DOCUMENT RESUME

ED 234 196 CE 036 917

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TITLE An Analysis of Characteristics Which Most Enable Low Income Heads of Household Women to Complete Technical Training Programs. Final Report.
INSTITUTION San Antonio Coll., Tex.
SPONS AGENCY Texas Education Agency, Austin. Dept. of Occupational Education and Technology.
PUB DATE 30 Jan 82
NOTE 112p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Counseling Services; Dropout Research; *Educational Attainment; Educational Needs; Educational Status Comparison; Employer Attitudes; Evaluation Methods; *Females; Field Tests; *Heads of Households; *Individual Characteristics; Low Income; *Low Income Groups; Measurement Techniques; Needs Assessment; Postsecondary Education; School Counseling; Services; Student Evaluation; Systems Approach; Teacher Attitudes; *Technical Education
IDENTIFIERS Assessment Instruments; Comprehensive Assessment and Support Systems; San Antonio College TX

ABSTRACT

A study analyzed the characteristics that are most responsible for enabling low-income female heads of household to complete technical training programs. The research project was undertaken for the purpose of developing a comprehensive assessment and support system (CASS) to aid women enrolling at one of three target technical programs at San Antonio Technical College in Texas. During the project the following three substudies were conducted: an interview of area employers of San Antonio Technical College graduates; a survey of San Antonio Technical College instructors in data processing, drafting, and electronics; and selection and field testing of the CASS battery. The researchers found that an internal locus of control and a high degree of socialization are necessary but not sufficient characteristics that enable low-income female heads of household to complete technical programs. Included among the many factors that can negatively affect the academic success of these women are financial problems, family responsibilities, lack of time to study, child care problems, and transportation. Therefore, to be effective, a CASS to assist low-income female heads of household should involve the use of several known personal and performance assessments and should include supportive services in the form of financial aid, child care, peer support, internality workshops, general independence workshops, and employability skills development workshops. (MN)

FINAL REPORT

Project No. 22420001

# AN ANALYSIS OF CHARACTERISTICS WHICH MOST ENABLE LOW INCOME HEAD OF HOUSEHOLD WOMEN TO COMPLETE TECHNICAL TRAINING PROGRAMS

Conducted Under
Public Law 94-482, Title II, Vocational Education

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The project reported herein was performed pursuant to a contract with the Research Coordinating Unit, Department of Occupational Education and Technology, Texas Education Agency. Institutions undertaking such projects under state and/or federal sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent the official U. S. Office of Education nor the Texas Education Agency's position or policy.

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June 30, 1982

ACKNOWLEDGEMENTS

Sincere appreciation is given to the many individuals who have contributed their time and talent throughout the project. Their cooperation and interest are gratefully acknowledged. Nellie Carr Thorogood provided valuable information and administrative support throughout the project. Dr. Earl Wright was instrumental in the development of the research design. Gaynell Proa spent many hours administering the CASS battery to students. The peer counselors, trained by Joan Cofield, contributed many volunteer hours. Special thanks is given to Jo Knox for her services as sounding board, consultant and critic.

Susan L. Nelson

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

CHAPTER

# Introduction

## Statement of Need

The trend of the eighties appears to be ever larger populations of females returning to higher education. Female heads of household responsible for the support of their families are attending school to receive the formal education and experiences necessary for successful competition in a tight labor market. Many of these females are now making inroads into traditionally male areas, primarily in technical specialties.

Many of the females enrolling in college, vocational training schools, and other post-secondary technical training programs are low income which, in this study, will be operationally defined either as meeting the federal guidelines established by the Office of Management and Budget for low income families or receiving financial aid. As a group, these low income head of household women must overcome two significant, and in some cases prohibitive, barriers--sex discrimination and a lack of economic or personal resources with which to achieve their educational objectives. In spite of these formidable barriers, many of these women are successful in reaching their educational objectives--the completion of technical training, which is operationally defined as earning an A.S., A.A.S., certificate of completion, or just enough course work to enable them to define themselves as having met their personal goal.

Career choice is often a difficult process, especially for individuals whose opportunities in the past have been limited by financial constraints,

family responsibilities, or discrimination. Women who have been out of the work force for a number of years due to family responsibilities and/or financial restrictions are now returning to education in ever increasing numbers, with the hope of learning the skills and earning the degrees that will enable them to earn a living to support themselves and their families. These usually older, low income, head of household women bring with them special needs and special strengths. They also bring with them a special hope for college administrators--as enrollment of the traditional young male student is declining (Unger, 1980:36) the displaced homemaker creates a new and growing market for community college services.

In the late 70's, it was estimated that between 3 and 4 million displaced homemakers with no children under age 18 lived in the United States (Vinick, 1979:10). Between 1950 and 1975, widows increased 41% (to 10,000,000) divorcees increased 166% (to 4,000,000) and 2,000,000 women were separated.

The rise in the number of displaced homemakers has coincided with an increase in the number of women enrolling in technical programs. The 1976 Vocational Education Amendments with regard to equal access have been successful in increasing the number of female students in non-traditional areas. In all technical education programs combined, enrollment increased 99% from 1976 to 1977, (from 44,135 to 88,069). In electronic occupations alone, enrollment has increased 103% (Vinick, 1979:257). These two trends combine to produce an expected increase in the number of displaced homemakers in technical education.

Of primary interest to educators who provide technical training to these women is the question: What characteristics most enable disadvantaged women (including displaced homemakers) to succeed in technical training? The purpose of this project is to design a Comprehensive Assessment and Support Sys-

tem for low income head of household women to identify women who have the potential to do well in, or will need special support in technical training programs in San Antonio in general, and San Antonio College in particular. The goal is to reduce the waste of human time and potential, and institutional time and dollars by reducing the fall-out rate of low income head of household women. In order to effectively address these new developments, a number of specialized counseling strategies, testing procedures, and other forms of assistance are needed to support disadvantaged students, especially low income head of household women, who enter technical training.

Objectives

Objective 1: Examine and identify the employment program characteristics of four local public and private sector employers according to: (a) assessment instruments, (b) interviewing techniques and rating criteria, (c) selection/elimination procedures, and (d) employment advancement criteria.

A survey of local private and public sector employment programs will determine what criteria are currently utilized to select disadvantaged women for employment and promotion in technical areas. Due to the recent local growth in employment possibilities in the electronics, computer programmer, and drafting (including computer-assisted graphics) fields, these three technical areas were central to the investigation.

Objective 2: Review various literature and identify the characteristics of disadvantaged students enrolled in electronics, drafting and computer sciences according to the use of: (a) assessment instruments, (b) selection/elimination processess, (c) employability skills development, and (d) financial and academic assistance in collegiate settings.

In order to determine which factors have been shown in the past to enable low income head of household women and other disadvantaged students to complete

technical training programs, a survey of the literature will be conducted. reports of studies previously completed on disadvantaged students should indicate a number of factors that have been found to influence success in education in general, and technical education and employment for females in particular.

Objective 3: Analyze all findings, draw conclusions, and design a Comrehensive Assessment/Support System (CASS) profile considered criteria to successful program completion.

Upon completion of the literature review and employment program interviews, a test battery will be designed to assess low income head of household women on significant variables. Standard personnel, personality, and achievement/aptitude tests were investigated to determine the best selections. To assess those factors not appropriately covered within the battery, an additional instrument has been constructed.

After identification of the characteristics most vital to success of low income head of household females in technical programs, a support system has been constructed to address any weaknesses these females may possess. Many support services are currently operational within the institution, but lacking is a clear, systematic and coherent whole designed specifically with this population in mind. Such services as day care; peer tutoring, counseling and support groups; formal tutoring; financial aid and others exist throughout the campus. However, a system to better utilize these and other services was developed through research findings and input of disadvantaged women in the study.

Objective 4: Subsequent to final analysis of all data, identify and assess low income women for enrollment in one of the three technical programs, electronics, drafting or computer programming, using the CASS profile.

When the design of the comprehensive assessment and support system (CASS) has been completed, women enrolling in one of the three target technical programs will be assessed and supported by this new system. These students should be followed after project termination to ensure that the CASS is effectively increasing probability of success in technical programs and to provide information for predictive validity.

## CHAPTER II

## Review of the Literature

A selective review of the literature with respect to disadvantaged students in technical programs at two or four year technical institutions was conducted to provide input into the development of various components required to assess and support disadvantaged students throughout their technical training. The following topics were identified as significant: selection/elimination procedures, assessment instruments, financial assistance, academic assistance, employability skills development, and employment advancement criteria. Information gained through this selective review of the literature has contributed to the development of the Comprehensive Assessment and Support System.

### Assessment Instruments

In 1979, the Federal Register published the following guidelines for receipients of federal funds offering vocational education programs:

> Recipients may not judge candidates for admission to vocational education programs on the basis of criteria that have the effect of disproportionately excluding persons of a particular race, color, rational origin, sex or handicap. However, if a recipient can demonstrate that such criteria have been validated as essential to participation in a given program and that alternative equally valid criteria that do not have such a disproportionate adverse effect are unavailable, the criteria will be judged non-discriminatory. (p.17166).

These guidelines were established due to the unacceptable number of civil rights violations of vocational school applicants occurring over the previous years. Any review of research prior to 1979 which includes assessment instruments and selection/elimination procedures must be interpreted in light of possible past discriminatory practices.

In Pucel's (1980) extensive review of the literature regarding admission practices of vocational schools, little evidence was found to suggest that one or more specific instruments could be identified that would be adequate for use across vocational programs.

The earliest findings that Pucel reports include Patterson's 1956 review of studies conducted from 1921 to 1954. Patterson concluded that it would be possible to develop a battery to predict trade school success. He determined that such a battery should include tests of verbal intelligence, spatial ability, mechanical experience or information, and interest (Pucel, 1980:17).

A later study by Crawford regarding research conducted at the Los Angeles Trade-Technical College from 1952 to 1966 supported and refined Patterson's findings. Crawford found that IQ tests, scholastic achievement tests and GPA were inferior predictors of success in vocational classes.

She concluded that:

> Measurements of individual traits and separate factors of intelligence followed by empirical combinations of these measures into aptitude test batteries specifically designed and weighted to predict success in specific areas of training within a specific institution is a far better approach to the problem (Pucel, 1980:17).

Prediger, et al. (1968) is reported by Pucel to have reviewed about 2000 studies conducted between 1954 and 1967 which dealt with vocational admission in high school. He determined ten test categories utilized in these previous studies: (1) verbal intelligence, (2) nonverbal intelligence, (3) arithmetic reasoning, (4) spatial aptitude, (5) mechanical aptitude, (6) perceptual speed and accuracy, (7) manual dexterity, (8) GPA, (9) achievement test data, and (10) special (usually standardized) tests. Three generalizations from this study are expecially germane: (1) drafting appears more highly correlated with intellignece and previous achievement than any other vocational area investigated, (2) special aptitude tests, requiring abilities to perform in

areas closely related to a specific occupation, appear to correlate with high school vocational program success, and (3) any given predictor varies greatly in its ability to predict success across occupations. This last generalization was found repeatedly by Prediger, Ghiselli and Patterson in their respective reviews.

Several attempts to utilize a battery of standardized tests have been made, with varying degrees of success. In 1968, Miller conducted a study involving the use of the following: The Flannigan Aptitude Classification Test, the Gordon Occupational Checklist, the Stanford Achievement Test, the Primary Mental Abilities Test, the Gordon Survey of Interpersonal Values, and the Differential Aptitude Test. Miller found that, for each of the occupational areas, specific subtest scores were the best predictors. (Pucel, 1980:18)

A similar project, Project MINI-SCORE, was conducted between 1966 and 1968 involving over 17,000 applicants to post-secondary Minnesota vocational schools (Pucel et al. 1972a). Six tests were included in the battery: the General Aptitude Test Battery (GATB), the Minnesota Vocational Interest Inventory (MVII), the Minnesota Importance Questionnaire, the Vocational Development Inventory (VDI), the Sixteen Personality Factors Questionnaire, and the Minnesota Scholastic Aptitude Test. For females in the study, three tests had as their highest correlation the "Employed Related" vs. "Drop" criterion: the GATB, the MVII, and the VDI.

Project MINI-SCORE found the MVII to reveal the largest differences between people who enter and succeed in different occupations. It was also established that there is little difference between people who graduate from vocational-technical training vs. people who graduate and are successfully employed after one year, as measured by the seven MINI-SCORE instruments.

The MVII, MIQ and 16PF were the most successful in discriminating between successful and unsuccessful vocational students for men and women combined.

Other studies have used a variety of tests to predict success or classify students according to potential for success. In 1967, Doerr used the Dailey Vocational Test and the MVII to successfully differentiate students in eight vocational Test and the MVII to successfully differentiate students in eight vocational groups (Pucel, 1980:23). In validating the Career Planning Program of the ACT Program in 1970, it was found that working condition preferences, vocational interests, career-related past experience, and job values were most related to students success (Pucel, 1980:24).

In 1978, Fadale and Winter conducted a study to determine nontraditional student success in career programs. Assessment instruments employed were the SRA Inventories, including the Inventory of Personal Values. Successful students valued goal orientation and recognition, consistently did not value variety. Program choices of successful students were based on personal inclination, rather than external influences (Fadale & Winter, 1980). An earlier study (Miller, 1966) found little use for the Survey of Interpersonal Values in predicting vocational success for high school students.

The formally administered standardized assessment instruments approach is by far the most popular. However, another successful method is the self-assessment. The Waukesha County Technical Institute (Wisconsin) has developed self-assessment instruments for basic competencies required for college work (Koeppel, 1980). These tests are not mandatory and were primarily developed to acquaint students with the levels of competencies required in vocational/technical programs offered. They also allow students to assess their mastery levels in a non-threatening way and to encourage students to seek remediation. These optional self-assessment instruments are not used as a method of showing

applicants where additional work is required.

In summary, the following statements may be made concerning the use of assessment instruments with respect to disadvantaged (and other) students in vocational programs.

1. Vocational interest tests provide valuable information on student success.
2. Aptitude measures can be used as predictors of student success.
3. Some personality tests can provide useful information.
4. Manual dexterity tests provide, in general, little information of predictive value.
5. Test batteries or tests must be developed for specific programs at specific institutions. No effective "blanket approach" using only one test or a small number of tests across programs and institutions has been found.

Selection/Elimination Procedures

Selection/elimination procedures for vocational programs in community colleges or technical schools are often rooted in the "open door" philosophy--egalitarian education. This does not mean, however, that any student may enter the program of his choice without appropriate prerequisites. Screening for program placement and course assignment is appropriate in almost any setting, including "open door" institutions. However, the ability (and desirability) to select students varies from institution to institution. Fadale and Winter (1978:12) recommend the follwoing questions be answered by any institution seeking to recruit and select non-traditional vocational students:

1. Does selection testing reflect locally determined threshold levels?
2. Does the selection process include counseling and/or advisement to complement high school records and test scores?
3. Does the selection process allow for an element of self-selection or personal choice to participate in developmental studies?
4. Is there sufficient flexibility in scheduling to allow change of competency level class after the initial weeks of instruction?

5. Is there opportunity for attention to the individual who is a member of a targeted group in developmental programs?

According to Roueche (1982:23), many colleges are administering standardized reading tests to determine suitability for entrance into college-level courses. This testing is not truly a "selection" procedure, but rather a placement procedure to assist the student with basic skill development before entering a program with inadequate preparation. Although the "right to fail" concept gained some attention in recent educational literature, Roueche feels it is far more appropriate to emphasize the student's right to succeed. Only when students are given adequate assessment, preparation and support can these rights be protected.

According to the Ford Foundation's Commission on Higher Education of Minorities (Middleton, 1982), the current testing, grading and admissions practices among colleges and universities should be revised to admit students based on potential, not previous grades and standardized tests. The committee recommends a "value-added" approach, including a series of diagnostic tests and individualized instruction to increase the competencies of the students. It is inappropriate for public institutions of higher education to screen out applicants lacking in previous academic accomplishments. By adopting a "value-added" approach, colleges would recruit students based upon potential, and would then work to increase competencies and abilities instead of accepting only students with previously developed competencies.

The selection procedure instituted by Waukesha County Technical Institute (Koeppel, 1980) is self-assessment. Utilizing a voluntary instrument is an alternative to placement tests which allows the students to determine their own developmental needs in a non-threatening atmosphere. This strategy allows students to decide for themselves, based upon this assessment, whether they possess the prerequisite skills necessary for the direct placement into a technical program.

A strong but informal selection/elimination factor that exists in many colleges occurs during counseling. An external barrier to equal vocational educational opportunity is the counselors' attitudes reflected in their interactions with women making nontraditional career choices. Harmon (1979:11) cites many studies documenting differential reactions to men and women making career choices in male-dominated fields. They subtly (and, at times, not-so-subtly) communicate their own feelings, expectations and judgements when counseling women considering nontraditional options. In a study on vocational education and sex equity (Verheyden-Hilliard, 1979:3), research is cited which demonstrates that counselors have the most conservative attitudes toward working mothers when compared to vocational teachers and administrators. A study by Casserly found that many guidance counselors still see mathematics-related careers as male domains (Fox, 1980:23). This attitude prevents women from acquiring necessary prerequisites for technical occupations.

Atkinson (1979) summarizes the primary inhibitors of expanded vocational education options as:

> traditional cultural socialization patterns which proscribe and prescribe appropriate behavior for young people based on sex. Frequent sources of support for these patterns, pracites and belief systems are the home, the peer group, the school, and educational material.

These informal selection/elimination factors must be counteracted through re-education of counselors, instructors, and administrators in order to truly provide equal access to all students.

Academic Assistance

With the open admissions policy a securely established fact for community colleges in the 80's, more attention must be given to preparing students with poor academic skills to enter technical programs. Roueche (1980:21) states that 20-35%of all entering community college students in Texas have reading

levels below the 4th grade. He also reports that reading requirements for technical courses have doubled over the past 15-20 years (Roueche, 1982:23). The collision of these two trends obviates the need for, as Roueche (1978) terms it, an "intensive care unit" where students can receive developmental skill upgrading, counseling, and be alerted to the realities and requirements of college survival. He recommends that community colleges adopt policies that do not allow students to enroll in courses prematurely and make choices that virtually guarantee failure. The open door often turns into the revolving door when strong placement practices are not instituted to assess and assign unprepared students to enter classes without first providing prerequisite background.

At Olive-Harvey Community College in Chicago, a Mastery Learning approach has been very successful in teaching nontraditional students (Jones, Gordon & Schechtman, 1975).

The student body consists of 95% minorities, 60% married, 20% single heads of households, 40% veterans, and 63% living in their own households, with a median age of 26. The Mastery Learning approach was successful across disciplines. (Dr. Benjamin Bloom served as a consultant to the project.) The project was based on the following assumptions: (1) 90% of "normal" range students can learn, (2) the basic purpose of education is to maximize the achievement of each student, (3) successful educational outcomes are not random phenomena, (4) affective factors have an important bearing on educational achievement, and (5) evaluations and grades are most meaningful when they assess movement toward educational objectives rather than compare students' performances.

Although success was achieved by this strategy (75% of the Mastery Learning students equlled the success of the top 20% of the control group),

several problems typical of nontraditional students appeared. Some less successful students had attendance problems, did not study, misused informative tests, failed to do prescribed correctives, and failed to utilize resources to their advantage. Some students continued to strive for a passing grade rather than high achievement. Insufficient time was provided for students to engage in cooperative helping. The institution at times provided insufficient screening for placement and insufficient counseling. One overriding concern was the ability to establish a nonthreatening and supportive environment where students could seek help from their peers.

In Fadale and Winter's (1978:10) study of nontraditional students in postsecondary career programs, it was found that many students required developmental assistance. The most satisfactory selection strategy was one that allowed students to make the choice to enroll. Programmatic and environmental factors leading to success are individual attention, open attitude of faculty, and an identifiable "center" or base of operation within the campus from which courses and services can eminate.

One key to providing academic assistance to the nontraditional student is helping them to develop an internal locus of control (Roueche and Mink, 1979). Since the enrollment of these "high-risk" students has increased, many of which may have histories of failure, the community college must develop strategies to remove their expectancies of failure and to promote feelings of self-control and direction in their lives. By assisting in development of an internal locus of control, it has been demonstrated that a student will improve significantly in the following areas: self-concept, adjustment, independence, successfulness, realism, openness to learning, creativity, flexibility, self-reliance, initiative, reduction of anxiety, grades, and interest in intellectual and achievement matters. Helping disadvantaged

students to develop responsibility for studying and making better grades is much more possible when they acknowledge the link between their behavior and its consequences. Roueche and Mink have developed a comprehensive strategy for teaching students to relate their own behavior to the reinforcement including individual and group counseling, which is fully reported in their publication Improving Student Motivation (1979).

According to Armes and Archer (1980), the nontraditional community college student who is older, educationally disadvantaged and economically impoverished can be successful if he/she is not expected to compete in traditional classroom settings. As cited by Armes and Archer, Roueche states that teachers derive their greatest satisfaction from teaching advanced and specialized courses. Their nontraditional students may lack motivation, interest, and regular attendance habits. Armes and Archer have developed a two part solution to these typical problems. By building a supportive environment and establishing instructional guidelines, an instructor can counteract the barriers to educationally and economically disadvantaged.

The first part of the solution, building a supportive environment, consist of: learning names, providing nonverbal encouragement, avoiding judging students, learning something personal about each student, relating on a personal level, providing specific positive reinforcement, treating students as adults, being available, not humiliating students, discovering peraonal situations that could interfere with student learning, being as positive as possible, watching for inattentive behaviors, committing to at least one individual conference with each student, telephoning students when high-risk patterns develop, and devoting the first week of class to creating a positive learning environment.

The second part of the solution depends upon establishing instructional

guidelines: providing structure, having an attendance policy, providing alternative ways of learning, making material relevant and sequential, providing immediate feedback, tutoring, allowing students to work at their own pace, not giving tests on Monday, starting and stopping classes on time, maintaining contact with the students' other teachers, allowing an adequate pause after a question, allowing students to help make course content decisions, provide specific written learning objectives, assessing skills and attitudes at the beginning of the semester when planning learning activities, and asking students to evaluate the course.

The Committee on Improving Remedial Efforts in the colleges, as reported in the Chronicle of Higher Education (Yanosko, 1982) identifies a very similar set of program characteristics as being successful. The following guidelines were presented to the Mathematical Association of America:

(1) A strong commitment of time and effort required on the part of the student of the scope and demands of the program.
(2) A tightly structured program of study, with the pace determined by the instructor (not the student) in response to the students ability and progress.
(3) An awareness of the needs of the different groups of students, and instructional strategies that provide for the differences.
(4) An informal atmosphere that provides considerable moral support and encourages interaction among the students.
(5) Enthusiastic teachers with a strong respect for mathematics.

Financial Assistance

Disadvantaged students in technical programs, as well as other programs, rely heavily upon financial assistance to complete their education. Recent reductions in government grants and loans portend ill for many prospective disadvantaged students. Although financial aid programs and recommendations included below are described before massive proposed cuts, they incorporate facets which were functional before the Spring of 1982, and will continue to be useful for planning on a smaller scale.

Financial aid has a significant impact on adult participation in educa-

tion. K. Patricia Cross (1981) describes a 1974 study indicating that 53% of potential adult learners not currently enrolled in post-secondary education state costs, including tuition, books, child care and so on, as the leading situational barrier to enrollment. The leading institutional barrier, cited by 35% of potential adult learners, was not wanting to go to school full-time, which decreases eligibility for financial assistance. She further commented that in all survey research, situational barriers (as opposed to institutional or dispositional barriers) are cited as the most frequent barriers, ranging from 10% for child care or transportation to 50% for cost or lack of time.

Valley (1979) cites a 1976 study by Baillie, Eignor and Averill which identified the unmet needs of students over age 25. The following needs were reported by fully 25% of the students attending the University of Massachusetts at Amherst who were age 25 and over:

- More information regarding core requirements and major requirements.
- Information on career opportunities in major field.
- Information regarding assessment of abilities and remedial skills.
- Information regarding credit for prior learning.
- Peer counseling in career planning.
- Rent subsidies.
- Information regarding student eligibility for subsidy programs.
- Information on food stamp and related programs.
- More social interaction, including parties, trips to cultural and sporting events, concerts, happy hours, and athletic activities.
- Information on total tuition and fees for one year.
- Information on how and when costs are to be paid.
- Information on specific procedures for applying for aid.
- Information on financial aid application dates.
- Information on how to appeal aid decisions.
- Information on the criteria for aid awards.
- Information on how aid is applied to tuition bills.
- Information on how loans are to be repaid after graduation.
- Information about available grants, fellowships and scholarships.
- Information about available loans.
- Information about on-campus jobs.

Of the twenty unmet needs cited, fourteen pertained to financial assistance. It must be remembered that the respondents were not surveyed because they were disadvantaged, but because they were over 25. The responsibilities

faced by today's older student make financial assistance a major unmet need. The significant number of students that drop out each semester bears witness to the fact that their financial needs are not being adequately met.

Tuition and education-related costs cause many problems for disadvantaged students. In a workshop conducted by Gore (1981:16), the following problems of disadvantaged vocational students were mentioned: individual project financing, purchase of supplies, clothing, nutrition, transportation, work hours conflicting with school, and finding jobs. In a study by Hernandez (1979) it was found that paying cost of transportation and child care, tuition and books is not feasible for low income head of household women. Due to extremely limited financial resources, paying costs such as transportation and child care becomes prohibitive and causes discouragement. In fact, when college grants and loans have been counted as earned income which reduces AFDC payments and food stamps, this serves as a disincentive to stay in school.

Length of training has an indirect impact on the need for financial aid. In interviews with AFDC women attending college, a frequent complaint (and cause for fall-out) was length of training. Existing on reduced welfare payments, along with supporting a family and studying in a difficult environment, proves too difficult for many women when the program lasts for two years.

Although a number of financial aid opportunities exist for minorities and women (see Appendix A), opportunities are limited and often cover tuition and books only, failing to provide for other financial needs such as day care or transportation.

Almost all disadvantaged students are in need of financial aid. However,

the need for financial aid is especially pressing among low income head of household women. In Young's 1977 study of 144 welfare mothers enrolled in Jefferson Community College in Kentucky, an analysis was made of factors which interfered with their ability to successfully complete 24 hours of credit at the community college with a C or above average. The factor which caused the greatest obstacle was not personal or academic problems--it was lack of finances. One fifth of the mothers were forced to withdraw due to reduced governmental support. Only one in ten withdrew due to academic reasons, citing most frequently the lack of remedial or tutorial help. One in ten withdrew due to personal problems. Therefore, "the greatest obstacle to these mothers' ability to continue their education was lack of finances" (Young, 1977:117).

Carol Eliason (1978), in a report on testimony given before the National Advisory Council on Women's Educational Programs, repeatedly stressed the dilemma that disadvantaged women face in obtaining a college education. An unskilled woman cannot support herself and her children with a minimum wage job and pay tuition and related educational costs. Without financial assistance, the disadvantaged woman is almost certainly doomed to "the treadmill of underemployment."

The testimony from a single mother from Omaha is described below:

> "I called or went to 17 agencies before my questions were answered about where to find money for training. My AFDC social worker threatened me with loss of food stamps if I attended school. The manpower office wanted to qualify me for only short-term, low-skill training." Despite these obstacles, the woman became a trained, self-sufficient assistant district attorney. (p.9)

Women testifying to the specific needs of single mothers also stressed the following obstacles in obtaining financial aid for education and training: (1) lack of living stipends or work study options, (2) absence of grants for

education-related costs, including child care, (3) absence of financial aid for part-time working students, and (4) overly stringent loan regulations.

Eliason also recommends increased financial aid, especially for part-time students seeking to re-enter the labor market. Financial assistance provided by employers to displaced homemakers (and others) to continue their education is largely regarded as taxable income, and the Council has recommended to the President that legislation be revised.

Eliason further states that Dr. Nikki R. Van Hightower from the Houston Mayor's Office testified concerning women's need for a three part support system to escape their plight: (1) more exist vocational guidance and counseling, (2) financial assistance for marketable skills training, and (3) child care assistance (p.9). Mary Ganikos and Julia Davidson of the American Personnel and Guidance Association proposed revision of federal financial aid guidelines to reflect the needs of these nontraditional part-time students.

Restrictions of some forms of financial aid may unintentionally discriminate against women. According to Westervelt (Gappa & Uehling, 1979) some women, due to family responsibilities, are not able to apply for financial aid due to their inability to attend college on a full-time basis. Another barrier to these low income women is the lack of financial assistance in obtaining adequate child care. Again, although not seemingly deliberate, low income head of household women are described as financially unable to participate in education due to education-related costs. The lack of deferred payment plans is another subtle barrier against women with children; also, married or pregnant women may suffer from occasional bias.

The Ford Foundation's Commission on Higher Education of Minorities has found that receiving grants increased student persistence (Middleton, 1982).

It also increased the student's options of choice of institution. The following recommendations are made concerning minority students and financial aid:

1. Students should receive grants rather than loans.
2. Students should not be forced to work more than half-time.
3. Work-study jobs should be on-campus, no more than half-time.
4. Grant and work-study programs should be expanded. (p.12)

Employability Skills Development

Although many reasons exist for disadvantaged or female students to attend college, a primary educational goal is preparation for a new or better job (Cross, 1979). Upward mobility offered to adult learners by two-year technical programs is an attainable goal for disadvantaged students who see four-year degrees as too expensive in both time and financial resources. Education is the means to the end of upward mobility through job advancement. To this end, many community colleges and technical schools have developed job placement offices and "employability skills development" offerings which assist students in obtaining employment.

Employability skills development includes standard offerings of resume writing, interview skills, job hunting techniques, employment applications, proper attire, and other employment skills. A number of programs have been developed to deal with issues of concern to technical students in general. More specific programs deal with issues of concern to women in particular, especially assertiveness training, time management (to assist in handling both job and family responsibilities), decision making, career planning, and handling sex discrimination.

In the Career Guidance Project developed for training of high school vocational counselors of disadvantaged students, Gore (1981:71) emphasizes the need for teaching the employability skills of working in groups, following

directions, accepting responsibility, and maintaining personal interaction skills.

In Lisack's (1979) study of vocational training and support services needed for displaced homemakers and other special populations, several of his recommendations center on employability skills development. The supportive services he investigated and recommended are special counseling, job development information, vocational education programs that prepare students for employment, and special courses on seeking employment. Lisack reported that in the state of Indiana an increase of more than 100% in the amount of supportive services offered to vocational students entering non-traditional occupations would be required just to meet the extant need.

Women entering occupations in traditionally male areas should be prepared to deal with resentment and harassment by male co-workers (Steiger and Schlesinger, 1979). Adequate preparation and counseling is invaluable here. As Harmon (1979:10) states, the most subtle problem in counseling is presenting these barriers without discouraging their clients.

In Hall and Gleaves' (1981) article concerning programs for special populations, it is stated that single mothers benefit greatly from time management courses and career counseling to set long-term goals, while displaced homemakers need education in career opportunities.

Harmon (1979:10) cites a 1978 study by Jakubowski which states that many women lack the skills necessary for success in employment such as decisiveness and assertiveness. A vocational counselor has two choices in such a situation: individual counseling or group counseling. The counselor may work with an individual to develop these skills relying on the client's own experiences and share ideas and support. Jakubowski feels that group counsel-

ing hastens the constructive behavior change process when many women share experiences.

The Fort Wayne Displaced Homemaker's Program (Parker, 1981) a CETA program, includes the following components concerning employability skills development: (1) creating a positive self-image, (2) human relations, (3) resources for job interest and personal goals, (4) importance of communication, (5) personal appearance, (6) potential employment, (7) personnel interview, (8) review of vocational options, and (9) problem encountered when looking for a job.

Counselors and other service providers must adequately prepare themselves to offer nonbiased career counseling and employability skills development. Harmon (1979:11) makes the following recommendations for vocational counselors providing career counseling to women:

(1) Inform themselves of the facts of women's employment.
(2) Confront their own biases in formal training experiences and informal discussions.
(3) Challenge the developers of counseling, career information, and testing materials to eliminate sex stereotyping in their products.
(4) Assess the developmental status of their women clients and work on basic problems of self-definition and motivation before providing career materials, testing and career education experiences.
(5) Encourage females, especially those at the junior high level, to enter basic courses in mathematics and science to keep their options open when they are ready to make choices.
(6) Develop and implement support groups for women facing common problems.
(7) Develop and implement programs to develop specific personal skills which are useful in the work force, such as assertiveness training, decision-making strategies, and time management techniques.
(8) Develop effective ways to initiate recognition of real barriers in home, educational process, and the work place without discouraging the career exploration of women clients.

Employment Advancement Criteria

No specific references for employment advancement criteria for disadvantaged graduates from technical training programs could be found. However,

several studies can be related to job success for workers in general, disadvantaged job seekers, and women.

Aptitude is a necessary attribute for employment advancement. One study cited previously, Project Mini-Score conducted by Pucel (1980), describes the importance of aptitude as a predictor of success in employment one year after graduation from technical training. The GATB aptitude subscores have been demonstrated to relate to employee success in a number of validation studies conducted by the United States Employment Service in the development of specific OAP's (Occupational Aptitude Patterns).

Ciscel and Tuckman (1981) cite maturity, labor market awareness and attitudes such as willingness to repeat job training experiences (which is indicative of a positive attitude toward training) to be characteristic of successful CETA trainees.

Casey (1979:2) reports that "individuals who felt they could influence their future through their own effort", or, in other words, have an internal locus of control, experience greater labor market success. This finding has an important implication for educators, which should alert them to the significance of instilling "success-prone" attitudes in disadvantaged and other students. Casey further states that for white women in particular, husband's perceived negative attitude towards wife's labor market participation decreased a woman's probability of advancing occupationally (p.18).

Teglasi (1978) has found that traditionally oriented women are more likely to attribute failure experiences to internal factors such as lack of ability, as opposed to external factors, such as bad luck. This tendency to internalize their failures may cause them to become more easily discouraged than nontraditional women when striving for success. O'Leary (1974) reports that research with the Strong Vocational Interest Blank has shown that women who work in

traditionally masculine fields do not make responses considered sterotypically female, and therefore may have adopted male-valued traits. She further states that women receive favorable attitudes from co-workers when their success is in an area in which female participation is as frequent as male participation--women whose success is seen as deviant will not be perceived as positively as successful males. This implies that women will meet with less resistance and be regarded with more positive attitudes as their numbers increase in nontraditional areas. These reports are an indication that nontraditional women who are more resistant to negative attitudes from their co-workers will, for the present, be the most likely to advance in male-dominated technical occupations.

Summary

The adequate selection and support of low income head of household women is dependent upon a variety of factors, but the primary facilitating factor is financial aid. Without adequate financial resources with which to cope with the hidden costs of education (i.e. child care, transportation, clothing, etc.), the goal of economic independence through technical training becomes unattainable. The need for child care cannot be denied. Women who head households must often pay for child care in order to attend class. This cost quickly becomes prohibitive. Women with low incomes and no subsidized child care are essentially trapped in the home until their children reach school age. As long as financial aid is limited to full-time students, most low income head of household women will find this avenue to employment frought with insurmountable obstacles. At this time of financial aid cutbacks, the supportive services that a community college provides will increase in importance.

A major supportive service provided to students is academic assistance. Under this simple heading come many services: tutoring, counseling, developmental studies, development of an internal locus of control, and many others. When providing these services, optimum results occur when services are presented through an identifiable "center" or base within the campus. By removing a high-risk or nontraditional student from traditional classroom competition until a solid foundation of learning skills is built, the high-risk student can gain the strengths necessary to succeed in traditional settings. Individual attention and a concerned, "open" faculty weigh heavily in student success. The development of an internal locus of control is equally important in assisting nontraditional students. Students lacking in financial resources and academic skills must be made to recognize their control over their educational fate. Without this acknowledgement of responsibility, students find it too easy to walk away in the face of such obstacles.

The selection and assessment of disadvantaged students in technical training programs varies from institution to institution, and rightly so. The most successful assessment and selection process is one that is developed in response to local needs. Many batteries have been developed to predict success; however, since student populations and programs vary from college to college, it becomes the responsibility of the institution to develop a battery based on local norms. Tests of aptitude, vocational interest and personality factors such as motivation and values have proven to predict success. Since community colleges are "open door" institutions, selection processes should more adequately be described as "placement" processes. The most effective use of assessment and selection processes occurs when students are assessed, allowed to compare their scores to some predetermined success criteria, and given the

opportunity to decide to place themselves in developmental or regular courses.

An informal selection process often occurs during couseling. Unfortunately, many studies have documented the conservative and biased attitudes of counselors that discourage disadvantaged (or any) women form entering technical training. Also, lack of an adequate math background discourages women from choosing technical majors. Obviously, high school and college counselors must become aware of the alternative limiting influence their advisement can have on these women. Women must be advised to take more math during their high school years if they wish to enter technical training with the necessary prerequisites. As long as mathematics is perceived as a male domain, many women will continue to take fewer math courses and experience more math anxiety than is functional for technical majors.

Disadvantaged students primarily enter technical training to gain a competitive edge in the job market. In order to become successful, however, a student must have not only job skills, but also the skills required to convince an employer to hire her. These skills consist of interview skills, completing an application, resume writing, choosing proper attire, and job hunting techniques. Women also benefit from assertiveness training, time management, and advice on handling discrimination and harassment from male co-workers.

Technical program graduates should be equipped with a variety of assets in order to successfully compete in the labor market. Aptitude and knowledge, of course, are necessary. Maturity, labor market awareness, and a positive work attitude are facilitating factors. Employees possessing an internal locus of control are more "success-prone" than externally motivated workers. Women working in male-dominated fields benefit from a nontraditional, as opposed to traditionally female, orientation. Also of value is the ability to deal

with less than positive attitudes from co-workers.

Low income head of household women, disadvantaged students, and other nontraditional technical students can, with adequate supportive services, become successful employees in today's technical labor market. Some disadvantaged students will be successful without specialized supports--many have done so. However the removal of societal, institutional and personal barriers to success can truly provide equal access to all segments of the community college constituency.

## CHAPTER III

## Procedures

Three substudies were designed to provide the information necessary to develop the Comprehensive Assessment and Support System. These substudies involved obtaining information from employers, instructors and female technical students in order to increase education and employment success for low income head of household women in technical programs. The substudies are described below.

### Substudy I
### Interview of Area Employers of San Antonio College Technical Gradutes

Many employers in the San Antonio area are currently selecting and training low income head of household women to work in technical occupations requiring aptitudes in the data processing, drafting, and electronics areas. The purpose of interviewing these employers was to identify and document criteria and measurement tools used by employment firms in their efforts with low income female heads of households. The rationale behind this research survey is that public and private sector employers are successfully providing employment and training for women in technical areas. Interview questions were designed to gain input from employers on successful assessment, training and employment practices (see Appendix B). What support mechanisms are currently being used? How can effective assessment and selection techniques be transferred or adapted to a college setting to enhance the placement process? The answers to these and similar questions contributed toward the design of a Comprehensive Assessment and Support System by project end.

## Substudy II
## Survey of Instructors in Data Processing, Drafting and Electronics

Of all the contacts students make on campus, the most frequent, and many times the most revealing, are contacts with their instructors. Students with personal or academic problems often choose to seek assistance from a familiar instructor rather than an unfamiliar counselor. Instructors also have an opportunity to observe student behavior in the classroom. Due to this close ongoing interaction, instructors may possess valuable information about a student's needs, strengths and weaknesses. In order to gain input from technical instructors on their perceptions of the strengths and weaknesses of the target population, and to receive pertinent information for developing appropriate supports, a questionnaire was developed (see Appendix C). Instructors were asked to remain anonymous to encourage candid responses.

## Substudy III
## Selecting and Field-Testing the CASS Battery

Of primary importance in assessment instrument selection was the development of a battery which could differentiate between women who successfully complete, as opposed to women who drop out of, technical training programs in computer science, drafting and electronics. Aptitudes, interests and personality variables were considered due to their well documented effect on academic performance. An investigation of assessment instruments was conducted; ERIC documents and the Buros' Mental Measurements Yearbook were the primary sources of information. Any test selected was chosen with the following constraints in mind:

(1) the entire battery must take less than six hours to administer; and

(2) all instruments must be in-house scorable. These two constraints make it possible to inform students of their scores on the same day that they

complete the battery.

Based upon the probability of efficacy, the decision was made to include the following instruments: (1) General Aptitude Test Battery (GATB), (2) Kuder Preference Record - Vocational, (3) IPAT Anxiety Scale Questionnaire, (4) Mathematics Anxiety Rating Scale (MARS), (5) Adult Nowicki-Strickland Internal-External Locus of Control Scale (ANS-IE), (6) Personal Values Abstract (PVA), and (7) the Mooney Problem Checklist.

After instrument selection was complete, lists were obtained of female students who were currently enrolled, dropped out, or graduated from the three target programs since 1979. These students were contacted by telephone and by flyers distributed during registration and asked to participate in the study. Due to the extremely low initial participation rate, a stipend of ten dollars was paid to each participant, which successfully increased the number of students included in the study.

Data Collection and Analysis Procedures

Data were collected from employers of SAC technical graduates through on site and telephone interviews. A content analysis of responses was conducted.

Data collected from instructors using the Questionnaire of Instructors in Data Processing, Drafting and Electronics (see Appendix C) was tabulated by hand. Due to the small number of participants (35), data analysis was limited to frequency distributions and content analysis.

Data on the CASS battery was collected during a number of testing sessions from ex-students and students currently enrolled in target technical programs. Frequency distributions were completed on the personal characteristics and problems identified on the CASS Questionnaire (see Appendix D). Means were determined for student grade point averages (GPA's), hours completed,

and number of problems identified on the Mooney Problem Checklist.

A factor analysis was conducted on the GATB, PVA, IPAT-ASQ, ANS-IE and MARS to determine what independent factors accounted for scores made on the assessment battery. Two stepwise multiple regression analyses were conducted on the Kuder separately and on all other scores combined (with the exception of the Mooney, which does not yield a true score) to determine which variables accounted for the greatest degree of variance. Due to the small sample, the discriminant analyses conducted to determine group membership in the Graduate or Non-Returning Student group was limited to the two variables in the CASS battery accounting for the greatest degree of variance.

## CHAPTER IV

## Results of the Study

Information presented herein is the result of three related studies conducted to learn of the special needs and characteristics of women in technical training as determined by employers, instructors, and students. By tapping these three sources of information it becomes possible to develop a comprehensive profile of the low income head of household woman's employment, educational, and personal needs and characteristics. Input from each of these areas is necessary to develop a Comprehensive Assessment and Support System able to systematically address the total person rather than responding to fragmented aspects of seemingly unrelated needs.

### Substudy I
### Interview of Area Employers of San Antonio College Technical Graduates

Interviews conducted with employers involved terminology which may requ' :e clarification. In order to more clearly relate the responses of the employers concerning unfamiliar concepts, the following operational definitions are provided.

Operational Definitions

Assessment instruments - any test, measurement tool or formal written instrument used to assess performance, aptitude, knowledge or personal qualities of applicant.

Bidding procedure - a formal request or application by a current employee for promotion to a currently vacant position.

Drafting work samples - a portfolio of drafting drawings demonstrating the applicant's ability in a number of specialized areas, including structural, electrical, mechanism, computer aided graphics, and others.

Employment advancement criteria - requirements for upward mobility, including personal qualities and job performance.

Interviewing techniques - procedures or format, including structured/unstructured, open ended or closed questions, or employment/personal questions used to assess an applicant's suitability for employment.

Performance appraisal - an evaluation of an employee's strengths and weaknesses in carrying out assigned job responsibilities.

Rating criteria - information or standards used as a basis for employment of applicants or promotion of employees.

Support mechanisms - any assistance provided to employees to facilitate job performance and increase their opportunities for upward mobility.

Participating Companies

The information obtained through these interviews was provided by:

| Company | Type of Interview | Interviewees |
|---|---|---|
| City Public Service Board | Telephone | Supervisor of Personnel Relations |
| City of San Antonio | On Site | Testing Supervisor |
| Datapoint Corporation | On Site | Acting Employment Manager & Personal Representative |
| Houston Light & Power | Telephone | Employment Supervisor |
| Texas Instruments (Dallas) | Telephone | Staffing Administrator |
| Valero Energy Corporation | On Site | Manager, Employee Training & Development |
| H. B. Zachry | On Site | Personnel Supervisor |

Valero Energy Corporation, the City of San Antonio, and H. B. Zachry granted approval to be identified by name in reporting the interview results. The other four companies were randomly assigned the titles "Company 1-4" for indentification purposes. Complete transcripts of the interviews are included in Appendix F.

Interview Procedure

The interview consisted of four sections. The actual procedure is fully described below.

Section I - Overview. The interviewer provided a brief overview of the research project and described to what use the information would be put. Approval to identify the company by name was requested. The interviewees

were then asked if they had any questions.

Section II - Assessment procedures. Questions were asked to determine what assessment instruments, interviewing techniques and rating criteria, selection/elimination procedures, and employment advancement criteria are being used. The following questions were asked:

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

Q3. What personal skills are desirable in employees eligible for raises or promotions?

Section III - Working with disadvantaged women (if applicable). Employers with specific knowledge of the performance of disadvantaged women within their organization were asked to comment on their abilities and problems. If employers had no specific knowledge of disadvantaged women as a group, this section was omitted.

Q1. Have you ever worked with local agencies that specialize in training or placing disadvantaged women?

Q2. As a group, can you make any observations about them (including strengths, weaknesses, etc.) in relation to career upward mobility?

Q3. Do you have any suggestions to improve the employability of these women?

Section IV - Comments. Employers were asked to contribute any relevant information that was not covered in the above sections.

Interview Results

The following summary is drawn from information provided by seven employment firms in San Antonio, Houston, and Dallas which employ San Antonio College technical graduates. The importance of assessment instruments, interview techniques and rating criteria, selection/elimination procedures, employment advancement criteria and supportive mechanaisms will be discussed as they relate

to hiring and employment success. Employers' perceptions of disadvantaged or low income head of household women and employers' suggestions for improved employability are also described.

Assessment instruments. Of the seven companies interviewed, only two currently use standardized personnel tests with national norms. Two other companies are using in-house electronics tests with their own norms, and one is contemplating the use of standardized tests validated on an in-house sample. Company 1 discontinued their reportedly successful testing program due to the complexity of EEOC regulations. Only one company (Company 4) does not or has not used tests, preferring to rely heavily on transcripts and GPA (grade point average) instead. (See Table 1). Four companies test electronics applicants. Only two companies currently test applicants for data processing and drafting; however, five companies stated that drafting work samples are requested.

Table 1

Tests Used by Employers

| Time of Utilization | Test | Company |
|---|---|---|
| Present | Adaptability Test | 3 |
| | Bennett Mechanical Test | 3 |
| | In-house electronics test | 2 |
| | In-house electronics test | City of San Antonio |
| | Wonderlick Personnel Test | H. B. Zachry |
| Under Consideration | SRA Computer Aptitude Test Battery | Valero |
| | Employability Aptitude Survey | Valero |
| | Verbal Comprehension | |
| | Verbal Reasoning | |
| | Numerical Reasoning | |
| Past | California Short Form | 1 |
| | Kuder Preference Record | 1 |
| | Edwards Personal Preference Record | 1 |

Another form of assessment instrument employed, other than a screening/selection instrument, is the formal performance appraisal, discussed below in the section entitled "Employment Advancement Criteria".

Interview techniques and rating criteria. Of the seven companies surveyed, only one, the City of San Antonio, (which determines eligibility by a point system) stated that low test scores (below 70%) would eliminate applicants. In all other cases, even when test scores are considered, the interview is the most heavily weighted factor in selection.

The personnel supervisors interviewed all mentioned the importance of good interviewing techniques in screening applicants for employment. Four companies rely upon an unstructured interview, while three prefer a more structured interview. All, however, include open-ended questions such as "Tell me about your work experience." Personality, motivation, and communications skills are evaluated, in addition to reported past work experiences. Three companies report asking questions that specifically allow them to assess an applicant's knowledge of the field.

Rating criteria used in employee selection include interviews (seven companies) transcript evaluation (seven companies), drafting work samples (five companies), tests (four companies, with another company considering establishing a testing procedure), references check (three companies) and resumes (two companies). When asked to determine which factors were most important in hiring, three stated the interview, two stated a combination of interview and transcript review and job application form, and one stated testing.

Selection/elimination procedures. Applicants in these seven companies go through a variety of selection procedures. The City of San Antonio tests all applicants. If the applicant passess the test (70 or above), he/she is allowed to fill out an application and is awarded points for test scores over

70, years of work with the city, veteran status, and related education or experience above job requirements. Rank-ordered eligibility lists, based on these points, are sent to departments seeking employees. The top candidates from the list are interviewed by department personnel, who make the final decision.

Valero accepts all applications in their personnel department. When an applicants' qualifications match a vacancy, they are called back and referred to the department where the vacancy exists to be interviewed. This interviewer/supervisor within the department is responsible for hiring.

H. B. Zachry tests and interviews each applicant within the personnel department. Qualified applicants are sent to the department with the vacancy for the final interview, where the hiring decision is made. In the three remaining companies, applicants are interviewed, tested (in Companies 2 and 3) and hired within the personnel department.

Several of the personnel supervisors interviewed stressed the fact that once an employee is hired, they have no further contact or systematic follow-up information on the performance of this new employee unless the supervisor provides unsolicited anecdotal information. No need for follow-up was expressed.

Employment advancement criteria. Of the seven companies interviewed, six provided information on employment advancement criteria within their companies. The criteria utilized by these six companies differed very little. Three companies (Valero, H. B. Zachry and Company 3) have informal performance appraisals, where it is the responsibility of the supervisor to keep his/her employees informed of their work performance. In two of these companies, the decision to promote rests with the supervisor. Company 3 requires a formal bid by the employee for a higher position, where he/she is considered along with other applicants.

Three companies have formal performance appraisals. Two companies (2 and 4) use standard appraisals evaluating: job knowledge, quality and quantity of work production, cooperation, dependability, versatility, judgment, and relation to others. All three companies stress attendance. Two of these companies did not mention bidding procedures. The City of San Antonio does require bidding, and differs also in its appraisal, which is based on the employee's specific duties. Valero is considering adopting a system similar to the city's, requiring bidding on posted vacancies for promotion and formally evaluating performance in terms of written criteria which are based upon specific job tasks.

Support mechanisms. The most common support mechanisms operating within the five companies responding are in the training area. The City of San Antonio, Valero, and Company 2 offer tuition reimbursement for courses leading to a degree related to the employee's job. The City of San Antonio, Companies 2 and 3, and Valero offer in-house training available upon supervisor's approval. H. B. Zachry has an on-the-job training program. In the area of career development workshops, employee counseling, and scholarships for employees' children, only Valero offers such services.

Employers' perceptions of low income head of household women. Three companies felt qualified to make observations about strengths and weaknesses of disadvantaged women employees. Positive qualities reported were responsibility (Company 3), enthusiasm, assertiveness and interest in upward mobility (Valero, which referred specifically to two National Women's Employment and Education graduates placed with their firm) and loyalty and positive attitude (Company 2). Weaknesses reported were the possibility of interference of household responsibilities (Company 3), need for academic upgrading and sound career advice (Valero), and lack of self-confidence (Company 2).

Employers' suggestions for improved employability of disadvantaged women. Valero and the City of San Antonio stressed the need for increasing awareness of career information and opportunities. Company 4 stressed the importance of teaching good oral and written communication skills and the ability to complete an application legibly and accurately, as well as maintaining a high GPA. Valero also reported a need for academic upgrading.

Company 2 suggested educating employers about the assets (i.e. responsibility) possessed by women entering the work force without recent education or work experience. The interviewee stated that unfortunately a bias exists against these women which could be counteracted by informing prospective employers about the value of these women as employees. Company 2 also suggested that the work policies of some companies (i.e. flex-time) could possibly be adapted to fit their specific needs.

## Substudy II
## Survey of Instructors in Data Processing, Electronics and Drafting

### Procedure

A two page questionnaire was developed and sent to each member of the faculty in the data processing, electronics and drafting departments (see Appendix B). In order to encourage candid responses, instructors were insured of the anonymity and confidentiality of the information they provided.

### Subjects

All instructors teaching courses in data processing, electronics and drafting, including part-time and evening instructors, received questionnaires. These questionnaires were sent to 104 instructors. A total of 35 questionnaires were returned, for a response rate of 34%.

### Results

Table 2 describes the respondents with respect to department and years

of college teaching experience (see Table 2). The instructors responding to the questionnaire teach the majority of their classes in the day division, with 19 respondents teaching primarily day classes, 15 teaching in the evening, and one teaching a combination of day and evening classes.

Table 2
Technical Instructor Responses
Department and Years of Experience

| Years of Experience | Data Processing | Electronics | Drafting | Total |
|---|---|---|---|---|
| 1 - 2 | 5 | 0 | 1 | 6 |
| 3 - 5 | 6 | 2 | 1 | 9 |
| 6 - 9 | 6 | 3 | 1 | 10 |
| 10 - 15 | 4 | 0 | 0 | 4 |
| 16 + | 2 | 3 | 1 | 6 |
| Total | 23 | 8 | 4 | 35 |
| | $\bar{X}$= 7.0 | $\bar{X}$= 10.4 | $\bar{X}$= 8.5 | $\bar{X}$= 7.9 |

Table 3 presents the perceptions that technical instructors have of low income head of household women with respect to years of teaching experience. Although a slight trend appears to indicate that instructors with fewer years of experience have more positive perceptions, the small sample size precludes further analysis.

Table 3
Technical Instructor Responses
Perceptions and Years of Experience

| Years of Experience | 1-2 | 3-5 | 6-9 | 10-15 | 16+ | Total |
|---|---|---|---|---|---|---|
| More Successful | 2 | 1 | 4 | | | 7 |
| Combination | 2 | 3 | 2 | | 1 | 8 |
| Do not Differ | 1 | 1 | 1 | 1 | 1 | 5 |
| Less Successful | | 2 | 2 | 3 | 1 | 8 |

Table 3--Continued

| Years of Experience | 1-2 | 3-5 | 6-9 | 10-15 | 16+ | Total |
|---|---|---|---|---|---|---|
| Insufficient Information | 1 | 2 | 1 | 0 | 3 | 7 |
| Total | 6 | 9 | 10 | 4 | 6 | 35 |

When asked to describe how low income head of household women differ from other students in terms of success, a variety of factors were noted. These factors were grouped into clusters, with the most frequent responses being: motivated, dedicated or conscientious (10 responses). Less successful students are described most frequently as lacking educational background or other experiences (6) and lacking self-confidence (4). Note: Only two of 35 respondents stated "lacking motivation."

When asked to note the differences existing between women who complete their technical programs and those who drop out, the most frequent response was drive, motivation or goal orientation (18), followed by self-confidence or assertiveness (7) and aptitudes (6)..

Table 4 describes the major inhibiting and facilitating factors influencing the performance of low income head of household women.

Table 4
Technical Instructor Responses
Facilitating and Inhibiting Factors

| Facilitating Factors | | Inhibiting Factors | |
|---|---|---|---|
| Study/hard work | 8 | Lack of time/responsibilities to children | 11 |
| Motivation/drive | 6 | Lack of academic background | 10 |
| Instructor/peer support | 4 | Lack of child care | 5 |
| Child care | 3 | | |

Instructors suggested that a variety of supportive services could mprove performance, such as child care (11), transportation (3), screening id counseling (3), and part-time jobs (3). Adequate prerequisite competenies (8) and psychological support for motivation and confidence (8) were lso noted. They suggest that the college can be more supportive by providing iild care, day and evening (10), screening for prerequisites before enrollent (9), and providing counseling (5).

Instructors were asked to identify supportive services available, needed, : not needed within their program area. The results are presented in ible 5. Some respondents checked only a few choices.

Table 5
Technical Instructor Responses
Supportive Services

| esently Available | Needed | Not Needed | Supportive Service |
|---|---|---|---|
| 14 | 4 | | Financial Aid |
| 5 | 6 | | Transportation |
| 6 | 10 | | Day Care |
| 6 | 5 | 2 | Peer Counseling |
| 17 | 6 | | Individual Counseling |
| 3 | 5 | 3 | Group Counseling |
| 2 | 6 | 2 | Peer Support Group |
| 17 | 4 | 1 | Tutoring |
| 10 | 4 | 2 | Part-time Work |
| 16 | 5 | | Career Information Regarding Technical Programs |
| | 4 | | Other (please explain) |

ther includes: orientation, smaller classes, a "proactive" counseling epartment, and self-paced and thinking skill classes during the first emester.

l services listed in the above table are available at San Antonio College. structors were most aware of financial aid, individual counseling, tutoring, rt-time work and career information. They were least aware of group

counseling and peer support groups. Many instructors, especially in drafting and electronics, had had very little contact with women students and therefore had not had the opportunity to refer them to many of the services available.

## Substudy III
## Selecting and Field-Testing The CASS Battery

### Subjects

The population of the study was originally designed to include only low income head of household women. However, after a number of contacts were made to students in the potential subject pool, it quickly became apparent that low income head of household women do not attend the three target technical programs in sufficient numbers to field-test an assessment battery. At this point a decision was made to expand the population to include all women students who entered data processing, electronics and drafting.

Computer printouts were obtained which provided information on all 122 female technical students who had graduated since Spring of 1979. Similar lists provided information on 274 females who had failed to return after the Spring 1979 or Spring 1980 semesters. A sample of 200 students who were enrolled from Fall of 1980 to Spring of 1981 were randomly selected to participate. Students who enrolled for the 1982 summer session were contacted via flyers passed out at registration (four responded). Out of this total of 600 female technical students, 92 subjects were scheduled for the assessment battery, 35 of which failed to report for testing. Three students failed to complete the battery, and three students were omitted from the study because they had degrees in other areas. Thus 51 students are included in the sample: 25 Graduates, 15 Non-Returning Students, and 11 Enrollees.

Assessment Instruments

A battery of seven instruments was selected. A brief questionnaire was also developed to obtain personal characteristics and a brief indication of any problems interfering with academic achievement. (See Appendix D).

General Aptitude Test Battery. The GATB was developed in 1947 by the United States Employment Service. In 1972, restandardization of the battery was begun to correct norms with a possible minority bias. The GATB has been validated on extensive samples and has established "OAP's", or Occupational Aptitude Patterns, for many occupations. The following OAP's have been developed for the three technical areas under consideration:

Table 6

Occupational Aptitude Patterns

| | Computer Programmer* | Drafter | Electronics Technician* |
|---|---|---|---|
| General | 115 | 105 | 115 |
| Verbal | 100 | -- | -- |
| Numerical | 110 | 100 | 105 |
| Spatial | 100 | 100 | 110 |

*Restricted - not revalidated on minorities

(Adapted from Manual for the USES General Aptitude Test Battery, Section II: Occupational Aptitude Structure, 1979.)

The mean for the GATB scales is 100. The standard deviation is 20. Concurrent validity with other aptitude tests falls in the .50 to .80 range. Test-retest reliability for the four target subtests falls in the .80 to .94 range.

In accordance with contractual obiligations between San Antonio College and the Texas Employment Commission, the entire GATB, including all 12 subtests, must be administered. However, this study uses only four subscores as predictors--

General, Verbal, Numerical and Spatial--since they are cited in the three OAP's. The entire test has an administration time of one and one half hours.

Kuder Preference Record - Vocational (Form CH). Students must possess not only an aptitude, but also an interest, to do their best work. A student with high aptitudes, no significant problems, and an optimum personality profile may still fail to complete a program if she has no interest in the nature of the tasks involved in her chosen occupation. Many times a student will choose a major for the wrong reasons. The Kuder Preference Record - Vocational is a self-report forced choice vocational interest instrument which indicates relative interest in a small number of broad vocational areas: Mechanical, Computational, Scientific, Persuasive, Artistic, Literary, Musical, Social Service and Clerical. Stanine scores are reported for each scale, with a mean of 5 and a standard deviation of approximately 2.

The reliabilities of the scales cluster around .90. Using the criteria of job satisfaction as a measure of validity, the Kuder correctly predicted job satisfaction among workers employed in areas consistent with their profiles completed ten years earlier. Of 728 people working in "consistent" areas, 62% were satisfied and 8% were dissatisfied.

Although the Kuder stanine scores are ipsative, as are vocational interest tests in general, a normative approach has been combined to provide comparison to other occupational groups. The Kuder has also been widely used, is hand-scorable, and has an administration time of 45 minutes. For these reasons, the Kuder became the instrument of choice for vocational interests.

IPAT Anxiety Scale Questionnaire. The IPAT Anxiety Scale Questionnaire provides a total score plus measures of covert and overt anxiety. The IPAT-ASQ measures trait (as opposed to state) anxiety, which would be more appropriate in

this educational setting since state anxiety evidences low reliability in a test-retest situation. Anxiety, which has a curvilinear relationship to learning, has been demonstrated to have a negative effect on learning when IPAT-ASQ values are extremely high or low. The IPAT-ASQ also correlates .80 with the IPAT Depression Scale, which has shown a negative relationship to learning when depression scores are elevated.

Test-retest reliability is .82, and a concurrent validity correlation coefficient with the Taylor Manifest Anxiety Scale has been reported. The score is reported as a sten score, with a mean of 5.5 on a ten-point scale and a standard deviation of two. The test is 40 items long and takes five to ten minutes to administer.

Mathematics Anxiety Rating Scale. The Mathematics Anxiety Rating Scale (MARS) is a 98-item self rating scale which allows subjects to rate themselves on a five point scale with respect to the amount of discomfort caused by dealing with mathematical concepts and problems. The MARS requires 20 minutes to administer.

The mean score for women is reported at 181, with a standard deviation of 50 (based on two studies with a combined sample of 97 subjects). Test-retest reliability is .78. Validation studies report a -.35 correlation between the Differential Aptitude Test numerical aptitude scale and the MARS.

Adult Nowicki-Strickland Internal-External Control Scale. The ANS-IE is a downward revision (simplified language for less sophisticated subjects) of the well-repected Rotter Internality-Externality instrument. It is a 40-item instrument which takes about ten minutes to administer. This instrument measures locus of control, which is a term that describes a person's orientation towards their ability to affect reinforcements accruing to them. People scoring high on internal locus of control feel that they are capable of influencing the reinforcements and rewards they receive in life. They are

intrinsically motivated people who strive to achieve their goals. People scoring high on external locus of control feel (and therefore may act) somewhat more helpless and more at the mercy of "luck". They are more reactive to and dependent upon their environment and others, and are extrinsically motivated (see Appendix G).

Locus of control has been demonstrated to be related to grade point average in college students (Nowicki & Strickland, 1973). The Coleman Report, as cited by Casey (1979:9) found an internal orientation to be a predictor of success among students.

Depending upon the population, college females score from a mean of 8.5 - 9 for Anglos to 14 for Blacks, with standard deviations of 3 - 4 to 6, respectively. Test-retest reliability is .83 for six weeks, and internal consistency is .69. Concurrent validity is reported at .68 with the Rotter I-E Scale (Nowicki, 1982).

Personal Values Abstract. The Personal Values Abstract is a 97-item derivative of the California Psychological Inventory. This self-report inventory is an experimental instrument which taps interpersonal skills, competence, intrapersonal values and regulatory dispositions. The three scales, Modernity (My), Socialization (Sn) and Femininity (Fy) address norm-questioning, norm-observing, and norm-setting, respectively.

Modernity is a distillation of the CPI scales for dominance, status, sociability, social presence and self-acceptance. This scale measures self-assurance and feelings of well-being. Socialization is a measure of self-discipline, responsibility, stability and conformity. Femininity is a measure of the negative traits of emotional vulnerability, helplessness and lack of assertiveness, as well as the positive qualities of tactfulness, warmth, and sympathy.

The means and standard deviations for college females for the three scales are expressed in Table 7.

Table 7

Means and Standard Deviations for the PVA

| | Modernity (My) | Socialization (Sn) | Femininity (Fy) |
|---|---|---|---|
| Mean | 20.99 | 25.71 | 20.85 |
| Standard Deviation | 3.99 | 3.31 | 3.04 |

The CPI subscales correlate with the derivative PVA scales (for females) as follows: Modernity, .58 to .77 among five scales; Socialization, .91 and Femininity .97. Although extensive reliability studies have been conducted on the CPI, no reliability data is reported for this CPI derivative. Test-retest reliabilities on the contributing CPI scales range from .71 to .90.

The selection of the PVA is based upon several factors: (1) A sense of well-being and self-acceptance is important in student achievement. (2) Socialization measures degree of internalization of societal values, which influences a persons valuing of education, following rules, meeting requirements and adhering to the work ethic. (3) Femininity is of interest since the study is concerned with women in nontraditional technical majors. (4) The CPI has been successfully used in the past to predict academic success. (5) The PVA may be administered in one-third the time of the CPI.

Mooney Problem Checklist. The Mooney Problem Checklist has been included in the battery; however, it does not provide a true "score". The Mooney provides a total number of problems (either serious or those causing some concern) that a college student is experiencing. Eleven scales of 30 questions each are included: Health and Physical Development; Financial, Living Conditions

and Employment; Social and Recreational Activities; Social-Psychological Relations; Courtship, Sex and Marriage; Home and Family; Morals and Religion; Adjustment to College Work; Future: Vocational and Education; and Curriculum and Teaching Procedure.

Unfortunately, since total problems is not a true score, it would be inappropriate to compare one person to another using number of problems as an indication of who would have more difficulty completing training. If a large difference in the number of problems is found to exist between graduates and non-returning students, however, it may be possible to establish local norms at a later date and use percentiles based on local norms as scores. No validity information exists (the author cites only "validity by popularity"), but test-retest reliability is high at .93.

Since a test battery cannot possibly cover every factor which may facilitate or inhibit success, this checklist serves a special purpose. A completed Mooney will serve as a springboard for discussion between the student and counselor, facilitating a deeper understanding of the needs of a student than a number score could provide.

Procedure

Students were tested in the San Antonio College Counseling Center by the test administrator. The battery was administered in a four to five hour session which varied dependent upon the speed of the participants. Students were requested to complete a Letter of Agreement and an Information Release Form, along with the two-page CASS Questionnaire. When these preliminary activities were completed, the GATB was administered as a group test according to standardized procedure. The remainder of the battery included no timed tests, so students were told to complete the battery at their own pace. One

ten minute break was allowed after completion of the GATB. Upon battery completion, students were informed that they would be contacted by a peer counselor who would meet with them to discuss their scores.

Three peer counselors from the Women's Opportunity Workshops Program were recruited to meet with each student and explain the meaning of her scores. The peer counselors received an additional ten hours of training on specific test background to better relate the results. Students with further questions not answered by the peer counselor were referred to counselors who had volunteered to assist in this aspect of the project.

All assessment instruments were hand scored. The GATB's were scored by the test administrator. All remaining instruments were scored by the research coordinator. Data was then coded and statistical procedures were completed by computer.

Results

The following tables (Tables 8-19) summarize the responses of the subjects to the Personal Characteristics questions on the CASS Questionnaire. The abbreviations GRAD, NRS and ENR stand for Graduates, Non-Returning Students, and Enrollees, respectively.

Table 8

Personal Characteristics
Program Enrollment

| | Data Processing | Drafting | Electronics |
|---|---|---|---|
| GRAD | 23 | 2 | 0 |
| NRS | 15 | 0 | 0 |
| ENR | 11 | 0 | 0 |
| Total | 49 | 2 | 0 |

Only two subjects (drafters) in the sample were not in data processing. No electronics students participated in the study. This distribution reflects the fact that only one woman has graduated from electronics since the Spring 1979 semester, compared to 13 drafters and 108 computer programmers and operators.

Table 9

Personal Characteristics
Day/Evening

| | Day | Evening | Combination |
|---|---|---|---|
| GRAD | 18 | 0 | 7 |
| NRS | 5 | 6 | 4 |
| ENR | 8 | 0 | 3 |
| Total | 31 | 6 | 14 |

The majority of the students attended day classes (61%). All students attending only evening classes were Non-Returning Students (12%). The remainder attended both day and evening classes.

Table 10

Personal Characteristics
Full/Part-Time

| | Full-Time | Part-Time | Combination |
|---|---|---|---|
| GRAD | 17 | 0 | 8 |
| NRS | 6 | 7 | 2 |
| ENR | 10 | 0 | 1 |
| Total | 33 | 7 | 11 |

Sixty-five percent of the sample attended college full-time. All students attending on a part-time basis (14%) were Non-Returning Students. Students attending both on a full and part-time basis during their college enrollment comprised 22% of the sample.

Table 11

Personal Characteristics
Age

| | -18 | 18-21 | 22-25 | 26-29 | 30-33 | 34-37 | 38+ |
|---|---|---|---|---|---|---|---|
| GRAD | 3 | 13 | 3 | 4 | 3 | 1 | 1 |
| NRS | 1 | 4 | 3 | 3 | 1 | 1 | 2 |
| ENR | 0 | 10 | 1 | 0 | 0 | 0 | 0 |
| Total | 4 | 27 | 7 | 7 | 4 | 2 | 3 |

The majority of the sample (52%) enrolled in school between the ages of 18 and 21. Graduates enrolled primarily before the age of 21 (64%). This trend was reversed for Non-Returning Students, with 67% enrolling after the age of 21. Enrollees sampled were almost exclusively found in the 18-21 category (91%). The median age by category is 26-29 for Graduates and Non-Returning Students, which is representative of the 28.7 mean age of all SAC technical students.

Table 12

Personal Characteristics
Ethnicity

| | Black | Hispanic | Anglo | Oriental | Other |
|---|---|---|---|---|---|
| GRAD | 0 | 11 | 13 | 0 | 1 |
| NRS | 0 | 8 | 6 | 0 | 1 |
| ENR | 0 | 10 | 1 | 0 | 0 |
| Total | 0 | 29 | 20 | 0 | 2 |

The ethnic breakdown is 57% Hispanic, 39% Anglo and 4% Other. No Blacks or Orientals came in for testing. These figures reflect the total enrollment for women in technical programs, which is 41% Hispanic, 48% Anglo, 8% Black, 2% Oriental and 2% Other. The overrepresentation of Hispanic Enrollees may

be due to the fact that they were drawn from a separate list composed of financial aid recipients, which is largely Hispanic.

Table 13

Personal Characteristics
Highest Grade Completed Before Enrollment

| | 10 | 11 | GED | High School | One Year of College | More than One Year |
|---|---|---|---|---|---|---|
| GRAD | 1 | 0 | 0 | 20 | 3 | 1 |
| NRS | 0 | 0 | 2 | 9 | 2 | 2 |
| ENR | 0 | 0 | 2 | 6 | 1 | 2 |
| Total | 1 | 0 | 4 | 35 | 6 | 5 |

Most students enrolled after high school graduation (69%). Only 10% of the sample had less than a high school diploma, and 22% of the sample had some college credit before enrolling at SAC.

Table 14

Personal Characteristics
Marital Status

| | Single | Divorced | Married | Widowed | Other |
|---|---|---|---|---|---|
| GRAD | 16 | 0 | 8 | 0 | 1 |
| NRS | 8 | 3 | 2 | 1 | 1 |
| ENR | 7 | 3 | 1 | 0 | 0 |
| Total | 31 | 6 | 11 | 1 | 2 |

Of the total sample, 61% were single, 12% were divorced, 22% were married and 2% were widowed. Two subjects (4%) stated other circumstances.

Table 15

Personal Characteristics
Head of Household

| | Yes | No |
|---|---|---|
| GRAD | 1 | 24 |
| NRS | 8 | 7 |
| ENR | 4 | 7 |
| Total | 13 | 38 |

Only 25% of the sample identified themselves as head of household. Eight of these 13 subjects were Non-Returning Students.

Table 16

Personal Characteristics
Number of Children

| | None | One | Two | Three | Total With Children |
|---|---|---|---|---|---|
| GRAD | 20 | 2 | 2 | 1 | 5 |
| NRS | 7 | 6 | 2 | 0 | 8 |
| ENR | 9 | 1 | 0 | 1 | 2 |
| Total | 36 | 9 | 4 | 2 | 15 |

Fifteen subjects (29%) have children. In the Graduate group, 20% have children, compared to 46% of the Non-Returning Students.

Table 17

Personal Characteristics
Children Under Five at Home

| | None | 1 | 2 | Total With Children Under 5 |
|---|---|---|---|---|
| GRAD | 24 | 1 | 0 | 1 |
| NRS | 11 | 4 | 0 | 4 |
| ENR | 9 | 1 | 1 | 2 |
| Total | 44 | 6 | 1 | 7 |

Of the 15 subjects who have children, seven subjects have children under five living at home. The group having the largest number of children under age five (27%) is the Non-Returning Students.

Table 18

Personal Characteristics
Monthly Income

| | $0-199 | 200-399 | 400-599 | 600-799 | 800-999 | 1000+ |
|---|---|---|---|---|---|---|
| GRAD | 8 | 10 | 2 | 0 | 0 | 5 |
| NRS | 3 | 2 | 6 | 2 | 2 | 0 |
| ENR | 7 | 3 | 0 | 0 | 1 | 0 |
| Total | 18 | 15 | 8 | 2 | 3 | 5 |

Forty-one of the 51 subjects estimated their income to be below $600 while enrolled at SAC. Eighteen of the graduates earned under $400, which indicates no full-time employment during enrollment. Ten of 15 Non-Returning Students had incomes of $400 or more, which may indicate employment.

Table 19

Personal Characteristics
Financial Aid

| | Yes | No |
|---|---|---|
| GRAD | 12 | 13 |
| NRS | 6 | 9 |
| ENR | 9 | 2 |
| Total | 27 | 24 |

A total of 27 subjects (53%) received financial aid. Approximately one-half of the Graduates and two-fifths of the Non-Returning Students received aid, while 82% of the Enrollees received financial aid. Since the CASS was developed for use with low-income women, Enrollees were drawn primarily from

a list of financial aid recipients, which accounts for the higher proportion of financial aid in this group.

Table 20

Grade Point Average and Hours Completed

| | N | GPA | Hours Completed |
|---|---|---|---|
| GRAD | 25 | 3.27 | 82.32 |
| NRS | 15 | 2.31 | 29.87 |
| ENR | 11 | 2.12 | 41.27 |
| Total | 51 | 2.74 | 58.04 |

The grade point averages of the Graduates were approximately one letter grade above the Non-Returning Students. The Enrollees were the lowest group, maintaining just above a C average. The Non-Returning Students had completed the fewest semester hours, followed by the Enrollees and the Graduates.

Table 21 summarizes the responses of all students to that portion of the CASS Questionnaire requesting information on the number of problems each student experienced.

Table 21

Total Student Problems

| Problem | None | Occasional | Frequent | Continuous/ Withdrawal |
|---|---|---|---|---|
| General financial difficulty | 20 | 22 | 6 | 3 |
| Reduction of government funds | 40 | 5 | 2 | 4 |
| Transportation | 32 | 13 | 5 | 1 |
| Problems with child care | 42 | 4 | 4 | 1 |
| Lack of academic assistance | 43 | 5 | 1 | 2 |
| Lack of academic ability | 43 | 6 | 2 | 0 |
| Problems with teachers | 44 | 6 | 0 | 1 |
| Lack of encouragement | 40 | 8 | 1 | 2 |
| Conflicts with my job | 32 | 18 | 0 | 1 |
| Lack of time to study | 17 | 25 | 8 | 1 |
| Lack of educational background | 37 | 8 | 6 | 0 |

Table 21--Continued

| Problem | None | Occasional | Frequent | Continuous/ Withdrawal |
|---|---|---|---|---|
| Feelings of not belonging | 39 | 10 | 2 | 0 |
| Health problems (mine) | 45 | 6 | 0 | 0 |
| Family health problems | 40 | 9 | 1 | 1 |
| Household responsibilities | 25 | 19 | 5 | 2 |
| Personal problems | 33 | 16 | 1 | 1 |
| Other | 46 | 1 | 0 | 4 |

The two most common problems cited were general financial difficulty and lack of time to study, followed by household responsibilities and transportation. One problem which emerged as significant is child care. With only 15 subjects having children (seven under the age of five), it is noteworthy that nine of these mothers (60%) indicated problems with child care.

Table 22 shows the means and standard deviations of the Graduates and the Non-Returning Students on the various measures included in the CASS battery. The Kuder results are presented separately.

Table 22

CASS Battery Means
Graduates and Non-Returning Students

| | GRAD | | NRS | |
|---|---|---|---|---|
| GATB | $\bar{X}$ | SD | $\bar{X}$ | SD |
| General | 116.16 | 19.12 | 99.20 | 14.22 |
| Verbal | 112.84 | 20.73 | 100.73 | 16.94 |
| Numerical | 114.76 | 14.83 | 100.67 | 13.99 |
| Spatial | 115.88 | 16.90 | 106.20 | 20.30 |
| ANS-IE | 8.20 | 4.43 | 13.67 | 4.72 |
| IPAT-ASQ | 5.56 | 1.94 | 6.87 | 2.17 |
| MARS | 160.96 | 45.87 | 186.13 | 57.74 |
| PVA | | | | |
| Modernity | 17.96 | 4.54 | 15.27 | 3.01 |
| Socialization | 25.96 | 2.64 | 22.27 | 3.90 |
| Femininity | 20.24 | 2.39 | 21.27 | 3.06 |
| Mooney | 24.21 | | 49.01 | |

Graduates scored higher on all GATB aptitude scales and on the Modernity Socialization scales of the Personal Values Abstract. Graduates scored lower on the ANS-IE (internality) instrument, the IPAT-ASQ anxiety measure and the Math Anxiety Rating Scale. Graduates also scored lower on the PVA Femininity scale and number of problems indentified on the Mooney Problem Checklist.

Table 23

Kuder Profiles

| | GRAD | | NRS | |
|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Mechanical | 4.20 | 1.70 | 4.36 | 1.55 |
| Computation | 6.36 | 1.46 | 5.50 | 2.07 |
| Scientific | 3.80 | 1.66 | 4.29 | 1.59 |
| Persuasion | 3.92 | 1.53 | 3.71 | 1.27 |
| Artistic | 7.04 | 1.62 | 6.36 | 1.69 |
| Literary | 4.32 | 1.77 | 5.14 | 2.07 |
| Musical | 5.48 | 1.61 | 5.57 | 2.17 |
| Social Science | 3.68 | 1.89 | 4.93 | 1.94 |
| Clerical | 5.48 | 2.31 | 6.14 | 2.41 |

Table 23 presents the mean stanine scores of the Graduates and Non-Returning Students on the Kuder Preference Record-Vocational. Both groups have very similar mean interest profiles. A stepwise multiple regression was performed, and the two strongest predictors accounted for only 15% (9% and 6%, respectively) of the variance. Due to the lack of ability of the equation to predict variance, no further analysis was performed.

A factor analysis was conducted to determine what interrelationships existed within the CASS battery scores. Two independent factors emerged. Factor one, named Cognitive, included all four GATB scales plus the PVA Socialization scale. Factor two was named Personality and included group membership, the IPAT-ASQ, the MARS, and PVA Modernity. The ANS-IE and PVA Femininity scores were related to both factors.

A stepwise multiple regression analysis was then conducted to identify which vaiables accounted for the greatest degree of variance. The ANS-IE score accounted for 26% of the variance alone. The PVA Socialization score accounted for 8% of the variance. Although other variables contributed to the variance, the small sample necessitated limiting predictors to the first two variables.

A discriminant analysis was then performed based upon the ANS-IE and PVA Socialization scores. Taking a conservative approach to increase stability, this procedure was again limited to two variables. The discriminant analysis, based upon these two factors, classified into correct groups 20 of 25 Graduates and 11 of 15 Non-Returning students. The equation used for this classification was:

$$F(X) = .139 \times \text{ANS-IE} - .186 \times \text{Sn} + 3.157$$

If the value is greater than .192, a student was assigned to the Non-Returning Students group. If the value was less than .192, a student was assigned to the Graduates group. This procedure correctly classified 80% of the Graduates and 73.3% of the Non-Returning Students.

The results presented in this section should be interpreted with the following limitations in mind: (1) only seven large employers were interviewed--employment practices and procedures may differ to some extent in other companies; (2) the generalizability of the results is limited due to the sample size; and (3) any assessment battery implemented should be based on local norms.

## CHAPTER V

## Summary and Recommendations

This study was designed to identify characteristics which facilitate technical program completion by low income head of household women. The goal of the project was to reduce the waste of human potential and institutional dollars through the development of a Comprehensive Assessment and Support System to facilitate completion of training for these women. Procedures involved included (1) selectively reviewing the literature, (2) interviewing employers, (3) surveying technical instructors, (4) selecting and field-testing an assessment battery, and (5) developing supports to facilitate completion. Several facilitating and inhibiting factors were identified.

### Summary

An internal locus of control and a high degree of socialization are necessary but not sufficient characteristics which enable low income head of household women to complete technical training programs. As determined by the results of the discriminant analysis, 80% of the Graduates possessed these qualities. However, 27% of the Non-Returning Students also possessed these qualities. This is an indication that internality and socialization contribute greatly to success, but that there are numerous other factors which can negatively influence academic achievement. These factors may include financial problems, family responsibilities, lack of time to study, child care problems and transportation, which were the major problems cited by the students on the CASS Questionnaire. Part-time and evening students were more likely to drop out, which may also indicate financial and child care problems since part-time students receive no financial aid and child care is not available for evening students.

It was shown that aptitude was not a major predictor of completion in this study. Although the Graduates were almost one grade point higher as a group than the Non-Returning Students, the latter group had a GPA of 2.31, which is above the 2.00 required for graduation. The minimum General Aptitude score on the GATB predicted to allow junior college completion is 100. The Non-Returning Students mean G score was 99.2. This strongly indicates that dropouts generally possess the aptitude required to complete the three target technical programs as presently offered. Based upon the research findings and logical conjecture, students with high externality and less aptitude will become discouraged more easily when required to put forth the additional effort necessary to complete. A student of less aptitude and high internality would more readily believe that her efforts would result in success, which increase motivation.

The high degree of socialization evidenced by the Graduates has a direct bearing on their behavior in the classroom. A highly socialized student is one who achieves success through conformity to established norms. These classroom norms include paying attention, meeting deadlines,,completing assigned tasks, and regularity in attendance. They are therefore more responsible and dependable students.

The Kuder vocational interest instrument did not successfully discriminate between Graduates and Non-Returning Students. The similarity of profiles was too great and the sample was too small to obtain significant findings.

Due to the small sample, it was not possible to determine more than two major predictors of successful completion. However, Graduates scored almost one standard deviation higher than Non-Returning Students on the PVA Modernity scale, which measures well-being and self-concept. They also scored lower on the PVA Femininity scale which measures lack of assertiveness and emotional

vulnerability. Graduates scored lower on the IPAT-ASQ, MARS AND Mooney, which indicates fewer problems and anxieties. Further research will be required to determine the significance of these factors.

One major intermediate finding was the extremely low incidence of low income head of household women taking data processing, electronics and drafting. This finding necessitated the expansion of the CASS battery subject pool to include all women in the target programs. It is indeed significant to find that there are insufficient numbers of subjects to participate in the field test of the CASS battery.

The 35 instructors (34%) responding to the Questionnaire for Instructors in Data Processing, Electronics and Drafting appeared to be aware of the needs and problems of the low income head of household woman. Overall, the respondents expressed sensitivity to the needs of the low income head of household woman and an understanding of the problems facing this nontraditional student population. Although many instructors (especially in drafting and electronics) had little personal contact with this category of students, their comments demonstrated a supportive attitude.

The overwhelming concern of the technical instructors appeared to be the lack of screening that permits students lacking prerequisite skills to enroll in highly technical and demanding classes. This lack of preparation is cited as a major barrier to success and a characteristic of unsuccessful students, while screening and adequate prerequisite skill development is mentioned by the instructors as able to improve the target population's chance for success. Instructors repeatedly suggested, in many contexts, that the college more carefully screen and prepare students to enroll in these technical areas.

According to the respondents, the most frequently mentioned supportive service needed was child care. Conflicts with family responsibilities are

seen as a major barrier to success, and the provision of adequate child care services is proposed to overcome this barrier. The evening instructors were particularly strong in their suggestion that "day care" become "child care" in order to provide evening students with an opportunity to attend classes free from undue concern over their children's welfare.

Successful completion of technical training does not automatically guarantee employment. Many factors are involved in obtaining employment. From the interviews of employers of San Antonio College technical graduates, the ability to present one's self well in an interview emerged as one of the most important factors in becoming employed in a technical occupation. Interviews are generally unstructured and include many open-ended questions. Although only one company stressed the importance of an applicant's ability complete an application neatly and accurately, it is a common practice to use an application review as the basis for an employment interview. Therefore, neatness and accurancy of the job application should be included as an influential factor in any discussion of interview techniques and rating criteria. Students who experience test anxiety should be informed that good interview skills can offset poor test results.

All companies rely upon college transcripts in their evaluation and selection procedures. Students with low GPA's are usually evaluated lower than other applicants with better academic records. Even when degrees or college hours are not required, students with low GPA's find themselves lacking a competitive edge when competing against other applicants with stronger transcripts.

Only one of the seven companies stated that testing was not feasible or was inappropriate. Another company dropped their testing program due to strict EEOC regulations. The other five utilize (or plan to utilize) testing

as a valuable secondary (or in one case primary) source of information. Therefore, the ability to perform well on tests is an important asset in gaining employment. Overall, testing seems to hold the most significance for electronics applicants. The majority of companies do not test drafters, preferring to assess work samples instead. Drafting applicants should be prepared to submit a neat and well organized work portfolio to prospective employers.

It is indicated that career upward mobility is largely dependent upon three factors--attendance, production, and the supervisor's personal knowledge of the employee. Formal bidding procedures and/or formal performance appraisals are often utilized in the promotion process, but the supervisor's personal knowledge about the employee desiring promotion is cited five out of six times, more than either bidding or performance appraisals.

Supportive services available on the job to low income head of household women are related almost exclusively to further training. While employers express concern about the needs of these women, it appears unlikely that widespread policy adaptations are forthcoming. Every effort should be made to equip women with the assets of independence self-confidence, adequate career information and personal problem-solving skills before they become employed, since no company in this study (with the possible exeption of Valero) is equipped to provide support mechanisms to address these needs.

In conclusion, the ideal low income head of household woman graduating from San Antonio College's data processing, drafting or electronics program should have:

1. High internality.
2. High socialization.
3. Good interview and oral communications skills.

4. A solid transcript and GPA.
5. The ability to take tests (especially in electronics).
6. A neat and well-organized work portfolio for drafters.
7. A good attendance record.
8. The ability to establish a good production record.
9. The ability to establish good relationships with supervisors.
10. The ability to solve problems without support mechanisms.

Recommendations

1. Implement the Comprehensive Assessment and Support System:

Assessment:

Adult Nowicki-Strickland Internality-Externality Locus of Control Scale
Personal Values Abstract
General Aptitude Test Battery
Kuder Preference Record - Vocational
IPAT Anxiety Scale Questionnaire
Mathematics Anxiety Rating Scale
Mooney Problem Checklist

Support:

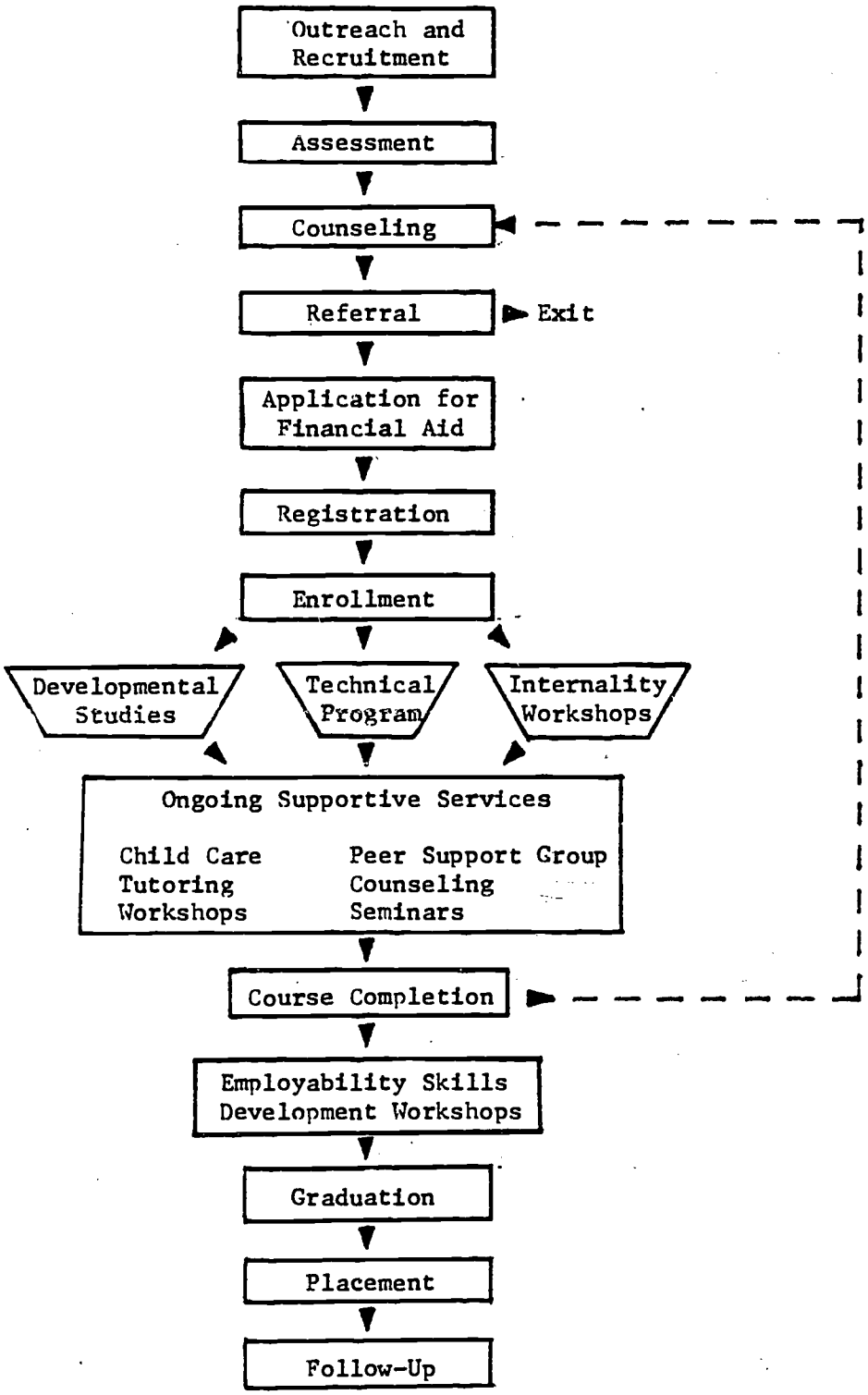
Financial aid for full-time and part-time students.
Child care, day and evening.
Counseling, individual and group.
Peer support groups.
Developmental studies and tutoring.
Internality workshops.
General "independence" workshops.
- Budgeting
- Time management
- Assertiveness training
- Problem solving

Employability skills development workshops.
- Interview skills
- Completion of job applications
- Job hunting techniques
- Labor market and career information

The following flow chart (see Figure 1) explains the order of delivery of these services.

Figure 1

Participant Flow Chart



The findings indicate that the ANS-IE and the PVA Socialization scale are the best predictors of success. This, however, does not negate the importance of other aptitude, personality and vocational interest measures included in the battery. Students will benefit from obtaining as much information as possible when making career decisions. Students should be counseled based upon the results of the battery by comparing their scores to the profiles made by technical program graduates. This procedure is fully described in Appendix H. By comparing themselves to graduates, they will be able to assess their own strengths and weaknesses.

The CASS battery should be restandardized in the future on a group of incoming freshmen who have had no previous technical training. Profiles should be kept on all low income head of household women. When at least 50 (preferably more) of these students graduate, it will be possible to develop new norms which are free of the confounding variable of previous training. Until this new standardization is accomplished, the following equation may be utilized to predict success:

$$F(X) = .139 \times \text{ANS-IE} - .186 \times \text{PVA Sn} + 3.157$$

If the value of X is less than .192, the probability is that the student will graduate.

2. Expand recruitment efforts. Low income head of household women possess the ability to complete training. However, a negligible number are doing so--few even try. An effort must be made to more adequately serve this segment of the community.

3. Increase supportive services. Many supportive services needed by low income head of household women are already available at San Antonio College. However, several new services are required, including primarily an internality workshop. The publication Improving Student Motivation (Roueche & Mink, 1979) outlines

procedures which have been used with success to develop internality in community college students. Child care should also be expanded for evening students. Workshops available through San Antonio College's Women's Opportunity Workshops could readily be revised to meet the special needs of the target population. Similar revisions could be made to SAC's employability skills development workshops and seminars.

4. Increase interfacing and coordination between supportive services components. The fragmented nature of supportive services on campus makes it possible for women to "get lost between the cracks." More communication between components with respect to mutual clients and shared responsibility will facilitate and strengthen supporting activities.

5. Increase one year technical program offerings. The mean number of semester hours completed by the Non-Returning Students in this study was 29.87. This amount of technical training is almost sufficient to receive a one-year certificate. By offering more one-year programs, many women would be able to receive a certificate leading to employment in a technical field. The drain of personal and economic resources makes two-year programs an unrealistic goal for some women with dependents.

Implications at the State Level

The implementation of the above recommendations is dependent, in part, upon state policies. The following policy modifications will facilitate equal access to low income head of household women:

1. Exempt student financial aid monies in the calculation of AFDC benefits.
2. Provide financial aid to part-time students whose family responsibilities prevent full-time enrollment.
3. Expand day care provisions to provide equal access.
4. Support the development of one-year technical programs.

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# APPENDICES

# APPENDIX A

The following appendix was originally included in Pennsylvania State Guidelines for Establishing Programs and Services for Displaced Homemakers by Katherine Towns (1980). It is included here as a short list of financial aid resources available to disadvantaged community college students. Other more complete lists are available.

## General Information on Funding

The Directory of Financial Aids for Women, By Gail Ann Schlacter, Los Angeles: Reference Press Service, 1979. $15.95.

Educational Financial Aid Sources for Women, by Clairol Loving Care Scholarship Program, 345 Park Avenue, New York, NY 10022. free.

Chronicle Student Aid Annual, by Chronicle Guidance Publications, Inc., Moravis, NY 13118 (1977-78 edition) $12.00 (aid programs of labor unions, state and federal governments and business firms).

Catalog of Federal Domestic Assistance (FDA), Superintendent of Documents, Government Printing Office, Washington, DC 20402 $20.00

Catalog of Federal Programs Related to Community Education, Superintendent of Documents, Government Printing Office, Washington, DC 20402

National Center for Community Action (NCCA) Where the Money Is and Human Work for Human Needs, (paperbacks that identify and describe Federal Government funding sources geared to help low-income people, available from National Center for Community Action, 1328 New York Avenue, NW Washington, DC 20005

The Foundation Directory from Foundation Center, 888 7th Avenue, New York, NY 10019, $36.00

Directory of Special Problems for Minority Group Members: Career Information Services, Employment Skills Banks, Financial Aid, by Willis L. Johnson, Ed. Carrett Park Press, Garrett Park, MD 20766, 1975 $8.50

Selected List of Postsecondary Education Opportunities for Minorities and Women. United States Office of Education, Bureau of Postsecondary Education, Washington, DC 20202

Financial Aid for The Handicapped, by Department of Health, Education and Welfare, Social and Rehabilitation Service, Division of Vocational Rehabilitation, 623 East Adams Street, Springfield, II. 62706

Career Development Opportunities for Native Americans, United States Department of the Interior, Bureau of Indian Affairs, Office of Indian Education Programs, Box 1788, Albuquerque, NM 87103. Free (applicants must be one-quarter or more Indian, Eskimo or Aleut)

Barron's Handbook of Junior and Community College Financial Aid, by Barron's Education Series, Inc., 113 Crossways Park Drive, Woodbury, NY 11797, (1977) $6.95 plus 50¢ postage.

Don't Miss Out, The Ambitious Student's Guide to Scholarships and Loans, by Octameron Association, Box 3437, Alexandria, VA 22302 (1977) $1.50 (Federal, State, Private aid for graduate and undergraduate students, special section on minorities.)

Financial Aid for Higher Education, by Oreon Deeslor, William C. Brown Co., Publishers, 2460 Keiper Boulevard, Dubuque, IA 52001, (1976-77 revised edition) $14.95. (Financial Aid for the first year of college listing programs for students showing high academic ability based on high school record and financial need.)

How to Obtain Money for College, A Complete Guide to the Sources of Financial Aid for Education, by William E. Lever, Arco Publishing Co., Inc., 219 Park Avenue South, New York, NY 10003 (1976) $5.00.

How to Understand, Apply for and Obtain Financial Aid for Your Post-Secondary Education, by C. Waner Hood and John R. Riina. John R. Riina, Box 16280, Baltimore, MD 21210. (1978) $5.95.

Need A Lift? by The American Legion Educational and Scholarship Program, The American Legion, Box 1055, Indianapolis, IN 46206 (1978 revised ed.) 50¢ (Revised annually - information on careers and scholarships for undergraduates who are children or spouses of disabled veterans).

An Introduction to Proposal Writing, available from Grove A. Spearly, Jr. Pennsylvania State University.

# APPENDIX B

## EMPLOYER INTERVIEW

Section I - Overview

The interviewer provided a brief overview of the research project and described to what use the information would be put. Approval to identify the company by name was requested. The interviewees were then asked if they had any questions.

Section II - Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

Q3. What personal skills are desirable in employees eligible for raises or promotions?

Section III - Working With Disadvantaged Women (If Applicable)

Q1. Have you ever worked with local agencies that specialize in training or placing disadvantaged women? (Or, Do you have any knowledge of how disadvantaged women, particularly low income head of household women, are performing as a group within your organization?)

Q2. As a group, can you make any observations about them (including strengths, weaknesses, etc.) in relation to career upward mobility?

Q3. Do you have any suggestions to improve the employability of these women?

Section IV - Comments

APPENDIX C

QUESTIONNAIRE FOR INSTRUCTORS IN DATA PROCESSING, DRAFTING, AND ELECTRONICS



(Please do not put your name on this questionnaire.)

1. What subject do you teach?
   _____ Computer Sciences
   _____ Drafting
   _____ Electronics

2. How many years have you taught at a college level? _____

3. Are the majority of your classes taught in the day or evening?
   _____ Day _____ Evening

4. In your experience, how do students whom you have known to be low income head of household women differ from other students in their performance?
   _____ Not at all
   _____ More successful _____
   _____ Less successful _____
   (If they are a combination of both, please describe each above.)

5. In your experience, what differences exist between women who complete your technical program and those who drop out? _____

6. In your experience, what can be done to improve the performance of low income head of household women in your program? _____

7. What do you perceive as the primary activities that facilitate success of low income women in your program? _____

8. What do you perceive as the primary barriers to low income head of household women in completing technical programs? _____

_____

_____

_____

9. In what ways can the college be more supportive in assisting your efforts to facilitate success of these women? _____

_____

_____

_____

10. What supportive services are currently available to low income heads of household in your program area?

| Presently Available | Needed | Not Needed | |
|---|---|---|---|
| _____ | _____ | _____ | Financial Aid |
| _____ | _____ | _____ | Transportation |
| _____ | _____ | _____ | Day care |
| _____ | _____ | _____ | Peer Counseling |
| _____ | _____ | _____ | Individual Counseling |
| _____ | _____ | _____ | Group Counseling |
| _____ | _____ | _____ | Peer Support Group |
| _____ | _____ | _____ | Tutoring |
| _____ | _____ | _____ | Part-time work |
| _____ | _____ | _____ | Career information regarding technical programs |
| _____ | _____ | _____ | Other (please explain) |

_____

_____

_____

11. Comments: _____

_____

_____

_____

_____

_____

_____

Please fill out the following:

1. Identification number, please leave blank. __ __ __

Name _____ _____ _____
(Last) (First) (M)

Social security number __ __ __ - __ __ - __ __ __ __

Address _____ _____
(Street) (Apt. #)

_____ _____ _____
(City) (State) (Zip)

Telephone number _____

Please write the number of your answer in the blank next to the question.

2. ___What was your age when you enrolled at SAC for technical training in data processing, drafting or electronics?
(1) under 18 (5) 30 - 33
(2) 18 - 21 (6) 34 - 37
(3) 22 - 25 (7) 38 +
(4) 26 - 29

3. ___What is your ethnicity?
(1) Black (4) Oriental
(2) Hispanic (5) Other
(3) Anglo

4. ___What was the highest grade you completed before you enrolled at SAC?
(1) less than 9 (5) GED
(2) 9 (6) high school graduate
(3) 10 (7) one year of college
(4) 11 (8) more than one year of college

5. ___What was your marital status while a student?
(1) single (4) married
(2) single, divorced (5) widowed
(3) single, separated (6) other, please explain _____

6. ___Were you the head of your household while you were a student?
(1) yes
(2) no

7. ___How many of your children lived with you while you were a student?
(1) one (4) four (7) seven
(2) two (5) five (8) eight or more
(3) three (6) six (9) none

8. ___How many were age 5 or less?
   (1) one (4) four (7) none
   (2) two (5) five
   (3) three (6) six or more

9. ___What was your estimated monthly income while a student?
   (1) $0 - $199 (4) $600 - $799 (7) $1200 +
   (2) $200 - $399 (5) $800 - $999
   (3) $400 - $599 (6) $1000 - $1199

10. ___Did you receive financial aid?
   (1) yes
   (2) no

11. ___Which program are (were) you enrolled in?
   (1) data processing
   (2) drafting
   (3) electronics

12. ___Are (were) you a day or evening student?
   (1) Day
   (2) Evening
   (3) Combination

13. ___Do (did) you attend full-time or part-time?
   (1) Full-time
   (2) Part-time
   (3) Combination

14. ___Are you a graduate of data processing, drafting or electronics (or, will you graduate this semester)?
   (1) yes
   (2) no
   (3) graduate in another field

15. ___Are you currently enrolled in college?
   (1) yes
   (2) no

16. ___Have you completed your technical hours requirement for your program as follows?
   Computer Programmer = 46 Drafting = 42 (which includes 6 hrs. of tech. math)
   Computer Operator = 35 Electronics = 34
   (1) yes
   (2) no

Please state the extent to which the following problems interfered with your education. Use the following responses for questions 17 - 33.
(1) None (2) Occasionally (3) Frequently (4) Continuous, causing withdrawal.

17. ___General financial difficulty
18. ___Reduction of government funds
19. ___Transportation
20. ___Problems with child care
21. ___Lack of academic assistance (tutoring)
22. ___Lack of academic ability
23. ___Problems with teachers
24. ___Lack of encouragement
25. ___Conflicts with my job (if applicable)
26. ___Lack of time to study
27. ___Lack of preparation (lack of adequate educational background)
28. ___Feelings of not belonging
29. ___Health problems (mine)
30. ___Family health problems
31. ___Household responsibilities
32. ___Personal problems
33. ___Other (please explain _____

---

DO NOT USE

GATB

34. _____G
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Kuder

38. ___M 41. ___P 44. ___Mu
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ANS-IE

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IPAT ASQ

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PVA

50. _____MY
51. _____SN
52. _____FY

Mooney

53. _____Total

Student standing

54. _____Technical Course GPA
55. _____Technical Hours Completed
56. _____Total GPA

APPENDIX E

Telephone Script

My name is _____ and I am calling about a research project being conducted by San Antonio College. We are currently doing research on women in data processing, drafting and electronics. We are developing a comprehensive assessment and support system to help future women students stay in school and be more successful. Could I ask you a few questions?

(1) What subject did you major in?

(2) Did you finish all your technical courses in your major area?

(3) (If #2 is no) What was your goal? (Did you want to take just a few courses or did you want to do more but quit?

(4) Were you or are you head of household?

(5) Did you receive financial aid?

I hope you can help us by agreeing to take some tests that we are trying to develop into the battery we will be using in the future. Your scores will be completely anonymous and will be averaged with everyone else's to develop norms for the future students. We'll be happy to let you know your scores if you're interested. The test battery takes 4 hours and we'll pay you $10.00, so it's obvious that you're not doing it for the money - you're doing it to help future women students. Your participation is very important. Can I schedule you for a test date?

The tests are given in the Counseling Center in the Fletcher Administration Center. The lady giving the tests is Gaynell Proa. Please call me at 733-2947 and reschedule your test date if you can't make it.

APPENDIX F

CITY OF SAN ANTONIO
(ON SITE INTERVIEW)



Date: January 15, 1982

Time: 1:30 p.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Glenda Kothmann, Testing Supervisor

I. Provided Ms. Kothmann with brief overview of the project. She had no questions.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

A1. Data processing applicants undergo no testing. Drafting applicants are required to bring work samples. Electronics Technician I and II applicants take a 30 minute, 20 item theory test (including problem solving for the Elec. II applicants) which has been develop in-house. They must pass with a score of 70%. (The city is in the process of gathering information on incoming applicants so that norms can be established. After data has been collected on 100 applicants, new cut off scores will be established.)

Applicants who pass a written test and have met minimum job requirements, fill out an application and are placed on an eligibility list. Candidates are rank-ordered on the list according to total number of points awarded for test scores, additional schooling, additional experience, years worked with the city, and veteran status.

Eligibility lists are sent to the appropriate department, where the department interviewer selects from three to twenty applicants to interview, depending upon the position.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. A performance appraisal is taken into consideration, along with personal knowledge of the supervisor, seniority, attendance, and other factors. Performance appraisals are made specifically for each job, but all include Task Statements, Performance Expectations and Standards. Employees are rated as "Exceeds/Meets/Below expectations in 6 categories, including Productivity (6 items), Work Habits/Attitudes (7 items), Personal Qualities (4 items), Supervisory Skills (8 items if applicable), Additional Factors (at the option of the supervisor), and Overall Work Performance (one summative score).

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. Production and adherence to a strict attendance policy are of primary importance.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. Yes

Q2. As a group, can you make any observations about them (including strenghts, weaknessess, etc.) in relation to career upward mobility?

A2. No - the only interaction the testing center has with them is to test them. They are not observed or followed up once they complete this phase of the application process.

Q3. Do you have any suggestions to improve the employability of these women?

A3. Yes. Women in general need to be informed of the excellent employment opportunities available with the city. Due to affirmative action policy, there are many opportunities that exist but that are unknown to most women.

IV. Comments

Tuition reimbursement is available for City employees. There are also in-house training classes available requiring supervisor approval.

VALERO ENERGY CORPORATION
(ON SITE INTERVIEW)

Date: January 14, 1982

Time: 4:00 p.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Kathy Patzman, Manager, Employee Training and Development

I. Provided Ms. Patzman with a brief overview of research project. She had no questions.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

A1. No tests are currently required for these positions. Drafting applicants are requested to bring in a work sample portfolio. All applicants bring in a transcript which is reviewed during a fairly structured interview, which includes such topics as: describing their experience and relating it to required qualifications; describing past work projects; discussing likes and dislikes; and discussing environments in which they feel they can work. The transcript and job references are all weighted in the hiring decision.

Valero is exploring the possibility of a testing program for Information Systems (data processing trainee) applicants. The tests under consideration are the Employment Aptitude Survey (including Verbal Comprehension, Numerical Reasoning, and Verbal Reasoning) and the SRA Computer Aptitude Test Battery. The test will be validated on 3 groups-just entering employees, those who have been employed for one year, and employees who have worked in field for several years. Valero plans to establish norms upon their own employees.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. A subjective performance appraisal by the supervisor, which describes tasks and evaluates how well they meet their objectives, is one criteria. However, the key promotion criteria is supervisor recommendation. When job openings are available, supervisors promote one of their employees or seek, by work of mouth, information on qualified employees from other supervisors in other departments.

A career path model, which will include open posting of job vacancies and promotion opportunities, and applications open to all employees, is under study. This job posting system will be implemented this spring. Also, a new 5 point rating scale will soon be implemented, which consists of a supervisor and employee stating job expectations at the begining of the year and measuring the successful attainment of these agreed upon goals.

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. First high performance is considered. Also, enthusiasm, inintiative, energy, the ability to plan and to set reasonable limits in their work, and the willingness to accept additional work assignments are desirable.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. Yes - Valero has employed two WIEE participants in non-traditional positions at our ESCO Supply operation.

Q2. As a group, can you make any observations about them (including strengths, weaknesses, etc.) in relation to career upward mobility?

A2. Yes - Their strengths include their enthusiasm and assertiveness (which may be a result of their WIEE training). They take advantage of every opportunity and they are very interested in their career. Both women are placed in the same work environment, which may prevent them from feeling isolated. Their weaknesses include a need for academic upgrading and sound career advice. They lack sophistication in corporate orgainzational behavior.

Q3. Do you have any suggestions to improve the employability of these women?

A3. Disadvantaged women need to be provided with information so that they may make sound career and business decisions. They need to be motivated to see the possibilities in their careers. They feel they have limited opportunities - they need to widen their horizons. Academic upgrading is also useful.

IV. Comments

Valero provides counseling services, in-house training, professional workshops in career development, scholarships for college-age children of employees, and 80% tuition reimbursement for employees taking work related college courses. Low income head of household women can benefit from many of these services.

H. B. ZACHRY
(ON SITE INTERVIEW)

Date: January 14, 1982

Time: 1:00 p.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Grady Maddox, Personnel Supervisor

I. Provided Mr. Maddox with a brief overview of research project. He had no questions.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess technical applicants requiring up to an AAS degree?

A1. The Wonderlick Personnel Test, a 12 minute general screening test, is given to all applicants having an AAS or less. Tests are interpreted by using the Position Analysis Summary and Ethnic Conversion Table, which includes published norms, in the Examiner Handbook. (H. B. Zachry submits the raw data they collect on each applicant to the Wonderlick publishers, who incorporate this data into their regularly updated norms.) Applicants are never eliminated on the basis of test scores alone.

Drafting applicants (they hire a very small number) are asked to bring in work samples. All applicants bring in their transcripts for general review.

An unstructured interview, lasting about 15 minutes, is conducted with each applicant. The transcript, resume (if provided), and application are discussed, along with such open-ended questions as "What do you like (and dislike) about this kind of work?" and "What do you see yourself doing five years from now?" They are asked specifically about any breaks in their educational or vocational history.

After their employment history has been verified by contacting references, qualified applicants are referred to a second interviewer within the department they are applying to. This interview is the most important factor in hiring.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. Strictly the perceptions of the supervisor. No performance evaluation is filled out. Promotions are based almost entirely on production.

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. In OJT positions, raises are usually based on the employee's successfully meeting the Association of General Contractors' guidelines for training and skill level. Promotions are based on supervisor's recommendations. The AGC criteria is for the OJT Program and does not necessarily set guidlines for all promotions or raises. The supervisor's decisions on these items, in some of our divisions, are not based on AGC criteria, but the performance of the individual as compared with the other employees of like crafts and abilities.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. H. B. Zachry hires women who fall under the Targeted Job Tax Credit program, and we also hire women due to our aggressive affirmative action policy, but I cannot identify these women as a group.

Q2. N/A

Q3. N/A

IV. Comments: None

(This information may be used for research purposes, but the company prefers not to be identified by name.)

Date: January 6, 1982

Time: 9:00 a.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Personnel Supervisor

Applicants in the areas of data processing, electronics and drafting are currently being assessed by two means: (1) an employment interview; and (2) a background investigation, which includes educational background, former employers, and personal references. The weight of each of these factors is determined by the particular requirements stated for each vacancy.

The most important factor involved in obtaining employment in any company is a successful, relatively unstructured interview, which has been estimated to account for as much as 60% of the decision in some cases. If the interview is unsuccessful, an applicant has little chance of being investigated. If it is passed successfully, a background investigation is completed.

Educational requirements of an A.S. or A.A.S. degree or its equivalent are not required for jobs in data processing. Professional programmers and system analysts require a Bachelors degree; other non-professional data processing positions require a high school diploma. However, people with A.S. degrees are often employed as computer operators or tape librarians, and although their degrees are not required, they are considered as having superior qualifications in some cases. Some electronics technician positions require an A.S. or its equivalent. In this case, the educational background of the applicant is more important. Work samples are not required of drafting applicants, but are regarded as a definite "plus".

Former employer references and personal references are used as an additional source of information.

Until a few years ago, personnel testing was extremely important in selecting personnel at this company. Due to legislation involving Title VII and the EEOC, the legal guidelines for testing for selection became so stringent and complex that their successful testing program was abandoned altogether.

During the years that the interviewee developed, validated and supervised the testing program, the following tests, among others, were used with good results: (1) The California Short Form intelligence test (2) The Kuder Preference Record (3) The Edwards Personal Preference Schedule (4) miscellaneous tests for supervisory aptitude, clerical ability, etc.

(This information may be used for research purposes, but the company prefers not to be identified by name.)

Date: January 5, 1982

Time: 9:00 a.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Personnel Supervisor

I. Provided interviewee with a brief overview of research project. He had no questions.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

A1. Applicants in the drafting and data processing areas are hired strictly on the basis of a structured personnel interview. College transcripts are taken into limited consideration. It is felt that there is no present need to test these individuals in any way, an interview being sufficient for their purposes.

In addition to an interview, applicants in the electronics technician field are given a one hour timed paper-and-pencil electronics test. This test has been developed in-house and covers electronics knowledge only. Almost all applicants complete the test; however, some do very poorly, and some decline to take it at all when they receive it because they perceive it as beyond their level of competence. No cut-off score has been established for the electronics test. Due to test anxiety or ability to bluff, applicants' scores are treated as a secondary source of information. The interview, which also taps their electronics knowledge, is the primary basis for the decision to hire or not to hire.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. A standard in-house performance appraisal is filled out on each employee, and managers promote their employees based upon these appraisals and other personal knowledge of the employee. The seven areas of evaluation include job knowledge, quality of work, quantity of work, judgement, dependability, versatility, and relation to others. Attendance is very important.

In-house training is available from time to time in some technical areas. To qualify for this training, an employee submits an application which must be approved by his/her manager (which depends to a large extent on the manager's willingness to take money from his/her budget to pay for training). The employee is also required to meet with a selection panel for final approval, which bases approval upon a sincere interest to learn. Tuition reimbursement is provided to employees who pass college courses with at least a C leading to a job-related degree. This benefit is made available to any employee from the first day of employment.

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. To be promoted from a technician position, a person must have, along with good performance, a more aggressive or assertive personality than the "average" technician. It has been observed that technicians at Company 2, particularly in the drafting area, are "loners" who prefer to be "individual contributors", working somewhat independently, rather than supervisors. This company looks for the ability to work in a very dynamic environment (which entails flexibility and tolerance for ambiguity) due to the frequent or unpredictable changes in operations.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. Yes

Q2. As a group, can you make any observations about them (including strengths and weaknessess, etc.) in relation to career upward mobility?

A2. Yes - As a group they tend to lack self-confidence--they tend to say "I don't know if I can do that," instead of "I'm willing to try." Once they are working, however, they tend to have a very positive attitude about their job. They perhaps are a bit more loyal, willing to take a few more "har knocks" than a person who feels more confident of their ability to find work elsewhere.

Q3. Do you have any suggestions to improve the employability of these women?

A3. Unfortunately, there seems to be a bias against someone returning to the work force after a lengthy absence as opposed to someone who has just completed high school. Employers, rather than employees, are the ones who need educating in this case. Perhaps employers could also do more in the line of adapting some of their policies to fit their needs. At the present time, Company 2 has given no specific consideration to the needs of these females heads

of household - they are expected to fit into the present situation, like all other employees.

IV. Comments

As a whole, low income female heads of households are a good labor pool. However, they often times "lack balance" in the marketable skills, area. They either lack skills, or complete many diverse CETA training programs simply taking advantage of classroom training opportunities rather than truly desiring to work. In these cases they are not hired at Company 2. Women who have completed technical training and desire to work, however, appear to have good work records and lower overall attrition rates.

(Telephone Interview)

(This information may be used for research purposes, but the company prefers not to be identified by name.)

Date: January 13,1982

Time: 9:00 a.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Personnel Supervisor

I. Provided interviewee with a brief overview of research project. She had no questions.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

A1. No tests are given to applicants who have two year degrees. Applicants with less than a two year degree are given the Adaptability Test (for general comprehension) and the Bennett Mechanical Test. Their test selections are confidential-not for public release.) National norms are used (informally). Drafting applicants are asked to bring in work samples. Transcripts are evaluated for all applicants with training in drafting, data processing and electronics. Good grades are a definite plus.

A structured interview is held with all applicants. The results of the interview are at least as, if not more, important than the transcript evaluation. The structured interview includes a discussion of the applicant's application and resume, especially the areas of education and work experience. Interviewers seek information on an applicant's knowledge, communication skills, and personality. A candidate msut exhibit personal skills that would enable hem/her to be a cooperative member of a work group.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. To be promoted, an employee bids on posted jobs. The applicant is interviewed, and the applicant's present supervisor provides and informal evaluation of attendance, punctuality, attitude and knowledge. To be eliminated, an employee either is not punctual, ahs poor attendance, has a poor attitude, or is eliminated for non-performance. All evaluation procedures are informal, and it is the duty of the supervisor to keep his employees informed of their performance.

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. Cooperativeness, volunteering for late work or extra assignments, and a willingness to learn are all important personal skills. Employees can ask to attend special in-house training programs, which demonstrates initiative.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. Not specifically, but I feel that we do hire a large number of low income head of household women.

Q2. As a group, can you make any observations about them (including strengths, weaknesses, etc.) in relation to career upward mobility?

A2. The only liability that interviewers may suspect is "Will they miss work due to household responsibilities?" Their main strength seems to be responsibility.

Q3. Do you have any suggestions to improve employability of these women?

A3. None that I can think of.

IV. Comments: None

COMPANY 4
(Telephone Interview)

(This information may be used for research purposes, but the company perfers not to be identified by name.)

Date: January 18, 1982

Time: 3:00 p.m.

Interviewer: Susan Nelson, Research Coordinator, SAC

Interviewee: Personnel Supervisor

I. Provided interviewee with a brief overview of the project, Explained that the information sought would be used to assist SAC in developing a comprehensive assessment and support system for low income head of household women entering data processing, drafting and electronics.

II. Assessment Procedures

Q1. What assessment instruments and interview procedures are currently utilized to assess applicants for technical positions requiring up to an AAS degree?

A1. No tests are given. It is felt that an adequate validation is not possible to obtain and that testing is not feasible today. Transcripts (an adequate measure of the person's ability in the subject area) are reviewed, and emphasis is placed on academic performance as compared to other applicants for the same position. Recruiters review the transcripts and applications during an unstructured interview, which includes a discussion of work experience and job-related experience. Transcript and application review are as important as the interview.

Q2. What instruments or procedures are used to select these employees for promotion (criteria for upward mobility) or elimination?

A2. A standard performance evaluation is used, which covers the traditional areas of work quality and quantity, job knowledge, cooperation, and others. Elimination can possibly result from poor evaluation, especially attendance, but verbal and written reprimands allow the employee an adequate opportunity to improve.

Q3. What personal skills are desirable in employees eligible for raises or promotions?

A3. Of course, a good performance appraisal is required. Schools such as SAC should also teach students good verbal and written communications skills in preparing them to become electronic technicians or drafters.

III. Working With Disadvantaged Women

Q1. Have you ever worked with local agencies that specialize in training and placing disadvantaged women?

A1. Although this company has hired many women that indicate that they are heads of household returning to the work force after many years as a housewife, we have no way of assessing their performance as a group once they are hired.

Q2. As a group, can you make any observations about them (including strengths, weaknesses, etc.) in relation to career upward mobility?

A2. No.

Q3. Do you have any suggestions to improve the employability of these women?

A3. The ability to fill out an application form correctly and neatly is very important. Of equal importance is the ability to sell onesself in an interview. Maintaining a high GPA is probably one of the most important factors in becoming employed in a position requiring an AAS degree.

IV. Comments

These responses are from the employment center, which is more concerned with hiring than anything else, and is not involved with the reviews and appraisals of the technicians hired at this office.

OPINION SURVEY

INSTRUCTIONS:

Below are a number of questions about various topics. They have been collected from different groups of people and represent a variety of opinions. There are no right or wrong answers to this questionnaire: we are only interested in your opinions on thses questions. Please circle "yes" or "no" for each question below.

| | | | |
|---|---|---|---|
| 1. | Do you believe that most problems will solve themselves if you just don't fool with them? | YES | NO |
| 2. | Do you believe that you can stop yourself from catching a cold? | YES | NO |
| 3. | Are some people just born lucky? | YES | NO |
| 4. | Most of the time do you feel that getting good grades meant a great deal to you? | YES | NO |
| 5. | Are you often blamed for things that just aren't your fault? | YES | NO |
| 6. | Do you believe that if somebody studies hard enough he or she can pass any subject? | YES | NO |
| 7. | Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? | YES | NO |
| 8. | Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? | YES | NO |
| 9. | Do you feel that most of the time parents listen to what their children have to say? | YES | NO |
| 10. | Do you believe that wishing can make good things happen? | YES | NO |
| 11. | When you get punished does it usually seem it's for no good reason at all? | | |
| 12. | Most of the time do you find it hard to change a friend's (mind) opinion? | YES | NO |
| 13. | Do you think that cheering more than luck helps a team to win? | YES | NO |
| 14. | Did you feel that it was nearly impossible to change your parent's mind about anything? | YES | NO |
| 15. | Do you believe that parents should allow children to make most of their own decisions? | YES | NO |
| 16. | Do you feel that when you do something wrong there's very little you can do to make it right? | YES | NP |

17. Do you believe that most people are just born good at sports? YES NO

18. Are most of the other people your age stronger than you are? YES NO

19. Do you feel that one of the best ways to handle most problems is just not to think about them? YES NO

20. Do you feel that you have a lot of choice in deciding who your friends are? YES NO

21. If you find a four leaf clover, do you believe that it might bring you good luck? YES NO

22. Did you often feel that whether or not you did your homework had much to do with what kinds of grades you got? YES NO

23. Do you feel that when a person your age is angry at you, there's little you can do to stop him or her? YES NO

24. Have you ever had a good luck charm? YES NO

25. Do you believe that whether or not people like you depends on how you act? YES NO

26. Did your parents usually help you if you asked them to? YES NO

27. Have you felt that when people were angry with you it was usually for no reason at all? YES NO

28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today? YES NO

29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them? YES NO

30. Do you think that people can get their own way if they just keep trying? YES NO

31. Most of the time do you find it useless to try to get your own way at home? YES NO

32. Do you feel that when good things happen they happen because of hard work? YES NO

33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters? YES NO

34. Do you feel that it's easy to get friends to do what you want them to do? YES NO

35. Do you usually feel that you have little to say about what you get to eat at home? YES NO

36. Do you feel that when someone doesn't like you there's little you can do about it? YES NO

37. Did you usually feel that it was almost useless to try in school because most other children were just plain smarter than you are? YES NO

38. Are you the kind of person who believes that planning ahead makes things turn out better? YES NO

39. Most of the time, do you feel that you have little to say about what your family decides to do? YES NO

40. Do you think it's better to be smart than to be lucky? YES NO

Key

Score one point each for the following answers. Scored for externality - a lower score indicates internal locus of control.

Yes - 1, 3, 5, 7, 8, 10, 11, 12, 14, 16, 17, 18, 19, 21, 23, 24, 27, 29, 31, 33, 35, 36, 37, 39

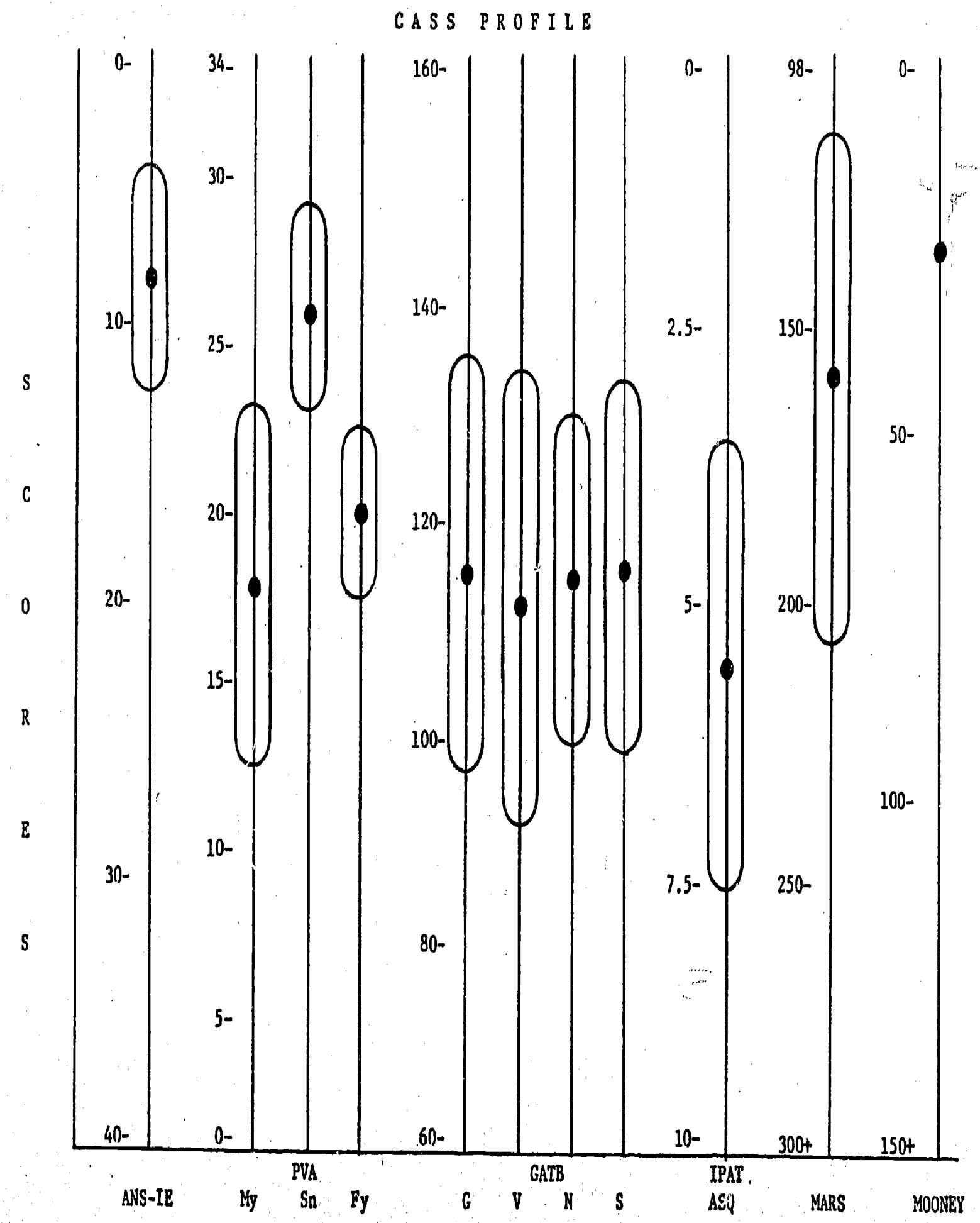
No - 2, 4, 6, 9, 13, 15, 20, 22, 25, 26, 28, 30, 32, 34, 38, 40

## CASS Profile Instructions

The purpose of the CASS Profile is to allow students, through the use of this visual aid, to assess their strengths and weaknesses by comparing their scores to the scores made by the "average" graduate. The graduate profile and a blank profile are needed for counseling.

The center dot on each line of the graduate profile represents the mean score for each measure. The oblong indicator drawn around each mean represents plus or minus one standard deviation. Graduates scored toward the top of the graph on all measures with the exception of the PVA Femininity scale, on which they scored lower.

To counsel students, make a transparency of the CASS graduate profile and lay it over the profile of the student. The student will then be able to compare her scores to the mean scores of the graduates. In this manner, a student will be able to assess her own strengths and weaknesses.


CASS PROFILE
SCORES
0-
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0-
160-
140-
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ASQ
MARS
MOONEY

# CASS PROFILE