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A Proposed Method of Student Selection Using a Biographical Inventory as an Adjunctive Predictive Criterion

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A PROPOSED METHOD OF STUDENT SELECTION

USING A BIOGRAPHICAL INVENTORY AS AN

ADJUNCTIVE PREDICTIVE CRITERION

by

Jeffrey Scott Orme

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Jeffrey Scott Orme

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Using a Biographical Inventory as an

Adjunctive Predictive Criterion

by

Jeffrey Scott Orme, Master of Science

Utah State University, 1980

Major Professor: Dr. Elwin C. Nielsen
Department: Psychology

The purpose of this paper was to investigate whether or not the use of a biographical inventory would be a feasible and viable adjunctive means of making more accurate predictions of student success in programs of upper-division and graduate study in speech pathology and audiology. During the past years, biographical inventories have been found to be predictive of creativity, performance as a military officer, performance in varied occupations, and academic performance. It was hypothesized that a biographical inventory could be developed which, when used in conjunction with the existing academic predictors of Grade Point Average and Graduate Records Examination scores, would add to the established selection instruments. As a means of identifying and distinguishing among several levels of competency of students, a student evaluation form was constructed and validated. Item

scores from a 257 item biographical inventory were correlated with scores

obtained from the student evaluation form and a 52 item biographical inven-

tory for speech pathology and audiology students was developed. Admissions

criteria data, student evaluation form scores and biographical inventory

scores were placed in two step-wise multiple regression equations and

analyzed statistically. Results indicate that biographical factors appear to

be of importance to undergraduate success in programs of speech and hearing

therapy. Student success in the more rigorous programs of graduate study

appears to depend much more on academic ability. Disparate results indicate

that the use of a biographical inventory as an adjunctive academic predictor

should be approached with caution until further studies can be conducted.

(137 pages)

CHAPTER I

INTRODUCTION

Graduate Student Selection

For over 30 years there has been a concentrated effort by the academic community to select university students who could and would successfully complete advanced educational programs: There have been successes and there have been failures. The problem that has existed since the prediction of academic success was undertaken is one of predictive validity. Vast amounts of research have been done on the topic of student selection. In spite of this effort, it has been virtually impossible to develop or discover predictors that would ensure that candidates accepted for advanced study would successfully complete their proposed courses of study. One year the selection instruments would be adequate and the next year they would not. No matter what the criteria, uniformity of prediction has not been ensured (Hirschberg & Itkin, 1978; Morgan, 1974; Permut, 1973; Thacker & Williams, 1974).

From the extensive body of literature available it appears that there is still a large controversy over what constitute the right criteria for the selection of graduate students. A majority of graduate schools use some combination of the undergraduate Grade Point Average (GPA), letters of recommendation or reference, and a score or scores from standardized

admissions tests (e.g., The Graduate Records Examination [GRE] or The

Miller Analogies Test [MAT] to determine who will be allowed to enter their

graduate programs). As is evidenced by the controversy in the literature

(Baird, 1975; Bean, 1975; Berman, 1975; Goldman & Slaughter, 1976;

Merenda, 1973), many graduate schools are not satisfied with the results of

their selections based upon the "traditional, standard criteria" of GPA, GRE

and/or MAT scores.

The Communicative Disorders Department at Utah State University

is one department which is dissatisfied with the "standard criteria" used to

select students for its advanced programs in speech pathology and audiology.

In recent years, concern has arisen over the question of whether candidates

accepted for advanced study will become more adequate and competent speech

therapists or audiologists than some of the applicants who have been rejected

because they did not meet the qualifications of the admissions criteria (Jensen,

1976). Another variable has entered into the problem of graduate student

selection: Undergraduate Grade Point Averages are on the rise, resulting

in restricted ranges of GPAs and hence, increased difficulty in discriminating

between good and excellent students.

The question then arises: How does one consistently choose students

who will quickly and effectively complete advanced courses of study? Many

schools are trying to identify the "successful" student by requiring personal

interviews with program applicants, in addition to the fulfillment of "standard

criteria." Other schools administer projective and/or personality tests to

their applicants. Further complications arise when graduate schools in the applied sciences (i.e., clinical and counseling psychology, communicative disorders, social work, nursing, etc.) try to discriminate between good students and potentially good therapists or practitioners. Many authors (Anthony, Gormally, & Miller, 1974; Berman, 1975; Denver, 1974; Dryer, Cope, Monson, & Van Drimmelen, 1972; Loughmiller, Ellison, Taylor, & Price, 1973) state that it should be possible to efficiently predict both academic success and therapeutic effectiveness prior to admission to a course of advanced study. However, as was mentioned above, experience indicates that successful prediction is difficult and, at best, tenuous. A substantial body of research has been generated by the unsuccessful attempts which have been made to resolve the dilemma of predicting success in advanced educational programs.

The Biographical Inventory

One alternative that has been tentatively explored is the incorporation of a biographical inventory or biographical data as a part of the selection criteria. The complexity of human beings appears to call for instruments which can tap many different variables. Biographical inventories can be constructed so as to be simple or extremely complex. They can also be constructed to tap one personality variables. If the premise is accepted that an individual's antecedent experiences are important in the determination of his present and future psychological make-up, then an instrument which could

efficiently tap a wide variety of those experiences, as biographical inventories do, would be logical to use in the prediction of his ability to perform.

In 1973, Loughmiller and his associates supported the use of biographical profiles as a major part of admissions batteries for medical students. Nelson (1972) suggested the use of information obtained from a biographical inventory in conjunction with academic measures and personality test scores as a basis for admission criteria to a college of medicine. Biographical inventories have met with some success in the prediction of minority student performance in undergraduate programs at several universities (Abe, 1970; Beasley, 1972). Scott (1978) met with success is her attempts to use a biographical inventory as a noncognitive measure to discriminate among successful and non-successful students in allied health sciences at the community college level. Academic performance of graduate clinical psychology, counseling psychology, and nursing students has also been predicted using biographical information as a part of the admissions criteria (Bean, 1975; Dryer et al., 1972; Felmy, 1974; Merenda, 1973). Since it has been demonstrated that biographical data can be used successfully as adjunctive predictors of both graduate and undergraduate student performance, it seems possible to predict academic, and possibly therapeutic, success of students in advanced speech pathology and audiology programs, who are probably not more complex than those professions mentioned above.

Problem

The problem with which this study dealt was the lack of satisfactory, established criteria for selecting advanced students into the Professional Programs of Speech Pathology and Audiology of the Department of Communicative Disorders at Utah State University. Specifically, there was a need for instruments which would increase the probability of selecting students who would be successful in completing the upper-division and graduate programs of the Communicative Disorders Department and who would also be competent speech pathologists and audiologists.

The problem was complicated by rising undergraduate Grade Point Averages and the questionable predictive value of the Graduate Records Examination scores which the Department of Communicative Disorders was using as their "standard" admissions criteria. Subsequently, the question arose as to whether the use of a biographical inventory would add to the predictive power of the established selection instruments.

Purposes and Objectives

The purpose of this study was to investigate whether or not the use of a biographical inventory would be a feasible and viable adjunctive means of making more accurate predictions of student success in the programs of upper-division and graduate study in speech pathology and audiology. It was hoped that the use of such an instrument, the biographical inventory, would

maximize the probability of selecting students who would successfully complete the programs' requirements, as well as become competent speech pathologists and audiologists. If biographical data could be used to supplement the already existing criteria for admission, then fewer errors in selecting marginal students were likely to be made.

The objectives of this research were:

1. To select a group of students who had been accepted into the Professional Programs of Speech Pathology and Audiology of the Department of Communicative Disorders at Utah State University against whose performance comparisons of biographical data could be made.

2. To select the standard with which to assess adequate performance in the Professional Programs, as well as less acceptable performance.

3. To select a standardized scoring method of a biographical inventory which would be meaningful and useful to the Department of Communicative Disorders faculty.

4. To attempt to devise a method whereby a biographical inventory could be used in conjunction with existing admissions criteria of GPA and GRE scores to better predict student success in the Professional Programs of Speech Pathology and Audiology.

Hypotheses

1. It will be possible to develop a student evaluation form designed to rate students' scholastic and professional behaviors, selected by Communicative Disorders Department faculty members as being important in the make-up of a successful student, which will have an inter-rater reliability of at least .85 among faculty members using it (the SEF), enabling its use as a criterion in the development of a biographical inventory.

2. There will be significant correlations between students' biographical inventory item scores and their respective ratings obtained from the student evaluation form.

3. It will be possible to develop a biographical inventory which will successfully predict student success in the Professional Programs of the Department of Communicative Disorders at Utah State University when used in conjunction with the currently used predictors of Grade Point Average and Graduate Records Examination scores.

CHAPTER II

REVIEW OF LITERATURE

The review of literature is divided into several segments of
research: (1) the use of GPA and GRE scores in the prediction of perfor-
mance, (2) the use of biographical inventories in the prediction of perfor-
mance, (3) the prediction of performance using a combination of GPA, GRE
scores and biographical inventories, and (4) a summary.

The Use of GPA and GRE Scores in the
Prediction of Performance

The prediction of student success has been of importance to univer-
sity faculties for many years. Since World War II there has been a dramatic
increase in university enrollments and the use of selection criteria has be-
come universally accepted. The most common criterion in use in univer-
sities is Grade Point Average. As the number of students who sought
graduate education increased, graduate programs proliferated to accom-
modate them. During the 1960s, funding for educational programs on both
the undergraduate and graduate levels became limited and some programs
had to be curtailed. Thus, prediction of student success became more
important because of the economic realities of limited funding. In order to
reach decisions about which students to admit, faculties began to increase
their minimum admissions standards. Two tests which were developed in an

attempt to more accurately predict graduate student success were the

Graduate Records Examination (GRE) and the Millers' Analogies Test (MAT).

GRE scores and GPA were adopted as admission criteria at Utah State Univ-

ersity. During the 1970s enrollments continued to be high and monies con-

tinued to become more scarce. The demand for cost effective university

programs, both undergraduate and graduate, became a primary concern for

both educators and legislators who controlled finances. In response to the

increased pressure to produce a higher percentage of graduates, universities

began to more closely scrutinize the criteria which they had selected to

discriminate potentially successful students from those not as likely to be

successful in their academic endeavors. GPA, standardized tests like the

GRE and MAT, and other admissions criteria (e.g., letters of reference

and interviews) were thus reviewed and researched with regards to their

predictability of student performance.

GPA and GRE Scores: Weaknesses in Predictability

Steven Permut (1973) published a study of the process of selection

of graduate students in American universities. In his review, he suggests

that many admission committees do not understand their own weighting

schemes employed in their selections of candidates for graduate study. He

suggests that the more traditional models of selection (e.g., GPA and GRE

scores) would benefit greatly if human judgement models were also introduced

into the selection process. Morgan (1974) called for more research on the

identification of criteria for the selection of health care personnel. She criticized the use of GPA and standardized tests like the GRE as criteria for graduate schools involved in the training of allied health professionals (i.e., psychologists, social workers nurses, etc.). Thacker and Williams (1974) found no significant relationship between GRE scores and GPA in a study they conducted with more than 1,000 graduate students at five different universities. They questioned the use of the GRE as a selection tool and asked that more predictive studies be undertaken.

Covert and Chansky (1975) studied 307 students seeking Master's degrees in education. They attempted to measure the prediction of success in graduate education by GPA and GRE scores. The students were divided into three groups according to the level of their undergraduate GPA (low, less than 2.5; mid, 2.5-2.9; high, greater than 2.9) and were further sub-divided according to sex, the end result being six groups of students. The researchers found that females with high GPAs were the most likely to succeed in the graduate program, while females with low GPAs were the least likely to succeed. No significance was found with any of the male groups. GRE scores were found to be of extremely limited use. Using both the GPA and GRE scores in a multiple prediction equation, only 20% of the total variance of student success could be accounted for. Covert and Chansky (1975) questioned the practice of using GPA and GRE scores as the only criteria in the selection of graduate students. The use of one of the predictors by itself was even further discouraged. John Nagi (1975) in a

study of the predictive validity of the GRE and MAT obtained similar results to those of Covert and Chansky. Using completion of a master's level program in counseling psychology as the criterion, he obtained point bi-serial correlation coefficients of .140 between the GRE and the criterion, and .087 between the MAT and the criterion. Both correlations were statistically non-significant. Of the 63 students involved in the study, 33 completed the programs in the alotted time of 5 years and 30 did not. Nagi questioned whether or not either the GRE or the MAT could be used by itself or in conjunction with the other as predictors of graduate student performance.

Andrew Bean (1975) obtained some significant correlations with both GRE verbal scores and GRE quantitative scores in his study of 91 students seeking a Master's degree in Educational Psychology at a large metropolitan university. However, his results failed to uphold the use of the GRE as a predictor of graduate student success. His study was designed to measure the predictive validity of the GRE (V & Q scores) and undergraduate GPA. He selected graduate GPA, a passing score on a Master's comprehensive examination, and grades in individual required courses as separate criterion variables with which the GRE scores and undergraduate GPA could be correlated. The GRE(V) scores correlated .31 with the graduate GPA, but failed to correlate significantly with of the other criteria. GRE(Q) scores correlated .450 and .590 with grades received in two research methods courses, but failed to correlated significantly with other criteria. The undergraduate GPA was not significantly related to any of the criteria. Bean called for the local

validation of graduate performance predictors before their inclusion in an admissions battery.

In an attempt to predict college GPA using high school GPA, Goldman and Slaughter (1976) found no significant correlation between the two. However, they obtained high correlations between the high school GPA and individual course grades. A substantial number of the significant correlations were negative, which led Goldman and Slaughter to hypothesize that many errors in the selection of college students come as a result of the lack of validity of the predictions employed. They thought that a major difficulty in the prediction of performance was the selection of the wrong criterion rather than the wrong predictor.

Students who entered the graduate programs of psychology at the University of Illinois, Urbana, between 1965 and 1970 were included in a study of the success of graduate students (Hirschberg & Itkin, 1978). The authors found that undergraduate GPA and GRE scores were not significant predictors of student performance. Year by year GPAs were also correlated with completion of program and end-of-first-year grades were found to be predictive of success. Hirschberg and Itkin urged the inclusion of more predictors in the admissions criteria battery. The use of a multiple hurdles program and inclusion of biographical data were recommended.

The Use of Biographical Inventories in the
Prediction of Performance

The underlying theoretical basis of the use of biographical inventories

is that when properly constructed, they can predict human behavior more con-

sistently than many single predictive instruments. Such a stance is based

upon the ideas that biographical items in an inventory can be constructed so

as to cover a wide range of factors relating to human behavior, and that an

individual's antecedent experiences are important in the determination of

his present and future psychological make-up.

The initial studies which dealt with the identification of predictive

historical data were constructed of as few items as possible. The results

were high correlations between single items and the criteria and difficulty

in maintaining results on cross-validation. As research progressed, so did

the number of items included in the biographical inventories. This process of

developing a biographical inventory from an item pool of more than 100 is the

general practice today. The review of research using biographical inven-

tories in the prediction of performance will primarily include studies which

included the use of such a strategem.

Selection of Military Personnel

Biographical inventories were developed by the Army during World

War II to predict success as an officer (Adjudant General's Office [AGO],

Report 704, 1946). Split-half reliabilities as high as .78 were reported in the

Army research. In an attempt to predict success in officer candidate schools, the Army researchers developed new scoring keys for the inventory used in Report 703. In one of the branch officer candidate schools, using $\underline{N}$s of 40 to 50, two successive classes yielded validity coefficients of .45 and .55, respectively (AGO, Report 711, 1946). Since 1946 the Army has used biographical inventories in the selection process of regular Army officers. Other branches of the armed forces have conducted extensive research in the development of their own biographical inventories (Taylor, Ghiselin, Wolfer, Loy, & Bourne, 1963).

In a review of biographical inventories and their utility in classification test batteries, Cowles and Daley (1949), stated that biographical data obtained from multiple choice inventories was probably useful in the selection and training of military officers because of their (the biographical inventories') ability to measure relevant experiences. They further stated that biographical inventories provided increased flexibility and utility when included in combination with aptitude tests in classification batteries.

Selection of Employees

A natural outgrowth of the research carried out by the military on the predictive use of biographical inventories was their application to the prediction of employee performance. Nielsen (1963) developed a biographical inventory designed to predict nursing aide performance at a Veterans' Administration hospital. Starting with a 300 item multiple choice inventory;

he computed point biserial correlations between each alternative and a criterion for hospital aide performance. The results yielded 132 items which were predictive of the criterion. A cross validation was completed and a correlation of .53 was obtained with one of the developed scoring keys. One of Nielsen's recommendations was to attempt to study large cross sections of populations in order to discover if norms for them could be derived from biographical information.

The Life History Questionnaire (LHQ) in 1972 was an attempt to develop norms for Americans with a high school education (Radloff & Helmreich, 1972). The authors reported limited success in the first stages of development of the LHQ. In 1974, Bakeman, Helmreich, and Wilhelm presented further validation of the LHQ, but were unable to produce evidence that the LHQ was valid across cultures. They suggested that local or regional norms be developed for the LHQ.

Hinman (1967) and Moffie and Goodner (1967) developed biographical inventories in complementing studies which were designed to predict creative and effective managerial performance. Their results were received with enthusiasm from a number of people involved with employment agencies throughout the middle-Atlantic states. Buel (1972) reported that validated forms of the biographical inventories developed in the Hinman and Moffies' and Goodner studies were being used in employment agencies as alternatives to traditional interest tests. Initial follow-up data indicated lower job turnover

among manager-level personnel placed using the biographical inventory than those placed using the traditional interest tests.

Cohen (1973) reported that by using a biographical inventory developed to predict success in an individualized managerial training program, he was able to improve the percentage of managers completing the training program to over 90%. He supported the idea of using biographical information to save industry money, time, and personnel which are currently being wasted.

James and Dorma Rawls (1974) conducted a survey of major manufacturers in the United States and Canada and found that biographical information and/or biographical inventories were being regularly in the selection of personnel by over 80% of them. They reported a dramatic increase in the use of biographical information blanks by all of the manufacturers they surveyed. The Rawls encouraged the use of biographical information by all employers.

In an attempt to predict vocational needs using a biographical inventory, Meresman (1976) developed a special biographical inventory and administered it and the MIQ (a 210 item questionnaire which assess vocational needs) to 206 college student subjects. Statistical analyses yielded significant correlations between the BI and 13 of 20 of the MIQ needs. However, using a group of subjects who were clients of a State Division of Vocational Rehabilitation, he was unable to support a hypothesis that the results of the BI and MIQ relationships would generalize across samples from different populations.

Personality Characteristics

A number of studies have been done which have attempted to predict psychological characteristics of individuals using biographical inventories. Some of the more recent studies will be presented here to demonstrate the scope of application of biographical inventories.

Denver (1974) completed a doctoral dissertation on research involving the development of a biographical inventory to study the demographic, attitudinal, and behavioral characteristics of all doctoral students at United States International University in southern California. He found over 50 items which correlated significantly among all the doctoral students across all fields of study. Interestingly, health services related fields of study (psychology, social work, etc.) had over 100 items which were significant among students.

Using a biographical inventory, Carrington and Sedlacel (1975) attempted to discover characteristics common to no-show students who had been accepted at the freshman level at an eastern university. Their results yielded some significant results, but failure to return mailed out inventories by over 50% of the no-shows was judged to be a serious problem which hampered the interpretation of the obtained results.

In a study of priests who had resigned from the Catholic ministry Gilbride (1973) used biographical data to compare 50 resigned priests with 50 active priests. Significant differences between the two groups of priests

were found in several areas. Items related to self-confidence, achievement, order, and endurance were all significantly different between the groups.

Lewis and Schoenfeldt (1973) used a biographical inventory to compare homosexual and heterosexual males on major dimensions of developmental interest. The inventory was used to develop subgroups which were homogeneous with respect to previous experiences. Homosexual males were found to differ significantly on 8 of the 19 dimensions.

In a study of the psychological characteristics of pregnant school-age adolescents Greenberg (1973) used a biographical inventory in conjunction with the Sixteen Personality Factor test and a problem check list. She reported that the use of the biographical inventory allowed her to find significant differences between the never-pregnant girls and pregnant girls which were untapped by the other measures.

Baer and Corrado (1974) studied the possible influence of heroin addicts' earlier parental relationships using a biographical inventory. A 56 item inventory was given to 100 addicts and to an equal number of matched non-users in Massachusetts. They reported significant differences between the groups and concluded that the use of early life histories could be of benefit in the study and treatment of heroin addicts.

In a study of the relationships between biographical data and patient symptomatology, Clum (1975) used item clusters derived from a biographical inventory to test the hypothesis that there would be a relationship between biographical data and symptomatology. He was able to confirm the expected

relationship. He also found that the life history clusters tended to be related to personality factors, as measured by the MMPI, as well.

Biographical data have even been used to predict faking on a personality test. Cohen and Lefkowitz (1974) developed a 14 item biographical inventory blank which significantly predicted the propensity to fake the MMPI in a socially desirable manner, as measured by the K scale of the MMPI. Item analyses were performed on the responses of 76 job applicants and the derived scoring weights were cross-validated on the responses of 42 other job applicants.

Performance in Science

During the 1960s a great deal of work was done with biographical inventories and the prediction of success in science. Ellison began to construct a 527 item biographical inventory in a study of the successful scientist in 1960. He reported that success in science could be predicted on the basis of biographical information. In 1964, Ellison published a doctor's dissertation which reported on research he conducted in refining the inventory developed in his 1960 study of the prediction of success in science. In this study, Ellison cross-validated his biographical inventory and its scoring key. He reported a cross-validation correlation coefficient of .60. Taylor, Ellison, and Tucker (1966) used a modification of the original Ellison inventory in the prediction of multiple criteria of success in science. They reported correlations of .48 through .59 for scientists at one research center. In 1967

Taylor and Ellison reported obtaining correlations as high as .48 in a study which attempted to predict success in science in a particular research center with the biographical inventory which had been validated on similar scientists from the different center used in the 1966 study. Using a still further refined version of Ellison's original inventory, Ellison, James, and Carron (1970) reported success in the prediction of research and development performance criteria.

Cline, Richards, and Abe (1964) used a biographical inventory similar to Ellison's to predict achievement in high school science classes. They obtained correlations as high as .62 in their research. Cline teamed with Tucker and Mulaik (1965) and used the same inventory, but different scoring keys to predict the success of pharmaceutical scientists. Further refinement of the 1965 study was reported in a 1967 study by Tucker, Cline, and Schmitt. Prediction of success as a pharmaceutical scientist was attained using the biographical inventory, replicating the results of the 1965 study. In addition, creativity was also predicted.

Creativity Prediction

One of the offshoots of the studies of Ellison and his associates was the application of biographical inventories to predict creativity in children and adolescents, as well as adults. The Creativity Research Institute of the Richardson Foundation, Inc., became one of the major sponsors for research in creativity which used biographical inventories. Hinman's and Moffie and

Goodner's studies on creative managerial performance prediction were funded

by the CRI. Other areas of research funded by the CRI were the prediction

of artistic performance (James, Ellison, McDonald, & Taylor, 1968) and the

identification of gifted adolescents (Damm, 1970; Payne & Halpin, 1974;

Payne, Rapley, & Wells, 1973).

James et al. (1968) developed a biographical inventory which

successfully predicted artistic performance in adolescents, as measured by

teacher assessments. Damm (1970) used a variation of the biographical

inventory used by James et al., in his study on the prediction of gifted

adolescents in regular classrooms. He found significant differences between

senior high school students who had been identified as being gifted and those

who were not. He reported high correlations, but no cross validation attempt.

Halpin, Payne, and Ellett (1973) used a biographical inventory to

synthesize previous research which indicated that gifted individuals who are

creative differ from others in past interests, work habits, social relations,

life ambitions, plans, and values. The relationship between past experiences

and the creative personality was studied in 312 high school juniors and seniors

participating in a state honors program. Large and significant correlation

coefficients were obtained for both boys and girls. In 1974, Payne and Halpin

reported on a follow-up study which replicated their findings in the 1973

research.

In a 5 year follow-up study of the Biographical Inventory, Creativity,

Schaefer (1972) reported that of 400 subjects who had been identified as being

creative by the BIC, 330 reported continued creativity. Some question as to the assessment of their creative abilities is in order because the criterion for continued creativity after 5 years was self-reported.

Bruch and Morse (1972) conducted a 12 year longitudinal study of prediction of creativity in young women. They reported results which suggested that creativity characteristics are stable over time. Torrance, Bruch, and Morse (1973) reporting on the same data obtained in the 1972 study, suggested that prediction of creative performance can be significantly increased by using biographical information.

Bal (1972) used the Alpha Biographical Inventory creative scores to predict creativity in university students. He found that the Alpha BI was a good predictor of creativity and it also proved to be an effective predictor of academic success in college, as measured by GPA.

Creativity among scientists and engineers at a naval research facility was predicted by a creativity scale developed for an adjective check list in research conducted by Lacey and Erickson (1974). The creativity scale was made up of items which had biographical content.

James, Ellison, Fox, and Taylor (1974) constructed a biographical inventory to predict an art versus non-art criterion. The inventory was administered to 312 non-art and 501 art students. They reported successful prediction of art versus non-art potential, but prediction of actual performance in art appeared to require different scoring procedure for the inventory.

Prediction of Undergraduate Performance

The Alpha Biographical Inventory was developed in an attempt to aid university and high school guidance personnel in the selection and placement of students. Reviews in Buros' Mental Measurements Yearbook (1972) are mixed regarding the successful application of the Alpha BI. Both reviewers indicated that the creativity score generated by the Alpha BI appeared to be a valid predictor of creativity in adolescent students, however, the reaction to the academic achievement score was quite negative. Both reviewers thought that it would be better to develop a biographical inventory specific to one's own research needs. As was previously noted, Bal (1972) found the Alpha BI to be an effective predictor of academic success in his study. Price conducted a study in 1969 using the Alpha BI to predict first semester grades of university freshmen. He found an exceptionally high predictive validity present with the instrument. One further study using the Alpha BI was completed in 1975 by Oldroyd. He found that students who had low creativity scores on the Alpha BI were more likely to drop out of college than those who had moderate or high creativity scores. The academic achievement score was not predictive of drop-out potential.

Payne et al. (1973), developed their own biographical inventory to estimate college academic achievement at all undergraduate class levels. They reported limited success that appeared to depend upon the selection of clear, specific criteria. When the faculty members involved in the judgement

of achievement did not fully understand the criteria, then no relationship was found between achievement and the biographical inventory.

Harrington (1969) reviewed several studies which used biographical data to forecast college performance and concluded that biographical information could be successfully used to predict college performance, as measured by grades. Johnson (1973) found that a biographical inventory she developed was predictive of educational success in a junior college when it was scored to produce homogeneous subgroups.

Boardman, Calhoun, and Scheil (1972) studied the development of college leadership roles among university freshmen using a biographical inventory. They found that pre-college experiences were predictive of college leadership potential in their study of 1,037 male and 897 female college freshmen.

Prediction of Academic Performance among Minorities

Studies that have been designed to predict academic performance among minorities using biographical inventories have been few, but relatively fruitful. Ellison, James, Fox, and Taylor (1970) used biographical data to identify talent among black and white college students. They reported equal success in predicting talent among black students and white students using the same biographical inventory and scoring key.

Abe (1970) developed a biographical inventory in an attempt to predict academic achievement among Mexican-American (Chicano) students at a

university in Arizona. He reported success with prediction of academic

achievement at a major state university, but was not able to obtain the same

level of results at two junior colleges. He urged the development of a more

comprehensive biographical inventory designed to reach a broader spectrum

of the minority population.

Beasley (1972) applied a biographical inventory he developed to all

minority students at the University of Colorado. He reported fair success

in the prediction of academic achievement among the minority students. He,

like Abe, recommended further research using more extensive biographical

inventories to predict minority success in an academic setting. He further

argued that the biographical inventory, properly developed, might possibly

be the most culture-fair instrument for prediction of academic achievement

available at the present time.

Prediction of Performance of Nurses

Biographical inventories have proven to be useful in the prediction

of performance in nursing, both academically and on the job. Dryer et al.

(1972), studied 1,108 nurses in 31 VA hospitals and found that a biographical

inventory they developed was highly predictive of job performance. No cross-

validation was carried out, but their sample size was quite large and they,

therefore, supported the use of biographical information in the selection of

nurses for the VA hospital system. Felmy (1974) developed a biographical

inventory and scoring keys in a study of associate degree nurse candidates.

She obtained moderate and high correlations between scores from the biographical inventory and three criteria; grades in science, liberal arts, and nursing courses.

Prediction of Psychology Graduate Student Performance

Federici and Schuerger (1974) reported using a biographical inventory as a part of the selection process for a subdoctoral applied psychology program. They reported significant and high correlations between the biographical inventory scores and faculty ratings of interpersonal skills. Academic competence was moderately, but significantly, predicted by the biographical inventory. They found that by using the biographical inventory score in conjunction with undergraduate GPA, they were able to obtain a significantly higher correlation than by using either predictor by itself.

Merenda (1973) reported on a follow-up study conducted 4 years after a group of students had been admitted to graduate study in psychology. Biographical information had been added to the traditional criteria of undergraduate GPA and GRE scores. His results indicated that by using the biographical data the graduate program faculty were able to successfully predict 53 out of 77 students completing the program. A net increase of seven correct predictions was obtained using the additional biographical data and time.

Berman (1975) studied 375 students involved in a graduate program of clinical psychology. Using biographical data, he was unable to predict

academic success as a graduate student, but he was able to predict diagnostic competence. Anthony, Gormally, and Miller (1974) developed a trainability index based on a biographical inventory and found that it accounted for a major part of the variance in the outcome of a study involving the prediction of human relations training outcome.

Prediction of Medical Student Performance

Nelson (1972) used a biographical inventory with personality test scores and academic scores to predict the performance of students enrolled in a college of medicine. His results indicated that cross-validated, empirical keys composed of items from the biographical inventory were the most consistently valid predictors of the criterion variable being considered (National Board scores, peer evaluations, and self-ratings). The intellectual predictor measures (pre-medical grades and Medical College Admission Test scores) were not significant predictors of the three criteria. Cullen (1975) reported higher first year GPA among medical college students who had been admitted using a cross-validated biographical inventory in conjunction with traditional admissions criteria. Leape (1976) found that peer evaluations based on biographical data were practical and acceptable in the prediction of second year medical school success.

The criterion problem of defining what constitutes a good career practitioner and the predictor problem of assessing in advance which applicants to various medical schools are most likely to become good career practitioners

were addressed in a study by Loughmiller, Ellison, Taylor, and Price

(1973). Using a 351 item biographical inventory developed by Ellison and

Taylor, 333 physicians were studied in an attempt to establish such criteria

and predictors in the field of medicine. A triple cross-validation item

analysis design was used to establish seven important composite and sum-

mary criteria. Of the seven, five were significantly predicted at levels

beyond .40 and ranging as high as .56 by the 351 item biographical inven-

tory. Loughmiller et al., supported the use of biographical inventories as

a major aspect of admission of students to medical studies.

Reliability of the Biographical Inventory

Murray (1972) used a 300 item biographical inventory to determine

if biographical data could be used to measure the same personality constructs

measured by a personality test and to evaluate the measures used in terms of

models of convergent and discriminant validity, factorial validity, and external

validity. A sample of 1,233 Air Force trainees were item analyzed against

30 need scales measures of the Activities Index, the biographical inventory,

and a training attrition measure. The results indicated that over 50% of the

personality constructs measured by the Activities Index were also measured

by the biographical data. Although the personality constructs measured by

the biographical data were more highly inter-correlated than the personality

constructs measured by the Activities Index, the biographical measures were

much more externally valid in predicting attrition from Air Force training programs than the Activities Index measures were.

James, Ellison, Fox, and Taylor (1972) reported on two separate studies of the reliability of a biographical inventory across samples. The two studies estimated the reliability of the biographical inventory (BI) by correlating scores from pre-existant scoring keys with scores from empirically constructed BI scoring keys. The first study demonstrated that a scoring key, developed on NASA scientists to predict creativity, was correlated .87 and .91 with scoring keys empirically constructed to predict creativity for two samples of industrially employed scientists and engineers. The second study demonstrated that pre-existant keys, constructed on university freshmen to predict GPA, were correlated .88 for males and females with scoring keys empirically constructed to predict GPA for high school students. Test-retest reliability estimates and validity generalization estimates supported the results of the two studies.

The cross-cultural effectiveness of the Alpha BI in Taiwan was studied by Tseng in 1974. His results indicate that cross-validities derived from the total sample analysis are at a .59 level for an empirically derived key designed to predict undergraduate GPA. A priori attempts to develop Alpha BI scoring keys for the prediction of GPA among Chinese students yielded correlations of from .45 to .54. Tseng concluded that better results can be obtained from biographical data by developing empirical keys from

target cultural settings than by adopting a priori keys from the cultural setting in which the instruments have been constructed.

Thus, while biographical inventories appear to have reliability across similar sample, caution must be exercised in applying them indiscriminately.

The Prediction of Performance Using a Combination of GPA, GRE Scores and Biographical Inventories

The variability of results among the studies which used only biographical inventories as the predictor of performance and the poor performances of GPA and GRE scores as predictors points to the need of using multiple predictors of performance. Several studies have been done which support the use of combinations of predictors.

Anthony et al (1974), in their study on the prediction of human relations training outcome, found that GPA, GRE scores and MAT scores accounted for only a minor part of the variance in ratings of counselors at the end of training. A trainability index developed from a biographical inventory accounted for a major portion of the variability. However, they found that by including all of the predictors in a multiple regression equation, they obtained a multiple R of better than .81. They concluded that each predictor added some meaningful portion of the total variance.

Baird (1975) did a predictive study of first year graduate and professional school grades in the study areas of arts and humanities, social sciences,

biological sciences, medical school, law school, and business. Using college GPA, major GPA, biographical data, and GRE scores as predictors of first year graduate grades, he found that college GPA was the highest single predictor for all fields of study with major GPA being the next best predictor. Biographical data had significance in all fields of study except social sciences and medicine. GRE correlations were low in all fields. When all predictors were placed in a multiple prediction equation, significant multiple R coefficients were obtained in all fields.

Berman's (1975) study of academic and non-academic predictors of academic and professional success in clinical psychology demonstrated that the use of academic and non-academic predictors in the same battery of criteria greatly enhanced the possibilities of predicting both academic and professional success. When undergraduate CPA, graduate GPA, GRE scores and non-academic predictors (biographical data and letters of recommendation) were combined, academic success, diagnostic competence, and professional competence were successfully predicted.

Valdez (1976) conducted an exploratory study of the use of biographical data, critical incidents in student-faculty interactions, GPA, and GRE scores to assess clinical skills in psychology. He found that GPA and GRE scores did not predict skills as well as the biographical data and critical-interaction measures did. However, both GPA and GRE scores contributed unique information to a multiple regression equation and were, therefore, recommended for inclusion in a predictive formula.

Bittlinger (1977) found GRE and MAT scores to unreliable predictors of psychology graduate students success as measured by graduate GPA. She obtained higher multiple R coefficients by using non-academic variables (biographical data and letters of recommendation) in combination with the previously used predictors of undergraduate GPA, GRE scores and MAT scores.

In a study of predicting performance of first quarter graduate students involved in counselor education, Dorothy Pfalzgraf (1977) used undergraduate GPA, Personal Orientation Inventory scores, Index of Discrimination scores, and Psychological Screening Inventory scores as predictors. A step-wise support regression was used in the analysis of the data. Substantial support for the use of non-academic predictors was generated by her results. The use of undergraduate GPA as the major selection and admission criterion was criticized.

Sime (1978) found that undergraduate GPA was predictive of graduate GPA in a study involving nurses in a Master's degree program. She also found that non-academic predictors enhanced the predictive power of the GPA when included in a multiple prediction equation.

Scott (1978) investigated the utility of a biographical inventory in discriminating between successful and non-successful allied health students at the community college level. She found the biographical inventory score to be a better predictor of success than high school GPA, but by combining

the two in a multiple regression equation, she obtained a multiple R with

significantly greater predictive power than the BI or GPA yielded.

Heidt, Johnson, Meeks, and Paxton (1978) set up admission criteria

to a health education program for undergraduates at Ohio State University.

They involved 41 students who had a minimum of 1 year of study as a health

education major. The proposed admission criteria were made up of GPA, a

personal interview score, a biographical inventory score, a score from a

paper of intent, a grade from a basic health education course, and ratings of

letters of recommendation. A multiple regression equation was used to

analyze the data. GPA was found to be the single highest predictor of

success in the program, but taken by itself was not significant at the .05

level of confidence. When the first four of the predictor variable were all

included, significance was obtained. They summarized the results of their

study by saying: "Components taken collectively are the best predictors of

success, rather than any individual factor."

<div align="center">Summary</div>

The review of literature has discussed the use of GPA and GRE

scores as predictors of success, especially their weaknesses; the use of

biographical inventories in the prediction of success, and the need for the

use of multiple predictors in the prediction of student performance. The

use of a biographical inventory in conjunction with GPA and GRE scores as

predictors of success was proposed as a potential means of increasing the predictive power of admission criteria.

It appears from this review that biographical inventories can be useful in increasing the predictive power of student admissions criteria. Biographical inventories appear to promise excellent results as predictors of success by themselves, but their major strength in the prediction of collegiate academic performance lies in their use as a predictor adjunctive to the commonly used academic predictors of GPA and GRE scores.

CHAPTER III

METHODOLOGY

This chapter includes a discussion of how the research was conducted,
what resources were used to obtain the data, and how the data were analyzed.

Objectives

The objectives of this research were to develop a biographical inven-
tory and accompanying scoring keys which could be used as an adjunctive
criterion to the already established selection criteria for student admission
to the Professional Program of the Department of Communicative Disorders
at Utah State University. A student evaluation form (SEF) enabling the faculty
to rate students' scholastic and professional behaviors was also to be devel-
oped and used as a criterion in the development of the biographical inventory
and its scoring keys.

Subjects

The subjects used in this study were all of the students enrolled in
the Professional Speech Pathology and Audiology Programs of the Department
of Communicative Disorders at Utah State University during the Winter and
Spring quarters of the 1977-1978 academic year. They included Juniors,
Seniors, and Master's degree candidates officially accepted or matriculated
into the programs. Students who were not accepted into the upper-division

programs or who were non-matriculated graduate students involved in the
graduate programs were excluded from the study. There were a total of 38
students included in the research sample: 16 graduate students and 22 upper-
division undergraduate students. Of these students, 25 were female and 13
were male. Five of the males were graduate students, while 11 of the
females were graduate students. Thus, of the 38 students included in this
study; 42.1% were graduate students seeking a Master's degree, of whom
65.8% were female and 34.2% were male. Of the males included in the
sample, 38.5% were graduate students. Of the females included in this
study, 44% were graduate students. Table 1, below, contains a numerical
description of the subjects by sex and level of involvement in the Professional
Programs (upper-division or graduate).

Table 1

Description of Subjects by Number, Sex, and Program Level

Category	Upper-Division (Juniors/Seniors)	Graduates (Master's level)	Totals
Number of Ss in group	22	16	38
% of total Ss in group	57.9%	42.1%	100%
Number of females	14	11	25
% of females	63.6%	68.7%	65.8%
Number of males	8	5	13
% of males	36.4%	31.3%	34.2%

Student Evaluation Form

The student evaluation form was developed from an item pool of 62 judgemental statements about expected "successful" student behaviors, both scholastic and professional. The item pool was arrived at by having all seven faculty members of the Communicative Disorders Department submit a list of statements with which they thought they could judge a student's competence as a Speech Pathologist and/or Audiologist. After all of the statement lists had been received by the author, statements with similar content were grouped together. A meeting was then held between the author and the faculty members and final judgemental statements which reflected the consensus of opinion of the faculty members were generated. The wording of each statement and the number of final statements in the pool were arrived at by the faculty members deciding which items were important in judging student competence and success. During this meeting it was decided to use a Likert-type scale of 5 points to rate the student behaviors. Behavior occurrence frequencies were also agreed upon and words descriptive of the five categories or frequencies were added to aid the faculty in their ratings of student behaviors. Scores ranging from 0 points to 4 points were assigned to each of the five behavior receiving the highest point value.

The actual scoring of items and behavior occurrence frequency category descriptions decided upon were as follows: 4 points for a behavior which occurs Very Often (80-100% of the time), 3 points for a behavior which

Often (60-79% of the time), 2 points for a behavior which occurs Sometimes (40-59% of the time), 1 point for a behavior which occurs Not Often (20-39% of the time), and 0 points for a behavior which occurs Almost Never (0-19% of the time). Students were also classified according to the total points they received from a rater, in one of five categories. A maximum of 152 and a minimum of 0 points were possible on the SEF. Categories were assigned and labeled as follows: Excellent student, 129-152 points (85-100% of possible points); Above average student, 98-128 points (65-84% of possible points): Average student, 67-97 points (45-64% of possible points); Below average student, 38-66 points (25-44% of possible points); and Poor student, 0-37 points (0-24% of possible points). All percentages .50 and above were rounded up to the next whole number and all percentages .49 and below were rounded down to the next whole number.

After the item pool of judgemental statements and scoring procedure for the SEF were agreed upon, five students were selected at random from a list of all students enrolled in the Professional Programs and the faculty was asked to rate them in accordance with the initially developed evaluation form. After the ratings were completed, an item analysis of the 62 judgemental statements was conducted. Individual SEF item scores were correlated with SEF total scores using a Pearson r correlation equation. Out of the initial 62 items, 46 items were found to correlate .60 or higher.

Using the 46 items retained from the initial SEF, the faculty was asked to rate five more students who had been randomly selected from the

Professional Programs student list. Item analysis of their ratings was again carried out. Using the same correlational procedure described in the previous paragraph, 38 items were found to correlate .80 or higher with the SEF total scores.

Another meeting between the experimenter and the faculty members was held to discuss the changes and refinements which had been made to the SEF and to clear up any questions about terminology, phrasing, or unclear meetings of any of the remaining 38 items in the form. A final form of the SEF and rating instructions were agreed upon (see Appendix 1). Using the 38 item SEF, the faculty rated the 10 previously selected students and an inter-rater reliability was computed. An inter-rater reliability coefficient of .923 was calculated among the faculty members, well within the acceptable limits for the attainment of meaningful ratings (Borg, 1971, p. 360).

Biographical Inventory

As was previously mentioned in Chapter I, a biographical inventory was to be developed which would enhance the predictive power of the selection criteria used by the Department of Communicative Disorders to admit students into their Professional Programs of Speech Pathology and Audiology. After reviewing a number of studies which used biographical inventories (Abe, 1970; Bean, 1975; Cline et al., 1964; Ellison, 1964, Nielsen, 1963; Taylor et al., 1966), the author decided to use an item pool of not less than 200 biographical data items. Taylor and Ellison (1967) indicated difficulties in developing good

biographical inventories when fewer than 200 items were used. To provide

as broad an item sampling base as possible, it was decided by the author and

his thesis coordinator, Dr. Elwin Nielsen, to search out a study which had

been done with a health sciences related sample using a 200-plus item bio-

graphical inventory. Several studies were found, but all except one had item

pools of fewer than 200. Nielsen's 1063 study of VA hospital nursing aides

contained a 300 item biographical inventory which was judged to be satisfactory

for use in the present research. Because the author had had limited experi-

ence with the development of biographical inventories, two colleagues with

such experience were asked to help in the selection of possible meaningful

items for inclusion in a biographical inventory. Both had previous experi-

ence in the development of biographical inventories and both had obtained

PhD degrees in clinical or counseling psychology. Decisions about inclusion

of biographical items from the Nielsen biographical inventory were made by

the author, Dr. Sharon Anderson and Dr. Reed Morrill. All three were given

copies of the Nielsen inventory and were asked to select items that each

thought could have some possible value in the prediction of student success.

A total of 257 items were selected by the three selectors. At least two of the

three selectors had to judge an item to be potentially useful in order for it

to be included in the initial biographical inventory.

The initial scoring procedures of the biographical inventory were

decided upon by the author, Dr. Nielsen, Dr. Anderson, and Dr. Morrill.

Various researchers using the biographical inventory have used different

methods of scoring. One method is the scoring of items with varying weighted scores, so that one item may be scored 1 point while others may have scores ranging up to 5 points. Another method which has been used is to weight items which are similar with the same score and other similar items with other scores or points, the similar items usually being identified as a particular category. One other method of scoring has been used which entails assigning a point value of from 1 to 5 for each alternative of each item. During the past 8 years a substantial number of researchers have successfully used the scoring method of assigning point values of from 1 to 5 for each alternative of the multiple choice items used in their biographical inventories (Beasley, 1972; Buel, 1972; Dryer et al., 1972; Felmy, 1974; Heidt et al., 1978; James et al., 1972; Loughmiller et al., 1973; Murray, 1972; Nelson, 1972; Scott, 1978; Sime, 1978). Following the item weighting suggestions made by Nielsen (1963) in his study and using the method of assigning from 1 to 5 points for each item alternative used by Loughmiller et al. (1973), Felmy (1974), and Scott (1978) on similar multiple choice items in the biographical inventories used in their research, each multiple choice item alternative of the bio- graphical inventory was assigned a value of from 1 to 5 points. For items with only four alternative choices, the lowest possible score was 2 points. In accordance with the findings of the previously mentioned studies, point values of higher number were assigned to responses thought more likely to be predictive of success or higher performance in the academic setting. Each item was then keyed for scoring in one of three ways: (1) Ascending order,

alternative E being worth 1 point, alternative D being worth 2 points, alternative C being worth 3 points, alternative B being worth 4 points, and alternative A being worth 5 points; (2) Descending order, alternative A being worth 1 point with the other alternatives receiving corresponding increases in points to alternative E being worth 5 points; and (3) Mixed order, each alternative was given a point value with the order neither being ascending nor descending.

Having selected 257 multiple choice items for inclusion in the biographical inventory and devising an initial scoring key, it was thought by the author and Dr. Nielsen that the inventory was ready to be administered. A set of instructions for those taking the biographical inventory was placed on a face sheet along with blanks asking for name, date, and class rank. The initial biographical inventory and face sheet were then typed on a stencil master and copies were run off.

Twenty-eight students were randomly selected from the Professional Programs student list, they included 13 graduate students and 15 upper-division (Junior and Senior) undergraduate students. These students were asked to fill out the biographical inventory following the instructions on the face sheet (see Appendix 2). The students were asked to participate in the study by a faculty member, who, upon acceptance by the student, would hand him or her a copy of the biographical inventory and ask him or her to complete it within 48 hours. All students accepted and completed the inventory within the designated time period. After the biographical inventories had been completed, they were scored using the aforementioned scoring key. The

Communicative Disorders Department faculty members were asked to evaluate

each student with whom they had 2 or more hours of weekly contact in class-

room instruction or practicum supervision using the SEF. The students SEF

scores were then used as the dependent variable in a Pearson r correlation

equation with the biographical inventory item alternative scores being used

on the independent variable. Fifty-two items of the original 257 items were

found to correlate at a significance level of .05 or higher. Of the 52 items,

17 were negatively correlated. The scoring for each of the negatively cor-

related items was reversed and the scoring key was revised to reflect the

changes.

The results of the correlation of the BI item scores with the SEF

scores for the initial 257 item biographical inventory are contained in Table 2

below. Only the items which were statistically significant at the .05 level or

above are included. BI items are identified by number (1, 2, etc.), corre-

lation by "r=," and level of significance by "s=." Appendix 2 can be con-

sulted for wordings of the BI items.

Table 3 is the scoring key developed for the biographical inventory.

As previously noted, the order of item alternative score weightings was

changed on all items which had a negative correlation with the SEF scores

(see Table 2). The scores were tabulated in such a manner as to reflect a

positive relationship between the BI item scores and the student's success in

the Professional Programs, as judged by his SEF score. For the initial BI,

the maximum attainable score was 1,279 points and the minimum was 346

Table 2

BI Item Score Correlations with SEF Scores

Item	Correlation	Significance	Item	Correlation	Significance
39	r= 0.3915	s=0.020	164	r=-0.6866	s=0.001
49	r=-0.3106	s=0.054	175	5=-0.4090	s=0.015
51	r= 0.5716	s=0.001	176	r=-0.3104	s=0.054
70	r=-0.3276	s=0.044	180	r= 0.4904	s=0.004
74	r=-0.3756	s=0.024	181	r= 0.5034	s=0.003
76	r= 0.3804	s=0.023	186	r= 0.5705	s=0.001
79	r= 0.5165	s=0.002	187	r= 0.4829	s=0.005
85	r= 0.3235	s=0.047	193	r= 0.3225	s=0.047
88	r=-0.3375	s=0.039	198	r= 0.5129	s=0.003
93	r= 0.4436	s=0.009	201	r=-0.3784	s=0.024
97	r= 0.3866	s=0.021	202	r=-0.3447	s=0.036
109	r=-0.4069	s=0.016	211	r= 0.3312	s=0.043
116	r=-0.3990	s=0.018	214	r= 0.3459	s=0.036
118	r= 0.3335	s=0.041	217	r=-0.3783	s=0.024
121	r= 0.3580	s=0.031	229	r= 0.3709	s=0.026
126	r= 0.3316	s-0.042	231	r= 0.3319	s=0.042
129	r= 0.3130	s=0.052	232	r=-0.3390	s=0.039
138	r= 0.3519	s=0.033	234	r= 0.3864	s=0.021
139	r= 0.4029	s=0.017	241	r= 0.3242	s=0.046
140	r= 0.3616	s=0.029	242	r=-0.3253	s=0.046
144	r= 0.5954	s=0.001	243	r= 0.3964	s=0.018
146	r= 0.3546	s=0.032	246	r= 0.4786	s=0.005
150	r=-0.6216	s=0.001	249	r= 0.4320	s=0.011
155	r=-0.3316	s=0.042	252	r=-0.3863	s=0.021
162	r= 0.3587	s=0.030	253	r=-0.3105	s=0.054
163	r= 0.3973	s=0.018	254	r= 0.4891	s=0.004

Table 3

Biographical Inventory Scoring Key

Item	Order	Item	Order	Item	Order	Item	Order	Item	Order	Item	Order
1	D	44	A	87	D	130*	A	173	D	215*	A
2	D	45	A	88	A	131*	A	174	D	216	A
3	D	46	A	89*	A	132*	dabc	175	A	217*	D
4	D	47	A	90*	A	133*	A	176	A	218*	A
5	A	48	A	91	A	134	A	177	D	219*	A
6	A	49	D	92*	A	135	A	178	D	220*	A
7	D	50	A	93	A	136	A	179	D	221*	D
8	A	51	A	94*	A	137*	A	180	A	222*	A
9	D	52	A	95*	A	138	A	181	A	223*	D
10	D	53	A	96	A	139*	D	182	D	224*	A
11	A	54	A	97	A	140	D	183	D	225*	A
12	A	55	A	98	A	141*	D	184*	A	226*	D
13	D	56	A	99	eabcd	142	A	185*	D	227*	A
14	eabcd	57	A	100	A	143	A	186*	A	228*	A
15	D	58	A	101	D	144	A	187	A	229*	A
16*	A	59	A	102	A	145	A	188	A	230	A
17	dceba	60	A	103*	A	146*	D	189*	D	231	A
18*	D	61	A	104*	A	147	D	190*	A	232	D
19	A	62	A	105	A	148	A	191	A	233	A
20	A	63	A	106	A	149*	A	192	A	234	A
21	A	64	A	107*	A	150*	D	193	A	235	D
22	D	65	A	108	D	151*	A	194*	A	236	D
23*	dbca	66	A	109*	D	152*	A	195	ecabd	237*	A
24	D	67	A	110*	D	153*	A	196	D	238	A
25*	D	68	A	111*	A	154*	A	197	D	239*	A
26	A	69	A	112	A	155*	D	198	D	240*	A
27	A	70	A	113	A	156*	A	199	A	241*	A
28*	A	71	eabcd	114*	A	157	A	200	D	242	cdeba
29*	A	72	A	115	A	158*	A	201	D	243	D
30	A	73	A	116	D	159*	A	202	A	244	D
31	D	74*	A	117*	A	160	D	203	A	245*	D
32	A	75	D	118*	A	161*	A	204	A	246	A
33*	A	76	D	119*	A	162	A	205	A	247	A
34	A	77*	D	120	A	163	A	206	A	248	D
35	A	78	A	121	D	164	A	207	eabcd	249	A
36*	D	79	A	122*	A	165*	A	208*	D	250	A
37	A	80	edabc	123	D	166	D	209*	f-ab	251	D
38*	A	81	eabcd	124*	A	167	D	209*	m-ba	252	A
39	A	82	D	125*	A	168	A	210	A	253	A
40	A	83	A	126	A	169*	adbc	211	A	254	A
41	A	84*	A	127	A	170*	A	212	A	255	A
42	A	85	A	128*	D	171	A	213	A	256	A
43*	D	86	A	129*	D	172*	A	214*	A	257*	D

points. For the revised BI, the maximum score was 260 points and the

minimum was 69 points. A disparity between the minimum attainable score

and the number of items is evident on both biographical inventories. This

disparity exists because, as previously noted, items with only four alterna-

tives, instead of five, had their least desirable choice weighted at 2 points

and their most desirable choice weighted at 5 points. By examining each of

the respective inventories one can identify the number of four alternative

items. For the revised BI, there were 35 items which had five alternatives

and 17 items which had four alternatives.

All 257 items of the initial biographical inventory have been included

in Table 3 in order to demonstrate the scoring procedures used during both

phases of development of the final BI. To facilitate ease in reading and

interpreting Table 3 the following modifications have been added: (1) an

asterisk (*) has been placed behind each item which contained fewer than five

alternatives; (2) each item included in Table 2 (significant BI item correla-

tions with SEF scores) has been underlined (e.g., 39); and (3) all items whose

alternatives were not in ascending or descending order, that is mixed order,

have had the order of weighting listed with the smallest weighting being first

and the highest last.

After the scoring key had been revised, a stencil master of the revised

BI was typed. Copies of the revised BI were made and distributed to each of the

38 students enrolled in the Professional Programs. The instructions and face

sheet were the same as used with the preliminary BI. Each student was asked

to complete the revised BI and return it within 1 week. The lengthened time period was perceived as necessary by the faculty members because a number of the graduate students were doing practicum work in elementary and secondary schools and were operating on limited time budgets. All copies of the revised BI were returned within the week, except one which was returned the following week. The completed inventories were then scored using the revised scoring key and the scores were recorded.

Procedures

After the development of the SEF, a meeting was held between the author and the faculty members of the Communicative Disorders Department. Dr. Jay R. Jensen, Department Head, explained that each faculty member was to rate each student with whom he or she had 2 or more hours of contact per week during the Winter quarter of the 1977-1978 academic year and those with whom they currently, Spring quarter of the same academic year, had 2 or more hours of weekly contact. Contact was defined as involvement with the student in either classroom instruction or practicum supervision. All faculty members were provided with lists of students whom they had supervised or taught the previous quarter, as well as a list of those they were currently supervising or instructing. The lists were provided from departmental files by Dr. Jensen and his secretarial staff. The faculty members were given 2 weeks in which to accomplish their rating tasks. All ratings were completed before the 2 week deadline. Once the ratings were obtained

from the faculty members, the author scored and recorded each rating. The ratings were recorded for each student by total score, mean score, and descriptive category (i.e., excellent student, above average student, average student, below average student, and poor student) for each rating received. The rater's name was also listed with the SEF scores. An average of all the SEF ratings received by each student was also recorded.

The procedure of the administration of the biographical inventories was covered in detail in the description of the BI development and refinement. As was noted earlier in this chapter, instructions for the initial BI were the same as those for the revised BI. Scoring instructions were revised to reflect the changes made in the BI due to negative coorlations between BI item scores and SEF scores. All students were asked by faculty members to participate in the study. Each was told that all information gathered would remain confidential and would have no effect upon his or her standing in the Professional Programs. No extra credit was given for participation, but all students accepted into the Professional Programs participated. After the final administration of the BI, the completed inventories were scored and the scores recorded with each student's SEF scores.

Grade Point Average at the time of admission to the Professional Programs, either at the graduate level or the upper-division level, was obtained for each of the students involved in the study. GRE scores, both Quantitative and Verbal, were obtained for each of the graduate students involved. All of the above information was available in the student files

maintained by the Department of Communicative Disorders. An attempt was made to obtain ACT scores for all of the undergraduates included in this study, but 10 of them had no scores on file with the university. It was, therefore, decided to not include ACT scores as a predictor variable.

A final list containing all of the above mentioned information was compiled. This list was then coded on an IBM coding form, so that final statistical analyses could be programmed. The coded form contained no information identifying, by name or student number, any participant in the study. Numbers ranging from 1 to 38 were used to identify students in lieu of names or student numbers. The numbers were coded to the author's master list.

Data Analyses

Data received from the study participants were analyzed in three distinct stages: (1) development of the SEF; (2) development of the BI; and (3) testing the BI as an adjunctive predictor of student success as measured by the SEF. As mentioned previously in this chapter, the SEF was developed using an item analysis technique. After each of two administrations, SEF item scores were correlated with the SEF total scores using a Pearson r correlation equation. For the first administration, SEF items which correlated .60 or higher with the SEF total scores were retained. For the second administration, SEF items which correlated .80 or higher with the SEF total scores were retained. After the SEF had been refined, it was

subjected to a test of inter-rater reliability. A Pearson r correlation equation was used to determine the inter-rater reliability coefficient.

The development of the BI has also been previously covered in detail in this chapter. After the administration of the initial BI, the BI item scores were correlated with the SEF total scores using a Pearson r correlation equation. BI items which had correlation with the SEF total scores at the .05 or higher level of confidence were judged to be significant and were retained for the final BI.

After the SEF had been developed to a point where it could be used as a criterion, the gathered data, including SEF total scores, BI total scores, GPAs, and GRE (V & Q) scores, were placed into multiple regression equations in order to test the Hypothesis 3. The multiple regression equation was used because it allows one to use it as a multiple prediction equation as well (Glass & Stanley, 1970, p. 186). It was thought that the data met the assumption of linearity required for the multiple regression statistic. Data gathered on the upper-division, undergraduate students were subjected to analysis in one multiple regression equation. The dependent variable was the SEF scores of the upper-division, undergraduate students and the two independent variables were: (1) GPA and (2) BI scores of the upper-division respondents. Data gathered on the graduate students were subjected to analysis in another multiple regression equation. The four independent variable used were: (1) GPA, (2) BI scores, (3) GRE(V) scores, and (4) GRE(Q) scores of the graduate student respondents. The dependent variable tested for

significance with these four independent variables was the graduate student respondents' SEF scores.

The data analyses were done using a program of the Statistical Package for the Social Sciences for the Burroughs 86700 computer at Utah State University.

CHAPTER IV

RESULTS

The final results of this study are presented in two sections:

(1) multiple regression equation results of upper-division, undergraduate

student data and (2) multiple regression equation results of graduate student

data. These sections reflect the cumulative effects of the development of

the SEF and the BI and the possible application of the BI as an adjunctive

predictor to be used in conjunction with the predictors currently in use by

the Department of Communicative Disorders at Utah State University.

Multiple Regression Equation Results for Upper-Division, Undergraduate Student Data

The 22 upper-division, undergraduate students' SEF scores, BI

scores, and GPAs were placed in a multiple regression equation. The SEF

score was the dependent variable and the BI score and GPA were the

independent variables. Table 4 is a correlation matrix of the variables used

in the multiple regression equation.

Looking at Table 4, one can see how the independent variables of

BI scores and GPA and the dependent variable of SEF scores correlate with

one another. The highest correlation obtained is between the BI scores and

the SEF scores (r=-.49401). The BI scores and GPA correlate .32477 with

each other. GPA, a currently used predictor of student success in the Professional Programs, only correlates .13845 with SEF scores.

Table 4

Undergraduate Student Multiple Regression

Equation Variables Correlation Matrix

	SEF Score	BI Score	GPA
SEF Score	1.00000	.49401	.13845
BI Score	.49401	1.00000	.32477
GPA	.13845	.32477	1.00000

The results of the step-wise multiple regression equation used with the upper-division, undergraduate student data are shown in Table 5.

Table 5

Correlations Between Two Predictors and SEF Scores

of Undergraduate Students

Predictor	r	r^2	R	R^2	R^2 change
BI Score	.49401	.24405	.49401	.24405	.24405
GPA	.13845	.01917	.49456	.24459	.00054

r = simple Pearson r correlation, R=multiple regression correlation

In interpreting Table 5, it must be remembered that a step-wise multiple regression equation was used. Accordingly the first step of the equation was the correlation of the independent variable of BI scores with the dependent variable of SEF scores. Next, the independent variable GPA was added and BI scores and GPA were correlated with the SEF scores. As noted beneath the table, "r" stands for correlations derived using a Pearson r formula and are between only one predictor and the SEF scores. The "R" stands for the correlation derived from the multiple regression equation. The value of "R" will increase as each independent variable is to the equation. "R^2" is the multiple regression correlation coefficient squared. The total amount of the variance explained by each step of the multiple regression equation is reflected by the R^2 value. "R^2 change" was included in Table 5 to show the additional amount of total variance explained by including each additional predictor variable as it was included in the step-wise multiple regression equation.

Looking at Table 5, the most interesting results are noted in the R, R^2, and R^2 change columns. An r and R of .49401 were obtained in the first step of the equation correlating BI scores with SEF scores. When GPA was introduced into the equation an R of .49456 was obtained between the independent variables of GPA and BI scores and the dependent variable of SEF scores. The BI scores accounted for approximately 24.4% of the variance in SEF scores, when GPA was added, approximately 25% of the variance became

ιccounted for. The difference between the amount of variance explained by the BI scores and the amount explained by the BI scores and GPA was .054%.

Multiple Regression Equation Results
for Graduate Student Data

The 16 graduate students' SEF scores, BI scores, GPAs, GRE (Verbal) scores, and GRE(Quantitative) scores were placed in a step-wise multiple regression equation in order to measure their abilities as predictors of student success. As with the upper-division, undergraduate student equation, the SEF score was used as the dependent variable and the BI score, GPA, SRE(V) scores and GRE(Q) scores were the independent variables. Table 6 is a correlation matrix of the variables used in the step-wise multiple regression equation for the graduate students.

Table 6

Graduate Student Multiple Regression Equation

Variables Correlation Matrix

	SEF Score	BI Score	GPA	GRE(V)	GRE(Q)
SEF Score	1.00000	.02390	.71654	.40547	.50846
BI Score	.02390	1.00000	.25426	.13076	.22000
GPA	.71654	.25426	1.0000	.60972	.74706
GRE(V)	.40547	.13076	.60972	1.0000	.59289
GRE(Q)	.50846	.22000	.74706	.59289	1.00000

Looking at Table 6, one can see how the independent variables of BI scores, GPA, SRE(V) scores and GRE(Q) scores and the dependent variable of SEF scores correlate with one another. The highest correlation obtained is between the GPA and GRE(Q) scores (r=.74706). The next highest correlation obtained was between the SEF scores and GPA (r=.71654). GPA and GRE(V) scores correlated .60972 with each other, while GRE(V) and GRE(Q) scores correlated .59289 with each other. The SEF scores correlated .40547 and .50846 with FRE(V) and GRE(Q) scores, respectively. The BI scores correlated .0230- with the SEF scores, .25426 with GPA, .13076 with GRE(V) scores, and .22000 with GRE(Q) scores.

The results of the step-wise multiple regression equation used with the graduate student data are listed in Table 7. It is to be read in the same manner as Table 5. The predictor variables are listed in the order of their insertion into the step-wise multiple regression equation (i.e., GPA was first, then BI scores were added to the GPA and correlated, etc.), "r" again stands for a simple Pearson r correlation coefficient and "R" stands for the multiple regression correlation coefficient.

Looking at Table 7, the most interesting results are again noted in the R, R^2, and R^2 change columns. An r and R of .71654 was obtained in the first step of the multiple regression equation when GPA was correlated with the SEF scores. In the second step, BI scores were added to the equation with GPA and the two were correlated with the SEF scores yielding an R of .73499. When GRE(V) scores were included in the equation in the third step, the three

Table 7

Correlations Between Four Predictors and SEF

Scores of Graduate Students

Predictor	r	r^2	R	R^2	R^2 change
GPA	.71654	.51342	.71654	.51342	.51342
BI Score	.02390	.00057	.73499	.54021	.02390
GRE(V)	.40547	.16441	.73636	.54222	.00201
GRE(Q)	.50846	.25853	.73668	.54269	.00047

r=simple Pearson r correlation, R=multiple regression correlation

independent predict or variables yielded an R of .73636 with the SEF scores. In the fourth and final step, GRE(Q) scores were included in the equation yeilding an R of .73668. By itself the GPA predictor variable accounts for approximately 51% of the SEF scores variance (R^2=.51342). Corresponding increases in the total amount of variance accounted for are noted with the inclusion of each of the other predictor variables (i.e., BI score, R^2=.54021; GRE(V), R^2=.54222; and GRE(Q), R^2=.54269). Changes in the total accounted variance were as follows: (1) .02390 when BI scores were included, (2) .00201 when GRE(V) scores were included, and (3) .00047 when GRE(Q) scores were included.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to investigate whether or not the use of a biographical inventory would be a feasible and viable adjunctive means of making more accurate predictions of student success in programs of upper-division and graduate study in speech pathology and audiology. It was hoped that the use of such an instrument, the biographical inventory, would maximize the probability of selecting students who would complete the program requirements for graduation, as well as become competent speech pathologists and audiologists. If biographical data could be used to supplement GPA and GRE scores, which are the currently used predictors, then fewer errors in selecting marginal students were likely to be made.

This research included the development of a student evaluation form (SEF), a biographical inventory (BI), and a scoring key for the BI. The end results of the development of the SEF and BI were measured in the prediction of student success in the Professional Programs, as estimated by the correlation scores yielded by two step-wise multiple regression equations.

One step-wise multiple regression equation was used to analyze the upper-division, undergraduate student data. With the SEF scores being the dependent variable, the first entry in the equation of BI scores yielded a multiple R of .49401. A multiple R of .49456 was obtained when GPA was entered as a second step in the equation.

A step-wise multiple regression equation was also used to analyze the graduate student data. With the SEF scores being the dependent variable, the first entry in the equation, GPA, yielded a multiple R of .71654. BI scores were the second entry in the equation and a multiple R of .73499 was obtained. The third entry in the equation was GRE(V) scores and they yielded a multiple R of .73636. The fourth and final entry to the equation was GRE(Q) scores and they yielded a multiple R of .73668.

Discussion

The discussion of the findings will be carried out by reviewing each hypothesis and then discussing the results of the research as they apply to each.

Hypothesis 1

"It will be possible to develop a student evaluation form designed to rate students' scholastic and professional behaviors, selected by Communicative Disorders Department faculty members as being important in the make-up of a successful student, which will have an inter-rater reliability of at least .85 among faculty members using it (the SEF), enabling its use as a criterion in the development of a biographical inventory."

A 38 item SEF was successfully developed. An inter-rater reliability coefficient of .923 was obtained among the faculty members who rated students. This level of coefficient is quite high and useful predictions of both group and

individual performance can be safely made with instruments with coefficients of similar level (Borg & Gall, 1971, p. 360). Because the inter-rater reliability was so high, it was considered safe to use the SEF as a criterion in the development of the biographical inventory. A cautionary note: It must be remembered that the student sample of the study and the faculty members used to help develop the SEF were closely linked. All of the students had been previously selected for admission into the Professional Programs by criteria chosen by the faculty members of the Communicative Disorders Department, thus the students were already likely to exhibit a number of the desired behaviors which the SEF attempted to rate. The SEF may not have application outside the Department of Communicative Disorders at Utah State University. For that department, however, it (the SEF) appears to be a reliable student rating instrument. If major changes in faculty or departmental expectations of students included in the Professional Programs occur, then revision and further development of the SEF would be in order. Because of the high inter-rater reliability obtained with the SEF, it may be useful for other Departments of Communicative Disorders at other universities to examine the possibility of such an evaluation form in the rating of their students.

The results appear to indicate that Hypothesis 1 can be accepted as stated.

Hypothesis 2

"There will be significant correlations between students' biographical inventory item scores and their respective ratings obtained from the student evaluation form."

Of the original 257 multiple choice items included in the biographical inventory, 52 correlated at the .05 or higher level of significance with the SEF scores using a Pearson r correlation equation. Seventeen of the 52 BI items were negatively, but significantly, correlated. As all of the item alternative score weightings were arranged to maximize high, positive relationships, the scoring on the 17 negatively correlated items was reversed for the final BI.

The results indicate that Hypothesis 2 can be accepted as stated for 52 of the correlations between the initial BI items and the SEF scores, but that it must be rejected for 205 of the correlations between the initial BI items and the SEF scores.

The same precautions in applying the biographical inventory to disparate populations must be exercised as with the SEF. Populations which are dissimilar to the one on which the BI was developed may not perform in an equivalent manner. Changes in the faculty or their expectations of students may necessitate changes in the BI. However, Ellison (1964) has found that once a biographical inventory has been found to be valid and predictive, it will retain its validity and reliability in spite of changes in faculty or their expectations. Populations which are similar to the students used in this research should achieve comparable results on the BI. Expectations at other

universities with programs in speech pathology or audiology may vary from those at Utah State University, with that variation resulting in significant differences in the type and quality of student accepted into their programs. Caution should therefore be used in the application of the biographical inventory developed during this research.

Some question arises because of the number of items which did not correlate significantly; almost 80% of the initial items were rejected. A number of studies have been completed which have found biographical inventories of fewer than 75 items to be predictive of student performance or success (Abe, 1970; Beasley, 1972; Cline et al., 1964; Dryer et al., 1972; Felmy, 1974; Nelson, 1972; Payne et al., 1974). In the majority of those studies, item pools of 175 or more were used to develop the final biographical inventory. In the present study it should be remembered that all the items included in the final BI correlated at a level of significance of .05 or higher. By chance alone, one would expect to have found only 13 items to have significant correlations and the final BI had 52 items. Thus, it appears that the BI which was developed in this research is of fairly high quality and contains a sufficient number of predictive items to be of use to the Department of Communicative Disorders faculty.

It should be noted here that some of the research which has been conducted in the development of biographical inventories has used wither a bi-serial or point bi-serial correlation equation in lieu of the Pearson r correlation equation used in this study. It may be that more information about

BI item alternatives and scoring weights could have been obtained in the present study if a point bi-serial correlation equation had been used, correlating each item alternative with the criterion.

Hypothesis 3

"It will be possible to develop a biographical inventory which will successfully predict student success in the Professional Programs of the Department of Communicative Disorders at Utah State University when used in conjunction with the currently used predictors of Grade Point Average and Graduate Reocrds Examination scores."

This hypothesis will be treated in two distinct parts. Part A will deal with the step-wise multiple regression equation used with the upper-division, undergraduate student data and Part B will deal with the step-wise multiple regression equation used with the graduate student data.

Part A. The step-wise multiple regression equation used to analyze the data obtained from the upper-division Progressional Programs students (see Tables 4 & 5) yielded a significant multiple correlation coefficient between the BI scores and GPAs and the SEF scores. The total multiple R for the equation with both steps entered was .49456, which accounted for approximately 25% of the total variance. While this correlation is not extremely high, it is significant and could be used in making predictions about student behaviors (Cronbach, 1970, pp. 425-432). It is interesting to note that the BI scores account for the majority of the total multiple R. A

multiple R of .49401 was obtained when the BI scores were correlated with the SEF scores in the first step of the equation. When the GPAs were added in the second step of the step-wise multiple regression equation, a multiple R of .49456 was obtained, an increase of only .00054. The change brought by adding the GPA predictor variable to the equation was surprisingly small. One would expect the GPA contribution to be larger (Guilford, 1965, p. 394). It was expected that the BI scores would correlate at a significant level, but the high level at which they correlated was not anticipated. Such high correlations have not been obtained in other research until the biographical inventory has undergone extensive refinement (Cline et al., 1964; Ellison et al., 1970; Loughmiller et al., 1973; Taylor et al., 1966).

Pearson r correlations between the independent and dependent variables yielded coefficients of .49401 between SEF scores and BI scores and .13845 between SEF scores and GPAs. The BI scores and GPAs correlated .32477 with each other. The higher correlation obtained between the BI scores and the GPAs than between the SEF scores and the GPAs suggests that the BI scores and GPAs are measuring some shared information about the students, while the SEF and GPAs have little in common. From the data obtained, it appears that the BI is a better predictor of upper-division, undergraduate student success in the Professional Programs, as measured by the SEF, than is GPA.

Part B. The step-wise multiple regression equation used to analyze the data obtained from the graduate Professional Programs students yielded a

significant multiple R coefficient of .73668 (see Table 7). Slightly more than 54% of the total variance was explained by this multiple R. GPA was the first entry in the step-wise regression equation and it yielded a multiple R of .71654 when correlated with the SEF scores. When the second entry, BI scores, was made to the equation, a multiple R of .73499 was obtained, an increase of .01845. The additional variance explained was 2.39%. When the GRE(V) scores were added to the GPAs and BI scores as the third entry in the equation, a multiple R of .73636 was obtained, increasing the total multiple R by .00137. When the fourth and final independent variable, GRE(Q) scores, was entered into the equation, a multiple R of .73668 was obtained, an increase of .00032 in the total multiple R.

Individual predictor item correlations with the SEF scores, using a Pearson r correlation equation, were: (1) GPA, .71654; (2) BI scores, .02390; (3) GRE(V) scores, .40547; and (4) GRE(Q) scores, .50846. GPA correlated .25426 with the BI scores, .60972 with the GRE(V) scores, and .74706 with the GRE(Q) scores. The GRE(V) and GRE(Q) scores correlated .59389 with each other. The BI scores correlated consistently low with all the predictor variables: .25426 with GPAs, .13076 with FRE(V) scores, and .22000 with GRE(Q) scores.

The multiple R and simple, Pearson r correlations obtained with the graduate student data were compatible with the expected levels of correlation. That is, GPA correlated quite highly with the SEF scores, the dependent

variable which measured student performance. The GRE, both Verbal and Quantitative, scores correlated moderately with the SEF scores. The correlation between the BI scores and the SEF scores was fairly low. The high correlations between the GRE(V & Q) scores and GPA suggest that the three independent predictor variables were contributing a substantial amount of similar information to the equation, that is, they appear to be explaining some of the same variance of the SEF scores. The low correlations yielded between the BI scores and all the other independent variables suggest that the BI scores contribute something unique to the equation. Unfortunately, the small correlation between the BI scores and the SEF scores seems to indicate that the contribution made by the BI scores is not significant.

From the data analyzed from the graduate students used in this research, GPA appears to be the best single predictor of graduate student success in the Professional Programs, as estimated by the SEF scores. GRE Verbal and Quantitative scores also appear to be significant predictors of student success. Even though its contribution was unique, it appears that the BI scores did not contribute enough significant information to be included in a battery of predictive criteria used by the Department of Communicative Disorders at Utah State University to predict graduate student success in their Professional Programs of Speech Pathology and Audiology.

Further Hypothesis 3 discussion. A number of incongruities in the results obtained with this research are readily apparent. The results obtained from the graduate student sample were opposite to those obtained from the

undergraduate sample. The independent predictor variables of GPA and BI scores correlated with the dependent variable of SEF scores at unexpected levels for the undergraduate sample. GPA correlated lower than expected and the BI scores correlated higher. With the graduate student sample, the correlations yielded between GPA and BI scores and SEF scores were reversed and more in keeping with expectations. The difference between the results is not easily explained. A maximum difference of 2 years of education existed between the graduate and undergraduate subjects. Such a difference should not account for such a complete reversal of correlations between the independent variables of GPA and BI scores and the dependent variable of SEF scores. It may be that the results obtained with either the graduate or undergraduate sample may have been due to chance. It is possible, but not likely, that the two samples were entirely different from each other. If such a difference existed, then the results obtained in this study might possibly be explained. An additional factor which could have had a possible effect upon the results is the likelihood that faculty expectations of graduate students are higher than their expectations for undergraduate students. Such expectations could influence their judgements of students on the SEF and result in less variability among graduate student SEF scores. This possible reduced variability could result in lower correlations among the variables obtained from the graduate student sample.

One of the processes which occurs in education is the elimination of undesirable students from a field of study. As students progress through

educational programs, they usually find increased challenges and levels of difficulty. In the Communicative Disorders Department at Utah State University, students are provided with increasingly difficult tasks in courses. However, it may be that, the course work is still easy enough that, once accepted into the program, almost all students have the intellectual ability to complete undergraduate work. Thus, it may be that most persons who get into college have the ability to succeed in the undergraduate program if accepted, and thus grades are not difficult to obtain, and thus GPA is not predictive of undergraduate success. As the student progresses through the freshman and sophomore level courses, he or she is likely to become either more comfortable or more uncomfortable with the field. Once the undergraduate student is accepted into the upper-division Professional Programs, his or her training is geared to provide him or her with clinical experiences which will be similar to those which can be expected in the professional world. These experiences may be the crucial factors in helping the student decide how suited for and interested in speech pathology and/or audiology she or he is. Interest and personality thus, may be more crucial factors in success at the upper-division, undergraduate level than is academic ability and these factors are tapped more readily by biographical information. The student is also being either encouraged or discouraged by his or her instructors to either stay in the field of study or change to another. Again, personality and biographical factors may be most important in whether instructors encourage or discourage their students at the undergraduate level. Grades, time spent

in discussion during and after classes and other means are all influential tools through which the instructor can reinforce a student. By the time a student has completed the upper-division Professional Program, he or she has usually made a decision, either by himself or herself or through faculty choice, to continue in speech pathology or audiology or to change to another field of study. Perhaps this choice comes as a result of personality factors and environmental determinants. Once the choice, based on upper-division studies experiences, is made, the variability of personality factors which make up a substantial portion of biographical data may be removed. On the graduate level, the intellectual challenge may be greater and the ability to get grades may become important. Thus, the graduates in this study may lack variance in their biographical characteristics and their success in the Professional Programs may depend upon their scholastic ability. If this were the case, then the low correlations between the BI scores and the SEF scores, on the graduate level, would be explained.

Because the results of the analyses of the graduate student data failed to replicate the results obtained from the analyses of the upper-division, undergraduate student data, it is questionable whether Hypothesis 3 can be accepted as stated.

Conclusions

This research project has resulted in some gains, but has provided some confusing results. This writer has concluded that biographical factors

are important to undergraduate success when the student is learning about the nature of the profession of speech and hearing therapy and is determining whether or not it is a profession with which he or she is compatible. On the other hand, given the right combination of biographical factors, the student's success in the more rigorous work of graduate school depends much more on academic ability, and hence GPA becomes a more important predictor at that level.

The SEF appeared to be a reliable rating instrument which could be used by the faculty of the Department of Communicative Disorders. It was developed to measure student behaviors which the faculty of the aforementioned department chose as being important and desirable in a successful student enrolled in the Professional Programs. Limitations of extending the use of the SEF to populations dissimilar to the students included in the present study have been noted. However, adaptation of the SEF to similar populations should be readily made.

Because of the disparate results obtained on the two samples used in this research, the use of the BI as a predictor of student success in the Professional Programs is questionable. Until further studies are conducted, it appears that the use of biographical data in the prediction of student success in the Communicative Disorders Department must be approached with extreme caution. However, the SEF appears to be a useful evaluation tool which could be used by the department faculty to make decisions about their students' scholastic and professional behaviors.

Recommendations

From the findings of this study, the following suggestions for future research and study are recommended:

1. A study designed to replicate the research reported in this thesis using the students currently involved in the Professional Programs of Speech Pathology and/or Audiology of the Department of Communicative Disorders at Utah State University might be conducted.

2. A study which is designed to replicate the study reported in this thesis using students from another university's program similar to the program of study used in the Communicative Disorders Department at Utah State University might also be conducted.

3. A study might be conducted in an allied, applied science (i.e., psychology, social work, or marriage counseling) to determine if the application of biographical data as an adjunctive predictor of student success is viable in other, related fields of study.

4. A study might also be conducted using a sample similar to the one used in this research, but altering the scoring procedure of the biographical inventory to one of the other methods discussed in Chapter 2.

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APPENDIXES

Appendix 1

STUDENT EVALUATION FORM

Communicative Disorders Department, Utah State University

Please fill out this evaluation form as objectively as you can. If you have not observed or had contact with a student, please do not fill out a form on him or her. There are five frequency statements after each question which are represented by the letters: VO (very often); O (often); S (sometimes); NO (not very often); and AN (almost never). Please circle the frequency which most closely describes the behaviors you have observed.

PERCENTUAL PERCENTAGES

80-100%	VO (very often)
60-80%	O (often)
40-60%	S (sometimes)
20-40%	NO (not very often)
0-20%	AN (almost never)

1. This student maintains eye-contact that is spontaneous and natural.
     VO   O   S   NO   AN

2. This student appears relaxed in all interactive situations.
     VO   O   S   NO   AN

3. This student reacts appropriately to relevant aspects of interactive situations.
     VO   O   S   NO   AN

4. This student does not dominate interactive verbalizations and does track communicative content.
     VO   O   S   NO   AN

5. This student is able to perceive verbal and non-verbal elements of communication.
     VO   O   S   NO   AN

6. This student can perform relatively free from structured advisement.
     VO   O   S   NO   AN

7. This student approaches clinical and interpersonal relationships with a problem-solving orientation.
     VO   O   S   NO   AN

8. This student conveys a feeling of concern and sincere interest in the client and his disorder.
     VO   O   S   NO   AN

9. This student plans, schedules, and executes tasks appropriately.
     VO   O   S   NO   AN

10. This student constructs a hierarchy of behaviors, objects, etc., from the simple to the complex.

    VO   0   S   NO   AN

11. This student takes criticism easily and self-modifies undersirable behavior.

    VO   0   S   NO   AN

12. This student portrays a feeling of capability in interactive situations.

    VO   0   S   NO   AN

13. This student meets assignments and responsibilities on time.

    VO   0   S   NO   AN

14. This student's behavior is consistent and predictable.

    VO   0   S   NO   AN

15. This student self-generates innovative ways for problem solving.

    VO   0   S   NO   AN

16. This student shows an ability to identify minimally-contrastive differences.

    VO   0   S   NO   AN

17. This student is open and honest in expressing feelings.

    VO   0   S   NO   AN

18. This student complains inappropriately and unconstructively.

    VO   0   S   NO   AN

19. This student shows a willingness to maintain effort over time.

    VO   0   S   NO   AN

20. This student adheres to a consistent, ethical standard of behavior accepted by professionals.

    VO   0   S   NO   AN

21. This student does not lie, cheat, or steal.

    VO   0   S   NO   AN

22. This student exerts maximum efforts to accomplish immediate tasks.

    VO   0   S   NO   AN

23. This student has appropriate, self-enhancing, long-term professional goals.

    VO   0   S   NO   AN

24. This student demonstrates empathetic candor.

    VO   0   S   NO   AN

25. This student shows an awareness of other's feelings and their basic underlying causes.

    VO   0   S   NO   AN

26. This student shows a willingness to accept standards of the profession through active participation.

    VO   0   S   NO   AN

27. This student seeks assistance from others.
    VO   O   S   NO   AN

28. This student gives assistance to others.
    VO   O   S   NO   AN

29. This student exhibits appropriate and expected verbal affect.
    VO   O   S   NO   AN

30. This student produces the sounds of language precisely.
    VO   O   S   NO   AN

31. This student generates grammatically complete and correct utterances.
    VO   O   S   NO   AN

32. This student maintains a flow of ideas in oral presentation.
    VO   O   S   NO   AN

33. This student's appearance is appropriate to the situation.
    VO   O   S   NO   AN

34. This student is practical in problem solving.
    VO   O   S   NO   AN

35. This student evidences appropriate levels of readability, correctness,
    appropriateness, and thought in his written work.
    VO   O   S   NO   .   AN

36. This student understands personal liabilities, capacities, and strengths.
    VO   O   S   NO   AN

37. This student shows an intellectual and vocational interest in the
    professional area.
    VO   O   S   NO   AN

38. This student demonstrates a systematic attempt to achieve and maintain
    professional excellence.
    VO   O   S   NO   AN

STUDENT'S NAME _____   STUDENT'S SEX: M   F

STUDENT'S CLASS RANK: Jr.   Sr.   Grad.

RATER'S NAME _____

Appendix 2

BIOGRAPHICAL INVENTORY FOR COMMUNICATIVE DISORDERS STUDENTS

Utah State University
Logan, Utah

A research instrument designed to study the
history and background of students and the
possible relationship of this information
to success.

INSTRUCTIONS

1. Put your name, the date, and your class rank on the inventory.

2. Proceed to answer the inventory. You will find that each question has
    four or five choices. From them you are to choose the one answer most
    correct for yourself and mark it in the answer column at the right of
    the question.

Thank you very much for your cooperation. This research will be
computed and analyzed by the research psychologist and will be
reported only as group results.

QUESTIONS

1. How much schooling have you had?   A B C D E

    A. 6th grade or less
    B. 7th through 9th grade
    C. 10th through 11th grade
    D. high school graduate through
        one year college
    E. two or more college years

2. Before the age of 16, you lived most   A B C D E
    of your life in:

    A. a small town (less than 1,000
        population
    B. a town (1,000 to 10,000)
    C. a small city (10,000 to 50,000)
    D. a city (50,000 to 250,000)
    E. a large city (more than 250,000)

3. Up to the time you were 18, how many   A B C D E
    times did you change residences?

    A. none or once
    B. twice
    C. three times
    D. four times
    E. five or more times

4. In how many states have you lived   A B C D E
    since age 18 (excluding military
    service)?

    A. one
    B. two
    C. three
    D. four
    E. five or more

5. In what part of the country did you   A B C D E
    live most of the time before you
    were 21? (mark only one)

    A. the Northeast (including
        Pennsylvania and New Jersey)
    B. the South (including Texas and
        Oklahoma)
    C. the Middle West (including
        Rocky Mountain area)
    D. the Pacific Coast
    E. outside the Continental U.S.

6. During most of the time until you   A B C D E
   were 21, or until you left home,
   you lived in a place where:

   A. you were well treated and happy
   B. you were fairly well treated and
      satisfied
   C. conditions were tolerable
   D. conditions were somewhat
      unsatisfactory
   E. you wanted to leave as soon
      as possible

7. How much time did you spend away   A B C D E
   from home before you were 18
   years old?

   A. 1 month or less
   B. 1 to 6 months
   C. 6 months to a year
   D. 1 to 4 years
   E. more than 4 years

8. On the average, what time do you   A B C D E
   go to bed on week days?

   A. after 1:00 AM
   B. after 12:00 midnight
   C. from 11:00 PM to 12:00
      midnight
   D. from 10:00 to 11:00 PM
   E. before 10:00 PM

9. Which of the following most nearly   A B C D E
   expresses your way of drinking
   alcoholic beverages?

   A. I don't drink and I prefer to
      avoid those social situations
      where others are drinking
   B. although I don't drink, the
      social drinking of others does
      not bother me
   C. my only drinking is social drinking
      and I do this only occasionally
   D. I enjoy a good drink and moderate
      drinking is part of my pattern of
      good living
   E. I enjoy drinking and I am not
      against some occasional heavy
      drinking

10. On the average, how many motion   A B C D E
     pictures do you go to each month?

     A. none or less than one a month
     B. one or two
     C. three or four
     D. five or six
     E. seven or more

11. What kind of a car do you usually drive?   A B C D E

     A. Cadillac, Lincoln, or Imperial
     B. Buick, Olds, DeSoto, Merc,
         Edsel, or Chrysler
     C. Ford, Chev, Plymouth, Dodge,
         or Packard
     D. Stude, Rambler, Volks, Hilman,
         Renault, or other small car
     E. M-G, Porsche, Jaguar, Corvette,
         or other sports car

12. How old is the car you drive?   A B C D E

     A. this year's model
     B. last year's model
     C. 2 to 4 years old
     D. 5 to 7 years old
     E. 8 years or older

13. How many times have you been cited   A B C D E
     for a traffic violation in the past
     three years?

     A. none at all
     B. once
     C. twice
     D. three times
     E. four or more times

14. About how many times has your driving   A B C D E
     resulted in damage to an auto or other
     property? (consider only cases which
     required repairs, amounting to $5 or
     more)

     A. none
     B. 1 to 3
     C. 4 to 7
     D. 8 or more
     E. I don't drive

15. At what age did you reach your
    present height?

    A. before the age of 15
    B. between the ages of 15 and 16
    C. between the ages of 16 and 17
    D. after the age of 17
    E. still in the process of growth

    A   B   C   D   E

16. In general, how would you describe
    yourself in health?

    A. the best of health--never sick,
       almost always feel great
    B. in good health--seldom sick,
       usually feel good
    C. in fairly good health--some-
       times sick, usually feel just
       fairly good
    D. poor health--often sick, almost
       always feel poor

    A   B   C   D

17. In recent years, you health has been:

    A. excellent
    B. good
    C. fair
    D. poor
    E. sometimes good and sometimes poor

    A   B   C   D   E

18. If you are employed and you wake up in
    the morning feeling a little "out of
    sorts" but don't feel really ill, what
    do you do?

    A. I'd stay at home because it's
       possible that I might be coming
       down with something serious
    B. I'd go to work but take pills or
       other medicines "just in case"
    C. I'd go to work, but consider going
       home if I got noticeably worse
    D. I'd go to work with little if any
       hesitation

    A   B   C   D

19. Up to the age of 12 years, approximately
    how often did you suffer minor illnesses?

    A. much more than the average child
    B. more often than the average child
    C. less often than the average child
    D. seldom
    E. never

    A   B   C   D   E

20. When you have a headache, you usually: A B C D E

    A. suffer nausea
    B. take some exercise
    C. take aspirin or other medicine
    D. ignore it
    E. I never have headaches

21. When you have a cold, you usually: A B C D E
    (choose the most important one)

    A. stay home in bed
    B. see a physician
    C. take home remedies
    D. stay on the job, but take it easy
    E. ignore it

22. Up to the age of 21 years, how often A B C D E
    were you sufficiently ill to require
    hospitalization?

    A. 0
    B. 1
    C. 2
    D. 3
    E. 4 or more times

23. What is your main reason for applying A B C D
    for this field of study?

    A. want to be of service to disabled
       people or have an interest in the
       helping professions
    B. security of college degree
    C. I feel particularly qualified or
       apt for this sort of work
    D. a way of making living

24. How old were you when you held your A B C D E
    first job?

    A. under 10 years
    B. between 10 and 13 years
    C. between 14 and 17 years
    D. between 18 and 21 years
    E. over 21 years

25. With whom would you prefer to work? A B C D

    A. mostly females
    B. mostly males
    C. a mixed group
    D. have no preference

26. How much interest would you have in a   A B C D E
    job that offered constant change and
    variety?

    A. a strong interest
    B. mild interest
    C. indifferent
    D. mild dislike
    E. strong dislike

27. How important do you think steady work   A B C D E
    is as compared with opportunities for
    promotion?

    A. steady work is much more important
    B. steady work is a little more important
    C. steady work and promition are about
        equally important
    D. opportunity for promotion is a little
        more important
    E. opportunity for promotion is much
        more important

28. My choice of an ideal occupation would   A B C D
    be one which would:

    A. allow me to have a great amount of
        interaction with other people
    B. require me to work with a small
        group
    C. allow me to work closely with one
        other person
    D. allow me to work by myself

29. As a youth how often did you discuss   A B C D
    with your parents or other adults
    about your occupational choice?

    A. frequently
    B. occasionally
    C. seldom
    D. never

30. By the time you were 18, how did you   A B C D E
    feel toward your life's occupation?

    A. knew what kind of job I wanted and
        have not changed my mind
    B. thought I knew what kind of job I
        wanted but have since changed my mind
    C. had some idea of what I wanted to go
        into as a career
    D. had little or no idea of what I wanted
        to go into because I was interested in
        many things
    E. had little or no idea what I wanted to
        go into because few things interested me

31. What is the maximum salary (per year)
    you expect to make during your lifetime?   A B C D E

    A. $3,000 to $4,000
    B. $4,000 to $6,000
    C. $6,000 to $9,000
    D. $9,000 to $12,000
    E. more than $12,000

32. Rate your past performance as an employee   A B C D E
    (in terms of your output, quality of work,
    responsibility, initiative, value to
    employer, etc.)

    A. superior
    B. good
    C. fair
    D. poor
    E. have never worked before

33. In responsibility, which of the following   A B C D
    best describes you?

    A. carry through to a finish what I am
       assigned to do--often do more than
       is expected of me
    B. conscientious but do not do more than
       is expected of me
    C. conscientious in some things and not
       in others
    D. usually need some prodding and super-
       vision

34. When you see someone else make a mistake,   A B C D E
    what do you usually do?

    A. I always tell him right away
    B. I usually make an effort to tell him
    C. I tell him if it will keep him out
       of trouble
    D. I wait until he asks me about it
    E. I let him worry about his own mistakes

35. When working on a project, do you do it   A B C D E
    over and over until you are satisfied
    with it?

    A. very frequently
    B. frequently
    C. occasionally
    D. rarely
    E. very rarely

36. On your past jobs, how much time did   A B C D
    you spend talking with other employees
    or in reading or studying?

    A. never
    B. rarely
    C. sometimes
    D. often

37. When serious situations occurred in   A B C D E
    your jobs how often did you wait to
    be told what to do?

    A. never waited
    B. almost never waited
    C. usually waited
    D. always waited
    E. I have not held a job before

38. How often did you resent it when some-   A B C D
    one pointed out an error you made?

    A. never resented it
    B. hardly ever resented it
    C. occasionally resented it
    D. usually resented it

39. When on a job how often have you made   A B C D E
    suggestions to your supervisor which
    were useful?

    A. very frequently made useful suggestions
    B. frequently made useful suggestions
    C. occasionally made useful suggestions
    D. very rarely made useful suggestions
    E. I have not held a job before

40. To what extent have you griped about   A B C D E
    conditions, pay, or supervision on
    your jobs?

    A. very much
    B. much
    C. a little
    D. very little
    E. none

41. When you are given an assignment or a job A B C D E
    to do, how soon do you start work on it?

    A. get at it right away
    B. get it done only before things pile up on me
    C. get it done as soon as it is convenient
    D. get it done only when it becomes necessary
    E. put it off as long as possible

42. How often do you try to please other people?   A B C D E

    A. I constantly try to please others
    B. quite often try to please others
    C. occasionally try to please others
    D. seldom try to please others
    E. never try to please others

43. When you work on a job how do you like to be   A B C D
supervised?

    A. let me learn what to do from fellow
       workers
    B. give me some general instructions and
       leave me alone to work out details
    C. give me instructions then let me ask
       questions if I need them about details
    D. give me detailed instructions and check
       up to see how I am coming along

44. When your boss or supervisor criticizes you   A B C D E
for something you have done wrong, how often
did you try to excuse yourself by saying
why it wasn't your fault?

    A. never made excuses
    B. hardly ever made excuses
    C. sometimes made excuses
    D. often made excuses
    E. never worked before

Please indicate the extent to which you were interested in participating in
the activities listed below up to the age of 18. (You need not necessarily
have participated to indicate that you desired to do so.)

    A. strong interest
    B. mild interest
    C. indifference
    D. mild dislike
    E. strong dislike

45. fast action sports (tennis, basketball,   A B C D E
etc.)

46. mild sports (golf, hiking, etc.)   A B C D E

47. social dancing   A B C D E

48. painting, sketching, drawing   A B C D E

49. collecting (stamps, coins, antiques,
insects, rocks, etc.)   A B C D E

50. playing a musical instrument   A B C D E

51.	listening to music	A	B	C	D	E
52.	writing, journalism	A	B	C	D	E
53.	making things, shop work	A	B	C	D	E
54.	repairing mechanical objects	A	B	C	D	E
55.	watching sports events	A	B	C	D	E
56.	making repairs about the house	A	B	C	D	E
57.	playing bridge or other card games	A	B	C	D	E
58.	systematic study outside of school work	A	B	C	D	E
59.	camping	A	B	C	D	E
60.	chemistry	A	B	C	D	E
61.	radio and electronics	A	B	C	D	E
62.	gasoline motors and building cars	A	B	C	D	E
63.	photography	A	B	C	D	E
64.	chess	A	B	C	D	E
65.	raising pets	A	B	C	D	E
66.	reading fiction	A	B	C	D	E
67.	reading non-fiction	A	B	C	D	E
68.	general bull sessions	A	B	C	D	E
69.	model airplanes	A	B	C	D	E

70. On the average, how many nights a week do you participate in outside activities (clubs or social activities)?   A B C D E

    A. none
    B. one
    C. two
    D. three
    E. four or more

71. In senior high school about how many times were you in a school program (assembly, play, operetta, etc.)?   A B C D E

    A. never
    B. once
    C. 3 to 6 times
    D. over 6 times
    E. didn't attend high school

72. The kind of recreation I like most and engage in more often when I have a choice is:

          A B C D E

    A. participation in competitive sports
    B. watching competitive sports events
    C. social relaxation with others such as parties, dances, etc.
    D. attending performances of plays, concerts, or other art events
    E. reading, listening to records, or other individual activities

73. Which of the following best describes you at a party or other social gathering?

          A B C D E

    A. usually I am very active in any social function
    B. I'm just one of the gang
    C. I usually enjoy myself but I tend to be rather reserved
    D. I often find that I am rather bored, although I am seldom uncomfortable
    E. I could best be described as a wall-flower

74. On the average, how often do you and your wife/husband or girl/boy friend go out socially?

          A B C D

    A. once a year or not at all
    B. once a month or several times during the year
    C. two or three times a month
    D. two or three times a week

75. To how many clubs or social organizations do you now belong? (Any group which has 10 or more members, regular meetings, and definite membership.)

          A B C D E

    A. 0
    B. 1
    C. 2 or 3
    D. 4 to 6
    E. 7 or more

76. Which of the following best applies to you when you are with people?

          A B C D E

    A. I often have feelings of loneliness
    B. I occasionally have feelings of loneliness
    C. I rarely have feelings of loneliness
    D. I never have feelings of loneliness
    E. I may be bored or uninterested but I am not lonely

77. Between 15 and 18, on the average, about how
    many hours a week, both in and out of school,
    did you spend on athletics?

    A B C D

    A. none or practically no time
    B. 1 to 4 hours
    C. 5 to 9 hours
    D. 10 to 14 hours

78. Which of the following activities gave you
    the greatest pleasure while in high school?

    A B C D E

    A. participation in or attending organized
       high school sports events
    B. social interaction with other students
       (dancing, dating, etc.)
    C. participation in organized school
       activities including plays, band,
       government
    D. achieving academic success and recognition
    E. participation in personal interests

79. How many clubs or other school organizations
    (other than athletics) did you belong to
    during your high school years?

    A B C D E

    A. five or more
    B. three or four
    C. two
    D. one
    E. none

80. How many friends did you have between the
    ages of 12 and 18?

    A B C D E

    A. went with one or two close friends only
    B. went with a larger group of close friends
    C. went with a large group of acquaintances
    D. preferred reading or studying to social
       life
    E. you can't remember

81. How many student offices were you elected
    to in high school or college?

    A B C D E

    A. 0
    B. 1
    C. 2 or 3
    D. 4 or more
    E. you can't remember or did not go to
       high school

82. How many times during high school or college   A B C D E
    did you receive special recognition, or any
    type of award for outstanding achievement?

    A. none
    B. once
    C. twice
    D. three times
    E. four or more times

83. How would you describe your high school   A B C D E
    and/or college social experiences?

    A. very extensive, many activities, many
       friends
    B. fairly extensive, quite a few activities
       and friends
    C. somewhat limited in activities and friends
    D. limited, only a little social activity
    E. practically no social life

84. During your childhood, how often did you find   A B C D
    yourself emotionally upset and crying because
    of your friends?

    A. definitely more than average
    B. somewhat more than average
    C. somewhat less than average
    D. definitely less than average

85. How many times during your college or high   A B C D E
    school career were you a captain of a school
    team, a school officer, president of a
    class or club or fraternity or officer in
    any other school or social organization?

    A. five or more times
    B. three or four times
    C. two times
    D. once
    E. none

86. The children you played with before you were   A B C D E
    12 years old were generally:

    A. older than yourself
    B. your own age or older
    C. your own age
    D. your own age or younger
    E. younger than yourself

87. Since you were 18, how often have you been   A B C D E
    in trouble with the law?

    A. none
    B. only once
    C. two to three times
    D. four to five times
    E. six times or more

88. Between the ages of 10 and 18, how many   A B C D E
    times were you picked up by the law for
    any of the following: breaking curfew,
    drugs, drinking, smoking, sluffing school,
    running away from home?

    A. never
    B. once
    C. two to three times
    D. four to five times
    E. six or more times

89. In which of the following settings did   A B C D
    your most unpleasant or negative
    experiences occur?

    A. family setting
    B. classroom or school
    C. social situation
    D. religious

90. How often do you boast or brag about   A B C D
    something?

    A. frequently
    B. occasionally
    C. rarely
    D. almost never

91. How often do you tell jokes?   A B C D E

    A. very frequently
    B. frequently
    C. occasionally
    D. seldom
    E. you can't remember jokes

92. Whenever a dispute or problem arose in a   A B C D
    situation, how often did you take the
    lead in bringing about a solution?

    A. nearly always
    B. very often
    C. seldom
    D. never

93. When in your teens you were usually chosen   A   B   C   D   E
for sports and games:

    A. first
    B. among the first
    C. about in the middle of the group
    D. was usually among the last chosen
    E. I did not take part in the games

94. Often people play practical jokes on each   A   B   C   D
other. How have you usually participated
in playing a practical joke on someone?

    A. I usually led other in playing a
       practical joke on someone
    B. I usually was just an accomplice to a
       practical joke
    C. I usually just sat back and enjoyed
       watching others play the joke
    D. I usually thought it was not right
       and did not participate

95. Which of the following best describes the   A   B   C   D
extent to which you influence other people?

    A. I greatly influence opinions, activities,
       or ideals of my associates
    B. I influence somewhat the opinions,
       activities, or ideals of my associates
    C. sometimes I influence others, sometimes
       I don't
    D. I have little or no influence over others
       and am rather easily influenced by others

96. How influencial were you as a teen-ager?   A   B   C   D   E

    A. I was the leader of the group of friends
       I belonged to
    B. I was a more important member of my gang
       of friends
    C. I was an average member of my gang of
       friends
    D. I was of lower importance in my gang
    E. I did not belong to a gang

97. How influential were you when in grade school?   A   B   C   D   E

    A. I was usually looked on as the leader of
       the group of kids I played with
    B. I was one of the more respected kids in
       the group I played with
    C. I was respected about as much as anyone else
       in the group of kids I played with
    D. I was looked on as a less important member
       of the group of kids I played with
    E. I was looked on as the lowest kid in my group

98. In high school who did you usually date?   A B C D E

    A. the most popular girls/boys
    B. girls/boys of more than average popularity
    C. girls/boys who were of average popularity
    D. girls/boys of below average popularity
    E. I did not date

99. If you have changed schools at any time in   A B C D E
    your life (not counting promotions from one
    school to another) how much trouble did you
    have making new friends in the new school?

    A. quite a lot of trouble
    B. some trouble
    C. little if any trouble
    D. no trouble
    E. I have never changed schools

100. How much have you participated with girls/boys   A B C D E
    in social activities such as dances, dates, etc.,
    since you were 17?

    A. I participated very often in social activities,
       and enjoyed them very much
    B. I participated often in social activities and
       almost always enjoyed them
    C. I participated occasionally in social activities,
       and generally enjoyed them
    D. I rarely participated in social activities, due
       to lack of time and diverging interests
    E. I hardly ever participated in social activities,
       due to shyness and diverging interests

101. At what age did you start dating as a fairly   A B C D E
    regular part of your social life?

    A. under 14
    B. 14 to 16
    C. 17 to 19
    D. 20 or over
    E. never

102. In the past what kind of friends have you made?   A B C D E

    A. many friends, but no close ones
    B. only three or four good friends
    C. a few close friends plus many casual friends
    D. only one good friend
    E. I had no friends

103. How would you rate yourself as being liked   A B C D
     by others?

     A. I am very well liked by practically everyone
     B. I am quite well liked by practically everyone
     C. I am fairly well liked by most people
     D. I am not very well liked by most people

104. While in school how would you have ranked   A B C D
     yourself in popularity in a list of 100
     typical students of your own age?

     A. among the top 25
     B. among the next to the top 25
     C. among the 25 just below the middle
     D. among the bottom 25

105. How would you rate the crowd you usually went   A B C D E
     with in high school on its social prestige
     (i.e. was it on top of the social ladder or
     at the bottom)?

     A. the highest prestige crowd
     B. above average in prestige
     C. average in prestige
     D. below average
     E. I did not belong to a crowd

106. Check the item that most applies to your social   A B C D E
     activity throughout your teens.

     A. all of my social activities were spent
         with one crowd
     B. I was a good member of several different
         crowds
     C. I moved about in several different crowds,
         but was never a consistent member of any
         one of them
     D. I did things mostly with a few other
         friends
     E. I kept pretty much to myself

107. How often are you apt to say something that   A B C D
     hurts other people's feelings?

     A. frequently
     B. occasionally
     C. rarely
     D. very rarely

108. When you go to a movie, what kind of picture   A B C D E
do you usually prefer?

    A. comedy
    B. western
    C. adventure
    D. dramatic
    E. musical

109. How well do you like to be with people in a   A B C D
social setting?

    A. I always enjoy being with people very much
    B. I usually enjoy being with other people
    C. I like being with other people sometimes,
        and at other times I like to engage in
        private activities
    D. I prefer to engage in private activities,
        and only occasionally do I like to be with
        other people

110. Which of the following best describes your   A B C D
feeling toward small children?

    A. dislike them very much
    B. they annoy me, but I tolerate them
    C. they don't affect me much one way or
        another
    D. I understand and enjoy them

111. To what extent have you found books more   A B C D
interesting than people?

    A. frequently
    B. occasionally
    C. rarely
    D. very rarely, if ever

112. When someone comes to you for advice or help   A B C D E
with personal problems, what is the first
thing you usually do?

    A. give them your best advice and whatever
        practical help you can
    B. encourage them to talk it out with you
    C. try to get them to see some one you feel
        is a good counselor
    D. listen to them talk, but don't encourage
        them to open up
    E. people rarely ask me for help with their
        personal problems

113. How concerned are you about other people?　　　A B C D E

    A. I am concerned about others and try to
       do what I can bout it
    B. I am concerned only about others and
       try to do what I can bout it
    C. I am concerned about others but only
       if it affects me
    D. I am concerned about other people but
       do little about it
    E. I am usually not concerned with the
       welfare of others

114. My general ability to deal with angry, sullen,　　　A B C D
     or hostile poeple effectively has been:

    A. very adequate
    B. somewhat adequate
    C. somewhat inadequate
    D. very inadequate

115. My general ability to make shy, nervous　　　A B C D E
     people feel more comfortable around me
     has been:

    A. very good
    B. somewhat good
    C. only fair
    D. poor
    E. very poor

116. My general ability to make grieved, saddened,　　　A B C D E
     unhappy people feel better has been:

    A. very good
    B. somewhat good
    C. only fair
    D. poor
    E. very poor

117. How easy have people found it to talk to you　　　A B C D
     about their personal problems?

    A. extremely easy compared to most
    B. somewhat easier than most
    C. about average
    D. difficult to talk with

113. How often in the past have you taken an interest　　　A B C D
     in other people's hobbies, interests and problems
     and done something for them?

    A. very often
    B. occasionally
    C. somewhat less than most people
    D. very little

119. In your social relations with other people,
you try to please them:

    A B C D

A. whenever the circumstances permit
B. if the inconveniences to yourself are
   not great
C. if it doesn't go against your own
   feelings
D. if it doesn't inconvenience you

120. How does it usually effect you to see
someone cut, burned, or wounded?

    A B C D E

A. makes me extremely upset and strongly
   sick to my stomach
B. makes me extremely depressed
C. makes me excited or upset
D. makes me feel calm but concerned
E. leaves me unaffected

121. How do you feel about giving a speech
before a large group of people?

    A B C D E

A. I could not be forced to make a talk
B. I would do it but would dislike it
   very much
C. I wouldn't object too much
D. I rather like to make talks
E. I like to make such talks very much

122. How do you feel about talking to people
you don't know?

    A B C D

A. I almost always find it rather enjoyable
B. I usually find it rather enjoyable
C. I usually find it rather unpleasant
D. I almost always find it rather unpleasant

123. How often do you have difficulty in thinking
of an appropriate remark in conversation?

    A B C D E

A. very frequently
B. frequently
C. occasionally
D. rarely
E. very rarely, if ever

124. Which of the following best describes your
social skill?

    A B C D

A. I have never had any problem with my
   social skills
B. I had problems with my social skills when
   young, but have since outgrown them
C. I had problems with my socisl skills when
   young and occasionally am still bothered
   by them
D. I had problems with my social skills when
   young and still feel bothered by them

125. In a list of 100 typical people of your own age,   A B C D
     where do you think you would rank in the ability
     to get along with people?

     A. among the top 25
     B. among the next to the best 25
     C. among the 25 just below the middle
     D. among the bottom 25

126. Which of the following best describes you?   A B C D E

     A. I feel secure in my social realtionships.
         Others accept and treat me right all of
         the time
     B. I feel a little uncertain about my social
         relationships but others do accept and
         treat me right
     C. I feel as though others are a little
         indifferent to me
     D. I tend to stay away from others and this
         prevents them from accepting me
     E. I am not well accepted by others

127. How would you describe your manners?   A B C D E

     A. considerably more courteous and well
         mannered than most of my acquaintances
     B. slightly more courteous and well mannered
         than most of my acquaintances
     C. about the same as most os my acquaintances
     D. somewhat discourteous at times
     E. often discourteious and poor mannered

128. When you are out for a social evening, how large   A B C D
     a social group do you prefer?

     A. most of the time I prefer from 2 to 4 people
     B. generally, I prefer small groups, only
         occasionally preferring large groups
     C. generally I prefer large groups, but small
         groups are sometimes pleasant
     D. it doesn't make any difference since I
         like most any kind of social activity

129. Which of the following best describes how you   A B C D
     felt about your social ability in comparison
     to others your age while you were in your early
     teens?

     A. definitely below average
     B. slightly below average
     C. slightly above average
     D. definitely above average

130. How often do you like to hear about people's   A B C D
     hobbies, interests, and problems?

     A. very often
     B. rather often
     C. not too often
     D. very little

131. Religion in my home was considered as: A B C D

     A. an integral part of our home life
     B. one of several factors which were
         important
     C. a relatively unimportant factor
     D. something to be left out of our
         family life

132. How much of your time is devoted to religious   A B C D
     activity?

     A. 2 to 3 hours per week
     B. 3 to 10 hours per week
     C. 10 or more hours a week
     D. none

133. On the matter of religion, my parents were: A B C D

     A. always in close agreement
     B. in general agreement but differed on
         minor points
     C. of different opinions on some major
         points
     D. very seldom in agreement

134. Which of the following statements best   A B C D E
     describes the church attendance of your
     mother?

     A. attends church regularly each week
     B. will on occasions let other activities
         take the place of church attendance
     C. attends church once or twice a month
     D. attends church occasionally
     E. does not attend church

135. Which of the following statements best   A B C D E
     describes your father's attendance at
     church?

     A. attends church regularly each week
     B. will on occasions let other activities
         take the place of church
     C. attends church once or twice a month
     D. attends only on special occasions
     E. does not attend church

136. Who had the greatest influence on your   A B C D E
     choice of religion?

     A. father
     B. mother
     C. friends
     D. a church representative (minister,
         missionary, preacher, priest, etc.)
     E. no religious affiliation

137. Concerning matters of religion, my parents   A B C D
     and I:

     A. are in close agreement
     B. usually feel the same on important matters
     C. disagree on most important matters
     D. disagree completely

138. During your childhood who was the most   A B C D E
     religious person in your family?

     A. mother
     B. father
     C. a brother or sister
     D. yourself
     E. don't know

139. How often are you in low spirits?   A B C D

     A. frequently
     B. occasionally
     C. rarely
     D. hardly ever

140. How often do you feel self-conscious?   A B C D E

     A. very frequently
     B. quite often
     C. occasionally
     D. rarely
     E. never

141. Which of the following best describes how   A B C D
     often you are dissatisfied with yourself?

     A. frequently
     B. occasionally
     C. rarely
     D. never

142. Which of the following statements most describe   A B C D E
     your feelings about your size while in high school?

     A. satisfied with size and stature
     B. too short for my age
     C. too tall for my age
     D. too heavy
     E. too thin

143. During your schooling, how would you compare   A B C D E
     yourself scholastically if you had done the
     very best you could?

     A. you would have been at the top of your class
     B. you would have been in the top 10% of your
         class
     C. you would have been above average
     D. you would have been average
     E. you would have been below average

144. Up to the age of 17, how did you feel about   A B C D E
     your home situation?

     A. I was very happy and could see practically
         no way of improving the situation
     B. I was happy but there were ways in which
         it could have been improved
     C. I was fairly happy but there were many ways
         in which it could have been improved
     D. I was rather unhappy with my home because
         so many things were wrong
     E. I was very unhappy with my home and I found
         little satisfaction there

145. How would you describe your emotional state?   A B C D E

     A. I usually feel very happy and my spirits
         are high
     B. I am sometimes up and sometimes down in my
         spirits
     C. I am steady--neither up nor down in spirits
         most of the time
     D. I am somewhat moody and low in spirits
     E. I usually feel unhappy and low in spirits

146. How often do you stammer or find you cannot   A B C D
     express yourself in words?

     A. often
     B. occasionally
     C. rarely
     D. hardly ever

147. In looking back on your childhood what area would   A B C D E
      you say gave you your greatest overall distress?

      A. physical illness
      B. feeling not wanted by parent or parents
      C. feeling not wanted by schoolmates
      D. feeling not wanted by teachers
      E. failure in some activity or thing you
          especially wanted to succeed in

148. How do you feel about your social and intellectual   A B C D E
      self-confidence?

      A. I am very confident of myself in any kind of
          activity
      B. I am quite confident of myself in most kinds
          of activity
      C. I have quite a bit of self-confidence about
          my intellectual ability, but I am not so
          self-confident about my social ability
      D. I have quite a bit of self-confidence about
          my social ability, but I am not so self-
          confident about my intellectual ability
      E. I lack some self-confidence in both
          intellectual and social activities

149. How often do you disagree with someone and argue   A B C D
      against him?

      A. often
      B. occasionally
      C. rarely
      D. never

150. How often did you daydream in comparison with your   A B C D
      classmates when you were of high school age?

      A. considerably more than average
      B. somewhat more than average
      C. somewhat less than average
      D. considerably less than average

151. How well do you feel you understand what makes   A B C D
      other people "tick?"

      A. extremely well
      B. very well but sometimes miss
      C. often fooled by outward appearances
      D. have a hard time figuring people out

152. How well do you think you understand yourself   A B C D
      as compared with the average person?

      A. much better than average
      B. a little better than average
      C. a little below average
      D. quite a bit below average

153. How frequently do you laugh during a day?   A B C D

   A. very often
   B. often
   C. a little
   D. very little

154. How often do you chew your fingernails?   A B C D

   A. often
   B. occasionally
   C. rarely
   D. never

155. When you have a humiliating experience how   A B C D
     long do you worry about it?

   A. it doesn't bother me at all
   B. it bothers me for a little while but not
       for long
   C. I occasionally worry about it for a long time
   D. I quite often worry about it for a long time

156. How well do you do most things you have   A B C D
     decided to do?

   A. I almost always do things better than most
       people could
   B. I occasionally find I have bitten off more
       than I can chew and have to give up
   C. I usually get the things done that I attempt
       but occasionally do not do them as well as I
       want to
   D. I find that I do most things less well than
       other people

157. How often have you lost or misplaced things?   A B C D E

   A. frequently
   B. occasionally
   C. rarely
   D. very rarely
   E. never

158. To what degree do you consider yourself a   A B C D
     nervous person?

   A. very nervous
   B. quite nervous
   C. rarely nervous
   D. not nervous

159. How do you tend to react to an unpleasant situation? A B C D

    A. I generally react immediately with a good solution
    B. most of the time I put off a decision for a little while so I can think it over
    C. quite often I put off a decision for quite a while
    D. I don't worry about it

160. Think of an imaginary person who you would feel was the most perfect person. Which one of the following is best descriptive of him or her? A B C D E

    A. kind
    B. famous
    C. rich
    D. sincere
    E. honest

161. To me social popularity is: A B C D

    A. a matter of extreme importance
    B. moderately important in my life
    C. something which concerns me very little
    D. something to be ignored

162. How would you classify your study skills and habits (ability to outline well, take notes, organize, concentrate, get things done, etc.) during your college or high school days? A B C D

    A. exceptionally good
    B. good
    C. poor
    D. exceptionally poor

163. Your academic achievement in the highest grade attended compared with your capacity was: A B C D E

    A. far above your ability
    B. somewhat above my ability
    C. about equal to my ability
    D. somewhat below my ability
    E. far below my ability

164. I feel that the most important goal in life is to: A B C D E

    A. win friends
    B. be successful
    C. achieve happiness
    D. take whatever comes
    E. find self-satisfaction

165. To what extent do you like to keep regular   A B C D
     hours and run your life according to an
     established schedule?

     A. to a great extent
     B. to some extent
     C. to a small extent
     D. to a very sma-1 extent

166. How much schooling did your father have?   A B C D E

     A. grade school or less
     B. high school
     C. some college training
     D. college graduate
     E. a graduate degree (M.A., M.S.,
         Ph.D., etc.)

167. How much schooling did your mother have?   A B C D E

     A. grade school or less
     B. high school
     C. some college training
     D. college graduate
     E. a graduate degree (M.A., M.S.,
         Ph.D., etc.)

168. In general, what did your parents believe about   A B C D E
     the importance of school for future adult
     security and success?

     A. graduation from university was highly
         essential
     B. graduation from a university was
         somewhat essential
     C. only graduation from high school was
         high essential
     D. graduation from high school was somewhat
         essential
     E. graduation from high school was not
         necessary or important

169. To what extent do you feel you have fulfilled   A B C D
     the standards of achievement set by your parents?

     A. I have not fulfilled their expectations
     B. I have fulfilled their expectations
     C. I have surpassed their expectations
     D. I am now working to, and expect to
         fulfill the standards set by my parents

170. Which of the following is most likely to make   A B C D
     you feel most uncomfortable or unhappy?

     A. being slighted or left out of something by
         my friends
     B. making a mistake in my work
     C. being laughed at when some circumstance
         makes me look silly (accident, practical
         joke, etc.)
     D. having to introduce myself to someone I
         don't know

171. In school if several conflicting activities   A B C D E
     arose which of the following generally won out?

     A. my social life--dates, shows, etc.
     B. my studies
     C. work outside of school
     D. athletics
     E. other outside of school activities

172. Which of the following applies to you?   A B C D

     A. I am the youngest child in my family
     B. I am the oldest child in my family
     C. I am the only child in my family
     D. none of the above applies to me

173. What was your position in order of birth?   A B C D E

     A. first
     B. second
     C. third
     D. fourth
     E. fifth child or more

174. How many brothers do you have?   A B C D E

     A. none
     B. 1
     C. 2 or 3
     D. 4 or 5
     E. 6 or more

175. How many sisters do you have?   A B C D E

     A. none
     B. 1
     C. 2 or 3
     D. 4 or 5
     E. 6 or more

176. How many older brothers and sisters do you have?   A B C D E

    A. none
    B. 1
    C. 2 or 3
    D. 4 or 5
    E. 6 or more

177. Your next oldest brother is how much older?   A B C D E

    A. one year older
    B. two or three years older
    C. four or five years older
    D. six or more years older
    E. I don't have an older brother

178. Your next oldest sister is how much older?   A B C D E

    A. one year older
    B. two or three years older
    C. four or five years older
    D. six or more years older
    E. I don't have any older sisters

179. Your next older brother or sister died when you were: A B C D E

    A. under five years of age
    B. between five and 10 years of age
    C. between 10 and 15 years of age
    D. 16 years of age or older
    E. does not apply to me

180. During most of the time before you were 16, you lived: A B C D E

    A. with both parents
    B. with one parent
    C. with a relative
    D. with foster parents or non-relatives
    E. in a home or institution

181. Which of the following best describes your present relationship with your mother?   A B C D E

    A. a very warm relationship
    B. a rather warm relationship
    C. a rather indifferent relationship
    D. a rather cold relationship
    E. does not apply

182. How much disagreement or trouble have you had   A B C D E
     with your mother (or guardian)?

     A. none
     B. very little
     C. little
     D. considerable
     E. a great deal

183. How much disagreement have you had with your   A B C D E
     father (or guardian)?

     A. none
     B. very little
     C. little
     D. considerable
     E. a great deal

184. Compared with other parents, I feel that the   A B C D
     achievements of my parents are:

     A. superior
     B. somewhat above average
     C. a little below average
     D. rather poor

185. When you were in high school, which of the   A B C D
     following statements best describes how you
     felt towards your parents (or guardian)?

     A. I was very much afraid of one or both
     B. I was somewhat afraid of one or both
     C. I was mildly afraid of one or both
     D. I was not at all afraid of my parents

186. How often did you discuss problems of sex,   A B C D
     choice of friends, vocational plans,
     scholastic progress, etc., with your
     father (or guardian)?

     A. very frequently
     B. frequently
     C. rarely
     D. very rarely

187. When you were in high school, to what degree   A B C D E
     did you confide with your parents (or guardian),
     talk with them about your problems, tell about
     your troubles, seek their advice, etc?

     A. I hid nothing from them; we often talked over
         my problems, etc.
     B. I often confided with them
     C. occasionally we talked things over
     D. we seldom talked things over
     E. I practically never talked with them about
         my personal problems

188. How willing were you to participate in family   A B C D E
activities?

    A. I almost always did so willingly
    B. I usually did so willingly
    C. I occasionally participated willingly
    D. I rarely participated willingly but was
       forced to participate
    E. there were few family activities in
       which to participate

189. When you were in high school, how did you   A B C D
feel about having your friends meet your
parents (or guardians)?

    A. I disliked having my friends meet my parents
    B. I was somewhat embarrassed to have my friends
       meet my parents
    C. I didn't mind having my friends meet my
       parents
    D. I liked to have my friends meet my parents

190. How would you describe the marital happiness of   A B C D
your parents (or guardians)?

    A. very happy
    B. fairly happy
    C. fairly unhappy
    D. very unhappy

191. Which of your parents (or guardians) was more to   A B C D E
blame for the disagreements between them?

    A. almost always father
    B. usually father
    C. both about equally
    D. usually mother
    E. almost always mother

192. In regard to social activities your parents were: A B C D E

    A. very active
    B. rather active
    C. usually not very active
    D. rather inactive
    E. very inactive

193. Your parents' social skills were: A B C D

    A. definitely above average
    B. slightly above average
    C. slightly below average
    D. definitely below average

194. While you were growing up, how often did your parents entertain friends?   A B C D

    A. frequently
    B. fairly often
    C. occasionally
    D. almost never

195. Major decisions in your family were usually made by: A B C D E

    A. mother
    B. father
    C. some other person
    D. discussion and common agreement
    E. you had no family

196. Your father's chief occupation was (mark only one of the ten items in this and the following question):   A B C D E

    A. unskilled labor
    B. semi-skilled labor
    C. skilled labor
    D. office worker
    E. service occupation (barber, etc.)

197. (continuation of the above question)   A B C D E

    A. sub-professional (musician, pharmacist, etc.)
    B. scientist (engineer, chemist, etc.)
    C. professional (lawyer, physician, teacher, etc.)
    D. business man (assuming risk and management duties)
    E. executive of large business or industry

198. During your childhood how did the income of your parents compare with the other families in your neighborhood?   A B C D E

    A. definitely below theirs
    B. a little below theirs
    C. about the same as theirs
    D. a little above theirs
    E. definitely above theirs

199. Your mother: A B C D E

    A. is still living
    B. died before you were 6 years old
    C. died when you were between 6 and 12 years of age
    D. died when you were between 13 and 19 years of age
    E. died when you were 20 or more years of age

200. About how old was your father when you were born?   A B C D E

   A. under 20
   B. 21 to 25
   C. 26 to 30
   D. 31 to 35
   E. over 35

201. How much at ease was your mother socially?   A B C D E

   A. very much at ease
   B. at ease more than most people
   C. about average
   D. a little shy
   E. extremely shy

202. About how old was your mother when you were born?   A B C D E

   A. under 20
   B. 21 to 25
   C. 26 to 30
   D. 31 to 35
   E. over 35

203. Your father: A B C D E

   A. is still living
   B. died before you were 6 years old
   C. died when you were between 6 to 12
       years of age
   D. died when you were between 13 to 19
       years of age
   E. died when you were 20 or more years
       of age

204. Which one of the following words would best   A B C D E
     describe your father?

   A. shy
   B. kind
   C. jovial
   D. stubborn
   E. belligerent

205. Which one of the following words would best   A B C D E
     describe your father?

   A. considerate
   B. tolerant
   C. forceful
   D. stern
   E. prejudiced

206. During most of your childhood up to age 13,   A B C D E
     your parents were:

     A. living together
     B. living apart
     C. legally separated
     D. divorced
     E. one or both deceased

207. How did your father (or guardian) feel in   A B C D E
     regard to your going to college?

     A. seemed indifferent
     B. showed some interest, but did not think
         it was very important
     C. maintained there was some need for a
         college education
     D. constantly impressed upon me the need
         of a good education
     E. did not want me to go

208. How often have you been depressed for no   A B C D
     obvious reason?

     A. often
     B. sometimes
     C. rarely
     D. never

209. Your own personality most resembles that of your: A B

     A. father, stepfather, or foster father
     B. mother, stepmother, or foster mother

210. Which of the following best describes your   A B C D E
     present relationship with your father (or
     guardian)?

     A. very warm relationship
     B. a rather warm relationship
     C. a rather indifferent relationship
     D. a rather cold relationship
     E. I have no father or guardian now living

211. As a child, you confided most in: A B C D E

     A. your father
     B. your mother
     C. a brother or sister
     D. some other person
     E. (you usually confided in no one)

212. How do you think your parents would feel   A B C D E
      about you now?

      A. they are quite pleased with me
      B. they are mildly pleased with me
      C. they are indifferent about me
      D. they are mildly disappointed in me
      E. they are quite disappointed in me

213. During your early teens, who made decisions   A B C D E
      about your activities and restrictions?

      A. generally my father
      B. generally my mother
      C. about equally by my mother and father
      D. generally left up to me
      E. usually someone other than me or my parents

214. To what degree have your parents been cheerful   A B C D
      and friendly toward you?

      A. to an outstanding degree
      B. to a moderate degree
      C. to a slight degree
      D. lacked these characteristics almost entirely

215. What kind of interest or concern did your father   A B C D
      have toward your activities (hobbies, school
      problems, recreations, etc.)?

      A. very helpful
      B. rather helpful
      C. rather indifferent
      D. very indifferent

216. How protective was your father?   A B C D

      A. wouldn't let me do a lot of things because
          he was afraid I might get hurt
      B. let me do most things and stopped me only
          when there was real danger
      C. encouraged me to take risks
      D. pushed me into doing things that I
          was afraid of

217. How much did your father criticize you?   A B C D

      A. very often
      B. often
      C. a little
      D. very little

218. How hard on you was your father when he disciplined   A B C D
     you for doing something wrong?

     A. very severe
     B. rather severe
     C. rather mild
     D. very mild

219. How successful were your father's methods of   A B C D
     disciplining you?

     A. very successful
     B. rather successful
     C. rather unsuccessful
     D. very unsuccessful

220. How often did your father explain his regulations   A B C D
     of you to you as opposed to just ordering you
     what to do?

     A. almost always explained them to me
     B. frequently explained them to me
     C. frequently just ordered me what to do
     D. almost always ordered me what to do

221. How strict or permissive was your father? Deals   A B C D
     with how much he placed restrictions or limitations
     on things like your getting dirty, the friends
     you had, personal freedom, etc.

     A. very strict
     B. rather strict
     C. rather permissive
     D. very permissive

222. How protective was your mother?   A B C D

     A. wouldn't let me do a lot of things because
         she was afraid I might get hurt
     B. let me do most things and stopped me only
         when there was real danger
     C. encouraged me to take risks
     D. pushed me into doing things that I was
         afraid of

223. How affectionate was your mother?   A B C D

     A. very unaffectionate
     B. rather unaffectionate
     C. rather affectionate
     D. very affectionate

224. How strict was your mother?   A B C D

    A. very strict
    B. rather strict
    C. quite easy going
    D. very easy going

225. How successful were your mother's ideas and methods   A B C D
     of discipline in dealing with you?

    A. very successful
    B. rather successful
    C. rather unsuccessful
    D. very unsuccessful

226. How hard on you was your mother when she punished you?   A B C D

    A. very easy
    B. somewhat easy
    C. rather hard
    D. severe

227. How much did your mother "spoil" you?   A B C D

    A. very much
    B. somewhat
    C. very little
    D. never spoiled me

228. How did your mother punish you when a child?   A B C D

    A. most often spanked or whipped me
    B. sometimes spanked me and sometimes
        just scolded
    C. most often scolded me
    D. other ways then above

229. What kind of interest or concern did your mother   A B C D
     have toward your activities (hobbies, school
     problems, recreation, etc.)?

    A. very helpful
    B. rather helpful
    C. rather indifferent
    D. very indifferent

230. Who influenced your conduct most when you   A B C D E
     were a child?

    A. father
    B. mother
    C. a brother
    D. a sister
    E. someone else

231. How much work did you do around the house when you were growing up (washing dishes, cleaning, painting, repairing, etc.)?   A B C D E

    A. I did a number of jobs almost every day
    B. I did something almost every day
    C. I did something only occasionally
       (once a week or so)
    D. I rarely did anything (once a month or so)   -
    E. I did little or nothing

232. How often did you make your own bed when growning up?   A B C D E

    A. always
    B. most of the time
    C. occasionally
    D. rarely
    E. never

233. For wrong-doings as a child, you were usually: A B C D E

    A. punished physically
    B. reprimanded verbally or deprived of something
    C. told how you should have acted
    D. warned not to do it again, but seldom punished
    E. sent to your room

234. Which statement best describes your parents' attitude toward you during your teens?   A B C D E

    A. extremely understanding and tolerant
    B. fairly understanding
    C. unconcerned about my adjustment
    D. somewhat lacking in understanding
    E. completely lacking in understanding

235. Your mother's favorite child was: A B C D E

    A. your brother
    B. your sister
    C. yourself
    D. (she was impartial)
    E. (you were an only child)

236. Your father's favorite child was: A B C D E

    A. your brother
    B. your sister
    C. yourself
    D. (he was impartial)
    E. (you were an only child)

237. Which of these statements do you feel best   A B C D
     describes your parents, as parents?

     A. they were, in most ways, the kind of parents
         I want my children to have
     B. in general, they tried to be good parents
         and succeeded, but there are ways in which
         I am certain I will be a better parent than
         they were
     C. they were too strict or old-fashioned and
         seemed to expect too much of me
     D. they were too easy on me and didn't require
         that I do many things I should have done

238. In childhood, you were disciplined: A B C D E

     A. strictly and often
     B. strictly at times, leniently at others
     C. strictly, but seldom
     D. occasionally and moderately
     E. never or rarely

239. To what extent was your mother irritated when she   A B C D
     found your toys or clothes lying around?

     A. usually very irritated
     B. usually rather irritated
     C. usually mildly irritated
     D. rarely irritated to any extent

240. When you lived at home, how neat were you   A B C D E
     required to keep your own room?

     A. spotless
     B. neat, but a little disorder was all right
     C. fairly neat
     D. mostly up to me
     E. never had a room to myself at home

241. The feelings toward each other among   A B C D
     those in your family were:

     A. quite warm and loving
     B. somewhat warm
     C. somewhat cold
     D. quite cold

242. If you have any children, to what degree are they   A B C D E
     fulfilling your expectations?

     A. I don't have any children
     B. my children are too young for this question to apply
     C. they are fulfilling my expectations very well
     D. they are fulfilling my expectations fairly well
     E. they are not fulfilling my expectations

243. How much of your income would you plan to save as
     head of a family under normal conditions?   A B C D E

     A. 5% or less
     B. 10%
     C. 15%
     D. 20%
     E. 25% or more

244. Assuming that you are married or expect sometime   A B C D E
     to be, how many children would you like in your family?

     A. 0
     B. 1
     C. 2
     D. 3
     E. 4 or more

245. How often do friends come to your home?   A B C D

     A. rarely (once a month or less)
     B. occasionally (two or three times a month)
     C. often (four or five times a month)
     D. frequently (more than five times a month)

246. Which of the following most nearly   A B C D E
     fits your pattern of reading?

     A. I devote considerable time to reading in
         areas directly related to my work but little
         time reading other things
     B. I devote much of my time to reading of all kinds
         including that related to my work
     C. I find that I have little time for reading
         although I read as much as I can
     D. about the only reading I do is the newspaper
         and occasionally a few magazines
     E. I usually have other interests so that I spend
         very little if any time reading

247. What type of radio programs do you prefer?   A B C D E

     A. classical music
     B. popular music
     C. news commentators
     D. plays
     E. I rarely listen to the radio

248. To how many magazines and periodicals do you   A B C D E
     subscribe to or read almost every issue?

     A. 0
     B. 1
     C. 2 or 3
     D. 4 to 6
     E. 7 or more

249. Which of the following kinds of magazine articles   A B C D
     have you liked most to read?

     A. reports of scientific discoveries, new theories,
         science fiction
     B. articles about do-it-yourself projects, sports,
         hunting, cars, etc.
     C. human interest stories, romantic short stories,
         stories about people
     D. articles about religion, family problems,
         moral questions, etc.

250. When you were in grade school, who influenced you   A B C D E
     the most as to what you did with your spare time?

     A. my parents
     B. my brothers or sisters
     C. my teachers or other adults
     D. my friends
     E. myself

251. When you were about 12 years old, how many books   A B C D E
     did you read? (not including those assigned in school)?

     A. 4 or 5 a year, or less
     B. about 6 to 11 a year
     C. about 1 or two a month
     D. about 1 a week
     E. 2 or more a week

252. How many times during you high school life were   A B C D E
     your parents called to come to the Principal's
     office to discuss your problems (unfavorable
     grades or misconduct)?

     A. never
     B. once
     C. two or three times
     D. four or more times
     E. didn't go to high school

253. How many courses, if any, did you fail in high school? A B C D E

     A. none
     B. one
     C. two
     D. three
     E. four or more

254. While you were in high school how often did your   A B C D E
     father (or guardian) appear to take an interest in
     how you were doing in your classes?

     A. very rarely, if ever
     B. rarely
     C. occasionally
     D. frequently
     E. very frequently

255. To what extent did your parents contribute   A B C D E
     to your sex education?

     A. to a great extent
     B. to some extent
     C. to a small extent
     D. to a very small extent
     E. not at all

256. How many books did you have in your home   A B C D E
     during your youth?

     A. large library
     B. several book cases full
     C. one book case full
     D. a few books
     E. less than five books

257. What type of book do you prefer to   A B C D
     read for pleasure?

     A. novels
     B. technical books
     C. mystery stories
     D. literary classics

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Major Field: Psychology

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