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ABSTRACT

Nor Cal Phase III was the experimental portion of the 3-year attrition study. The general purpose of the study was to design and test treatments aimed at reducing attrition among first-time freshmen entering community colleges. Twenty-eight colleges (22 in Northern California, five in Southern California and one out-of-state) were involved in either conducting a Phase III study or in further validating the Nor Cal questionnaire. Plans to develop research projects at each of the participating campuses were hampered by limited resources and lead time. Twelve colleges found time and staff to conduct true experiments with defineable treatment variables; seven other colleges conducted post hoc or quasi-experimental studies; and nine colleges further validated the Nor Cal instrument. Reports from these individual projects are included. (AL)

NORCAL PROJECT

Phase III Final Report

July 1, 1971

The Lesson From the Three-Year NORCAL Attrition Study

Many of the Potential Dropouts Can Be Helped

Donald L. Kester
Project Director

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PREFACE

The Northern California Community College Research Group, with the filing of its Phase III report, concludes the first of its cooperative research efforts. Since its inception in 1966, the by-laws of the research consortium of over twenty northern California colleges has stated its threefold purpose as follows:

1. to conduct cooperative research;
2. to provide resources to individuals and colleges in their research efforts; and
3. to exchange research ideas and results.

The spark of the NORCAL consortium idea was struck in the summer of 1966 when the California Junior College Association, through the efforts of Dr. Thomas Mersen, sponsored a U.S.O.E. summer workshop for Junior College institutional researchers at the University of California, Berkeley. The following people attended that summer workshop and later organized themselves into the first NORCAL Steering Committee:

1. Mrs. Lorine Aughinbaugh, Assistant Dean of Research, American River College
2. Mrs. Virginia Murdoff, Dean of Student Services, Napa College
3. Mr. Martin Taylor, Dean of Student Personnel, Sierra College
4. Mr. Lee A. Stevens, Associate Director of Institutional Research, Foothill Community College District
5. Dr. E. Lance Rogers, Director of C.O.I.L. (Center for Independent Learning) and Tutorial Programs, City College of San Francisco
6. Mr. Marvin Veregge, Instructor-Counselor, Chabot College
7. Dr. Frank Pearce, Workshop Instructor, Director of Research, Modesto Junior College - currently Vice President for Academic Affairs at Rio Hondo College

These seven people organized a project planning committee during academic year 1966-67 and invited five additional members with

research responsibilities in their respective community colleges to join the group:

1. Mr. Walter Brooks, Counselor and Research, Shasta College
2. Dr. Dayton Axtell, Counselor, Merritt College
3. Dr. James Keene, Dean of Research, San Joaquin Delta College
4. Miss Katherine Farley, Psychometrist, Merritt College
5. Dr. Martin Olivarri, Registrar, Diablo Valley College

During the following two academic school years, meetings of the planning committee were held at Napa College, American River College, City College of San Francisco, and Cabrillo College. During that time funding was sought, the Phase I questionnaire was constructed, and the first Project Director was chosen. Grantsmanship activities spearheaded by Mr. Lee Stevens of Foothill College were so successful that multiple funding was actually attained and the Three-Year NORCAL Attrition Study was underway.

The chairmanship of the NORCAL Research Group has been carried by Mr. Lee Stevens, Foothill College, 1966-68, Dr. Martin Olivarri, Diablo Valley College, 1968 until his untimely death, Mrs. Lorine Aughinbaugh, American River College, 1969-71, and the current chairman, Mr. Walter Brooks, Shasta College.

Membership on the NORCAL Steering Committee has remained constant during the conduct of the Attrition Study. In addition to the four chairmen, Mrs. Virginia Murdoff, Dr. Lance Rogers, Dr. Dayton Axtell, and Mr. Martin Taylor have provided the enthusiasm and cohesiveness needed to successfully conduct a long term research project.

In the spring of 1968, Dr. Thomas F. MacMillan, then a faculty member at Napa College and a student in the University of California, eley, Junior Colleges Leadership Program, became the Project Director.

Dr. MacMillan had just completed a recent model for the prediction of attrition as part of his doctoral research and brought to the project a wealth of background knowledge and technical skill which coupled with his own enthusiasm and leadership ability saw the successful completion of Phase I and Phase II. Although Dr. MacMillan left the project to assume a full-time research position at Santa Barbara City College in the spring of 1970, Santa Barbara City College has joined the northern colleges as a participant in the project and Dr. MacMillan has strongly supported the NORCAL activities in his position as chairman of the CJCA Research and Development Committee.

Mr. Don Kester, a counselor and psychometrist at Chabot College, and also a doctoral candidate in the University of California, Berkeley, Junior Colleges Leadership Program, was employed in July, 1970, as the Project Director for Phase III. Mr. Kester's tireless effort and personal dedication to the completion of the Attrition Study and his special skills in research design, statistics, and data processing made it possible for him to assist the many colleges with their individual studies during Phase III.

The twenty-two northern community colleges which conducted the experimental phase, as well as the research persons responsible for the conduct of the experiment at each college, are listed in the body of the report, so it is not necessary to list each here. In all, twenty-eight colleges, twenty-two in northern California, five in southern California, and one out-of-state community college were involved in either the conduct of a Phase III study or in further validation of the NORCAL Questionnaire during the year 1970-71. To each and everyone we would like to express our appreciation for their interest and their participation. A study which has involved twenty-eight colleges and staff and almost fifty

thousand students over the three-year period could not have been conducted without the support of a great many individuals.

Foothill Community College district provided the fiscal services for the project during its three-year period. As funding came from many sources - NDEA, VEA, CJCA, and from each participating college. Mr. William B. Cutler and his Business Services staff provided an invaluable service for the fledgling organization. During Phase I and II Napa College provided an office for Dr. MacMillan and the Foothill District provided office space at De Anza College for Mr. Don Kester.

Two other colleges provided the hardware and staff which made it possible to process almost 30,000 questionnaires administered during Phase III. Mr. Jerry Underwood, Supervisor, Data Processing Services at Solano College and Mr. Terry Milko, Systems Analyst at San Jose City College deserve special commendation for their "above and beyond" assistance.

Gratitude is expressed to all these people and to all the others who contributed to Phase III through their technical skills, as consultants, or as enthusiastic supporters. Phase III of the NORCAL Attrition Study could not have been completed without their much appreciated assistance.

NORCAL Chairman
1969-71

INTRODUCTION

In October, 1967, at Cabrillo College, the Northern California Community College Research Group approved a proposal that its first co-operative research effort would deal with Student Attrition - a problem of concern to all twenty-two colleges as each had witnessed the loss to the student, to the institution and to society.

As the aims of the cooperative project were more specifically defined, it was agreed that the participating colleges would share part of the cost and that additional funds would be sought from state and federal sources. The project was to have three phases, each to take approximately one year to complete.

Phase I - Description - the identification of characteristics associated with the attrition of full-time day students during their initial enrollment period in college;

Phase II - Prediction - the development and validation of a predictive model; and

Phase III - Experimentation - the development and testing of experimental programs which might have an impact on attrition.

Phase I Procedures - 1968-69

Three specific steps were taken to implement the purposes of Phase I. They were:

1. Analysis of the NORCAL questionnaire items to identify those individual responses which were non-randomly distributed among community college withdrawals and persisters.
2. Multiple regression analysis of the most potent predictors to derive individual weights for the categorical responses to each item in the instrument that seemed to be associated with persistence status.

3. Development of discriminant scores, using the weights derived in Step 2, and analysis of the distributions of discriminant scores among students who withdrew and a randomly drawn sample of persisters in each participating college.

The three steps in the execution of the Phase I objectives were selected in order to provide maximum information at each step, while at the same time allowing that information to be most easily interpreted by the participating institutions for implementation in Phase II.

Phase I - Findings:

A. Individual Characteristics Associated with Attrition

A 112 item questionnaire was developed, administered to 25,000 students and carefully analyzed (MacMillan - 1969b). The model which was developed and applied in the twenty-two colleges "NORCAL" Research Project yielded an acceptable level of prediction. Typically, seven out of ten students could be correctly identified as persisters or dropouts by assessing the patterns of their weighted responses to a brief biographical questionnaire, and grouping students by ability and sex. The major findings on the characteristics of potential dropouts may be generalized as follows:

1. The potential dropout is likeliest to be black, least likely to be oriental.
2. The potential dropout is likely to come from a family that is less affluent, and is likelier to express greater concern over matters of finance and employment.

3. The potential dropout is likely to have less perceived parental encouragement for college.
4. The potential dropout shows a lower sense of importance of college.
5. The potential dropout is likely to have lower educational aspirations than the persister.
6. Ability is a key factor in the prediction of attrition, when grouped by sex; low ability males are three times likelier to withdraw than low ability females.

The critical difference between the NORCAL study in community colleges and earlier research on attrition was that out of the description findings a model was developed and validated which made it possible to identify, individually, students with high potential to withdraw.

B. Institutional Patterns of Attrition

A number of valuable insights were developed in the process of comparing rates of attrition during the initial semester or quarter of attendance among the cooperating colleges. The range of attrition for the twenty-two colleges was between 3.90% and 21.24%, with the mean falling at 7.47% (S.D. = 4.08).

The undeniable evidence of the NORCAL study is that the community college environment provides its own patterns of support or rejection for the potential dropout. These institutional patterns will be carefully scrutinized as planning for the experimental

phase of the NORCAL Project continues.

Phase II - Procedures - 1969-70

The items which discriminated the dropouts from the persisters were combined into a single one page questionnaire which was again administered to 22,000 entering full-time day students in twenty-two Northern California Community Colleges.

Three discriminant scores were derived for each student as a search was made for the most effective eclectic model.

Phase II - Findings

The total number of variables used in the three discriminant scores was 9: SexAbility, race, need for aid, mother's employment status, goal for college, obstacle to college, significant source of advice, parental encouragement for college, and importance of college to the self.

The most effective combination of weighted responses was found in the set known as Sum I.

The five most salient variables were: SexAbility, race, goals, parental encouragement, and importance of college to self. The students who were likely to withdraw were shown to have the following characteristics: (MacMillan - 1969)

1. SexAbility: On the variable of SexAbility, the potential dropout is most likely to be a low ability male, least likely to be a middle ability female.
2. Race: On the variable race, the potential dropout is most likely to be black, least likely to be oriental.
3. Goals: On the variable of academic goals, the potential dropout is most likely to have lower educational goals than the persister.

4. Penc: On the variable of parental encouragement, the potential dropout is most likely to receive little parental encouragement for his college plans.

5. Imps: On the variable of importance of college to self, the potential dropout is most apt to have a low sense of the importance of college.

It is important to note that in the above list, variables one, three, and five have the heaviest weightings in the predictive equation. That is to say, the SexAbility, goals, and importance of college to self are more heavily weighted.

The overall empirical validity of the model was .65 to .67. When all students with a +10 score or higher were compared to actual withdrawal, the validity of the model increased to .85.

Therefore, it was recommended that assignment to experimental treatment programs during Phase III seems reasonable only under two conditions:

1. Random assignment to experimental or control condition.
2. Assignment for research purposes of only those students with plus (liability) scores above 10.

Every piece of evidence suggests that the discriminant scores decrease in their effectiveness as they approach zero. By researching attrition among only those students with exceptional liabilities, it would appear that a reasonable evaluation could be made of the programs designed to meet the needs of potential dropouts (MacMillan - 1970).

PHASE III PURPOSE AND PLANNING

The experimental phase of the three-year NORCAL Attrition Study was ushered in at American River College in June of 1970 with a workshop on experimental design conducted by Dr. Ben Gold, Director of Research at Los Angeles City College. While the general purpose of the NORCAL study was to design and test treatments aimed at reducing attrition among first-time freshmen entering community colleges, workshop participants recognized that the task of developing research plans to be carried out at each of the college campuses would be hampered by several formidable obstacles. Among them were:

1. The limited availability of staff, time, and physical facilities at participating colleges - Most of the community colleges participating in the study operate in crowded facilities on severely restricted budgets. Any new program or procedure in these colleges must compete for available funds and space. During the summer workshop, each college research officer was forced to take into account these realities in his research design. The researcher had to think not only of what was likely to be effective as a treatment, but also of what his college could afford to provide.

2. The limited lead time in which to develop and implement experimental projects - The workshop which launched Phase III of the NORCAL Attrition Study was held the summer immediately preceding the school term in which implementation would take place. The final Phase II report was not available to member colleges until the summer workshop. Further, it was not possible to hold the planning conference until the summer regardless of the availability of the Phase II report. Research personnel simply could not find the time to get together until the end of the spring term in their respective colleges.

While some colleges, because the research officer had well-developed research skills or because of special funding, were able to begin their projects early, most were compelled to wait until the summer workshop to finalize plans. These two conditions, while unavoidable, reduced the lead time and severely restricted the treatment alternatives open to college research personnel. Staff commitments and class schedules are usually made far in advance of the summer preceding the fall term.

3. The nonspecific nature of the variables associated with attrition among community college freshmen - The NORCAL Questionnaire was found to be effective in identifying early the student likely to withdraw from college. This identification was an important first step in successful treatment, but most of the variables identified offered no precise prescription for treatment. The race variable might be considered as an important first example. On the questionnaire, the student who claims to be "oriental" has a high probability of staying in college while a student who claims to be "black" has a low probability of staying. Even if we assume that we and the student agree on what it means to be "black", it is highly unlikely that this condition could be successfully treated in a college setting. We also have observed that not all students claiming to be black leave the college nor do all students claiming to be oriental stay. We therefore might suspect that some other unknown factor which distinguishes the black and oriental subcultures, such as family stability or family mobility, might be operating to produce the observed difference in withdrawal rate. We might follow up this line of speculation with specific investigation and ultimately might discover a variable which both distinguishes between the subcultures and is also amenable to treatment in a college setting, but such a variable is not imme-

diately apparent from the responses on the questionnaire and was not investigated further because of the time and effort which would be required.

The SexAbility variable is so named because the probability of withdrawal differs among young women with low standardized scholastic aptitude test scores from the probability of withdrawal among young men with similar test scores. The young man with test scores indicating low ability is far more likely to withdraw. This would seem to indicate that important differences exist between young men and young women of similar scholastic ability in their purposes for attending college. And if true, this would require that we design treatments for men that differed from those we designed for women.

The meaning of the scholastic ability test scores themselves are not as obvious as they might first seem. Test scores which attempt to measure "ability" or an inborn capacity to learn are just as likely to measure "developed ability" or the adequacy of the academic preparation of the student. If we assumed that our standardized tests were measuring ability, then we should design attractive programs in which young men with lesser learning capability can succeed. If on the other hand we assumed that the test scores reflected an unfortunate learning environment, we would design programs which offered remedial skills as a predecessor to the normally offered academic and vocational programs.

The questionnaire item relating to parental encouragement offers a somewhat clearer opportunity for interpretation (or speculation) but not a great deal more hope for college-based treatment. We can do little in a direct nature about parental encouragement.

If the parent has not encouraged the student to go to college, the attitude is probably already formed before he ever gets to us and it is beyond our capability to change the inclination of the parent. Again alternative interpretation of the response on the item among withdrawal-prone students is possible. A student who indicates on a questionnaire that he has no support at home may really be saying that he has no communication. To indicate no support might really indicate a symptom of prolonged adolescent rebellion with withdrawal from college but another symptom. If this were the case, if we were really dealing with an attitude of the student rather than an attitude of the parent, direct treatment in the college setting might be possible.

The remaining questionnaire items with high Sum I weights are the items referring to goals of the student and importance of college to the student. Responses on these two items appear to be related and a straightforward interpretation seems less likely to be in error. Treatment in the college setting with regard to these two variables seems to stand a better chance of being successful. These are essentially attitudes of the student and not attitudes of the parent or unchangeable characteristics.

In the final analysis, however, the NORCAL Questionnaire was and must be regarded in its present state of development as a predictive device only. The validation process thus far has addressed itself only to prediction. The questionnaire is a useful tool in assisting a community college to determine which freshmen will withdraw; it gives few reliable clues on why they withdraw or what to do about it.

RESEARCH DESIGNS

The research designs which evolved in the workshop held at American River College were, in all cases, a compromise between the treatment the research officer thought would be effective and the reality of available resources at their own college. Treatments specified in the study usually was an existing course or counseling procedure which could be adapted for the purposes of the study rather than a new technique or course alternative.

In all, eleven colleges found the time and staff to develop and implement a true experimental design with a defineable treatment variable and a reasonable degree of controlled observation. Seven colleges conducted post hoc or quazi experimental studies of the effects of a treatment variable. (A few colleges were able to complete both a post hoc study and a true experimental design.) Nine colleges conducted further validation studies of the NORCAL instrument. (Some did so in addition to one of the other two forms of study.)

The eleven colleges conducting a study employing an experimental design are shown below together with the treatment variables employed.

Colleges Using Experimental Design

College	Treatment Variables
American River College	Special individual counseling
Cabrillo College	Career counseling
College of San Mateo	Learning skills course
Merritt College	Individual counseling or a special course
Napa College	Special individual counseling
Ohlone College	Controlled course selection or identification to counselor
Porterville College	Special English class or group counseling or extra individual counseling

Reedley College	Recruitment, pre- ollege workshop, and counseling
San Joaquin Delta College	Group counseling
San Jose City College	Identification to counselor and intensive individual counseling or intensive counseling without identification
Shasta College	Identify to counselor and special counseling
Sierra College	Identify to counselor and special counseling

Colleges Using Post Hoc Study or Quasi Experimental Designs

College	Treatment Variables
Contra Costa College	Special courses or student services
De Anza College	Special counseling
Foothill College	Special courses or student services
Merced College	Group counseling
Reedley College	Student services
Sierra College	Special courses
Yuba College	Special courses

Colleges Conducting Validation Study of the NORCAL Instrument

American River College	Napa College
Chabot College	Reedley College
De Anza College	Santa Barbara City College
Diablo Valley College	Solano College
Foothill College	

PHASE III FINDINGS

1. Eleven colleges employing an experimental design reported differences between treatment and control groups in the number of students withdrawing during the first semester of attendance. All eleven colleges reported fewer student withdrawals among those students subject to treatment conditions. Six of the eleven colleges reported significance levels at the 5% level of confidence or greater. The fact that differences in the predicted direction were found in eleven colleges suggests that certain changes in the nature or intensity of the treatment variable, tighter control of the experimental design, or improved sampling procedures to establish larger groups or more truly random assignments to treatment versus control conditions would yield statistically significant differences in the five colleges which reported that an acceptable level of significance had not been achieved in the 1970-71 projects.

2. All twelve colleges employing an experimental design reported differences between treatment and control groups in numbers of students reenrolling for a second term of college. All colleges reported more students reenrolling among students subject to treatment conditions. Eight of the twelve reported significance levels at the 5% level of confidence or greater. This finding suggests that the effects of the treatment conditions may become more apparent with the passage of time. It was considered an extremely important finding to discover that the effects of the treatment tended to persist after the treatment had ceased.

3. Of the twelve colleges employing an experimental design, six reported differences in grade point average between treatment and control

groups. All six reported higher grades among students in the treatment groups but only two reported differences significant at the 5% level of confidence. Grade point average is an important measure of student success, but it was not the primary focus of the study. Of the three commonly used measures of attrition, grade point average is probably the least reliable. It is unreliable in part because colleges compute grade point averages differently. While some colleges allow the withdrawing student an extended grace period, others assign failing grades upon irregular withdrawal early in the semester. Even where colleges have similar grading patterns, a sizeable problem exists in interpreting the meaning of a grade point average with regard to the attrition study. If a student in the control group withdraws, he is usually assigned no grades for the semester. His grades are, therefore, not counted in the group average. If on the other hand a student in a good treatment program stays throughout the semester in spite of poor grades, his grades are counted in the average. This tends to pull the overall grade point average of the group down. It is not certain that this occurs in every case, and certainly good grades are an important part of many of the treatment programs, but the interpretation of grades can only be made on an individual college basis.

4. All colleges reporting a successful treatment program included counseling in their procedures. In an earlier discussion, it was stated that the item weights on the questionnaire identifying attrition-prone students were nonspecific. The withdrawal-prone student does not necessarily have a recognizeable personality type, at least not on the basis of available evidence. A college counselor involved in the treatment process to enable the student to identify the specific courses or student services required seems appropriate.

5. Most community colleges have within their present course structure and student services the potential for significantly reducing attrition among first-semester freshmen. Very few of the participating colleges introduced new courses or procedures during the attrition study. At the outset of the study, it was felt that this was a weakness. In the final analysis, however, this must be considered one of the strengths. The community colleges participating in the three-year study range from rural Shasta and Sierra to metropolitan San Francisco City and Merritt. It is important to recognize that a wide variety of colleges each found that the resources were already available to do the job.

Conclusion

The NORCAL project on student attrition occurred at a time when the special needs of minority and economically disadvantaged students were receiving statewide and nationwide attention. It was no surprise to discover that "high liability" students were principally in metropolitan minorities, and it was no surprise to observe substantial numbers of potential withdrawals in every one of the participating colleges. Pressure for legislation in California to provide special services to the disadvantaged, increased financial aid, and other direct aid programs was certainly not sparked by the carefully executed three phase research project which the NORCAL consortium succeeded in bringing to fruition. On the contrary, legislation was prompted more by the increasingly vocal and insistent patterns of student demands. It was prompted more by the increasingly evident and deeply felt disparity between the expectations of the new students in higher education and the realities of their academic persistence and performance in higher education. But in the final analysis, when one is called upon to ask whether the new students in higher education can be afforded the means

to academic survival, there is perhaps no more extensive documentation of an affirmative answer than the findings of NORCAL Phase III. Not only is it clear that the provision of special services makes a measurable difference in attrition and performance, it is also clear that the potential for providing these services exists within every community college. The problem of attacking attrition is clearly one of will, not means. Perhaps this simple realization is the best contribution of the NORCAL project.

THREE-YEAR NORCAL ATTRITION STUDY

INDIVIDUAL COLLEGE REPORTS

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NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

AMERICAN RIVER COLLEGE

by

Mrs. Lorine Aughinbaugh
Assistant Dean for Research

Although the circumstances that developed before the first weeks of the fall term materially changed the research design, the original design together with what later happened do provide insight into an area heretofore unmeasured. This area is the "No-Show Rate" as reported later in this individual college report. First, the original research design.

Original Research Design, as Planned

Display 1
Nor Cal Project

Outline of Plan for Phase 3

Problem

Is it possible to reduce the attrition rate of students predicted prior to college admission as potential dropouts by increasing their motivation through an overview of career choices available to them?

American River College

Procedure

During Spring semester 1970 - Administer the Nor Cal Questionnaire to all students planning to attend American River College in the Fall 1970 from the feeder high schools with the highest attrition rate. List the students with the "highest attrition scores" during the early part of the summer. Divide the list into three equal parts. One third selected by random book will become the control group. They will receive no special treatment.

Two thirds will be asked to register for one of two Pre-Vocational Survey Courses - (to be described later).

Each of the survey courses will introduce the students to eight different vocational fields. About two weeks will be spent with each field. Each two weeks will be organized differently, but some "hands on experience" will be planned for each field presented and wherever possible a field trip will be arranged. The course will be offered on a C/NC basis.

Group I	Group II
Data Processing	Electronics
Auto Body	Heavy Equipment
Food Service	Drafting
Television Repair	Bookkeeping
Interior Design	Advertising
Horticulture	Natural Resources Tech.
Retail Food Management	Nursery School
Human Services	Welding

Evaluation

As all of the students under study have been predicted as high attrition risks, (should leave during the first semester) the success of the program will be judged on:

1. The percent of students left in Groups 1, 2, and 3 at end of semester.
2. The number of students who return the second semester.
3. The selection of goals (majors) by those who return.

American River College

The Plan Develops Smoothly

During May, 1970, the Director of Research contacted the three high schools which had had the highest attrition rate during the preceding year. The Director of Counseling at each high school agreed to administer the Nor Cal questionnaire to all senior students planning to attend American River College in the fall of 1970 before school closed in June. Arrangements were also made with the Admissions Office to ask all late applicants (after July 15) for admission to also complete the Nor Cal questionnaire if they were to be first-time college students in the fall. The college anticipated over 5,000 new students last fall and although it would have been preferable to administer the questionnaire to all new students, the above method was agreed upon to save cost and paperwork while still making it possible to locate a sufficient number of +10 students to set up both a control and experimental group.

Following the above procedure, 777 students completed the questionnaire. Of this number 98 students scored in the +10 category.

During the spring of 1970, the Director of Research met with the counselors on two occasions and found that some of the counselors were enthusiastic about the proposed study and some were not. As the program would depend to a great extent upon the ability of the counselors to "sell" the idea it was agreed that the folders of the experimental students would be marked "N" for Nor Cal and routed to the four enthusiastic counselors on duty during the summer. With a great deal of cooperation from both the admissions and counseling clerical staff this procedure

was carried out with very little problem. The control students were noted, but not marked in any way.

Also during the spring of 1970, both Dr. Quint, the Director of Vocational Education and the Director of Research met with the division chairmen and the campus curriculum committee. The course, Interdisciplinary A, was adopted, the involved division chairmen pledged their support and named the instructors who were to be involved in the "on hands" experiences, and the Dean of Instruction assigned an instructor and scheduled the class for the fall.

New Information is Gained and Events Force the Revision of the Original Design

At the close of the summer scheduling it was learned that of the 98 students with +10 scores, 53 had not completed the registration process. This left a group of 45 students to be split between control and experimental, or 23 experimental and 22 control. Of the 23 experimental students, 11 elected not to take the class after discussion with the counselor, 5 were in the class, and 7 had wanted the class but were unable to work it into their schedules with the other courses recommended for them to take - or could not locate the course on the floor of the gymnasium during registration. Unfortunately, the course had been given to the Behavioral Science Division for distribution, and a new division chairman during one whole day told students he did not have the cards. Frustrated, many of them selected an alternate course. On the last day of registration other students were permitted to enroll in Interdisciplinary A so that the course would not have to be cancelled for the five "+10" potential dropouts who had managed to enroll.

The breakdown in communication and the future of over half the potential

dropouts to complete registration, materially changed the original intent of the project. But new information now came to light. A "No-Show" rate for potential dropouts (those students having Sum 1 Scores of +10 or higher) was now known. Also known was the "No-Show" rate for all other students (those having Sum 1 Score of below +10). As the following two tables indicate the "No-Show" rates are significantly different between the potential dropouts and all others and the potential dropouts and everyone who took the questionnaire.

Table 1
"No-Show" Rate

	Potential Dropouts (+10 and above)	All Others (Below +10)
No-Shows	52	173
Shows	45	506
Total	98	679
"No-Show" Rate	53.06%	25.47%

$Z = 5.63$

$p < .0001$

Table 2
"No-Show" Rate

	Potential Dropouts (+10 and above)	Total Group
No-Shows	52	225
Shows	45	552
Total	98	777
"No-Show" Rate	53.06%	28.95%

$Z = 4.84$

$p < .0001$

In an attempt to provide some form of treatment for the seven students who had wanted to take the course but coudn't, each student was sent a letter and in-

vited to come in and meet the director of research and discuss the problems they were facing as new students on campus. They all responded to the invitation some of them coming in for a second discussion, and seemed appreciative of the interest shown them as new students.

The experimental group received attention from the Assistant Dean of Research. The following results were obtained.

Table 3
Attrition Rate - "All Potential Dropouts"

	Experimental Group	Control Group
Withdrew	1	3
Persisted	18	15
Total	19	18
Attrition Rate	5.3%	16.7%

$Z = 1.12$
$p < .15$

Table 4
Reenrollment Rate - "Full-Time Potential Dropouts"

	Experimental Group	Control Group
Reenrolled	4	3
Dropped	0	2
Total	4	5
Reenrollment Rate	100.0%	60.0%

$Z = 1.43$
$p < .10$

Conclusions

Although the final N was quite small it was possible to show that the re-enrollment of the students who attempted 12 or more units and were given special

treatment was significant at the .10 level over the control group. For all students enrolled with a +10 score on the Nor Cal questionnaire, the retention of those under special treatment was significant at the .15 level.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

CABRILLO COLLEGE

by

Mr. John Hinton
Dean of Admissions and Records

Purposes of the Study

The Cabrillo College counseling and guidance faculty elected to focus its attention and Nor Cal study participation on two general approaches to retaining the high-potential-dropout student. These approaches dealt with the effectiveness of career planning, and more frequent individual counseling, as they relate to attrition (completion of the counseling course); persistence in college (reenrollment in the subsequent session); units completed by the student, and the grade point average earned by the student. Hypotheses were developed as follows; each for high-potential-dropout students identified through administration of the Nor Cal questionnaire:

Hypothesis 1. The student is more apt to complete his counseling course if his counseling is focused on career planning rather than the usual and traditional orientation to college.

Hypothesis 2. The student is more apt to reenroll in the subsequent semester, or to persist in college enrollment, if his counseling is career oriented rather than the traditional orientation to college.

Hypothesis 3. The student is more apt to complete a higher proportion of the units he attempts if his counseling is career oriented rather than traditional orientation to college.

Hypothesis 4. The student is more apt to earn a higher grade point average if his counseling is career oriented rather than traditional orientation to college.

Hypothesis 5. The student is more apt to complete his counseling course, if he is a high-potential-dropout as identified by the Nor Cal instrument, if his counseling is tradition but more frequent than the usual counseling (orientation to college) of other students.

Hypothesis 6. The student is more apt to persist in college; i.e., reenroll for a subsequent session, if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students.

Hypothesis 7. The student is more apt to complete a higher proportion of the units he attempts if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students.

Hypothesis 8. The student is more apt to earn a higher grade point average if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students.

Methodology

High-potential-dropout students were identified through the use of the Nor

Cal questionnaire. Students with a Nor Cal instrument score of +10 or higher (i.e., students with a high potential to become dropouts) were placed in two experimental sections for special treatment in counseling. In one group (E_1) the students (N=10) were placed in a counseling and guidance section for career planning. The counselor-instructor in this lecture-laboratory class worked with these students on the selection, preparation for, and factors for success relating to specific vocations of the students' choice. Interest and aptitude tests were utilized to assist individual students in vocational self-analysis. Thus, the major thrust of E_1 was career counseling.

A second group (E_2) started as a special (10+ Nor Cal Sum-1 score) student group (N=5) in one section of orientation to college, with more frequent counseling sessions than were accorded students in usual orientation to college sections. The counselor-instructor of this group met with the individual students, at first on a formal schedule basis, which later became informal when the students voluntarily came in for counseling more frequently than other orientation students. The thrust of E_2 thus was an increase in frequency of individual counselor-student sessions.

A usual orientation-to-college section was randomly selected as a control group (C) for comparative purposes. No special treatment was accorded students (N=19) in this group. They participated in a usual freshman seminar dealing with orientation to college life and responsibilities through lecture, class discussion, and activity participation.

Results

Hypothesis 1 is accepted. The student is more apt to complete his counseling course ($p < .04$) if his counseling is focused on career planning rather than the usual and traditional orientation to college.

Table 1
Attrition Rate

	Experimental Group #1 (E1)	Control Group (C)
Withdrew	1	8
Persisted	9	11
Total	10	19
Attrition Rate	10.0%	42.1%

$Z = 1.78$
$p < .04$

Hypothesis 2 is accepted. The student is more apt to reenroll in the subsequent session ($p < .04$), or to persist in college enrollment, if his counseling is career oriented rather than traditional.

Table 2
Reenrollment Rate

	Experimental Group #1 (E1)	Control Group (C)
Reenrolled	10	14
Withdrew	0	5
Total	10	19
Reenrollment Rate	100.0%	73.68%

$Z = 1.78$
$p < .04$

Hypothesis 3 is accepted. The student is more apt to complete a higher proportion of the units he attempts ($p < .005$) if his counseling is career oriented rather than traditional.

Table 3
Units Completed

	Experimental Group #1 (E1)	Control Group (C)
Mean	11.5	4.921
Number	10	19
Standard Deviation	3.78	4.85

T = 3.73
p < .005

Hypothesis 4 is accepted. The student is more apt to attain a higher grade point average if his counseling is career oriented rather than the traditional orientation to college ($p < 0.10$).

Table 4
Grade Point Average

	Experimental Group #1 (E1)	Control Group (C)
Mean	2.19	1.52
Number	10	19
Standard Deviation	0.956	1.325

T = 1.42
p < .10

Hypothesis 5 is accepted. The student is more apt to complete his counseling course if his counseling is traditional but more frequent than the usual counseling (orientation to college) of other students ($p < .04$).

Table 5
Attrition Rate

	Experimental Group #2 (E2)	Control Group (C)
Withdrew	0	8
Persisted	5	11
Total	5	19
Attrition Rate	0.0%	42.11%

Z = 1.78
p < .04

Hypothesis 6 is rejected. The student is not significantly more apt to persist in college (i.e., reenroll for a subsequent session) if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students (p = not significant).

Table 6
Reenrollment Rate

	Experimental Group #2 (E2)	Control Group (C)
Reenrolled	4	14
Withdrew	1	5
Total	5	19
Reenrollment Rate	80.0%	73.68%

Z = 0.29
p not statistically significant

Hypothesis 7 is accepted. The student is more apt to complete a higher proportion of the units he attempts if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students ($p < .025$).

Table 7
Units Completed

	Experimental Group #2 (E2)	Control Group (C)
Mean	11.1	4.921
Number	5	19
Standard Deviation	3.8144	4.8456

T = 2.39
$p < .025$

Hypothesis 8 is rejected. The student is not significantly more apt to attain a higher grade point average if his counseling is traditional but more frequent than is the usual counseling (orientation to college) of other students (p = not

significant).

Table 8
Grade Point Average

	Experimental Group #2 (E2)	Control Group (C)
Mean	2.254	1.519
Number	5	19
Standard Deviation	.737	1.324

T = 1.18
p not statistically significant

Discussion

Career counseling appears to be a useful means by which high-potential-dropout students may be motivated or encouraged to complete their counseling courses, reenroll in the subsequent session, complete more of the units he attempts, and earn a higher grade point average than the student who has usual (non-career) counseling through orientation to college classes.

Traditional but more frequent individual counselor-student orientation to college sessions appear more effective than usual orientation to college counseling course. More frequent traditional counseling has no significant impact, however, on reenrollment of students in a subsequent session (persistence in college enrollment) or in the students' earned grade point average.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

CHABOT COLLEGE[1]

by

Mr. David Guzman
Psychometrist - Counselor

Two items of interest to the members of the Nor Cal Consortium are included in this Individual College Report. The first is the description of the results of a validation study that compared attrition rates, number of units attempted, number of units completed, and no-show rates for two groups as identified by the Nor Cal questionnaire. The second is the description of the results into the reason for withdrawal between fall and winter quarters, 1970-71 school year. First the validation study.

The Development of the Nor Cal Validation

A questionnaire developed by the Nor Cal Research Consortium Research

[1]Separately entitled, "A Follow-Up Study of High Risk Students and Low Risk Students."

Project on Student Attrition, was administered to a sample of first-time, full-time freshman students admitted to Chabot College for the Autumn Quarter, 1970. Based on the results of this research questionnaire, a follow-up evaluation was conducted by this institution to measure the extent to which this instrument successfully identified potential dropout students.

It was determined that those students who obtained high Sum-1 scores on this instrument had a higher probability of attrition, whereas low Sum-1 scorers showed a strong "persistence" pattern. For the purposes of this report, forty-seven high risk (Sum-1 scores of +10 or higher), and fifty-seven low risk (Sum-1 scores of -10 or lower) students were selected from the data sent to this college from Nor Cal.

The academic performances of the two groups were compared across two quarters - Autumn 1970 and Winter 1971. It was found that 51% of the high risk group either, (1) withdrew before the start of the Autumn Quarter, or (2) withdrew from college after completing the Autumn Quarter. With respect to the low risk group, 35% were in this category. The differences between groups was significant beyond the .06 level as is indicated in the following table.

Table 1
Attrition Rate

	High Risk (+10 and Above)	Lower Risk (-10 and Below)
Withdrew	25	20
Persisted	24	36
Total	49	56
Attrition Rate	51.0%	35.7%

$Z = 1.58$

$p < .06$

Moreover, it appeared that high risk students, who reenrolled and completed the Winter Quarter, withdrew from significantly more ($p < .005$) courses than did the low risk group. This finding was determined by statistically comparing the units attempted and units completed for both groups. The results are shown in Tables 2 and 3.

Table 2
Units Attempted

	High Risk (+10 and Above)	Lower Risk (-10 and Below)
Mean	9.49	15.63
Number	49	56
Standard Deviation	8.76	12.48

$T = 2.86$
$p < .005$

Table 3
Units Completed

	High Risk (+10 and Above)	Lower Risk (-10 and Below)
Mean	6.88	12.85
Number	49	56
Standard Deviation	8.96	12.09

$T = 2.82$
$p < .005$

Also, in terms of the identification of "No Shows", the Nor Cal instrument appears to be capable of identifying a group of students who do register for the fall term but who fail to show for classes.

Table 4
"No Show" Rate

	High Risk (+10 and Above)	Lower Risk (-10 and Below)
"No Show"	11	7
"Show"	38	49
Total	49	56
"No Show" Rate	22.4%	12.5%

$Z = 1.35$
$p < .10$

The Nor Cal research questionnaire has demonstrated sufficiently its effectiveness in identifying Chabot College students who might be considered dropout prone. Insofar as "high potential" students showed a marked tendency to drop courses during the quarter, this suggests that these students might benefit from more intensive individual counseling. The main consideration would be, of course, the suitability of particular courses for this student's program.

Reasons for Withdrawal Between Quarters[1]

Dr. Victor Wm. Willits, Associate Dean of Student Personnel, reports the following:

> A questionnaire was mailed to 986 students (selected by use of the last digit in their I.D. number) who were enrolled in the Autumn Quarter 1970, but who did not return for the Winter Quarter 1971. The questionnaire was conducted in an attempt to determine the possible reasons for a larger than usual drop in enrollment between quarters.
>
> Unfortunately, the return of 375 was smaller than hoped for. The results were less than surprising. Major reasons for not continuing were, (1) work and work/school conflicts of time and energy, (2) transfer of students to other institutions. Very few (13) responded with any expression of dissatisfaction of Chabot College which is encouraging. Of those few who expressed dissatisfaction, five stated or inferred concern for our schedule of classes - 'unable to get class I wanted' was typical. Two expressed concern for 'quality of instruction.'

[1] More information regarding this study can be obtained by writing to the office of the Associate Dean of Student Personnel.

Chabot College

Responses from Questionnaire

Reasons for not returning, Winter 1970	Respondee's N = 155 Day Students Number	%	Respondee's N = 220 Evening Students Number	%
Transferred to another junior college	12	6.8	5	1.9
Working full time	38	21.6	63	24.4
Transferred to four year college or University	35	19.8	7	2.7
Completed educational goal or program	10	5.7	11	4.2
Work schedule conflicted with desired class	12	6.8	68	26.4
No desired classes offered	7	4.0	24	9.3
Dissatisfied with Chabot College experience	9	5.1	4	1.5
Military duty	16	9.1	0	0
Marriage and/or children	9	5.1	21	8.1
Moved to out-of-district area	12	6.8	13	5.0
Illness to self or family	7	4.0	17	6.6
Other	9	5.1	25	9.7
	176*		258*	

*some students responded more than once.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR THE

COLLEGE OF SAN MATEO[1]

by

Dr. J. William Wenrich
Miss Jane Hanigan
Mr. Raymond Pflug[2]

Preface

This experimental study was made possible by the Small Grant Research program of the Office of Education in the Department of Health, Education and Welfare. We are indebted to Dr. Walter Hirsch of the HEW Regional Office in San Francisco for his flexibility and responsiveness in handling our application.

The experiment was a success. We applied the criteria we proposed to apply and the results were positive. Our findings and our methodology are described in the following report, but a word needs to be said here for our staff.

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[1] Separately entitled, "Keeping Dropouts in," a report supported by a small grant from HEW Region IX.

[2] At the time of the writing of this individual college report for College of San Mateo's efforts in Phase 3 of the Nor Cal Attrition Study, Miss Jane Hanigan and Mr. Raymond Pflug were co-coordinators of College of San Mateo's Learning Center and Dr. William Wenrich was Assistant to the President for Research. Dr. William Wenrich is presently Vice President of Ferris State College in Michigan.

If we can isolate any one factor in the success of our experiment, it was the relationship of the staff to the students. This was crucial. We and the students in the program owe a debt of gratitude to the following people: Robert Howe and Susan Shih, Guidance and Counseling; Austen Meek, Mathematics Division; Lawrence Stringari, Psychological Services; Jean Fredricks, Learning Center Teaching Assistant; and of course, our student tutors. Without them we would not have had any program at all. We are also indebted to several research assistants for their invaluable help: Marie Maddox, Jackie Kelley and Carol Haskin; and to William Dewey for his creati artwork on the cover.

Whatever the methodological limitations of the study, and there are many, we hope this research will contribute to the understanding of how we can reduce entering student attrition. Many contributed to the success of the program; we alone should be judged for the errors of the study.

Introduction

The California community colleges have historically admitted just about anyone who applied, a practice frequently referred to as the "open-door" policy. With no real restrictions on admission, the community colleges have watched a staggeringly high percentage of students drop out, resulting in a change of the metaphor from "open door" to "revolving door." Trent and Medsker (1967) noted that 49 percent of entering students left college before their second year; 17 percent withdrew during the first year and an additional 32 percent failed to return after that first year. (Medsker and Trent, 1967) Everyone deplored this phenomenon but no one knew what to do about it. Some argued that in insisting on no

entrance requirement we were going to have to accept the fact that many unqualified students would register, and promptly get to work to prove that they were indeed unqualified. Others argued that in order to maintain the community colleges as the Last Chance stations we were going to have to live with the fact that our entering students were often poor risks academically. Only by accepting those poor risks were we going to be able to offer an opportunity to the occasional student capable of taking advantage of that Last Chance. And others of us argued that if we were going to admit students with weak records we had an obligation to provide support for those students; it was wrong as well as wasteful to present them with the traditional "pass on or flunk out" program. It was this last kind of thinking that led to the development of our Learning Center; the Learning Center would be a kind of auxiliary resource for the Last Chance.

A major problem was that of identification of the dropout. Not that he was difficult to recognize; he proclaimed himself clearly; he dropped out. He withdrew from his classes, failed to register for the succeeding term, or just disappeared. He became a statistic and was no longer around as a person to be helped. How to treat a patient who was not even diagnosed until he was terminal? The problem was tackled in 1968 by researchers representing 22 community colleges in Northern California (the NORCAL group); they undertook a three-phased project: (1) Identify and describe characteristics associated with attrition of first-time, full-time community college students; (2) Develop and validate an instrument to identify students likely to drop out; (3) Develop and evaluate programs designed to reduce attrition.

The College of San Mateo, a member of NORCAL, administered a ques-

tionnaire developed by NORCAL to 1,884 first-time, full-time students in the Fall of 1969. By weighting responses and combining key questions, the NORCAL group developed discriminant scores for each student, indicating whether or not he had a high probability of attrition. This predictive score was then empirically evaluated; did the student actually drop out? The validity of the questionnaire for the College of San Mateo students was nearly .68 (sixty-eight percent of the students were classified correctly). The predictive validity increases significantly if one takes only those students with extremely high liability scores, as we did in the experiment described below.

Research Design

Armed with a predictive device, we secured a Small Grant Research contract through the San Francisco office of the Department of Health, Education, and Welfare to finance an experimental study. The purpose of the study was to determine whether involvement in an individualized instruction program, the Learning Center, would reduce attrition of first-time freshmen who are identified as high probability dropouts. This action research design was the natural third phase of the NORCAL continuing research.

During the Spring and Summer of 1970, the College of San Mateo administered the NORCAL revised questionnaire (see Appendix A) to over 3,200 first-time students who intended to enroll full-time in the Fall semester, at the same time they took the SCAT for admission and placement. Discriminant scores were developed for all these students, even though it was apparent that not all would actually enroll at the College of San Mateo. As it turned out, 2,488 did actually enroll for the Fall semester, although not all for a full-time load.

College of San Mateo

Using the list of discriminant scores developed for all 3,200 applicants who filled out the NORCAL questionnaire, 38 percent had positive discriminant scores, indicating a higher likelihood of attrition. Five hundred admissions applicants had discriminant or liability scores of 10 or higher, which put them in the top one-sixth of high attrition liability. These people were identified early so that they could be assigned to a select group of academic counselors, if they actually decided to enroll. The counselors were given a brief description of the Learning Center and the research study. They were then asked to try to convince the specially identified students to enroll for one or two credit hours in the Learning Center program. Enrollment was absolutely voluntary. The study design had programmed enrollment of 50 of these identified students in the Learning Center (along with all other regular students who elected to matriculate there), and 49 actually registered for credit. These 49 students then comprised the experimental group for the study.

From the remainder of the 500 student applicants with discriminant scores of 10 or higher who actually registered, each of the experimental sample group was pair-matched with 49 students who did not enroll in the Learning Center. These students comprised the control group in the experimental design. The control and experimental group members were matched in terms of sex, actual discriminant score, number of credit hours enrolled, and type of academic program.

Within controllable limits, it was intended that the major difference between the two groups would be the hopefully positive involvement of the experimental group in the Learning Center. This active association with the Learning Center was the independent variable. This in turn led to the recognition of a key experimental feature: flexibility. Programs would have to meet individual needs; very possibly no programs would be alike.

The dependent variables included: completion of the first semester; registration for the second semester; completion of a full-time credit load (12 units); attainment of a 2.0 gradepoint average; and maintenance or improvement of the gradepoint average achieved in high school.

The basic hypothesis of the research design was that active participation in the Learning Center would be related to a lower level of attrition. Specifically, it was hypothesized that the experimental group (active in the Learning Center), as compared to the control group, would have (1) a lower rate of withdrawal prior to completion of the first semester; (2) a higher proportion of students who actually completed a full-time academic load of 12 units or more; (3) a higher rate of continuing registration in the second semester; (4) a higher percent of students who achieved a 2.0 ("C") gradepoint average at the college; (5) a higher proportion of students whose grades were as good as or better than those they received in high school.

No one of the above five specific measures is a singularly adequate index of attrition. Some entering students may withdraw completely the first semester and then register the second semester. Others may be counseled to reduce their academic load significantly by withdrawing from selected courses. Some students may complete the semester with a gradepoint deficiency (less than a C average) which is severe enough to warrant their academic disqualification. Others may complete the first term with a GPA of 2.0 or better, but for other reasons decide not to continue in the second semester. Thus, the question of attrition involves several measurements which will be examined in the results.

The characteristics of the 98 students who formed the research sample can be compared to the characteristics of the 2,488 first-time, full-time students who

completed the NORCAL questionnaire.

While the student body of the College of San Mateo is comprised of about 60 percent males and 40 percent females, the male-female ratio was higher in the higher probability dropout sample. Of the 98 students in the experimental and control groups, 78 (about 80%) were male. Th corresponds to general findings on attrition that males have a higher dropout probability than females.

Race is another factor associated with attrition. The NORCAL data indicated that blacks, those with Spanish-surnames or other non-whites were more likely to drop out, while orientals were actually less likely. The following table describes the racial composition of the experimental and control groups, and of all entering students (in percent).

Table 1 - Racial Composition

Race	Experimental Group	Control Group	Percent of All Entering Students Completing Norcal Questionnaire (N=2.488)
Black	3	5	3.5
Spanish Surname	3	1	4.6
Oriental	-	2	3.9
Other Non-white	2	-	1.4
White	41	41	86.6
Total	49	49	100.0%

In comparison to the total entering group, the experimental and control groups had slightly higher percentages of all racial minorities, except orientals. While this fits the expected pattern, the number of minority students was not as disproportionately high as might have been expected.

The high probability dropout student is young. The median age for students

in the experimental and control groups was 18 years. No comparable data is available for all students who completed the NORCAL questionnaire, but Table 2 shows the age breakdown of the sample groups.

Table 2 - Ages of Potential Dropouts

Age	Experimental Group	Control Group	Total
17	1	-	1
18	27	34	61
19	11	11	22
20	4	-	4
21	-	-	-
22	2	-	2
23	1	2	3
24	1	1	2
25 and over	2	1	3
Totals	49	49	98

Two other descriptive characteristics seem to be relevant to the attrition problem. Of all the entering students, 18.7 percent said they would need financial aid to stay in college, and this was viewed as a negative factor associated with attrition. In the experimental group, one student actually received financial aid from the College of San Mateo, while two students in the control group received this assistance. However, most of the students in the experimental group had part-time jobs off campus.

The Experimental Treatment

As mentioned before, the independent variable differentiating the experimental from the control group students was active participation in the Learning Center. The students in the control group received the same treatment as any

other entering students at the College. The students in the Learning Center group were offered special assistance, specifically one or more of the following: (1) Special academic counseling; (2) Enrollment in a special guidance course focusing on study skills; (3) Access to individualized programmed instruction materials; (4) Participation in a reading improvement laboratory; (5) Individual tutoring by student peers; (6) Weekly meetings in groups of ten with the Learning Center Chairman, with instructors from subject areas invited to participate; (7) A physical place to go where they were fully accepted and where learning was the accepted activity. We hoped to get these students to recognize that the skills they already possessed could be put to work in college, recognize what new skills they needed to acquire, and make use of the facilities offered in the supportive atmosphere of the Learning Center, with its recognition that students' problems are not confined to strictly academic areas.

Two criticisms can be made about the experimental treatment; (1) For various reasons which are the fault of no one, the application for the grant was submitted at the last moment, with the result that final approval was also at the last moment, thus precluding much advance planning that would have been advantageous. Faculty and administration of the College devoted vacation time on a "when and if" basis, not conducive to the best kind of long-range planning; (2) The Learning Center itself, the heart of the resources for the experiment, was barely past the planning stage, little more than space and ideas in the minds of a few faculty. As a result we often found ourselves making a program as we were using it.

Each student was personally interviewed and allowed to place himself. No ntion was made of any test scores or placement tests. The student was told

what the Learning Center had to offer and that he could pick and choose on the basis of what he thought he needed. The rationale was that the student had to want the assistance, not be assigned to it. The only restriction was that if he wanted one unit of credit he had to commit himself to five hours a week in the Learning Center for a period of eight weeks; if he wanted two units, he had to commit himself to five hours a week for the second eight weeks. If the student did not wish credit he could spend any number of hours in the Learning Center he wished to spend. No significant pattern emerged--some chose credit because they needed the units to be eligible for financial aid, other because they were veterans who had to carry a minimum number of units to receive veteran's benefits, and so on. All were told they could receive help on basic skills such as reading, writing, and mathematics. They could learn more about basic study skills. They could join a weekly discussion group where they might air gripes about teachers, fellow students, the college system, whatever. The groups were completely free. They could discuss matters pertaining to the college or they might discuss matters having nothing to do with the school. They were not encounter groups but rather opportunities to define problems relating to success in school and to find ways the staff and fellow students could be of help.

No two students had the same programs. One had reading improvement two hours a week, discussion group one hour a week, and study skills two hours. Another chose tutoring two hours a week, reading two hours, and discussion one hour. Some chose tutoring exclusively for the first eight weeks, then mixed in other activities for the second eight weeks. Some spent as much as three hours a week on individualized programmed instruction. And a few felt so insecure about their reading skills that they chose to spend the entire five hours a week in the reading

laboratory.

The flexible scheduling was possible through the cooperation of the reading teachers and the study skills instructor. Both reading and study skills are regularly scheduled sections but both employ the laboratory method so that students can choose the full program or parts of it. Flexibility also meant that when a student began to lose interest or felt he was not progressing at a satisfactory rate, we could revamp his schedule on the spot, a process that had unforeseen results occasionally; just offering to make up a new program for a student sometimes led him to suggest that he might give his current program another week or two before changing.

We could not attempt to give an accurate picture of the number of students enrolled in any one program at any one time. The only constant here was that the students earning unit credit put in the required minimum of five hours a week. The non-credit students varied from a low of one hour per week to one student who spent an average of three hours per day in the Learning Center.

Forty of the 49 students chose the discussion groups as part of the program. These groups served as means for students to get to know other students, faculty and staff in an informal, unstructured situation, a valuable service for students fresh out of high school, thrust into a large, impersonal institution. Much counseling took place in these groups. Students counseled other students, faculty counseled students, and students counseled faculty.

Tutoring

Tutoring was the very heart of the program. We hired ten student tutors to work fifteen hours per week each. During the first weeks the tutors found few

students to tutor. Many students were reluctant to admit they needed help; many did not know they needed help until they received the results of their first tests. This early free time was put to good use as professional staff trained tutors and examined problems that came up. This activity paid off later when tutors became swamped and the staff had other demands on time.

Throughout the semester there were weekly tutor meetings at which tutors could present gripes, problems, and suggestions. One outcome of these meetings was the assignment of a member of our Psychological Services staff to the meetings. We had expected to encounter many psychological problems and had assumed that, once trust had been established between a member of the staff and a student, the student could easily be referred to Psychological Services if he needed help in that area. We quickly learned that the logical sequence did not necessarily work. We all had to learn how to make referrals without losing the student; we had to do a little psychological work ourselves; we had to get a psychologist physically present in the Learning Center for those students who flatly refused to go see a "shrink."

The weekly meetings were compulsory for tutors and staff. Every other week we invited those being tutored to join us. Students being tutored were surprisingly eager to evaluate the tutors in a very constructive manner. The meetings were excellent learning experiences for the tutors and they went a long way toward building confidence in those being tutored. The tutors learned they had to be people-oriented first and subject-oriented second, yet they were being paid to help a student succeed in math or history, not being paid to sit and rap with him for an hour. Trying to communicate to the student that the tutor was interested in him as a human being, that part of that interest lay in helping him succeed

academically, that, while the tutor was a good listener, he was not a trained therapist, that he was taskmaster as well as friend--all this was a tall order for the inexperienced tutor. But with only one or two exceptions our tutors did well. They were self-starting, highly motivated, goal-oriented students with excellent GPA's. The students they were tutoring were usually the opposite, a fact which we anticipated but one which the tutors sometimes had difficulty accepting. In a community college the fact that there are no students higher than the sophomore level presents a problem in finding tutors who are, in addition to being good students, mature enough, patient enough, to handle students who appear to be apathetic, disinterested, even hostile. It is difficult for the tutors to understand why such students are even in college. But they learned quickly that often such attitudes are the last defense of the low achiever and that such attitudes can be cracked. The rewards to the tutors were immense as they saw their wards change in attitude and demonstrate ability to achieve. It must be emphasized that the success of a program like that of the Learning Center depends heavily upon the success of the tutors, and their success depends heavily upon the support given by the professional staff.

Results of the Learning Center Treatment

Some of the effects of the Learning Center can be measured; others are more subjective. The measurable results are related to our basic hypothesis that active participation in the Learning Center would be related to reduced attrition. The more subjective effects have to do with attitudinal changes in the students who persisted.

The first criterion for defining attrition is whether the student actually completes one or more courses, or withdraws completely during the semester.

College of San Mateo

In validating the NORCAL questionnaire in 1969-70, it was found that at the College of San Mateo seven percent of all first-time, full-time students failed to complete even one course during the first semester. Since we were working with high probability dropouts, it was expected that this percentage would be much higher in our sample group. In the experimental group 3 of 49 students failed to complete the first semester. In the control group 7 of 49 students failed to complete the semester.

Table 3 - Attrition During First Semester

	Experimental Group	Control Group
Withdrew	3	7
Persisted	46	42
Total	49	49
Attrition Rate	6.12%	14.28%

$Z = 1.34$

$p < .10$

Some students withdraw from most of their classes but managed to complete one or two courses. In some cases, this load reduction may be exactly what is needed to prevent attrition, and the student may be counseled to withdraw from specific courses. The following table indicates the credit hours completed by the sample groups.

Table 4 - Credit Hours Completed First Semester

Credit Hours	Experimental Group	Control Group	Total
12 or more (full-time)	25	18	43
6 to 11.5	16	17	33
Less than 6 (including withdrawals)	8	14	22
Totals	49	49	98

X^2 is not statistically significant

Over half the students in the experimental group actually completed a full-time (12 hours or more) course load, while less than 40 percent of the control group did.

Many students may fail to register for a second term, having completed a certificate vocational program or a more limited academic goal. However, the sample groups were all first-time students and most were enrolled in general education programs. Thus, failure to re-register for the Spring, 1971 term can be construed as attrition.

Table 5 - Reenrollment of Potential Dropouts

	Experimental Group	Control Group
Reenrolled	46	35
Withdrew	3	14
Total	49	49
Reenrollment Rate	93.87%	71.42%

$Z = 2.93$

$p < .01$

Approximately one-sixth of the total 98 students failed to continue their enrollment at the College of San Mateo for the second semester. Almost five times as many control group versus experimental group students did not come back in the Spring.

College of San Mateo

Grades are not necessarily an adequate reflection of either knowledge or performance, but they are used universally in higher education as comparative measures of achievement. They at least provide an additional indication of academic success. The high school gradepoint averages of the experimental and control groups were relatively similar, as can be seen in Table 6.

Table 6 - High School GPA of Potential Dropouts

GPA	Experimental Group	Control Group	Total
Less than 1.00	--	1	1
1.00 - 1.49	4	4	8
1.50 - 1.99	17	10	27
2.00 - 2.49	12	16	28
2.50 - 2.99	9	11	20
3.00 - 3.49	2	2	4
3.50 - up	--	--	--
No data available	5	5	10
Total	49	49	98

For their first semester in college, the students identified as having a high probability of attrition received the grades summarized in Table 7.

Table 7 - First Term College Gradepoint Averages of Potential Dropouts

GPA	Experimental Group	Control Group	Total
Less than 1.0	--	2	2
1.00 - 1.49	8	6	14
1.50 - 1.99	9	9	18
2.00 - 2.49	20	15	35
2.50 - 2.99	6	8	14
3.00 - 3.49	3	2	5
3.50 - up	--	--	--
Withdrew	3	7	10
Totals	49	49	98

College of San Mateo -

Almost 60 percent of the experimental group in the Learning Center achieved a 2.00 gradepoint average or better. Slightly over 50 percent of the control group, not participating in the Learning Center, achieved a 2.00 GPA or better.

Finally, in comparing achievement in high school to achievement in college, as measured by comparative gradepoint averages, Table 8 indicates the number of students whose gradepoint average rose, fell and remained the same. For purposes of definition a student's GPA remained the same if his college GPA was within .20 (higher or lower) of his high school GPA.

Table 8 - Relation of College GPA to High School GPA of Potential Dropouts

College GPA to High School	Experimental Group	Control Group
Better	11	7
Same	17	12
Worse	13	19
Dropped Out	3	7
No Data on High School	5	4

X^2 is significant beyond the .05 level.

The Dropouts

Ten students in the experimental and control groups withdrew prior to the end of the first term. Of those, three came back to register for the second term. A total of seventeen students failed to return for the second term, including seven of the first term withdrawals. Thus, a total of 20 students either withdrew or failed to register again, or both. One question of interest is how these students differ from those in the experimental and control groups who persisted.

While the sample groups were comprised of four males for every female,

half of the 20 who withdrew or failed to register again were female. In fact, nearly half of the females in the control and experimental groups were in the dropout category.

Racial minority students did not drop out as much as whites. Sixteen students of the 98 in the experimental and control groups were Black, Spanish surname, Oriental, or other non-white. None of them withdrew during the semester and only two failed to enroll the second semester.

The median age of those who persisted and those who withdrew was 18. However, of the ten students in the sample groups who were over 21, only one withdrew.

Due to lack of time and funds, no follow-up interviews were held with the students in the control group who withdrew or failed to register for the second term. Thus, we have no good data on differences in attitudes or perceptions about the collegiate experience.

Subjective Observations

Daily contact with the students in the experimental group allowed us to observe changes not measured in the attrition data but so striking that they require mention. When first interviewed, the students manifested similarity of appearance and response. They were apathetic, slow to respond, suspicious, even hostile. "Why have I been singled out?" "Why would anyone care if I succeeded?" All had a poor self-image. So often had they been told they were dumb that they believed it, even seemed bent upon proving it. Many of them had enrolled to prove once and for all that they were indeed failures academically. This appeared over and over. A student who had a test coming up would tell us he was going to flunk

it. If he did fail the test we heard about it immediately; it was a prophecy fulfilled. If he passed the test nothing was said unless he was asked about it, whereupon he would explain that it was an easy test, the instructor had graded very high, or the student had guessed correctly. This attitude was very frustrating to the tutors and the staff until we realized that it was success, not failure, that threatened these students. We instructed the tutors not to emphasize test results but to praise the student for small accomplishments when the tutor felt he could do so honestly. There was to be nothing lavish--just a comment here and there on an assignment done well. And the staff began making positive comments on behavior not related to academic efforts. A para-professional in the Learning Center who had very close daily contact with students, began to draw them into the actual operation of the Learning Center, asking them to run an errand, check a machine, monitor some programmed material, and thanking them matter-of-factly when a task was accomplished. As the semester wore on and trust had been established, we were able to begin to refer to the students' self-deprecation in a joking manner, particularly in the discussion groups. When a student admitted he had received a B on a test one of the staff might say, "Hey! Bob snookered Mr. X out of a B. Must have been an easy test." A fellow student might respond, "I thought Mr. X was a hard grader," or, "I got a C--that was no easy test." The subject student was helped to accept his grade as an honest evaluation of his work.

In the early weeks we found that most of our students were unable to distinguish between an evaluation of their work and an evaluation of themselves; an F grade in Economics meant to them that they were F students. By the end of the semester it was gratifying to hear some of these students talk about their expected final grades. They had begun to make distinctions. "I'll probably get a C or maybe

a B- in History, but I can't do much more than a D in English--I need more help in that subject." The subject and the personality were becoming distinguished; the individual could look at himself as succeeding in this and failing in that without making his earlier judgment that he was failing as a person.

Males greatly outnumbered females in the experimental group, and they demonstrated severe dependency characteristics which were not apparent in the females. Males complained that their parents treated them like "children," yet, when asked why they continued to live at home, even when they had well-paying jobs, they looked astonished. The idea of living independently had not occurred to them and when it was suggested it was not acted upon. Most of the males who complained about parents were particularly sensitive to their father's attitudes. If a student's father disapproved of his son's attendance at the college it was much more serious to the student than if his mother disapproved. Immaturity often appeared as students failed to keep appointments with tutors, attempted to drop classes they had tired of, made childish demands on the Learning Center staff, constantly tested us. One student came in daily for a week and a half to tell us he was dropping out, "Right now. Today!" By the end of the semester his threats came every two weeks.

It was difficult to give support as needed without at the same time playing the parent role, a trap some of the staff occasionally had to be cautioned against. The staff and the tutors discussed this at length and we achieved some facility in being supportive without allowing ourselves to be manipulated, without allowing the student to develop new dependency patterns. Here the psychologist provided by the Psychological Services section, played an important role.

The feelings the students have towards the system are interesting; they

feel resigned to it. They recognize that there is a system but it has never occurred to them that one can learn how a system works and make that system work for oneself. They see it as some kind of anonymous, faceless, inhuman monster waiting to devour them if they cannot somehow escape. Not function, note, but escape. They began with the feeling that their only salvation was somehow to get out. We tried to teach them, as much as could be done in one semester, how the system worked. For example, if a student had a problem which we of the staff could have taken care of with a phone call, we instead told him which office to go to, whom he should ask for, what he should say, and where he should apply if he did not get satisfaction. At times we actually rehearsed them in what to say, how to act. We invited faculty in to talk informally with groups. Students heard faculty gripes about parts of the system they did not like and how they attempted to handle problems. The president of the college talked informally with one group for over two hours, listened to their gripes, aired some of his own frustrations, and left the students with the feeling that it was possible to cope with the system even if it were not always possible to beat it.

The distrust of the system which many of these students feel can be seen in the difficulty we had in getting them to take attitude tests. We had hoped to administer certain attitudinal measurements at the beginning and end of the experiment in an effort to evaluate changes in attitudes. We told the students that we needed these tests to try out the Learning Center, to see if it made any difference. But they balked. They were willing to take tests in math, English, whatever, even though they knew they would do poorly. But tests that asked how they felt about the College, teachers' methods, grading systems--no. Skill deficiencies could be blamed on poor high school teaching, faulty eyesight, poor hearing, or what-

ever. An attitude test was too threatening. Of 49 students, we talked 14 into taking the attitudinal tests. Yet, when we tried again at the end of the semester, we had 30 agree to take the tests, a change we interpreted to mean that the students felt less threatened by the system, more sure of themselves.

At the end of the semester we asked students to come in during final examination week for interviews. We asked them what their experience in the Learning Center had meant to them. The replies ranged far afield; the following are typical:

> The place itself meant so much. When I walked in here someone knew me by name. I felt I belonged.
>
> The tutor's help. I never would have made it without my tutor.
>
> The discussion groups. We talked about real things in there and you guys took me seriously.
>
> The atmosphere around here. I felt I could get some real help if I needed it.

Most of the students indicated that they felt surer of themselves, that the campus did not seem quite so huge and impersonal, the people so cold. Some realized that they had passively accepted programs offered by counselors even when the subjects did not interest them, simply because they were accustomed to taking whatever was offered to them. The Learning Center staff helped these students choose programs for the spring semester that were more realistic and challenging. The staff and the tutors felt that many of the students in the experimental group had become more independent, more aggressive, more sociable. The dull, apathetic look was gone; they actually looked forward to the new term.

Summary and Conclusions

Using a sample of 98 first-time community college students identified as

having a higher than average probability of attrition, this study attempted to associate reduction of attrition with involvement in an experimental instruction-tutorial-counseling program. A stereotype indicates the typical student in our sample group: He lacks academic skills, is threatened by failure, lacks specific goals, does not know how to work within the "system," is poorly motivated. In fact, frequently he does not do anything so positive as "drop out"; he just "goes away," fails to return, often without any formal action whatever.

Half of the sample students were actively involved in the individualized study programs offered through the Learning Center; the other half received no special treatment. Measurable results indicated that the experimental group, involved in the Learning Center, as opposed to the control group, had: fewer withdrawals during the semester ($p < .10$); more students who completed a full-time course load; fewer students who failed to register for the second term ($p < .01$); more students who achieved a C average in college and more students who did as well or better in college as they did in high school ($p < .05$). Subjective evaluation leads us to assert that students involved in the Learning Center learned to accept set-backs without regarding themselves as failures, to accept success as easily as failure, to become less dependent and more confident in themselves. In sum, the experimental treatment seemed to be strongly related to reduced attrition.

However, our experimental sample was small enough as to require application and extension to many times the number of subjects we have included. Reluctant as we are to fall back to the trite recommendation of more research, this is what is needed. Not only should the present treatment be replicated on larger numbers over a longer period of time, but new experiments should be undertaken to ascertain which program aspects of the Learning Center have the strongest

effect on reducing attrition. We don't really know if it was the blend of offerings, flexibly adapted to the needs of each student; or whether a specific activity was most responsible for reducing attrition. To find out, more controlled experimentation is required.

From our point of view, probably the most important aspect of the Learning Center approach is the integration of individualized academic services with a supportive psychological atmosphere and personal counseling. For most high probability dropout students, academic difficulties cannot be separated from personal problems.

It can be asserted that the success of the Learning Center should be described in terms of a Hawthorne effect; that any special treatment and interest shown in these students will have a positive effect. This may be true. Perhaps the specific programs and activities of the Learning Center are not as important as its very existence. There, students are treated matter-of-factly as though they are expected to remain, finish the term, and register for the next term. A self-fulfilling prophecy is created; students who are expected to succeed generally do so.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

COLLEGE OF THE SEQUOIAS

by

Mr. Richard Jacobsen
Assistant to the President
and
Dr. Lincoln H. Hall
Dean of Instruction

Scope of the Study

The purpose of this study is to compare the retention rate and academic success of a group of typically "non-college" Mexican-American high school seniors recruited for participation in a special college readiness program with a matched control group.

Procedures

Selection of Experimental Group

During the months of April and May, 1970, principals and counselors in the eleven College of the Sequoias district high schools were asked to recommend students for participation in the program who were:

1. Poor performers in their high school academic work.

2. Educationally disadvantaged because of social, economic, cultural, or language handicaps.

3. Judged by their counselors to have the innate ability to succeed academically.

4. Not planning to attend college following completion of high school.

From the names submitted to the college's Financial Aids Office, seventeen Mexican-American students were selected for inclusion in the present study.

Summer Program

Two College of the Sequoias faculty members conducted a six-week special instructional program during the college's summer session which consisted of work in the following areas:

1. Improvement of reading and study skills.

2. Development of writing skills.

3. Discussion of contemporary world and national affairs. (Subscriptions to the daily edition of the Los Angeles Times were purchased for the students during the summer session).

Students, their instructors, and ten student tutors (returning sophomores from disadvantaged backgrounds who had been recruited in the spring on the basis of their demonstrated academic success in college) met in their classes from 8 a.m. to 12 noon each day. Following lunch, students remained on the college campus until 3:00 p.m. working with their tutors (3 to 4 students per tutor) or studying independently. A special room was provided in the Business Building of the college for the students and their tutors in addition to conference facilities

in the college library.

Students who completed the six-weeks summer program received 8 semester units of college credit. Those who continued attending college during the 1970-71 academic year were awarded grants of $600.00 each, to be paid at the rate of $60.00 per month.

1970-71 Academic Year

In addition to receiving grants of $60.00 per month, the continuing students were provided tutoring assistance during the year. Each tutor was available for fifteen hours of tutoring per week. If at all possible, students were assigned to the same tutors with whom they had worked during the summer program, each tutor working with from two to three students. Scheduling conflicts rendered this impossible in a few instances. Most students, however, continued working with their original tutors in the fall semester.

To relieve the problems posed by a lack of tutoring facilities, tutors and their students were provided with a schedule showing which classrooms were empty during each hour of the day and were encouraged to use those rooms for tutoring purposes. Tutors were frequently reminded of their responsibility to seek out and provide assistance and encouragement to their students when attendance at tutoring sessions or class meetings had been delinquent or instructors had reported that they were having academic difficulties.

Evaluation

A control group consisting of seventeen students was selected on a match-

ing basis, employing the Nor Cal factors: Sum-1 Index (Sex, ACT or SAT scores, etc.) and Ethnic background.

The one basic difference between the Control Group and the Experimental Group was that members of the "Control Group" voluntarily elected to enroll at the College of the Sequoias, whereas the "Experimental Group" agreed to enroll only after receiving promises of financial and tutorial assistance.

Comparisons were made between control and experimental groups at the end of the first two semesters and will continue to be made until the student reaches his objective, fails to return to school, or after six semesters, whichever occurs first.

At the conclusion of the first two semesters, the following statistical data was obtained.

Table 1
Units Completed First Semester

	Experimental Group	Control Group
Mean	8.88	10.71
Number	17	17

$T = 1.05$
$p < .15$

Table 2
First Semester Grade Point Averages

	Experimental Group	Control Group
Mean	1.55	2.25
Number	17	17

$T = 2.28$
$p < .02$

Table 3
Attrition Rate During First Semester

	Experimental Group	Control Group
Withdrew	3	1
Persisted	14	16
Total	17	17
Attrition Rate	17.6%	5.9%

Z = 1.06
p < .14

Table 4
Reenrollment for Second Semester

	Experimental Group	Control Group
Reenrolled	14	15
Withdrew	3	2
Total	17	17
Reenrollment Rate	82.4%	88.2%

Z = .48
not statistically significant

Table 5
Units Completed Second Semester

	Experimental Group	Control Group
Mean	8.38	9.94
Number	17	17

T= .70
not statistically significant

Table 6
Second Semester Grade Point Averages

	Experimental Group	Control Group
Mean	1.06	1.39
Number	17	17

T= .56
not statistically significant

Table 7
Attrition During Second Semester

	Experimental Group	Control Group
Withdrew	3	2
Persisted	11	14
Total	14	15
Attrition Rate	21.4%	13.3%

Z = .58
not statistically significant

In the first semester the Experimental Group had statistically significant lower Grade Point Averages, (Table 2), and higher Attrition Rate (Table 3).

After completion of the first semester, the indicators of academic success showed no statistically significant differences between the Control and Experimental Groups, as indicated by Reenrollment for Second Semester, (Table 4), Units Completed Second Semester, (Table 5), Second Semester Grade Point Averages, (Table 6), and Attrition Rate During Second Semester, (Table 7).

Conclusions

1. Performance data for the Experimental Group during the first semester would indicate that the selection process had accurately identified the students who would have difficulty.

2. Lack of significant differences during the second semester strongly suggests that the Experimental Group Program was effective in reducing their educational handicaps.

3. Continued observation of the Control and Experimental Groups will shed additional light on the educational value of the special program for the disadvantaged students.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

CONTRA COSTA COLLEGE[1]

by

Miss Phyllis Goldman
Psychometrist

Introduction

In the process of planning for Phase 3 of the Nor Cal Attrition Study, the Psychometrist and other staff members of Contra Costa College reviewed programs that appeared to have the possibility of "saving" the potential dropouts. Dr. Tom MacMillan's "Phase 2 Final Report" was reviewed and several faculty members of other Bay Area colleges were contacted. The various programs that might help potential dropouts included: aid in developing study skills, financial aid, student tutors, ethnic studies programs, regular or special counseling services, core course blocks, and special tutoring or learning centers. (MacMillan, Thomas, 1970)

Since many of these special programs were already in operation at Contra

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[1]Separately entitled, "What Good are Special Programs?"

Costa College, the effort in Phase 3 became centered on determining which of the existing programs, if any, were effective in helping potential dropouts. Identifying such programs or combinations as being particularly helpful in assisting students to use (rather than drift through or get ploughed under by) their first college experience, would aid the college to allocate its exceedingly slim financial resources in the most effective way.

To reflect the college's philosophy that students should, insofar as possible, make their own program choices and since several of the aid programs are outside the instructional area, a self-selection (i.e., ex pose facto) experimental design was selected. The experimental group consists of all those Fall 1970 first-time, full-time entering freshmen who had a Sum 1 score on the Nor Cal questionnaire of +10 or above, and who used one of the following services or programs:

1. Personal-vocational-educational counseling (in addition to that which occurs in the initial programming interviews)
2. Ethnic studies courses--any course in Black or Chicano studies
3. Basic skills course--any one or more of the "101 series" of basic skills in English, math or social sciences
4. Tutoring service--student tutors
5. Financial aids--actually received some form of financial aid.

Hypotheses

The hypotheses were:

1. Those who used one or more of the special aids or programs

would persist through the first semester to a significantly greater extent than those who did not.

2. Those who used one or more of the special aids or programs would complete more units than those who did not.

3. Those who used one or more of the special aids or programs would achieve a higher grade point average than those who did not.

Procedure

Although it was realized that the resulting small group numbers would make reaching statistical significance difficult, it was felt that subdividing the experimental group into nine separate treatment classifications would eliminate "smearing" of results by possible overlap of the effect of different programs. Very few students were expected to use just one service. Hopefully this kind of analysis would also point up particularly effective combinations of services.

The resulting experimental treatment groups were:

E1 - Used counseling services other than financial aid and programming.

E2 - Took one or more ethnic studies courses.

E3 - Took a 101 "basic skills" course.

E4 - Used tutoring services only. (None were in this category)

E5 - Used two or more of above except tutoring.

E6 - Received financial aid.

E7 - Received financial aid plus one or more of the above except tutoring.

E8 - Received tutoring plus one or more of above except financial aid.

E9 - Received both financial aid and tutoring.

There was no overlap among any of the nine groups.

The Control group was composed of those whose Sum 1 score was +10 or above but who used none of the above aids. Altogether there were sixty-two students in the total experimental group (E1 through E9), and thirty-eight in the Control group, for a total of one-hundred potential dropouts who were studied in this post-hoc fashion.

Results

Table 1
Attrition Rate

	Experimental Group	Control Group
Withdrew	4	15
Persisted	58	23
Total	62	38
Attrition Rate	6.5%	39.5%

$Z = 4.09$
$p < .01$

Those high-risk students who used one or more special services or programs did persist to a significantly greater extent than those who used none of the services. (For an additional comparison, the withdrawal rate for all Day students enrolled in Fall 1970 was 31.5%)

Table 2
Reenrollment Rate

	Experimental Group	Control Group
Reenrolled	45	18
Did not reenroll	17	20
Total	62	38
Reenrollment Rate	72.6%	47.4%

$Z = 2.53$
$p < .01$

This variable was not included in our original assumptions but the results support the effectiveness of special programs in encouraging potential dropout students to remain in college.

Table 3
Units Completed

	Experimental Group	Control Group
Mean	7.42	4.95
Number	62	38

T = 2.43
p < .01

While the experimental groups completed significantly more units than the control group, the number of units completed by either group was low. This should be interpreted in the context of Contra Costa College's overall withdrawal policy, which allows students to withdraw without penalty up through the final examination. Thus, many students actually complete all the requirements of a course but choose not to receive credit or a grade which might lower their grade point average.

Table 4
Grade Point Average

	Experimental Group	Control Group
Mean	2.35	1.60
Number	62	38

T = 1.54
p < .10

The experimental group achieved a mean grade point average that was three-fourths of a grade point higher than the control group but the difference

does not reach as high a level of significance as discovered with the previous criteria.

Conclusions and Comments

It can be said with some confidence that those students who received some kind of special aid or enrolled in some special course stayed longer, completed more units, and achieved a higher grade point average in those courses than did those students who did not receive some kind of special aid or were not enrolled in some special course. Our original assumptions are supported.

However, one of our primary, original questions remains: "Is there some one program or combination of programs which is more highly related to persistence than are others?"

Here the results are suggestive but the number in each experimental subgroup are small.

Table 5
Attrition Rate

	C1	E1	E2	E3	E5	E6	E7	E8	E9
Withdrew	15	2	0	0	1	1	0	0	0
Persisted	23	4	5	21	8	4	8	6	2
Total	38	6	5	21	9	5	8	6	2
Attrition Rate	39.5%	33.3%	0%	0%	11.1%	20.0%	0%	0%	0%

$X^2 = 21.37$
$p < .01$

The one subgroup for which significant differences exist in comparison to the Control group is E3 - enrollment in a "basic skills" 101 Course. This group has the largest number of students in any post hoc "experimental" group. The

significant differences occur in regard to attrition rate and reenrollment rate.

Table 6
Attrition Rate

	Experimental Group #3 - Basic Skills Course(E3)	Control Group No Basic Skills Course (C)
Withdrew	0	15
Persisted	21	23
Total	21	38
Attrition Rate	0.0%	39.5%

$Z = 3.33$
$p < .01$

Table 7
Reenrollment Rate

	Experimental Group #3 - Basic Skills Course (E3)	Control Group No Basic Skills Course (C)
Reenrolled	15	18
Withdrew	6	20
Total	21	38
Reenrollment Rate	71.4%	47.4%

$Z = 1.78$
$p < .05$

These results indicate the likelihood that attendance in a basic skills 101 course improves retention through the fall term and into the following term.

A factor which is frequently held to be of importance in a student's remaining in college is financial aid. To investigate the contribution of this variable the three subgroups involving financial aids (E6, E7, E9) were combined and then compared with the Control group which received no financial aid.

Table 8
Attrition Rate

	Experimental Groups - Received Financial Aid (E6, E7, E9)	Control Group Did Not Receive Financial Aid (C)
Withdrew	1	15
Persisted	14	23
Total	15	38
Attrition Rate	6.7%	39.5%

$Z = 2.34$
$p < .01$

A disturbing question arises as to why over one-third of the group of one hundred "potential-dropout" entrants did not avail themselves of any of the special services or programs offered, including counseling and tutoring. One explanation, of course, is that they didn't feel they needed any. A second is that, despite their Nor Cal Sum 1 scores, they were not identified by their counselors or academic advisors and so were not referred to these special services. Checking the individual records of these students and comparing them with the experimental group, we found a third possibility.

Table 9
Attrition Before Fourth Week

	Experimental Group	Control Group
Withdrew before fourth week	13	3
Withdrew after fourth week	2	1
Total number of withdrawals	15	4
Early Attrition Rate	86.6%	75.0%

It is clear that the majority of those who did withdraw did so before the fourth week of the semester.

Contra Costa College

The question, "Why was there such large early attrition in the Control group and not in the experimental group?" deserves attention. Possibly those in the experimental group knew where to go and were willing to go for help in resolving problems before the problems became overwhelming. This may be the reason they were in the experimental group. They asked for or were willing to be referred to special aids and programs.

Another factor, though probably not one that would differ between the experimental and Control groups, is difficulty in getting desired classes. Almost all of our first-time freshmen experience some difficulty in this regard since they are among the last to register. Either those in the experimental group did not have such problems or were able in some way to cope with them.

This post-hoc study undertaken under the rubric of the Nor Cal Attrition Study indicates that the special aids and programs at Contra Costa College do help students to remain in school longer and to make more academic progress than would be the case without such programs. Because of the small numbers involved in each experimental subgroup, the study was not able to distinguish which particular aids were most effective. However, the figures suggest that each of them, and particularly the basic skills classes, may have helped some students remain in school who otherwise would have joined the great corps of dropouts. A larger study may be desirable to investigate this further.

The large proportion of withdrawals occuring in the first month of the semester indicates that class availability for new students may need to receive priority in instructional planning. Special intensive assistance to new students in the first four weeks might help them cope with many of the problems that lead dropping out.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

DE ANZA COLLEGE

by

Mr. David Shaw
Associate Dean of Students

De Anza's participation in Phase 3 Nor Cal consisted of differentially labeling +10's to all counselors working with freshmen of the 1970-71 class. After the scoring of the Nor Cal inventory, all students whose Sum 1 scores were +10 or above were identified to counselors as high-risk students and were listed on a separate sheet for each counselor. What the counselor then chose to initiate for the high-risk student was individually determined by that counselor. As a result of the distribution of that list, counselors contacted their students and performed those activities they deemed appropriate in terms of assisting a potential high-dropout to maintain his persistence through the fall quarter.

In order to determine the effect of the differential labeling and the suggestion for special contact, the results of the 1970 fall quarter dropout versus the 1970 fall quarter persisters were compared for counselor contact and for number of times that a counselor saw the student. If the question of the number of times that a counselor has seen a student is related to the withdrawal and/or persistence

then there should be a difference between the rate of dropping out for students who saw a counselor on a regular basis and those who did not see a counselor on a regular basis. Results of this comparison showed that a significant number of those students who withdrew saw a counselor less than those students who persisted. In figures, the persisters saw a counselor two or more times during that quarter at a rate of 50%, whereas those who withdrew saw a counselor at a rate for the total of withdrawals of 14.3%. As Table 1 shows, this difference is significant.

Table 1
Attrition Rate

Number of times Student Saw Counselor	Performance	
	Persisted	Withdrew
Two or more	6	2
Only once	6	12
Total	12	14
Attrition Rate	50.0%	14.3%

$Z = 1.97$

$p < .025$

The two variables, the number of visits to a counselor and the withdrawal rate are also related as Table 2 indicates.

Table 2
Relation of Number of Counseling Sessions and Performance

Performance	Number of Times Student Saw Counselor	
	1	2 or More
Persisted	6	6
Withdrew	12	2

$X^2 = 4.39$

$p < .05$

In order to determine if one or more of the counselors were having a particularly strong affect on the variance between dropouts and persisters, a Chi Square on the dropout rates for +10's among counselors was performed. The results were not significant; i.e., it does not seem to be that particular counselors had stronger effect than others on the dropout rate of their students who were identified as high-risk by the Nor Cal survey. See Table 3 below.

Table 3
Comparison of Attrition of Potential Dropouts by Counselor

Counselor Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Number of Dropouts	2	3	0	2	4	0	2	2	1	0	0	0	2	1	3	0

$X^2 = 18.73$
not significant

Also in order to determine whether counselors had a significantly different number of +10's between them, a Chi Square was performed on the distribution of +10's among counselors and there was a somewhat uneven distribution, a Chi Square probability of chance of about .10; so it is possible to say that the number of +10's was slightly different for some of the counselors than others. But again referring to the earlier different dropout rate among counselors, this somewhat uneven distribution did not seem to be reflected in the comparison of those who did drop out. See Table 4 below.

Table 4
Comparison of Distribution of Potential Dropouts Among Counselors

Counselor Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Number of +10's	16	24	25	15	22	10	20	11	19	8	13	19	18	12	24	13

$X^2 = 25.72$
$p < .10$

De Anza College

There was also a question for future use at De Anza College of whether the validation of the Nor Cal survey was maintained for the 1970 group. Apparently the number of withdrawals for the +10 and above and the number of withdrawals of below +10; i.e., in the less-risk direction, did not differ significantly for those who did not seem to have potential dropout problems on the Nor Cal survey. The attrition rate was 21.7%, while for those who did seem to be indicative of potential dropping out, the attrition rate was 26.5%. As Table 5 indicates the difference was not significant though somewhat in the direction that the Nor Cal survey was predicated upon.

Table 5
Attrition Rate

	Below +10	+10 and Above
Number Withdrawing	290	76
Total Number	1336	287
Attrition Rate	21.70%	26.48%

$X^2 = 3.13$
but $\emptyset = 0.04$

While the attrition rate comparison does not indicate statistically significant differences, such differences were found to exist on the variables of number of units completed and grade point average as Tables 6, 7, 8, and 9 show.

Table 6
Descriptive Statistics for Validation Study
of Data from De Anza College, Fall, 1970

Variable is Units Completed

Group	Sum 1 Score -10 and Below	Between	+10 and Above
Sample Size	345	991	287
Mean	10.4826	8.5318	7.2091
Standard Deviation	5.9166	6.0205	5.6655

Table 7
Analysis of Variance for Validation Study
of Data from De Anza College, Fall, 1970

Variable is Units Completed

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	1762.0625	2	881.0313	24.9932*
Within Groups	57106.3125	1620	35.2508	
Total	58868.3750	1622		

*P < .01

Table 8
Descriptive Statistics for Validation Study
of Data from De Anza College, Fall, 1970

Variable is Grade Point Average

Group	-10 and Below	Between	+10 and Above
Sample Size	345	991	287
Mean	2.1258	1.9391	1.7562
Standard Deviation	1.1406	1.2578	1.2449

Table 9
Analysis of Variance for Validation Study
of Data from De Anza College, Fall, 1970

Variable is Grade Point Average

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	21.5344	2	10.7672	7.0994*
Within Groups	2456.9622	1620	1.5166	
Total	2478.4966	1622		

*P < .01

One possibility for the lack of continuance of the validation is that for the first time this year those students who did receive the potential risk score on the Nor Cal survey were identified early to the counselors and several, perhaps all, of the counselors then treated these students differently, either as they came in for contacts on a routine basis or were asked to come in to discuss this problem.

It is a possibility, but only a remote possibility, that this intervention as minimal as it was was sufficient to improve the withdrawal or attrition rate for those +10 students to the extent that it was significantly different from those who were not identified as high-risk students.

It is also interesting to note that on the follow-up questionnaire for students who did withdraw from De Anza College after the fall quarter, or continued their enrollment into the next quarter, an encounter group or counseling group which is a requirement of all incoming freshmen at De Anza College, was indicated as helpful or of great value by 60.6% of the students who responded; and 88%, almost 89% of the students indicated that it was useful to them to have gotten assistance from a student employed by the college. These results are shown in Display 1.

Display 1

Instructions:

5. Please help us evaluate the services and programs listed below and on the back side of this questionnaire. We are interested in evaluating services as they affect the beginning freshman student; therefore, please consider only services and programs offered by the college you attended in the fall of 1970. Would you place a checkmark in the box to the left of any service you used or program in which you enrolled while attending college in your first semester or quarter of attendance. Check only services you used or programs in which you enrolled.

Place a checkmark in one of the spaces to the right to evaluate the program you enrolled in or the service you used. Check only one space for each program or service you used.

If you felt the program or service was of little value to you and you could have gotten along well without it, check the third space.

If you felt the program or service was helpful and it saved you time, worry, or expense, check the second space.

If you felt the program or service was of great value and you probably could not have continued in college without it, check the first space.

De Anza College

Display 1 (continued)

Results:

D. Participation in an encounter group or a counseling group meeting regularly to improve interpersonal relationships:

N	"Great Value" or "Was Helpful"	"Little Value"
33	20 60.6%	13 39.4%

E. Assistance from a student employed by the college to advise you in class selection:

N	"Great Value" or "Was Helpful"	"Little Value"
9	8 88.9%	1 11.1%

F. A reading course or laboratory to help you in reading skill development:

N	"Great Value" or "Was Helpful"	"Little Value"
9	7 77.8%	2 22.2%

H. A math course or laboratory to help you in math skill development:

N	"Great Value" or "Was Helpful"	"Little Value"
13	10 76.9%	3 23.1%

Again this year, De Anza College has employed on a regular basis, both counselor aides in the counseling area and a specially funded and staffed drop-in center in the campus center area for students who have concerns of no particular nature but primarily of academic nature to obtain assistance from another student.

It is also significant that 77.8% of the students who responded indicated that a reading course to help in reading was of value to them. About the same percentage indicated that a developmental mathematics course was useful to them. See Display 1.

Though this form was filled out by a relatively small number of students

who actually left De Anza College in the fall of 1970, a difference of 53 students filling out the form who remained in college and 11 students who withdrew. The major concern was not of those who withdrew, why they withdrew, but to find out if those who did remain felt the services that this college offered were of use to them. It seems to indicate from a rather small total number returned that the services that are provided are useful to the larger percentage of those students who responded to the questionnaire.

If De Anza College participates in future Nor Cal projects, it would probably be appropriate that we enter into a more traditionally experimental design in attempting to treat specific problems of specific groups rather than the shotgun approach that was used in this Phase 3 attempt.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

DIABLO VALLEY COLLEGE

by

Mr. William Preston
Director of Research

Background

Diablo Valley College (DVC) has participated in the Northern California Research Project on Student Attrition (NOR CAL Attrition Study) since the project began in 1968. The project, which is a joint effort of twenty-two community colleges located throughout the northern part of the state, has had as its primary purposes: (1) development of a profile of the characteristics of the student who withdraws from college, (2) design of an instrument for identifying potential withdrawal students on the basis of these characteristics, and (3) development of counseling, educational and other techniques that will help such students to overcome their liabilities and to persist to successful completion of their academic efforts. From the beginning the costs of the project have been funded from various sources, including federal grants and the $300 to $500 annual contributions (based on enrollment) of each of the participating colleges.

Diablo Valley College

The project was planned to be conducted in three phases spread over a three-year period. Phase 1, which took place during the 1968-1969 academic year, had as its goal the identification of the withdrawing students' characteristics. To this end, an extensive biographical questionnaire was designed and administered to over 27,000 entering full-time freshmen at the twenty-two community colleges at the beginning of the fall 1968 term. Responses to the questionnaire were tabulated and subjected to extensive statistical analysis and validation procedures. The results quite clearly demonstrated that, as stated in the final report of Phase 1, "it is possible to construct a hypothetical picture of the potential dropout, using evidence related to an expressed response, attitudes and beliefs measured by the NOR CAL questionnaire." On this basis, the characteristics of the potential dropout were defined as follows:

"1. The potential dropout is likeliest to be Negro; least likely to be Oriental.

2. The potential dropout is likely to have less perceived parental encouragement for his college plans.

3. The potential dropout shows a lower sense of importance of college.

4. The potential dropout is likely to have lower educational aspirations than the persister.

5. The potential dropout is most likely to be a low-ability male, least likely to be a middle-ability female."

(MacMillan, Thomas 1969)

For Phase 2 of the project (1969-1970 academic year) the questionnaire was revised somewhat and was administered to approximately 21,000 first-time freshmen who entered the twenty-two colleges in the fall of 1969. The responses to this questionnaire were combined and weighted to provide a scale of discriminate scores,

indicating the likelihood that a student would or would not withdraw. The range of the scale was from +45.0 (very likely to withdraw) to -45.0 (very unlikely to withdraw). Individual scores on this scale were then calculated for each student. Predictive validity of the individual scores was evaluated in terms of whether or not the students actually dropped out. For DVC, the validity was determined to be .683, which means that the prediction was accurate for over 68% of the students. For the overall sample, including the students at all twenty-two colleges, the validity was .65.

Phase 3

The project plan called for Phase 3 (1970-1971 academic year) to be the experimental phase, during which students identified by the questionnaire as having a high potential for withdrawal would be provided with special counseling and other help in an effort to keep them in school. Because of its nature, the focus of this phase was on the individual participating colleges and each was encouraged to develop its own approach to the problem in light of local philosophy, facilities and capabilities. Effectiveness of the various programs was then to be evaluated by comparison of the attrition rates of students who received treatment with those who did not, both within the individual campuses and among the several colleges.

For DVC's part in this experimental phase, a plan was developed to provide special group counseling sessions for dropout-prone students, as identified by the NOR CAL questionnaire that would be given to entering freshmen at the beginning of the fall 1970 semester (see Display 1 below). One hundred of the students who were determined to be most likely to drop out were to be invited to

attend a series of nine weekly group counseling sessions that would begin early in the semester. To assure personal contact, each group would be limited to a maximum of ten students, thus requiring assignment of at least ten counselors to the program. At the end of the semester, effectiveness of the experimental treatment would be evaluated in terms of changes in the expected attrition rate and in the students' personal plans and attitudes.

Original Research Design as Planned

DISPLAY 1

NOR CAL PROJECT

OUTLINE OF PLAN FOR PHASE 3

Research Question:

Can the attrition rate of dropout-prone students be reduced significantly by means of special group counseling sessions on a weekly basis during their first semester of college attendance?

Procedure:

1. Administer the NOR CAL questionnaire to all first-time, full-time freshmen admitted to Diablo Valley College for the fall semester, 1970.
2. Based on the questionnaire results, as reported by the NOR CAL Project Director, select approximately one hundred of the students who appear to be most likely to drop out.
3. Send a letter to each of the one hundred students, inviting them to participate in a special program of weekly group counseling sessions during the fall semester 1970.
4. Assign the students in groups of eight or ten to a counselor for a series of nine weekly meetings to begin not later than the fourth week of classes. (This will require assignment of eight to ten counselors to this program.
5. Conduct the counseling sessions in a manner to be determined by the counseling staff.
6. Interview each participating student individually at the end of the nine weeks to obtain his views on his past, present and future plans.

Display 1 (continued)

Evaluation of Results:

The extent to which the special counseling is successful in reducing the attrition rate of the potential dropouts will be evaluated by:

1. Comparing the percentage of students from the "treatment" group who remain at the end of the fall semester, 1970, with the percentage of students having similar dropout characteristics who remained at the end of the fall semester, 1969.
2. Determining how many of the "treatment" group students reenroll for the spring semester, 1971.
3. On the basis of the follow-up interviews, determine whether or not there is any apparent change in career plans and/or attitudes toward college attendance.

Unfortunately, the planned experiment at DVC was not implemented for various reasons, not the least of which were the changes that had occurred in the DVC Research Office staff during Phase 2. Sufficient lead time was not available to establish necessary coordination and communication with the various individuals and departments involved. The result was that the program failed to "get off the ground." Publication of the outline of the plan (as displayed above) as part of NOR CAL documentation, however, has evoked considerable favorable comment from other colleges. Indeed, this office has been informed that it was being seriously considered for use by others in southern California, although the results are not yet known.

General Comments

Although the experiment at DVC was not carried out as planned, at least

one valuable lesson from our experience with Phase 3 was learned. This was a re-emphasis of the principle that successful adoption of any new program or procedure is heavily dependent upon proper laying of groundwork for its acceptance by those whom it involves or affects. In our own case, all members of the college community, including faculty, counselors and students, should have been more fully informed of progress of the NOR CAL project from its inception. Furthermore, the counseling staff, which had primary responsibility for implementing the experimental phase, should have had a more direct part in planning it. As it turned out, largely because of the Research Office staff turnover as noted above, design of the treatment program was only finally completed during the summer of 1970. The result was that some of the counseling staff reported first becoming aware of their proposed responsibilities upon their return to campus at the beginning of the fall semester. Thus their reluctance to adopt the proposal is understandable.

In a somewhat different context, an interesting phenomenon was observed with regard to the results of the NOR CAL questionnaires that were given to DVC students in fall 1970. On the basis of the findings of the first two phases of the project, it had been established that "SUM-1" scores (the values assigned to the pattern of characteristics revealed by the questionnaire responses) of +10.0 to +45.0 represent those students who appear most likely to drop out of college. For fall 1970, however, this did not appear to be true for DVC students. The rate of withdrawal for students with SUM-1 scores of +10.0 or higher (31.0%) was not much different than for those below +10.0 (30.1%) or for all of the students in the DVC sample (30.4%). This raised some question as to the validity

of the procedure as a means of identifying students most likely to withdraw. Perhaps the +10 score was not the most appropriate cutting score.

Further investigation on this point indicated that DVC apparently was somewhat deviant. The +10.0 cutting score was demonstrated as having continued to be valid for the other colleges. (Kester, Donald. "Further Validation of the Nor Cal Questionnaire," 1970) Attention was turned to the broader question of whether or not there was any other level on the scale at which the procedure would identify a group of students with a significantly higher attrition rate than the average at DVC. Analysis of the data indicated that there was, at the level of SUM-1 scores of +18.2 and above, as indicated by the following:

Table 1
Distribution of SUM-1 Scores Above +18.2
in Initial Sample and Among Those Who Withdrew
by End of the Fall 1970 Semester

SUM-1	Number Initially	Withdrawals			Withdrawal Rate
		Before 9 Weeks	After 9 Weeks	Total	
25.0	91	29	11	40	44.0%
23.9	83	15	9	24	29.0
23.3	15	6	4	10	66.7
22.1	7	3	1	4	57.1
18.4	1	0	0	0	0
18.2	17	2	5	7	41.2
Total	214	55	30	85	39.7%

The same information for those scoring below +18.2 is:

Table 2

SUM-1	Number Initially	Withdrawals			Withdrawal Rate
		Before 9 Weeks	After 9 Weeks	Total	
Below +18.2	2411	528	184	712	29.5%

Table 3
Validation for DVC: Attrition Rate Comparison

SUM-1 Score

	Below +18	+18 and Above
Withdrew	712	85
Persisted	1699	129
Total	2411	214
Attrition Rate	29.5%	39.7%

$Z = 3.36$
$p < .001$

Using these data to test the null hypothesis that there is no difference between the probability of a student with a high (+18.2 and above) or a low (below +18.2) SUM-1 score withdrawing from DVC (H_o: $P_h = P_1$ versus H_1: $P_h \neq P_1$), a Z - 3.36 was obtained, which is significant at the .001 level. This was interpreted to indicate that the NOR CAL questionnaire and scale will identify a group of DVC students who withdraw at a statistically higher rate than other students at DVC.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

FOOTHILL COLLEGE[1]

by

Mr. Irel D. Lowe
Registrar

A number of programs to aid potential dropouts have been started or amplified at Foothill College the past year (1970-71). These programs are:

1) Study Skills Center in the language and mathematics areas.

2) Tutoring program in all divisions.

3) Group counseling program.

4) Expanded financial Aid program.

5) Expanded counseling for disadvantaged student.

Study Skills Center

A Study Skills Center was in full operation which was equipped to give students individual attention in all areas of reading and English. A Study Skill

---

[1]Separately entitled, "How Were Potential Dropouts Helped at Foothill College?"

Center was also operated in the area of mathematics which provided students individual help in mathematics.

Students did sign up for help in the area in which help was needed. After spending the prescribed number of hours, they received 1/2 unit of college credit. This facility was used extensively during the past year.

Sixty-four of the potential dropouts reported on the questionnaire that they had been helped by the various skill development programs. The attitudes of the potential dropouts were measured by the following questions as shown in Display 1 and Display 2.

Display 1

Instructions

5. Please help us evaluate the services and programs listed below and on the back side of this questionnaire. We are interested in evaluating services as they affect the beginning freshman student; therefore, please consider only services and programs offered by the college you attended in the fall of 1970. Would you place a checkmark in the box to the left of any service you used or program in which you enrolled while attending college in your first semester or quarter of attendance. Check only services you used or programs in which you enrolled.

Place a checkmark in one of the spaces to the right to evaluate the program you enrolled in or the service you used. Check only one space for each program or service you used.

If you felt the program or service was of little value to you and you could have gotten along well without it, check the third space.

If you felt the program or service was helpful and it saved you time, worry, or expense, check the second space.

If you felt the program or service was of great value and you probably could not have continued in college without it, check the first space.

Display 1 (continued)

Results:

F. A reading course or laboratory to help you in reading skill development:

N	Great Value	Was Helpful	Little Value
22	8 36.4%	9 40.9%	5 22.7%

G. A writing course or laboratory to help you in writing skill development:

N	Great Value	Was Helpful	Little Value
30	7 23.3%	17 56.7%	6 20.0%

H. A math course or laboratory to help you in math skill development:

N	Great Value	Was Helpful	Little Value
28	7 25.0%	16 57.1%	5 17.8%

These three questions then give the following profile of student attitudes toward these Study Skills Center activities.

Display 2

Evaluation of experiences with reading, writing, and/or mathematics course or laboratory designed to help student in skill development:

N	Great Value	Was Helpful	Little Value
80	22 27.5%	42 52.5%	16 20.0%

or

N	"Great Value" or "Was Helpful"	Little Value
80	64 80.0%	16 20.0%

Tutoring Program

Each division has set up a tutoring program which provides tutors in all subject areas if desired. Twenty-three (23) students reported they were involved

in the program and twenty (20) reported they were helped by tutoring. This is shown in Display 3 below.

Display 3

I. Assistance from a student tutor employed by the college to help you in one or more of your courses:

N	Great Value	Was Helpful	Little Value
23	5 21.7%	15 65.2%	3 13.0%

Expanding Counseling (Group and Individual)

Most students reported receiving aid from the counseling service and 74% indicated that this assistance was useful, as shown in Display 4 below.

Display 4

A. Assistance from a counselor or advisor in planning your college major:

N	Great Value	Was Helpful	Little Value
52	8 15.4%	27 51.9%	17 32.7%

B. Assistance from a counselor or advisor in selecting specific classes:

N	Great Value	Was Helpful	Little Value
73	13 17.8%	45 61.6%	15 20.5%

A and B together:

N	"Great Value" or "Was Helpful"	Little Value
125	93 74.4%	32 25.6%

Financial Aids

Much more effort was made in providing financial aid to disadvantaged students. Some potential dropouts were kept in school by financial assistance. This is shown in Display 5 below.

Display 5

J. Financial aid in the form of a grant or loan provided by the college:

N	Great Value	Was Helpful	Little Value
13	6 46.2%	2 15.4%	5 38.4%

While no concerted effort was made at Foothill College to help the potential dropout as indicated by the Nor Cal questionnaire, a major effort was made with the general student body to provide assistance for staying and achieving at Foothill College.

There are indications that our effort was in some measure effective by the non-significant difference in attrition rate between the identified potential dropout, and the general population of new students. This is shown in Table 1 below.

Table 1
Attrition Rate Comparison

	Sum 1 Scores Below +10	Sum 1 Scores +10 and Above
Withdrew	139	59
Total	748	301
Attrition Rate	18.6%	19.6%

Z = .38
not statistically
significant

With the initiation or amplification of programs designed to assist students to remain at Foothill College, the attrition rate was reduced for the potential dropouts as shown above. However, as a total group the potential dropouts did complete fewer units and get a lower mean grade point average as shown in Tables 2, 3, 4 and 5 below.

Table 2
Descriptive Statistics for Validation Study
of Data from Foothill College, 1970-1971

Variable is Units Completed

Group	-10 and Below	Between	+10 and Above
Sample Size	323	425	301
Mean	10.6053	9.2929	9.3272
Standard Deviation	5.5680	6.0908	5.8615

Table 3
Analysis of Variance for Validation Study
of Data from Foothill College, 1970-1971

Variable is Units Completed

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	376.8938	2	188.4469	5.4724
Within Groups	36019.7773	1046	34.4357	
Total	36396.6680	1048		

$p < .01$

Table 4
Descriptive Statistics for Validation Study
of Data from Foothill College, 1970-1971

Variable is Grade Point Average

Group	-10 and Below	Between	+10 and Above
Sample Size	323	425	301
Mean	2.3314	2.1193	2.0372
Standard Deviation	1.1549	1.2649	1.1867

Table 5
Analysis of Variance for Validation Study
of Data from Foothill College, 1970-1971

Variable is Grade Point Average

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	14.7257	2	7.3629	5.0326
Within Groups	1530.3247	1046	1.4630	
Total	1545.0503	1048		

$p < .01$

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

MERCED COLLEGE

by

Mr. James Rand
Counselor

Due to a number of things, our attempt to carry out our design for Phase 3 of the project fell somewhat short of what we had originally anticipated. Our most serious problem was the result of having to work with an extremely small sample in our experimental group.[1] In view of the size of the group our results would have to be viewed as being somewhat tentative in their application. Taking this into consideration as a limiting factor, our project ran as follows.

---

[1]A shortage of Nor Cal questionnaires developed at Merced College during Fall 1970 registration. When the shortage was noticed those in charge of the Attrition Study at Merced phoned De Anza College in an attempt to reach the Project Director, who was at that time somewhere between Shasta College and Yuba College. While more questionnaires were hand-delivered within a day and a half of the realization of the shortage, obviously some entering students missed taking the questionnaire. An answering service that could provide around-the-clock communication would have been beneficial in this kind of situation.

Merced College

Original Research Design as Planned

Display 1

Design of the Proposed Phase 3 Project

1. Hypothesis

   a. Students assessed to be dropout-prone (though the use of the Nor Cal questionnaire) will show no significant increase in persistence as a result of participating in small group counseling classes.

2. Procedure

   a. A sample of students will be selected on the basis of their Nor Cal questionnaire scores.

   b. This pool of high potential dropout students will be randomly divided and assigned to an experimental and a control group.

   c. These students assigned to the experimental group will be enrolled in a small group counseling class and will also be provided individual counseling with their small group leader.

   d. The control group will be provided essentially the same enrollment and counseling experiences as are available to all incoming students.

3. Evaluation

The experimental and control group will be compared on the basis of the following variables:

   a. Total number of both groups who drop out Fall Semester 1970.

   b. Total number of both groups who reenroll for Spring Semester 1971.

   c. Total number of students in each group who reenroll for Fall Semester 1971.

   d. Grade point averages for both groups at the conclusion of Fall Semester.

Implementation of Design

Incoming students were provided copies of the Nor Cal questionnaire at the time they were in the initial stage of registration for fall semester. Due to a shortage of questionnaires we were unable to provide forms for a large number of students during the registration period, but we hoped that the number returned would yield a sufficiently large sample for our project. This hope was not realized, and at the time that students were being recruited for the experimental group we found ourselves faced with a total high-potential dropout group numbering fifty. By the time we screened this group of those students who were ineligible to participate in the study we found ourselves reduced to working with a total of twenty-two students. At this point it was too late to screen additional students in time to include them in the start of the group-counseling class that was to serve as our primary independent variable. However, rather than scrap our design at this point, we decided to complete the project with the limited number of subjects available.

As was mentioned above, the difference between the experimental and control groups was the inclusion of the experimental group in a group-counseling class. The structure of this group-counseling class was such that the individual student was encouraged to freely discuss and explore his educational and vocational goals and aspirations. The only direction that was provided during this discussion took the form of attempting to keep the discussion of goals in some realistic relationship to the individual student's previous school performance and his present performance in the college courses in which he was enrolled.

The students enrolled in the class were also assigned to the group discussion

leader on a one-to-one basis which made it possible to verify previous and ongoing school progress as well as problems. It was the group leader's opinion that the atmosphere provided in the group promoted a kind of reality testing that the students might not have experienced outside of the group discussion. Whether this was a crucial factor in shaping the student's thinking with regard to their role as college students, or whether it may have resulted in their persisting in school is far from clear, but it was the impression of the group leader that this type of discussion did result in a process of clarified self-definition in terms of goals, abilities and motivation.

One of the outcomes of the administration of the Nor Cal questionnaire which confirmed a previous suspicion, but also contained a small element of surprise was the fact that being dropout prone (as indicated by the questionnaire) did not necessarily mean that a student had low ability (as measured by the placement test administered to incoming freshmen). It may be that the small size of our experimental group resulted in a sample which was biased in the direction of the higher potential student in need of reality testing or it may only be a reflection of the group leaders bias in perceiving the group process, but this characteristic, real or imagined, serves to point up the fact that the needs of the dropout-prone student dictate the development of a broad based program.

Results of the Project

It is our feeling that due to the limited size of the sample included in our project, any conclusion we might draw from the outcome would be extremely limited in their utility. The statistical analysis that was conducted on the basis of our

sample did not allow for the rejction of our hypothesis as originally stated. The attrition rates for the student population in general and the "Sum 1 Score +10" sample group did not differ significantly, although we would have expected, on the basis of the validation which took place in Phase 2, the "+10" students to have a higher rate of attrition. However, the "+10" students did receive special treatment this time and it may be that the lower-than-expected attrition rate may have been due to the special treatment provided by the individual and group-counseling.

Merced College
Attrition Rate

	Experimental Group (Small Group Counseling)	Control Group (No Small Group Counseling)
Withdrew	1	51
Persisted	10	722
Total	11	773
Attrition Rate	9.1%	6.6%

Z = 0.33
not statistically significant

It may be that the treatment was salient in reducing the group's attrition rate, but as mentioned above, various factors preclude any firm interpretation of these results.

Implication for the Future

In spite of the inconclusive nature of our findings and the problems encountered with sampling, we are convinced of the tremendous potential of the type of research included in the Nor Cal Project. The idea of learning by doing certainly applies to our experiences with the project, and we intend to make the best

use of the knowledge gained during this phase of the project.

One of the most valuable learnings derived from our participation relates to the realization of the wide range of needs that may be subsumed under the heading of dropout prone. As mentioned earlier, the ability level of our experimental group, as measured by the Co-op English Test, was higher than would be expected from a random sample of incoming freshmen. This resulted in a group guidance class that tended to focus more on definition of goals and reality testing than it did on any kind of subject matter problems, or remediation. We are planning to broaden the range of services available to the "+10" type student so that we can respond to problems as diverse as lack of subject matter background, need for remedial work on basic skills, and definition of goals. Included in this expanded program will be a tutorial center which will draw upon the talents of our counseling department, our instruction department, and our faculty. Along with this we will be expanding our group-guidance offering. Finally, we will attempt to coordinate our guidance, instructional, and tutorial services in a way that will allow for a more immediate, intensive, and comprehensive support program.

It is our hope that with this more comprehensive approach we will be able to respond to the needs of the prospective dropout regardless of what his unique problems may be.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

MERRITT COLLEGE[1]

by

Dr. Donald Denevi
Psychometrist

Scope and Procedures For The Study

The research report herein was performed pursuant to the Phase 3 design of the Nor Cal Project. The study evaluated effectiveness of the special group and individual counseling offered at Merritt College's Grove Street campus. The program was offered during the initial quarter of attendance of identified high-risk students and was designed to help such potentially low academic achievers succeed at Merritt College. The special group and individual counseling consisted primarily of an experimental Psychology 86A course, multiple and individual counseling within this course, and intensive individual counseling outside of the course. The catalog description for Psychology 86A reads:

"In small groups each student develops the skills necessary for

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[1]Separately entitled, "Evaluation of Special Group Counseling for Reduction of the Attrition Rate at Merritt College."

meaningful interpersonal relationships through the experience of expressing his feelings and becoming sensitive to the feelings of others."

Our intent, however, was to transform Psychology 86A into an experimental section focusing upon more crucial topics for college success: a systematic approach to an understanding of the principles of learning, an opportunity to participate in a group learning experience according to individual needs and interests; an opportunity to develop insight into study difficulties; skills and techniques developed through interests, needs, and individual projects; improvements of reading interests, concentration, comprehension, rate, and application of reading study skills to other college courses through emphasis on and correction of existing difficulties. The unique procedures for this experimental approach were (1) team learning, (2) group dynamics/group discussions, (3) individual instruction and projects, (4) mechanical reading devices. Also discussed were concepts and theories which apply to the process of psychological growth. The intent was to help students understand themselves and others, with emphasis on problems encountered by college students. Interspersed throughout all this was instruction in terms of orientation to college, and career planning (an organized approach to career selection and sources of occupational information). It was intended that there occur an objective self-concept in areas of interest, aptitudes, values. For this development, standardized vocational, aptitude, on values tests were employed.

The Groups

Random selection and assignment was used to form the experimental and

control group. Students were selected from first-time enrollees at Merritt College who scored "+10" on the Nor Cal questionnaire which was administered at the same time as our classification tests. The Nor Cal questionnaire yielded the names of 144 students who would "more than likely" drop out within the fall term, 1970. Out of the 144, selection was based upon those who also scored below the 10% on the SCAT and ENGLISH CO-OP tests. The final list of approximately 50 students represented an "extra-high" risk category. Random selection of these "extra-high" risk students into experimental and control grouping was then done. The "SUM-1" scores were derived by weighting the students' responses on certain questions. The variables that were used in the calculation of Sum 1 were sex-ability, race, goal, encouragement, importance of college to parents, and importance of college to self. In short, the higher the Sum 1 score, the greater likelihood the student would drop out. But what must be remembered was that both the experimental and control groups contained only those students designated as +10's who also scored below the tenth percentile on the School and College Ability Test (Form 1A) and the English Co-Operative Test. Hence, we had extra-high risk designation.

The attrition rates were reduced at the .05 level and the reenrollment rate was increased at the .01 level while the grade point average was increased at the .10 level and units completed was increased at the .01 level.

Table 1
Attrition Rate

	Experimental Group	Control Group
Withdrew	0	3
Persisted	12	9
Total	12	12
Attrition Rate	0.0%	25.0%

$Z = 1.85$
$p > .05$

Table 2
Reenrollment Rate

	Experimental Group	Control Group
Reenrolled	10	3
Withdrew	2	9
Total	12	12
Reenrollment Rate	83.3%	25.0%

$Z = 2.87$
$p > .01$

Table 3
Grade Point Average (Excluding Dropouts)

	Experimental Group	Control Group
Mean	2.5500	1.9322

$T = 1.44$
$p > .10$

Table 4
Units Completed

	Experimental Group	Control Group
Mean	11.4583	5.9583

$T = 2.55$
$p > .01$

Conclusions

Completion of the special experimental Psychology 86A "Interpersonal Relations" course encouraged all participants to reenroll for a second quarter. It was obvious that these students who enrolled in the special course dropped fewer units for the first quarter than students in the control group.

Discussion and Recommendations

The experimental study indicates that the project meets the needs of Nor Cal potential dropout students who also scored below the tenth percentile on SCAT and ENGLISH CO-OP Test. The findings are important in light of current unrest evidenced by minority groups. These students were encouraged through the program to persist as Merritt College. However, the effects were investigated only through reenrollment in the Second Quarter. Motivation might be extended by offering similar courses in succeeding quarters. A follow-up study should be conducted to determine which, if any, of the students dropped out later and why.

Already various suggestions have been offered by our counseling staff as an outgrowth of this study: a resumption of our Psychology 87 series, emphasis upon our English 66 remedial program, further intensive individual and group counseling, emphasis upon articulation with the state college or university, emphasis upon tutoring assistance from the tutorial center, the designation of more such experimental Psychology 86A multiple counseling sections during the Fall, and a redefinition of our Psychology 83, "The Psychology of College Success".

The evident success of the experimental Psychology 86A course with such "extra-high" risk students places a strong responsibility on Merritt College to

continue and further elaborate upon this course. This not only would permit other colleges in the Peralta District to initiate similar programs, but would also help insure district-wide efforts to help these students.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

NAPA COLLEGE[1]

by

Mrs. Gladys E. Dallas
and
Mrs. Virgina Murdoff
Dean of Students

Two items of interest to the members of the Nor Cal Consortium are included in Napa College's Individual College Report. The first item centers on the results of the true experimental design as performed at Napa. The second item centers on a very interesting validation study involving potential dropouts as identified by the Nor Cal questionnaire and a matched group -- the matched group consisted of students like the Nor Cal identified potential dropouts on the variables of ACT test scores and sex. Both of these items will now be presented. First an overview and results of the true experimental design that was used in Phase 3 at Napa.

Problem

Attrition among community college freshmen -- discussed at California Junior College Association in 1966.

Background

Northern California Research Group set up by 22 California Community Colleges to work on three phases of a cooperative project.

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[1]Separately entitled, "NOR CAL Cooperative Research on Community College Attrition Phase 3 Experimental."

Three Phases were:

1. Description -- the identification of characteristics associated with attrition during the initial enrollment period.

2. Prediction -- the development and validation of a predictive model.

3. Experimentation -- the development and testing of experimental programs to have an impact on attrition.

Each phase was to take one year.

Results of Phase 1

Variables studied and now used to predict potential dropout:

SEXABIL	Low ability male -- most vulnerable Middle ability female -- least vulnerable.
GOALS	i.e., transfer, non-transfer, no goal Non-transfer students or non-transferable courses taken -- most vulnerable.
PENC	Parental encouragement Low parental encouragement -- most vulnerable.
IMPS	Importance of college to self Low importance -- most vulnerable.
RACE	Black -- most vulnerable Orientals -- least vulnerable.

Results of Phase 2

Characteristics of potential dropouts generalized as follows:

1. Is likeliest to be Negro; least likely to be Oriental. (RACE)

2. Likely to have less perceived parental encouragement for college. (PENC)

3. Shows a lower sense of importance of college. (IMPS)

4. Likely to have lower educational aspirations. (GOALS)

5. Ability is key factor in the prediction of attrition, when grouped by sex; low ability males are three times likelier to withdraw than l w ability females. Model developed and validated which made it possible to identify, individually, students with high potential to withdraw. (SEXABILITY)

Procedure for Phase 3

1. Administer questionnaire to all entering freshmen.

2. Use of SUM 1 (GOALS, PENC, IMPS & RACE) to identify potential dropouts.

3. Work with twenty (20) highest scoring (Nor Cal Sum 1 Scores) freshmen offering:

   a. Counselor initiated interviews

   b. Counselee initiated interviews

   c. Readily available counseling

   d. Informal atmosphere

   e. Tutorial services

   f. Review of high school transcripts for strengths, weaknesses, and interests.

   g. Check of ACT scores

   h. Use of vocational and personal inventories to assist in academic adjustment, vocational choice, and personal development.

i. Generally provide a "someone cares" atmosphere.

Hypothesis. Development of these student characteristics, through use of the outlined counseling methods, will reduce the rate of attrition. This procedure will enhance the kinds of personal characteristics that will enable the student to develop:

a. A sense of independence

b. Self discipline

c. A goal

d. Personal responsibility for organizing his own activities and goals

e. A desire to do his best in order to fulfill his potential.

Composition of Groups

Experimental Group (E1): Use of above counseling procedures with twenty (20) Napa College entering freshmen identified through Nor Cal questionnaire.

Control Group 1 (C1): Twenty (20) students identified as potential dropouts by Nor Cal methods receiving routine student services.

Control Group 2 (C2): Twenty (20) students matched to the experimental group by ACT scores and sex. They also received routine student services.

Results

First the comparisons between the Experimental Group (E1) and the Control Group (C1) that were chosen on the basis of the students Nor Cal Sum 1 scores.

The following criteria were used: (1) Attrition Rate, (2) Reenrollment Rate, (3) Grade Point Average, and (4) Units Completed. These four criteria were investigated at two points in time. The two groups, E1 and C1, are compared on the four criteria (1) at the end of the fall quarter, and (2) at the end of the winter quarter. As the following tables show, the potential dropouts who received special attention (E1) did better on all criteria than did those potential dropouts who received routine student services (C1).

Table 1
Attrition Rate After Fall Quarter

	Experimental Group (E1)	Control Group (C1)
Withdrew	2	9
Persisted	18	11
Total	20	20
Attrition Rate	10.0%	45.0%

$Z = 4.00$
$p < .01$

Table 2
Reenrollment Rate After Fall Quarter

	Experimental Group (E1)	Control Group (C1)
Reenrolled	15	2
Did not reenroll	5	18
Total	20	20
Reenrollment Rate	75.0%	10.0%

$Z = 3.04$
$p < .01$

Table 3
Grade Point Average (Including Dropouts) After Fall Quarter

	Experimental Group (E1)	Control Group (C1)
Mean	2.3985	0.3973
Pooled Variance	1.1347	1.1347

$T = 5.00$
$p < .01$

Table 4
Units Completed After Fall Quarter

	Experimental Group (E1)	Control Group (C1)
Mean	9.7000	2.1818
Pooled Variance	28.7535	28.7535

T = 3.74
p < .01

Table 5
Attrition Rate After Winter Quarter

	Experimental Group (E1)	Control Group (C1)
Withdrew	2	14
Persisted	18	6
Total	20	20
Attrition Rate	10.0%	70.0%

Z = 3.87
p < .01

Table 6
Reenrollment Rate After Winter Quarter

	Experimental Group (E1)	Control Group (C1)
Reenrolled	15	3
Did not reenroll	5	17
Total	20	20
Reenrollment Rate	75.0%	15.0%

Z = 3.81
p < .01

Table 7
Grade Point Average (Including Dropouts) After Winter Quarter

	Experimental Group (E1)	Control Group (C1)
Mean	2.4750	0.7480
Pooled Variance	3.5406	3.5406

T= 2.90
p < .01

Table 8
Units Completed After Winter Quarter

	Experimental Group (E1)	Control Group (C1)
Mean	15.95	4.50
Pooled Variance	95.52	95.52

T = 3.70
p < .01

The situation at Napa College is advantageous because it not only allowed the true experimental design as presented above to be used but also it allows the comparison of the two Control groups, C1 and C2, to be made. One of these groups, C1, is predicted by the Nor Cal questionnaire to be "potential dropouts." The other group, C2, is the "match" of C1 using only the knowledge of ACT test scores and Sex. This comparison is advantageous because it allows for the further investigation of the validity of the Nor Cal questionnaire, "Does the Nor Cal questionnaire identify potential dropouts better than the two variables of ACT scores and Sex?" The answer is yes as the following tables show.

Table 9
Attrition Rate After Fall Quarter

	C1	C2
Withdrew	9	5
Persisted	11	15
Total	20	20
Attrition Rate	45.0%	10.0%

Z = 2.48
p < .01

Table 10
Reenrollment Rate After Fall Quarter

	C1	C2
Reenrolled	2	14
Did not reenroll	18	6
Total	20	20
Reenrollment Rate	10.0%	70.0%

$Z = 3.87$
$p < .01$

Table 11
Attrition Rate After Winter Quarter

	C1	C2
Withdrew	14	3
Persisted	6	17
Total	20	20
Attrition Rate	70.0%	15.0%

$Z = 3.52$
$p < .001$

Table 12
Reenrollment Rate After Winter Quarter

	C1	C2
Reenrolled	3	16
Did not reenroll	17	4
Total	20	20
Reenrollment Rate	15.0%	80.0%

$Z = 4.12$
$p < .001$

Table 13
Units Completed After Fall Quarter

	C1	C2
Mean	2.525	8.85

$T = 3.49$
$p < .005$

Table 14
Grade Point Average (Including Dropouts) After Fall Quarter

	C1	C2
Mean	.4185	2.501

T = 4.99
p < .005

Table 15
Units Completed After Winter Quarter

	C1	C2
Mean	4.50	16.97

T = 3.83
p < .005

Table 16
Grade Point Average (Including Dropouts) After Winter Quarter

	C1	C2
Mean	.748	2.621

T = 4.61
p < .005

Thus, there are two lessons to be gained from the Phase 3 Nor Cal study as accomplished at Napa College. First, it was demonstrated by the use of a true experimental design that potential dropouts who receive special attention have a lower dropout rate, have a higher reenrollment rate, complete more units, and attain a higher grade point average than do those potential dropouts who do not. This is true after Fall Quarter and after Winter Quarter. Second, it was demonstrated that the Nor Cal questionnaire is valid in terms of its ability to identify students who are potential dropouts. In comparison to a control group (C2) matched on ACT and Sex with the Nor Cal-identified group of potential dropouts (C1), the Nor Cal-identified group: (1) had a significantly higher rate of attrition ($p < .01$), (2) had a significantly lower rate of reenrollment ($p < .01$), (3) completed significantly fewer units ($p < .005$), and (4) attained a significantly lower grade point average ($p < .005$) after both Fall and Winter quarters.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

OHLONE COLLEGE

by

Mr. Clay Bell
Counselor

Introduction

Ohlone College has participated in all three phases of the NOR CAL Drop-out project. Briefly, the first two phases of this project covering the 1967-68, and 1968-69 academic years, consisted of developing and validating an instrument to identify the high probability dropout among first-time, full-time students. This report, covering the third and final phase, presents the development of an experimental attempt aimed at reduction of attrition among the high-risk student.

Research Design and Experimental Treatment

During registration for the Fall Quarter, 1970, the NOR CAL questionnaire was administered to all first-time freshmen. From this pool, a total of 65 high-risk students were identified (descending Sum 1 sequence of +10 or above). These students were then assigned to one of the following four treatment groups. Seven of these high-risk students were assigned to the College's

Qualified Entry program, a special college program designed to assist students of low academic potential, which has, among other requirements a mandatory enrollment in Guidance 2, Orientation to College. Seven students matched as to sex, program, and Sum 1 discriminant scores served as a control for the Guidance 2 group. Of the remaining 51 high-risk students, 26 were randomly assigned to a second experimental group -- identified to their counselors as high-risk students -- and 25 served as non-treated controls; that is, not so identified to their counselors. In summary then, the independent variables investigated were the assignment to Guidance 2 and identification to their counselor as a high-risk student. The dependent variable, whether the student dropped out or not, was assessed as completion of the Fall Quarter and registration for the Winter Quarter. Also assessed was units completed.

Results

The difference in attrition (withdrew Fall Quarter, did not register Winter) among students enrolled in Guidance 2 and their matched non-enrolled controls, supports the hypothesis that enrollment in Guidance 2 leads to reduced attrition among high-risk students (Table 1).

Table 1
Attrition-Guidance 2 vs Non-Treated Matched Control

	Experimental Group	Control Group
Withdrew, did not reenroll	0	4
Persisted, did reenroll	7	3
Total	7	7
Attrition Rate	0.0%	57.14%

$Z = 2.37$
$p < .01$

Examination of the second criteria, number of units completed, indicated no statistically significant effect between the Guidance enrolled group and their control.

In Table 2 are presented the results of the second experimental treatment, identification of the high-risk student to their respective counselors.

Table 2
Attrition-Identified to Counselor vs Non-Identified

	Experimental Group	Control Group
Withdrew, did not reenroll	3	9
Persisted, did reenroll	23	16
Total	26	25
Attrition Rate	11.53%	36.00%

$Z = 2.06$
$p < .02$

The second criteria, units completed, indicated that students in the experimental group completed significantly more units than their untreated controls (at greater than the .10 level of confidence). However, a further analysis of the data indicate that a significant proportion of the experimental group had voluntarily enrolled in Guidance 1, a study skills class (43% of the experimental versus 26% of the controls). Our registration had made it impossible to control the classes for which the students had pre-registered.

Discussion

The reduction in attrition of the high-risk students enrolled in Guidance 2 is both gratifying and thought provoking. An important implication of this finding for future implementation is that a number of the NOR CAL identified high-risk students were not screened into Guidance 2, indicating that in the future our

screening for the Qualified Entry program should be complimented with NOR CAL screening.

The secondary findings that the minimal act of identifying high-risk students to their counselor are somewhat unclear as to interpretation due to the unforeseen effect of voluntary enrollment in Guidance 1 which was not controlled. There is some evidence to suggest, however, that mere identification as high-risk has some effect in preventing attrition. For the 1971-72 academic year, it will be necessary to follow up the importance of our Study Skills class in prevention of attrition.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

PORTERVILLE COLLEGE[1]

by

Mr. Albert M. Cano
Director of Financial Aids

Preface

The criteria set forth for our study included the offering of the following services to the experimental group:

(1) Special counseling in a group psychology class;

(2) Special English classes;

(3) Individual counseling by four trained specialists.

Insofar as were were able to offer these special services the experiment can be called a success. There were many limitations which restricted the services that could be offered to these students.

Staff members included: Esther R. Bradley, Dean of Guidance; Lou Rienzi, Psychologist, instructor; Helen Winn, Counselor, instructor. Although not a staff member recognition should be given to Mrs. Arlene Held, Guidance Center

[1] Separately entitled "A Study of High Attrition Students."

secretary, for her help in working with students involved in the program.

The above mentioned are to be commended for their efforts in special counseling, the group psychology class, and a strongly supportive role in dealing with these students.

Introduction

Historically, one of the greatest expenses encountered in community colleges results from funds expended on the education of students who appear to benefit very little from their educational endeavors, and who subsequently withdraw from school. The first two phases of the Nor Cal Project enabled the member colleges to identify these potential dropouts.

The Third Phase of this project, which is the one involved in this study, is focused on an attempt to develop a program which will negate the variables which contribute to failure of certain students to reach their educational goals.

These first-time, full-time students who have a high probability of attrition were identified through the use of the questionnaire and method developed by Nor Cal. They were administered the questionnaire in the fall of 1970 and following their identification, were divided into an experimental group and a control group consisting of fifty students each.

Sixty five students who registered for the fall of 1970 were found to have discriminant or liability scores of +10 or higher. To attain the full figure of one hundred subjects it was necessary to include students who were below the discriminant score of +10.

Within the limits that could be controlled, it was planned that the principal

difference between the experimental and control groups would be the exposure of the former group to intensive counseling and the special classwork.

The dependent variables which were applied contained the following: completion of the first semester; registration for the second semester; maintaining a full-time credit load of twelve units; attainment of a 2.0 GPA; and equaling or exceeding the GPA acquired in high school.

The basis of the research experiment focused on the assumption that exposure to the conditions outlined would have a definite relationship to a lower attrition rate. The hypothesis was that the experimental group as compared to the control group would achieve the following: (1) a smaller number of withdrawals prior to completing the first semester; (2) a greater number of students who would complete a full-time academic load of at least twelve units; (3) a higher number of students registering for second semester; (4) a greater percentage of students who achieved a 2.0 GPA in college; (5) a greater number of students whose grades in college were equal to or better than those earned in high school.

It should be remembered that none of the above conditions can be used as a positive index with reference to student attrition since many students drop out of school in the first semester and then re-enroll for the second semester. Other students experiencing academic difficulties are often advised to drop certain courses to reduce their academic load.

In addition, many students complete the first semester with a GPA of 2.0 or better but for a variety of reasons do not enroll for the second semester. Therefore, the subject of attrition consists of a number of measurements which must be examined.

The ratio of males to females in our study was higher than the actual overall enrollment of males and females in the entire college population. 85% of the higher probability dropout sample consisted of males. This is in agreement with the findings of the other 21 colleges participating in the Nor Cal study that males have a higher dropout probability than females.

Another factor related to attrition involved ethnic background or race. The information received from Nor Cal evidenced the fact that Blacks were more apt to drop out, while Orientals showed a greater degree of persistence.

When compared to the entire entering group completing the questionnaire, the number of minority students was not as disproportionately high as might have been expected.

Table 1
Ethnic Composition

	Experimental Group	Control Group
Black	3	4
Spanish Surname	4	5
Oriental	0	0
Other Non White	0	0
White	43	41
Total	50	50

The Nor Cal printout revealed the fact that the potential dropout is quite young, having an average age of 18. As Table 2 of this report indicates, 78% of the students involved in the study were in the 18 and 19 year old category, with 50% falling in the former group. There was only one student who was 17 years of age in the entire study.

Table 2
Ages of Study Group

Age	Experimental Group	Control Group	Total
17	1	0	1
18	29	21	50
19	9	19	28
20	3	4	7
21	3	0	3
22	1	1	2
23	2	3	5
24	0	0	0
25 and over	2	2	4
Totals	50	50	100

The Experimental Treatment

The independent variable which differentiated the experimental group from the control group students was their exposure to a number of special services. These included: (1) Special academic counseling; (2) Psychology 57; and (3) Special English classes. The students who were in the control group received the same treatment as all other students who enter college. It was hoped that the experimental students would be able to recognize the skills which they had and utilize them, would learn what skills they needed to acquire, and would make use of the supportive services offered to them. Essential to the entire process was the attempt to emphasize the fact that students' problems are not confined strictly to those found within academic areas.

The principal criticism relative to the experimental treatment was that because of the lack of funds, we were not able to implement a tutorial program. It is felt that this is probably the single most important preventative factor to which the experimental group might have been exposed and it would probably had

a marked effect on the retardation of the attrition rate. The result was that we were unable to utilize a most effective tool in this experiment. The students were interviewed and permitted to select, to a great degree, the services which they felt would be of the greatest benefit to them.

Results of the Treatment

Some of the effects of the specialized treatment are measurable while others are more subjective. The results which are measurable are associated to the basic hypothesis which was that exposure to special services would be related to a lowered attrition rate.

The primary factor for defining attrition is determined by whether or not the student completes one or more courses, or whether he withdraws completely during the initial semester. Because of the fact that the students in the study were from the group labeled as high probability with regard to attrition, it was expected that the dropout percentage would be higher in the sample group. In the experimental group 12 out of 50 students failed to complete the first semester, while in the control group 17 of 50 students did not finish the first semester.

Table 3
First Semester - Second Semester Attrition Rates

	Experimental Group	Control Group
Withdrew	12	17
Persisted	38	33
Total	50	50
Attrition Rate	24.0%	34.0%

$Z = 1.10$

$p < .14$

Porterville College

A number of students dropped a majority of their classes yet managed to complete one or two courses. To some students, the reduction in load level was an important factor which contributed to their postponement of attrition. A number of students were counseled to withdraw from classes in which they felt that they were not interested and in which they were experiencing little or no success.

Coincidentally, 32% of the experimental group and 32% of the control group completed a full time load of 12 hours or more.

The sample groups were all first-time students who were enrolled in general programs which necessitated the completion of at least two years of college. Because of this fact, the failure of a student to re-enroll for the 1971 spring semester can be regarded as attrition.

Over one-fourth of the 100 students in the study groups, 29 to be exact, failed to register for the second semester at Portervilie College. Twelve students in the experimental group did not re-register while 17 students in the control group failed to continue.

Table 4
Reenrollment Rate

	Experimental Group Received Special Services	Control Group No Special Services
Reenrolled	38	33
Withdrew	12	17
Total	50	50
Reenrollment Rate	76.0%	66.0%

$Z = 1.10$
$p < .14$

Although academic grades are not a true index of either knowledge or performance, we must accept the fact that they are used as a comparative measure of achievement in higher education. The value of grades lies in their providing another indicator for predicting academic success. The high school grade point averages of the experimental and control groups were somewhat similar, as is shown in Table 5.

Table 5
High School GPA of Study Group

GPA	Experimental Group	Control Group	Total
Less than 1.00	0	1	1
1.00 - 1.49	4	2	6
1.50 - 1.99	19	18	37
2.00 - 2.49	21	11	32
2.50 - 2.99	2	9	11
3.00 - 3.49	2	5	7
3.50 and above	0	0	0
No data	2	4	6
Totals	50	50	100

Table 6 depicts a summary of grades achieved by the study group students during their first semester in college. Exactly 50 percent of the experimental group and 50 percent of the control group earned a 2.00 grade point average or better. It is felt that this phenomenon was due to the absence of a tutorial program, which might have made a significant difference between the two groups, in favor of the experimental group. Table 7 indicates that a statistically significant difference did exist however between the mean grade point averages for the two groups.

Table 6
Initial Semester GPA's of High Probability Dropouts

GPA	Experimental Group	Control Group	Total
Less than 1.00	3	1	4
1.00 - 1.49	5	7	12
1.50 - 1.99	6	7	13
2.00 - 2.49	17	7	24
2.50 - 2.99	6	7	13
3.00 to 3.49	4	7	11
3.50 and above	0	3	3
Withdrew	9	11	20
Totals	50	50	100

Table 7
Grade Point Average

	Experimental Group	Control Group
Mean	2.28	2.05

T = 1.45
p < .10

Tables 8 and 9 indicate the number of students whose grade point average was better, remained the same, or fell below that which was earned in high school.

Table 8
Comparison of College GPA to High School GPA of Study Groups

College GPA to High School GPA	Experimental Group	Control Group	Total
Better	17	14	31
Same	0	1	1
Worse	22	20	42
Dropped Out	9	13	22
No High School Data	2	2	4
Totals	50	50	100

Table 9
Comparison of College GPA to High School GPA of Study Groups

	Experimental Group	Control Group
Same or Better	17	15
Worse	22	20
Total	39	35
	43.6%	42.9%

Z = .06
not significant

Students Who Dropped Out

A total of twelve experimental group students and seventeen from the control group either failed to re-register or completely withdrew from school.

There were sixteen Blacks and Spanish Surnamed students who were included in the study groups. The experimental group included three Blacks and four Spanish-Surnamed students, while the control group contained four Blacks and five students with Spanish-Surnames. The percentage of Blacks who persisted was slightly higher than that of the Whites but the percentage of persisting Spanish Surnamed students was lower than the median for Whites.

The average age of the students from the experimental group who withdrew was eighteen, while that of the control group students was nineteen. The median age for students who persisted was eighteen.

Most of the students who withdrew did so by ceasing to attend classes. Because of this fact it was impossible to do a follow-up interview to determine the variations in their attitudes with regard to their experience in college.

Subjective Observations

The most obvious characteristic which emerged from the observation of the students in the study groups was the apathy or lack of interest which they exhibited. It was difficult to get the students to make initial contact with the Guidance Center in order to get the study started. Most of the students did not want to make program changes to take advantage of the special classes which were offered to them, a fact that was particularly obvious among the experimental group students.

Summary and Conclusions

The purpose of this study was an attempt to determine if there is a significant relationship between the reduction of attrition among high risk students and an involvement in a program which offered special services to these students.

Again, we must mention the fact that the lack of a tutorial program seriously handicapped the study. It probably contributed to the lack of any significant differences in number of units completed between the experimental group and the control group. It should be noted that between the first and second semesters the attrition rate of the potential dropouts in the experimental group was reduced ($p < .14$), the reenrollment rate was increased ($p < .14$), and the mean grade point average was increased ($p < .10$).

This rather superficial study reveals the fact that a more comprehensive type of treatment would yield even greater positive results. An expanded treatment should be utilized over a greater length of time in order to reduce the attrition rate. Furthermore, more research into other areas of special services

should be undertaken to furnish us with more data on how we can meet the needs of the high risk student.

If we are sincere in our desire to reduce the attrition rate among community college students, it is essential that qualified researchers be given the opportunity to carry on profound studies in the field of attrition prevention. This will give all interested and dedicated persons the tools by which they might hopefully reduce the rate of college withdrawals.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

REEDLEY COLLEGE

by

Mr. Robert Clark
Counselor

Experimental Design

It was decided that during Phase 3 both an experimental design following the Nor Cal model would be tested and a validation of the predictive powers of the Nor Cal instrument would be undertaken. First the experimental study.

Purpose of the Study

One of the largest expenses in community college education is the money spent on the education of students who seem not to realize any benefit from their educational efforts and who eventually fail to complete their education objectives. Of course, of greater cost is the loss to society of the potential contribution to society of the "dropout". Phases 1 and 2 of the Nor Cal Attrition Project have made it possible to identify the potential dropout with a fair degree of confidence; Phase 3 is the attempt to develop treatment conditions which will counteract the [illegible]s which cause the failure of the student to continue toward completion of his

educational plans.

Procedure

The Nor Cal questionnaire was required of all first-time freshmen as a condition for registration. Questionnaires were mailed out with other registration materials, were filled out by these students, and were turned in completed at the time of the students' registration.

Prior to the conception of this project, a project under S.B.164 was started. It consisted of recruiting minority students with academic potential but will little possibility of continuing their education past high school. The initial phase (recruitment) was supervised by a faculty director and carried out by students of Mexican-American descent during the spring, 1970, semester. The recruiters worked in the high schools from which they graduated and knew the students among whom they recruited. Unfortunately the Nor Cal questionnaire was not used as a selection criterion. Forty students were selected for the S.B.164 project by a selection committee composed of the director of the project, Mrs. Josephine Zepeda; the Director of Guidance, John R. Hiatt; a faculty representative, Fernando Cuevas; and three students of the college. These forty students constituted the experimental group for the Nor Cal Project, Phase 3. Nor Cal questionnaires were completed by the experimental group during the second day of the first phase of their treatment. All but two of this group were of Mexican-American descent.

The first phase of the treatment consisted of a two-week readiness workshop in which the experimental group was housed in the college residence halls along with nine student staff members. Other staff members were: Residence Super-

visor, Mrs. Louisa Wilson; director, Mrs. Zepeda; reading specialist, Mr. James Cooney; speech instructor, Miss Terry Rojas; and English instructor, Mrs. Lupe Gutierrez. Mr. Armando Gonzales, who served as counselor and source of career information, resided at home. Board and room for the two weeks was furnished the students along with a stipend of $70.00. During the workshop, orientation to the world of education and work was presented, along with introduction to study skills and expectancies of college teachers as related to student performance.

Exercises using the special skills of the staff were pursued. They included sensitivity training, career counseling, reading and speech, and English grammar and composition. The staff is to be commended on their extra efforts and dedication.

A control group of forty students was developed by matching of Nor Cal Sum-1 index, ethnic background, and sex. It should be pointed out that the Sum-1 index is used as the index for predicting dropouts and includes ACT and SAT scores as a measure of scholastic aptitude.

During the fall semester, 1970, special tutoring assistance was made available to both the experimental and control groups, as was individual counseling and financial aid.

Evaluation

The evaluation was based on five criteria; namely: (1) attrition rate, (2) reenrollment rate, (3) grade point average (including dropouts), (4) grade point average (excluding dropouts), and (5) units completed. On attrition rate and reenrollment rate the Z statistic was used with both two-tailed and one-tailed tests.

On the remaining three criteria the T test was used.

When the control group and experimental group were compared, the null hypothesis was not rejected except for the fourth criterion, grade point average excluding dropouts. There was a significant difference to the 0.05 level of confidence show that the control group had a significantly higher grade point average.

Table 1
Grade Point Average (Excluding Dropouts)

	Experimental Group	Control Group
Mean	1.6609	2.0773
N	40	40

T = 2.22
p < .025

Since both experimental and control groups had E.O.G. grants, E.O.P.S. grants, scholarships, tutoring, and individual counseling evaluation was made with these as treatments disregarding experimental and control groups as previously identified and comparing those who did not receive the treatment with those who did. This gave an N of eighty. The same criteria were used with the same statistical tests with the following results:

Table 2
Results of Five Treatments Along Five Criteria

Treatment	Attrition Rate	Reenrollment Rate	GPA (Including Dropouts)	GPA (Excluding Dropouts)	Units Completed
E.O.G. grants	0	0	0	0	0
E.O.P.S. grants	0	0	0	0.025	0
Scholarships	0	0	0	0.200	0
Tutoring	0.200(2) 0.100(1)	0.250(2) 0.150(1)	0	-0.300	0.200
Individual counseling	0.010(2&1)	0.010(2&1)	0	-0.200	0.025

In the table a cipher indicates that the null hypothesis was not rejected. A positive number indicates the level of confidence for a significant difference in favor of the treatment where a negative number indicates the level of confidence for a significant difference in favor of no treatment. The parenthetical numbers indicate whether the two-tailed or one-tailed test was involved. The null hypothesis was not rejected for those levels of confidence below 0.050. Therefore, the null hypothesis was rejected in the case of E.O.P.S. grant recipients, in the case of tutoring recipients, and in the case of individual counseling recipients. Separate examinations of the effects of E.O.P.S. grants, individual counseling, and tutoring produced the following:

Table 3
Grade Point Average (Excluding Dropouts)

	Experimental Group (E.O.P.S.)	Control Group (No E.O.P.S.)
Mean	1.6687	2.1245
N	44	36

T = 2.37
p < .025

Table 4
Attrition

	Experimental Group (Tutoring)	Control Group (No Tutoring)
Withdrew	1	12
Persisted	17	50
Total	18	62
Attrition Rate	5.5%	19.4%

Z = 1.40
p < .10

Table 5
Reenrollment Rate

	Experimental Group (Tutoring)	Control Group (No Tutoring)
Reenrolled	16	47
Withdrew	2	15
Total	18	62
Reenrollment Rate	88.9%	75.8%

$Z = 1.19$
$p < .15$

Table 6
Attrition Rate

	Experimental Group (Individual Counseling)	Control Group (No Individual Counseling)
Withdrew	3	10
Persisted	47	20
Total	50	30
Attrition Rate	6.0%	33.3%

$Z = 3.21$
$p < .01$

Table 7
Reenrollment Rate

	Experimental Group (Individual Counseling)	Control Group (No Individual Counseling)
Reenrolled	45	19
Withdrew	5	11
Total	50	30
Reenrollment Rate	90.0%	63.3%

$Z = 2.89$
$p < .01$

Table 8
Units Completed

	Experimental Group (Individual Counseling)	Control Group (No Individual Counseling)
Mean	11.64	8.17
Number	50	30

$T = 2.18$
$p < .025$

Validation

The Nor Cal questionnaire is shown to be valid for entering freshmen at Reedley College, as the following results indicate:

Table 9
Comparison of Attrition Rates for Validation Study of Data from Reedley College for the Fall Semester, 1970

Sum 1 Score

	-10 and Below	Between	+10 and Above
Withdrew	16	36	26
Persisted	246	373	109
Total	262	409	135
Attrition Rate	6.1%	8.8%	19.3%

$X^2 = 18.37$
$p < .001$

Table 10
Descriptive Statistics for Validation Study of Data from Reedley College, Fall Semester, 1970

Variable is Grade Point Average (Excluding Dropouts)

Group	-10 and Below	Between	+10 and Above
Sample Size	262	409	135
Mean	2.1670	2.0864	1.6721
Standard Deviation	0.8772	0.9334	0.9892

Table 11
Analysis of Variance for Validation Study of Data
from Reedley College, Fall Semester, 1970

Variable is Grade Point Average (Excluding Dropouts)

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	23.3646	2	11.6823	13.65*
Within Groups	687.4277	803	0.8561	
Total	710.7922	805		

*p < .0005

Table 12
Descriptive Statistics for Validation Study of Data
from Reedley College, Fall Semester, 1970

Variable is Units Completed (Excluding Dropouts)

Group	-10 and Below	Between	+10 and Above
Sample Size	262	409	135
Mean	12.8683	12.0208	10.2481
Standard Deviation	4.4369	4.8660	5.6423

Table 13
Analysis of Variance for Validation Study of Data
from Reedley College, Fall Semester, 1970

Variable is Units Completed (Excluding Dropouts)

	Sum of Squares	DF	Mean Square	F Ratio
Between Groups	612.0320	2	306.0159	12.89*
Within Groups	19064.7070	803	23.7419	
Total	19676.7383	805		

*p < .0005

Conclusions

At first glance it would appear that the treatment was unsuccessful as far as grade point average was concerned. It should be pointed out that the experimental group was recruited by recruiters who knew the students. We might say, then, that the recruiters were successful in identifying those students who would have difficulty in college--poor study habits, attitude, family considerations, etc. Further evaluation would be indicated.

When we take the E.O.P.S. grant recipients into consideration, the entire

experimental group is included along with four from the control group. This is merely another evaluation of the group reported immediately above and is, therefore, not a significantly different treatment.

A significant difference appears for those who had individual counseling. Those who had counseling had a significantly lower attrition rate during the semester and enrolled for the second semester at a significantly higher rate. Both of these differences were statistically significant at the 0.01 level of confidence. All students, especially entering freshmen, are encouraged to visit a counselor. During registration, counseling appointments are made for entering freshmen. Those who kept the appointment, and who possibly saw a counselor more than one time, had a significantly better experience as indicated above. It is hoped that the counseling offered is an effective treatment in reducing attrition, yet it might be pointed out that those potential dropouts who choose to follow prescribed procedures and are concerned enough about their future to seek help from counselors, are students who while they are likely to withdraw do have a readiness to be influenced by "outreach" activities of counselors. However, the high rate of success of the individual counseling treatment seems to be the one bright spot in all the treatments tried and it should not be underestimated.

Recommendations

It is then recommended that evaluation continue until all members of the experimental and control groups are no longer in attendance. It will then be possible to evaluate on the basis of numbers who reached their objective compared with those who fell by the wayside.

It is further recommended that the counseling staff more diligently pursue those who are reluctant to visit a counselor and given them individual attention with concern for their future.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SACRAMENTO CITY COLLEGE

by

Mr. Elbert L. Kinnebrew
Assistant Dean of Research and Development
and
Mr. William A. Smith
Coordinator of Special Programs

Editor's Comment

At the time of the writing of Sacramento City College's Nor Cal Individual College Report, Elbert was in Washington, D.C., serving as a governmental intern at the AAJC office. AAJC's governmental intern program is partially described in the June-July issue of the Junior College Journal. In a letter, Mr. Kinnebrew wrote:

> I feel that the work done by the director and staff responsible for the development of the SB164 Programs on campus represent our best efforts in the area of Treatment Programs that exemplify real holding power. Please scrutinize these results carefully and report them not as a NOR CAL Phase III treatment, but as a program that we feel has great merit in terms of meeting the need of cutting down the attrition problem in northern California.
>
> As reported earlier today, I feel that new directions taken as a result of my Washington experience will set us upon the path of some truly innovative NOR CAL research.

Sacramento City College

Pursuant to Elbert's recommendation, Bill Smith was kind enough to send the June 1971 progress report on the SB 164 program at Sacramento City College. Bill wishes it known that anyone wanting a copy of the final report need only write him to that effect. The final report should be available in August.

The Nor Cal Consortium meetings appear to constitute a natural forum at which to hear about Elbert's AAJC governmental internship experiences.

Reasons for Dropping in the Fall, 1970

1. Dropped because of irregular class attendance - 3
2. No know reasons why they dropped - 2
3. Dropped because of insufficient units - 1
4. Took a leave of absence because he moved elsewhere - 1
5. Dropped in order to support his family (work) - 1

Breakdown of Dropouts and Completion of Fall, 1970

Total Enrolled	Total Served	No. Dropped	%	No. Completed	%
150	193	8	5.3	147	94.7

Reasons for Dropping in the Spring, 1971

1. One had transportation and financial problems.
2. One had personal problems such as drug problems and lack of child care for 3 month old baby.
3. Three students dropped for reasons unknown.

Sacramento City College

Breakdown of Dropouts and Completion of Spring, 1971

Total Enrolled	Total Served	No. Dropped	%	No. Completed	%
153	185	5	3.2	153 as of May 4, 1971	96.8

Breakdown of Students

Age	%
17 - 9	5.9
18 - 33	21.6
19 - 44	28.8
20 - 21	13.7
21 - 8	5.2
22 - 6	3.9
23 - 6	3.9
24 - 6	3.9
25 - 2	1.3
26 - 4	2.6
27 - 3	2.0
28 - 2	1.3
29 - 3	2.0
31 - 3	2.0
34 - 1	.7
37 - 1	.7
39 - 1	.7
153	100.0%

Sex		%
Male	60	39.2
Female	93	60.8
	153	100.0%

Ethnic Group		%
Black	47	30.7
Mexican	45	29.4
White	30	19.6
Asian	31	20.3
	153	100.0%

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SAN JOAQUIN DELTA COLLEGE

by
Dr. James Keene
Dean for Research and Planning
and
Mrs. Elizabeth Lee
Research Assistant

In a memo from Dr. Keene to Mr. Max Barber, Dean of Students, the research design as planned was stated:

Original Research Design as Planned

Display 1
Nor Cal Project Plan for Phase 3

This memorandum will confirm the arrangements agreed upon between our offices for conduct of Nor Cal Phase III on this campus.

A computer print-out of the names of 341 first-time freshmen showing a high probability of becoming drop-outs by the Nor Cal model has been developed. Those students of the 341 who have already been enrolled in the College Readiness Program will be identified by your office and will constitute Group A (Experimental). The remaining students will be divided by your office into two approximately equal groups on a random basis. One of these groups, designated Group B (Experimental), will be subjected to an intensive counseling and guidance program developed as a special project by the counselors under your direction. The remaining group, designated Group C (Control) will be identified as such to neither the counselors nor the Readiness Center, but will be subject to the same press as if the experiment were not being conducted.

This office (Mrs. Hodge) will compare the Registrar's periodic reports of drop-outs with the print-out, noting the date each drop-out occurs. When the semester ends, this office will obtain from the Data Center a transcript print-out on each of the 341 students, make the

necessary analyses, report the results to the Nor Cal Director, and, in cooperation with your office, prepare a report for the President to present to the Board of Trustees.

If you will give this office a copy of the print-out with each student identified as a member of Group A, B, or C, we will have alphabetical print-outs run of each group for convenience in accounting.

Revising the Original Design

Early in the fall semester it was learned that only a few students who were recruited for and enrolled in the College Readiness Program (Group A) had also completed the Nor Cal questionnaire. A sizeable number of those recruited had somehow "side-stepped" completing the questionnaire. Because of this, Group A was dropped from the experimental analysis.[1] What follows is the analysis of the differences between those potential drop-outs who received intensive counseling (Group B - Experimental), and those who did not receive intensive counseling (Group C - Control).

On October 24, 1970, acting as a Research Assistant to Dr. Keene, Mrs. Lee individually interviewed four student personnel people at Delta College: Robertson, McCarthy, Atwood, and Barber. The counselors agreed to individually counsel the experimental group (Group B) and follow-up with group sessions. Dr. Robertson suggested that the plan be implemented in November.

---

[1]Dr. Keene has reported an evaluation of this program already. (Keene, James. "Evaluation of the Delta College Tutorial Program", 1968.

Results:

Although the counselors "reached-out" for the "experimental group" of potential drop-outs late in the fall semester, the following results were obtained:

Table 1
Attrition Rate

	Experimental Group	Control Group
Withdrew	2	6
Persisted	44	40
Total	46	46
Attrition Rate	4.3%	13.0%

$Z = 1.43$

$p < .08$

Table 2
Reenrollment Rate

	Experimental Group	Control Group
Reenrolled	36	23
Exited	10	23
Total	46	46
Reenrollment Rate	78.3%	50.0%

$Z = 4.22$

$p < .0002$

Conclusions:

Even though counselors did begin to "reach-out" to potential drop-outs late in the semester, it is clear that even this minimal experimental treatment had a significant effect. Those potential drop-outs who were "touched" by the counselors did drop-out at a significantly lower rate ($p < .08$) and did reenroll at a higher rate ($p < .0002$) than the other potential drop-outs who were not contacted by the counselors. The importance of having contacts with counselors is obvious.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SAN JOSE CITY COLLEGE[1]

by

Dr. A. Gordon Peterson
Assistant Dean of Counseling and Guidance

Background

For the last two years the Nor Cal Research group (composed of researchers in twenty-three northern California junior colleges) has been developing and validating an instrument designed to predict which students are most likely to drop-out of college during their first semester. The research has progressed to the point where we may now (with 65% accuracy) predict which of our students will not complete the fall semester.

The final phase of the Nor Cal Research program is left in the hands of the individual colleges to implement ways of reducing attrition among these "potential-drop-out" students.

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[1]Separately entitled "Evaluation of Intensive Counseling for Attrition-Prone Students".

San Jose City College

The Counseling Department of San Jose City College has long felt that every effort must be made to help students remain in college. In light of this dedication, the department elected to initiate a pilot study to see if intensive counseling would help identified "potential-drop-out" students to remain in college.

Objectives of the Study

The objectives of the study are as follows:

1. to focus the resources of the college on the identified "potential-drop-out" student;
2. to evaluate the results of special counseling assistance as compared with regular counseling;
3. to make recommendations concerning future directions the Counseling Department should consider when evaluating services to students.

Methodology

A. Selection of Participants

Three counselors volunteered to work with "potential-drop-out" students as part of their regular group of counselees. First-time, full-time students with a score of +10 or greater on the Nor Cal scale were randomly assigned to one of three conditions: (1) identified and assigned to one of the three counselors to receive intensive counseling service, identified as E1, E2, and E2; (2) unidentified, but assigned to one of the three counselors doing the intensive counseling, identified as C1, C2, and C3; (3) unidentified and assigned to counselors other than the three doing the intensive counseling, identified as OT). Groups 2 and 3 serve

as control groups. Group 2 is a control group for the effect of the counselors giving the experimental treatment. Group 3 is a control group for the effect of other members of the general counseling staff.

B. Assignment of Subjects

Numbers were assigned to a list of "potential-drop-outs", ranked in order by their Nor Cal Sum 1 scores, and a table of random numbers was used to assign fifty students to each of the experimental counselors. Those remaining were assigned to the general control group.

Each group of fifty assigned to each experimental counselor was then ranked by the Nor Cal score and assigned to either the intensive counseling groups (E1, E2, E3) or the unidentified control groups (C1, C2, C3) by the throw of the coin for consecutive pairs on the list. This random assignment of ranked pairs should yield theoretically equivalent experimental and control groups on "potential-drop-outness". Only students in the experimental group were identified to the counselor. The control group in each counselor's case load was not identified as "potential-drop-outs".

C. Treatment

The three cooperating counselors agreed to provide the following counseling services:

1. Attempt to establish and maintain regular contact with identified students. (It was suggested that a minimum of three attempts to contact each student be initiated, if contact had not been voluntarily provided by the student.)

2. Hold a minimum of three counseling sessions with each student.

3. Utilize all resources of the college to assist the student to stay in college. Examples of such assistance may be: intensive counseling, assistance in applying for financial aid, arranging for tutoring, participating in encounter groups, attending career planning courses, using the learning laboratory, assisting in finding work, planning life goals, and other similar efforts to meet individual needs. The counselor endeavored to insure that each student was informed about and encouraged to use all sources of assistance available through the college. Students were not to be told they were part of an experimental counseling study, unless they pressed the question.

4. The use of "student counselor aids" was an open option. If they were to be utilized to help bring the students into contact with the counselor, then a record would be kept of whom they see and information gathered concerning what they do.

D. Collection and Preparation of the Data

All first-time full-time students were asked to complete the NOR CAL survey when they come to their pre-registration counseling appointment. All the surveys were machine scored. Those students with attrition scores of +10 or more were randomly assigned to one of the three groups described under "Selection of Participants". Some students came for counseling, but did not enroll. Since these students never enrolled, they were not included in the analysis of results. The students who came for counseling, but did not enroll were, however, included in the 192 subjects who were randomly assigned to the three groups of 50 assigned to the experimental counselors and the 42 assigned to other counselors. The reason for different sample sizes shown in Table 1 is a result of the failure of all counseled students to enroll even though they came for counseling.

San Jose City College

Table 1

Retention Rate and Reenrollment Rate

Group	N	Fall Semester: Withdrew	Persisted	Retention Rate	Z Value	Spring Semester: Reenrolled	Withdrew	Reenrollment Rate	Z Value
E1	23	6	17	73.9%		17	6	73.9%	***
C1	20	5	15	75.0%	0.08	11	9	55.0%	1.30
E2	23	5	18	78.3%		15	8	65.2%	***
C2	20	5	15	75.0%	0.25	9	11	45.0%	1.33
E3	22	2	20	90.9%		16	6	72.7%	
C3	20	4	16	80.0%	1.01*	14	6	70.0%	.10
ET	68	13	55	80.9%		48	20	70.6%	***
CT	60	14	46	76.7%	0.58	34	26	56.7%	1.49
C4	38	8	30	78.9%		27	11	71.1%	***
CT	60	14	46	76.7%	0.26	34	26	56.7%	1.31

*p < .16
**p < .12
***p < .10

Results and Discussion

The criteria used for evaluating the effect of special counseling were grade point average, units attempted, units completed, remaining enrolled throughout the fall semester, and reenrolling for spring semester. No significant differences were found among the experimental and control groups for grade point average, units attempted, or units completed.

The value of identifying potential drop-outs is primarily to help students stay in college. The retention rates for fall semester and reenrollment rates for spring semester for all groups is given in Table 1.

While none of these groups differ significantly at the .05 level of significance (using a one-tailed test), there is a clear and consistent trend for the identified students (E1, E2, E3) to stay in college ($p < .14$) and to reenroll ($p < .10$) as compared to the unidentified students in the experimental counselor's case loads. There is also an apparent wide variation among counselors. However, the tempting interpretation that counselors are the cause for the wide difference cannot be made from the present data since the result may be due to something in the assignment of students. Nevertheless, the strict random assignment used reduces the probability of such an argument and more strongly supports the possibility that counselors do vary in their ability to help attrition prone students. The unidentified control group assigned to other counselors shows a retention rate and a reenrollment rate comparable to the combined identified experimental groups. The combined control groups; i.e., students assigned to the experimental counselors but not identified, faired much more poorly in both retention and reenrollment (significant at the .10 level). One explanation for this is that the identified group

may have taken counselor effort away from the unidentified group. On the other hand, the high potential drop-out students assigned to other counselor case loads probably received more attention since counselors are often able to identify students requiring special help. Counselors having fewer such students to work with enabled them to devote more attention to them.

The retention rate found for the control groups calls into question the validity of the NOR CAL survey for identifying attrition prone students. The drop-out rate for the controls, who received no special treatment, is comparable to the college as a whole; i.e., any randomly selected group would have a similar drop-out rate. San Jose City College did not use placement test scores as part of the prediction formula because prediction weights for the placement test used at San Jose City College were not developed during initial phases of the Nor Cal study. The value of just the survey items for identifying dropouts seems negligible in the current study.[1]

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[1] If it is assumed that the attrition rate of the control group (23.7%) is the same as that of all potential dropouts, then something may have happened to reduce attrition rate at San Jose City College between the 1969-70 academic year and the 1970-71 academic year. The chapter in this paper entitled, "Further Validation of the Nor Cal Questionnaire" shows that the questionnaire was valid for San Jose City College freshmen during the 1969-70 school year. The significant reduction in the attrition rate from Fall 1969 (31.2%) to the control group 1970 (23.7%) [$Z = 1.16$ and $p < .13$] indicates the strong possibility of an intervening variable that may operate campus-wide to produce the reduced attrition rate. Thus one would expect the change in +10 attrition rate from Fall 1969 (31.2%) to control group Fall 1970 (23.7%) to not happen by chance 8.7 times out of 10. In any event, there may be an as yet unidentified variable that has operated to reduce the total 1970 control group's attrition rate.

San Jose City College

The experimental counselors felt they were hampered in being effective due to the late arrival of the list of potential dropouts. They also experienced difficulty in contacting the students who failed to respond to written requests to visit them. Further, they felt that minority students who may be attrition prone were not adequately identified by the survey; indeed, they early questioned the validity of the survey in identifying attrition prone students, after they have interviewed several of the experimental students. The results of the study suggests their impressions were accurate in suspecting low validity for San Jose City College of the NOR CAL survey instrument.[2]

Grades, units attempted, and units completed apparently were not factors associated with students staying in college for these groups. The experimental counselors had no opportunity to adjust units attempted or the kind of classes taken (which may have affected grade point average) because the students were identified after enrollment. It is probably fair to say that too much was "set" before the counselor was made aware of the potentially attrition proneness. Considering the apparent validity of the scale, however, it is probably best they did not know.

Recommendations

Attrition prediction depends at least on two general classes of events.

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[2]There is also a possibility that the "negative perceptive set" held by the counselors at the beginning of the experiment may have invludenced the outcome. But this would still not explain the "lower" attrition rate of the 1970 control groups. The accuracy of counselor's estimates might prove interesting to investigate. This kind of study has not been done recently.

One class of events are nonexistent or unknown prior to enrollment and, therefore, are unavailable as aids for prediction. Consider for example such things as a change in work schedule, envolvement in an accident, discouragement, end of a love affair, death of someone close, or a serious family difficulty which results in a student dropping out. Another class of events relate to what might be termed predisposing factors which do exist when the student enters college. Such factors as interest in attending, distance to travel, need for financial assistance, desire for a college education, and attitude of parents may be involved which may ultimately result in withdrawal. These factors may lend themselves to a degree of measurements. Most studies of attrition seem to assume that the predisposing factors account for most dropouts, when it may be that unexpected or previously nonexistent events really account for most attrition or at least enough to significantly reduce the feasibility of prediction.[3] It may be that existing predisposing factors are different for various colleges and/or categories of students within the college. If such were the case one set of items might be used to identify the factors, but they would be individually weighted for different colleges and/or categories of students.[4]

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[3]Phase 2 primary validation yielded empirical validity of between .65 and .67. One hypothesis as to why the validity is not perfect; i.e., not 1.0, is that "unexpected or previously unknown" events account for some attrition. Given that instruments measure the predisposing factors, the .65 level of predictive validity may be about as high as any instrument can reach.

[4]A goal of the Three-Year consortium-level Attrition Study was the encouragement of exactly this kind of individual college committment to research efforts designed to help attrition-prone students.

In any event if there were sufficient validity in an instrument to identify a potential dropout then the counselor would be greatly aided by knowing about the attrition proneness at the time of the pre-registration counseling appointment. The counselor should know, as well, specifically what factors about the student indicated the attrition proneness.

It is strongly recommended that the feasibility of prediction be further investigated; that local factors be identified (possibly by category of students); and if there is shown a sufficiently valid base for identifying potential dropouts, that the information be made available for counseling prior to the first enrollment; and that the factors which suggest potential for drop-out be reported to counselors for possible direct action.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SANTA BARBARA CITY COLLEGE[1]

by

Dr. Thomas F. MacMillan
Director of Research and Development

Background

For three years, a consortium of 22 Northern California Community Colleges have been conducting a cooperative study which was designed, in three phases, to:

1) Describe the characteristics of withdrawing students who discontinue their enrollment within one semester of college entrance;

2) Develop and validate an instrument for identification of students with high dropout liability;

3) Conduct experimental treatments for potential dropouts and observe whether the experimental treatment has an impact on attrition.

The first two phases of the project were completed with acceptable empirical validity to justify the experimental phase: overall, 65% of the 16,488 students in the 22 colleges for whom discriminant scores had been derived were correctly identified as "persisters" or "dropouts" by the model. The reports of Phase 1

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[1]Separately entitled, "A Follow-Up of Potential Dropout Students at SBCC - Fall, 1970," Office of Research memo 2-71.

and Phase 2 have been completed elsewhere, but some of the central findings of the study were that:

1) Ability is the key factor in the prediction of attrition, when grouped by sex; low ability males are three times likelier to withdraw than low ability females.

2) The potential dropout is likely to have less perceived parental encouragement for college.

3) The potential dropout shows a lower sense of importance of college to him.

4) The potential dropout is likely to have lower educational aspirations than the persister. (MacMillan, 1970, p. 8)

Santa Barbara City College was not a participating college during Phase 1 and Phase 2 of the project, but the NORCAL instrument was administered to all students filing an application for admission from the local high schools during the Spring, 1970. The intent of the Santa Barbara City College study was fourfold:

1) To obtain descriptive data on the potential new students from local high schools for the Fall, 1970 semester.

2) To identify students with high dropout potential among the new students applying for admission from the local high schools.

3) To observe the attrition pattern among new students in the sample.

4) To observe the achievement characteristics of the high dropout potential sample.

The Sample

A total of 554 students filed applications for admission from Santa Barbara, San Marcos, Dos Pueblos, Bishop Garcia Diego, and Carpinteria high schools and completed the NORCAL questionnaire as part of the admissions process. Since the test data were not available at the time the NORCAL questionnaire was completed, it was not possible to include the measure of ability in generating the

discriminant score to identify potential dropouts. In the larger study, an empirical validity of .67 had been reported for four schools which required no test for admission (67% of the sample had been identified correctly as persisters or dropouts). Thus, it seemed reasonable to generate discriminant scores even with no test data available. The central elements in the discriminant score were student responses to four questions. The discriminant scores were derived in such a way that "plus" scores were assumed to be associated with attrition and "minus" scores were associated with persistence. The specific weights associated with the key variables were:

Response	Weighted Score
Importance of College to me	
High	- 3.7
Low	+16.5
No Response	+ .8
Major Goal	
Undecided	+ 5.1
Courses only	+ 3.4
Two-year	+ 4.0
Transfer	- 5.4
Other	+ 2.2
Parental Encouragement	
High	- 3.7
Low	+ 3.1

In each case, a discriminant score was generated by taking the algebraic sum of the weighted scores for all responses: thus, for example, a theoretical maximum of 24.7 would exist if a student felt low importance of college, low parental encouragement, and was undecided about his goal. A theoretical score of -12.8 would be obtained by a student with high encouragement, high sense of importance of college, and a transfer goal.

To be certain that the scores would be sufficiently discriminating, it was

decided that only those students with scores of +10 or more would be considered "high liability" potential dropouts.

Findings: Description of the Total Sample

The response of the total sample of 544 students is given below for each of the questions in the NOR CAL questionnaire. As a point of reference, the responses for the entire 1969 NOR CAL sample are shown for comparison.

Question 1. What is your Race?

	SBCC		Total 1969 Sample	
	N	Percent	N	Percent
Caucasian	444	80.1%	15,531	73.31%
Spanish Surname	67	12.1%	1,122	5.29%
Black	9	1.6%	1,020	4.82%
Oriental	5	.9%	1,316	6.21%
Other	14	2.5%	540	2.47%
No Response	15	2.7%	1,654	7.80%

Comment: The proportion of Spanish surnamed students in the sample is almost double the existing proportion of Spanish surnamed students enrolled at SBCC. The recruiting efforts of MECHA have improved during the 1969-70 academic year, and, although the actual proportion of minority students at SBCC was lower during the Fall, 1970 semester, as compared with Fall, 1969, the number of new students of Spanish surname may reflect the impact of the recruiting activity.

Question 2. If you are now employed, will you keep your job?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Yes	310	56.0%	8861	41.83%
No	31	5.6%	3024	14.27%
Not Employed	180	32.4%	8371	39.52%
No Response	33	6.0%	927	4.38%

Santa Barbara City College

Question 3. If employed, is your job related to your college major?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Yes	54	9.70%	1928	9.10%
No	285	51.40%	9803	46.28%
Not Employed	174	31.40%	8017	37.84%
No Response	41	7.40	1435	6.78%

Comment:

The two questions related to student plans for employment are of particular interest since SBCC is now considering a Cooperative Work Experience program, and has already established two smaller programs in which the aim is to obtain employment for students related to their majors. The data seem to suggest that, although 56% of the students will work, only 9.70% will be employed in jobs related to their major. Perhaps a vigorous work experience program will have an impact on these statistics.

Question 4. Will you need financial aid to remain in college?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Yes	133	24.0%	4,477	21.13%
No	357	64.4%	14,942	70.53%
No Response	64	11.6%	1,764	8.34%

Question 5. How would you characterize the occupation of the principal wage earner in your family?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Unemployed	20	3.6%	405	1.92%
Unskilled	36	6.5%	1941	9.16%
Semi-skilled	74	13.4%	3412	16.11%
Skilled	135	24.4%	5730	27.05%
Managerial	104	18.8%	4495	21.32%
Professional	151	27.3%	3981	18.79%
No Response	34	6.1%	1219	5.75%

Santa Barbara City College

Comment:

As an index of financial need of new students, the two questions above seem to be a reasonable basis for judgment. A slightly greater proportion of SBCC students reported financial need than in the 1969 NOR CAL sample, and 23.5% of the SBCC students indicated that the major wage earners were semi-skilled, unskilled, or unemployed. At the same time, 27.3% locally reported "Professional" heads of households, as compared with 18.79% for the whole sample. These data seem to confirm the bi-modal distribution of wealth in Santa Barbara. The problem of serving such a diverse cross section of socio-economic status is a constant one for the community college.

Question 6. What is your goal for college?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Undecided	75	13.5%	1,961	9.25%
Courses only	25	4.5%	888	4.19%
Voc tech only	54	9.7%	2,725	12.89%
AA Degree only	28	5.1%	1,102	5.20%
AA and Voc tech	56	10.1%	2,650	12.51%
Transfer	312	56.3%	11,103	52.41%

Question 7. Which of the following people would you rely on most for advice about school or job plans?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
No one	23	4.2%	959	4.82%
Father	155	28.0%	4,739	22.37%
Mother	61	11.0%	1,956	9.23%
Teacher	36	6.5%	1,493	7.05%
Counselor	207	37.4%	8,416	39.73%
Brother/Sister	28	5.1%	952	4.50%
Pals	16	2.9%	863	4.07%
Other	19	3.4%	851	4.02%
No Response	9	1.6%	954	4.51%

Santa Barbara City College

Comment:

The pattern of decision making, and the central role of the counselor in assisting in the decision making process, are clearly indicated in the two questions above. The finding that counselors tend to be regarded as the most significant source of advice was something of a surprise, but has been consistent through Phase III as well as in Phase II.

Question 8. How important is it to your father that you go to college?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Not Important	33	6.0%	1,627	7.68%
Somewhat Important	94	17.0%	3,239	15.29%
Quite Important	187	33.8%	6,661	31.44%
Extremely Important	196	35.4%	7,316	34.53%
No Response	44	7.9%	2,340	11.06%

Question 9. How important is it to your mother that you go to college?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Not Important	16	2.9%	1,050	4.96%
Somewhat Important	98	17.7%	3,071	14.49%
Quite Important	196	35.4%	7,205	34.01%
Extremely Important	221	39.9%	8,196	38.69%
No Response	23	4.2%	1,661	7.85%

Question 10. How important is college to you?

	SBCC		Total 1969 Sample	
Response	N	Percent	N	Percent
Not Very Important	6	1.1%	295	1.40%
Somewhat Important	81	14.6%	1,901	8.97%
Quite Important	204	36.8%	6,965	32.88%
Extremely Important	249	44.9%	11,038	52.11%
No Response	14	2.5%	984	4.64%

Comment:

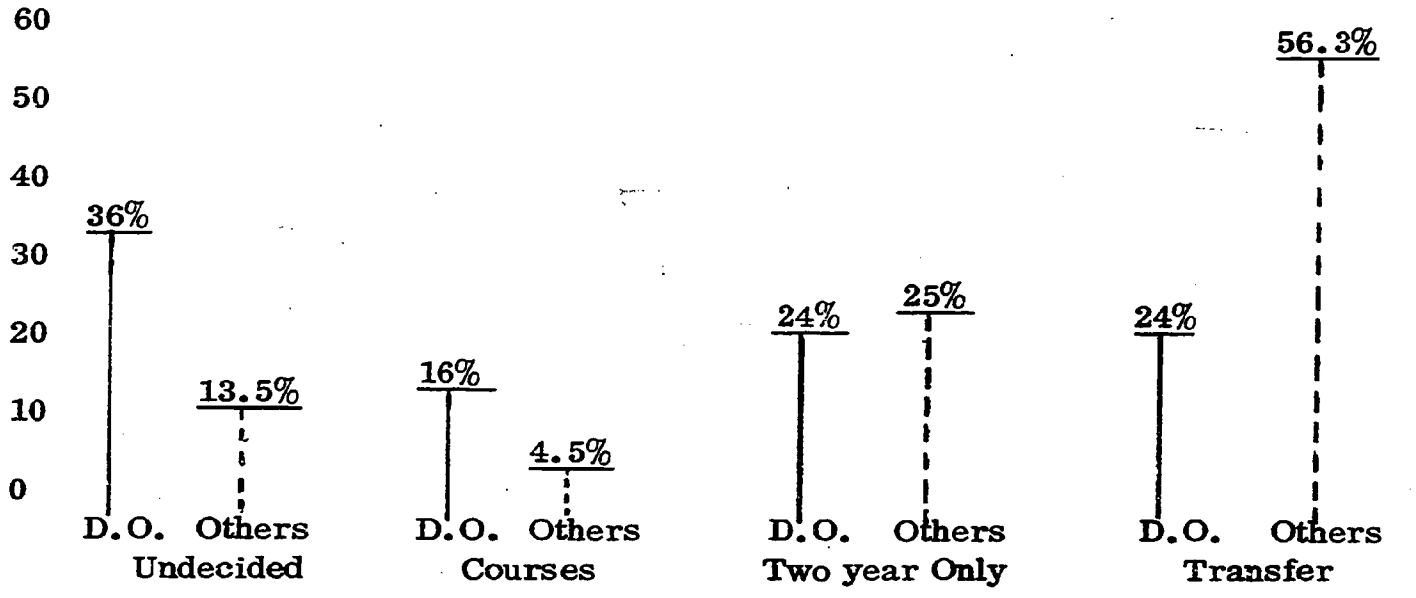
The three questions related to importance of college are central in the assessment of the affective tone of expectation which a student brings to college

with him. The difference between a "Quite" or "Extremely" important response and a lesser response will be shown below as the high dropout potential sample is compared with the total SBCC sample. The evidence suggests that the critical importance of a supportive and positive expectation for college cannot be over-estimated.

The findings: High Liability (potential dropouts) vs the total sample

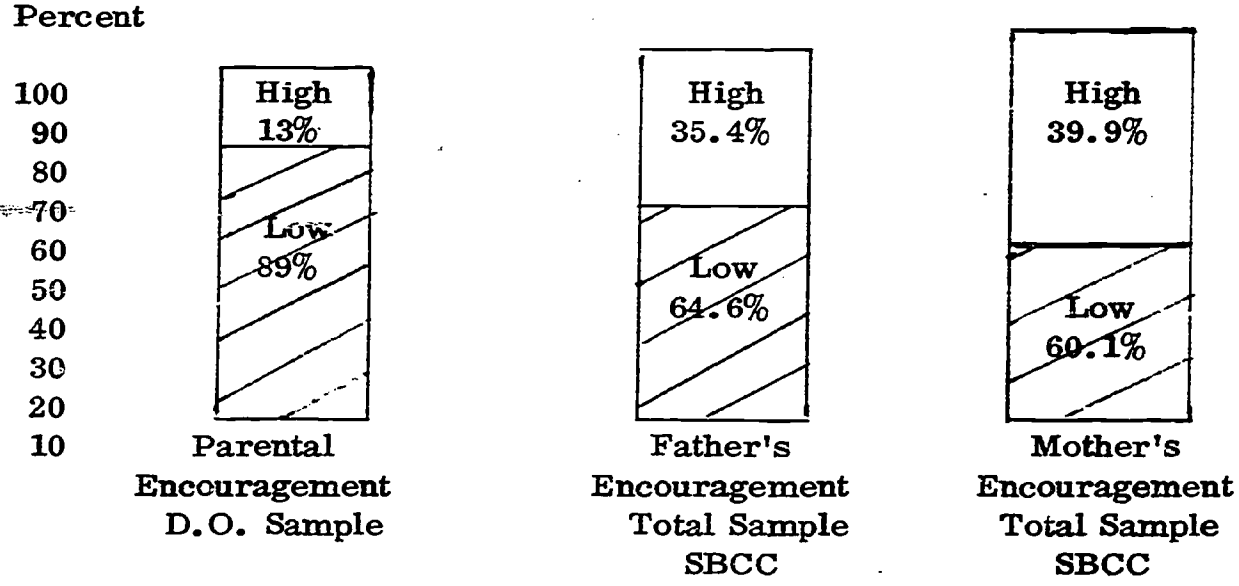
Using the discriminant scoring method described above, 78 entering students were identified as being potential dropouts from SBCC according to their responses during the admissions process. To illustrate the difference between the attitudes and expectations of these students, their responses to three critical questions were compared with the total college sample.

Comparison 1: Goal for College

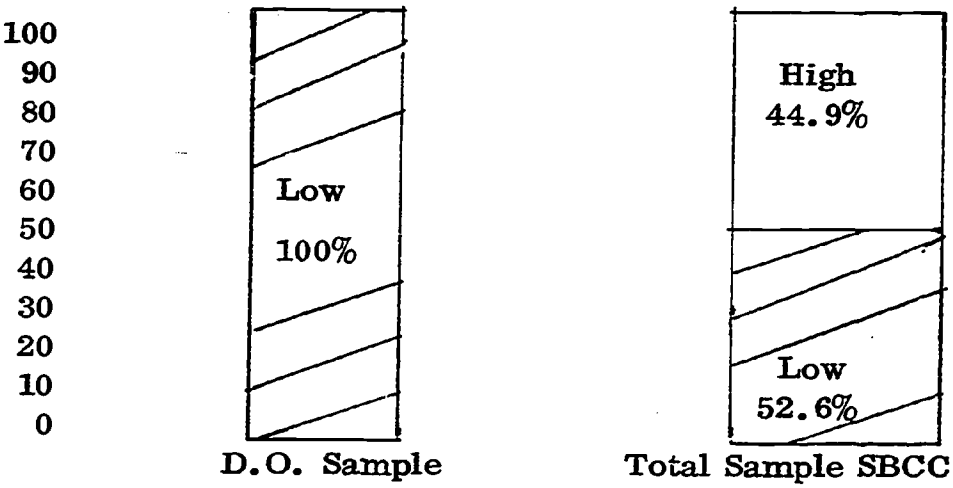


*"No Response" was not compared.

Comparison 2: Parental Encouragement



Comparison 3: Importance of College to me.



Comment:

The emotional climate of the potential dropout is clearly indicated by the three comparisons above. NOT ONE potential dropout felt college was important to him; over twice the parental encouragement was found for the total sample as for the potential droputs; over twice the total sample was seeking a transfer goal, while over twice the proportion of potential droputs was undecided about a major.

The comparisons should be no surprise, since the model was based on the pattern of responses shown above for potential dropouts. However, the difference between the groups is perhaps more clearly emphasized in the graphic representations above than in the abstract form of the discriminant score model.

The Follow-up of Potential Dropouts

The 78 students who were identified as potential dropouts were followed into and through the fall, 1970 Semester at SBCC. Since this study was primarily a validation study, as opposed to experimental, no attempt was made to provide special services to these students. The intent was to observe whether a greater proportion of these students would withdraw from college than the average of 7.47% attrition found in the 1968 sample of NOR CAL Colleges (MacMillan, 1969). The first analysis of follow-up data is given below.

Entrance, Persistence and Performance of
78 Potential Dropouts, Fall 1970

Status	N	Percent	Percent of Entering
Completed 12 or more units	20	25%	40%
Completed 6.5 - 11.5 units	11	14%	23%
Completed 1.0 - 6.0 units	11	14%	23%
Withdrew	7	10%	14%
Never entered SBCC	29	37%	-

The figures above show that over a third of the students with the characteristics of potential dropouts did not even enter Santa Barbara City College. Fourteen percent of those who did enter withdrew before completing the semester. In addition, seven of the 49 entering students were on probation at the end of the Fall, 1970 semester. All totalled, 55 percent of the high risk students either failed to enter at all, withdrew, or were on academic probation by the end of their

first semester.

One of the key variables in the study of attrition is the measured academic aptitude of students. To assess the pattern of ability and performance among the 42 students who completed the semester, comparisons were made of grade point average and SCAT total scores for each sub-group of students. The comparison is given below.

Sample Sizes, Mean GPAs and Mean SCAT Total Scores for 42 Persisting Students with High Dropout Potential

Category	N	SCAT T Mean Score	Mean GPA
Completed 12.5 or more units (Not on Probation)	19	56.60%ile	2.63
Completed 12.5 or more units (On Probation)	1	84.00%ile	1.85
Completed 6 to 12 units (Not on Probation)	8	35.86%ile	2.34
Completed 6 to 12 units (On Probation)	3	52.00%ile	1.77
Completed 6 or fewer units (Not on Probation)	8	24.80%ile	2.66
Completed 6 or fewer units (On Probation)	3	17.00%ile	1.49
Mean SCAT Total Score all not on probation:		45.33%ile	
Mean SCAT Total Score all on probation:		40.00%ile	

While the case is not made as convincingly as it could be, because of the small sample sizes among the probationary students, the general relationship between measured academic aptitude and number of units completed is shown in the

above presentation: The mean percentile ranks for the three non-probation groups were 56.60, 35.86, and 24.80, with each lower measured academic aptitude corresponding to fewer units completed.

The complexity of the attitude-aptitude relationship is also suggested in the data. Although all of these students had the attitude or expectation pattern associated with attrition, those with the higher academic aptitudes seemed to persist with full academic loads, even without special support services.

Toward Experimental Designs

The findings of the NOR CAL study at SBCC suggest that potential dropouts can be identified early so that special services can be provided them as necessary and appropriate. Of the total sample of students with high dropout potential, 55% were on probation, withdrew, or never entered SBCC in the Fall, 1970. Of the remaining 45%, the highest ability had generally completed a full academic load with satisfactory marks.

A number of specific suggestions for meeting the needs of potential dropouts have already been suggested by the research office (Research Office Memo 7-70). Among the experimental treatments that seem to have shown promise on campus are:

1) direct financial aids for students
2) recruitment
3) tutorial services
4) summer readiness program

While any one or all of these may be useful as treatment variables for the stu-

dents who are identified as potential dropouts, there is an apparent need for the identification to take place early enough for some of the services to be performed. For example, none of the 49 students received tutorial assistance in the tutorial center, although they might have if earlier referral had taken place. As another example, only 5 of the 49 students took Psych 29, 30 or 33, any one of which might have been responsive to a particular need.

The importance of this preliminary study was to show the usefulness of the NOR CAL model in a school not originally included in the 22 college sample. As indicated above, no attempt was made to conduct deliberate experimentation with the potential dropouts. The data seem to suggest that such experimentation would be useful in the future, and that it would be possible using the same model as that used in the larger NOR CAL study to identify the potential dropout.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SHASTA COLLEGE

by

Mr. Walter Brooks
Director of Institutional Research

Purpose of the Study

The general purpose of the cooperative Nor Cal Project is to reduce the withdrawal rate of first-time college freshmen. The specific purpose of the Shasta College Project is to develop a minimum treatment model for reducing dropouts. Cooperating colleges in the project have various treatment models. It is important to know for future planning how elaborate the treatment must be to be effective in reducing the withdrawal rate. Shasta College has, therefore, developed a simple treatment model which may be compared with more elaborate models.

Procedure

The Nor Cal Questionnaire was administered to all first-time freshmen in college orientation classes during the first week of classes of the fall semester (September 15-17, 1970). All students receiving a score of +10 or higher on the ...al pre-enrollment questionnaire were included in the study group. A score

of +10 on the Nor Cal questionnaire was the agreed upon operational definition of the dropout-prone student. In all, 112 students with scores of +10 or higher were identified among entering freshmen completing the Nor Cal questionnaire. Students identified as dropout-prone were randomly assigned to treatment and control conditions. Two groups of 56 were identified.

A check of the gross characteristics of the two groups indicated that they did not differ significantly on variables likely to affect the experimental procedure. The male-female ratio was virtually the same in the two groups. The two groups enrolled for approximately the same number of college units. Registration dates of the students did not significantly differ. The students from both groups were assigned to all members of the counseling staff in roughly equal proportions.

Students assigned to the treatment group were mailed the following letter at their local address on Friday, September 25, 1970:

"Dear _____

> Will you please stop by to see me in the counseling office to discuss your college course work and educational plans. I will be available and reserve time for you on (Appointment Date) _____ if this date and time is convenient for you. If the hour is not convenient, would you please call or stop by and see me in the counseling office to arrange another time."

_____

(Counselor's Signature)

Students in the treatment group were invited to come to the counseling office between September 28 and October 2. Students assigned to the control group received no such letter. In fact, the counseling staff of the college was not told the names of the students identified as belonging to the control group. The names

were known only to the research assistant who mailed the letters. While the students in the control condition received no special treatment, the normal services of the counseling office and other student services certainly remained available to them. The great majority of students who were invited to visit their counselor did so. It should be noted that dropout-prone students were quite well distributed as counselees among members of the college counseling staff. All seven members of the counseling staff of the college had counselees who were assigned to the treatment group and the control group.

All but 11 of the 56 students assigned to the treatment group took advantage of the invitation to see their counselor. (Three students in the treatment group had withdrawn from college between the time they took the pre-enrollment questionnaire and the implementation of the treatment condition. These students were included in the treatment group since they were sent the letter inviting them to see their counselor.) When the student appeared for his appointment with the counselor, the counselor began with a semi-standardized and structed interview. Each counselor was asked to tell the student frankly that he had been identified as a student who was likely to withdraw from college. The student was assured that the indication that he would drop out was a statistical phenomenon and was by no means predictable in his particular case. The counselor was asked to review student services offered at the college and to inquire about any specific difficulty that the student might be facing. The counselor was encouraged to deal with problems identified in the interview as he would with the problems of any student who asked for such help on his own. Where a specific service such as tutorial assistance, financial aids, class or objective changes, or a specialized remedial

class was indicated, the counselor assisted the student in meeting the need.

Results

One of the difficulties of determining the effects of this or any other educational service is deciding when to monitor the effects of the service. Any procedure which is introduced to reduce withdrawals among a group of students must necessarily be observed over an extended period of time. We are therefore reporting the latest available data in this paper while remaining fully aware that any measure occurring this soon after the interviews can be no final statement of the differential effect. The study was designed to look at differences in the treatment and control students in terms of withdrawals from college, units completed, and grade point average. The following results were obtained on measures of these characteristics:

Table 1
Reenrollment of Potential Dropouts - February 2, 1971

	Experimental Group	Control Group
Reenrolled	45	39
Withdrew	11	17
Total	56	56
Reenrollment Rate	80.4%	69.6%

$Z = 2.35$
$p < .01$

The above table indicates that reenrollment for the treatment group was greater than for the control group. This difference of six proved to be significant. ($p < .01$) Differences between treatment and control have tended to increase as time passes. A look at the persistence rate in April of the spring semester for

all entering freshmen demonstrates this widening difference.

Table 2
Persistence of Fall, 1970 Entering Freshmen
as of April 15, 1971

	Experimental Group	Control Group	All Students Under +10
Withdrew	12	20	217
Persisted	44	36	797
Total	56	56	1014
Attrition Rate	21.4%	35.7%	21.4%

$X^2 = 6.78$
$p < .01$

Of course, these same data can be compared pair-wise. When this is done, the following results are obtained:

Table 3
Attrition Rate

	Experimental Group	Control Group
Withdrew	12	20
Persisted	44	36
Total	56	56
Attrition Rate	21.4%	35.7%

$Z = 1.68$
$p < .05$

Table 4
Attrition Rate

	Experimental Group	All Students Under +10
Withdrew	12	217
Persisted	44	797
Total	56	1014
Attrition Rate	21.4%	21.4%

$Z = 0$
no significant difference

Table 5
Attrition Rate

	All Others	Control Group "+10" Potential Dropouts Untreated
Withdrew	229	20
Persisted	841	36
Total	1070	56
Attrition Rate	21.4%	35.7%

$Z = 2.51$
$p < .01$

It can be seen from the data presented above that the students identified in the treatment group persisted at a greater rate through April 15 than students in the control group. In fact, the persistence rate for treatment +10 students and students under +10 on the preenrollment questionnaire is identical. A chi square significance test was computed using as the expected frequency of withdrawal the 21.4% rate found among under +10 students. Students in the treatment group did not differ at all from the general student in persistence, while the control group differed significantly ($X^2 = 6.78$, $p < .01$) The Z tests further confirm these conclusions, but especially the conclusion that the experimental potential dropout rate was reduced so as to be less than that of the control group ($p < .05$) and not different from the rate among all students scoring below +10.

Table 6
Grade Point Average of Experimental and Control Groups (GPA Including Dropouts).

	Experimental Group	Control Group
Mean	1.59	1.67

T is not significant

As can be seen from Table 6, no significant difference existed in GPA

between students assigned to treatment and control conditions at the end of the fall semester in January. Students in the control group, on the average, completed more units. The slight advantage in grade point average and units completed held at the end of the fall semester by the control group is not significant. It should be noted here that the persistence data described in Tables 2, 3, 4, and 5, which does show a significant difference, is as of the middle of April, a much later measurement than the GPA measurement.

Conclusion

A treatment model requiring a minimum of staff time and cost can have a significant affect on the persistence of potential dropout students. The Nor Cal questionnaire has proven to be a useful tool in identifying students likely to withdraw from college. It is recommended that the questionnaire be administered as a part of the college orientation program at Shasta College, and that students identified as potential dropouts be dealt with in the manner indicated in the study.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SIERRA COLLEGE

by

Mr. Martin Taylor
Dean of Student Personnel

Prior to the beginning of the fall, 1970, semester, each first-time freshman completed the NOR CAL questionnaire. From this group of students, those high-risk students likely to drop out during the first semester were identified by listing all those with weighted predictive scores of +10 or higher. These were randomly assigned to experimental and control groups.

Experimental Treatment

Of the full-time freshmen group, twenty-two experimental students received personal letters from the counseling center and were seen there from one to eight times in individual interviews. The twenty-nine control students were not so treated, nor were they identified to the counseling staff.

Results

The difference in grade point average for the experimental group exceeded

that of the control group by .25 of a grade point, a value significant at the .07 level of confidence.

Table 1
Grade Point Average (Excluding Dropouts)

	Experimental Group Counseling	Control Group No Counseling
Mean	2.6354	2.3824
N	22	29

T = 1.52
p < .07

The difference in reenrollment rate in the spring semester also favored the experimental group at the .10 level.

Table 2
Reenrollment

	Experimental Group Counseling	Control Group No Counseling
Reenrolled	21	24
Withdrew	1	5
Total	22	29
Reenrollment Rate	95.5%	82.7%

Z = 1.39
p < .10

When all students in the high risk group, including those attending less than full time, were included, a sample experimental group of forty-one was obtained and a control group of seventy-nine. Statistical analysis of these two groups indicated a grade point average difference of .25 of a grade point in favor of the experimental group, a figure significant at the .05 level of confidence.

Table 3
Grade Point Average (Excluding Dropouts)

	Experimental Group Counseling	Control Group No Counseling
Mean	2.3672	2.1184
N	41	79

T = 1.67
p < .05

Comments

In addition to the experimental data with the groups reported above, an examination of other data was sufficiently provocative to justify comment. It is important to note that the rate of honors students (3.00 GPA or higher) was more than three times as high in the experimental as in the control group of full-time freshmen, 31.8 percent versus 10.3 percent, a figure significant at the .03 level.

Table 4
"Honor Student" Rate

	Experimental Group Counseling	Control Group No Counseling
Honor Students	7	3
Other	15	26
Total	22	29
"Honor" Rate	31.8%	10.3%

Z = 1.92
p < .03

Another interesting group of statistics relates to those students enrolled in Counseling 70 (Interpersonal Relations) and 75 (Study Skills). Among the total high risk group (Full time and part time), the reenrollment rate the following semester for students enrolled in either class was significantly higher (p < .01). Final

GPA was also significantly superior for those enrolled (.01 level for those in Counseling 75, and .05 level in Counseling 70).

Table 5
Attrition

	Experimental Group Psychology 70	Control Group No Psychology 70
Withdrew	4	15
Persisted	39	78
Total	43	93
Attrition Rate	9.30%	16.1%

$Z = 1.07$
$p < .15$

Table 6
Reenrollment

	Experimental Group Psychology 70	Control Group No Psychology 70
Reenrolled	26	36
Withdrew	17	57
Total	43	93
Reenrollment Rate	60.5%	38.7%

$Z = 2.37$
$p < .01$

Table 7
Grade Point Average (Excluding Dropouts)

	Experimental Group Psychology 70	Control Group No Psychology 70
Mean	2.3672	2.1309

$T = 1.70$
$p < .05$

Table 8
Units Completed

	Experimental Group Psychology 70	Control Group No Psychology 70
Mean	10.3721	8.1398

T = 1.67
p < .05

Table 9
Attrition Rate

	Experimental Group Psychology 75	Control Group No Psychology 75
Withdrew	4	15
Persisted	38	78
Total	42	93
Attrition Rate	9.5%	16.1%

Z = 1.02
p < .15

Table 10
Reenrollment Rate

	Experimental Group Psychology 75	Control Group No Psychology 75
Reenrolled	26	36
Withdrew	16	57
Total	42	93
Reenrollment Rate	61.9%	38.7%

Z = 2.50
p < .01

Table 11
Grade Point Average (Excluding Dropouts)

	Experimental Group Psychology 75	Control Group No Psychology 75
Mean	2.3468	2.1309

T = 1.55
p < .10

Table 12
Units Completed

	Experimental Group Psychology 75	Control Group No Psychology 75
Mean	10.2857	8.1398

T = 1.58
p < .08

Since the enrollment in these two courses was voluntary and not randomized, however, these significant figures may indeed arise from original motivational differences between the two groups rather than from the subsequent exposure to these guidance courses.

Conclusions

It would appear that identification of the high risk students to the counselors and the requiring of even a minimal number of counseling contacts early in the semester does result in improved grade point average and retention into the second semester for the full-time students and improved grade point average even for the part-time students. There is, also, some evidence to suggest that enrollment in two of our guidance courses (Counseling 70 or 75) may be related to retention and higher grade point average for such students.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

SOLANO COLLEGE

by

Mr. Dean Eaton
Registrar

The Nor Cal Research group has developed and validated an instrument designed to predict which students are most likely to drop-out of college during their first semester. The previous research has indicated that with 65% accuracy, it is possible to predict which students will and will not complete the semester.

The school year 1970-71 was the first year that Solano College participated in administering the Nor Cal questionnaire to its entering freshman class. Because of this being the initial year the objective of the study was to validate the instrument on Solano students.

Students who were first-time, full-time students with a score of +10 or greater were placed in one sample and -10 or greater in another sample. For statistical purposes, the groups were made numerically equivalent at 47 students each.

The data from the following tables indicate that when using Nor Cal questionnaires with Solano College students you can predict which of our students will

not complete the semester. There is a significant difference between the two groups in attrition, reenrollment, number of units completed, and grade point average.

Table 1
Attrition Rate - Fall Semester

	Sum 1 Score	
	-10 and below	+10 and above
Withdrew	1	11
Persisted	46	36
Total	47	47
Attrition Rate	2.1%	23.4%

$Z = 3.09$
$p < .001$

Table 2
Attrition Rate - Spring Semester

	Sum 1 Score	
	-10 and below	+10 and above
Withdrew	6	19
Persisted	41	28
Total	47	47
Attrition Rate	12.8%	40.4%

$Z = 3.03$
$p < .0013$

Table 3
Reenrollment Rate Betwen Fall and Spring Semesters

	Sum 1 Score	
	-10 and below	+10 and above
Reenrolled	41	30
Did not reenroll	6	17
Total	47	47
Reenrollment Rate	87.2%	63.8%

$Z = 2.64$
$p < .025$

Solano College

Table 4
Units Completed - Fall Semester

	Sum 1 Score	
	-10 and below	+10 and above
Mean	13.01	7.75
Standard Deviation	4.10	5.77

T = 5.11
p < .005

Table 5
Units Completed - Spring Semester

	Sum 1 Score	
	-10 and below	+10 and above
Mean	11.88	5.80
Standard Deviation	5.13	5.88

T = 5.33
p < .005

Table 6
Grade Point Average - (Including Dropouts)

	Sum 1 Score	
	-10 and below	+10 and above
Mean	2.31	1.16
Standard Deviation	1.03	1.20

T = 5.01
p < .005

Table 7
Grade Point Average - (Excluding Dropouts)

	Sum 1 Score	
	-10 and below	+10 and above
Mean	2.59	2.07
Standard Deviation	.69	.82

T = 2.86
p < .005

In conclusion it is recommended that in the school year 1971-72 the entering full-time, first-time freshmen be given the Nor Cal questionnaire. From this identification will be made of the high risk students. This should be followed by experimentation to see if it is possible to find an effective holding-power program.

NOR CAL ATTRITION STUDY
PHASE 3 FINAL REPORT

INDIVIDUAL COLLEGE REPORT
FOR

YUBA COLLEGE

by

Mr. Elbert Miller
Dean of Counseling and Records

In the Spring of 1970 the NOR CAL Questionnaire was administered to 821 students. The questionnaire was filled out at our two largest feeder high schools by students who stated that they would probably attend Yuba College the following Fall. At that time the NOR CAL roster indicating "Sum-1 +10" was checked against actual enrollment. Unfortunately for our study, many of the individuals who had planned to come did not, in fact, enroll. NOR CAL scores of +10 or more were entered in the student's personnel folder. A special Counseling Staff meeting was held describing the questionnaire results, and counselors were urged, if the occasion presented itself, to give special attention to these "+10" students. There were 36 such students.

At no time did our use of the NOR CAL scores envisage an experimental design that included a control group. We did anticipate measuring the effects of two treatments other than counseling; namely, financial aids and tutoring. Unfortunately, the numbers involved were so small that the results were insignificant.

Yuba College

Only two students on our NOR CAL "+10" list received financial aid, and while four signed up for tutoring, only two showed up and were actually tutored.

The following table indicates the attrition rate of NOR CAL Sum-1 +10 students compared to all freshmen:

	Potential Dropouts (+10 or Above)	All Other Freshmen (Below +10)
Withdrew	6	136
Persisted	30	1,036
Total	36	1,172
Attrition Rate	16.7%	11.6%

$Z = 0.94$

$p < .17$

One would expect that if the "potential dropout" group went "untreated" this group would have a significantly higher attrition rate than the other group of students. This is the case but only if one accepts the odds of 8.3 out of 10. It must be remembered that at Yuba College the potential dropouts may have been treated since at the special Counseling Staff meeting it was urged that counselors give special attention to the potential dropouts if such a situation presented itself.

Although our findings are inconclusive, it would appear the attempts to identify "high risk" students are valuable even though the effect of treatments like extra counseling were not measurable with this particular group.

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