FACTORS CONDUCIVE TO SUCCESS IN NURSING -

A PREDICTIVE STUDY

A thesis submitted to the Department of Psychology, University of Cape Town, in fulfilment of the requirements for the degree of Master of Social Science in Psychology.

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ABSTRACT

The purpose of this study was to determine which biographical or personality variables might be used as indicators of success or failure in a nurse-training program.

The population consisted of 502 nursing students in various stages of a diploma course at either the Carinus or Otto Duplessis Nursing College during June and July 1980. The students received their practical training at one of ten hospitals in the Western Cape Region.

The students were given the Personal, Home, Social and Formal Relations Questionnaire (PHSF), the IPAT Anxiety Scale and a biographical questionnaire (designed by the researcher). Both the PHSF and IPAT are multiple choice questionnaires.

For the purpose of this study a successful student was one who was rated average or above average in the college as well as the hospital, who enjoyed her work and intended making nursing her profession. An unsuccessful nursing student was one who resigned as a result of not being able to cope, emotional problems and a general dissatisfaction with her job.

After a period of two years, a random sample of 56 unsuc-

cessful students (Experimental group) and 48 successful students (Control group) were drawn and their scores on the questionnaires studied in relation to their success or failure.

Independent variables included scores on the various factors measured by the PHSF and IPAT as well as data from the biographical questionnaire. Dependent variables were success or failure the training program.

Chi-squared (χ^2) tests of association in contingency tables were carried out for each biographical variable. The results of these tests indicate that none of the biographical variables are significantly associated with the success or failure of nursing students.

Stepwise discriminant analysis was used to determine whether there are differences between the Experimental and Control groups in terms of personality variables and to predict which group an aspirant nurse is likely to fall into, on the basis of her scores on the personalityvariables. Four variables, namely Formal Relations, Family Influence, Sociability G and IPAT Anxiety gave rise to an approximate F-statistic of 51,54 which indicates a highly significant discrimination between the Experimental and Control groups. For these four variables the classification functions are as follows : Experimental/ failure group

$$-32{,}57 + 2{,}74\ X_7 + 3{,}13\ X_9 + 1{,}87\ X_{12} + 5{,}32\ X_{14}$$

Control/success group

$$-39,40 + 4,01\ X_7 + 2,35\ X_9 + 3,36\ X_{12} + 4,54\ X_{14}$$

X_7 = (Score on Family Influence)

X_9 = (Score on Sociability G)

X_{12} = (Score on Formal Relations)

X_{14} = (Score on IPAT anxiety)

By substituting a subject's scores for the variables into these functions, it is possible to assign the subject to the group whose classication function yields the larger value.

A classification matrix of the raw data was developed and showed that overall, the classification functions are capable of correctly classifying 91,3% of cases. (89,3% of failure group are classified failure; 93,8% of success group are classified success). The classification functions can therefore be used to predict which group an aspirant nurse will fall into, with a high degree of accuracy.

CONTENTS

CHAPTER 1

THE NATURE OF THE PROBLEM

> "The time is past for perpetuating the notion that because we have managed before, we will manage again. The (nursing) profession as a whole must start to find new ways and means of solving the problem of manpower supply."

Those words uttered by Frances Harrison (Nursing Times, September 18, 1980), sum up the present situation as far as the nursing profession is concerned.

For many years the nursing profession has been burdened by a shortage of nursing staff. The Republic of South Africa has not escaped this trend according to Venter (1981, p. 20) and during 1974, the shortage of nursing staff was so acute that hospitals were obliged to close certain sections as a result of not being able to man the sections with nursing staff.

This tendency still exists and the news media contain frequent reports about hospitals that are compelled to close a section as a result of a manpower shortage. (Venter, 1981, p. 21).

It is/

It is apparent that the fundamental reason is that the nursing posts which exist in the specific hospital are not adequately filled so that the beds cannot be used.

On the 31st December 1978, there was a shortage of 457 White Nursing Sisters and on 31st December 1979, the shortage was 555. This figure escalated to 726 on 31st December 1980. It is therefore apparent that the tempo at which the demand for trained nursing staff increased far surpasses the supply and this critical manpower shortage is reaching more and more serious proportions as time passes by. Harrison claims, " ..... although national unemployment is escalating, and despite the large sums of money being spent on advertising, there is still a shortage of nurses." (Nursing Times, 1980, p. 1648).

There are obviously many factors which contribute to this situation. For one thing, recruitment to the profession is usually done amongst scholars leaving school and there is a decrease in these numbers. Apparently the decreasing birth-rate of the 1960's and the 1970's is at present having the effect of a slightly decreased number of school-leavers among the White scholars. It is however, interesting to note that the present problem has existed for decades. Charlotte Searle (1965, p. 258) explains why there was a shortage forty years ago:

> "Poor working conditions, execessive discipline, long hours of duty, too heavy restrictions on personal free-

freedom/

> freedom, and the extremely low salaries paid to nurses, all contributed to the falling off of nursing recruits and to the continued high wastage of student nurses form the training schools. By 1946, the recruitment position was so poor, that it was very difficult to fill vacancies for student nurses."

It would appear that conditions in the nursing profession at present have not improved very much (Venter, 1981, p. 91). Nursing's poor image according to Harrison, (Nursing Times, 1980, p. 1649) may well account for the poor response to recruitment drives, but according to Venter, (1981, p. 20) shortages in the profession occur mainly as a result of resignations.

According to Searle (Die Burger, 23 July 1981), more than 20% of all White girls who matriculate are drawn to the nursing profession, but they cannot be retained.

The cost of orientation and training programs for new recruits, coupled with the decrease in productivity and effectiveness of such neophytes as compared with trained nurses is difficult to assess.

Vast sums of money, according to Harrison (Nursing Times, 1980, p. 1648) are spent by hospitals to recruit and train nurses. According to a senior spokesman of the Cape Provincial Administration, Department of Hospital Services, the cost of training one general nurse in the Republic of South Africa is appro-

approximately R20,000.

If the problems giving rise to the resignations of nursing staff are not acknowledged and solved, then future hospital services will be hampered. Since there is no evidence to suggest that there will be any decline in the number of persons requiring hospitalization, but rather a continuing increase, and in the light of predictions (Venter, 1981, p.20) that future patient populations will be more seriously ill and will require more intensive treatment, it is urgently necessary for the health authorities to exploit all avenues to maintain an adequate nursing staff. High on the list of priorities is the retention of trained staff. It is therefore important that the factors giving rise to the resignation from the nursing profession be identified and given the necessary attention.

Reasons why nursing students resign can be divided into two groups, namely voluntary or preventable and non-voluntary or non-preventable. The former includes factors that can be controlled by the nurse herself, e.g. obtaining another job outside her present organization. The non-voluntary resignations result from situations such as moving to another home, pregnancy, physical ill-health, domestic problems, retirement, etc.

There exists/

There exists no clear-cut solution to the problem on hand. There are two sources out of which the number of nurses can be increased. Firstly, more young people must be recruited to the profession and retained. This can only be ensured by a careful selection process. Secondly, non-practising nurses should be encouraged to rejoin the nursing profession. Studies have been and are being undertaken to determine ways and means of exploiting this field. In this present study attempts will be made to facilitate the recruitment and selection process.

As has already been suggested, the problem of selection of students is of vital economic significance in nursing education. For this reason, and to maintain adequate standards of patient care, the nursing authorities have a special responsibility to ensure that wastage from the ranks of the training groups is limited to only those who are unsuitable to practise the profession of nursing.

During the first months of training, the student nurses represent a considerable expense to hospitals because they require a great deal of supervisory time. With increased training, of course the students become progressively more proficient and thus more valuable to the training institution.

In spite of various incentives to have as many student nurses

as possible/

CHAPTER 2

HISTORICAL PERSPECTIVE

A review of the results of previous research indicates that the reasons why nurse trainees withdraw from the training course may be divided into two broad categories, namely academic failure and non-academic factors. It is, however, not always possible to seperate the two as they are interdependent. Throughout the decades studies have been conducted in this field, and various researchers have emphasized the relative importance of one or other category.

2.1 ACADEMIC FAILURE

Albert Ford (1950, p. 186) is of the opinion that academic failure is one of the principal reasons for withdrawal from nursing school. This opinion was supported by Heslin and Katzell (in Sternlicht and Cavallo, 1965, p. 170) who concluded that the major reason for non-graduation of nursing students after admission, was failure in classwork. Ford further concluded that most failures occur early in the training program.

In spite of this trend, efforts to predict academic achievement, as a prelude to prevention or remediation of difficulties, have been only moderately successful. Such measures,

according to/

according to Mc Phail (Rhinehart, 1933, p. 278) often merely predict a student's success in nursing school subjects, but are of little value in predicting success in the nursing profession as a whole. A major difficulty encountered in such prediction efforts is that nursing, more than most professions, demands a successful combination of practical and theoretical work. The relative importance of these two aspects, or course, has varied over a period of years and probably, from hospital to hospital. (Berg, 1947, p. 389).

R.N. Moses (1976, p. 3871) conducted a study to determine selected variables which might be used as indicators of success or failure of students in an associated nursing program. Using various personality-, interest- and biographical questionnaires, 119 student nurses were evaluated. It was concluded that conscientious, self-critical nurses had a better chance of success. Academic failure, lack of motivation and family responsibilities are the major reasons for dropping out of the course.

M.T. Molen (1977, p. 3981) attempted to analyze the relationship between life stress and academic performance in a group of graduate students. Life stress was operationalized through the variables of life change and anxiety. Academic performance was empirically demonstrated through the use of three measures, namely academic achievement, somatic disturbances and students' attitude toward their graduate school experience.

It was/

It was hypothesized that a significant relationship exists between magnitude of life stress and quality of academic performance.

The results suggested that the decision to return to school does carry with it a lot of other life experiences, both academic and non-academic, to which the students must adjust. Moreover, these experiences are perceived as threatening, particularly as students begin their year of full-time course-work.

2.2 NON-ACADEMIC FACTORS

Although academic failure accounts for a reasonable proportion of resignations from nursing training programs, previous research points to certain non-academic factors that play a role in determining whether an aspirant nursing student will be successful or unsuccessful. The research projects can be divided into a number of categories:

2.2.1 DEMOGRAPHIC VARIABLES

Diller and Fuller (1952, p. 45) attempted to ascertain statistically some of the personal and familial characteristics of the well-adjusted trainee as compared with those found in the maladjusted nursing student.

They compared/

They compared fifty-nine maladjusted student nurses who came for psychiatric consultation to the Northern New Jersey Mental Hygiene Clinic with 41 normal nursing students with respect to certain personal and familial characteristics. It was found that significantly more maladjusted trainees came from broken or unhappy homes; were only children; came from small families; and did not complete their training, than did the well-adjusted nursing students.

It was also noted that there were consistent, but non-significant, trends in the direction of finding more single girls, younger girls and more girls from rural communities among the normal student nurses than among the maladjusted group.

Meadow (in Sternlicht and Cavallo, 1965, p. 170), in his study on practical nursing found that the older married students had a better chance of success than the younger single ones. However, Layton (in Sternlicht and Cavallo, 1965, p. 171) concerning herself with the practical nursing program dropouts, obtained no significant correlations between failure to complete a training program and such factors as marital state, race, sex, age and education.

In a retrospective study of two groups of graduates of the Willowbrook School for Practical Nursing, in which, among others, chronological age was correlated with achievement criterion variables including final grades, Sternlicht and Cavallo (1965, p. 172) discovered no significant chronological age difference between successful and unsuccessful

nursing students.

Rubin and Mahoney (1972, p. 439) tested a group of 42 entering nursing students on a battery of achievement/aptitude, demographical and personality measures. Product-moment correlations and multiple linear regression were utilized to assess relationships between criterion measures of success, academic failure and non-academic withdrawal with aptitude, personality and demographical measures. The results indicated that the only demographic characteristics that had a systematic relationship to success were age and race.

2.2.2 VALUES, INTERESTS AND APTITUDE VARIABLES

Haney et al (1959, p. 645) attempted to ascertain:

1. the factored dimensions of a battery of fourteen aptitude and achievement tests administered to 83 female nursing trainees in Los Angeles;
2. the degree of predictability that these factors furnish of success in four criterion: marks obtained in nursing arts, ward adjustment, anatomy and pharmacology; and
3. the nature of the relationship of the factor pattern in the criterion variables to those tests found to be empirically valid.

Although a/

Although a somewhat complex pattern of aptitude and achievement factors was associated with success in nursing training, considerable ambiguity remained especially in view of the existence of a substantial amount of variance common to the four criterion variables alone. One plausible hypothesis would be that in addition to certain minimal amounts of verbal ability and mathematics background, a particular pattern of personality and motivational characteristics might outweigh the importance of other cognitive factors.

In order to determine possible differences between nursing student drop-outs and remainers, May (1966, p.902) administerd several psychological tests to a group of 64 entering nursing students. One of these tests was the Allport-Vernon-Lindzey Study of Values. At the end of the first nursing college year, 18 of the 64 students had dropped out. Comparison of initial performance on the Study of Values by drop-outs and remainers, revealed that three of the six scales differentiated the two groups significantly. The drop-outs scored significantly higher on the Theoretical and Economic Scales than did the remainers. On the Social Scale, the latter scored significantly higher.

Although the investigation as a whole produced only preliminary findings, it could be concluded that the importance of non-intellectual factors for prediction of student nursing success may well have to be taken more seriously.

Johnson and/

Johnson and Leonard (1970, p. 147) attempted to describe the psychological characteristics of beginning nursing students and to determine the effectiveness of these characteristics in predicting academic performance of student nurses. Seventy-seven students completed each of three psychological tests, namely , the College Qualification Tests, the Sixteen Personality Factor Questionnaire (16 PF) and the Strong Vocational Interest Blank for Women (SVIB-W). The test scores indicated that they were average in scholastic aptitude compared with other University of Winconsin females. They scored relatively higher in Numerical and Information-Science areas than in Verbal and Information-Social Studies areas.

The purpose of Johnson's study (1973, p. 148) was to:

1. identify cognitive, interest, and personality variables related to academic achievement in a practical nursing curriculum;
2. develop a set of regression models for predicting achievement; and
3. test the relationship of interest patterns derived from a theory of vocational choice on practical nursing training achievement.

Fifty-three nursing students were subjected to the Pre-admission and Classification Examination, (PACE) the General Aptitude Test Battery, (GATB), the Edwards Personal Preference Schedule, (EPPS), that served as measures of cognitive and non-cognitive traits. Academic performance was assessed

by the final numerical grade.

On the basis of the results of the study, it can be concluded that the various subscales of the PACE, namely Science and Health, General Information, Arithmetic, Vocabulary and Reading are better predictors of practical nursing achievement than the more generalized cognitive measure (GATB) or the scales of the personality assessment (EPPS).

2.2.3 ATTITUDE

The research undertaken by Owen et al (1970, p. 867) was concerned with establishing whether two attitude measures designed specifically for prediction of achievement in nursing education, and a set of divergent thinking tests increase the predictive efficiency of an established set of cognitive predictors. It was concluded that when added to a battery of established cognitive predictors, e.g. high school grade averages, Scholastic Aptitude Test etc., divergent thinking tests such as Guilford's Consequences and Alternate Uses added a unique and significant increment to the prediction of grade averages in nursing education. It seems likely that these divergent thinking tests tap some aspects of creative thinking which are related to successful achievement at several stages in the nursing education program.

2.2.4 PERSONALITY VARIABLES

The relative importance of intelligence as opposed to personality in determining success or failure in the nurse-training program has been the source of controversy for a long time.

As far back as 1933, Rhinehart (1933, p. 278) concluded that actual experimental investigations for the purpose of finding prognostic tests that could effectively serve to supplement the usual criteria for admission to schools of nursing, are few. Those investigations which have been made up to 1933 have for the most part employed intelligence tests almost exclusively.

After administering the Army Alpha Test to a group of student nurses, Earle (Rhinehart, 1933, p. 278) on the other hand, was convinced that personality and emotional traits are as important if not more so, than general intelligence in determining success or failure in the nursing profession.

In agreement with the conclusion of Earle, Hyman and Dreyfuss (in Rhinehart, 1933, p. 277) stated that differences in intelligence do not have so much weight in determining future success in nursing as does the possession of other characteristics such as attitude and personality.

In 1933, Habbe (1933, p. 567) also emphasized the need to know about other factors, i.e. factors other than "native" intellectual ability which make for, or militate against academic suc-

success in nursing training. This conclusion was reached after a study of 82 student nurses at the Grasslands Hospital, New York, using the Thurstone Personality Schedule (1929 ed.). He found a negligible correlation between chronological age, mental ability, academic achievement and ward ratings. He concluded that personality factors apparently were of first importance in determining success or failure in nursing training.

However, the problem is not made easier by various conflicting statements. Although Habbe concluded that emotional balance and maturity were important for success in nursing training, he also felt that success in nursing training was associated with a "neurotic make-up." In the same year, Rhinehart also claimed that "student nurses rank higher in neurotic tendencies than college women."

THE YEARS BETWEEN 1950 AND 1960

According to Healy and Borg (1951, p. 275) many research and guidance workers have seen the need for objective knowledge of the personality characteristics of nurses and nursing students but little in the way of positive results in this area has been reported. Healy and Borg (1952, p. 767) later confirmed that numerous efforts were being directed toward finding suitable criteria for the prediction of success in the

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the nursing/

nursing profession.

The problem has been further confounded by non-comparable results form various researchers. Bennet and Gordon (in Healy and Borg, 1951) tested 235 entrants to nursing schools, using the Bernreuter Personality Inventory and the Minnesota Personality Scale and compared their results with personality ratings by students' colleagues and supervisors. Their conclusions concerning the personality measures are summarized as follows:

> "To the extent that it is possible to generalize from the findings presented in the present study, it would appear that the type of personality test used is of little or no value as a part of a battery of tests used in personnel selection, since it will predict neither success nor the attitudes of colleagues or supervisors." (p. 275)

On the other hand, Healy and Borg (1951, p. 276) tested a group of 182 nursing school freshmen taken from six schools of nursing. The test battery used included the Guilford-Martin Personnel Inventory and Inventory of Factors G A M I N. These tests measure a total of 13 personality factors. Significant results appear to have been achieved in that the mean scores of the group of nurses were significantly more favourable than those of the norm group of women university students on factors relating to Inferiority Feelings, Nervousness, Depression, Emotional Stability, Objectivity, Agreeableness and Co-operativeness. Their scores indicated that they were significantly more socially introverted and

less rhathymic than the norm group. They concluded that the need for more information concerning personality characteristics related to success in nursing is becoming increasingly apparent as we come to recognize the importance of personality in the nurse-patient relationship. Many people in hospital are dependent on the nurse and look to her to relieve their feelings of anxiety and provide strong emotional support. Nurses who are not emotionally suited to such work or who have emotional conflicts of their own, are not able to give this care which is such an important part of the nurse's duty.

In England, according to Asenath and Powell (1951, p. 281), the use of intelligence tests or general knowledge tests in selection has been only sporadically reported. The study of previous work in this field suggested that personality was likely to be at least as important as intelligence in the good nurse, and that some aspects of intelligence might prove more important than others. They therefore decided to include several tests of different aspects of intellectual ability as well as objective tests of personality in their investigation. They drew the conclusion that there are two distinct requirements made of the good nurse: one involves intellectual capacity, the other involves personal relationships.

Beaver (1955, p. 339) undertook an interesting study to determine the degree to which the Guilford-Zimmerman Tempera-

ment Survey would differentiate a group of student nurses from a liberal arts education majors in terms of a specific pattern responses. Mean scores for 10 traits were computed for each group and the resulting profiles compared for factors of similarity and difference. Both groups were found to be average in four traits: Emotional Stability, Objectivity, Friendliness, and Personal Relations. Significant differences between the experimental and control groups were found in the case of four traits. Student nurses rated higher than education majors in Friendliness, Emotional Stability and Sociability. They were, however, lower in Masculinity.

In order to discover the extent to which the Rorschach Technique and the Wechsler Bellevue Intelligence Scale might be profitably employed in the selection of student nurses, Mindess (1957, p. 89) conducted a study lasting one and a half years. The attempt was made to predict success in nurses' training from the results of these tests alone.

The girls' progress in training was followed for one year during which time they received a series of grades for their academic work (based on objective type examinations) and their efficiency on the wards (based on subjective grading by three supervisors).

From the results Mindess, (1957, p. 39) concluded that Intelligence as measured by the Wechsler, and Ego-Strength as es-

timated by/

timated by the Rorschach Prognostic Rating Scale are significantly related to achievement in nurse's training as indicated by Total Nurse Grade.

THE YEARS BETWEEN 1960 AND 1970

A study was undertaken by Reece (1961, p. 172) with the purpose of determining whether objective measures of personality characteristics are associated with successful completion of a nursing program. The Edwards Personal Preference Schedule (EPPS) was administerd to 67 female students who were beginning the nursing program, and attending classes in psychology at Wayne State University in the United States of America. Three years later, after the course was completed, the students were divided into two basic groups; withdrawal and successful completion. The EPPS scores for these groups were compared with each other and with the scores obtained by the normative female sample in the development of this test.

It was found that the Completed Group "have a need to take care of others; to be sympathetic and encouraging with others; are interested in motives and feelings and in analyzing others. They like to experience novelty and change; they show a need for friendship; a need to please; and to win affection; but they tend to feel inferior and timid; willingly submitting to authority." (Reece, 1961, p. 173).

As a/

As a group, the Withdrawal students had a greater need for achievement, but less need for deference than the Completed subjects. It was notable that they appeared to be more aggressively motivated; more self-concerned; with a greater need to determine; and, at the same time, they appeared to be unable to tolerate as much pressure.

It can therefore be concluded that these results indicate there are differences in personality characteristics of the successful and unsuccessful nurses.

Reece (1961, p. 176) states as follows:

> "The results are felt to merit study of the EPPS as a predictor of success with a larger and more representative sample of students in schools of nursing."

Gynther and Gertz (1962, p. 277) felt that more information was needed with respect to differentiating between student nurses and women of the same age and education, not in nursing. They attempted to describe the personality differences, if any, between good performers and poor performers to give an additional guide to nursing schools in their selection of candidates for training. Edwards Personal Preference Schedule scores were obtained from 222 student nurses. Raters independently selected the best and worst nurses in terms of technical competence, dependability, iniative, attitude toward patients and colleagues, and related factors.

Comparison of/

Comparison of the results with normative data showed that student nurses display weaker needs for exhibitionism, dominance, autonomy and change and stronger needs for orderliness and endurance. Good students had significantly greater needs to be dominant and less interest in orderliness than poor nurses. These results suggest that one reason for these girls entering the field of nursing is to find security in a well-organized setting in which they do not have to make decisions. It appears that these findings give some suggestions as to criteria for the adequate selection of good student nurses. They are, however, not conclusive.

In an effort to determine whether IPAT Anxiety level does permit prediction of success or failure at Nursing schools, the scale was included in Fein's (1963, p. 374) study of the causes of drop-outs from Nursing school. Analysis of the data did not provide statistically significant evidence that anxiety as measured by the IPAT (40-item) scale is inversely linearly related to nursing school achievement, according to Levitt (Fein, 1963, p. 374). However, IPAT anxiety is significantly related to Nursing school achievement in a curvilinear manner, that is, both very high and very low IPAT anxiety levels operate against success at Nursing school, both in theoretical and clinical courses. These findings appear to support Cattell's inference that low anxiety (sten 1, 2 or 3) may reflect blandness and low motivation and that

such individuals require recurring stress and crises to function optimally.

Thurston and Bruncklik (1965, p. 203) deduced from reports and findings of previous research on the subject that the personality tests used demonstrated an almost negligible power of prediction of success or failure in the nursing training program. As a result of the measure of success achieved by Mindess in the use of projective techniques in predicting success, Thurston and Bruncklik decided to investigate a method that would allow for projective response that could be useful in predicting success or failure in schools of nursing. In substance, the purpose was to use a technique - that of incomplete sentences in conjunction with the MMPI and the Rotter ISB. The conclusion was drawn that so far as MMPI and Rotter ISB results are concerned it would appear that this search had not been fruitful. Personality as described by performance on these tests appeared unrelated to success in nursing education as defined in this study.

There were, however, indications that the Luther Hospital Sentence Completions approach may have sufficient merit and potentiality to at least warrant additional study.

The partial test of the March and Simon theory that continued participation in a course depends upon the difference between rewards and contributions was undertaken by Katzell (1958, p. 154). From the theory it should follow that the greater

the number of stress experienced, the more likely the student will be to withdraw. In addition, a student will be more likely to withdraw if she experience a large number of unexpected stresses than if she experiences the same number of stresses but they were expected. It should also be true that expected, but unrealized satisfactions will tend to cause withdrawal, and that experiencing expected satisfactions will do more to prevent withdrawal than experiencing unexpected satisfaction. After applying a 139-item questionnaire to 1 852 first-year nursing students. the following conclusions were drawn:

1. Withdrawal was inversely related to experienced satisfaction.
2. Withdrawal was inversely related to the confirmation of expectations, especially in the area of satisfactions.
3. Withdrawal was unrelated to experienced stresses, whether expected or unexpected.
4. Stress and satisfaction did not operate as opposite ends of the same continuum.

(Katzell, 1968, p. 147)

Despite the fact that the above conclusion were drawn after significant correlations were obtained. so small a fraction of the total survival-withdrawal variance is predictable that the contribution may be regarded as negligible.

The years/

THE YEARS 1970 AND THEREAFTER

A study by Krall (1970, p. 265) represents an attempt to investigate the dimensions of self-image and role, as well as academic background, in success or failure in nursing school. Self-image and role were studied by means of the Draw-A-Person Test (D-A-P) which consists of human figure drawings of a man and a woman. The human figure drawing has been found to relate to the individual's attitude towards his body or the body image. For the purpose of this study, it is assumed that a girl who draws only parts of a body, rejects the body and its impulses; a girl who draws the opposite sex figure first, rejects her feminine identification and role.

Seventy-five first year nursing students were tested and a comparison was made of those completing and dropping out of the program with scores on the National League of Nursing test. The results lent support to the notion that an inadequate self-concept is related to emotional difficulties that lead to underachievement or possible withdrawal from nursing. The student's personality test scores indicated that they were more intelligent, assertive, and experimenting than female college students in general.

Only one study seems to have been done in South Africa on the influence of personality factors on success in nursing. Using the N.I.P.R. Personality Questionnaire, Appelman (1978, p. 22) made a comparison between a group of psy-

chiatric nurses who elected to continue in psychiatric nursing after completion of their training, a group of nurses who left psychiatric nursing immediately after their training, as a result of a definite aversion to the profession, and a group of qualified nurses who had not received psychiatric training and had never been intersted in that profession. Each group, consisting of 20 Afrikaans-speaking subjects, were given the N I P R Personality Questionnaire.

Although no significant correlation was found between personality traits and success in the psychiatric nursing profession, the investigation indicated a trend for successful psychiatric nurses to possess the following personality traits:

1. Social responsiveness that is conducive to positive communication.
2. A calm and peaceful disposition with an absence of anxiety feelings in crisis situations.
3. Affability and peacefulness as opposed to hostility.
4. Flexibility and suppleness in interpersonal relationships without rigidity.
5. Effective practising of duties without a preoccupation with a fulfilment of authority.

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2.3 SYNTHESIS

It would appear that the limited amount of research that has been conducted concerning nursing students has focussed on predicting success for the purpose of selecting suitable candidates for the training programs. Those efforts to predict success or failure from scores on personality inventories have not yet proved conclusive, so that O'Hara-Devereaux et al (1978, p. 1259) claim that "... useful criteria for predicting success in clinical practice for health power is as yet an unsolved problem." They do, however, deduce that it is likely that success in practical nursing is due to a combination of cognitive ability, personality factors, vocational interest and past experiences.

This may well be true, but according to White (1975, p. 162) there is as yet little evidence to indicate which traits, abilities or experience are associated with success and satisfaction in the (nurse) practioner role. Do nurses need certain basic personality characteristics to function effectively as practioners? Do persons having certain constellations of traits find it easier to be successful? Do individuals need a certain level of maturity when they come into the nurse training program?

Although various research findings have not always supported one another, certain factors have reasonably consis-

tently been found to have significance for success or failure in the nurse training program. They can be classified as follows:

PERSONALITY AND ADJUSTMENT FACTORS

Emotional Stability
Sociability
Conscientiousness
Respect for authority
Attitude
Reliability
Nervousness
Self-criticism
Ego Strength
Self-concept
Anxiety

DEMOGRAPHIC FACTORS

Home circumstances
Size of Family
Only children
Marital state
Age
Race

White (1975, p. 165) summed up the situation to date as follows:

Firstly, present/

> "Firstly, present research on the selection and characteristics of (nurse) practitioners is both controversial and important. We need good answers to be helpful to those planning directions for the future of nursing. Secondly, we need good descriptive research indicating..... how age, experience, (personality) and background factors affect the outcome of training."

Spurred on by views as these, the present study represents an attempt to correlate scores on as many of the above and other factors as possible, with success or failure in the nurse training program. This can possibly lead to an improvement in the selection technique and thereby facilitate considerable savings of time and money.

CHAPTER 3

THE PRESENT STUDY

3.1 AIM

The general purpose of the study is to determine which critical factors play a role in determining whether student nurses successfully complete their training course or resign in spite of the fact that their conditions of service, working hours, holiday benefits, etc. are the same.

For the purpose of this study a successful nursing student is one who has been nursing for at least two and a half years and has either completed or nearly completed her basic training. She must enjoy her work and be rated average or above average in the hospital ward-ratings as well as the college-ratings. A student who is rated highly in the hospital as well as the college and enjoys her work, but is compelled to resign as a result of factors beyond her control, is also regarded as successful.

An unsuccessful nursing student is one who resigns as a result of reasons such as job dissatisfaction, emotional problems and an inability to cope with her duties. Her attitude is negative. A student who completes the course and resigns immediately to take up another job, is also regarded as successful.

Motivation for/

3.2 MOTIVATION FOR THE CHOICE OF TESTS

After being associated with the students of the Carinus Nursing College since 1975 as a part-time lecturer of Psychology, the researcher noted that many of the students resigned from the nurse training course before or shortly after completing their studies. Various reasons have been given for this phenomenon.

There are external factors that contribute to dissatisfaction in the nursing profession and possibly lead to resignation. These are, among others, inadequate salary, irregular working hours, social isolation, night duty, etc. It is also generally felt that there is a difference in the personality of the nurse who remains in the profession in spite of the so-called areas of dissatisfaction, and the nurse who resigns. This opinion was shared by various senior members of the staff of the college. The question however, is in what way do they differ, and why?

After casual discussions with among others, the staff of the Carinus and Otto du Plessis Nursing College, as well as those at various hospitals, such as Groote Schuur, Victoria-, Tygerberg-, Somerset-, Woodstock-, Volks-, Conradie-, Paarl-, Swartland-, Eben Dönges Hospital, etc., it appeared that there was agreement that certain personality- and adjustment factors could play a role in determining success or failure in the nursing profession.

A senior/

A senior principal of one of the colleges was of the opinion that the nurse who was better able to associate socially with her fellow students was better able to cope with the stresses and strains of her profession. She possibly achieves an emotional release in the company of her fellow students. Furthermore, the phenomenon of group cohesion possibly safeguards her from an impulsive decision to resign as a result of dissatisfaction with her profession.

Other senior members of the staff of both colleges and hospitals felt that self-confidence was vital to success in the nursing profession. The further the nurse advanced, the more likely she would be called upon to use her discretion and act accordingly. If she lacked self-confidence, she would not feel adequate in coping with her position. The senior nurse must have leadership qualities in order to effectively supervise the functioning of a ward or any area to which she is assigned. For this, self-confidence is imperative. Furthermore, she must be able to control her own emotions in the face of crisis situations.

It was the opinion of, among others, the Chief Nursing Officer that anxiety played the most important role in success or failure in nursing. She felt that nursing became more anxiety-laden the further the student advanced. That was possibly the reason why many students reached a stage where

they could/

they could no longer cope with the emotional stress involved in their work.

The senior matron of one hospital felt that the hospital situation was in many ways similar to the home situation. In the home there are the parental figures who exercise authority and who are obeyed by the children. In the hospital the matron represents the parental figure and exercises authority and discipline and must be obeyed without question. She feels that the effective functioning of a hospital depends heavily on such discipline. If a nursing student does not have strong family ties or is not used to accepting authority in the home situation, she would probably develop problems with the disciplinary structure in the hopsital.

These opinions were to a large degree shared by the nursing students themselves. After casual discussions with the students at various stages of their training, and after requesting them to write down what they felt was important for success in the nursing profession, an interesting array of factors emerged. On the whole, most students agreed that it was very necessary to be able to accept authority unconditionally. Furthermore, they felt that the students who had been in a boarding school would better cope with the regulations in the Nurse's Home as well as in the hospital.

The students/

The students also felt strongly that the anxious student simply was not able to cope as a result of the emotional impact of dealing with suffering and dying.

Many students stated that the nursing profession was vastly different to what they had expected it to be. They felt that the disillusionment contributed considerably to the number of resignations form the profession.

The abovementioned factors were considered in conjunction with the factors found in the previous research to be significant to success or failure in the nurse training program.

After considering various available tests in the catalogue of the Human Science Research Council, it was decided that the Personal, Home, Social and Formal Relations Questionnaire (PHSF), the IPAT Anxiety Scale, as well as a Biographical questionnaire would be best suited for measuring the abovementioned factors.

3.3 METHOD

A total of 502 White student nurses completed the three questionnaires. They represented ten hospitals in the Western Cape and were in different stages of their academic training (Classes 1, 2, 3, 4 or 5) at the Carinus Nursing College or the Otto du Plessis Nursing College during June and July 1980. There were English- as well as Afrikaans-speaking, male and female students.

3.4 SUBJECTS

The number of students from the various hospitals are shown in Table 3.41

TABLE 3.41

Hospital	Number of Students
Groote Schuur Hospital	144
Tygerberg Hospital	166
Woodstock Hospital	13
Volkshospital	22
Somerset Hospital	51
Victoria Hospital	45
Paarl Hospital	31
Eben Dönges Hospital	13
Swartland Hospital	7
Conradie Hospital	10
TOTAL	502

These hospitals/

These hospitals draw nursing students from a wide geographical area, as can be seen in Table 3.42

TABLE 3.42

Area	Number of Students
Western Cape	227
Eastern Cape	42
Transvaal	67
Natal	21
Orange Free State	23
South-Western Cape	18
North-Western Cape	13
South West Africa	27
Northern African States	38
Other Countries	26
TOTAL	502

As a/

As a result of the reasonably widespread geographical area from whence the students come, it appears feasible to generalize the findings of this study to all White student nurses, both English- and Afrikaans-speaking, male and female employed by hospitals in the Western Cape under the control of the Cape Provincial Administration.

The age groups and home language of the student nurses were as follows:

TABLE 3.43

Class	Language	Number of Students in Age Group					
		16-18 yrs.	18-20 yrs.	20-22 yrs.	22-24 yrs.	24+ yrs.	TOTAL
1	English	14	36	5	3	7	65
1	Afrikaans	0	45	31	8	6	90
2	English	0	11	6	1	1	19
2	Afrikaans	0	4	14	17	4	39
3	English	0	24	23	2	5	54
3	Afrikaans	0	27	24	4	3	58
4	English	0	6	43	11	5	65
4	Afrikaans	0	0	39	7	6	52
5	English	0	0	10	21	7	38
5	Afrikaans	0	0	5	7	10	22
TOTAL							502

It appears that there is no real difference in the ages of the Afrikaans- and English-speaking students.

3.5 PROCEDURE

The necessary permission to conduct the research was obtained form the Director of Hospital Services, the Chief Nursing Officer of the Cape Province as well as from the principals of the Carinus- and Otto du Plessis Nursing Colleges.

The students were reassured that the results would be treated with the utmost confidentiality. It was furthermore explained that the student's name was required on each questionnaire answer sheet in order to correlate the findings of the various questionnaires. The names had no further significance.

3.6 THE QUESTIONNAIRES USED

As was mentioned earlier, three questionnaires were administered, namely the PHSF, the IPAT Anxiety Scale and the Biographical Questionnaire.

A reasonably high correlation was found between maladjustment, as measured by the Adjustment Questionnaire (NBAQ) of the National Bureau of Education and Social Research (now the Human Science Research Council), and anxiety. A thorough revision of the NBAQ was initiated towards the end of 1967, and a new questionniare, namely the Personal, Home, Social and Formal, (PHSF) Relations Questionnaire resulted

from this/

from this in 1969.

3.61 PHSF RELATIONS QUESTIONNAIRE

This questionnaire determines the level of adjustment of high school pupils, students and adults in four main areas, namely :

PERSONAL RELATIONS

This refers to the intra-personal relations which are of primary importance in adjustment, e.g.

1. Self-Confidence: The degree to which a person has confidence in his ability, real or fancied, to be successful.

2. Self-Esteem: The inner appraisal based on evaluation and acceptance of real or fancied personality characteristics, abilities and defects.

3. Self-Control: The degree to which a person succeeds in controlling and channeling his emotions and needs in accordance with his principles and judgement.

4. Nervousness: A high score on this component indicates an absence of symptoms of nervousness as expressed by anxious, purposeless, and repetitive behaviour.

5. Health: A high score on this component indicates an absence of preoccupation with the physical condition.

HOME RELATIONS

This refers to the relations experienced by the person as a dependent within the family and home environment, e.g.

6. Family Influences: The degree to which a person as a dependent in home, is influenced by factors such as his position in the family, family togetherness, relationship between the parents and socio-economic conditions.

7. Personal Freedom: The degree to which a person feels that he is not restricted by his parents.

SOCIAL RELATIONS

This refers to the manner in which a person engages in harmonious and informal relation within the social environment.

8. Sociability-G: The degree to which a person has a need for and spontaneously participates in sosial group interaction (extrovert) in comparison with the degree to which a person is averse to a social group interaction (introvert).

9. Sociability-S: The degree to which a person has a need for sociable interaction with a specific person of the opposite sex.

10. Moral Sense: The degree to which a person feels that his behaviour corresponds to the accepted norms.

Formal Relations/

FORMAL RELATIONS

This refers to the relations occuring in formal situations in the school, college or university, or occupation, e.g.

11. Formal Relations: The degree to which a person at school, college, univeristy or in his occupation, is successful in his formal relations with fellow pupils, fellow students, colleagues, as well as with figures of authority and supervisors in the learning or work situation.

DESIRABILITY SCALE

12. This is a scale indicating the honesty with which a person answered the questionnaire. The questions are of such a nature that only exceptional people can justly give a large number of favourable answer.

RELIABILITY

The Reliability as well as Standard Error of Measurement of the various components of the PHSF has been calculated according to the split-half method and the indices are given in Table 3.61.

Table 3.61/

TABLE 3.61

Component	Reliability	Standard Error
Self-Confidence	0,79	0,90
Self-Esteem	0,74	1,00
Self-Control	0,70	1,07
Nervousness	0,74	1,00
Health	0,85	0,76
Family Influences	0,88	0,68
Personal Freedom	0,89	0,65
Sociability-G	0,89	0,65
Sociability-S	0,89	0,65
Moral Sense	0,77	0,94
Formal Relations	0,80	0,88
Desirability Scale	0,78	0,92

Interdependence of/

INTERDEPENDENCE OF THE COMPONENTS

The intercorrelations of the components, which are an indication of the interdependence of the PHSF, appear in Table 3,42.

TABLE 3.62

INTERCORRELATIONS BETWEEN COMPONENT SCORES OF THE PHSF

Component	1	2	3	4	5	6	7	8	9	10	11	12
1. Self-Confidence	-	.56	.36	.36	.28	.26	.24	.48	.10	.29	.53	-.30
2. Self-Esteem		-	.25	.37	.34	.30	.28	.42	.15	.04	.39	-.16
3. Self-Control			-	.46	.26	.26	.17	.17	-.14	.50	.40	-.54
4. Nervousness				-	.53	.22	.22	.23	.04	.12	.24	-.19
5. Health					-	.26	.26	.24	.07	.09	.26	-.14
6. Family Influences						-	.60	.21	-.10	.32	.33	-.32
7. Personal Freedom							-	.24	.04	.27	.25	-.15
8. Sociability-G								-	.36	.05	.33	-.20
9. Sociability-S									-	-.20	-.01	.14
10. Moral Sense										-	.48	-.56
11. Formal Relations											-	-.40
12. Desirability Scale												-

Validity/

VALIDITY

According to Fouche and Grobbelaar (1971), research done with the prelimanary form of the PHSF showed that the PHSF possesses a high degree of construct and concept validity.

3.62 IPAT ANXIETY SCALE (1969)

The Ipat Anxiety Scale is an adaptation of Cattell's Anxiety Scale based on the 16 Personality Factor Questionnaire. The purpose of the Anxiety Scale is to meet the need for a short, verbal clinical measure for the appraisal of free anxiety level as distinct from neuroticism and psychosis. It is suitable for the age group of 14 - 15 years and older.

The test is untimed, but normally requires only about five minutes to complete. Although it is a group test, it may also be applied individually.

There are five components of anxiety which measure the Symptomatic Anxiety, Unconscious Anxiety, as well as the Total Anxiety.

1. INADEQUATE SELF-SENTIMENT DEVELOPMENT Q3 (-)

The healthy, non-anxiety (low score) side of the Scale represents the testee's motivation to incorporate his behaviour into a valid,

conscious self-sentiment and socially acceptable standards. An inability to adjust behaviour to a definite self-understanding (high score on the scale) is one of the most important causes and symptoms of anxiety. The score on the Q3-Anxiety component can therefore be regarded as a measure of the degree in which anxiety is "bound" in socially-acceptable character structure and habits. A low score indicates greater stress.

2. INADEQUATE EGO C (-)

A low score on the non-anxiety side of the scale represents the well-known term of ego-strength - the ability to express tensions which could give rise to frustrations in a realistic and appropriate manner. The relationship between an inadequate ego (high score for C) and anxiety, means that an insecure ego, with an abundance of ego defences, etc, gives rise to anxiety. An alternate hypothesis is that high tension anxiety gives rise to a measure of regression and suppresses the normal development of ego-strength.

3. SUSPICIOUSNESS L

The social problems that are caused by paranoidal behaviour can lead to isolation and anxiety, or otherwise anxiety can appear first and the paranoidal behaviour develops as a defense against the anxiety.

Tendency towards/

4. TENDENCY TOWARDS GUILT-FEELINGS O

This component of anxiety is related to feelings of unworthiness dejection and guilt. In Freudian terms it implies anxiety that results from pressure from the superego. In the extreme form, the pattern clinically resembles depressive reactions and other types of neurosis.

5. TENSION AS A RESULT OF ID-PRESSURE Q4

Correlation and factorial analyses have clearly indicated that this dimension of personality is one of the most important components of anxiety. It represents the measure in which anxiety is generated by pressure from the Id - by aroused drives and unsatisfied (frustrated) needs of all kind. Activation of the sex-drive, need for recognition, and fear for an immediate situation, are drives which correlate positively with this component. It can be described as a tendency towards emotionality, tension, irritability and nervousness (jitteryness).

6. SYMPTOMATIC ANXIETY AND UNCONSCIOUS ANXIETY (A- and B-)

The scale can also be divided into two sub-scales, namely, a scale to measure Unconscious Anxiety (A-scale) and a scale to measure Symptomatic, Conscious Anxiety (B-scale). This scale is intended to indicate to which degree a testee is conscious of his own

anxiety as

anxiety as well as a conscious effort and desire to emphasize it.

Interpretation of these scores is usually in terms of the relationship between conscious and unconscious anxiety. It has been found that individuals who are least inclined towards verbal expression of hostility, show the most unconscious anxiety, while those individuals who are inclined toward physical expression of hostility show more conscious anxiety.

In an investigation into the relation between the IPAT Anxiety Scale and "social desirability", it was indicated that unconscious anxiety had a lower correlation with the tendency towards socially-acceptable responses, than the case of conscious anxiety. Levitt and Perksy indicated that pupil-nurses who failed to complete their training, displayed significantly lower relationships between conscious and unconscious anxiety than those pupils who had completed their courses.

7. RELIABILITY

The reliability coëfficient for the Total as well as A- and B-scores ranges from .76 to .87. In addition it appears that the internal consistency or homogeneity is satisfactory.

The reliability of the sub-totals is lower than in the case of the A- and B- and Total scores and for this reason it is recommended that the total score be used for clinical diagnostic purposes.

Although no/

Although no definite conclusions should be made on the strength of those sub-totals, their reliability is high enough to provide valuable information regarding the nature of the total score.

8. VALIDITY

The estimated construct validity of the scale as a whole is between .87 and .89.

3.63 PERSONAL PARTICULARS QUESTIONNAIRE (APPENDIX)

This questionniare is intended to gather as much relevant information as possible, concerning the student and her circumstances. Questions tapped the following areas:

Present Block
Age
Birthplace
Marital Status
Church Affiliation
Participation in Church Activities
Home Language
Hospitals where employed
Residence
Place where student grew up
Number of years in boarding school
Age when first sent to the boarding school
Whether student is adopted or not
Whether student is an only child or not

Whether student/

Whether student is the oldest or youngest child
Regular participation in sport
Marital status of own parents
Occupation of father as well as mother
Smoking habits
Physical Handicaps
Feelings regarding working night-shift
Hobbies
Intention of making nursing a permanent career or not
Enjoyment derived from nursing
The extent to which nursing is what it was expected to be
Left- or right-handedness
Members of immediate family in the nursing profession
State of health
Own experience of hospitalization
Subjects and symbols in Matric
Grade of matriculation pass
Commencement of nursing directly after school or not
Existence and length of a fixed heterosexual relationship
Whether the student has children of her own
Whether the student is the sole supporter of children
Whether the student is the partial or sole supporter of parents.

CHAPTER 4

ANALYSIS OF RESULTS

4.1 ANALYSIS OF BIOGRAPHICAL FACTORS

According to Table 3.42, it is clear that the students who were subjected to the questionnaires came from a reasonably wide geographical area.

The largest number of nursing students are unmarried. The marital state of the students in the classes are as follows:

TABLE 4.11

THE MARITAL STATE OF THE STUDENTS

Class	Unmarried	Married	Divorced	Total
1 Eng.	59	3	3	65
1 Afr.	86	1	3	90
2 Eng.	19	-	-	19
2 Afr.	38	1	-	39
3 Eng.	52	1	1	54
3 Afr.	56	2	-	58
4 Eng.	61	4	-	65
4 Afr.	45	7	-	52
5 Eng.	33	5	-	38
5 Afr.	19	1	2	22
TOTAL	468	25	9	502

A large number of Church denominations are represented.

TABLE 4.12

	Number of Students in Class										
Denomination	1E	1A	2E	2A	3E	3A	4E	4A	5E	5A	Total
D.R. Church	1	80	1	37	1	51	1	48	-	21	241
Anglican	17	-	4	-	13	-	18	1	6	-	59
R.C. Church	12	2	2	-	10	-	7	-	4	-	37
Methodist	8	-	1	-	9	1	11	1	10	-	41
Church of Eng.	3	-	5	-	3	-	6	-	5	-	22
Presbyterian	6	1	1	-	1	-	4	-	1	-	14
Jewish	2	-	2	-	2	-	5	-	1	-	12
Baptist	3	-	1	1	5	-	13	-	2	1	13
Other	9	6	2	1	7	6	-	2	9	-	42
None	4	1	1	-	3	-	5	-	7	-	21
TOTAL											502

The students varied in the degree to which they participated in Church Activities

TABLE 4.13

EXTENT TO WHICH STUDENTS PARTICIPATED IN CHURCH ACTIVITIES.

Class	Often	Sometimes	Never	Total
1 Eng.	11	23	30	64
2 Eng.	3	2	14	19
3 Eng.	13	14	27	54
4 Eng.	5	6	54	65
5 Eng.	5	5	28	38
1 Afr.	39	42	9	90
2 Afr.	14	19	6	39
3 Afr.	19	24	15	58
4 Afr.	26	16	10	52
5 Afr.	5	11	7	23
TOTAL	140	162	200	502

It appears/

It appears that the largest percentage (39,84%) of students never participate in Church activities. 32,27% sometimes participate and 27,89% often participate in Church activities.

An interesting fact however, is that 74,29% of the students who participate in Church activities are Afrikaans-speaking. Furthermore, of those students who never participate in Church activities, only 23,5% were Afrikaans-speaking.

These figures suggest that the Afrikaans-speaking student appears to participate more readily in Church activities.

The students are encouraged to stay in residence during their first year of training. Thereafter they are allowed to reside elsewhere if they choose to do so.

Table 4.14/

TABLE 4.14

DISTRIBUTION OF STUDENTS' RESIDENCE

Class	Nurses' Residence	Elsewhere	Total
1 Eng.	53	11	64
2 Eng.	6	13	19
3 Eng.	31	23	54
4 Eng.	19	46	65
5 Eng.	5	33	38
1 Afr.	86	4	90
2 Afr.	30	9	39
3 Afr.	51	7	58
4 Afr.	31	21	52
5 Afr.	13	10	23
TOTAL	325	177	502

Results after/

4.2 RESULTS AFTER TWO YEARS

Reports were obtained from the respective hospital and college in respect of each student after completion of each class. The reports on the student's progress were in the form of a five-point rating scale. A rating of 1 is very poor and a rating of 5 represents outstanding progress. The hospital reports were compiled by the sisters of the various wards in which the student served. The college ratings were done by the various tutors in charge of the classes in which the particular student was.

In order to counteract the usual shortcomings of such rating scales, a number of ratings of each student were obtained. The mean score was then taken.

Particulars were also obtained on a monthly basis regarding students who had resigned form the course. These particulars included the date and possible reason for the resignation.

After a period of approximately two years, it appeared that 104 of the original 502 had resigned from the nursing profession. The reasons for resignation are classified as follows:

Table 4.21/

TABLE 4.21

Reason for Resignation	Number of Students
Unable to cope	20
Academic Problems	11
General dissatisfaction	10
Other employment	10
Personality Problems	5
Domestic Problems	25
Husband Transferred	4
No reason given	19
TOTAL	104

The domestic problems inculded pregnancy, marriage, illness of a member of the family, etc.

Inability to cope included feelings of depression and tension and an inability to accept responsibility.

General dissatisfaction/

General dissatisfaction included disillusionment, lack of interest, poor job satisfaction, objection towards the working hours, etc.

The students who developed personality problems were either referred for psychiatric treatment or treatment by the student counsellor. In most cases their resignation followed shortly after the onset of the problem.

Out of a total of 104 students therefore, 56 resigned as a result of personal reasons and 48 as a result of unavoidable circumstances. For the purpose of this study, attention will be focussed on the 56 students and they will be regarded as the Experimental Group.

Of the remaining 398 students, 48 were rated above average in the hospital as well as college. Furthermore, they appear to be happy in their job and enjoy nursing. These students will be regarded as the Control Group.

4.3 COMPARISON BETWEEN TWO GROUPS

A distribution of the number of unsuccessful students (Experimental Group) and successful (Control Group) is as follows:

TABLE 4.31

Hospital	Experimental Group	Control Group
Groote Schuur	13	11
Tygerberg	22	17
Somerset	9	6
Victoria	6	1
Conradie	1	1
Volks	1	3
Woodstock	1	2
Paarl	1	1
Eben Dönges	1	4
Swartland	1	2
TOTAL	56	48

The following /

The following statistics, histograms and discussions indicate that there are differences between the two groups on the personality variables but not on the biographical variables, and that it is possible to discriminate between successful and unsuccessful nurses, prior to training, with a high degree of accuracy.

The variables chosen for consideration in this study may be divided into those that explore biographical data and those that explore personality data. Because the biographical data is on a nominal scale, while the personality data is at least interval, these sets of variables will be considered seperately and clearly be treated differently.

4.4 BIOGRAPHICAL VARIABLES

The biographical variables are as follows:

1. Marital Status
   - : Single
   - : Married
   - : Divorced

2. Degree of participation in Church Activities
   - : Regularly
   - : Sometimes
   - : Never

3. Attending Boarding School
   - : Yes
   - : No

Adopted child/

4. Adopoted Child : Yes
: No

5. Only Child : Yes
: No

6. Youngest Child : Yes
: No

7. Eldest Child : Yes
: No

8. Degree of participation in sporting activities
: Regularly
: Sometimes
: Never

9. Mother Employed : Yes
: No

10. Intention to make nursing a career : Yes
: No

11. Family members in nursing : Yes
: No

12. Matric Symbol : B
: C
: D
: E

13. Nursing started directly after matric : Yes
: No

14. Fixed Boyfriend : Yes
: No

Parents Divorced/

15. Parents Divorced : Yes
: No

The variable of Age was also considered as a possibility, but as previously discussed, there is an important bias in using the age of student nurses here, due to successful nurses by definition being further advanced in training, and thus older. Therefore, the Age-variable was rejected. Similar arguments apply to the Class-variable. This was also discarded.

4.5 SUBJECTS

As was stated before, from an initial pool of 502 student nurses, 56 unsuccessful nurses have been identified.

In order to determine whether the biographical variables contribute towards a discrimination between successful and unsuccessful student nurses, Chi-squared (χ^2) tests of association in contingency tables were carried out for each variable. The results of these tests indicate that none of the biographical variables are significantly associated with the success/failure of nurses. Therefore, none of these variables are useful in contributing towards a discrimination between successful and unsuccessful nurses. The results of the tests are tabulated overleaf.

Table 4.51/

TABLE 4.51

TABLE OF D^2 STATISTICS FOR BIOGRAPHICAL VARIABLES

Variable	Computed D^2	Critical χ^2	Tail Probability
Marital Status	0,39	5,991	$p > 0,05$
Participation in Church Activities	2,47	5,991	$p > 0,05$
Attended Boarding School	0,21	3,841	$p > 0,05$
Adopted Child	0,76	3,841	$p > 0,05$
Only Child	1,19	3,841	$p > 0,05$
Youngest Child	0,83	3,841	$p > 0,05$
Eldest Child	1,41	3,841	$p > 0,05$
Participation in Sporting Activities	0,76	5,991	$p > 0,05$
Mother Employed	3,44	3,841	$p > 0,05$
Intention to Make Nursing A Career	1,77	3,841	$p > 0,05$
Family Members in Nursing	0,01	3,841	$p > 0,05$
Matric Symbol	2,09	9,488	$p > 0,05$
Nursing Directly After Matric	0,02	3,841	$p > 0,05$
Fixed Boyfriend	1,49	3,841	$p > 0,05$
Parents Divorced	0,71	3,841	$p > 0,05$

Raw data and calculations are presented in Appendix 2 A

Clearly, the biographical variables do not provide a satisfactory means of distinguishing successful from unsuccessful nurses. The focus now turns to the personality variables.

4.6 PERSONALITY VARIABLES

The personality variables are as follows:

1.	Self Confidence	- Selfconf
2.	Self Esteem	- Selfestm
3.	Self Control	- Selfcont
4.	Nervousness	- Nervousn
5.	Health	- Health
6.	Family Influence	- Fmlyinfl
7.	Personal Freedom	- Psnlfrdm
8.	Sociability - G	- Socbltyg
9	Sociability - S	- Socbltys
10.	Moral Sense	- Moralsen
11.	Formal Relations	- Formalre
12.	Desirability	- Desrblty
13.	Ipat Anxiety	- Ipatanx

The raw data for these variables is presented in a computer printout in Appendix 3B.

Table 4.61/

TABLE 4.631

CORRELATION MATRIX OF PERSONALITY VARIABLES (See Appendix 3E)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1													
2	0,46 * *	1												
3	0,32 * *	0,60 * *	1											
4	0,30 * *	0,38 * *	0,36 * *	1										
5	0,32 * *	0,42 * *	0,40 * *	0,45 * *	1									
6	0,26 * *	0,46 * *	0,50 * *	0,33 * *	0,49 * *	1								
7	0,68 * *	0,35 * *	0,36 * *	0,24 *	0,24 *	0,17	1							
8	0,35 * *	0,35 * *	0,36 * *	0,16	0,23 *	0,22 *	0,52 * *	1						
9	0,11	0,60 * *	0,52 * *	0,29 * *	0,25 *	0,40 * *	0,15	0,31 * *	1					
10	0,03	0,20 *	0,09	-0,05	0,15	0,01	0,05	0,19	0,22 *	1				
11	0,38 * *	0,36 * *	0,17	0,42 * *	0,21 *	0,25 *	0,34 * *	0,11	0,17	-0,11	1			
12	0,62 * *	0,61 * *	0,49 * *	0,35 * *	0,35 * *	0,29 * *	0,46 * *	0,21 *	0,35 * *	0,15	0,47 * *	1		
13	-0,25	-0,35	-0,15	-0,41	-0,13	-0,22	-0,12	-0,01	-0,15	-0,21	-0,61	-0,35	1	
14	-0,53 * *	-0,60 * *	-0,60 * *	-0,56 * *	-0,63 * *	-0,52 * *	-0,48 * *	-0,44 * *	-0,52 * *	-0,10	-0,34 * *	-0,51 * *	0,28 * *	1

NOTE: Variable numbers refer to the names on page 63.

Critical points $R_{104}^{0,05}$ (2-tailed) = 0,1966

$R_{104}^{0,01}$ (2-tailed) = 0,2565

* Significant at 5% level

** Significant at 1% level

This matrix reveals that many strong relationships between the independent variables exist.

NOTE: This multicollinearity may cause problems with the discriminant analysis to be carried out at a later stage. (It could affect the order of entry of variables and the relative importance of variables in the system). However, this is not likely to be serious as the analysis takes account of these interrelationships, after the initial computation of F'S - to - enter, through the computation of subsequent F's - to - enter via Analysis of Covariance and not Analysis of Variance, with the covariate(s) being variable(s) already entered.

An advantage of the strong interrelationship of these variables is that fewer of them will be needed to maximally discriminate between the two groups than if they had been independent. However, this further suggests problems with the labels assigned to variables, indicating the importance of a factor analysis here.

A factor/

NOTE: A factor analysis has been carried out, but not interpreted - the computer printout is included in Appendix 3F.

Correlation coefficients have also been computed between the dichotomous variable of success/failure and each of the other variables. However, these should be interpreted with great caution as they are Pearson Product Moment Correlation Coefficients, while the nature of the success/failure variable (dichotomous) indicates the use of Tetrachoric coefficients.

Correlation matrices of interrelationships between the variables for each group have also been developed. These are as follows: see Overleaf.

Table 4.632/

TABLE 4.632

CORRELATION MATRIX OF PERSONALITY VARIABLES FOR GROUP 1 (FAILURE) ALONE.

* $r^{0,05}_{54}$ (2 tailed) = 0,2787

** $r^{0,01}_{54}$ (2 tailed) = 0,3610

	2	3	4	5	6	7	8	9	10	11	12	13	14
2	1												
3	0,64 * *	1											
4	0,37 * *	0,36 *	1										
5	0,22	0,34 *	0,36 *	1									
6	0,48 * *	0,62 * *	0,30 *	0,49 * *	1								
7	0,08	0,22	0,06	-0,03	0,09	1							
8	0,24	0,26	0,09	0,17	0,18	0,47 * *	1						
9	0,75 * *	0,64 * *	0,35 *	0,21	0,55 * *	0,11	0,24	1					
10	0,23	0,05	0,11	0,27	0,08	-0,03	0,07	0,20	1				
11	0,23	0,06	0,25	-0,04	0,07	0,13	-0,13	-0,01	-0,09	1			
12	0,47 * *	0,38 * *	0,27	0,15	0,26	-0,01	-0,17	0,26	0,14	0,48 * *	1		
13	-0,25	-0,16	-0,34 *	0,08	-0,19	0.01	0,11	-0,07	0,24	-0,66 * *	-0,30 *	1	
14	-0,54 * *	-0,65 * *	-0,61 * *	-0,59 * *	-0,61 * *	-0,24	-0,34 *	-0,59 * *	-0,19	-0,07	-0,21	0,07	1

TABLE 4.633

CORRELATION OF MATRIX OF PERSONALITY VARIABLES FOR GROUP 2 (SUCCESS) ALONE

*$r^{0,05}_{48}$ (2 tailed) = 0,2940

**$r^{0,01}_{48}$ (2 tailed) = 0,380

	2	3	4	5	6	7	8	9	10	11	12	13	14
2	1												
3	0,37 *	1											
4	0,18	0,19	1										
5	0,48 * *	0,33 *	0,43 * *	1									
6	0,27	0,19	0,24	0,38 *	1								
7	0,05	0,19	0,05	-0,02	-0,15	1							
8	0,22	0,32 *	0,03	0,09	0,10	0,33 *	1						
9	0,42 * *	0,30 *	0,16	0,26	0,14	0,12	0,35 *	1					
10	0,18	0,13	-0,28	-0,02	-0,11	0,13	0,34 *	0,25	1				
11	0,21	0,04	0,46 * *	0,28	0,31 *	0,12	0,10	0,35 *	-0,20	1			
12	0,44 * *	0,42 * *	0,13	0,26	-0,02	0,04	0,16	0,61 * *	0,24	0,06	1		
13	-0,31 *	0,08	-0,44 * *	-0,29	-0,13	-0,18	0,06	-0,25	0,18	-0,48 * *	-0,17	1	
14	-0,36 *	-0,35 *	-0,37 *	-0,55 * *	-0,39 *	-0,11	-0,29	-0,48 * *	0,04	-0,32 *	-0,27	0,38 *	1

These matrices (see Appendix G for computer printouts) are useful for comparison of the interrelationships between the variables from one group to the other. Essentially, the same broad trends occur in both groups, with negative correlations between both anxiety and desirablility and the other variables and several significant positive correlations between the other variables in both groups.

4.64 DISCRIMINANT ANALYSIS

Discriminant analysis is a multivariate technique enabling the determination of differences between two or more groups on a number of variables, as well as the development of a set of classification functions, which enable the classification of a case to one of the groups on the basis of measures on the variables included in the functions. Thus stepwise discriminant analysis is ideally suited to determining whether there are differences between the Experimental and Control Group in terms of the personality variables, and to predicting which group an aspirant nurse is likely to fall into, on the basis of her scores on the personality variables, thereby facilitating considerable savings with respect to not accepting students for training who, it appears, will subsequently drop out.

The following discriminant analysis employed a tolerance limit of 0.01, prior probabilities of 0,05 for each group and a critical F-to-enter value of 4,0.

STEP NUMBER 0

In this initial step, one-way Analysis of Variance is computed, thereby obtaining F-to-enter values for each variable. This step may be summarised as follows:

TABLE 4.641

Variables	F-to-enter	Tail Probability
Self Confidence	27,08	$p < 0,01$
Self Esteem	11,95	$p < 0,01$
Self Control	9,80	$p < 0,01$
Nervousness	11,94	$p < 0,01$
Health	7,23	$p < 0,01$
Family Influence	85,29	$p < 0,01$
Personal Freedom	14,42	$p < 0,01$
Sociability G	1,20	$p > 0,05$
Sociability S	0,11	$p > 0,05$
Moral Sense	16,76	$p < 0,01$
Formal Relations	88,66	$p < 0,01$
Desirability	6,56	$p <$
Ipat Anxiety	37,94	$p < 0,01$

$F^{0,05}_{1:102} \approx 3,94$

$F^{0,01}_{1:102} \approx 6,90$

(See Appendix H for computer printout of the discriminant analysis).

It is clear form this table that there are highly significant differences between the two groups on all variables except Sociability G and Sociability S. It is important to note that this feature is tied up with the strong interrelationships of the variables, as noted earlier.

The variable with the largest F-to-enter in this table (Formal Relations - F = 88,66) is entered first. On entering this variable and computing new F's-to-enter through Analysis of Covariance on each of the remaining variables, Family Influences emerges as the next most important variable and is entered second. This process is continued until no F's-to-enter exeed 4,0. This occurs in Step 4 of the analysis with the variables of Formal Relations, Family Influence, Sociability G and Ipat Anxiety in the system. (Having been entered in that order).

These four variables give rise to an approximately F-statistic of 51,54, which indicates a highly significant discrimination between the control and experimental groups (df = 4,99; F-critical 3,52; p 0,01)

For these four variables the classification functions are as follows:

Experimental/Failure/

EXPERIMENTAL/FAILURE GROUP

$$-32,57 + 2.74\ X_7 + 3,13\ X_9 + 1,87\ X_{12} + 5,32\ X_{14}$$

CONTROL/SUCCESS GROUP

$$-39,40 + 4,01\ X_7 + 2,35\ X_9 + 3,36\ X_{12} + 4,54\ X_{12}$$

By substituting a subject's scores for the variables into these functions, it is possible to assign the subject to one of the two groups. (Classification rule: Assign the subject to the group whose classification function yields the larger value).

On the basis of these classification functions, the following classification matrix of the raw data was developed:

TABLE 4,642

Group	% Correct	No. of cases Classified into Group	
		Failure	Success
Failure	89,3	50	6
Success	93,8	3	45
TOTAL	91,3	53	51

This matrix/

This matrix shows that overall, the classification functions are capable of correctly classifying 91,3% of cases (89,3% of failure group are classified failure; 93,8% of success group are classified success). These are very powerful results as they mean that the classification functions can be used to predict which group an aspirant nurse will fall into, with a high degree of accuracy.

Thus, the aim of this excercise has been achieved, i.e. the setting up of a model which enables selection bodies to predict whether an aspirant nurse will fail or succeed, on the basis of his/her scores on four personality variables, with 91,3% accuracy, thereby facilitating considerable savings of time and money.

CHAPTER 5

A FOLLOW-UP STUDY TO DETERMINE THE VALIDITY OF THE CLASSIFICATION FUNCTIONS

A follow-up study was done to determine the measure of accuracy and reliability of prediction achieved by the total value of the classification functions mentioned in Chapter 4. As was mentioned in Chapter a total of 502 students completed the three questionnaires, namely the Biographical (Personal Particulars), PHSF and IPAT.

The results of 56 students who resigned as a result of personal reasons and 48 students who were rated above average in the hospital as well as college were compared and resulted in the classification functions mentioned in Chapter 8.

Of the remaining 398 students, a stratified random sample of 133 students (being approximately 33 %) was drawn, (Table 5.1) and their scores on the variables of Family Influence (X_7), Formal Relations (X_9), Sociability G (X_{12}), and Total IPAT Anxiety (X_{14}) noted. Each student's scores were duly substituted in the classification function as follows:

UNSUCCESSFUL: $-32,57 + 2,74\ X_7 + 3,13\ X_9 + 1,87\ X_{12} + 5,32\ X_{14}$

SUCCESSFUL: $-39,40 + 4,01\ X_7 + 2,35\ X_9 + 3,36\ X_{12} + 4,54\ X_{14}$

Each student/

Each student was classified as unsuccessful or successful, depending on which classification function yielded the largest value in her particular case. This was compared with the actual outcome of each student's training.

Regarding the outcome of the student's training, she is regarded as successful if she has been nursing for at least two and a half years and has either completed or nearly completed her basic training. She enjoys her work and gives efficient and effective service and does not intend resigning voluntarily.

A student is regarded as unsuccessful if her attitude is negative and has resigned from the course. A student who completes the course and resigns immediately to take up another job, is also regarded as unsuccessful.

Unfortunately contact was broken with eight students and it is unknown whether they are still in the nursing profession or not.

The results of the 133 students are tabulated in Table 5.2.

A distribution of students in the stratified random sample is relfected in Table 5.1. (See overleaf).

Table 5.1

TABLE 5.1

DISTRIBUTION OF STUDENTS IN STRATIFIED RANDOM SAMPLE

Class	Case No.'s	Class	Total No. Chosen	% Chos
Carinus 1 (Afr.	1 - 9	7	2	28,5
Carinus 2 (Afr.)	10 - 17	5	2	40,0
Carinus 3 (Afr.)	18 - 23	6	2	33,3
Carinus 4 (Afr.)	24 - 29	5	2	40,0
Carinus 5 (Afr.)	30 - 36	3	1	33,3
Carinus 1 (Eng.)	37 - 100	48	16	33,3
Carinus 2 (Eng.)	101 - 119	10	3	30,0
Carinus 3 (Eng.)	120 - 173	53	18	33,9
Carinus 4 (Eng.)	174 - 238	52	17	32,6
Carinus 5 (Eng.)	239 - 275	30	10	33,3
Otto du Plessis 1 (Afr.)	276 - 357	65	22	33,8
Otto du Plessis 2 (Afr.)	358 - 388	30	10	33,3
Otto du Plessis 3 (Afr.)	389 - 437	45	15	33,3
Otto du Plessis 4 (Afr.)	438 - 488	37	12	32,4
Otto du Plessis 5 (Afr.)	489 - 502	2	1	50,0
TOTAL		398	133	

TABLE 5.2

TABLE OF PREDICTED AND ACTUAL OUTCOMES FOR THE STRATIFIED SAMPLES

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
5	4	5	6	4	26,71	26,54	Successful	Successful
7	5	1	4	9	37,30	39,62	Unsuccessful	Unsuccessful
10	6	5	5	4	31,37	30,15	Successful	Successful
16	1	3	9	2	10,98	07,30	Successful	Successful
19	8	5	5	5	43,93	40,95	Successful	Successful
20	6	6	5	4	33,72	33,28	Successful	Successful
28	4	2	3	7	23,20	27,50	Unsuccessful	Unknown
29	3	6	3	6	24,05	31,96	Unsuccessful	Unsuccessful
36	7	5	4	6	41,10	41,66	Unsuccessful	Unknown
37	9	6	6	4	49,11	43,37	Successful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
42	5	6	6	5	37,61	37,73	Unsuccessful	Successful
47	8	4	4	3	25,78	23,44	Successful	Successful
51	6	8	6	5	46,32	46,73	Unsuccessful	Successful
55	6	5	6	1	21,11	16,16	Successful	Unsuccessful
57	8	4	6	5	44,94	36,69	Successful	Successful
63	6	6	7	6	49,52	47,66	Successful	Unsuccessful
65	6	6	6	4	37,08	35,15	Successful	Unknown
68	8	6	5	5	46,28	44,08	Successful	Successful
73	6	7	6	4	39,43	38,28	Successful	Successful
80	5	6	5	5	34,25	35,86	Unsuccessful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
86	5	9	9	4	50,20	47,41	Successful	Successful
88	4	3	6	2	12,93	09,64	Successful	Successful
91	6	5	6	4	34,63	32,02	Successful	Successful
93	6	3	7	4	33,39	27,63	Successful	Successful
100	8	6	4	3	33,84	31,57	Successful	Successful
101	8	1	9	4	43,43	30,59	Successful	Successful
112	5	7	5	5	36,60	38,99	Unsuccessful	Unsuccessful
114	5	5	7	1	20,46	15,19	Successful	Successful
121	9	4	9	4	54,49	42,72	Successful	Successful
126	9	6	8	6	64,91	57,75	Successful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
129	5	3	4	5	23,84	24,60	Unsuccessful	Unknown
130	3	7	3	7	30,94	40,41	Unsuccessful	Unsuccessful
132	7	5	7	1	28,48	20,67	Successful	Successful
137	3	5	6	5	27,14	29,12	Unsuccessful	Unsuccessful
141	5	7	5	3	27,52	28,35	Unsuccessful	Successful
143	5	5	5	3	22,82	22,09	Successful	Successful
144	8	8	7	4	53,16	48,76	Successful	Successful
146	6	5	5	5	35,91	35,47	Successful	Successful
147	6	7	5	4	36,07	36,41	Unsuccessful	Unsuccessful
148	6	5	7	3	33,55	28,57	Successful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
154	7	5	5	4	35,38	31,29	Successful	Successful
158	4	4	8	3	26,54	21,83	Successful	Successful
162	5	5	3	6	29,72	34,31	Unsuccessful	Unsuccessful
165	4	5	6	3	22,17	21,22	Successful	Successful
167	4	3	6	4	22,01	20,28	Successful	Successful
173	7	4	6	3	31,85	26,31	Successful	Unknown
179	7	6	5	4	37,73	36,02	Successful	Successful
181	4	5	4	4	19,99	22,80	Unsuccessful	Successful
184	5	3	7	4	29,38	24,89	Successful	Successful
190	3	2	2	4	2,21	6,93	Unsuccessful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
193	6	6	8	4	43,80	36,89	Successful	Successful
197	5	5	3	5	25,18	28,99	Unsuccessful	Successful
199	3	4	2	5	11,45	18,51	Unsuccessful	Unsuccessful
201	4	6	5	3	21,16	22,48	Unsuccessful	Unsuccessful
208	6	5	6	4	34,73	32,02	Successful	Successful
213	6	7	7	3	38,25	34,83	Successful	Successful
214	1	2	1	5	04,63	04,90	Unsuccessful	Unsuccessful
215	4	7	6	2	22,23	22,16	Successful	Successful
220	6	6	5	3	29,18	27,96	Successful	Successful
229	6	7	4	2	23,63	23,90	Unsuccessful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
232	6	4	6	2	23,30	18,25	Successful	Successful
234	5	3	2	5	17,12	20,86	Unsuccessful	Unsuccessful
235	5	6	4	5	30,89	33,99	Unsuccessful	Unsuccessful
239	8	5	4	6	45,11	44,40	Successful	Unknown
241	5	2	4	3	15,77	12,70	Successful	Unsuccessful
243	4	3	4	3	10,75	11,22	Unsuccessful	Unsuccessful
245	5	6	7	5	40,97	39,60	Successful	Successful
249	6	4	4	2	16,58	14,51	Successful	Successful
257	6	4	7	6	44,82	41,40	Successful	Successful
258	5	4	6	5	32,91	31,47	Successful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
260	4	5	3	3	12,09	15,61	Unsuccessful	Successful
273	4	5	4	5	24,53	28,12	Unsuccessful	Unsuccessful
274	3	2	3	5	10,11	14,12	Unsuccessful	Unsuccessful
278	8	5	7	4	46,11	39,37	Successful	Successful
281	6	6	6	5	41,62	40,47	Successful	Successful
283	6	5	5	5	35,91	35,47	Successful	Unsuccessful
293	9	3	9	4	52,14	39,59	Successful	Successful
305	5	2	3	7	27,21	30,24	Unsuccessful	Successful
306	9	5	6	5	51,30	45,56	Successful	Successful
308	5	6	5	4	39,71	30,54	Unsuccessful	Unknown

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
315	5	5	6	2	21,64	18,65	Successful	Successful
319	5	7	5	7	32,06	33,65	Unsuccessful	Successful
322	5	7	4	5	33,24	37,12	Unsuccessful	Successful
327	6	4	7	5	40,28	36,08	Successful	Successful
328	5	7	4	6	37,78	42,44	Unsuccessful	Unsuccessful
332	7	6	7	6	53,53	50,40	Successful	Successful
337	3	7	9	3	32,94	30,35	Successful	Successful
338	4	6	6	4	29,06	29,67	Unsuccessful	Successful
341	8	5	8	4	49,47	41,24	Successful	Successful
343	8	7	4	4	40,73	40,02	Successful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
345	5	5	5	4	27,36	27,41	Unsuccessful	Unsuccessful
346	3	4	3	6	19,35	25,70	Unsuccessful	Successful
350	7	7	8	5	54,70	50,08	Successful	Successful
352	4	6	5	3	21,16	22,48	Unsuccessful	Successful
356	9	7	9	1	47,92	36,15	Successful	Successful
358	8	5	8	3	44,93	35,92	Successful	Successful
363	6	5	6	5	39,27	37,34	Successful	Unsuccessful
365	6	4	6	4	32,38	29,11	Successful	Successful
370	6	4	5	4	29,02	27,02	Successful	Successful
375	6	6	5	4	33,72	33,28	Successful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
377	5	4	5	7	38,63	40,24	Unsuccessful	Unsuccessful
381	4	5	6	6	35,79	37,18	Unsuccessful	Successful
382	6	7	5	4	36,01	36,41	Unsuccessful	Unusuccessful
383	6	7	6	3	34,89	32,96	Successful	Unsuccessful
384	5	5	5	4	27,36	27,41	Unsuccessful	Unsuccessful
392	7	5	7	4	42,10	36,63	Successful	Successful
394	6	6	6	3	32,54	29,83	Successful	Successful
402	7	6	5	2	28,65	25,38	Successful	Successful
403	7	8	7	2	40,07	35,38	Successful	Successful
404	4	6	6	3	24,52	24,35	Successful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
414	5	7	6	3	30,88	30,22	Successful	SUccessful
415	7	5	4	6	41,10	41,66	Unsuccessful	Unsuccessful
417	6	3	3	7	33,57	36,11	Unsuccessful	Unsuccessful
419	7	4	5	4	33,03	29.76	Successful	Successful
420	4	5	6	4	26,71	26,54	Successful	Successful
424	6	6	4	6	39,44	42,05	Unsuccessful	Unsuccessful
426	5	8	7	3	36,59	35,22	Successful	Successful
429	5	4	5	6	34,09	34,92	Unsuccessful	Unsuccessful
435	7	3	5	2	21,60	15,99	Successful	Successful
437	7	3	6	3	29,50	23,18	Successful	Successful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
441	6	6	4	2	21,28	20,77	Successful	Successful
453	6	5	3	4	24,65	26,41	Unsuccessful	Successful
455	1	3	3	9	22,60	33,05	Unsuccessful	Unsuccessful
456	4	6	5	5	30,24	33,12	Unsuccessful	Successful
459	5	4	4	6	30,73	33,05	Unsuccessful	Unsuccessful
463	6	6	5	3	29,18	27,96	Successful	Successful
467	1	2	1	9	13.53	26,18	Unsuccessful	Unknown
473	8	4	4	3	29,14	25,31	Successful	Successful
475	5	5	5	5	31,90	32,73	Unsuccessful	Unsuccessful
479	4	5	3	4	16,63	20,93	Unsuccessful	Unsuccessful

Case	Scores on Variables				Total of Classification Functions		Prediction	Outcome
	Fam. Inf.	Soc. G	Form. Rel.	IPAT	Successful	Unsuccessful		
482	4	8	3	8	41,84	51,60	Unsuccessful	Unsuccessful
488	6	7	4	4	32,71	34,54	Unsuccessful	Unsuccessful
498	5	6	4	5	30,89	33,89	Unsuccessful	Unsuccessful

CHAPTER 6

CASE STUDIES

A number of case studies will be presented to indicate how the abovementioned results could have been used effectively to advise an aspirant nursing student against embarking on a course which was not suitable for her. On the other hand, the potentially successful nurse could also have been identified with a high degree of certainty.

It will also become apparent that certain subjective motivational factors can also influence the outcome of a student's training program. Because it is not possible to make allowance for each and every such factor, it can be expected that the prediction and the outcome of such cases will differ.

It cannot be disputed that there are nurses in the profession who are not really suited to the job and who do not enjoy their work. The question arises whether they would not have benefited by an earlier prediction of failure in the nurse training program.

Case studies are provided for students falling into each of the categories:

Predicted successful/

a) Predicted successful - Outcome successful

b) Predicted unsuccessful - Outcome unsuccessful

c) Predicted successful - Outcome unsuccessful

d) Predicted unsuccessful - Outcome successful

A small random sample of case studies in categories a and b are provided as an illustration of successfully predicted cases.

In cases c and d all cases of incorrect predictions are provided to demonstrate how various extraneous factors can influence the outcome of training.

6.1 PREDICTION SUCCESSFUL - OUTCOME SUCCESSFUL

Of the following three students, student no. 10 studied at the Carinus Nursing College (Afrikaans Class), student no. 258 at the Carinus Nursing College (English Class), and student no. 343 at the Otto du Plessis Nursing College (Afrikaans Class).

In all three cases the students were rated as successful by the classification functions.

Although only student no. 258 has actually qualified as nursing sister so far, all three students are positive in their attitude towards nursing in general. In spite of the "drawbacks" and "disadvantages", they enjoy the work and give reasonably efficient and effective service. From all accounts, they all

intend nursing/

intend nursing for as long as it is possible.

They can therefore be regarded as successful nursing students.

CASE 10

Miss C. is an Afrikaans-speaking girl from Touwsriver who enrolled as student nurse at the Conradie Hospital during 1978. She was in Class 2 during 1980 when she completed the questionnaire.

She entered the nursing profession with a reasonable idea of what to expect and her attitude was always positive. She enjoys her work and it appears that she gives efficient service.

She was rated as successful by the classification functions.

She is still nursing at present and intends making nursing a permanent career. She is 28 years of age and does not yet have any plans of getting married.

CASE 258

Miss E. is an English-speaking girl from Cape Town who enrolled as student nurse at the Somerset Hospital during 1977. She was in Class 5 during 1980 when she completed the questionnaires.

Her attitude/

Her attitude towards nursing was always favourable in both the Carinus College as well as the Hospital. Her own words were:

> "I love nursing (sometimes it has drawbacks, e.g. internal policies of my hospital). I intend travelling and using my career to get me around."

She has qualified as a nursing sister and intends nursing until she gets married.

CASE 343

Miss B. is an Afrikaans-speaking girl form Bellville who enrolled as student nurse at the Tygerberg Hospital during 1979. She was in Class 1 during 1980 when she completed the questionnaires.

Her mother was originally in the nursing profession so the student had a reasonable idea of what to expect. She is positive in her attitude towards nursing and accepts the disadvantages with the advantages.

She was rated as successful by the classification functions.

She has been nursing ever since and enjoys her job. She does not yet have a fixed boyfriend and intends making nursing a permanent career.

6.2 PREDICTION UNSUCCESSFUL - OUTCOME UNSUCCESSFUL

Of the following four students, student no. 29 studied at the Carinus Nursing College (Afrikaans Class), student no. 201 at The Carinus Nursing College (English Class) and student no.'s 328 and 377 at the Otto du Plessis Nursing College (Afrikaans Class).

In all four cases the students were rated as unsuccessful by the classification functions.

In three out of the four cases the students were dissatisfied, disillusioned and negative in their attitude towards the nursing profession.

Although both students no.'s 29 and 201 qualified as nursing sisters, they resigned shortly after completion of their studies. They did not enjoy their work and merely completed the course rather than resign half-way.

These students can be regarded as unsuccessful as far as the outcome of their training program is concerned.

CASE 29

Miss E. is an Afrikaans-speaking girl from Bonnievale who commenced training at the Groote Schuur Hospital during 1957. She was in Class 4 when she completed the questionnaires in 1980.

Coming from/

Coming from a small rural town, she found it difficult to adjust to the urban life of Cape Town. She often indicated that she went home to Bonnievale regularly and would like to go back permanently. Her attitude towards nursing was not very positive and she regarded her training course as something that had to be completed as soon as possible so that she could return to Bonnievale.

Shortly after she qualified as nursing sister, she resigned and got married. She is at present a housewife.

CASE 201

Miss K. is an English-speaking lady from Johannesburg who enrolled as student nurse for the second time at the Groote Schuur Hospital during 1977.

She was in Class 4 during 1980 when she completed the questionnaires. According to her she had previously resigned from nursing during her final year of training. After deciding to return, she was compelled to start from the beginning again. Although these facts could not be varified, it appeared that she was disillusioned.

She was rated as unsuccessful by the classification functions.

She resigned form nursing shortly after qualifying as nursing sister.

CASE 328

Miss R. is an Afrikaans-speaking girl of 20 years from Bellville. Her mother is a qualified nursing sister and is permanently employed.

She did not start nursing directly after school, but did know what to expect when she embarked on the course. She appeared to enjoy nursing to a certain extent, but objected to various "petty" rules and regulations.

She completed the questionnaires in Class 1 during 1980.

According to the classification functions, she was a poor candidate.

She resigned from the course after a period of approximately six months. It is uncertain what she did afterwards.

CASE 377

Miss G. is an Afrikaans-speaking girl from Fraserburg, who commenced training as student nurse at the Eben Dönges Hospital in Worcester during 1978.

She was in Class 2 during 1980 when she completed the questionnaires.

She did not start nursing directly after matriculating but worked as a clerk. She was both dissapointed and disillu-

sioned with the conditions of service and claimed that the salary was far too inadequate. She is the supporter of her parents and could not make ends meet. She did not intend making nursing a permanent career.

She was rated as unsuccessful by the classification functions.

She resigned shortly after completing the questionnaires and obtained a more lucrative job.

6.3 PREDICTION SUCCESSFUL - OUTCOME UNSUCCESSFUL

Of the following nine students, student no. 37 studied at the Carinus Nursing College (Afrikaans Class), student no.'s 55, 63, 126, 148 and 241 at the Carinus Nursing College (English Class) and students no.'s 283, 363 and 383 at the Otto du Plessis Nursing College (Afrikaans Class).

In all nine cases the students were rated as successful by the classification functions.

In most of the cases, the students were originally happy in their work and had intentions of carrying on in the nursing profession. It appears however, that the various disadvantages, such as social isolation, irregular working hours, poor salary, emotional and physical strain had caused discontent

and dissatisfaction/

and dissatisfaction.

Although two students, namely no.'s 126 and 241, had continued until they were qualified, they resigned shortly afterwards. Neither had any desire to carry on nursing afterwards. The other seven students all resigned before the end of the course.

These students can all be regarded as unsuccessful.

CASE 37

Miss S. is an Afrikaans-speaking single girl from Zimbabwe, who enrolled as student nurse at the Groote Schuur Hospital directly after matriculating in 1979.

She was in Class 1 during 1980 when she completed the questionnaires.

Although she is Afrikaans-speaking, she received her training in English. This did not, however, prevent her from adjusting well to the conditions of service.

She was rated as successful by the classification functions.

Later, she found that nursing interfered too much with her social life and decided to look for another job. She resigned approximatly twelve months after the commencement of her training.

CASE 55

Miss G. is an English-speaking girl from Humansdorp who enrolled as student nurse at the Groote Schuur Hospital directly after matriculating in 1979.

She was in Class 1 during 1980 when she completed the questionnaires.

Being the daughter of a nursing sister, she was reasonably well aquainted with the nursing profession as such. She did, however, claim that nursing was not quite what she had expected, but she was able to cope.

She was rated as successful by the classification functions.

She resigned from nursing before qualifying. It appears that she became disillusioned by the various conditions of service.

CASE 63

Miss G. is an English-speaking girl from Johannesburg who did not commence nursing training directly after leaving school.

She is the youngest child of a university professor and a nursing sister. Evidently their marriage was originally somewhat unstable in as much as they were divorced but remarried.

Having a mother who was a nursing sister, she was familiar with

what to expect form a career in nursing. She enjoyed her job and felt satisfied with the conditions of service.

She completed the questionnaires when she was in Class 1. She was rated as successful by the classification functions.

Approximately two years later she complained about poor relationships with the senior hospital staff. In her own words:

> "I sometimes feel nursing tends to make me feel as if I'm being like an immature, incapable child."

She resigned form nursing and has been working as a representative.

CASE 126

Miss D. is an English-speaking girl from Cape Town who enrolled as a student nurse directly after leaving school at the end of 1978. She is working at the Woodstock Hospital.

She completed the questionnaires in Class 3 during 1980. She regarded nursing as exciting and enjoyed the challenge very much. Although she felt that there were certain organizational hazards, she felt that the nursing profession provided her with opportunities for self-initiative and -enhancement.

She was rated as successful by the classification functions.

Although she/

Although she did qualify as a nursing sister, she resigned shortly afterwards. She felt that the irregular working hours led to isolation. She also felt that as qualified sister she was earning too little and could in fact earn much more as a secretary, with the additional advantage of more regular working hours of duty.

CASE 148

Miss G. is an English-speaking single girl from England who commenced training as a student nurse at the Groote Schuur Hospital during 1978.

She was in Class 3 during 1980 when she completed the questionnaires.

Being the eldest daughter in the family and growing up in a semi-rural area in Kent, England, she had come to South Africa for experience. She did not appear to be adversely affected by the urban life of Cape Town and adjusted well to local conditions.

She was rated as successful by the classification functions.

Shortly before qualifying as a nursing sister, she resigned and evidently returned to England.

CASE 241

Miss M. is a German-speaking girl from Otjiwarongo, S.W.A., who matriculated in 1974. After a period of nearly three years in which she had various jobs, she commenced training as a student nurse at the Somerset Hospital during 1977.

She was in Class 5 during 1980 when she completed the questionnaires.

Being the eldest daughter of a medical doctor and a chiropodist, she was reasonably familiar with the hospital setting. She enjoyed her work and was rated very favourably by the senior staff.

She was rated as successful by the classification functions.

She completed her general nursing training and left the profession shortly afterwards to take up a position in a private company.

CASE 283

Miss L. is an Afrikaans-speaking girl from Paarl who enrolled as a student nurse at the Tygerberg Hospital directly after school in 1980.

She completed the questionnaires in Class 1 during 1980.

Originally she/

Originally she was rather pleasantly surprised by what she encountered in the nursing profession. She enjoyed her work and regarded her job as a challenge. Her parents encouraged her and because their relationship was sound, it had a positive influence on her progress.

She was rated as successful by the classification functions.

After a year and a half of training, she resigned and obtained a job in a private company where she is evidently earning considerably more money. It is uncertain whether she ever expressed discontent with the nursing profession as such. The indications are that she left the profession merely in order to earn more money.

CASE 363

Miss G. is an Afrikaans-speaking girl from Barberton who enrolled as student nurse at the Tygerberg Hospital directly after leaving school in 1978.

She was well motivated to make nursing a permanent career and enjoyed the work immensely. She was married during 1979 and it appeared that her job did not cause any problems. Both she and her husband accepted the fact that her hours of duty were somewhat irregular at times.

She was rated as successful by the classification functions

after completing/

after completing the questionnaires while she was in Class 2 during 1980.

Approximately one year later she decided to leave the nursing profession after being offered a job that is less tiring and more remunerative.

CASE 383

Miss M. is an Afrikaans-speaking girl from Bellville who enrolled as a student nurse at the Tygerberg Hospital directly after matriculating in 1979.

She grew up in a well-disciplined household and claimed that she and her parents were closely-knit. She originally wanted to become an air-hostess, but as a result of her age, her application was turned down.

She completed the questionnaires in Class 2 during 1980. According to the classifications functions she was rated as successful.

She enjoyed her job and was rated highly by the hospital as well as the college. When she reached Class 4, however, she became increasingly aware of the negative side of the profession, i.e. salary irregular hours of duty, emotional strain, etc.. She was offered another job and shortly afterwards resigned from the nursing profession.

6.4 PREDICTION UNSUCCESSFUL - OUTCOME SUCCESSFUL

Of the following fifteen students, students no.'s 42, 51, 141, 181, 197, 229 and 260, studied at the Carinus Nursing College (English Class) and student no.'s 305, 319, 322, 338, 352, 381, 453 and 456, at the Otto du Plessis Nursing College (Afrikaans Class).

In all fifteen cases the students were rated as unsuccessful by the classification functions.

In most of the cases the students were originally reasonably uncertain of themselves and the profession they had chosen. As a result of salary, "petty" discipline, disrupted social life, irregular hours, etc., their attitude towards the profession could be regarded as negative.

Furthermore, in many cases, the student's initial encounters with the nursing profession had given rise to feelings of anxiety.

As the students had progressed they had become more proficient and used to the role and demands of a nurse. Although some nurses had "resigned" themselves to "accepting the disadvantages as well as the advantages" of nursing, it can be argued that their general attitude had changed. By virtue of their accepting nursing for what it is, and remaining in the profession, they are in actual fact prepared to give the profession their support.

They have become become more positive in their attitude towards nursing and can therefore be regarded as successful.

CASE 42

Miss M. is a Jewish girl from Cape Town who enrolled as student nurse at the Groote Schuur Hospital after an overseas trip directly after matric.

She was in Class 1 during 1980 when she completed the questionnaires.

She was uncertain of herself as well as her profession and decided to carry on with nursing "until something better turns up." It is clear that her attitude towards nursing as such could not be regarded as sound.

She was rated as unsuccessful by the classification functions.

She is still nursing and appears to be reasonably satisfied. She intends to get married soon and is not prepared to make a change at this stage.

CASE 51

Miss B. is a twenty year old girl from Cape Town who commenced training at the Groote Schuur Hospital directly after matriculating in 1979.

She was drawn to the nursing profession by unrealistic expectations regarding the nature of the work. Too soon she realised that she had made a mistake, but the further she progressed with

the course/

the course, the less inclined she felt to make a change. She also felt morally obliged to carry on with the profession.

She was classified as unsuccessful by the classification functions.

She is still in the nursing profession and feels that it is too late to embark on a fresh course at this stage.

CASE 141

Miss M. is an English-speaking girl from Stutterheim who enrolled as student nurse at the Tygerberg Hospital directly after matriculating in 1978.

She completed the questionnaires in Class 3 during 1980, and was rated as unsuccessful by the classification functions.

In the beginning she experienced difficulties in the predominantly Afrikaans hospital.

She felt unable to cope with the work load and generally regarded herself as a failure.

During the past two years she has found her feet and tends to derive more satisfaction out of her job. She adjusts herself better to her colleagues and has mastered the Afrikaans language.

She is now reasonably happy in her job and has decided to carry on nursing until she gets married.

CASE 181

Miss G. is an English-speaking girl from Livingston who enrolled as student nurse at the Groote Schuur Hospital directly after matriculating in 1978.

She was in Class 4 during 1980 when she completed the questionnaires.

Originally she did not have many definite plans for her own future and carried on with nursing although she was not particularly enthusiastic about her job.

She was rated as unsuccessful by the classification functions.

She is at present a sister at the Groote Schuur Hospital and appears to be reasonably satisfied with her position.

She is engaged to be married and intends nursing until she is compelled to resign.

CASE 187

Miss G. is an Italian girl of 21 years who commenced her training directly after matriculating in 1978. Shortly after she started working at the Groote Schuur Hospital, she realised that she was not suitable for the nursing profession. She felt obliged, however, to carry on with what she had begun. Her own words:

> "If it wasn't for the fact that my parents are expecting me to resign, and said that I'd never last out nursing, I would jolly well resign!"

The classification functions determined that she would be a poor candidate for the nursing profession. For her own reasons, she actually persevered and qualified as a sister.

Although she did qualify, her motives for carrying on cannot be regarded as healthy and normal.

CASE 229

Miss R. is an English-speaking Jewish girl from Cape Town who commenced training as a student nurse during 1978. She completed the questionnaires during 1980 while she was in Class 4.

Originally she was disappointed in what she encountered in the nursing profession. She felt that nurses had a poor status in the community and that the general public were unaware of the hard work and poor salaries with which nurses had to be satisfied.

She was rated as unsuccessful by the classification functions.

She decided to carry on and complete her training. She wanted to "finish what she had set out to do." She qualified as sister and has been employed at the Groote Schuur Hospital ever

since. She

since. She does not feel inclined to resign from her job at this stage and is prepared to accept the job for what it is worth.

CASE 260

Miss C. is an English-speaking girl from Muizenberg who worked as a clerk for one year before enrolling as student nurse at the Woodstock Hospital.

She was in Class 5 during 1980 when she completed the questionnaires.

Although she was satisfied with the nursing profession originally, she gradually became disillusioned with the irregular hours of duty, salary and general working conditions. Her own words were:

> "I will continue nursing if I find a five-day week job, with a better salary, otherwise I am virtually forced out of nursing."

She was rated as unsuccessful by the classification functions.

She qualified as nursing sister and completed her midwifery training and has been nursing ever since. She has apparently adjusted herself to the conditions of service and is happy in her job.

CASE 305

Miss J. is an Afrikaans-speaking girl from Worcester. She commenced her training at the Tygerberg Hospital, and was in Class 1 during 1980 when she completed the questionnaires.

Being the eldest daughter of a farmer and having lived in a semi-rural community for many years, she did experience difficulties with her adjustment to city life. Furthermore, from the beginning, she resented much of the so-called petty discipline in the nursing profession. She was however, determined to complete her course and obtain the qualification of nursing sister.

She was rated as unsuccessful by the classification functions.

She did in fact qualify as sister and does not feel inclined to make a change at this stage. She has a fixed boyfriend and intends to get married later on. She accepts the fact that her present salary is higher than the starting salary elsewhere and has resigned herself to carrrying on with the profession until she gets married.

CASE 319

Miss E. is an Afrikaans-speaking girl from Kempton Park who studied B.Sc. at university for one year before enrolling as student nurse at the Tygerberg Hospital during 1980.

She expressed concern about her future and felt unsure about

whether she was studying in the right direction. She had vague ideals of becoming a lecturer and emphatically stated that she did not like the practical side of nursing.

She was classified as unsuccessful by the classification functions.

She is still nursing and it appears that she has resigned herself to accepting the profession as it is. She also feels that she is too old to embark on antoher career at this stage.

CASE 322

Miss M. is an Afrikaans-speaking girl from Malmesbury who commenced training at the Tygerberg Hospital directly after matriculating in 1979.

She was in Class 1 during 1980 when she completed the questionnaires.

She had never been in a boarding-school and found it rather difficult to adjust to the strict discipline in the nurse's residence as well as the hospital. She resented the fact that she was often made to feel inferior by her seniors.

She was rated as unsuccessful by the classification functions.

She has been nursing ever since and has become satisfied with her profession. In spite of the fact that she experienced

adjustment difficulties in the nurse's home originally, she has resided there all the time and does not feel inclined to move out at this stage.

CASE 338

Miss I is an Afrikaans-speaking girl from Rawsonville who commenced her training as student nurse at the Tygerberg Hospital in 1980. For two years before entering the nursing profession she had worked as a typist-clerk.

She was in Class 1 during 1980 when she completed the questionnaires.

She is the eldest daughter of a doctor, so that the nursing profession as well as hospital situation was not strange to her. She was, however, inclined to be unsure of herself and was not certain whether she would be happy in the nursing profession.

She was rated as unsuccessful by the classification functions.

She is still nursing and appears to have resigned herself to accepting the nursing profession for what it is worth. She is rated highly by the hospital authorities and does her job effectively and efficiently.

CASE 352

Miss I. is an Afrikaans-speaking girl from Porterville who enrolled as a student nurse at the Tygerberg Hospital after matriculating during 1979.

She had a difficult childhood in which her father's excessive drinking habits often gave rise to family disruption. At the time of her enrolling for the course, she had felt reasonably uncertain of herself and her future, and in the nursing profession she sought the security of a well-structured environment. Her motives for entering the nursing field were therefore centered more around her own well-being than a desire to help others.

She was rated as unsuccessful by the classification functions.

During the course of her studies, her family problems were resolved and her attitude towards nursing also changed drastically. She is now happy in her job and feels that her stable working environment can only enhance her relationship with her parents.

CASE 381

Miss W. is an Afrikaans-speaking girl who is at present a qualified sister at the Tygerberg Hospital. She grew up in Worcester and commenced her training at the Eben Dônges Hospital.

After a/

less fortunate and fall by the wayside.

Various factors motivate an individual to become a nursing student. In some cases, it will seem, the motives are healthy and sound. In other cases the motives appear somewhat irregular.

There are nurses who enjoy their job and feel that they are afforded the opportunity to use their discretion and initiative. For such students there are ample chances for self-enhancement and -growth. There are however, also nurses who feel that their initiative is stifled by the hierarchical system in which they are made to feel inferior and worthless.

It was mentioned before that there are nurses in the profession who remain for reasons that cannot be regarded as healthy and normal. In Case 197 the nurse felt compelled to remain in the nursing profession in order to prove her parents wrong. In her case the classification functions had rated her as potentially unsuccessful. That is understandable if one takes into consideration her negative attitude towards nursing which possibly gave rise to an inability or unwillingness to accept the authority imposed on her by the hierarchical system. She was not motivated to carry on nursing by a desire to help others or some other acceptable reason. Instead, she was driven by an urge to prove her point in a somewhat morbid manner.

In case 51, the nurse was not inclined to make a change from

the nursing profession although she was convinced that she was in the wrong profession. She felt that she had already embarked on a course and it was not advisable to start something else at that stage in her life. At the time of completing the questionnaires, she had felt very unsure of herself which had obviously had an effect on her anxiety level. She had felt morally obliged to carry on with the profession. Although the classification functions had then rated her as unsuccessful, other motives had played a decisive role in her remaining in the nursing profession.

In Case 381 the nurse had originally experienced adjustment problems after being used to a rural environment. This had obviously affected her anxiety level. Her attitude was apparently not very sound, but after "finding her feet," she gradually became progressively more accepting of her role as nurse.

It is, however, not always possible to explain why the prediction and outcome differ. There are factors which cannot be predicted in advance. Factors which play a role in determining whether the nurse carries on happily in her job, or resigns and finds another job.

In a number of cases the students had become disillusioned and dissatisfied with the nursing profession early in their training period. Some had experienced difficulties adjusting to the urban life surrounding the larger hospitals. Some nur-

ses had entered the nursing profession with unrealistic notions of what they would encounter. In some cases, the nurse resented the so-called "petty" discipline, the inadequate salaries, the poor status of the nurse, the social isolation which results from working irregular hours, etc.

As a result of the aforementioned factors, some students resigned. Others decided to finish the course and obtain the qualification which could always be used later if the need were to arise. Still others experienced the same negative feelings towards nursing but carried on nevertheless. It would appear that in such cases the student "grew" into the profession and adjusted herself. This evidently gave rise to a change in attitude towards the nursing profession. A negative attitude changed to a positive one. According to her, the hospital hierarchy can be compared to the hierarchy in the army. Those who reach a position of authority often tend to thrive on imposing their authority on their junior colleagues.

It does not follow, therefore, that because a nurse experiences adjustment problems in the beginning, she will not be successful. There appear to be many successful nurses who had wanted to resign in the early stages of their training. According to Miss Hattingh, Chief Nursing Officer of the Cape Province, she had also desperately wanted to resign from nursing in the beginning of her training program.

There are/

There are nurses who enjoy the work in spite of the various negative factors. Their attitudes appear to be positive. They are satisfied to work in a well-structured environment in which the discipline provides the necessary sense of security.

CHAPTER 7

RELATION OF PRESENT STUDY TO PREVIOUS RESEARCH

During this study a very significant correlation was found between a nursing student's scores on the variables Family Influences, Sociability G, Formal Relations, and Total IPAT Anxiety scale and her success or failure in the nurse training program.

Some of the findings fit in with what has been reported in previous research. The following is a summary of some of these findings:

FAMILY INFLUENCES

In a comparison of fifty-nine maladjusted student nurses, with forty-one normal nursing students, Diller and Fuller, (1952, p. 45) found that significantly more maladjusted nursing trainees came from broken or unhappy homes than their normal counterparts.

SOCIABILITY G

In 1951 Asenath and Powell (p. 281) concluded that successful personal relationships played an important role in nursing.

Four years/

Four years later, Beaver (1955 , p. 339) determined that in comparison to education students, nursing students rated higher in Sociability, among others.

In yet another study, using the Edwards Personal Preference Schedule (EPPS), Reece (1961, p. 172) found that the student nurses who successfully completed their training course, showed "a need to please ....." This does indicate a trend towards sociability.

The study conducted by Appelman (1978, p. 22) in the Republic of South Africa, revealed that the successful psychiatric nurse should have, among others, a "social responsiveness that is conducive to positive communication."

FORMAL RELATIONS

In the aforementioned study of Reece, (1961, p. 172) it was found that the successful nursing student was "willingly submitting to authority." This is in keeping with the description of good formal relations, being "successful in her formal relations with fellow-pupils, fellow-students, colleagues, as well as with figures of authority and superiors in the learning or work situation."

IPAT ANXIETY

Healy and Borg, (1951, p. 276) compared a group of 182 nursing students with a norm group of woman university students. The mean scores of the group of nurses were significantly more favourable than those of the norm group on factors relating to Nervousness, among others.

During 1963, Levitt (Fein, 1963, p. 374) found that IPAT Anxiety is significantly related to nursing school achievement in a curvilinear manner; that is, both very high and very low IPAT Anxiety levels operate against success at nursing school, both in theoretical and clinical courses.

In 1978, Appelman, (p. 22) in the aforementioned study determined that the successful psychiatric nurse should have a "calm and peaceful disposition with an absence of anxiety feelings in crisis situations".

PREVIOUS FINDINGS NOT CONFIRMED IN PRESENT STUDY

In the comparison between 182 beginning nursing students and the norm group of 143 woman college students (as mentioned above), Healy and Borg, (1951, p. 276) found that the nursing students were significantly more socially introverted and less rhathymic than the norm group. Rhathymia as defined by the Guilford-Martin battery of personality tests is a "happy-

go-lucky, carefree disposition, liveliness, impulsiveness, versus an inhibited, over-controlled, conscientious, serious-minded disposition."

This does not fit in with the findings of the present study in which it was determined that the successful student was high on Sociability G according to the PHSF. Sociability G is defined as "the degree to which a person has a need for, and spontaneously participates in social group interaction (extrovert) in comparison with the degree to which a person is averse to social group interaction (introvert)."

This apparently conflicting finding becomes less severe in view of the fact that Healy and Borg's group of nursing students who were "significantly more socially introverted and less rhathymic" were beginning students. On the other hand, in the present study, it was the successful nursing students who were high on Sociability G. By definition, these students had been nursing for at least two and a half years, while their less sociable counterparts had already resigned from the training program. The groups of students in the two studies are therefore not really comparable.

Diller and Fuller (1952, p. 45) in the previously mentioned study found that significantly more maladjusted nursing students were only children, etc.

The present study found no association between the success/failure of student nurses and being an only child.

The abovementioned investigations have displayed to a greater or lesser degree, a significant relationship between scores on the variables mentioned and success or failure in nursing training. None of the studies however, indicated to what extent the scores on the variables concerned would be able to predict a student's success or failure in the training program.

The unique achievement of the present study is that it has successfully combined the abovementioned factors in the formulation of the classification functions whereby a prediction can be made with a high degree of accuracy whether a student nurse would be successful or unsuccessful in the nurse training program.

CHAPTER 8

CONCLUSION

This study has not focussed on all the reasons for withdrawal from the nursing profession. An attempt has been made to highlight specific personality and biographical factors that could determine whether a student nurse would be successful or unsuccessful.

In the closing paragraph of the previous chapter, it was claimed that the classification functions can be used to predict in advance whether an aspirant student will be successful or not.

An attempt was made to determine the accuracy and validity of the classification functions. Although they appeared to be valid during the follow-up study that was carried out, the stratified random sample of students used in the follow-up study was drawn from the same population from which the original experimental and control groups were drawn. There is, therefore, the possibility that the population as a whole was special in some respect or other which would render a generalization of the results to other populations invalid.

In view of the above, it would seem advisable that the tests be applied to a wider population of students.

It would/

It would then be possible to prove the validity of the classification functions more conclusively.

By virtue of the fact that there are cases where the prediction and the outcome of a student's training differ, it is necessary to exercise caution when selecting students for the training programs on the strength of the results of the classification functions. Instead of rejecting an aspirant student's application for training too hastily, it might prove fruitful to consider an investigation into why she is not rated as suitable for the training course. There might be factors present that were not able to be foreseen in advance. The matter could possibly be rectified by counselling or some other measure.

The present study has shed light on four variables that have an influence on the outcome of a student nurse's training, namely, Family influences, Sociability, Formal Relations and Anxiety. Many questions, however, remain unanswered. Why do these variables have an influence on a nurse? Is there possibly some relationship between a particular variable and some situation or condition in the hospital program?

In order to provide adequate answers to such questions, it would be necessary to launch a thorough investigation into the various duties of the nurse and to determine how these duties affect her, both physically and emotionally. Only then it would be possible to put forward any recommendations concerning the nurse training program.

APPENDIX 1

PERSONAL PARTICULARS QUESTIONNAIRE

1. Name :
2. Telephone, if any :
3. Address :
4. Date of Birth :
5. Birthplace :
6. Marital Status :
7. If married, date of marriage :
8. Church Affiliation :
9. Do you attend church regularly ?
10. Do you actively partake in church activities ?
11. Home language ?
12. Hospital at which you are working ?
13. Do you reside at the nurses home ?
14. Do you stay at home ?
15. Did you grow up in a city ?
16. Did you grow up in your parents' home ?
17. If not, where did you grow up ?
18. Were you ever in a boarding school ?
19. If so, for how many years ?
20. At what age were you first sent to boarding school ?
21. Are you an adopted child ?
22. Are you an only child ?
23. Are you the youngest child ?
24. Are you the eldest child ?
25. Do you regularly partake in sport ?
26. Are your parents divorced ?
27. Occupation of father ?
28. Does your mother work ?
29. Her occupation ?
30. Do you smoke ?
31. Do you have any physical handicaps ?
32. Specify any physical handicaps :
33. Specify any hobbies :
34. Do you mind working night-shift ?
35. Do you intend making nursing a permanent career ?
36. Do you enjoy nursing ?

37. Do you feel that nursing is what you expected it to be ?
38. Are you left-handed or right-handed ?
39. Are any members of your family nurses ?
40. State of health ?
41. Have you ever been hospitalized ?
42. Reason for hospitalizatio n ?
43. Total period(s) of hospitalization :
44. Subjects and symbols during matric :.....
.....
45. Block at present ?
46. Grade of matriculation ?
47. Did you start nursing directly after school ?
48. Do you have a fixed boy-friend ?
49. How long has your present relationship been on the go ?
50. Do you have any children of your own ?
51. Are you the sole supporter of the child(ren) ?
52. Do you fully or partially support a parent or parents ?
53. Age (year and months) of children, if any :
54. Present grades in comparison to rest of class (good or poor) ?
55. Any other relevant information : .....
.....
.....
.....
.....

Today's Date.....

APPENDIX 2

RAW DATA AND CALCULATIONS OF D^2 ON THE BIOGRAPHICAL VARIABLES

1. MARITAL STATUS

	Single	Married	Divorced	
Experimental	49 50	4,85 4	2,15 2	56
Control	42 41	4,15 5	1,85 2	48
Total	91	9	4	104

NOTE 1: Expected (theoretical) frequencies in blocked corners.

NOTE 2: Problems may arise when expected frequencies are less than 5, as occurs here. This means that caution must be exercised in interpreting D^2 statistics from tables like these.

$$D^2 = \sum \frac{O_i^2}{E_i} - N$$

$$= 0,3899$$

$$\chi^2_{2\ 0,05} = 5,991$$

$\therefore$ We accept H_o and conclude that there is no association between the failure/success of nurses and their marital status.

2. PARTICIPATION IN CHURCH ACTIVITIES

	Regularly	Sometimes	Never	
Experimental	9,69 7	20,46 20	25,85 29	56
Control	8,31 11	17,54 18	22,15 19	48
	18	38	48	104

$$D^2 = \sum \frac{O\ i^2}{E\ i} - N$$

$$= 2,47$$

$$\chi_2^{2\ 0,05} = 5,991$$

∴ We therefore accept H_o and conclude that there is no association betweenparticipation in church activities and the successf/failure of nurses.

Attended boarding/

3. ATTENDED BOARDING SCHOOL

	Yes	No	
Experimental	25,85 27	30,15 29	56
Control	22,15 21	25,85 27	48
Total	48	56	104

$$D^2 = \sum \frac{O_i^2}{E_i} - N$$

$$= 0,21$$

$$\chi^2_{1\ 0,05} = 3,841$$

∴ We therefore accept the H_o and conclude that there is no association between the success/failure of nurses and whether they attended boarding school.

4. ADOPTED CHILD

	Yes	No	
Experimental	3,85 3	52,15 53	56
Control	0,46 1	47,54 47	48
Total	4	100	104

$$D^2 = \sum \frac{O\ i^2}{E\ i} - N$$

$$= 0,7557$$

$$\chi_1^{2\ 0,05} = 3,841$$

∴ We therefore accept Ho and conclude that there is no association between success/failure and being an adopted child or not.

Only child/

5. ONLY CHILD

	Yes	No	
Experimental	0 (0,54)	56 (55,46)	56
Control	1 (0,46)	47 (47,54)	48
Total	1	103	104

$$D^2 = \sum \frac{O\ i^2}{E\ i} - N$$

$$= 1,19$$

$$\chi_1^{2\ 0,05} = 3,841$$

∴ We therefore accept H_0 and conclude that there is no association between the successf/failure of nurses and being an only child.

6. YOUNGEST CHILD

	Yes	No	
Experimental	14 / 16	42 / 40	56
Control	12 / 10	36 / 38	48
Total	26	78	104

$$D^2 = \sum \frac{O\,i^2}{E\,i} - N$$

$$= 0,8254$$

$$\chi_1^{2\ 0,05} = 3,841$$

∴ We therefore accept H_o and conclude that there is no association between success/failure of nurses and being the youngest child.

Eldest child/

7. ELDEST CHILD

	Yes	No	
Experimental	18,85 16	37,15 40	56
Control	16,15 19	31,85 29	48
Total	35	69	104

$$D^2 = \sum \frac{O_i^2}{E_i} - N$$

$$= 1,41$$

$$\chi_1^{2\ 0,05} = 3,841$$

∴ We accept therefore the H_o and conclude that there is no association between success/failure of nurses and being the eldest child

NOTE: There is an inherent bias in considering only/ child/ youngest child/ eldest child because every only child will also be the youngest and the oldest.

Participation in/

8. PARTICIPATION IN SPORTING ACTIVITIES

	Regularly	Sometimes	Never	
Experimental	23,15 21	9,15 10	23,69 25	56
Control	19,85 22	7,85 7	20,31 19	48
Total	43	17	44	104

$$D^2 = \sum \frac{O\ i^2}{E\ i} - N$$

$$= 0,76$$

$$\chi_2^{2\ 0,05} = 5,991$$

.'. We therefore accept H_o and conlcude that there is no association between the success/failure of nurses and their degree of participation in sporting activities.

Mother employed/

9. MOTHER EMPLOYED

	Yes	No	
Experimental	25 (20,46)	31 (35,54)	56
Control	13 (17,54)	35 (30,46)	48
Total	38	66	104

$$D^2 = \sum \frac{O_i^2}{E_i} - N$$

$$= 3,44$$

$$\chi_1^{2\ 0,05} = 3,841$$

∴ We therefore accept H_o and conclude that there is no association between the success/failure of nurses and whether or not their mother is employed. However,

$$\chi_1^{2\ 0,10} = 2,706$$

Therefore this association is significant at the 10% level. One can therefore possibly speak of a trend here, in the direction of nurses who succeed having fewer working mothers and nurses who fail being more likely to have working mothers.

Intention to/

10. INTENTION TO MAKE NURSING A CAREER

	Yes	No	
Experimental	26,38 23	29,62 33	56
Control	22,62 26	25,38 22	48
Total	49	55	104

$$D^2 = \sum \frac{O_i^2}{E_i} - N$$

$$= 1,7739$$

$$\chi_1^{2\ 0,05} = 3,841$$

$\therefore$ We therefore accept H_o and conculde that there is no association between the success/failure of nurses and their intention to make nursing a career or not.

NOTE: This variable is not a biographical variable. It involves intentions and the attitudes, beliefs, expectations, circumstances, etc. involved in it.

11. FAMILY MEMBERS IN NURSING

	Yes	No	
Experimental	18 (17,77)	38 (38,23)	56
Control	15 (15,23)	33 (32,77)	48
	33	71	104

$$D^2 = \sum \frac{Oi^2}{Ei}$$

$$= 0,009$$

$$\chi^2_{1\ 0,05} = 3,841$$

$\therefore$ We therefore accept H_o and conclude that there is no association between the success/failure of nurses and whether or not they have family members in nursing.

12. MATRIC SYMBOL

	B	C	D	E	
Experimental	3,23 3	10,77 8	40,92 44	1,08 1	56
Control	2,77 3	9,23 12	35,08 32	0,92 1	48
	6	20	76	2	104

$$D^2 = \sum \frac{Oi^2}{Ei} - N$$

$$= 2,09$$

$$\chi^2_4 \quad {}^{0,05} = 9,488$$

$\therefore$ We therefore accept H_o and conclude that there is no association between the success/failure of nurses and their matric symbol.

13. NURSING DIRECTLY AFTER MATRIC

	Yes	No	
Experimental	39 (39,31)	17 (16,69)	56
Control	34 (33,69)	14 (14,31)	48
	73	31	104

$$D^2 = \sum \frac{Oi}{Ei}^2 - N$$

$$= 0,018$$

$$\chi_1^{2\ 0,05} = 3,841$$

$\therefore$ We therefore accept H_o and conclude that there is no association between the success/failure of nurses and whether or not they start nursing directly after Matric.

14. FIXED BOYFRIEND

	Yes	No	
Experimental	35 32	21 24	56
Control	30 33	18 15	48
	65	39	104

$$D^2 = \sum \frac{Oi^2}{Ei} - N$$

$$= 1,49$$

$$\chi^2_1{}^{0,05} = 3,841$$

∴ We therefore accept H_o and conclude that there there is no association between the success/ failure of nurses and whether or not they have a fixed boyfriend.

15. PARENTS DIVORCED

	Yes	No	
Experimental	7,54 9	48,46 47	56
Control	6,46 5	41,54 43	48
	14	90	104

$$D^2 = \sum \frac{Oi^2}{Ei} - N$$

$$= 0,708$$

$$\chi_1^{2\ 0,05} = 3,841$$

$\therefore$ We therefore accept H_o and conclude that there is no association between the success/failure of nurses and whether or not their parents are divorced.

FACTOR SCORE COVARIANCE (COMPUTED FROM FACTOR STRUCTURE AND FACTOR SCORE COEFFICIENTS) 16

	FACTOR 1	FACTOR 2	FACTOR 3
FACTOR 1	1.000		
FACTOR 2	-.000	1.000	
FACTOR 3	-.000	.000	1.000

THE DIAGONAL OF THE ABOVE MATRIX CONTAINS THE SQUARED MULTIPLE CORRELATIONS OF EACH FACTOR WITH THE VARIABLES.

APPENDIX
B

PAGE 3 STUDENT NURSE DISCRIMINATION

BASED ON INPUT FORMAT SUPPLIED 1 RECORDS READ PER CASE.

CASE NO.	LABEL	1 FAILSUCC	2 SELFCONF	3 SELFESTM	4 SELFCONT	5 NERVOUSN	6 HEALTH	7 FMLYINFL	8 PSNLFPDM	9 SOCBLTYG	10 SOCBLTYS
1		0	3	2	5	3	5	5	3	3	4
2		0	4	5	6	6	5	2	4	3	3
3		0	4	5	5	5	7	4	9	6	3
4		0	4	5	4	4	3	7	6	5	4
5		0	4	5	4	4	6	2	1	3	3
6		0	3	3	6	8	5	5	8	2	6
7		0	3	3	5	4	2	2	3	3	1
8		0	2	1	4	5	1	2	4	1	8
9		0	4	6	3	5	4	3	4	6	4
10		0	5	7	4	4	3	5	6	3	3
11		0	5	5	4	6	5	3	3	5	5
12		0	2	3	3	3	2	5	2	1	3
13		0	7	6	4	4	5	2	8	8	5
14		0	2	1	4	5	1	2	4	1	8
15		0	3	3	4	5	4	6	5	5	3
16		0	3	4	3	1	3	1	2	6	5
17		0	3	3	2	5	3	5	6	4	3
18		0	6	3	7	2	2	1	1	5	4
19		0	1	2	3	3	6	4	1	2	2
20		0	1	1	2	1	1	5	6	1	2
21		0	5	6	5	7	4	3	3	6	5
22		0	7	4	4	4	5	6	8	6	4
23		0	3	6	6	5	4	5	3	5	4
24		0	3	2	1	2	3	3	2	5	7
25		0	6	4	6	6	4	3	4	5	6
26		0	5	5	5	3	3	5	4	3	5
27		0	5	6	5	5	4	4	2	4	7
28		0	5	5	1	6	7	4	3	3	6
29		0	8	3	5	3	3	4	5	5	4
30		0	5	5	6	7	7	4	6	5	6
31		0	5	7	7	5	7	6	6	7	6
32		0	5	5	4	4	4	2	4	6	3
33		0	7	5	3	1	3	6	4	8	6
34		0	3	5	3	8	4	5	3	4	4
35		0	3	5	3	4	3	3	6	3	4
36		0	5	6	7	3	4	5	5	6	6
37		0	4	6	5	6	7	3	3	5	3
38		0	4	4	6	4	4	5	4	6	5
39		0	8	8	3	5	8	4	4	7	7
40		0	3	5	5	4	5	5	5	4	6
41		0	5	7	6	6	6	2	2	6	4
42		0	3	4	5	8	4	2	3	4	5
43		0	5	4	5	8	5	4	5	6	6
44		0	5	3	4	7	4	3	4	4	5
45		0	5	7	6	6	5	4	5	5	6
46		0	5	5	4	6	4	4	5	7	7
47		0	3	1	1	5	1	2	1	2	5
48		0	9	8	6	5	5	5	4	6	4
49		0	8	7	7	7	9	2	3	9	4
50		0	5	5	7	5	3	6	4	6	4
51		0	8	8	6	8	7	5	8	8	8

UCT

CASE NO.	LABEL	1 FAILSUCC	2 SELFCONF	3 SELFESTM	4 SELFCONT	5 NERVOUSN	6 HEALTH	7 FMLYINFL	8 PSNLFRDM	9 SOCBLTYG	10 SOCBLTYS
52		0	7	7	5	8	7	4	4	8	5
53		0	6	5	6	4	4	3	5	5	4
54		0	6	3	7	8	6	3	3	7	7
55		0	6	6	3	4	5	5	6	7	4
56		0	6	9	5	8	6	6	7	6	4
57		1	5	8	6	7	5	9	8	5	4
58		1	6	8	6	8	8	6	7	5	6
59		1	6	6	6	7	5	5	4	5	5
60		1	5	7	8	5	5	6	7	5	5
61		1	9	9	6	9	8	6	6	7	4
62		1	9	7	7	9	7	5	8	8	7
63		1	8	6	6	6	4	6	4	6	6
64		1	6	6	8	5	3	6	6	5	5
65		1	7	6	6	6	6	8	7	6	5
66		1	3	4	3	4	6	4	4	2	5
67		1	6	3	4	6	6	7	6	6	8
68		1	7	7	3	4	5	3	6	6	5
69		1	6	6	4	4	5	8	8	5	8
70		1	7	5	6	8	4	6	3	5	4
71		1	6	4	5	3	6	8	7	5	5
72		1	7	5	7	6	6	6	7	4	3
73		1	9	5	2	6	5	8	7	4	8
74		1	8	7	5	7	7	6	6	7	5
75		1	6	5	6	4	4	7	7	8	7
76		1	6	7	5	5	3	6	2	5	6
77		1	8	7	5	8	7	6	7	4	6
78		1	5	7	3	6	5	7	7	5	5
79		1	8	9	4	8	6	9	5	8	5
80		1	9	3	7	9	6	7	7	6	4
81		1	7	6	7	7	7	5	3	7	4
82		1	5	5	5	5	4	6	5	6	5
83		1	7	6	4	4	2	8	8	6	4
84		1	7	6	9	9	6	6	6	5	3
85		1	6	4	3	5	3	6	7	7	5
86		1	7	6	5	4	4	7	6	5	5
87		1	4	7	7	5	5	7	6	4	5
88		1	5	7	6	8	2	9	8	3	7
89		1	6	5	4	6	4	6	4	6	5
90		1	6	7	6	6	3	6	7	7	6
91		1	5	5	6	4	7	6	7	5	3
92		1	5	5	5	3	5	7	4	4	2
93		1	5	4	5	6	6	6	2	3	5
94		1	6	6	6	9	5	5	6	5	3
95		1	8	7	7	8	8	7	5	6	6
96		1	6	6	5	8	5	5	7	8	6
97		1	5	4	5	6	6	6	2	2	4
98		1	3	2	6	5	4	5	1	3	2
99		1	6	6	3	4	5	6	4	3	4
100		1	8	8	6	7	7	8	6	8	3
101		1	8	8	7	6	9	6	7	5	4
102		1	9	7	7	7	3	7	3	3	3
103		1	5	5	4	7	6	5	6	2	3
104		1	8	6	9	9	8	6	6	7	4

PAGE 1 STUDENT NURSE DISCRIMINATION

CASE NO.	LABEL	11 MORALSEN	12 FORMALRE	13 DESRELTY	14 IPATANX
1		4	4	6	7
2		2	1	7	5
3		2	2	8	5
4		4	2	8	5
5		7	6	4	6
6		5	1	5	4
7		6	6	4	7
8		5	6	9	8
9		1	4	6	5
10		3	5	7	6
11		3	4	7	7
12		7	4	4	9
13		2	2	4	6
14		1	1	9	6
15		3	3	9	6
16		1	3	9	9
17		2	1	8	6
18		7	4	2	6
19		6	2	2	8
20		3	2	3	9
21		3	4	6	6
22		5	3	7	6
23		4	3	6	5
24		2	3	8	7
25		3	4	6	6
26		4	5	6	6
27		2	5	6	5
28		5	5	5	7
29		8	8	2	7
30		8	9	4	4
31		3	3	6	3
32		5	5	6	6
33		7	5	5	7
34		6	6	3	6
35		5	3	5	8
36		6	5	4	5
37		2	5	6	6
38		4	6	6	5
39		6	7	6	5
40		5	3	4	6
41		7	3	4	5
42		6	4	6	4
43		2	4	8	5
44		7	3	4	6
45		5	4	4	5
46		5	4	6	6
47		2	3	9	9
48		7	7	4	3
49		4	5	4	3
50		6	5	5	5
51		4	5	5	4
52		3	5	5	3
53		4	5	3	6

UCT

PAGE 4 STUDENT NURSE DISCRIMINATION

CASE NO.	LABEL	11 MORALSTR	12 FORMALRT	13 DESRPLTY	14 TRATANX
54		5	6	5	4
55		6	4	5	3
56		4	6	7	3
57		3	6	3	4
58		7	7	4	2
59		3	6	6	4
60		5	7	4	3
61		3	8	6	3
62		7	9	2	2
63		8	6	4	5
64		8	7	4	6
65		4	7	6	2
66		5	6	6	8
67		5	6	5	5
68		4	8	6	4
69		4	6	7	5
70		6	6	6	3
71		7	6	5	5
72		6	6	4	4
73		6	6	5	5
74		7	7	4	3
75		7	8	3	4
76		3	7	6	6
77		4	8	4	3
78		3	7	6	3
79		9	8	4	2
80		9	6	3	2
81		9	8	4	3
82		5	6	4	3
83		4	6	5	6
84		9	7	2	3
85		5	8	5	2
86		5	7	5	4
87		5	5	4	2
88		4	7	6	5
89		4	7	5	5
90		9	7	4	2
91		6	6	6	5
92		8	6	4	4
93		3	6	6	4
94		6	6	3	2
95		7	7	4	2
96		6	8	4	5
97		7	5	3	5
98		5	5	4	6
99		5	8	6	5
100		9	8	4	3
101		8	5	5	4
102		5	9	3	5
103		5	3	4	4
104		9	7	5	1

NUMBER OF CASES READ 104

APPENDIX
C

MEANS

VARIABLE	GROUP = FAILURE	SUCCESS	ALL GPS.
1 FAILSUCC	.00000	1.00000	.46154
2 SELFCONF	4.64286	6.37500	5.44231
3 SELFESTM	4.71429	5.09583	5.25962
4 SELFCONT	4.55357	5.64583	5.00000
5 NERVOUSN	4.96429	6.20833	5.53846
6 HEALTH	4.41071	5.33333	4.83654
7 FMLYINFL	3.85714	6.33333	5.00000
8 PSNLFROM	4.26786	5.66667	4.91346
9 SOCPLTYG	4.85714	5.25000	5.03846
10 SOCPLTYS	4.73214	4.83333	4.77885
11 MORALSEN	4.35714	5.91667	5.07692
12 FORMALRE	4.05357	6.64583	5.25000
13 DESRBLTY	5.57143	4.72917	5.18269
14 IPATANX	5.71429	3.81250	4.63654
COUNTS	56.	48.	104.

STANDARD DEVIATIONS

VARIABLE	GROUP = FAILURE	SUCCESS	ALL GPS.
1 FAILSUCC	.00000	.00000	.00000
2 SELFCONF	1.83331	1.51060	1.69228
3 SELFESTM	1.92320	1.49096	1.73744
4 SELFCONT	1.55995	1.58436	1.57124
5 NERVOUSN	1.89702	1.74987	1.83089
6 HEALTH	1.82694	1.64166	1.74395
7 FMLYINFL	1.47005	1.22619	1.36311
8 PSNLFROM	1.91160	1.82574	1.87253
9 SOCPLTYG	1.98726	1.64391	1.82536
10 SOCPLTYS	1.58964	1.46350	1.53281
11 MORALSEN	1.91101	1.96602	1.93655
12 FORMALRE	1.58882	1.13905	1.39964
13 DESRBLTY	1.86701	1.41029	1.67213
14 IPATANX	1.58073	1.46819	1.52990

MEANS/ST.DEVS.

VARIABLE	GROUP = FAILURE	SUCCESS	ALL GPS.
1 FAILSUCC	.00000	.00000	.00000
2 SELFCONF	2.53249	4.22018	3.21597
3 SELFESTM	2.45127	3.95430	3.02722
4 SELFCONT	2.91905	3.46458	3.18219
5 NERVOUSN	2.61688	3.54738	3.02534
6 HEALTH	2.41440	3.24875	2.77332
7 FMLYINFL	2.62382	5.16504	3.66808
8 PSNLFROM	2.23261	3.10376	2.62397
9 SOCPLTYG	2.46890	3.19379	2.76026
10 SOCPLTYS	2.97687	3.30258	3.11771
11 MORALSEN	2.28002	3.00946	2.62163
12 FORMALRE	2.55131	2.83458	2.75095
13 DESRBLTY	2.98416	3.35333	3.09946
14 IPATANX	3.61497	2.59673	3.16134

APPENDIX D

HISTOGRAM OF VARIABLE FAILUCC

SYMBOL	COUNT	MEAN	ST.DEV.
X	104	.462	.501

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
.00000	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	56	56	53.8	53.8
.12000		0	56	.0	53.8
.18000		0	56	.0	53.8
.24000		0	56	.0	53.8
.30000		0	56	.0	53.8
.36000		0	56	.0	53.8
.42000		0	56	.0	53.8
.48000		0	56	.0	53.8
.54000		0	56	.0	53.8
.60000		0	56	.0	53.8
.66000		0	56	.0	53.8
.72000		0	56	.0	53.8
.78000		0	56	.0	53.8
.84000		0	56	.0	53.8
.90000		0	56	.0	53.8
.96000		0	56	.0	53.8
1.02000	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	48	104	46.2	100.0
1.08000		0	104	.0	100.0

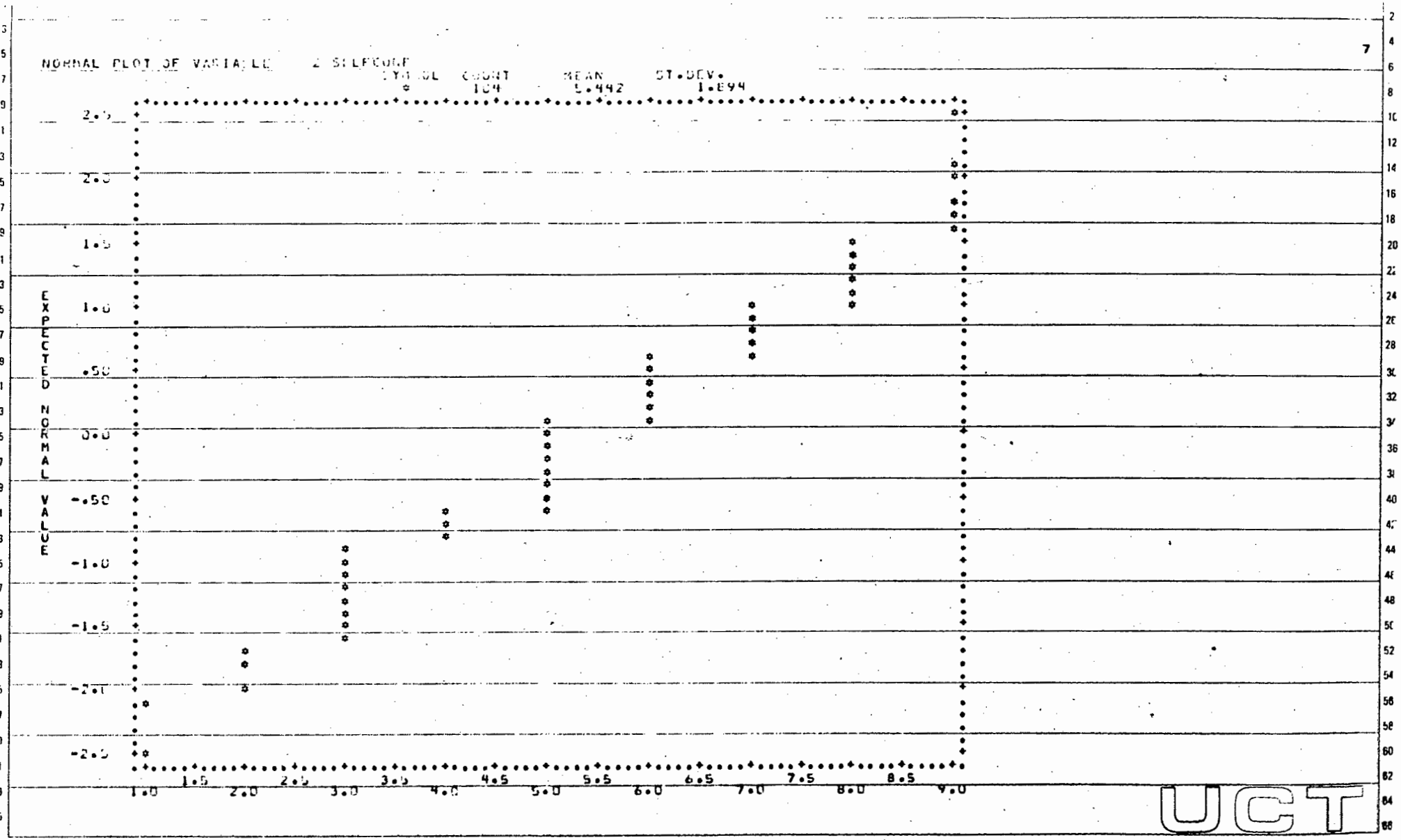
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

HISTOGRAM OF VARIABLE 2 SELFCONF

TOTAL COUNT 104 MEAN 5.442 ST.DEV. 1.894

INTERVAL NAME		FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.0000	+XX	2	2	1.9	1.9
* 2.0000	+XXX	3	5	2.9	4.8
* 2.5000	+	0	5	.0	4.8
* 3.0000	+XXXXXXXXXXXXXXX	15	20	14.4	19.2
* 3.5000	+	0	20	.0	19.2
* 4.0000	+XXXXXXXX	8	28	7.7	26.9
* 4.5000	+	0	28	.0	26.9
* 5.0000	+XXXXXXXXXXXXXXXXXXXXXXXXXXX	27	55	26.0	52.9
* 5.5000	+	0	55	.0	52.9
* 6.0000	+XXXXXXXXXXXXXXXXXXXX	20	75	19.2	72.1
* 6.5000	+	0	75	.0	72.1
* 7.0000	+XXXXXXXXXXXX	12	87	11.5	83.7
* 7.5000	+	0	87	.0	83.7
* 8.0000	+XXXXXXXXXXX	11	98	10.6	94.2
* 8.5000	+	0	98	.0	94.2
* 9.0000	+XXXXXX	6	104	5.8	100.0
* 9.5000	+	0	104	.0	100.0
* 10.000	+	0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

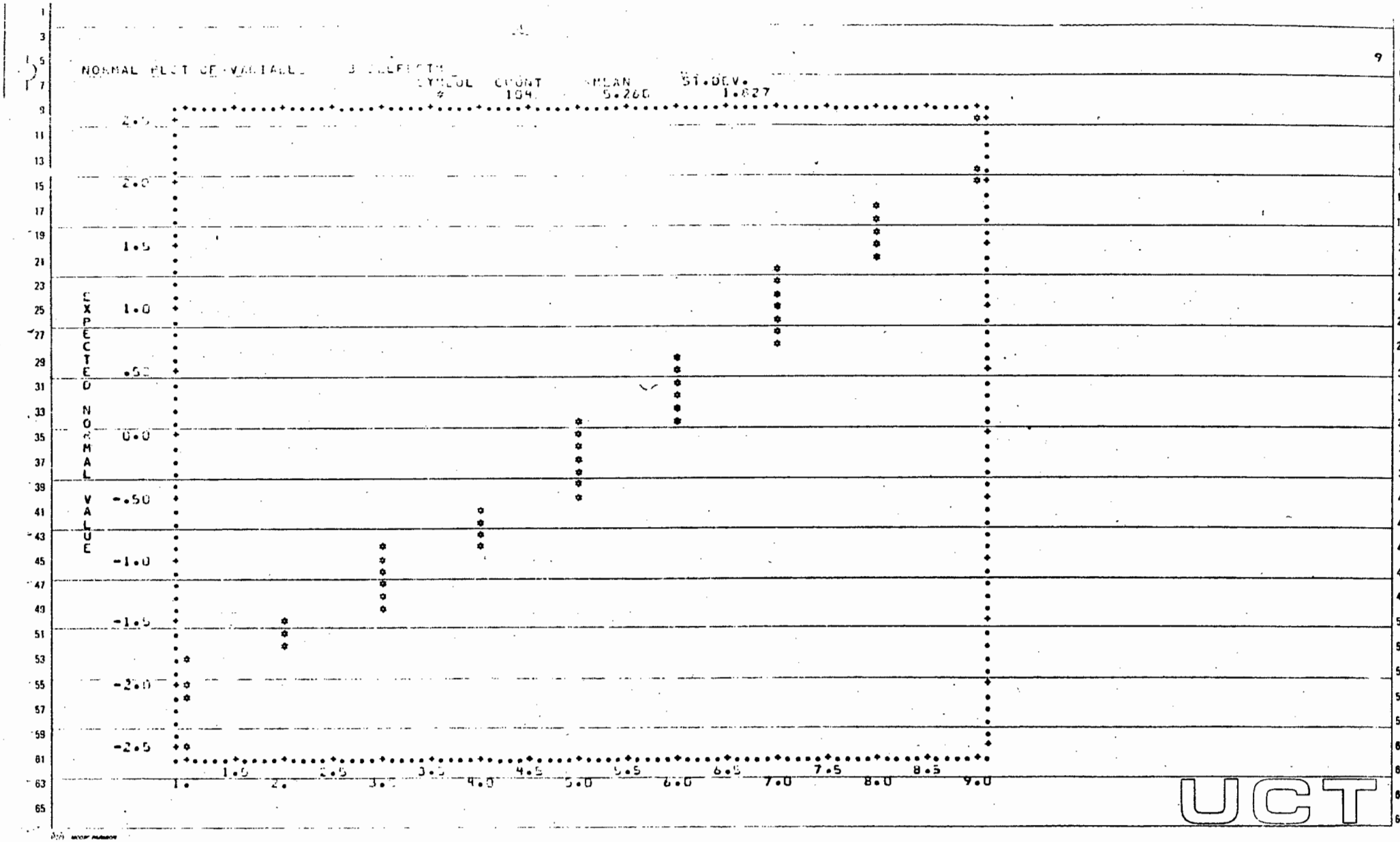

NORMAL PLOT OF VARIABLE 2 SELECTED
SYMBOL COUNT MEAN ST.DEV.
104 5.442 1.894
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0

HISTOGRAM OF VARIABLE 3 SELECTED

SYMBOL	COUNT	MEAN	ST.DEV.
X	104	5.260	1.827

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.0000	+XXXX	4	4	3.8	3.8
* 2.0000	+XXXX	4	8	3.8	7.7
* 2.5000	+	0	8	.0	7.7
* 3.0000	+XXXXXXXXXX	11	19	10.6	18.3
* 3.5000	+	0	19	.0	18.3
* 4.0000	+XXXXXXXXXX	11	30	10.6	28.8
* 4.5000	+	0	30	.0	28.8
* 5.0000	+XXXXXXXXXXXXXXXXXXXXXXXX	25	55	24.0	52.9
* 5.5000	+	0	55	.0	52.9
* 6.0000	+XXXXXXXXXXXXXXXXXXXXX	22	77	21.2	74.0
* 6.5000	+	0	77	.0	74.0
* 7.0000	+XXXXXXXXXXXXXXXXX	18	95	17.3	91.3
* 7.5000	+	0	95	.0	91.3
* 8.0000	+XXXXXX	6	101	5.8	97.1
* 8.5000	+	0	101	.0	97.1
* 9.0000	+XXX	3	104	2.9	100.0
* 9.5000	+	0	104	.0	100.0
* 10.000	+	0	104	.0	100.0
	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80				

UCT


NORMAL PLOT OF VARIABLE
SYMBOL COUNT MEAN ST.DEV.
104 5.260 1.827
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

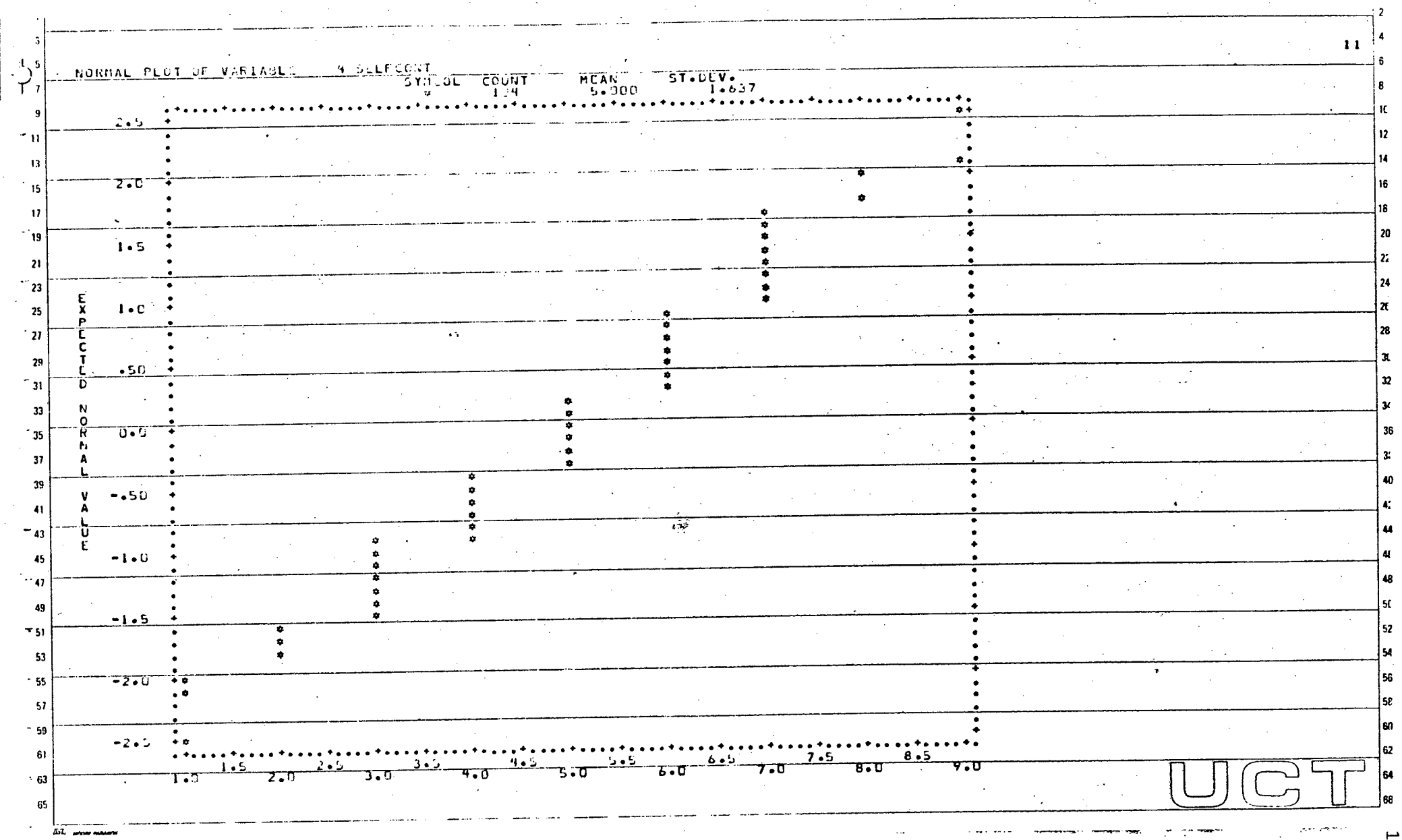
HISTOGRAM OF VARIABLE 4 SELECCOUNT

SYMBOL COUNT MEAN ST.DEV.
X 104 5.000 1.637

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.5000	+XXX	3	3	2.9	2.9
* 2.0000	+XXX	3	6	2.9	5.8
* 2.5000	+	0	6	.0	5.8
* 3.0000	+XXXXXXXXXXXX	13	19	12.5	18.3
* 3.5000	+	0	19	.0	18.3
* 4.0000	+XXXXXXXXXXXXXXXXXX	19	38	18.3	36.5
* 4.5000	+	0	38	.0	36.5
* 5.0000	+XXXXXXXXXXXXXXXXXXXXXXX	24	62	23.1	59.6
* 5.5000	+	0	62	.0	59.6
* 6.0000	+XXXXXXXXXXXXXXXXXXXXXXX	24	86	23.1	82.7
* 6.5000	+	0	86	.0	82.7
* 7.0000	+XXXXXXXXXXXXX	14	100	13.5	96.2
* 7.5000	+	0	100	.0	96.2
* 8.0000	+XX	2	102	1.9	98.1
* 8.5000	+	0	102	.0	98.1
* 9.0000	+XX	2	104	1.9	100.0
* 9.5000	+	0	104	.0	100.0
* 10.000	+	0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

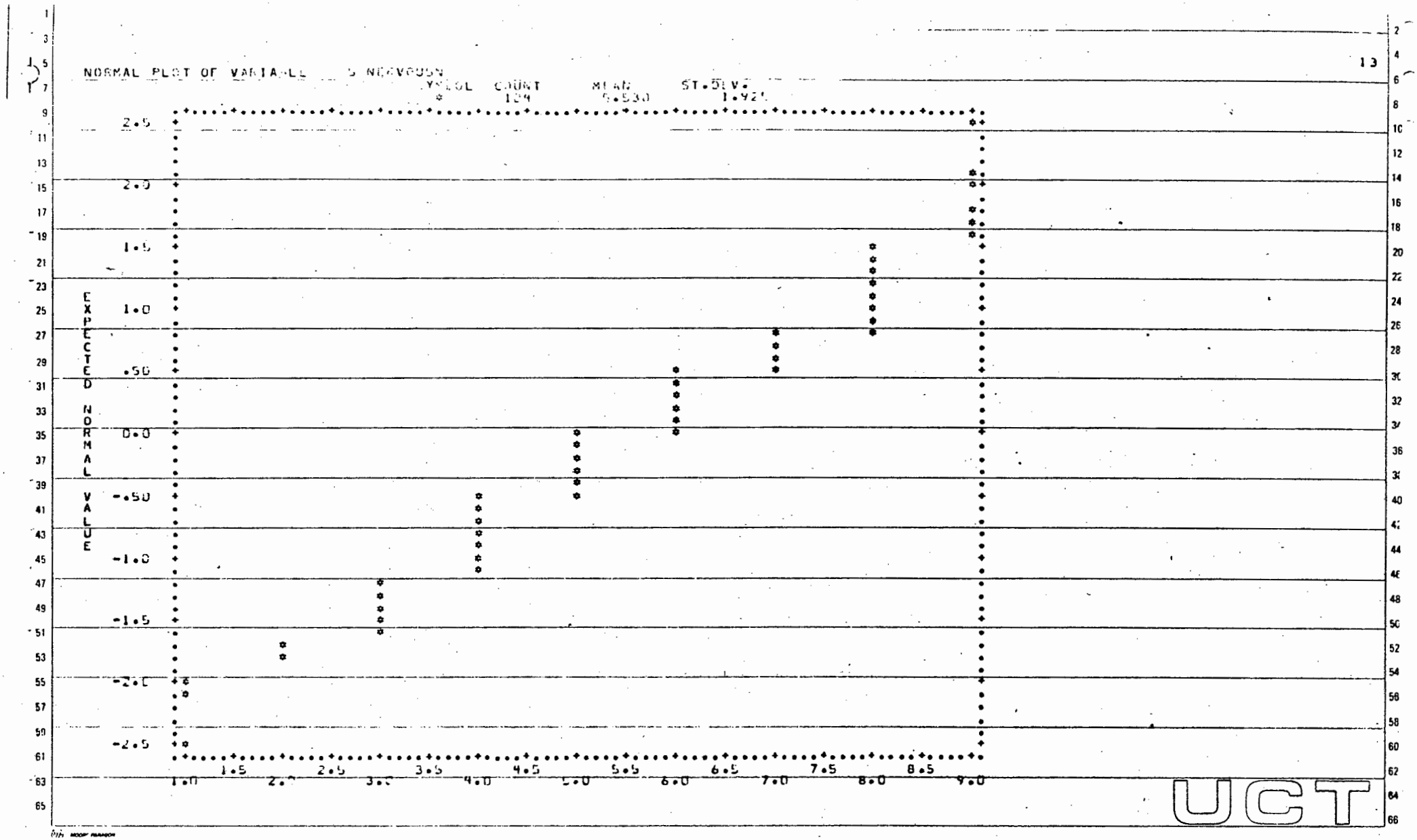
UCT


NORMAL PLOT OF VARIABLE 4 SELECONT
SYMBOL COUNT MEAN ST.DEV.
114 5.000 1.637
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0
11
UCT

HISTOGRAM OF VARIABLE [illegible] OBSERVED

SYMBOL: X COUNT: 104 MEAN: 5.536 ST.DEV.: 1.925

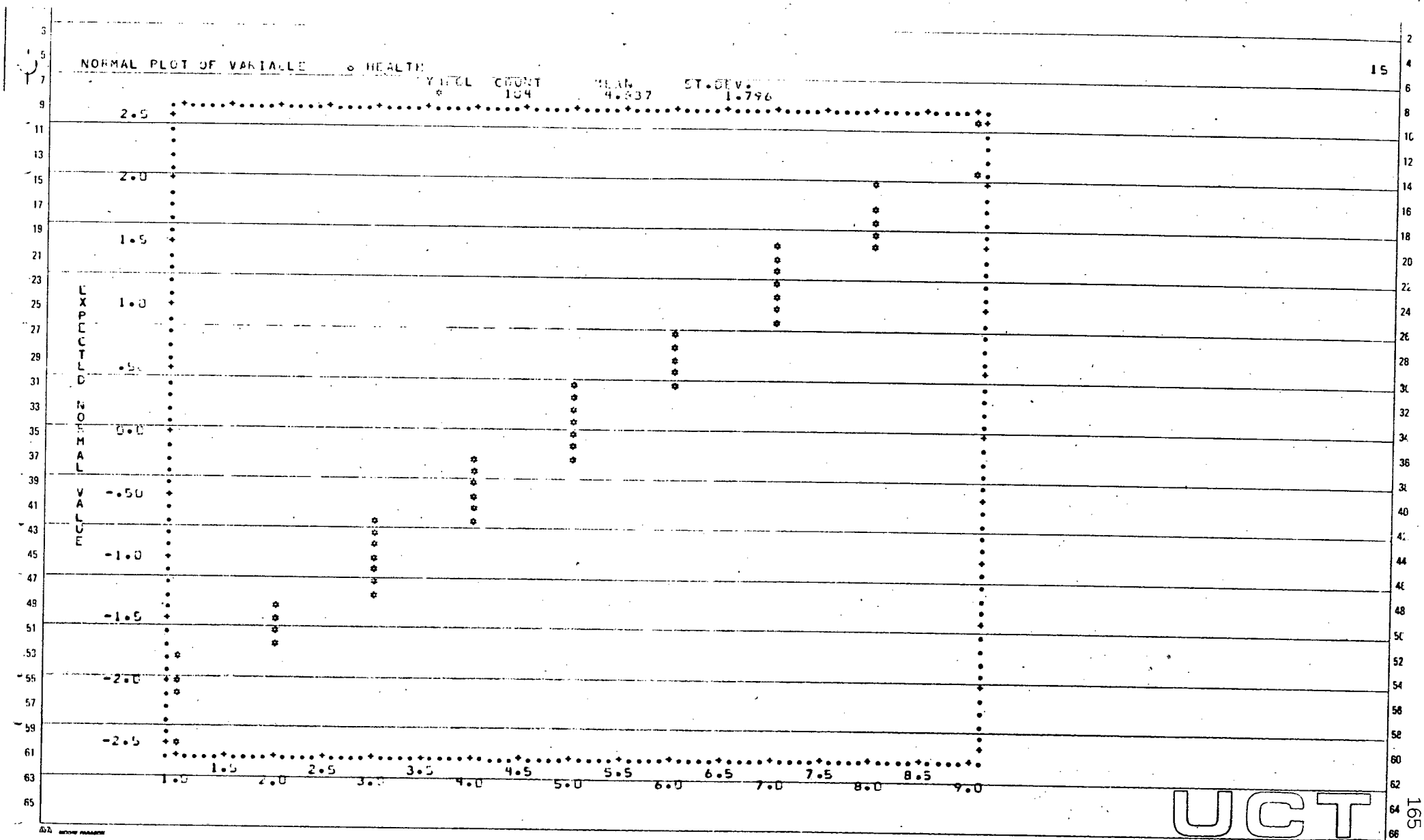
INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.5000	+XXX	3	3	2.9	2.9
* 2.0000	+XX	2	5	1.9	4.8
* 2.5000	+	0	5	.0	4.8
* 3.0000	+XXXXXXXX	8	13	7.7	12.5
* 3.5000	+	0	13	.0	12.5
* 4.0000	+XXXXXXXXXXXXXXXXXXX	20	33	19.2	31.7
* 4.5000	+	0	33	.0	31.7
* 5.0000	+XXXXXXXXXXXXXXXXXXX	20	53	19.2	51.0
* 5.5000	+	0	53	.0	51.0
* 6.0000	+XXXXXXXXXXXXXXXXXX	19	72	18.3	69.2
* 6.5000	+	0	72	.0	69.2
* 7.0000	+XXXXXXXXXXX	11	83	10.6	79.8
* 7.5000	+	0	83	.0	79.8
* 8.0000	+XXXXXXXXXXXXXX	15	98	14.4	94.2
* 8.5000	+	0	98	.0	94.2
* 9.0000	+XXXXXX	6	104	5.8	100.0
* 9.5000	+	0	104	.0	100.0
* 10.000	+	0	104	.0	100.0


NORMAL PLOT OF VARIABLE ... NERVOUSN
SYMBOL COUNT MEAN ST.DEV.
124 5.530 1.921
13
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0
UCT

HISTOGRAM OF VARIABLE: HEALTH

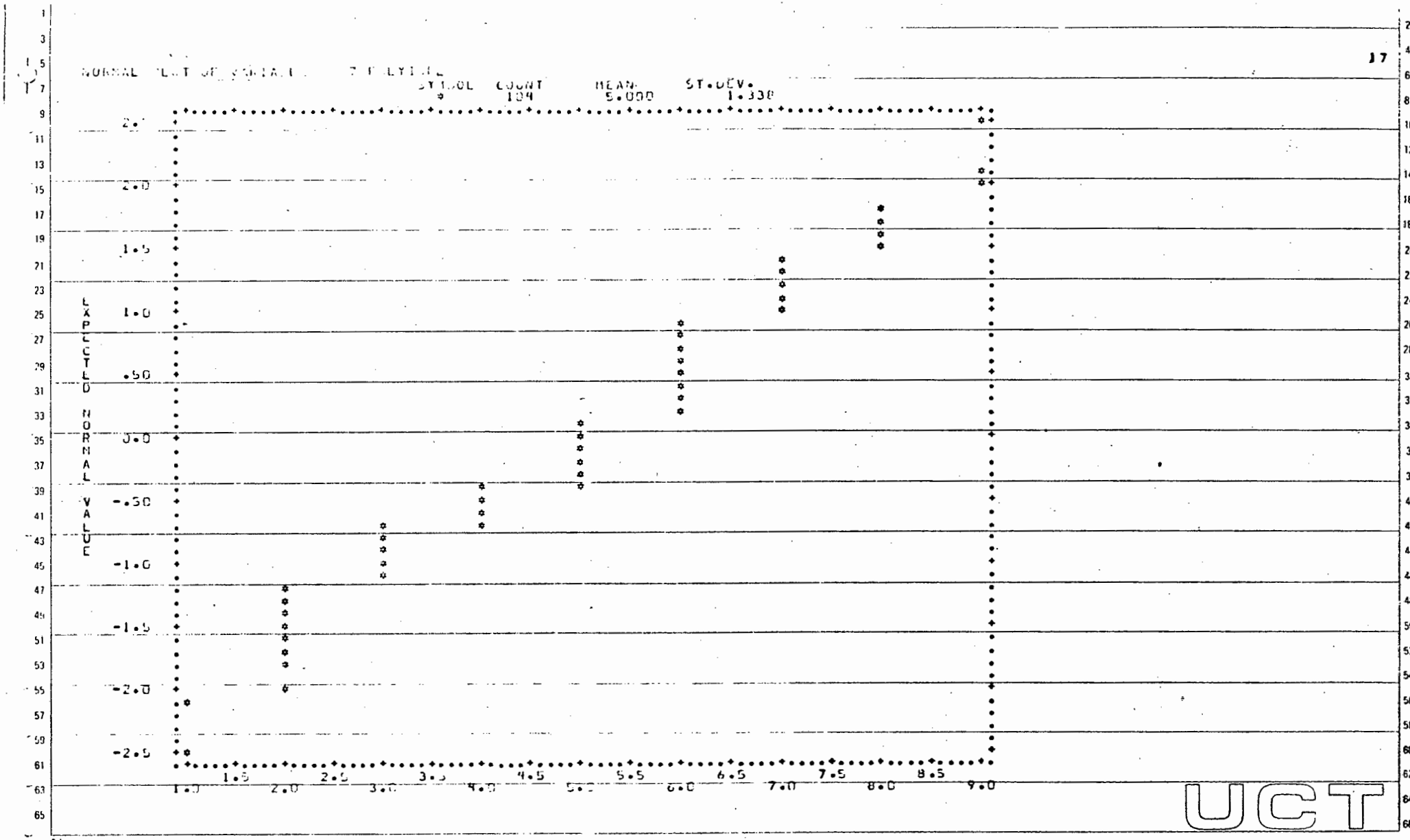
SYMBOL X COUNT 104 MEAN 4.837 ST.DEV. 1.796

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.0000	XXXX	4	4	3.8	3.8
* 2.0000	XXXXX	5	9	4.8	8.7
* 2.5000		0	9	.0	8.7
* 3.0000	XXXXXXXXXXXXXXX	15	24	14.4	23.1
* 3.5000		0	24	.0	23.1
* 4.0000	XXXXXXXXXXXXXXXXXXXX	21	45	20.2	43.3
* 4.5000		0	45	.0	43.3
* 5.0000	XXXXXXXXXXXXXXXXXXXXXX	23	68	22.1	65.4
* 5.5000		0	68	.0	65.4
* 6.0000	XXXXXXXXXXXXXXXX	16	84	15.4	80.8
* 6.5000		0	84	.0	80.8
* 7.0000	XXXXXXXXXXXXX	13	97	12.5	93.3
* 7.5000		0	97	.0	93.3
* 8.0000	XXXXX	5	102	4.8	98.1
* 8.5000		0	102	.0	98.1
* 9.0000	XX	2	104	1.9	100.0
* 9.5000		0	104	.0	100.0
* 10.000		0	104	.0	100.0


NORMAL PLOT OF VARIABLE o HEALTH
VALID COUNT 104
MEAN 4.837
ST.DEV. 1.796
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

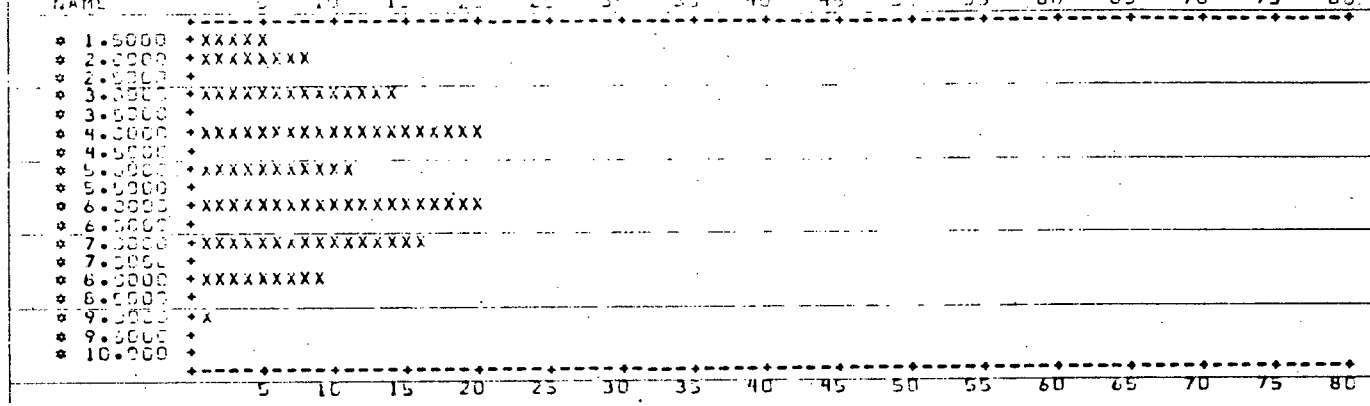
```
HISTOGRAM OF VARIABLE      7 [illegible]
                                   TOTAL   COUNT       MEAN        ST.DEV.
                                     X      104        5.000       1.[illegible]38
INTERVAL
NAME          5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
            +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
*  1.5000   +XX
*  2.0000   +XXXXXXXXXXX
*  2.5000   +
*  3.0000   +XXXXXXXXXXX
*  3.5000   +
*  4.0000   +XXXXXXXXXXXX
*  4.5000   +
*  5.0000   +XXXXXXXXXXXXXXXXXXXXXX
*  5.5000   +
*  6.0000   +XXXXXXXXXXXXXXXXXXXXXXXXXXXX
*  6.5000   +
*  7.0000   +XXXXXXXXXX
*  7.5000   +
*  8.0000   +XXXXX
*  8.5000   +
*  9.0000   +XXX
*  9.5000   +
* 10.000    +
            +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
              5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
```

FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
2	2	1.9	1.9
11	13	10.6	12.5
0	13	.0	12.5
11	24	10.6	23.1
0	24	.0	23.1
12	36	11.5	34.6
0	36	.0	34.6
22	58	21.2	55.8
0	58	.0	55.8
28	86	26.9	82.7
0	86	.0	82.7
10	96	9.6	92.3
0	96	.0	92.3
5	101	4.8	97.1
0	101	.0	97.1
3	104	2.9	100.0
0	104	.0	100.0
0	104	.0	100.0

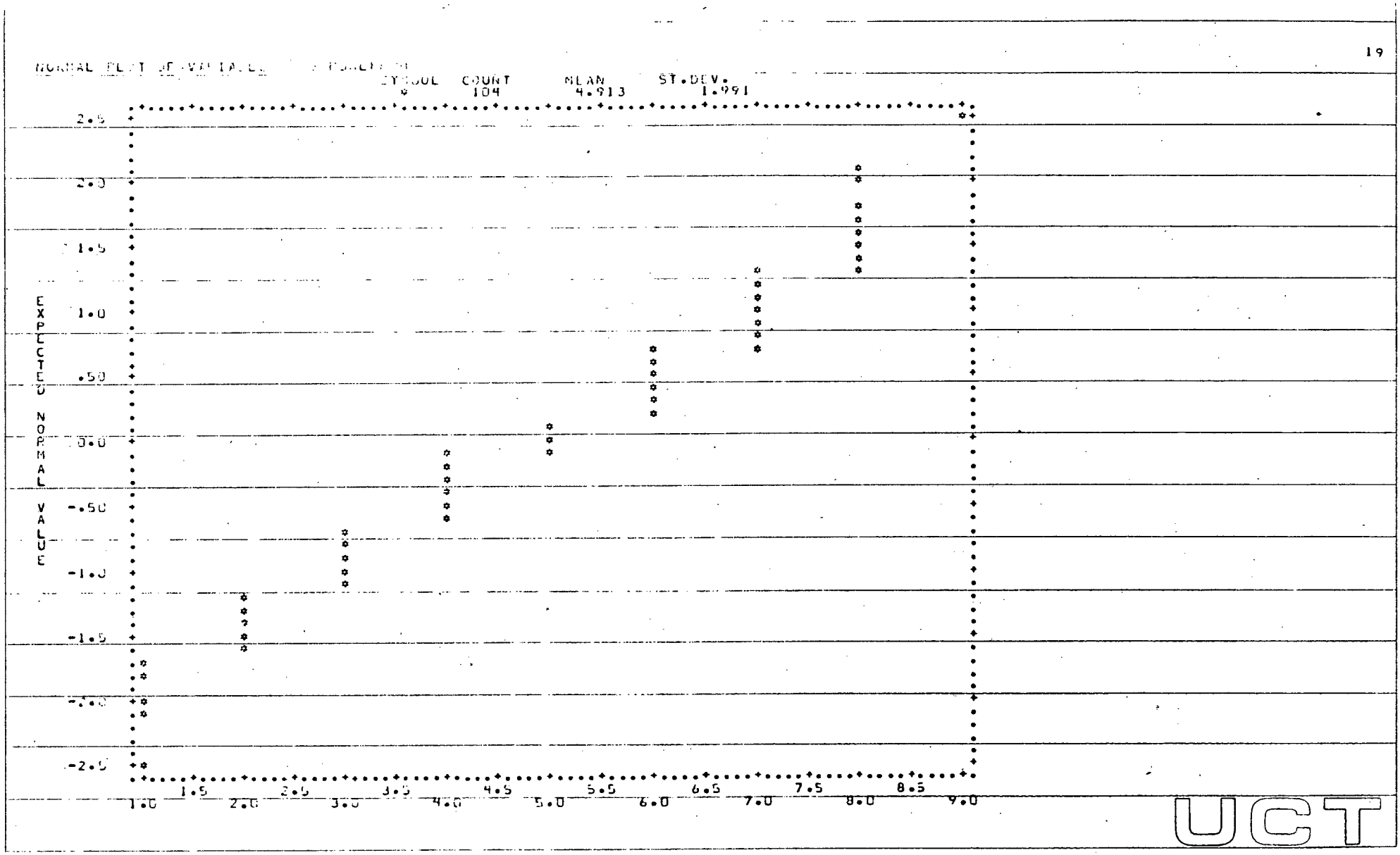

SYMBOL COUNT MEAN ST.DEV.
104 5.000 1.338
EXPECTED NORMAL VALUE
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

HISTOGRAM OF VARIABLE [illegible]

SYMBOL COUNT MEAN ST.DEV.
(104 4.913 1.991



FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
5	5	4.8	4.8
8	13	7.7	12.5
0	13	.0	12.5
14	27	13.5	26.0
0	27	.0	26.0
20	47	19.2	45.2
0	47	.0	45.2
11	58	10.6	55.8
0	58	.0	55.8
20	78	19.2	75.0
0	78	.0	75.0
16	94	15.4	90.4
0	94	.0	90.4
9	103	8.7	99.0
0	103	.0	99.0
1	104	1.0	100.0
0	104	.0	100.0
0	104	.0	100.0


NORMAL PLOT OF VARIABLE
SYMBOL COUNT MEAN ST.DEV.
104 4.913 1.991
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

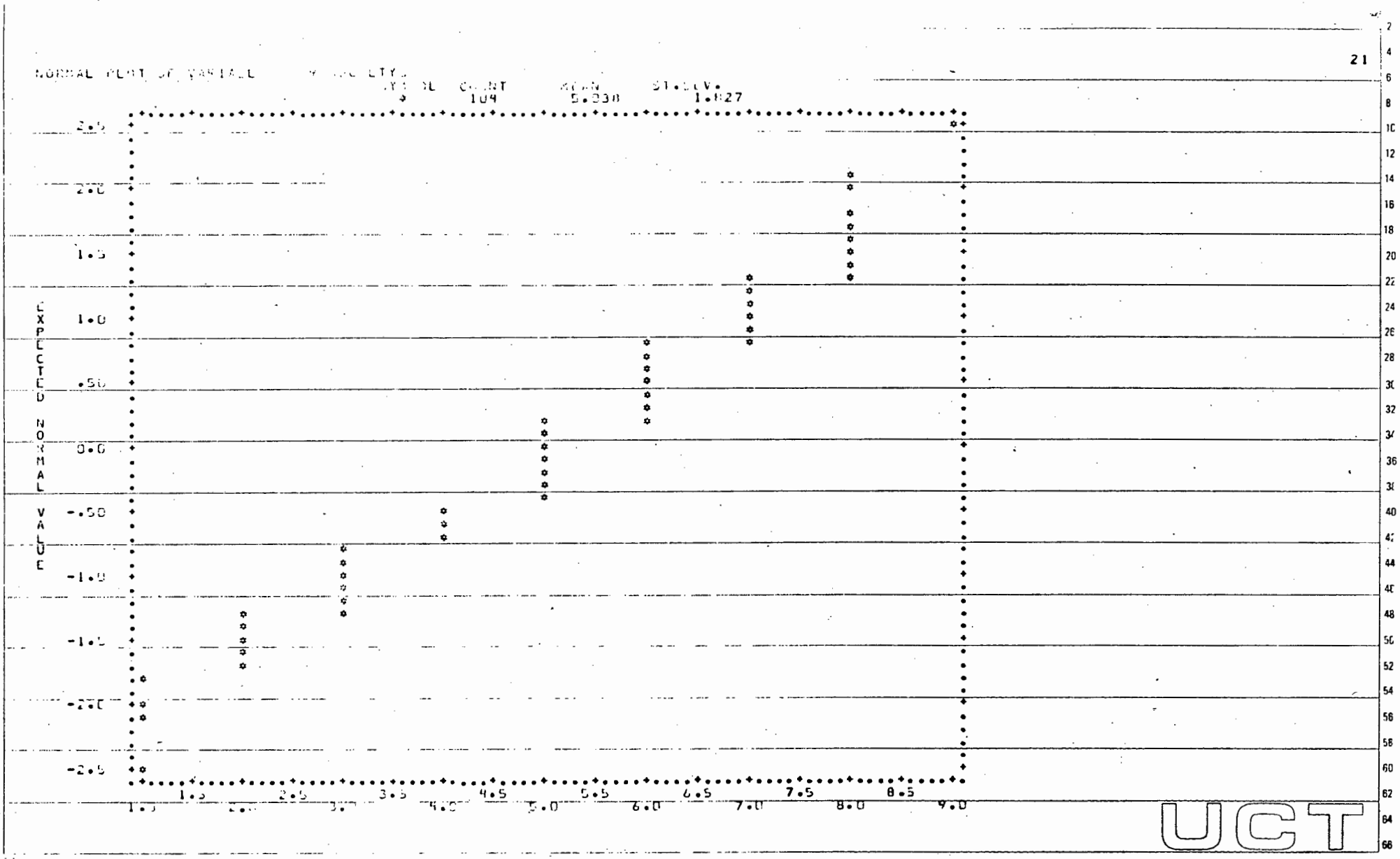
HISTOGRAM OF VARIABLE __ 9 SOCIETY

SYMBOL COUNT MEAN ST.DEV.
104 5.038 1.627

INTERVAL NAME		FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.5000	+XXXX	4	4	3.8	3.8
* 2.0000	+XXXXXX	6	10	5.8	9.6
* 2.5000	+	0	10	.0	9.6
* 3.0000	+XXXXXXXXXXXX	13	23	12.5	22.1
* 3.5000	+	0	23	.0	22.1
* 4.0000	+XXXXXXXXXX	11	34	10.6	32.7
* 4.5000	+	0	34	.0	32.7
* 5.0000	+XXXXXXXXXXXXXXXXXXXXXXXXX	27	61	26.0	58.7
* 5.5000	+	0	61	.0	58.7
* 6.0000	+XXXXXXXXXXXXXXXXXXXXX	22	83	21.2	79.8
* 6.5000	+	0	83	.0	79.8
* 7.0000	+XXXXXXXXXX	11	94	10.6	90.4
* 7.5000	+	0	94	.0	90.4
* 8.0000	+XXXXXXXXX	9	103	8.7	99.0
* 8.5000	+	0	103	.0	99.0
* 9.0000	+X	1	104	1.0	100.0
* 9.5000	+	0	104	.0	100.0
* 10.000	+	0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

UCT


NORMAL PLOT OF VARIABLE
COUNT 104
MEAN 5.038
STD DEV 1.827
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

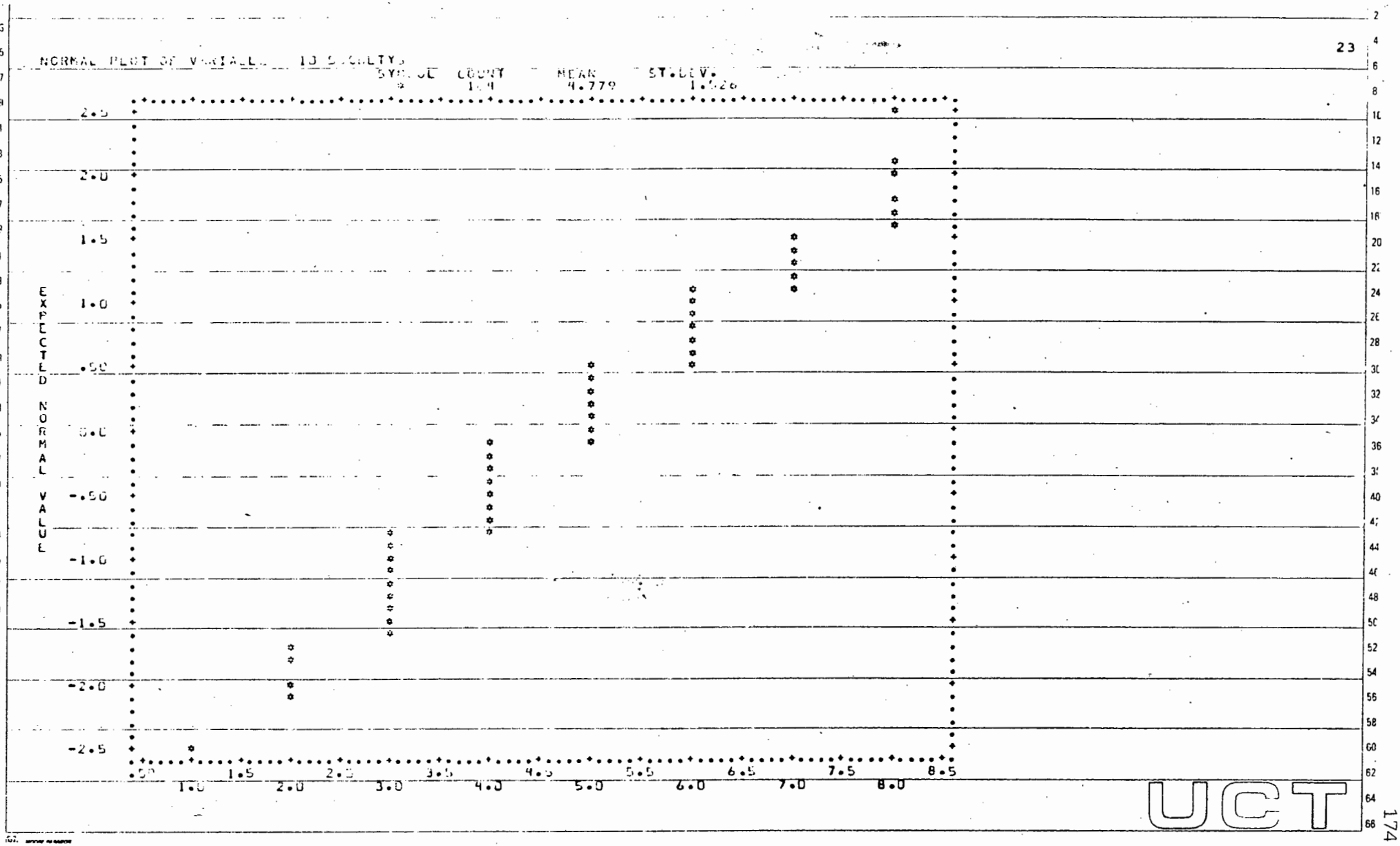
HISTOGRAM OF VARIABLE 1 VARIETY

VARIABLE	COUNT	MEAN	ST.DEV.
X	104	4.779	1.526

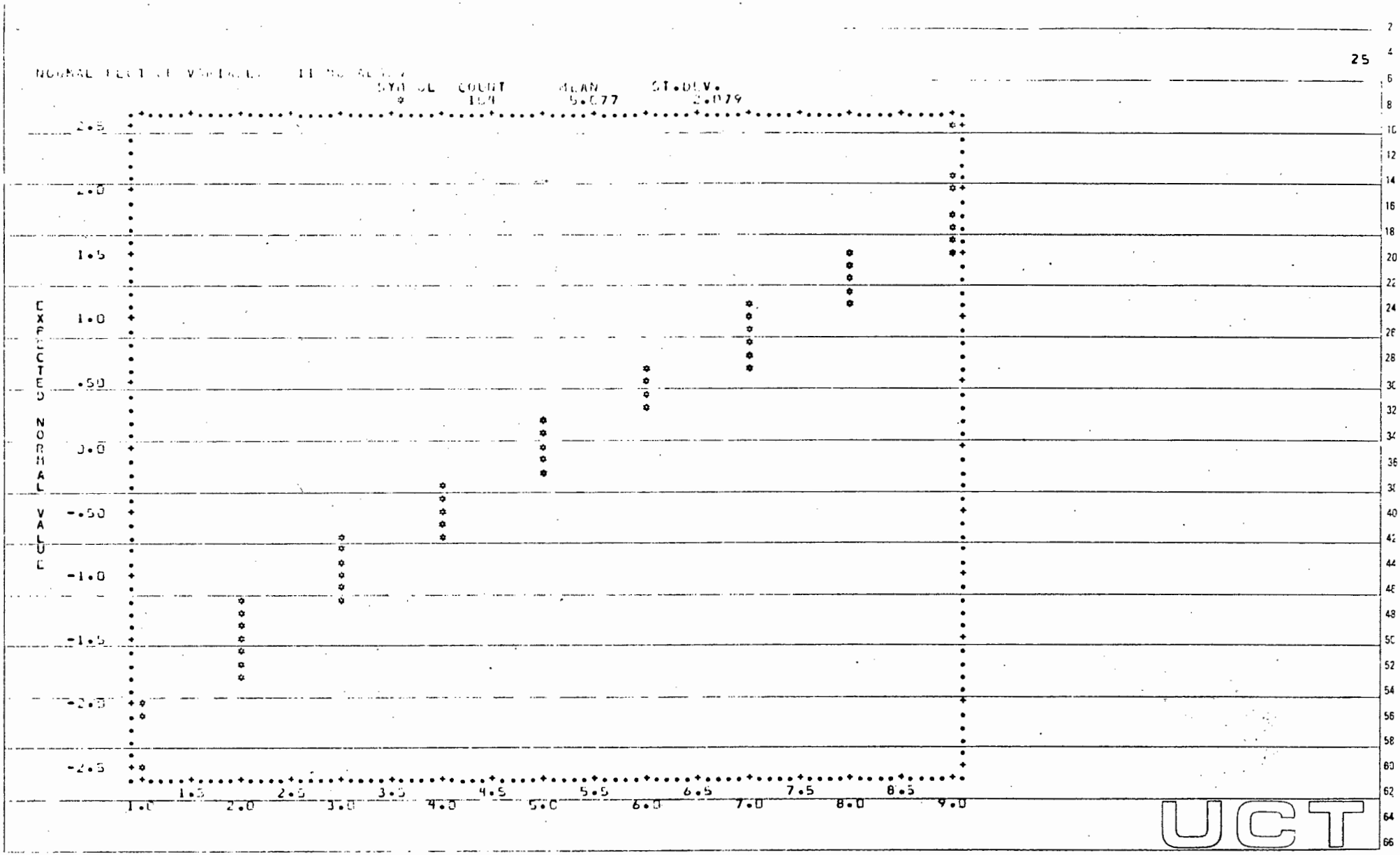
INTERVAL NAME		FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 1.0000	X	1	1	1.0	1.0
* 1.5000		0	1	.0	1.0
* 2.0000	XXXX	4	5	3.8	4.8
* 2.5000		0	5	.0	4.8
* 3.0000	XXXXXXXXXXXXXXXX	16	21	15.4	20.2
* 3.5000		0	21	.0	20.2
* 4.0000	XXXXXXXXXXXXXXXXXXXXXXXXX	26	47	25.0	45.2
* 4.5000		0	47	.0	45.2
* 5.0000	XXXXXXXXXXXXXXXXXXXXXXXXX	26	73	25.0	70.2
* 5.5000		0	73	.0	70.2
* 6.0000	XXXXXXXXXXXXXXXXX	17	90	16.3	86.5
* 6.5000		0	90	.0	86.5
* 7.0000	XXXXXXXX	8	98	7.7	94.2
* 7.5000		0	98	.0	94.2
* 8.0000	XXXXXX	6	104	5.8	100.0
* 8.5000		0	104	.0	100.0
* 9.0000		0	104	.0	100.0
* 9.5000		0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

UCT

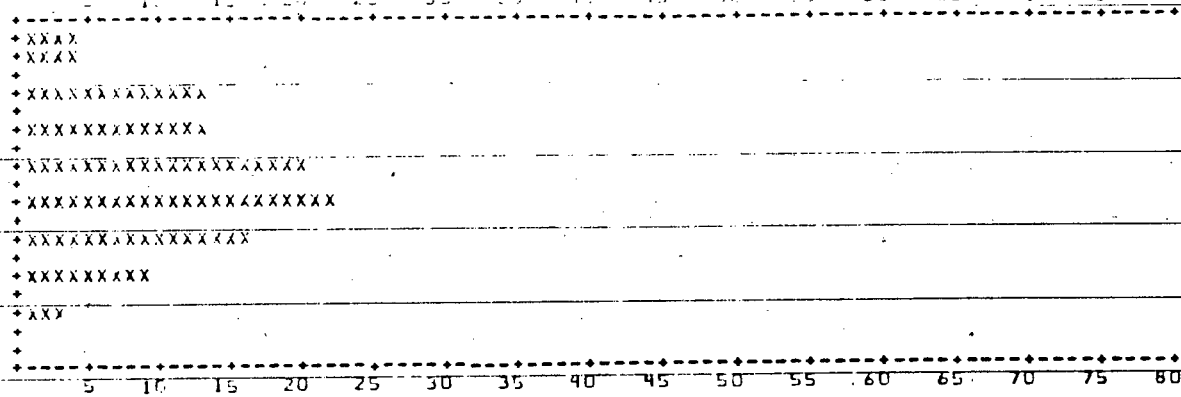

NORMAL PLOT OF VARIABLE 13 S.GULTY
SYMBOL COUNT MEAN ST.DEV.
1-9 4.779 1.526
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0

```
HISTOGRAM OF VARIABLE 11                SYMBOL  COUNT       MEAN      ST.DEV.
                                           X      104       5.077      2.079
                                                                                                FREQUENCY  PERCENTAGE
INTERVAL                                                                                        INT. CUM.  INT.  CUM.
NAME           5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
             +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
  *  1.5000  +XXX                                                                             3    3    2.9    2.9
  *  2.0000  +XXXXXXXXX                                                                       9   12    8.7   11.5
  *  2.5000  +                                                                                0   12     .0   11.5
  *  3.0000  +XXXXXXXXXXXXXX                                                                 14   26   13.5   25.0
  *  3.5000  +                                                                                0   26     .0   25.0
  *  4.0000  +XXXXXXXXXXXXXXXX                                                               16   42   15.4   40.4
  *  4.5000  +                                                                                0   42     .0   40.4
  *  5.0000  +XXXXXXXXXXXXXXXXXXXX                                                           20   62   19.2   59.6
  *  5.5000  +                                                                                0   62     .0   59.6
  *  6.0000  +XXXXXXXXXXXXXX                                                                 14   76   13.5   73.1
  *  6.5000  +                                                                                0   76     .0   73.1
  *  7.0000  +XXXXXXXXXXXXXX                                                                 14   90   13.5   86.5
  *  7.5000  +                                                                                0   90     .0   86.5
  *  8.0000  +XXXXXXX                                                                         7   97    6.7   93.3
  *  8.5000  +                                                                                0   97     .0   93.3
  *  9.0000  +XXXXXXX                                                                         7  104    6.7  100.0
  *  9.5000  +                                                                                0  104     .0  100.0
  * 10.000   +                                                                                0  104     .0  100.0
             +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
               5   10   15   20   25   30   35   40   45   50   55   60   65   70   75   80
```

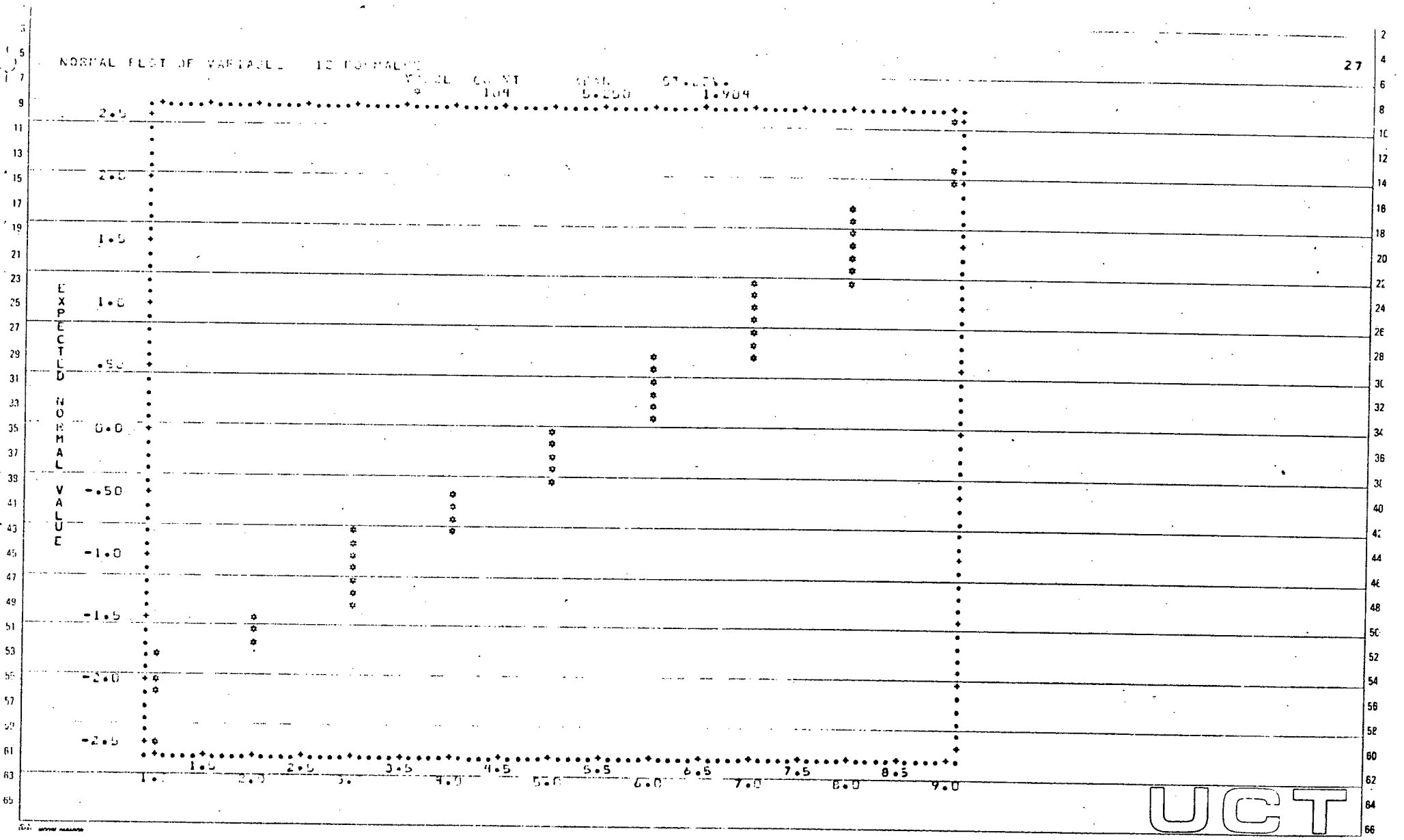

SYM CL COUNT MEAN ST.DEV.
154 5.077 2.079
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0

HISTOGRAM OF VARIABLE: [illegible]

SYMBOL X | COUNT 104 | MEAN 5.250 | ST.DEV. 1.904



INTERVAL MIDPT	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
1.0000	4	4	3.8	3.8
2.0000	4	8	3.8	7.7
2.5000	0	8	.0	7.7
3.0000	13	21	12.5	20.2
3.5000	0	21	.0	20.2
4.0000	13	34	12.5	32.7
4.5000	0	34	.0	32.7
5.0000	20	54	19.2	51.9
5.5000	0	54	.0	51.9
6.0000	22	76	21.2	73.1
6.5000	0	76	.0	73.1
7.0000	16	92	15.4	88.5
7.5000	0	92	.0	88.5
8.0000	9	101	8.7	97.1
8.5000	0	101	.0	97.1
9.0000	3	104	2.9	100.0
9.5000	0	104	.0	100.0
10.000	0	104	.0	100.0

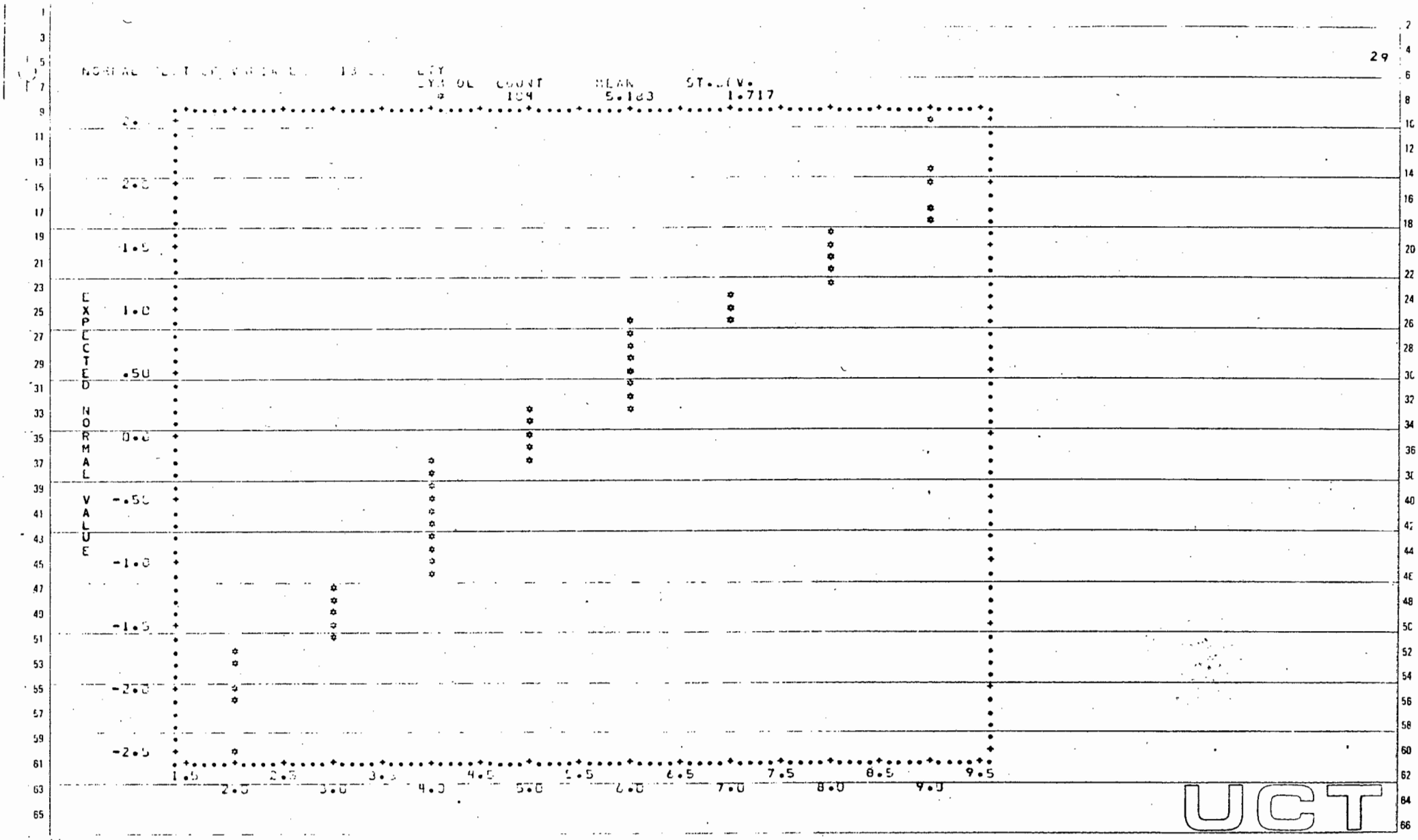

NORMAL PLOT OF VARIABLE IS NORMAL
27
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
UCT

HISTOGRAM OF VARIABLE [illegible]

VARIABLE COUNT MEAN STD.DEV.
X 104 5.163 1.717

INTERVAL NAME		FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
* 2.5000	XXXXX	5	5	4.8	4.8
* 2.7500		0	5	.0	4.8
* 3.0000	XXXXXXXX	8	13	7.7	12.5
* 3.2500		0	13	.0	12.5
* 4.0000	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	30	43	28.8	41.3
* 4.2500		0	43	.0	41.3
* 5.0000	XXXXXXXXXXXXXXXXX	18	61	17.3	58.7
* 5.2500		0	61	.0	58.7
* 6.0000	XXXXXXXXXXXXXXXXXXXXXXXX	24	85	23.1	81.7
* 6.2500		0	85	.0	81.7
* 7.0000	XXXXXX	6	91	5.8	87.5
* 7.2500		0	91	.0	87.5
* 8.0000	XXXXXXXX	8	99	7.7	95.2
* 8.2500		0	99	.0	95.2
* 9.0000	XXXXX	5	104	4.8	100.0
* 9.2500		0	104	.0	100.0
* 10.000		0	104	.0	100.0
* 10.500		0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80


NORMAL PLOT OF VARIABLE 13
SYMBOL COUNT MEAN ST.DEV.
* 104 5.183 1.717
EXPECTED NORMAL VALUE
2.5
2.0
1.5
1.0
.50
0.0
-.50
-1.0
-1.5
-2.0
-2.5
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
UCT

HISTO[illegible] OF V[illegible] IN [illegible]

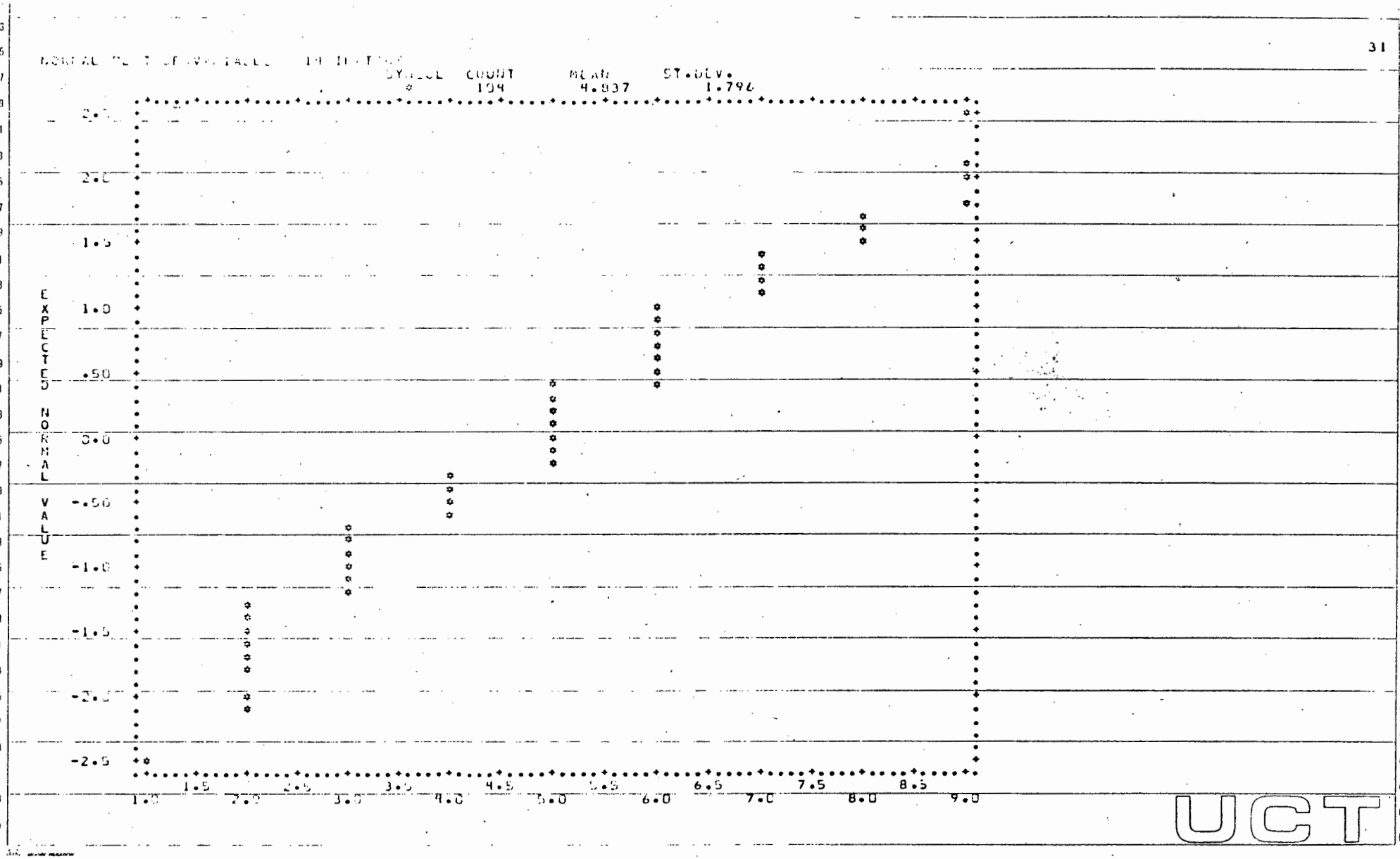
SYMBOL	COUNT	MEAN	ST.DEV.
X	104	4.657	1.796

INTERVAL NAME	5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80	FREQUENCY INT.	FREQUENCY CUM.	PERCENTAGE INT.	PERCENTAGE CUM.
1.5000	X	1	1	1.0	1.0
2.0000	XXXXXXXXXX	10	11	9.6	10.6
2.5000		0	11	.0	10.6
3.0000	XXXXXXXXXXXXXXXX	16	27	15.4	26.0
3.5000		0	27	.0	26.0
4.0000	XXXXXXXXXXXXXXX	15	42	14.4	40.4
4.5000		0	42	.0	40.4
5.0000	XXXXXXXXXXXXXXXXXXXXXXXXX	25	67	24.0	64.4
5.5000		0	67	.0	64.4
6.0000	XXXXXXXXXXXXXXXXXXXXXX	22	89	21.2	85.6
6.5000		0	89	.0	85.6
7.0000	XXXXXXX	7	96	6.7	92.3
7.5000		0	96	.0	92.3
8.0000	XXXX	4	100	3.8	96.2
8.5000		0	100	.0	96.2
9.0000	XXXX	4	104	3.8	100.0
9.5000		0	104	.0	100.0
10.000		0	104	.0	100.0

5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

NORMAL PLOT OF VARIABLE IN DATA

SYMBOL COUNT MEAN ST.DEV.
* 199 4.937 1.796



UCT

APPENDIX E

4

CORRELATI[illegible]

		FAILSUCC 1	SELFCONF 2	SELFESTM 3	SELFCONT 4	NERVOUSN 5	HEALTH 6	FMLYINFL 7	PSNLFRDM 8	SOCBLTYG 9	SOCBLTYS 10	MORALSEN 11	FORMALRE 12	DESRBLTY 13
FAILSUCC	1	1.000												
SELFCONF	2	[illegible]	1.000											
SELFESTM	3	.324	[illegible]	1.000										
SELFCONT	4	[illegible]	[illegible]	.357?	1.000									
NERVOUSN	5	.324?	.415	.451	.447	1.000								
HEALTH	6	.257?	.450?	.354?	.327	.409	1.000							
FMLYINFL	7	.575	.354	.367	.239	[illegible]	.171	1.000						
PSNLFRDM	8	.352?	.353	.341	.161	.233	.224	.523	1.000					
SOCBLTYG	9	.108	.601	[illegible]	.209	.243	.404	.153	.305?	1.000				
SOCBLTYS	10	[illegible]	.202	[illegible]	-.051	.153	.011	.045	.185	.219	1.000			
MORALSEN	11	[illegible]	.356	.166	.419	.213	.253	.338	.112	.173	-.114	1.000		
FORMALRE	12	[illegible]	.610	.492	.349	.352	[illegible]	.463	.236	.346	.153	.468	1.000	
DESRBLTY	13	-.246?	-.345	-.151	-.411	-.133	-.220	-.117	-.004?	-.154	.205	-.613	-.353	1.000
IPATANX	14	[illegible]	-.598	-.599	-.561	-.631	-.562	-.476	-.438	-.516	-.095	-.342	-.505	.284

		IPATANX 14
IPATANX	14	1.000

UCT

APPENDIX
F

CORRELATION MATRIX FOR GROUP 1 FAILURE

		SELFCONF 2	SELFESTM 3	SELFCONT 4	NERVOUSN 5	HEALTH 6	FMLYINFL 7	PSNLFRDM 8	SOCBLTYG 9	SOCBLTYS 10	MORALSEN 11
SELFCONF	2	1.0000									
SELFESTM	3	.6358	1.0000								
SELFCONT	4	.3692	.3628	1.0000							
NERVOUSN	5	.2155	.3360	.3575	1.0000						
HEALTH	6	.4789	.6240	.3016	.4922	1.0000					
FMLYINFL	7	.0019	.0232	.0589	-.0279	.0699	1.0000				
PSNLFRDM	8	.2405	.2596	.0896	.1681	.1614	.4732	1.0000			
SOCBLTYG	9	.7468	.6378	.3521	.2061	.5529	.1060	.2424	1.0000		
SOCBLTYS	10	.2286	.0518	.1122	.2741	.0624	-.0322	.0719	.1968	1.0000	
MORALSEN	11	.2343	.0580	.2496	-.0366	.0718	.1285	-.1262	-.0055	-.0876	1.0000
FORMALRE	12	.4686	.3900	.2666	.1515	.2554	-.0122	-.1724	.2584	.1426	.4786
DESRBLTY	13	-.2474	-.1563	-.3416	.0777	-.1673	.0104	.1143	-.0665	.2424	-.6596
IPATANX	14	-.5440	-.6493	-.6057	-.5916	-.6134	-.2448	-.3413	-.5863	-.1902	-.0739

		FORMALRE 12	DESRBLTY 13	IPATANX 14
FORMALRE	12	1.0000		
DESRBLTY	13	-.3047	1.0000	
IPATANX	14	-.2110	.0748	1.0000

CORRELATION MATRIX FOR GROUP 4 SUCCESS

		SELFCONF 2	SELFESTM 3	SELFCONT 4	NERVOUSN 5	HEALTH 6	FMLYINFL 7	PSNLFRDM 8	SOCBLTYG 9	SOCBLTYS 10	MORALSEN 11
SELFCONF	2	1.0000									
SELFESTM	3	.3672	1.0000								
SELFCONT	4	.1234	.1856	1.0000							
NERVOUSN	5	.4769	.3268	.4282	1.0000						
HEALTH	6	.2663	.1883	.2345	.3753	1.0000					
FMLYINFL	7	.0459	.1940	.0511	-.0231	-.1515	1.0000				
PSNLFRDM	8	.2160	.3153	.0319	.0868	.1017	.3263	1.0000			
SOCBLTYG	9	.4156	.2973	.1613	.2752	.1419	.1161	.3545	1.0000		
SOCBLTYS	10	.1829	.1284	-.2029	-.0194	-.1092	.1265	.3371	.2476	1.0000	
MORALSEN	11	.2113	.0405	.4682	.2773	.3054	.1177	.0988	.3489	-.1972	1.0000
FORMALRE	12	.4374	.4163	.1280	.2620	-.0152	.0406	.1569	.6051	.2446	.0625
DESRBLTY	13	-.3109	.0774	-.4116	-.2670	-.1348	.1764	.0551	-.2547	.1838	-.4764
IPATANX	14	-.3609	-.3493	-.3697	-.5476	-.3884	-.1064	-.2857	-.4827	.0446	-.3151

		FORMALRE 12	DESRBLTY 13	IPATANX 14
FORMALRE	12	1.0000		
DESRBLTY	13	-.1669	1.0000	
IPATANX	14	-.2696	.3757	1.0000

APPENDIX
G

5

SQUARED MULTIPLE CORRELATIONS (SMC) OF EACH VARIABLE, WITH ALL OTHER VARIABLES AND KAISER'S (1970) MEASURE OF SAMPLING ADEQUACY (MSA)

		SMC	MSA
TOTAL			[illegible]
1	FAILSUCC	.6971[illegible]	.7[illegible]3
2	SELFCONF	.6346[illegible]	.9[illegible]0
3	SELFESTM	.[illegible]	.[illegible]7
4	SELFCONT	.42704	.900
5	NERVOUSN	.49933	.[illegible]19
6	HEALTH	.43674	.[illegible]
7	FMLYINFL	.6010[illegible]	.779
8	PSWLFREM	.3983[illegible]	.[illegible]31
9	SOCELTYG	.[illegible]364[illegible]	.7[illegible]
10	SOCELTYS	.20366	.[illegible]79
11	MORALSEN	.5146[illegible]	.782
12	FORMALRE	.66604	.[illegible]9
13	DESRBLTY	.4776[illegible]	.79[illegible]
14	IPATANX	.72924	.869

COMMUNALITIES OBTAINED FOR 3 FACTORS AFTER 7 ITERATIONS.
THE COMPOSITE OF A VARIABLE IS ITS SQUARED MULTIPLE CORRELATION (COVARIANCE) WITH THE FACTORS.

1	FAILSOCC	.7233
2	SELFCONF	.6835
3	SELFESTM	.6134
4	SELFCONT	.5276
5	[illegible]	.4675
6	WEALTH	.5554
7	FAMLYINFL	.7891
8	PERSFROM	.5320
9	SOCCLTYG	.5277
10	SOCCLTYS	.3866
11	NO ALIEN	.6779
12	FORMALRS	.6225
13	OCSOCLTY	.7031
14	IPATANX	.7524

FACTOR	VARIANCE EXPLAINED	CUMULATIVE PROPORTION OF TOTAL VARIANCE
1	5.515	.394
2	1.712	.516
3	1.429	.618
4	.991	.689
5	.872	.751
6	.740	.804
7	.591	.846
8	.421	.877
9	.404	.905
10	.378	.932
11	.307	.954
12	.260	.974
13	.207	.989
14	.160	1.000

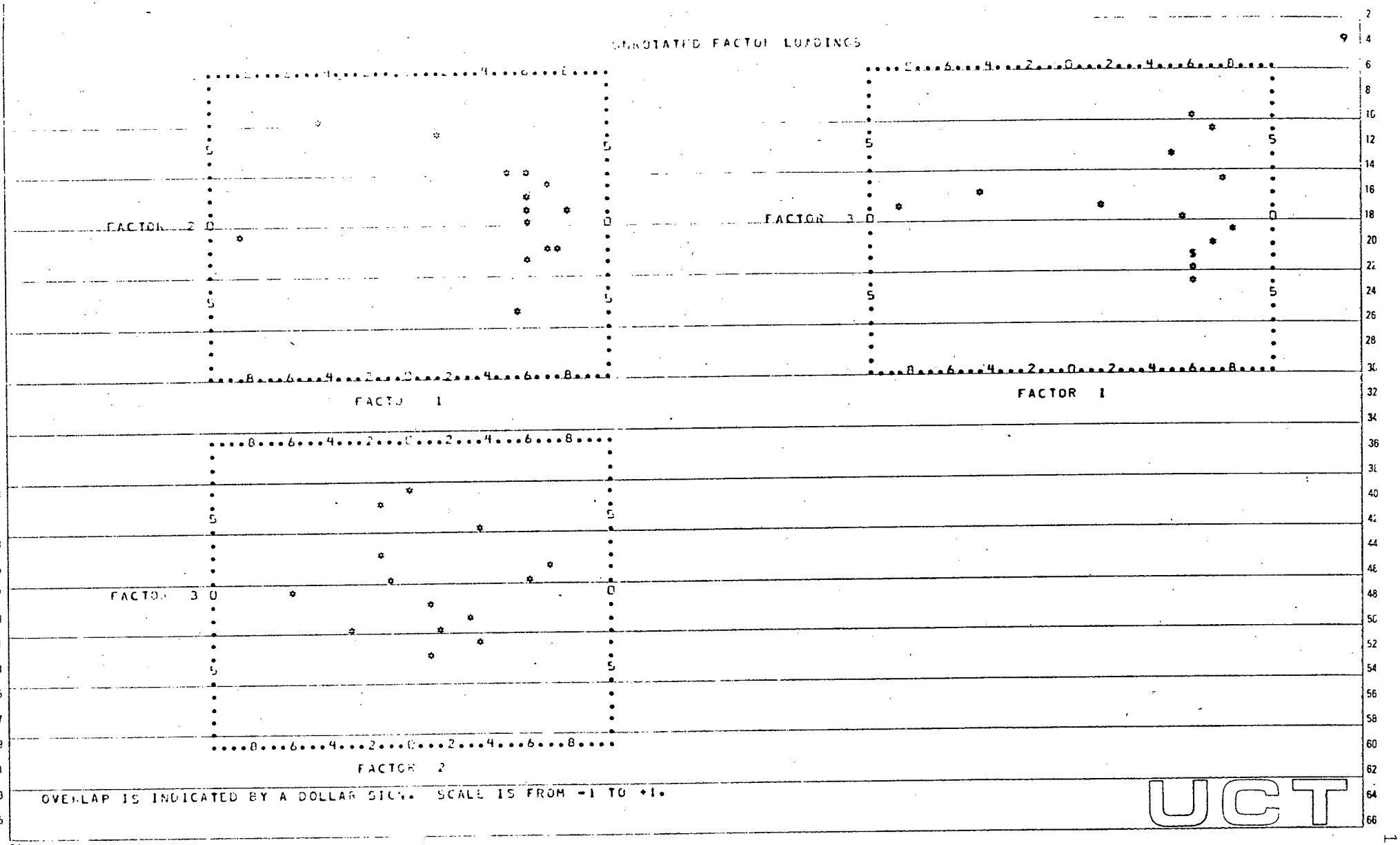
THE VARIANCE EXPLAINED BY EACH FACTOR IS THE EIGENVALUE FOR THAT FACTOR.

TOTAL VARIANCE IS DEFINED AS THE SUM OF THE DIAGONAL ELEMENTS OF THE CORRELATION (COVARIANCE) MATRIX.

OBLIQUELY FACTOR LOADING MATRIX (PATTERN)
FOR PRINCIPAL COMPONENTS

		FACTOR 1	FACTOR 2	FACTOR 3
FAILSUCC	1	.679	-.154	.546
SELFCONF	2	.795	.121	-.111
SELFESTM	3	.717	-.276	-.153
SELFCONT	4	.615	-.275	-.270
NERVOUSN	5	.628	.147	-.249
HEALTH	6	.613	.113	-.401
EBLYIGEL	7	.804	-.283	.651
PSNLFREM	8	.503	.372	.375
SOCELTYC	9	.556	.342	-.393
SOCELTYS	10	.135	.596	.086
MORALSEN	11	.548	-.616	.027
FORMALRE	12	.749	-.137	.222
DESIRLTY	13	-.442	.683	.201
IPATANX	14	-.855	-.110	.093
	VP	5.515	1.712	1.429

THE VP FOR EACH FACTOR IS THE SUM OF THE SQUARES OF THE ELEMENTS OF THE COLUMN OF THE FACTOR LOADING MATRIX CORRESPONDING TO THAT FACTOR. THE VP IS THE VARIANCE EXPLAINED BY THE FACTOR.


UNROTATED FACTOR LOADINGS
FACTOR 2
FACTOR 1
FACTOR 3
FACTOR 1
FACTOR 3
FACTOR 2
OVERLAP IS INDICATED BY A DOLLAR SIGN. SCALE IS FROM -1 TO +1.

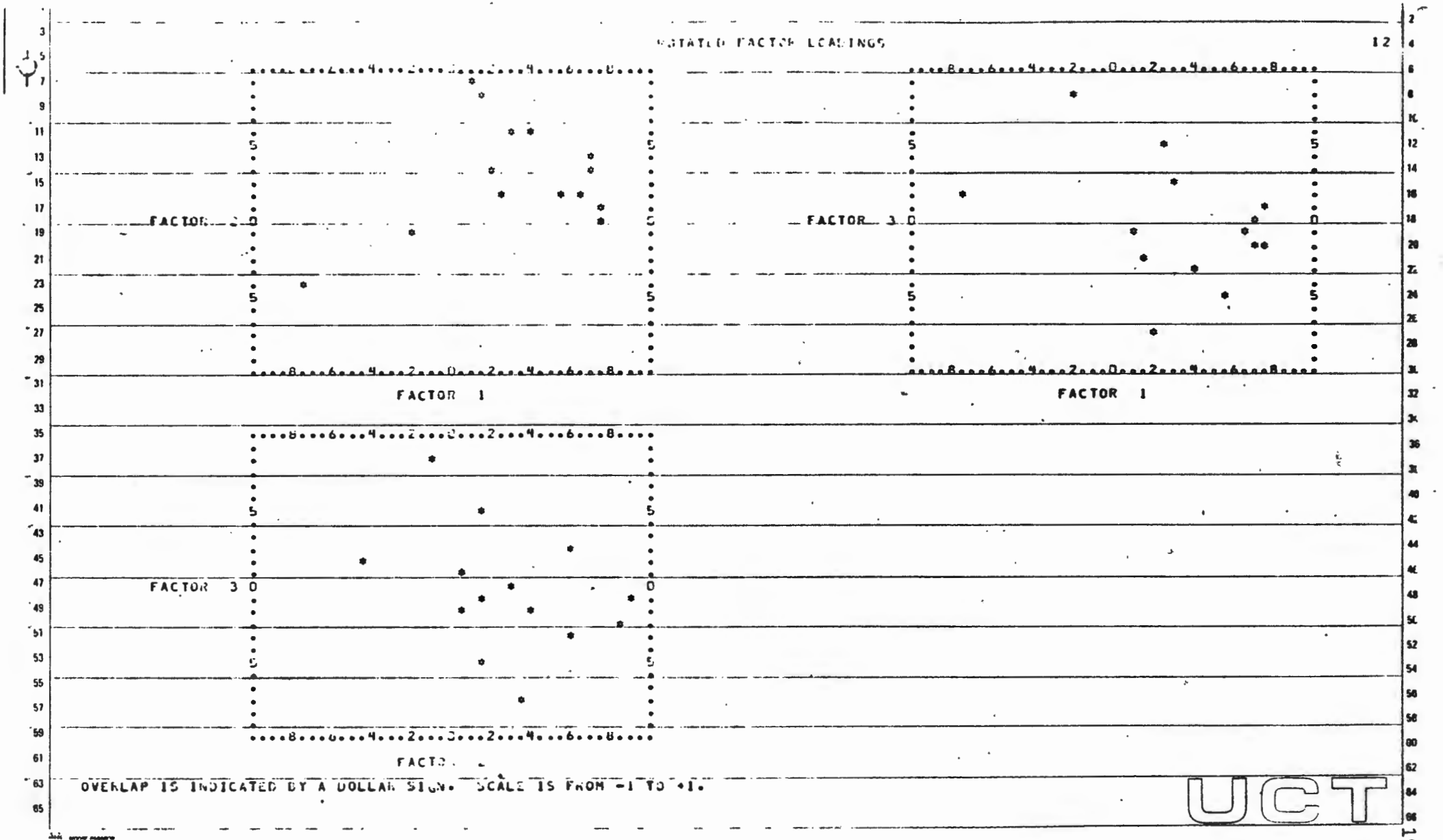
ORTHOGONAL ROTATION, GAMMA = [illegible]

ITERATION	FIDELITY
[illegible]	[illegible]
[illegible]	[illegible]
1	-4.990101
2	[illegible]
3	[illegible]

ROTATED FACTOR LOADINGS (PATTERN)

		FACTOR 1	FACTOR 2	FACTOR 3
FAIL ACC	1	.16	.[illegible]	-.[illegible]
SELFCONF	2	.709	.379	-.127
SELFESTM	3	.722	.299	.033
SELFCONT	4	.626	.142	-.461
NERVOUSN	5	.659	.163	-.[illegible]
HEALTH	6	.731	.039	-.140
EMLYIMPL	7	.097	.182	-.047
PSELFSEM	8	.402	.602	.282
SOCCLTYG	9	.709	.057	.092
SOCCLTYS	10	.254	.154	.546
MORALSEN	11	.194	.336	-.726
FORMALRE	12	.398	.615	-.293
DES SLTY	13	-.219	-.[illegible]	.[illegible]
IPATANX	14	-.743	-.427	.151
	VP	3.[illegible]	2.35	1.992

THE VP FOR EACH FACTOR IS THE SUM OF THE SQUARES OF THE ELEMENTS OF THE COLUMN OF THE FACTOR PATTERN MATRIX CORRESPONDING TO THAT FACTOR. WHEN THE ROTATION IS ORTHOGONAL, THE VP IS THE VARIANCE EXPLAINED BY THE FACTOR.


ROTATED FACTOR LOADINGS
FACTOR 3
FACTOR 1
FACTOR 3
FACTOR 1
FACTOR 3
FACTOR
OVERLAP IS INDICATED BY A DOLLAR SIGN. SCALE IS FROM -1 TO +1.

SORTED ROTATED FACTOR LOADINGS (PATTERN) 14

		FACTOR 1	FACTOR 2	FACTOR 3
SOCSLTYG	9	.757	.303	.000
IPATANX	14	-.740	-.427	.000
HEALTH	6	.731	.309	.000
SELFESTM	3	.723	.293	.000
SELFCONF	2	.709	.379	.000
NERVOUSN	5	.657	.000	.000
SELFCONT	4	.526	.000	-.481
EMLYINEL	7	.500	.382	.000
FAILSUCC	1	.000	.639	.000
FORMALRE	12	.396	.615	-.293
PSNLFRDM	6	.299	.602	.282
DESSOCLTY	13	.000	.550	.804
MOPALSEN	11	.000	.336	-.726
SOCSLTYS	10	.254	.000	.540
	VP	3.824	2.835	1.992

THE ABOVE FACTOR LOADING MATRIX HAS BEEN REARRANGED SO THAT THE COLUMNS APPEAR IN DECREASING ORDER OF VARIANCE EXPLAINED BY FACTORS. THE ROWS HAVE BEEN REARRANGED SO THAT FOR EACH SUCCESSIVE FACTOR, LOADINGS GREATER THAN .5000 APPEAR FIRST. LOADINGS LESS THAN .2500 HAVE BEEN REPLACED BY ZERO.

FACTO[illegible] C[illegible]EFFICI[illegible]
THESE C[illegible]EFFICI[illegible] [illegible] AND STANDARD DEVIATION ONE.

		FACTOR 1	FACTOR 2	FACTOR 3
FAILSUCC	1	-.14[illegible]51	.3[illegible]68	-.04632
SELFCONF	2	.1738[illegible]	.0[illegible]	.[illegible]1289
SELFESIM	3	[illegible]	-.[illegible]74	[illegible]
SELFCONT	4	.13597	-.00915	-.21631
NERVOUSN	5	.21105	-.07447	.01674
HEALTH	6	.26318	-.16[illegible]67	-.02195
FMLYIREL	7	-.17226	.43335	.35417
P.ALF[illegible]	[illegible]	-.[illegible]0345	.2[illegible]	.[illegible]916
SOCBLTYG	9	.28675	-.13873	.11120
SOCBLTYS	10	.10167	.06651	.33264
MORALSEA	11	-.25568	.06984	-.36298
FORMALRE	12	-.01321	.20421	-.08323
DESRBLTY	13	-.30552	.07081	.42497
IPATANX	14	-.17576	-.93872	-.30504

ESTIMATED [illegible] DISTANCE (CHI-SQUARED) FROM EACH CASE TO THE CENTROID OF ALL CASES
FOR ORIGINAL DATA (14 D.F.) FACTOR SCORES (3 D.F.) AND THEIR DIFFERENCE (11 D.F.).
EACH CHI-SQUARE HAS BEEN DIVIDED BY ITS DEGREES OF FREEDOM.
CASE NUMBERS BELOW REFER TO DATA MATRIX BEFORE DELETION OF MISSING DATA.

CASE LABEL	NO.	CHI-SQ/DF 14	CHI-SQ/DF 3	CHI-SQ/DF 11	FACTOR 1	FACTOR 2	FACTOR 3
	1	[illegible]	.677	[illegible]	-1.271	-.661	-.243
	2	.914	.277	.396	-.329	-1.640	.469
	3	1.259	1.043	1.317	.340	-.661	1.610
	4	.344	.697	.604	-.773	.226	1.201
	5	.983	1.597	.815	-.426	-1.443	-1.589
	6	1.504	.101	1.016	-.270	-.262	.368
	7	1.229	2.161	.975	-1.465	-1.015	-1.019
	8	2.192	1.590	2.357	-1.647	-.169	1.153
	9	.673	.774	.646	.124	-1.109	1.037
	10	.935	.345	1.396	-.726	-.091	.707
	11	.384	.711	.295	.099	-1.225	.769
	12	.991	2.744	.513	-2.503	-.292	-1.372
	13	1.486	1.069	1.600	.377	-1.162	1.544
	14	1.766	2.415	1.539	-1.517	-.797	2.075
	15	.973	.686	1.051	-.894	-.225	1.100
	16	1.509	2.036	1.365	-.927	-1.634	1.608
	17	.900	1.215	.814	-1.232	-.341	1.418
	18	1.569	2.668	1.264	-.540	-1.770	-2.147
	19	1.509	3.135	1.274	-1.799	-1.456	-2.012
	20	1.720	3.587	1.207	-3.230	.032	-.575
	21	.521	.778	.451	.519	-1.329	.545
	22	1.371	.310	1.304	-.196	.124	.937
	23	.588	.264	.677	-.136	-.678	.034
	24	1.044	1.859	.321	-1.253	-.885	1.796
	25	.457	.515	.441	.262	-1.069	.577
	26	[illegible]	.277	.672	-.672	-.105	.244
	27	[illegible]	.493	.397	.146	-.316	.890
	28	1.306	.247	1.594	-.250	-.718	.403
	29	1.274	1.003	1.348	-.675	-.408	-1.543
	30	1.670	.395	2.273	.779	-.224	-.726
	31	1.007	1.011	1.005	1.261	-.598	1.041
	32	.579	.465	.609	-.110	-1.168	-.143
	33	1.315	.136	1.645	-.407	.043	.284
	34	1.251	.593	1.423	-.321	-.614	-1.146
	35	.834	.600	.897	-1.208	-.570	.119
	36	.706	.500	.777	.143	-.352	-.309
	37	[illegible]	.843	.799	.467	-1.507	.127
	38	.433	.159	.507	-.168	-.609	.277
	39	1.237	1.067	1.204	1.430	-.649	.859
	40	.069	.152	[illegible]	-.444	-.568	.027
	41	1.064	1.979	.815	.932	-1.977	-1.070
	42	.537	.604	1.026	.104	-1.322	-.233
	43	.659	1.202	.511	.632	-.029	1.567
	44	.704	.522	.753	-.323	-1.029	-.634
	45	.507	.346	.551	.620	-.609	.019
	46	.335	.531	.536	.351	-.648	1.025
	47	1.236	2.297	.946	-2.042	-1.048	1.273
	48	1.270	.655	1.438	1.050	-.356	-.847
	49	1.116	3.964	.342	2.579	-2.239	-.461
	50	.623	.134	.751	-.127	-.260	-.605

ESTIMATED FACTOR SCORES AND MAHALANOBIS DISTANCES (CHI-SQUARES) FROM EACH CASE TO THE CENTROID OF ALL CASES
FOR [illegible] (14 D.F.) [illegible] (3 D.F.) AND THEIR DIFFERENCE (11 D.F.).
EACH CHI-SQUARE HAS BEEN DIVIDED BY ITS DEGREES OF FREEDOM.
CASE NUMBERS BELOW REFER TO DATA MATRIX BEFORE DELETION OF MISSING DATA.

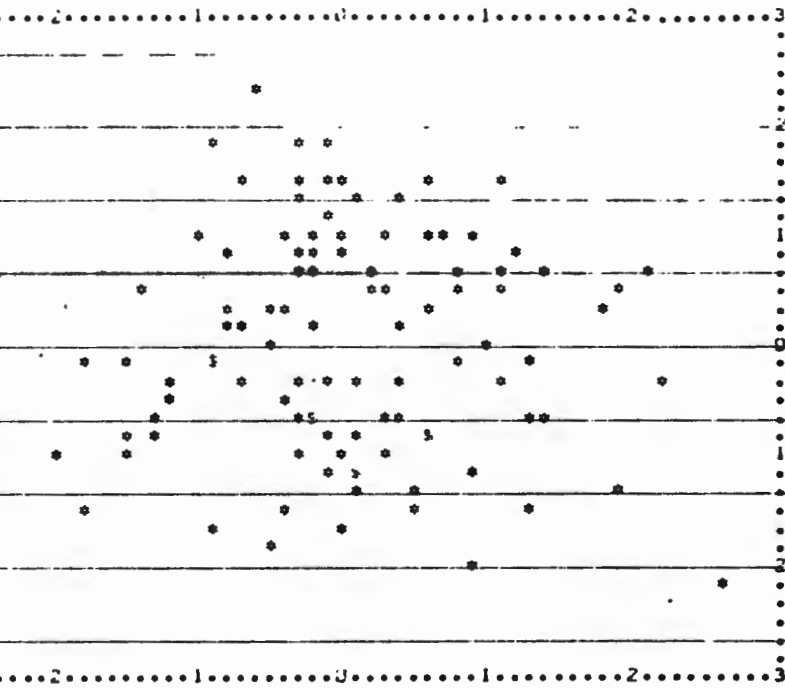
CASE LABEL	NO.	CHISQ/DF 14	CHISQ/DF 3	CHISQ/DF 11	FACTOR 1	FACTOR 2	FACTOR 3
	51	.964	2.302	.597	2.150	-.395	1.457
	52	.675	1.023	.355	1.002	-1.260	.566
	53	.599	.439	.643	.001	-.932	-.670
	54	.993	1.225	.930	1.263	-1.442	-.026
	55	.973	.132	1.210	.330	-.302	.264
	56	.966	.917	.756	1.270	-.100	-1.061
	57	1.453	1.272	1.475	-.557	1.966	.426
	58	.677	.735	.661	1.227	.807	-.217
	59	.416	.109	.499	.387	.239	.345
	60	.435	.382	.958	.334	.944	-.404
	61	.974	1.432	.357	1.912	.460	.560
	62	.935	1.645	.742	2.061	.691	-.459
	63	.804	.325	.934	.223	.659	-.701
	64	1.031	.794	1.395	-.384	1.341	-1.072
	65	.597	.899	.315	.254	1.419	.612
	66	1.469	.796	1.673	-1.367	.453	.566
	67	1.043	.648	1.151	-.071	1.111	.838
	68	1.308	.302	1.522	.319	.496	.748
	69	.797	2.301	.364	-.321	1.894	1.658
	70	.717	.175	.753	.187	.466	-.564
	71	.760	.979	.701	-.705	1.551	-.188
	72	.575	.543	.583	.022	.797	-.996
	73	1.449	1.032	1.563	-.121	1.421	1.030
	74	.285	.596	.174	1.109	.667	-.334
	75	1.061	.682	1.066	.101	1.409	-.227
	76	1.034	.246	1.240	-.316	.619	.505
	77	.549	.655	.952	.330	1.041	.305
	78	.751	1.110	.551	-.347	1.428	1.146
	79	1.429	1.202	1.491	1.141	1.456	-.431
	80	1.441	1.175	1.513	.712	.945	-1.458
	81	.667	1.261	.505	1.038	.342	-1.645
	82	.535	.214	.622	-.158	.754	-.221
	83	1.345	1.473	.979	-.866	1.620	.593
	84	.776	2.064	.424	.810	.504	-2.298
	85	1.651	.785	1.324	-.256	1.440	.466
	86	.577	.676	.550	-.269	1.318	.469
	87	1.366	.351	1.286	-.312	.975	-.333
	88	1.577	2.562	1.227	-.615	2.374	1.603
	89	.469	.199	.543	-.214	.719	.185
	90	1.245	.650	1.407	.419	1.253	-.453
	91	[illegible]	.279	[illegible]	-.269	[illegible]	-.352
	92	.757	1.534	.545	-1.314	.943	-1.639
	93	.893	.093	1.118	-.308	.358	.024
	94	.799	.566	.862	.544	.364	-1.164
	95	.466	.943	.335	1.448	.672	-.530
	96	1.241	.356	1.463	.763	.666	.124
	97	.530	1.152	.743	-.802	.272	-1.655
	98	1.087	1.827	.585	-1.470	-.160	-1.816
	99	.613	.498	.545	-.616	.903	.057
	100	1.204	1.337	1.25[illegible]	.576	1.324	-1.247

FACTOR SCORE COVARIANCE (COMPUTED FROM FACTOR SCORES)

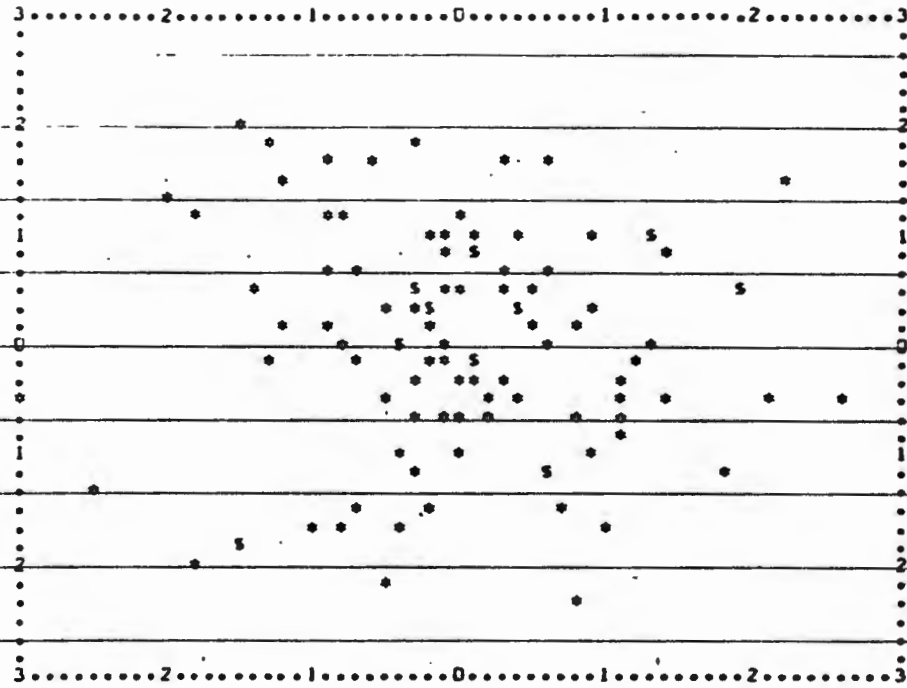
		FACTOR 1	FACTOR 2	FACTOR 3
FACTOR	1	1.000		
FACTOR	2	-.000	1.000	
FACTOR	3	.000	-.000	1.000

FACTOR SCORES

X-AXIS IS FACTOR 1, Y-AXIS IS FACTOR 2



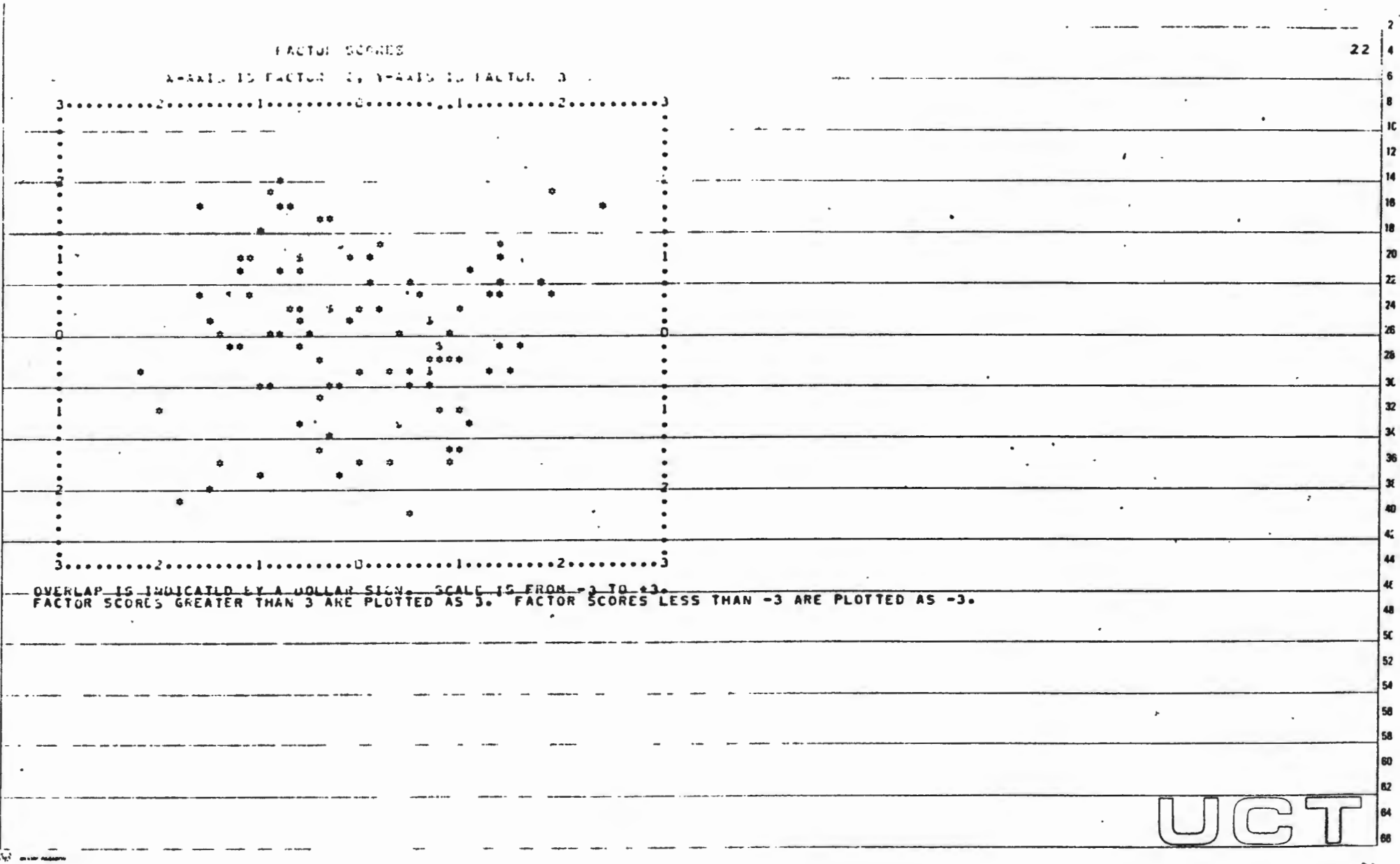
X-AXIS IS FACTOR 1, Y-AXIS IS FACTOR 3



OVERLAP IS INDICATED BY A DOLLAR SIGN. SCALE IS FROM -3 TO +3.
FACTOR SCORES GREATER THAN 3 ARE PLOTTED AS 3. FACTOR SCORES LESS THAN -3 ARE PLOTTED AS -3.

FACTOR SCORES

X-AXIS IS FACTOR 2, Y-AXIS IS FACTOR 3



OVERLAP IS INDICATED BY A DOLLAR SIGN. SCALE IS FROM -3 TO +3.
FACTOR SCORES GREATER THAN 3 ARE PLOTTED AS 3. FACTOR SCORES LESS THAN -3 ARE PLOTTED AS -3.

UCT

STEP NUMBER 0

VARIABLE	F TO REMOVE	FORCE LEVEL	TOLERANCE
	DF = 1	103	

VARIABLE	F TO ENTER	FORCE LEVEL	TOLERANCE
	DF = 1	102	
2 SELFCONF	27.078	1	1.000000
3 SELFESTM	11.953	1	1.000000
4 SELFCONT	9.795	1	1.000000
5 NERVOUSN	11.935	1	1.000000
6 HEALTH	7.234	1	1.000000
7 FMLYINFL	65.290	1	1.000000
8 PENLFROM	14.423	1	1.000000
9 SOCRLTYG	1.197	1	1.000000
10 SOCRLTYS	.113	1	1.000000
11 MORALSEN	16.762	1	1.000000
12 FORMALRE	88.658	1	1.000000
13 DESRBLTY	6.558	1	1.000000
14 IPATANX	39.939	1	1.000000

****

STEP NUMBER 1
VARIABLE ENTERED 12 FORMALRE

VARIABLE	F TO REMOVE	FORCE LEVEL	TOLERANCE
	DF = 1	102	
12 FORMALRE	88.658	1	1.000000

VARIABLE	F TO ENTER	FORCE LEVEL	TOLERANCE
	DF = 1	101	
2 SELFCONF	.541	1	.791010
3 SELFESTM	.033	1	.846800
4 SELFCONT	.731	1	.955737
5 NERVOUSN	1.526	1	.963913
6 HEALTH	.760	1	.974913
7 FMLYINFL	44.667	1	.999968
8 PENLFROM	9.693	1	.997461
9 SOCRLTYG	3.655	1	.859503
10 SOCRLTYS	.984	1	.968286
11 MORALSEN	.774	1	.902083
13 DESRBLTY	.006	1	.931851
14 IPATANX	9.635	1	.946900

U-STATISTIC OF WILKS' LAMBDA .5349892 DEGREES OF FREEDOM 1 1 102
APPROXIMATE F-STATISTIC 88.658 DEGREES OF FREEDOM 1.00 102.00

F - MATRIX DEGREES OF FREEDOM = 1 102

FAILURE
SUCCESS 88.66

CLASSIFICATION FUNCTIONS

VARIABLE	GROUP = FAILURE	SUCCESS
12 FORMALRE	2.06920	9.39245
CONSTANT	-4.59697	-11.96599

STEP NUMBER 2
VARIABLE ENTERED 7 FMLYINFL

VARIABLE	F TO REMOVE	FORCE LEVEL	TOLERANCE
DF= 1 101			
7 FMLYINFL	44.667	1	.999968
12 FORMALRE	47.286	1	.999968

VARIABLE	F TO ENTER	FORCE LEVEL	TOLERANCE
DF= 1 100			
2 SELFCONF	.040	1	.786549
3 SELFESTM	2.116	1	.802491
4 SELFCONT	.162	1	.952801
5 NERVOUSN	1.364	1	.963180
6 HEALTH	.579	1	.974986
8 PSNLFROM	.101	1	.826809
9 SOCBLTYG	5.027	1	.847913
10 SOCBLTYS	.978	1	.967409
11 MORALSEN	.060	1	.887319
13 DFSRBLTY	.217	1	.926968
14 IPATANX	2.342	1	.911520

U-STATISTIC OR WILKS' LAMBDA .3709426 DEGREES OF FREEDOM 2 1 102
APPROXIMATE F-STATISTIC 85.648 DEGREES OF FREEDOM 2.00 101.00

F = MATRIX DEGREES OF FREEDOM = 2 101

SUCCESS	FAILURE
	85.64

CLASSIFICATION FUNCTIONS

GROUP =	FAILURE	SUCCESS
VARIABLE		
7 FMLYINFL	2.06399	3.38905
12 FORMALRE	2.05789	3.37368
CONSTANT	-6.84459	-22.63624

****

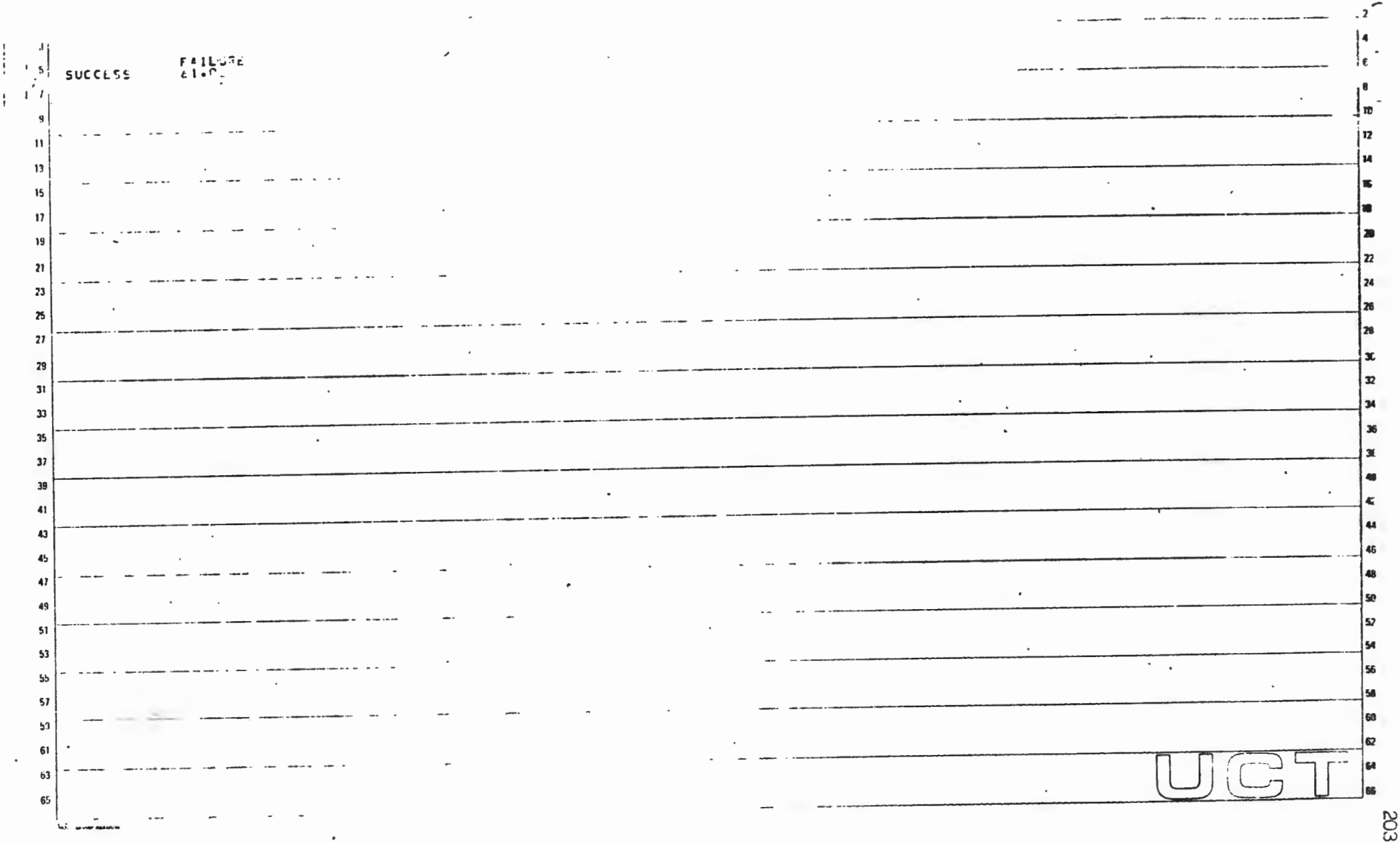
STEP NUMBER 3
VARIABLE ENTERED 9 SOCBLTYG

VARIABLE	F TO REMOVE	FORCE LEVEL	TOLERANCE
DF= 1 100			
7 FMLYINFL	46.185	1	.906485
9 SOCBLTYG	5.027	1	.847913
12 FORMALRE	54.193	1	.858277

VARIABLE	F TO ENTER	FORCE LEVEL	TOLERANCE
DF= 1 99			
2 SELFCONF	2.716	1	.552430
3 SELFESTM	.300	1	.660677
4 SELFCONT	.739	1	.912017
5 NERVOUSN	2.394	1	.933647
6 HEALTH	2.728	1	.843949
8 PSNLFROM	1.083	1	.746066
10 SOCBLTYS	.379	1	.941990
11 MORALSEN	.203	1	.887105
13 DFSRBLTY	.309	1	.924893
14 IPATANX	8.777	1	.685623

U-STATISTIC OR WILKS' LAMBDA .3531863 DEGREES OF FREEDOM 3 1 102
APPROXIMATE F-STATISTIC 61.046 DEGREES OF FREEDOM 3.00 100.00

F = MATRIX DEGREES OF FREEDOM = 3 100


SUCCESS
FAILURE

CLASSIFICATION FUNCTIONS

VARIABLE / GROUP =	FAILURE	SUCCESS
7 FMLYINFL	1.94146	3.33325
9 SOCBLTYC	.32215	[illegible]
12 FORMALRE	1.05664	3.10496
CONSTANT	-9.79942	-22.64786

****

STEP NUMBER 4
VARIABLE ENTERED 14 IPATANX

VARIABLE	F TO REMOVE (DF = 1 99)	FORCE LEVEL	TOLERANCE	*	VARIABLE	F TO ENTER (DF = 1 98)	FORCE LEVEL	TOLERANCE
7 FMLYINFL	30.817	1	.962169	*	2 SELFCONF	1.056	1	.530344
9 SOCBLTYG	11.606	1	.637783	*	3 SELFESTM	2.410	1	.587350
12 FORMALRE	44.338	1	.856619	*	4 SELFCONT	.210	1	.738649
14 IPATANX	8.777	1	.685623	*	5 NERVOUSN	.022	1	.634810
				*	6 HEALTH	.208	1	.701804
				*	8 PSNLFRDM	.293	1	.726391
				*	10 SOCBLTYS	.228	1	.940561
				*	11 MORALSEN	.058	1	.877721
				*	13 DESPBLTY	.013	1	.904586

U-STATISTIC OF WILKS' LAMBDA .3244227 DEGREES OF FREEDOM 4 1 102
APPROXIMATE F-STATISTIC 51.539 DEGREES OF FREEDOM 4.00 99.00

F - MATRIX DEGREES OF FREEDOM = 4 99

	FAILURE
SUCCESS	51.54

CLASSIFICATION FUNCTIONS

VARIABLE / GROUP =	FAILURE	SUCCESS
7 FMLYINFL	2.73794	4.00866
9 SOCBLTYG	3.12677	7.35196
12 FORMALRE	1.06756	3.36460
14 IPATANX	5.32771	4.54201
CONSTANT	-32.57472	-39.40090

CLASSIFICATION MATRIX

GROUP	PERCENT CORRECT	NUMBER OF CASES CLASSIFIED INTO GROUP - FAILURE	SUCCESS
FAILURE	92.9	52	4
SUCCESS	93.8	3	45
TOTAL	93.3	55	49

JACKKNIFED CLASSIFICATION

GROUP	PERCENT CORRECT	NUMBER OF CASES CLASSIFIED INTO GROUP - FAILURE	SUCCESS
FAILURE	89.3	50	6
SUCCESS	93.5	3	45
TOTAL	91.3	53	51

SUMMARY TABLE

STEP NUMBER	VARIABLE ENTERED	VARIABLE REMOVED	F VALUE TO ENTER OR REMOVE	NUMBER OF VARIABLES INCLUDED	U-STATISTIC	APPROXIMATE F-STATISTIC	DEGREES OF FREEDOM	
1	12 FOTMALFE		68.6281	1	.5350	88.658	1.00	102.00
2	7 FMLYINFL		44.6665	2	.3709	85.640	2.00	161.00
3	9 SCCULTYG		5.0274	3	.3532	61.046	3.00	100.00
4	14 IFATANX		9.7774	4	.3244	51.539	4.00	99.00

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