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ABSTRACT

A study examined the school and labor market experiences of students who either are in or have participated in vocational education programs. To formulate their conclusions, the researchers involved in the study analyzed a subset of data from the National Longitudinal Survey of Youth Labor Market Experience--Youth Cohort. These data indicate that students who participated in vocational education to a fairly extensive degree were less likely to drop out than were others. Most vocational students worked while in high school, earning an average of $67 per week for 24 hours of work at a job that was most likely self-obtained. Working did not seem to affect the academic performance of these students; both their grades and their class rank were at least equal to those of their nonworking counterparts. Once they had graduated from high school, these vocational participants were more likely to be active in the labor force--either working or looking for work--than graduates with less vocational concentration. The typical female vocational graduate had a relatively high-prestige clerical job that demanded moderate use of her intelligence. The average male graduate, on the other hand, tended to choose craft or agricultural employment and was more likely than his nonvocational counterparts to work for himself. (MN)

Research and Development Series No. 244

HIGH SCHOOL VOCATIONAL EDUCATION EXPERIENCES: IN SCHOOL AND IN THE LABOR MARKET

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FOREWORD

This report was written to synthesize and clarify significant research findings for those with a need to be informed on the effects of vocational education. As a compilation of research, it should be a particularly useful source for those involved in policy-making, including the following:

- Legislators
- Directors of vocational education programs
- School officers
- Members of state and local boards of education
- State and national advisory councils

It is not the intent of this report to present the full details and methodology of the research summarized here. For those who are interested, the database is fully described in the appendix. Readers who wish more detail should consult the original reports.

The research discussed here was based on analysis of the most extensive and complete database ever available for the study of the high school and labor market experience of young adults. This database, The National Longitudinal Survey of Labor Market Experience (NLS Youth), is a continuing study being conducted by the Center for Human Resource Research, The Ohio State University, with primary support from the U.S. Department of Labor. For these studies, NLS Youth data were combined with the data on transcripts collected by the National Center for Research in Vocational Education, with support from the U.S. Department of Education. The addition of the transcripts permitted a more precise classification of students' participation in vocational courses, and thus better estimates of the effects of this participation.

The National Center wishes to express its appreciation to Michael Borus, Director of the Center for Human Resource Research, for his cooperation in this effort, and to the Office of Vocational and Adult Education, U.S. Department of Education, for its funding of the collection of the transcripts and the analysis of the NLS Youth data.

The major studies used here were conducted in the Evaluation and Policy Division of the National Center under the direction of N.L. McCaslin, Associate Director. Paul Campbell, John Gardner, Morgan Lewis, and Donna Mertens each directed one of the projects. Patricia Seitz contributed substantially to all four, and Sterling Cox assisted with two while completing his dissertation. Jeanne Desy compiled the findings of the studies and wrote this report.

The conscientious work of Bernice DeHart and Sherri Trayser in the typing of the manuscript and the careful editing of Constance Faddis, is deeply appreciated.

Robert E. Taylor
Executive Director
The National Center for Research
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EXECUTIVE SUMMARY

High School Vocational Education Experiences: In School and in the Labor Market is a continuation of a series of comprehensive reports designed for educators and policymakers. The first of these, *High School Vocational Graduates: Which Doors Are Open?*, was issued in 1982. The objective of these reports is to supply much needed information on vocational education as clearly and concisely as possible.

The research summarized here focuses on the effects of vocational curricula on students, graduates, and dropouts from vocational programs. Particular emphasis has been given to their labor market experiences, both in high school and beyond. Substantial use is made of four studies carried out by the National Center for Research in Vocational Education during 1982. All four reports are based on data taken from a subsample of the National Longitudinal Survey of Labor Market Experience—Youth Cohort (NLS Youth), combined with information from subjects' high school transcripts. The merger of these two data sources has given researchers a database on the high school and post-high school experience that is the most complete and comprehensive in existence. The methodology of the specific research projects is described in the following reports:

- *Vocational Education and the High School Dropout* (Mertens, Seitz, and Cox 1982)
- *Influences of High School Curriculum on Determinants of Labor Market Experience* (Gardner, Campbell, and Seitz 1982)
- *Job Satisfaction: Antecedents and Associations* (Campbell, Mertens, Seitz, and Cox 1982)
- *High School Work Experience and Its Effects* (Lewis, Gardner, and Seitz 1983)

The most significant of the findings included in this report are presented next through a description of typical vocational students and graduates. With the understanding that there is no "average" person, these descriptions outline the experience of the typical young man or woman whose participation in vocational education is fairly extensive.

While in high school, students whose participation in vocational education is fairly extensive are less likely to drop out than others. If they do leave school before graduation, they will lose the labor market benefits they might otherwise have received from their training, such as above-average job satisfaction, and will share the unemployment problems of all dropouts.

Typical vocational students do not drop out, however. And, far from worrying about employment, they probably work while still in school. Two-thirds of all high school students do work, and students with high participation in vocational education are more likely to work than others. If their hours and earnings are average, they work twenty hours to earn $67 a week, probably at self-obtained jobs. For the woman, a school-supervised job holds a specific advantage over a self-obtained job; she is more likely to receive equal pay for equal work. She is also, for reasons that are still unclear, more likely to train for and work in an occupation that fits the traditional sex-role stereotype than nonvocational women.

Working does not seem to affect the academic performance of these students. Both their grades and their class rank at least equal those of their nonworking classmates. At the same time, like all working high school students, they tend to be involved in more problem behavior and delinquency, such as cutting class or shoplifting, than students who do not work.

Once they have graduated from high school, these vocational participants are more likely to be active in the labor force—either working or looking for work—than graduates with less vocational concentration. The young man is more likely to work full-time in a regular (day or evening) shift than his otherwise similar counterparts; his job typically makes moderate demands on his intelligence and manual dexterity. He will tend to choose craft or agricultural employment, and to work in a small, private-sector firm; he is more likely than his nonvocational counterparts to work for himself. Perhaps for these reasons, his job is less likely than theirs to be unionized.

The typical female vocational graduate has a relatively high-prestige clerical job that demands moderate use of her intelligence. Because of her specialty, she is more likely than the male vocational graduate to work in a large private firm or government agency; her job, unlike his, has the same likelihood of being unionized as those of her nonvocational counterparts. She is more likely than they are to work full-time and to work a regular shift.

Both of these average graduates report above-average satisfaction with some aspects of their jobs. In particular, they are pleased with two factors: their opportunities to use and develop skills on the job; and the safety and quality of the workplace. If they are in certain occupations, such as sales and clerical work, they are also satisfied with such job rewards as security and the chance for advancement. Although wages in these fields are often relatively low, these graduates appear to be satisfied with their pay, possibly feeling that other kinds of satisfaction are more important.

National educational policy has always reflected an appreciation of education as both an end in itself and a means to an end. In evaluations of vocational education, however, policymakers have sometimes emphasized the investment (or outcome-oriented) aspect and have deemphasized the consumption aspect. Research on the effectiveness of vocational education has similarly overemphasized investment by measuring factors that are immediate, direct, visible, and often easily measured. Earnings, training-related placement, and the employment or unemployment of graduates are the most frequently cited criteria for evaluation.

Although no one would dispute the importance of these investment aspects, a curriculum cannot be fully understood in terms of only a few factors. As the material in this report shows, vocational education takes place in a broad context, and must be understood in context. Its effects should be assessed in terms of a range of outcomes, including its potential to reduce dropout rates, improve attitudes toward work, promote occupational safety and health, increase job satisfaction, and in general enhance the quality of the worker's life.

It is also important to recognize that individuals can and do elect to trade off one job benefit for higher levels of another, and that such choices reflect individual values. If vocational education graduates consistently value satisfaction with working conditions more than do graduates of general curricula, then comparisons of the two groups on the basis of earnings alone will fail to respect the values of the vocational participants. Any evaluation based on a narrow range of investment outcomes overlooks the range of individual choice and the variety of benefits individuals find in their work.

The studies summarized in this report focused on the exploration of the multidimensional benefits of curricula, in particular

those that might derive from vocational education. Some effects, such as labor market experience, job tenure, and educational aspiration, are subtle and may operate through mediating factors. Although the findings included here cannot encompass all possible effects of vocational education, this research does reflect the belief that such factors as income, prestige, job satisfaction, opportunities for leisure, and the general quality of life are all important potential outcomes of vocational education, deserving of consideration in any evaluation effort.

Overall, this material shows that participation in vocational programs can be associated with a number of benefits in terms of the labor market experience, benefits that have been underemphasized in the past. This suggests the need for reassessment of policy in three broad areas. First, given the apparent benefits of high school vocational education, policy should encourage the continuation of programs at no less than the present levels. Second, policy should encourage the design and implementation of programs through which vocational education might work to understand and correct such conditions as increased delinquent behavior among employed students that has been detected by researchers. Finally, policy should maintain its commitment to research designed to increase our understanding of the vocational education alternative and should monitor its effectiveness.

The major findings summarized here also suggest specific new approaches to vocational education policy. Some of the considerations that seem most pressing are outlined next under the topics of retention, working while in school, the labor market after high school, and job satisfaction. Although these categories are helpful in considering a specific area of concern, policy in one area affects outcomes in another.

Retention

- **Further research is needed to determine whether offering a wider variety of vocational courses below the eleventh grade level can keep students in school who might otherwise drop out.** Although many factors are strongly related to dropping out, vocational education seems to be one ingredient that can make school more palatable.
- **Education on becoming a parent should be studied in terms of its potential ability to affect retention.** Having a child while in high school is associated with a high dropout rate. Education on the responsibility involved in this choice might lead some students to defer becoming parents, and would probably benefit students in general, as well.
- **Policy should direct attention to methods of raising the self-esteem of dropout-prone students.** Low self-esteem is related to poor academic achievement, which is characteristic of dropouts. There are numerous strategies, from counseling to remedial instruction, that have been shown to have the potential to raise self-esteem. Intervention in this area may also raise levels of academic achievement and improve retention.
- **Programs should be developed to teach vocational students job search techniques and to help them develop the skills needed to hold a job.** Dropout-prone students in particular have a high need for these skills, since they are most likely to enter the labor market at a young age and without the credentials and occupational skills to find employment easily. Again, virtually all students would benefit from learning of this kind whenever they do enter the labor market.

Working While in School

- **Work study programs should be continued and emphasized.** These programs provide employment for those young people who have difficulty

obtaining work on their own, many of them from economically disadvantaged families. The advantage may continue after graduation, since being employed while in high school is likely to reduce the length of unemployment after high school.

- **Cooperative vocational education programs should emphasize the placement of students in jobs related to their training.** Cooperative jobs seem to have a unique potential for providing on-the-job training. Their value would be enhanced by policies that stress placing students only in jobs that offer opportunities for training. Experience in their specialties should give students additional strength in the labor market after high school.
- **High schools should help all working students use their work experiences to their best advantage.** There are numerous ways to do this. Schools should be able to answer inquiries about students' work histories; work experience records should be maintained as a supplement to transcripts, listing all regular employment held by each student, the nature of the work, the hours, and whether or not the job was school supervised. Work experience can also be made more useful to students through individual and group counseling on work-related problems. Such education can help students develop the interpersonal skills and problem-solving techniques needed to build tenure in future jobs.
- **National, state, and local policies should facilitate the employment of minority youths through promoting general economic activity and/or providing jobs targeted for these students.** Although school-supervised work opportunities are heavily oriented toward racial/ethnic minority youths, these students may still have fewer opportunities than white students to work while in high school. Schools alone cannot eliminate the disparities found in the labor market.

The Labor Market after High School

- **Study is needed on methods of changing secondary vocational education to improve productivity and narrow income differentials.** Vocational education has been shown to have an indirect effect on earnings that, though not dramatic, is not negligible. While increasing the numbers of students who participate in vocational programs will not produce drastic economic shifts, changes in programs may enhance the present effects.
- **All program modifications should allow for the great variation among vocational students.** New programs and improvements on existing programs must take into account the students' varying levels of participation, differences in socioeconomic backgrounds, gender, and other factors and influences. Because of this variety, different groups of students have differing needs that can be addressed by vocational programs.
- **Secondary vocational education should be studied for the potential changes that could contribute to equalizing the labor market experiences of white and minority graduates.** At present, white graduates have longer job tenure, more labor market experience, and greater labor market stability. Although secondary vocational education cannot change the job market, the direction of changes in vocational programs that may increase equity requires further research and discussion.
- **Vocational education programs should concentrate on reducing income inequality between the sexes.** Women vocational graduates who specialize in trade and industry are often successful

in finding jobs in manufacturing, which usually pay more than many jobs traditionally held by women. Encouraging women to choose freely among the specialties is one strategy that may help foster income equity.

- **Policy should examine methods by which vocational education can increasingly contribute to the reduction of sexism in employment.** The data suggest that set-asides in federal appropriations and declarations of intent have not been successful in reducing sex stereotypes in the fields for which vocational students are trained. Female vocational students still choose specialties that match traditional sex stereotypes more often than do women students in general. Programs that encourage free choice for these students have the potential to both reduce gender-defined occupational choice and increase income equality.

Job Satisfaction

- **Policymakers and administrators should develop multifaceted methods of evaluating vocational education.** The job satisfaction reported by vocational graduates suggests that there are "compensating differentials" for earnings differences. Given the importance many graduates place on such features of their jobs as the work environment, hourly earnings alone are not a valid measure of productivity. Evaluation methods should be designed and utilized that take into account the kinds of satisfaction individuals value in their work.
- **Schools should develop programs that give young people a realistic picture of the occupations for which they are training.** In view of the importance of job satisfaction, students need to understand the occupations they are interested in entering. Programs should make available information on such features as job duties, the future of such work, status, earnings progression, career change opportunities, and so on.

New information naturally leads to a reconsideration of policies based on older information. The NLS Youth data and transcript information have provided (and will continue to provide) material for significant research. The major studies summarized here rest on that data. The analyses—distinguished by the use of the classification system, patterns of participation—suggest a need for new approaches to vocational education policy.

CHAPTER 1
INTRODUCTION

High School Vocational Education Experiences: In School and in the Labor Market focuses on a series of related questions on the subject of the effects of vocational education on those young people who participate in it. It is a continuation of a series of comprehensive reports designed to present important new research findings on vocational education as clearly and concisely as possible for the ready use of educators and policymakers. The first report in this series, *High School Vocational Graduates: Which Doors Are Open?* was issued in 1982.

The range of inquiry in this series is broad; the information in this report extends from the early aspirations of high school students to the effects of vocational education during the first years in the labor force. This extensive coverage is intended to facilitate a broad understanding of the effects of vocational education. The major questions considered here include the following:

- Can vocational education be a force for preventing high school dropout?
- Other than curriculum, what factors determine whether or not students complete high school? If specific influences can be identified, what intervention strategies do they suggest?
- What effect does high school work experience have on academic performance? On post-high school earnings?
- Does school supervision of jobs affect the nature of work experience and its educational and labor market outcomes?
- How large are the direct and total effects of vocational education on earnings and unemployment?
- In the post-high school labor market, what accounts for the relatively small effect that vocational education seems to have on the earnings of male graduates?
- Does vocational education influence nonmonetary characteristics of jobs, such as fringe benefits and working conditions?
- How is participation in vocational education related to job satisfaction?
- What is the relationship of job satisfaction to hourly rate of pay?
- If vocational education increases job satisfaction, does that effect appear because vocational programs depress occupational aspirations, or are there other causes?

Sections of this report make substantial use of four studies carried out by the National Center for Research in Vocational Education during 1982. Further information on the subjects of retention, the relationship of high school curriculum to labor market experience, job satisfaction, and high school work experience can be found in these reports, which are as follows:

- *Vocational Education and the High School Dropout* (Mertens, Seitz, and Cox 1982)
- *Influences of High School Curriculum on Determinants of Labor Market Experience* (Gardner, Campbell, and Seitz 1982)

- *Job Satisfaction: Antecedents and Associations* (Campbell, Mertens, Seitz, and Cox 1982)
- *High School Work Experience and Its Effects* (Lewis, Gardner, and Seitz 1983)

The reports are based primarily on data taken from a subsample of the National Longitudinal Survey of Labor Market Experience—Youth Cohort (NLS Youth), combined with information from the subjects' high school transcripts. The interview data were collected through funding by the U.S. Department of Labor, an agency not directly concerned with education; as a result, it represents an objective third-party view. The merger of these two data sources has given researchers the most comprehensive database on the high school and post-high school experience in existence.

Traditionally, discussions of the effects of high school curricula have rested on the classification of programs into three categories: college preparatory, general, and vocational. As the demand for reliable evidence concerning the effects of educational programs has grown, it has become evident that a single descriptive term cannot encompass the wide range of program content actually experienced by vocational students. A graduate who took a few courses scattered across specialties is not comparable to another with a heavy concentration in one field, and post-high school work experience is likely to reflect these differences. Careful discussion of effects must take into account such factors as the extent of participation in vocational education and the degree of concentration in a service area.

Recognizing the need for precise classification, the research summarized in this paper uses a system based on five patterns of participation in vocational education. These categories were developed in *Patterns of Participation in Secondary Vocational Education* a study conducted at the National Center for Research in Vocational Education (Campbell, Orth, and Seitz 1981). The patterns are used throughout this report wherever results are distinctly different for students with varying levels of participation. Often the experiences of pattern groups differ so markedly that this study by groups is essential to any meaningful analysis; at the same time, fine discrimination inevitably increases the complexity of the findings. Therefore, in the interest of readability and clarity, this report groups pattern types into larger aggregations whenever possible, usually in terms of whether students' participation in high school vocational education was high, moderate, or low to nonexistent.

Careful discussion of effects must take into account such factors as the extent of participation in vocational education and the degree of concentration in a service area.

The patterns of participation describe key variations in student experience. **Intensity** measures the number of credits earned in a single area of concentration in which the student accumulated at least six-tenths of his or her vocational credits. **Diversity** refers to the number of program areas in which the student took courses. **Continuity** reflects the number of grades in which the student pursued a specialty. **Supportive diversity** counts credits earned in areas judged to be potentially supportive of the skills and knowledge accumulated in the student's area of study. Finally, **proximity** measures the time between coursework in the specialty and probable entry into the labor market after graduation. The five patterns of participation based on these measures are given next.

Concentrators

On the average, these students have at least six credits in their vocational education

service areas. Many also have a credit in another service area, occasionally one supportive of their specialty. They average three years of coursework in their vocational specialties. Nearly all take vocational courses in both the eleventh and twelfth grades.

Limited Concentrators

These students average a little more than three credits in a vocational service area. They tend to spend only two years in specialty courses, and take such courses in the upper two grades a little less often than Concentrators. They take more courses outside their specialty; seldom are these courses that seem to be supportive. These students also tend to have a higher level of academic achievement than Concentrators. (Academic standing is not, however, a consideration in pattern grouping.)

Nearly four out of five graduates have taken at least one vocational course.

Concentrator/Explorers

Averaging somewhat over two credits in a vocational service area; these students tend to spend fewer than two years pursuing a specialty. Not many take specialty courses in the twelfth grade. Often, students in this category sample at least two vocational service areas, but rarely areas that support their specialties.

Explorers

Students in this category take courses in at least three vocational service areas without developing a specialty, and average more than four vocational credits. Since they do not have specialties, they are not scored in other areas.

Incidental/Personals

Averaging slightly less than one vocational education credit; these students take too few courses to qualify as Concentrator/Explorers or Limited Concentrators; although some do develop specialties. Those who do tend to take a course in the specialty area in the upper grades.

The substantial differences in participation in vocational education among the NLS Youth subjects are shown in figure 1. Nearly four out of five graduates have taken at least one vocational course. Only 1 percent are Explorers. Almost half of the remaining 77 percent are classified as Incidental/Personal. The rest participated extensively enough to be classified in the top three categories of participation in vocational education.

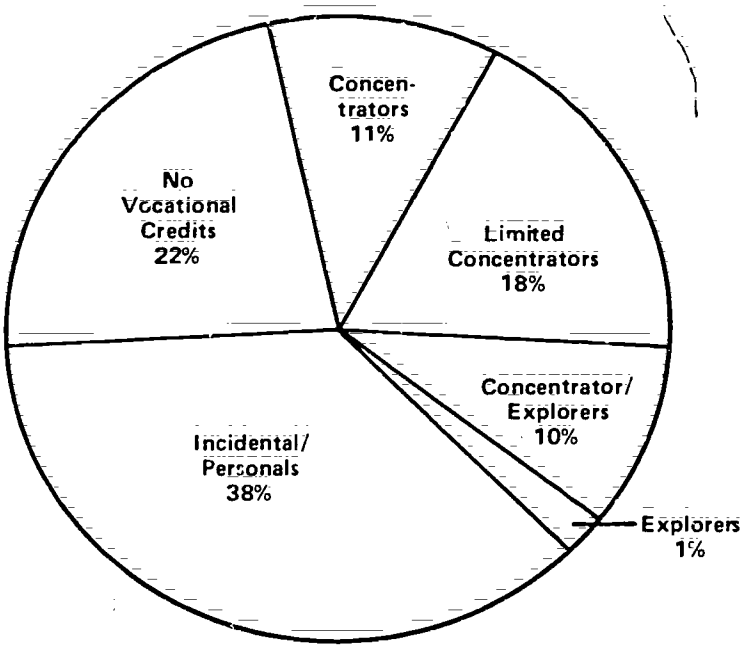

Figure 1. Vocational patterns of secondary school youth

CHAPTER 2

IN HIGH SCHOOL

Academic Performance

Past speculation that holding a job during high school might damage academic performance has generally been unsupported by research findings. An exception is a study in which Greenberger and Steinberg (1981) did find an association. Since school-sponsored work is a feature of many vocational programs, this is an important issue and one that demands close examination.

Using the NLS Youth database, a study (Lewis, Gardner, and Seitz 1983) by the National Center for Research in Vocational Education examined this question. Although the study was not designed to establish a causal link, it did find an association between working while in high school and below-average academic performance—but only for select groups of students.

Academic performance is usually evaluated in terms of grade point average (GPA), class rank, or both. Class rank is usually considered the better index of the two, since it enables comparison of students from different schools. This discussion will examine both indices in relation to the possible effects of working while in high school.

Grade Point Average

For this purpose, GPAs were computed for respondents for whom at least three years of grades were available; most of the respondents analyzed were, therefore, high school graduates. In order to remove other variables that were likely to affect results, the GPAs were then controlled for other conditions that might affect them. These conditions included race or ethnic origin, socioeconomic status (SES), and becoming a parent while in high school. As used in these reports, socioeconomic status was a composite of the occupational prestige of the head of the household, parents' education, and the availability of reading materials in the home.

. . . although working students are less likely to receive top grades, they are no more likely to receive the poorest grades.

For this group, the analysis showed that students who did not work were almost twice as likely to have A averages as students who worked. Low grades did not show the same disparity. When all students who had received F's were compared, the proportion of working students was only 2 percent higher. This distribution suggests that, although working students are less likely to receive top grades, they are no more likely to receive the poorest grades.

These findings, which apply only to the group as a whole, must be approached with caution. First, GPA data are descriptive, at best. Secondly, data on students' academic performance prior to working in high school were not available; although it is possible that working leads to lower academic performance, it is also possible that respondents who worked had GPAs in this range before

they began working. Therefore, the association of working with lower GPAs does not establish a causal link; it does suggest avenues for future study.

. . . for men there is little connection between work experience in high school and GPA. For women . . . working is associated with lower grades.

When the data are separated for men and women, different patterns emerge. For the men, there is little association between GPA and working during high school. The GPA measure does show a clear relationship to SES: blacks have significantly lower grades than whites, and students who have children during high school have significantly lower scores than those who do not. Relationships for variables other than work experience hold for both men and women.

These variations lend credence to the finding that for men there is little connection between work experience in high school and GPA. A clearer pattern emerges for women. Even after adjustments for race and SES, working is associated with lower grades for them. The difference in grade average—about 0.1 on a four-point scale for women with school-supervised jobs—is small but statistically significant.

Class Rank

Men who work during high school do not have class ranks significantly different from those who do not work, although women with school-supervised jobs do, a difference that varies with the amount of work experience. This should be considered in light of the fact that more low and middle SES students—both women and men—work at school-supervised jobs than high SES students; work-study and government-sponsored jobs are often targeted to economically disadvantaged youths. Women who work in self-obtained rather than school-supervised jobs show higher class ranking, although the magnitude of the association is small.

Data on both class rank and GPA demonstrate a difference between students who work while in high school and those who do not. Again, however, the database did not contain the pre-high school and pre-work information needed to examine the possibility of a causal link. This is an area that undoubtedly deserves further study.

Aspirations

Most students aspire to educational levels beyond high school. Fifty-five to 75 percent of the NLS Youth subjects said they hoped to complete at least thirteen years of education. These aspirations vary with high school work experience; men who had not worked, or worked only in outside jobs, were more likely to aspire to at least sixteen years of school than those peers who held school-supervised jobs. The same pattern was evident in women who held outside jobs.

Students who plan to enter the labor force immediately after high school probably benefit most from school-supervised jobs. Schools seemed to be effective in providing jobs to many of those students. Over 40 percent of the men and about 30 percent of the women who held school-supervised jobs aspired to graduate from high school, and did not aspire to pursuing additional education.

The question of the impact of vocational education upon aspirations was addressed as part of the study (Campbell, et al. 1982) on job satisfaction. This study used the NLS data to examine changes in both work and educational aspirations between tenth grade and graduation. The change score was defined as the difference in educational aspi-

ration between the first interview (1979) and the last (1982). Work aspiration was measured with a job content status level, as defined by Scoville (1969) on the basis of such job attributes as the amount of education, skill, and intellectual responsibility needed to perform a job. These two scores were treated in equations that controlled for the influence of variables other than high school work experience. This procedure was used to examine three possible effects of school curriculum on aspirations.

The first possibility explored was that young people's aspirations will be higher early in their high school careers than near the end. If true, this would have been reflected in negative change scores. Analysis of the NLS Youth database shows that this hypothesis is partially valid: although the mean change score is positive for educational expectations, it is negative for occupational aspirations.

Decline in aspirations can be explained in a number of ways. Some social scientists argue that aspirations fall because society represses them. Others believe there are natural limits to normal accomplishment, which young people perceive as they mature. It may also be that as students learn more about the demands of occupations, their aspirations are tempered to align with the realities.

The evidence of opposing trends in aspiration adds to the difficulty of explanation. One possible influence is a specific social condition. The aspirations of these students, for example, may be influenced by a slack labor market and by the perception that schooling is an alternative to combatting unemployment. The complexity of these results and the significance of the issue do suggest that further research is necessary.

Past studies of aspiration have led to some debate about whether vocational education itself depresses aspiration. This was tested by an equation that modeled a number of variables that might help explain changes in aspiration, such as race, gender, and SES. The results showed that vocational training, rather than depressing educational aspirations, is associated with neutral or positive change. Change is also distinctly associated with certain variables. Both blacks and those with higher scores on the Armed Services Vocational Aptitude Battery (ASVAB), which measures both academic and vocational aptitude, showed increased expectations. Students who were in academic curricula in tenth grade, and whose friends had higher aspirations, tended to reduce their expectations in the next two years. Overall, the occupational aspirations of the youths in the entire sample decreased, but this change could not be associated with specific factors that might provide an explanation.

A third approach to the issue is to ask whether participation in an academic curriculum increases aspirations. This data gives no evidence to that effect; students who participated in academic programs showed no increase in aspiration. In general, their educational aspirations tended to decrease; occupational aspirations did not change.

. . . these findings refute the idea that vocational education depresses the aspirations of its students.

These analyses, in short, do not support the notion that vocational education suppresses aspirations (see Grubb and Lazerson 1975), but suggest that the opposite may be true. It must be noted that analysis of this sort is extremely difficult, and not even the most carefully designed list of variables can include all the factors at work in the real world of the subject. But, to the degree that changes and variables were adequately measured, these findings refute the idea that vocational education depresses the aspirations of its students.

Dropping Out

Past research has found that participation in vocational education influences students to stay in school. The study by Mertens, Seitz, and Cox (1982) of a sample of 7,416 NLS Youth respondents confirmed this finding. Everything else being equal, the more vocational education that students had taken by a given time, the less likely they were to drop out of school the following year. This effect varied; it was small, but significant, for grades ten and twelve, and too small to be considered reliable for grade eleven.

Everything else being equal, the more vocational education that students had taken by a given time, the less likely they were to drop out of school the following year.

One possible explanation for these complex results is that they are related to the availability of vocational education during specific grades. The tenth-grade retention rate may reflect the fact that vocational programs often become available for the first time in tenth grade; the vocational curriculum can renew the interest of students who have little enthusiasm for traditional courses. Because of their youth, tenth-grade students may also be less likely to feel compelled for financial reasons to drop out and go to work.

Eleventh-grade students are more likely to drop out: they are now at the legal age to do so, and they may also feel more pressure to earn money. Most vocational programs are limited before eleventh grade, so the potential retentive effects of vocational education are also limited. Students who have reached twelfth grade, on the other hand, are likely to have had more exposure to vocational education courses, and thus benefit more from the retentive effect.

Although vocational education is clearly related to retention, albeit in complex ways, other factors account for a far larger proportion of dropout probability, and their impact must be considered. Patterns of dropping out by gender and race, shown in figure 2, illustrate the significance of these determinants. Gender is not a factor until grade twelve; then women are less likely than men to drop out. When such factors as grades, SES, and ability are controlled, being black is associated with lower dropout rates in grades ten and eleven. For Hispanics, the dropout rate is consistently higher than for the entire sample. The strength of influences such as these demonstrates the need to understand retention in terms of all the factors that contribute to dropping out. Figure 3 depicts the factors that influence the decision to drop out or complete high school.

Another individual characteristic associated with dropping out is low aspiration; specifically, the lower the grade aspire ' to, the more likely the student is to drop out. Although this is a finding corroborated by previous research, it should be noted that some of the respondents in this sample had already left high school by the time they were interviewed, and their recollection of aspirations may have been influenced by whether they dropped out or graduated. The same may be true of the strong association between low self-esteem and dropping out; the response of students who dropped out might be changed by the fact that they did so. Low aspiration and low self-esteem cannot be seen as causal on the basis of this study, but they can be considered as two of several factors that may indicate that a student is dropout-prone.

Past research has found that students with low cognitive ability are more likely to drop out. This study used two variables, the GPA and the score on the World of Work (WOW) test, to examine that hypothesis. WOW is an occupational information test that, as Griliches notes (1976), "should reflect both the quantity and quality of schooling, intelligence, and motivation . . ."

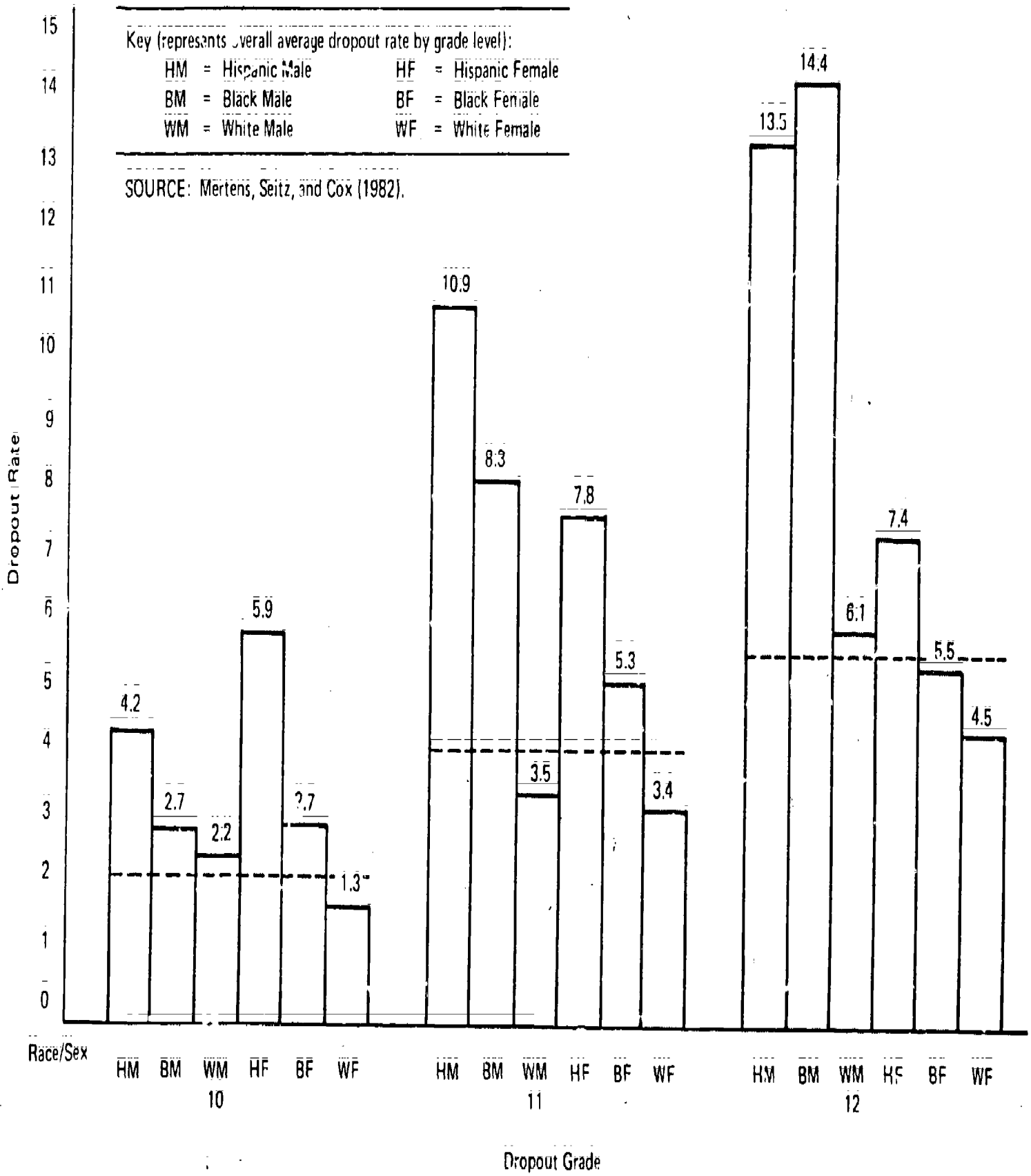

Figure 2. Dropout rate by grade level, race, and sex (in percent)

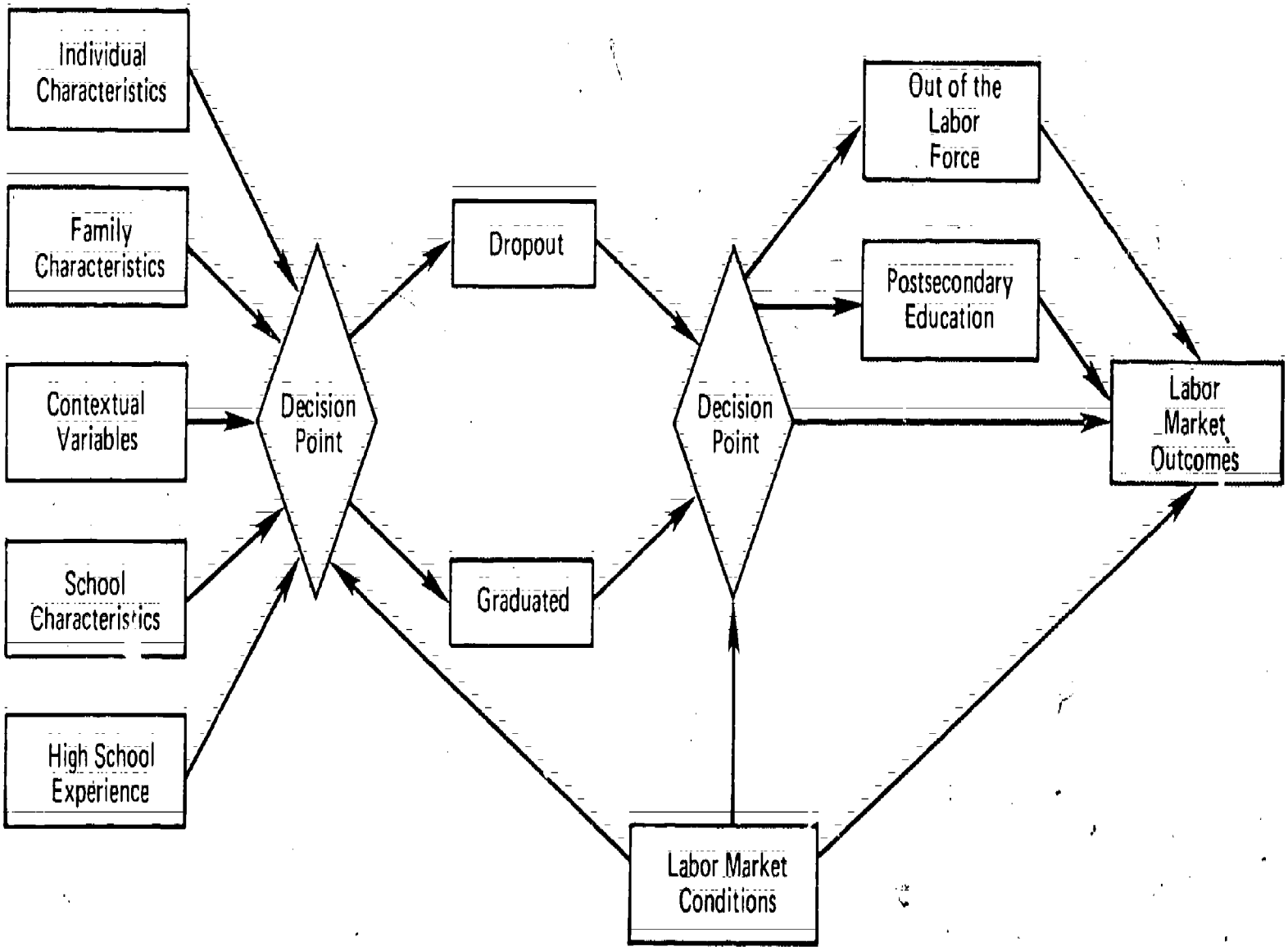

Figure 3. Explanatory model of factors influencing high school completion and labor market outcomes

(p. 875). Both scores were significantly related to dropping out. Students with low cognitive ability are likely to be dropout-prone. Programs aimed at helping these students increase their motivation and ability to handle cognitive tasks not only have the potential to be enriching of themselves, but may also work to keep these students in school.

The study examined contextual variables, family characteristics, school characteristics, and school experiences (see table 1). Family characteristics were represented by the respondent's SES. The analysis showed that the lower the SES, the more likely it was that the student would drop out.

Contextual variables, such as urban/rural residence and local unemployment rates, were not shown to be significant; school characteristics had an inconsistent effect. Of the vocational programs considered, only the existence of a trade and industry program was associated with a low dropout rate. The influence of the peer group, represented by a variable giving the percentage of disadvantaged students in the school, changed with grade levels. The higher this percent, the higher the dropout rate at the tenth-grade level; this increase was less in eleventh and twelfth grades.

The results of the examination of high school experience confirmed earlier research. This component was represented by the number of days absent in grades ten and eleven. The figures showed a positive relationship between grade ten absenteeism and dropping out in grades eleven and twelve. High absenteeism, then, can be considered another factor that may indicate a student is dropout-prone.

Clearly, students leave school early for a variety of complex reasons. It is not always obvious whether a variable associated with dropping out is a cause or an effect. Low self-esteem, for instance, may both lead to lower academic achievement and result from doing poorly. Some significant factors, such as race and SES, are beyond the ability of the school to influence; any suggestion that vocational programs alone can do the whole job of preventing dropouts would be unrealistic.

Given this, it is still worthwhile to consider interventions open to the schools. One possibility deserving continued research is the question of whether a variety of earlier offerings can retain high-risk students. It seems apparent that, at the least, vocational programs make school more palatable for many dropout-prone youths. This may be an important intervention, since dropouts who are asked for their reasons frequently say they disliked school.

. . . any suggestion that vocational programs alone can do the whole job of preventing dropouts would be unrealistic.

Whether or not students complete high school seems to be most affected by individual characteristics and decisions. These, too, may be affected by intervention strategies. For example, early marriage and childbearing, which are associated with dropping out, carry responsibilities many young people may not foresee. Parenting education that stresses the realistic demands of these roles may lead some students to defer marriage and parenting; such education, of course, also has the potential to benefit all students, whether or not they stay in school.

Low self-esteem, another characteristic associated with dropping out, may be raised through counseling and other human relations experiences. Skills mastery and remedial instruction aimed at helping the student achieve can raise confidence and self-esteem. Delinquent behavior, also associated with dropping out, can be approached

TABLE 1

PERCENT CHANGE IN DROPOUT LIKELIHOOD BY CHARACTERISTIC AND GRADE LEVEL

Variables	Grade Ten	Grade Eleven	Grade Twelve
Vocational credits	- .01**	- .00	- .02**
Black	- 2.81**	- 1.19	.81
Self-esteem	.18**	.20**	.24**
Married early	1.42	4.67	12.33**
Involved with law enforcement agencies	.07**	.22**	.24**
Trade and industry courses available	1.84**	- .37	- 2.27
Married late	2.07**	- 3.74	- .07
Female	.43	1.02	- 2.99*
Child born late	3.95**	12.00**	7.55**
Drug use	.05*	.10*	.27**
Child born early	2.87**	4.76**	8.63**
Hispanic	- .32	3.73**	2.24
Involved in theft	- .01	.19**	- .09
Highest grade aspired	- 1.50**	- 3.18**	- 4.02**
World of Work test	- .35	- .83**	- 1.26**
Percent disadvantaged	.02**	- .05**	- .04
Age	- .80**	- 1.68**	- 2.71**
Grade point average	- .20**	- .33**	- .43**
Socioeconomic status	- .12**	- .30**	- .26**
Office courses available	- 2.79**	- 1.29*	1.60
Days absent in grade ten	—	.14**	.18**
N	3432	2679	1869

SOURCE: Mertens, Seitz, and Cox (1982, tables 9, 10, and 11).

*P < .10
**P < .05.

through a number of intervention strategies. Although this is obviously a difficult area, strategies that reduce delinquency can have a number of important effects, among them contributing to the retention of the high-risk student.

Vocational programs can help all students, and dropout-prone students in particular, in another way, by preparing them for the labor market. Those who drop out soon need to find and hold jobs and are at a considerable disadvantage in the job search. **There is little evidence that existing programs provide effective help in these areas.** Programs that prepare all participants for the realities of work are of special help to these youths, who are handicapped by their lack of diplomas. Remediation in basic skills is often equally vital for students who appear likely to leave school early. Although retention is the most desirable outcome, it is realistic to expect some students to drop out, and best if all students are prepared as well as possible to function in the labor market.

One promising kind of intervention with dropout-prone students is change in the school experience itself. Many dropouts say that they just did not like school, or were bored, or felt their coursework gave them nothing of value. However these students put it, school experiences were simply not positive enough to hold them. This is a complex question involving individual needs and personalities, but experimental programs have shown that schools can retain some of these disaffected students.

For example, retention rates have improved when efforts to increase understanding between student and teacher are successful. This rapport seems to enable dropout-prone students to tolerate what they dislike about school. Higher retention has also occurred in programs held in locations less structured than regular schools, and in those that give the student less time in the classroom and more time at work. Promising results of this sort, as well as the positive associations between vocational education and retention, suggest that an optimistic approach to this problem is both necessary and realistic.

CHAPTER 3
IN THE LABOR MARKET

Working While in High School

School-supervised Work/Outside Work

In terms of policy considerations, the distinction between school-supervised jobs and student-obtained (or outside) jobs is important. The school, through its policies, directly influences the number and kind of supervised jobs, as well as which students hold them. It can also monitor features of the employment, such as working conditions and hours. On the other hand, the school has no policy control over outside jobs; it may not even know of them. It cannot place on them the reasonable limitations usually placed on school-supervised jobs, such as the restriction of work hours to fifteen or twenty hours a week.

Because schools can and do supervise students in their work programs, the nature of those programs is important. When carefully structured and monitored, school-supervised jobs can add greatly to vocational education. Jobs can be monitored so that they do not demand too much of students. They can be chosen with the individual's needs in mind. They can help the student develop skills, learn new ones, and build self-esteem through this mastery. They can give the student experience that will be useful in getting training-related jobs after graduation. In these and numerous other ways, school-supervised jobs have the potential to enrich the vocational training experience.

Work-study and cooperative programs. Work-study and cooperative vocational programs constitute the bulk of school-supervised programs. Often similar in practice, these two approaches do differ in their purposes.

Work-study is usually designed to try to keep alienated students from dropping out. The typical work-study program does not attempt to teach occupational skills. Instead, it teaches the skills and concepts of job search and retention, such as how to fill out an application and how to get along with supervisors and fellow workers.

In contrast, cooperative vocational programs are intended to teach more direct occupational skills through a combination of classroom instruction and on-the-job experience. Under the supervision of both the school and the employer, the student is placed in a part-time job that allows the practice of relevant skills and the development of new ones. These programs' goals are to supply an educational experience that is part of the vocational training.

Although these two programs often differ in the essential ways named, we are forced to combine them here. Because they were not distinguished from one another on the NLS questionnaire, the NLS data refer to all school-supervised jobs in one category. The database used here also includes the information available about those government-sponsored jobs that existed from 1978 through 1980, such as the Neighborhood Youth Corps In-School Jobs Program. Often conducted with cooperation between the school and the government agency, these programs can be considered to have been school-supervised. All other jobs are classified here as outside jobs.

In terms of the number of students involved in school-supervised jobs, few reliable data are available. The major source is the Vocational Education Data System operated by the National Center for Education Statistics. Students in cooperative programs that receive some of their funding under the Vocational Education Act of 1963 (P.L. 88-210), as amended, are reported in this system. During the 1979-1980 school year, 595,633 cooperative education students at the secondary and postsecondary levels were reported. They represent 10 percent of the nearly 6 million enrolled in occupationally specific programs in the last two years of high school and at the postsecondary level. The numbers of students in work-study programs cannot be added to this figure, because there is no data system that gathers those figures.

The figures given here refer to students who left high school, through graduation or otherwise, between April 1978 and August 1979. Only jobs held between September and June are included, except that summer jobs that were extensions of jobs held during the school year were also counted. Irregular jobs, such as occasional lawnmowing, were not. In the words of the questionnaire, the jobs were ". . . done on a more or less regular basis." Although occasional babysitting was not counted, the approximately 9 percent of the women's jobs identified as "household services" are nearly all in child care, presumably of a regular, formalized kind.

These data show that a surprisingly large number of high school students work. Tables 2 and 3 show that about 70 percent of the men and 64 percent of the women held jobs while in high school. The frequency of working varies with race. White students were more likely to have jobs than either Hispanics or blacks.

Most of these students obtained work on their own. Those jobs that were school-supervised were more likely to be held by women than by men. Minority students were a little more likely than white students to hold school-supervised jobs; this may indicate less opportunity for work outside the school for students from ethnic and racial minorities

Students from middle and high SES families were much more likely to work than those whose families were low SES.

Family socioeconomic status at the time the student was fourteen years old is strongly allied to employment during high school. Students from middle and high SES families were much more likely to work than those whose families were low SES. It is natural to expect low family income to be an incentive to work, and it may very well be. But several other factors apparently also influence the students' working. For example, those from middle to high SES homes may have fewer household responsibilities. They may have greater access to the labor market through the family's contacts. They may receive more help and encouragement in general from their families. Low SES students may not only lack these benefits, but may also be hampered by such problems as lack of transportation and limited knowledge of the labor market.

Socioeconomic status is also related to the frequency of working in school-supervised jobs. If we consider only those who worked while in high school, the percentage of low and middle SES students in school-supervised jobs is much higher than the percentage of high SES students. This pattern is predictable; work-study and government-sponsored jobs are often targeted to economically disadvantaged youth. These data do not distinguish clearly between the disadvantaged and those with moderate incomes, since family income was not directly measured. Had it been, the relationship between SES and school-supervised employment might be even more pronounced.

TABLE 2

HIGH SCHOOL WORK EXPERIENCE BY VOCATIONAL PATTERNS AND SPECIALTY (PERCENTAGE DISTRIBUTION)

Pattern and Specialty	School Job Only	Both School and Outside Job	Outside Job Only	No Job	Total	Percent of All Jobs School-Related	(n)
Males							
Vocational concentration	13	9	57	20	100	16.8	(245)
Limited vocational participation	6	4	55	35	100	9.5	(240)
No vocational credits	6	3	65	26	100	7.4	(177)
Agriculture	11	2	58	30	100	–	(57)
Office	4	5	59	33	100	–	(167)
Trade and industry	13	10	57	20	100	–	(147)
Other speciality	23	23	33	21	100	–	(29)
No speciality	6	6	57	32	100	–	(967)
Total	6.9	6.4	56.5	30.2	100	–	(1387)
Females							
Vocational concentration	14	11	47	28	100	22.2	(427)
Limited vocational participation	7	6	57	29	100	13.1	(290)
No vocational credits	3	4	53	50	100	10.7	(95)
Office	11	9	52	28	100	–	(518)
Trade and industry	22	5	46	27	100	–	(28)
Home economics	10	14	34	42	100	–	(32)
Other specialty	12	8	51	28	100	–	(50)
No specialty	7	6	44	42	100	–	(842)
Total	9.4	7.5	47.5	35.6	100	–	(1470)

SOURCE: Lewis, Gardner, and Seitz (1983, tables 2.6 and 2.8).

NOTE: Percentages shown in the table are weighted and may not sum to 100 due to rounding. For men, the "other" category includes distributive education, health occupations, and home economics. For women, the "other" category includes distributive education, health occupations, and agriculture. See text for explanation of school and outside jobs. All columns refer to respondents except "Percent of All Jobs School-Related." That column refers to jobs held and may include several jobs for a single respondent.

TABLE 3

HIGH SCHOOL WORK EXPERIENCE BY BACKGROUND CHARACTERISTICS (PERCENTAGE DISTRIBUTION)

Sex, Race, and SES	School Job Only	Both School and Outside Job	Outside Job Only	No Job	Total	(n)
Males						
Hispanic	8.9	8.9	43.6	38.7	100	(232)
Black	8.3	6.4	36.7	48.6	200	(346)
White	6.6	6.2	60.3	26.9	100	(809)
Low SES	8.3	7.3	44.6	39.8	100	(434)
Middle SES	8.2	6.9	57.7	27.2	100	(731)
High SES	3.2	4.5	62.6	29.7	100	(218)
Total	6.9	6.4	56.5	30.2	100	(1387)
Females						
Hispanic	11.4	9.0	36.6	43.0	100	(223)
Black	14.5	5.2	19.2	51.2	100	(376)
White	8.4	7.8	51.2	32.6	100	(871)
Low SES	9.6	6.2	33.2	51.0	100	(461)
Middle SES	10.0	9.1	48.3	32.6	100	(787)
High SES	7.7	5.0	57.8	29.6	100	(217)
Total	9.4	7.5	47.5	35.6	200	(1470)

SOURCE: Lewis, Gardner, and Seitz (1983, tables 2.1 and 2.2).

NOTE: Percentages shown in the table are weighted and may not sum to 100 because of rounding.

Despite their greater participation in school-supervised jobs, low SES students have much lower overall rates of working during their high school years. Something is considerably different for these students; the difference may lie in opportunity, encouragement to work, or a combination of other factors. Whatever the causes, the high employment of low SES students in school-supervised jobs is not enough to offset their significantly lower rates of working while in high school.

Experience in school-supervised jobs also differs according to region. These jobs are proportionally more frequent in the western states than in the southern, north central, or northeastern parts of the country. In the south, work experience of any kind is less common; in the north central regions it is more common.

Not surprisingly, students who are parents show employment patterns different from other students. The sample size for men is quite small, but analysis does suggest that men who are parents work more often than others, and much less often at school-supervised jobs. Over 70 percent of these men held outside jobs, compared to 56 percent of the men without children. Although it seems likely that students with parental responsibilities have a greater need to work, it may also be that those who are more likely to work are more likely to become parents while in high school.

Women with children are less likely to work—46 percent did so compared to 66 percent of the childless women. Since many probably experience financial hardship, there may well be significant reasons for this choice, such as the need to balance school-work and child care. When high-school-age mothers do work, they are more likely than their male counterparts to choose school-supervised jobs.

The extent of school-supervised work. The overall worth of school-supervised work programs is naturally of prime concern in terms of future policy. Do these programs have a more positive effect on students than outside jobs in terms of such things as academic performance or future labor market outcome? If so, expanding such job programs should be a high priority for vocational education.

Students hold school-supervised jobs at rates that vary with their participation in vocational education and with gender. Overall, about 16 percent of all the jobs women hold during high school are school supervised, compared to about 11 percent for the men. This may mean that women are more dependent upon this source of jobs, or simply that they take greater advantage of it.

. . . school-supervised jobs account for less than one-sixth of all jobs students hold.

The difference in men and women's participation must, in any case, be seen in light of the fact that school-supervised jobs account for less than one-sixth of all jobs students hold. By far the majority of all high school work experience is obtained in outside jobs; most of the jobs held by vocational students are not school supervised. Considering the enormous numbers of students who do work, it is hardly surprising that vocational programs do not supply all high school jobs.

School-supervised jobs are not held exclusively by vocational Concentrators. Most Concentrators, like most working students in general, hold outside jobs. But Concentrators do use school jobs more often. About 22 percent of the jobs held by female Concentrators are school supervised; the figure is less than half that for women with little or no vocational coursework. When the sample is limited to those students for whom complete transcripts were available (so that Concentrator groups are fairly represented),

the results are that male Concentrators held about 35 percent of the men's school-supervised jobs and female Concentrators held about 50 percent of the women's jobs that were school supervised.

School-supervised jobs seem to increase opportunity for working students by providing jobs with higher job content and by offering more prestige, better pay, and the opportunity to learn new skills.

In general, most school-supervised jobs were held by students with some vocational education. Of those for whom complete transcripts were available, 84 percent of the supervised jobs for men and 94 percent of those for women were held by students with some degree of vocational coursework. Given this, it is still true that most Concentrators—about 70 percent—never hold a school-supervised job.

Characteristics of High School Jobs

The impact of working during high school is easily seen in the hours students work. Many student jobs demand substantial commitments of time. Almost half of those held by men and one-third of those held by women involve over twenty hours of work a week. One job in seven demands over thirty hours a week. For students with all the responsibilities of school, these commitments of time are substantial.

The jobs students hold can be described from several points of view, including the occupations, the impact of school supervision, the nature of the employers, and the skills required. Examination of each of these areas casts light on the working vocational student. (Since the data on income and earnings are extensive, this area is treated in a separate section immediately following this discussion of job characteristics.)

Although the analyses that follow are as precise as possible, the results should be read with the limitations of the data in mind. Each of the 6,796 high school jobs reported by NLS respondents was counted, whether or not the same respondent reported holding more than one job during high school. This method has obvious shortcomings; it gives equal weight to jobs that lasted two weeks as to those that lasted two years. As a result, an individual who moved through several short-lived jobs influenced the distribution more than another who held the same job for the entire school year.

As previously discussed, the jobs identified in this analysis were those done on a more or less regular basis. This exclusion of occasional work undoubtedly has an effect on the findings. Other data from the High School and Beyond survey (Lewin-Epstein 1981) suggest that as many as one-third of the sophomores and one-tenth of the seniors who work may do irregular work of this kind.

Occupations. The occupations of the students discussed here are categorized according to the census occupational classifications. It should be pointed out that objections have been made to using this system for examining jobs held by young people (Lewin-Epstein 1981), since it is probable that their jobs often differ from those held by adults.

For various reasons, including the vagueness of many individuals' descriptions of their jobs, the researchers were unable to classify about one-third of the high school jobs reported by the NLS respondents. The data used here represent, then, the regular jobs held by two-thirds of the respondents. The likely effect of this gap is that skilled and semiskilled jobs are overrepresented, since many of the unclassifiable jobs were probably in the service area.

Using the database described, the study found that half of the high school men held jobs in the service or laborer groups. The other occupational groups, except for (1) managerial and professional/technical and (2) household service, each accounted for at least 5 percent of the jobs.

For women, jobs were even more heavily concentrated, but in service and clerical occupations. Women were more often in sales or household service jobs than men, with the latter field accounting for almost 20 percent of the women's jobs. Only 5 percent of the women worked in craft and operative jobs, compared to 24 percent for men.

These patterns, which obviously conform to traditional, gender-defined roles, parallel the patterns found among older workers. There, too, larger proportions of women than men work in clerical, service, and household service occupations, and smaller proportions are found in the craft, operative, and laborer groups.

Concentration in vocational education shifts the occupational groupings to a degree. Male Concentrators are more likely than other men to be in craft or farm jobs, and less likely to work in service occupations. In comparison to women with no vocational credits, female Concentrators are more likely to hold clerical jobs and less likely to work in sales or service occupations.

When jobs are school supervised, the occupational groupings change even more distinctly. For men, craft occupations account for a larger share of jobs, and laborer, sales, and farm positions for a smaller share. Women's jobs are less likely to be found in the sales and service occupations. Both men and women are more likely to hold clerical jobs. For women, the differences between outside jobs and school-supervised jobs are particularly striking in the clerical field. Over half the women in school-supervised jobs do clerical work, compared to only 27 percent of those in outside jobs. In household service, another significant difference appears: only 1 percent of women in this group work in this field, compared to over 15 percent of the women holding outside jobs.

These differences suggest that the high school work experience is more beneficial to vocational Concentrators and students who work in school-supervised jobs. They are, at least, more likely to work in those occupations that offer more prestige, better pay, and increased opportunity to learn useful skills.

Skills. The great majority of high school jobs are not complex in their demands. Most involve unskilled clerical, service, or manual labor tasks with low job content. The term "job content" refers to the skill, complexity, and responsibility of a job as measured on the five-level scale developed by Scoville (1969). For example, ushering is a low content job, while operating a motion picture projector is a higher content job. Over 75 percent of the jobs students hold are at the two lowest content levels; in comparison, about 38 percent of adult jobs are at the same levels.

That inexperienced young people tend to find work in low-skilled jobs is not surprising. What is surprising is that as much as one-fifth of the jobs reported are at the intermediate content level or higher. A substantial portion involve at least some dexterity or mental effort.

In general, concentration in vocational education is associated with higher job content. This effect, however, is probably due to the larger proportions of Concentrators in school-supervised jobs. These jobs are more likely to be in the middle level of job content than are outside jobs. Half of the school-supervised jobs for women have middle-level job content, which follows from the nature of clerical work and its demand for certain levels of proficiency. Men, who are more likely to hold simple manual labor jobs, are also more likely to work at the lower levels of skill. Only about one-fourth of the men in school-supervised jobs worked above the lowest levels of job content.

The employer. In placing students in jobs, schools may still have considerable room for work with employers within the private sector. This area of employment is relatively untapped in comparison with government, which is the employer in a large number of school-supervised jobs. Insofar as private sector jobs are available, the expansion of jobs with these employers is one obvious way to create more school-supervised jobs.

School-supervised jobs show distinct patterns in terms of the areas in which students are employed. About one-third of such jobs are in trade and industry, compared to over half of all outside jobs. Although 15 percent of female students in outside jobs work in the personal services industry, a very small number—only 2 percent—of the women in school-supervised jobs are in this area. Both men and women are more likely to work in professional services and public administration when jobs are school supervised.

In placing students in jobs, schools may still have considerable room for work with employers within the private sector.

Over half of all employment while in high school is within the wholesale and retail industries. These jobs, many of which demand lower levels of skill, involve working as stockpersons, baggers, file clerks, or sales clerks. Professional services and manufacturing provide another substantial portion of student jobs. More women work in the professional services area, which primarily supplies clerical jobs; more men work in manufacturing, where manual labor jobs are more common.

The remaining one-third of student jobs are found in an assortment of industries. Thirteen percent of the women work in personal services, many in child care; the rest are dispersed in other industries. Men are divided more equally across a handful of industries: agriculture, business and repair service, construction, and entertainment.

Most students work part-time during their high school years. In keeping with their age and experience, most hold jobs that demand low-level skills and entail little complexity or responsibility. School-supervised jobs seem to increase opportunity for working students by providing jobs with higher job content and by offering more prestige, better pay, and the opportunity to learn new skills.

Income and Earnings

The image of the casual high school student who works a few hours a week for pocket money is outdated. Almost three-fifths of all seniors work; vocational Concentrators more often than others. At least half of those who work earn over $2,500 during their senior years—enough to constitute a substantial contribution to their own or their families' needs.

Almost three-fifths of all seniors work, vocational Concentrators more often than others. At least half of those who work earn over $2,500 during their senior years . . .

Income from high school jobs. The best measure of the economics of student work is the total income the students receive from all the jobs they hold. This includes, in one figure, several significant variables: the hourly rate of pay, the hours worked per week, the number of weeks worked per year, and the

TABLE 4

LABOR INCOME OF HIGH SCHOOL GRADUATES AS SENIORS 1978-79 AND 1979-80 1979 DOLLARS, PERCENTAGE DISTRIBUTION

	Men							Women						
Pattern	$0	$1-$1000	$1001-$2500	Over $2500	X	Total	(n)	$0	$1-$1000	$1001-$2500	Over $2500	X	Total	(n)
Concentrator	24	5	8	13	50	100	(76)	45	3	5	7	40	100	(118)
Limited Concentrator	35	4	9	9	43	100	(98)	35	4	11	14	36	100	(184)
Concentrator/Explorer	36	1	3	20	40	100	(58)	35	4	9	13	39	100	(111)
Explorer	32	3	–	25	40	100	(17)	49	–	–	3	48	100	(15)
Incidental/Personal	43	3	8	11	35	100	(223)	46	2	4	8	40	100	(276)
No vocational credits	41	3	4	12	40	100	(116)	57	–	7	2	34	100	(96)
Incomplete transcript	40	1	11	9	39	100	(363)	41	2	7	13	37	100	(379)
Racial/Ethnic Group														
Hispanic	42	3	7	14	34	100	(144)	53	4	10	8	25	100	(161)
Black	56	2	8	4	30	100	(238)	57	4	7	6	26	100	(306)
White	37	3	8	12	40	100	(619)	40	2	7	11	40	100	(712)
All	39	3	8	11	39	100	(1001)	43	3	7	10	37	10	(1197)

SOURCE: Lewis, Gardner, and Seitz (1983, table 3.16)

NOTES: Percentages are weighted and may not sum to totals because of rounding. X refers to respondents who held high school jobs but could not be classified by income because either the tenure of the job was unknown or the job continued beyond the date they left high school.

accumulated wages from a number of different jobs.

Using this measure, Lewis, Gardner, and Seitz (1983) calculated income for high school seniors who graduated in 1978 and 1979 (see table 4). Since complete high school work histories are not yet available in the NLS database, it was not possible to arrive at comprehensive income figures; therefore, the figures here are likely to understate slightly the actual frequency of working. As before, the NLS Youth data analyzed refer to jobs that were "more or less regular" rather than sporadic.

As the table shows, nearly 60 percent of these graduating seniors earned money from regular jobs. The severe unemployment problems of black teenagers are in evidence; black men and women earned regular incomes less often than others. Women in the full sample, as well as those who were white or Hispanic, earned regular income less often than men.

Those who worked at school-supervised jobs during their senior year earned rather substantial amounts. Half of this group, including both men and women, earned over $2,500 that year. Only about one-seventh earned under $1,000. Although fewer women held regular jobs, income was distributed evenly between men and women in the sample as a whole. Some vocational students with medium to high participation earned income from regular jobs more often than those in other groups, but the overall earning figures were nearly the same.

Some respondents could not be classified by income because the tenure of the job was unknown. Others stayed on in their high school jobs after they left school. In the interview, these students provided information on the hours worked and wages earned at the date of the interview. Since these figures may differ from the hours and wages in high school, they are suspect as a measure of high school income. Respondents in both of these categories were therefore allocated a hypothetical income, the average yearly income for students of the same gender and racial or ethnic background who held jobs of the same type. They are represented on table 4 in column X. The majority are shown as receiving over $2,500 from their jobs, like most working students in the sample.

Working while in high school is both more widespread and more economically important than commonly believed.

The allocation shows that Concentrator pattern groups earn at least $2,500 more often than students with no vocational credits. It also suggests that among all high school seniors about 40 percent of the men and 30 percent of the women earn more than $2,500.

Working while in high school is both more widespread and more economically important than commonly believed. In a typical senior classroom, half or more of the students carry the responsibilities of a job and of managing significant income.

Earnings. The financial aspect of working while in high school can also be examined in terms of the patterns of students' earnings per hour and per week. One natural comparison is with the federal minimum wage for jobs not involving tips.

In considering this comparison, researchers took into account changes in the minimum wage, which rose twice during the reporting period for the NLS survey. From $2.65 an hour on January 1, 1978, it became $2.90 exactly one year later, and $3.10 the following year. The NLS survey itself had cautioned respondents to include the usual value of tips and bonuses in the hourly earnings they reported, so that the data would reflect

their total hourly earnings; this is significant in that some groups work more at jobs in which tips are an important source of income. The obvious example is the higher proportion of women who work as food servers.

In comparing earnings, the inexactness of the inflation adjustment was also considered. Brackets were set wide enough to encompass rates of pay within about 10 percent of the upper and lower boundaries of the minimum wages during this time. Students who earned between $2.51 and $3.50 an hour were considered to earn minimum wage.

Table 5 shows that, for both sexes, the clear majority of jobs held during high school fell within this range. A substantial fraction, however, earned at least 10 percent less than the minimum, a fraction that is considerably larger for women (33 percent) than for men (19 percent). In part, this is due to the fact that 10 percent of the women worked in household service, a field seldom subject to the federal minimum.

This large fraction of low-paying jobs affects the figures for average earnings for women. Women in the entire sample, as well as in most categories, show an average hourly wage below the 1979 minimum of $2.90 an hour. For men, the average is about $0.25 an hour above the 1979 minimum. Excluding household service jobs raises the average for women by $0.17 an hour. But the remaining $0.20 an hour difference from men's wages is still substantial.

Women earned considerably more when they held school-supervised jobs. Twice as large a fraction of their outside jobs paid under $2.51, but their school-supervised jobs averaged $3.15. When household service jobs are again excluded, this gap narrows, since almost no jobs in this field are school supervised. Finally, women with no vocational credits show higher mean earnings; this is due to the fact that 7 percent of this group earn over $5.50 an hour.

For men, hourly earnings were uninfluenced by whether jobs were school supervised or outside. Differences in pattern groups were apparent; vocational Concentrators reported lower hourly earnings than nonvocational students.

Weekly earnings give additional insight into the financial position of the working student. Usual weekly income was calculated by multiplying hourly earnings by the number of hours the student typically worked in a week. Compared to the weekly earnings of adults who work full-time, the average is predictably low. Here, too, most women earn significantly less than most men. Incomes of less than $50 a week were reported for 46 percent of the women's jobs, compared to 34 percent of the men's jobs. However, in the most common range, $51 to $75 a week, men and women held nearly equal numbers of jobs. Twenty-six percent of the jobs held by men and 28 percent of those held by women were in this category. A small but important proportion of jobs averaged over $100 a week--over 22 percent of the men's jobs and 14 percent of the women's jobs.

In terms of the income of the pattern groups, there were no significant differences for men. However, women with high concentration in vocational education reported higher mean weekly earnings than those with no vocational courses. Moreover, the figures suggest that those with heavier concentration earn more, although the difference is not statistically significant.

School-supervised work programs in particular should not be evaluated solely with reference to the earnings of the students.

Both men and women in school-supervised jobs reported higher weekly earn-

TABLE 5

USUAL HOURLY EARNINGS OF JOBS HELD WHILE IN HIGH SCHOOL (1979 DOLLARS, PERCENTAGE DISTRIBUTION)

Pattern and Type of Job	$2.50 and Less	$2.51–$3.50	$3.52 and Over	Mean	(n)	Excluding Household Service Mean	Excluding Household Service (n)
Males							
Concentrator patterns	21	60	18	$3.01	(300)		
Limited participation	21	54	25	3.11	(297)		
No vocational credits	14	66	20	3.16	(170)		
School job	12	68	19	3.15	(390)		
Outside job	20	57	23	3.15	(1310)		
Total	18.8	59.1	22.1	3.15	(1700)		
Females							
Concentrator patterns	27	62	10	2.80	(424)	$2.89	(402)
Limited participation	25	60	15	2.96	(252)	3.09	(238)
No vocational credits	32	62	7	3.03	(62)	3.29	(55)
School job	15	71	13	3.15	(400)	3.15	(397)
Outside job	39	51	11	2.65	(962)	2.88	(830)
Total	33.4	55.3	10.4	2.80	(1362)	2.97	(1227)

SOURCE: Lewis, Gardner, and Seitz (1983, tables 3.12 and 3.13).

NOTE: Percentages and means are weighted, and percentages may not sum to 100 due to rounding. Jobs held while in high school exclude jobs that respondents continued to hold after leaving high school.

ings. This difference, though, is statistically significant only for women, and if household service jobs are excluded, it disappears.

This section has isolated the subject of earnings during high school at some risk, given that vocational education programs are often evaluated in terms of earnings after graduation. School-supervised work programs in particular should not be evaluated solely with reference to the earnings of the students. As described earlier, these programs are not constructed primarily to provide income, but to educate and help students in a variety of ways.

The Working Student

No two working students are alike. One may be from a low SES family, the next may be Hispanic, the next may work over thirty hours a week, the next may have taken only two vocational courses, and so on. Even so, some generalizations hold true for at least half of the NLS respondents who worked during high school. They obtained their own jobs. They were from middle or high SES families. Their jobs involved little skill or responsibility. They worked in the wholesale and retail industries. They worked enough hours to have substantial incomes.

. . . the vocational Concentrator is more likely to hold several jobs during high school than are students with less participation in vocational education.

In order to complete this general profile, several remaining areas must be mentioned. One is the relationship between high concentration in vocational education and the frequency of job change: the vocational Concentrator is more likely to hold several jobs during high school than are students with less participation in vocational education.

Both male and female Concentrators held at least three jobs during high school almost twice as often as did other students: 9 percent of the men in the total sample held three or more jobs, compared to about 17 percent of the male Concentrators. For female Concentrators, the ratio was nearly the same: about 19 percent held three or more jobs during high school, compared to 12 percent of the women in the total group.

Degree of participation is related to the frequency of employment during high school only for Concentrators. This group of vocational students seems more likely to have a kind of job mobility during the high school years. The frequency of employment may be related to more use of school-supervised jobs, a higher degree of skills offered to the employer, more interest in working, or other, less visible, factors. In any case, this varied experience may well be an advantage in the job search after graduation.

Another variable related to the student's likelihood to work during high school is service area. (Area of specialization was defined as that service area in which a student with high participation earned at least 60 percent of his or her total vocational credits.) Eighty percent of the men who specialized in distributive education or trade and industry worked during high school. Seventy percent of the men in agriculture and office specialties worked. Women who specialized in occupational home economics were somewhat more likely to be employed than those in other fields. Otherwise, specialty was not related to employment to the same degree as for men.

Just as frequency of employment varied with specialty, so did the tendency to hold school-supervised jobs. Of those men in trade and industry, 23 percent worked in school-supervised jobs; over 45 percent of those in the "other" category did the same. (Most of the men in this category were dis-

tributive education students. "Other" also included men in health services and occupational home economics.) Only 9 percent of the men in office specialties and 13 percent of those in agriculture held school-supervised jobs. The proportions of women who worked in school-supervised jobs varied with specialty, but the differences were small.

. . . the extent of vocational education is significantly related to participation in the labor market.

Any profile of the working student must include the relationship of working to delinquent behavior—a question seldom addressed in previous research. Data on this issue were gathered in the NLS Youth survey through a confidential questionnaire completed by respondents during the May 1980 interview. The form listed a number of delinquent acts and school problems, such as shoplifting and being suspended from school. Respondents were asked to indicate how often they had been involved in each behavior during the twelve months prior to the interview.

Lewis, Gardner, and Seitz (1983) used the resulting data to focus on the difference in delinquent behavior between students who worked during high school and those who did not. The subsample used for analysis was limited to those who were juniors or seniors at the time of the interview, and those who had dropped out within the preceding three months. These limitations ensured that the data analyzed would reflect the experience of respondents who had actually been students during most of the one year period in question. The study was not limited by curriculum.

Table 6 shows the results for men, both juniors and seniors, and table 7 shows the findings for women. The frequencies of various behaviors are similar across both gender and grade. Some acts, such as drinking, are very common; others, such as expulsion from school, are rare. These differences are fairly predictable, but the analysis gives a clear outline of the frequency of various behaviors.

Most significant is the relationship of delinquent acts to working during high school. A consistent pattern emerged under analysis: when all categories of work experience are combined, the incidence of school problems and delinquent behavior is higher among working students than among those who did not work. Students who held both school and outside jobs usually reported the most problem behavior. The least delinquency was reported by those who worked only in school jobs or did not work at all. Other than work patterns, these respondents did not differ from their counterparts.

There is no obvious explanation for these data. It is possible that future research will discover a causal link. It may also be that working and delinquent behavior are associated phenomena that spring from other factors characteristic of working students.

Working after High School

Participation in the Labor Force

In their study of the labor market experience, Gardner, Campbell, and Seitz (1982) examined the extent to which graduates are active in the labor force, either working or looking for work. Since one reason for not working is enrollment in postsecondary education, their sample was limited to those who were not enrolled, and in some instances restricted further to those who had exactly twelve years of education. They found that, in general, people with any concentration in vocational education were more likely to be in the labor force for a full year than those who had either no vocational courses or an incidental course.

TABLE 6

RESPONDENTS REPORTING SCHOOL PROBLEMS OR DELINQUENT BEHAVIOR IN PREVIOUS TWELVE MONTHS BY WORK EXPERIENCE PERCENTAGE REPORTING BEHAVIOR, MEN

Problem or Delinquent Behavior	School Job Only	Both School and Outside Job	Outside Job Only	No Job	Total
Juniors					
Skipped school	59	84	50	50	52
Used alcohol	71	82	78	71	75
(n) *	(31)	(27)	(300)	(204)	(562)
Suspended from school	40	46	23	28	26
Expelled from school	3	6	3	3	3
Used marijuana	17	33	19	18	19
Shoplifted	26	68	41	29	38
Stole < $50 value	20	28	32	26	29
Stole > $50 value	7	12	10	8	10
(n)	(38)	(39)	(336)	(224)	(637)
Seniors					
Skipped school	38	62	53	36	50
Used alcohol	74	97	72	65	73
(n)	(22)	(22)	(172)	(61)	(277)
Suspended from school	26	44	26	28	28
Expelled from school	1	1	2	3	2
Used Marijuana	47	54	45	34	44
Shoplifted	34	32	30	20	29
Stole < $50 value	23	29	25	27	25
Stole > $50 value	8	2	7	5	6
(n)	(56)	(64)	(338)	(126)	(584)

SOURCE: Lewis, Gardner, and Seitz (1983, table 2.15)

NOTE: Percentages shown in the table are weighted.

*Questions on skipping school and drinking of alcohol were asked only of respondents seventeen years of age or younger.

TABLE 7

RESPONDENTS REPORTING SCHOOL PROBLEMS OR DELINQUENT BEHAVIOR IN PREVIOUS TWELVE MONTHS BY WORK EXPERIENCE PERCENTAGE REPORTING BEHAVIOR, WOMEN

Problem or Delinquent Behavior	School Job Only	Both School and Outside Job	Outside Job Only	No Job	Total
Juniors					
Skipped school	50	68	54	32	45
Used alcohol	48	75	78	54	69
(n) [a]	(30)	(17)	(248)	(264)	(559)
Suspended from school	24	28	11	10	11
Expelled from school	–	4	1	1	1
Used marijuana	44	42	49	33	43
Shoplifted	32	31	32	17	26
Stole < $50 value	8	18	16	10	13
Stole > $50 value	–	3	1	1	1
(n)	(33)	(23)	(259)	(291)	(606)
Seniors					
Skipped school	38	62	60	38	54
Used alcohol	55	68	77	51	68
(n)	(37)	(49)	(171)	(92)	(349)
Suspended from school	17	15	11	10	12
Expelled from school	3	–	1	1	1
Used marijuana	24	67	54	24	46
Shoplifted	14	29	25	19	23
Stole < $50 value	6	14	17	9	14
Stole > $50 value	2	2	2	1	2
(n)	(71)	(82)	(269)	(173)	(595)

SOURCE: Lewis, Gardner, and Seitz (1983, table 2.16).

NOTE: Percentages shown in the table are weighted.

[a] Questions on skipping school and drinking of alcohol were asked only of respondents seventeen years of age or younger.

The patterns for various groups are shown in table 8. Men with moderate levels of vocational education were much more likely to be in the labor force for a full year than those with incidental or no participation. This general trend is not as strong for male Concentrators, although it is in the same direction. For female Concentrators, the trend is stronger: they were much more likely to be in the labor force for a year than other female graduates.

It seems clear that the extent of vocational education is significantly related to participation in the labor market. The student's specific level of participation also seems to affect this outcome, although in ways for which there is no obvious explanation at present.

The Job Search

Job search techniques are probably unlimited, but in general they fall into two categories—those that involve direct contact with the employer and those that are conducted through a broker. Direct searches often involve contacting the employer at the place of business or responding to an advertisement. A broker as a source of help and information may include employment services or helpful relatives. Techniques of both kinds seem to be effective. Several studies have examined various strategies and found some evidence that direct employer contact and job information secured through family and friends are most likely to lead to employment.

Analysis of the 1981 interview data from the NLS Youth survey generally supports this conclusion, with one notable difference. Although direct employer contact and help from family and friends are still the most successful strategies, they are followed very closely by two other methods: use of private employment agencies as brokers and use of newspaper advertisements as sources of information.

Assuming that this does reflect the realities of the job search, it becomes important to ask what strategies vocational graduates use. Certainly many factors, from individual skills and work history to the local labor market, affect the success of a job search. Even so, the search method used appears to be significant. In considering the success of vocational graduates in the labor market, it is important to ask what strategies these graduates use in their job searches.

Several studies have examined various strategies and found some evidence that direct employer contact and job information secured through family and friends are most likely to lead to employment.

Data gathered from a subsample of the NLS Youth survey can be used to examine this question. In three consecutive annual interviews, these respondents had replied affirmatively to the question, "Were you seeking employment during the four-week period prior to the interview?" In response to additional questions, they reported what job search techniques they were using, and to what degree. During the third interview they were asked a supplemental series of questions about the results of their job searches. Using this information, Gardner, Campbell, and Seitz (1982) examined the success rate of the various strategies used. These strategies, with their percentage of use, are as follows (more than one strategy was used by many individuals; therefore the percentages total more than one hundred):

- Direct employer contact (60-61 percent)
- Response to advertisements (39-40 percent)

TABLE 8

LABOR FORCE EXPERIENCE BY VOCATIONAL EDUCATION PATTERNS, RESPONDENTS WITH EXACTLY TWELVE YEARS OF EDUCATION (PERCENTAGE DISTRIBUTION)

Patterns	Men			Women		
	52 Weeks in Labor Force	27 or More Weeks Worked	0 Weeks Unemployed	52 Weeks in Labor Force	27 or More Weeks Worked	0 Weeks Unemployed
Concentrator						
1978	64.2	89.9	65.4	63.3	85.7	70.0
1979	61.8	87.5	81.5	60.9	77.3	69.4
Limited Concentrator						
1978	78.4	92.1	70.3	51.4	75.3	66.5
1979	71.9	85.0	66.6	45.5	70.2	69.0
Concentrator/Explorer						
1978	77.6	96.1	81.5	53.0	66.2	59.8
1979	71.0	94.2	74.3	45.4	73.8	65.2
Explorer						
1978	36.1	88.3	54.9	40.9	57.0	80.6
1979	68.4	89.5	49.9	33.1	61.7	49.5
Incidental/Personal						
1978	59.3	88.9	64.0	44.4	66.4	64.5
1979	59.5	87.7	69.6	39.1	72.0	57.9
Nonvocational						
1978	59.6	82.5	61.1	36.3	56.8	53.4
1979	59.5	87.7	69.3	39.7	60.3	54.1
Incomplete transcript						
1978	62.9	78.8	65.5	42.1	60.9	59.1
1979	62.1	79.1	57.2	37.6	61.1	61.7
Total						
1978	63.9	85.2	65.6	47.4	67.3	62.6
1979	64.5	84.7	65.8	42.8	67.7	63.1

SOURCE: Gardner, Campbell, and Seitz (1982, tables 3-5, 3-7, etc).

- Seeking information from family and friends (15-19 percent)
- Use of state employment services (14 percent)
- Use of school employment services (6-8 percent)
- Use of private employment services (4-5 percent)
- All other methods (9-12 percent)

It is possible that some respondents took direct employer contact to refer to the job interview itself, and may have reported direct contact with the employer to the exclusion of other methods. However, the survey question was carefully worded, and the figures should not have been significantly changed by this kind of misinterpretation. These percentages seem to form a reasonable basis for examining other factors that relate to the choice of job strategy. Knowing what strategies particular groups choose can both illuminate labor market experience, including employment and unemployment, and suggest helpful policies for the future.

Job search strategies and vocational students. How vocational education participants conduct their job searches is of primary interest in terms of their labor market experience. Analysis of the data does suggest that graduates tend to use specific techniques and that these tendencies vary with patterns of participation and with specialty. Some trends in usage hold for two years; few are consistent across all three years of the survey data. For instance, in 1979 and 1980, Concentrators were more likely to use state employment services and less likely to use their friends and relatives as sources of information than were those with little or no vocational coursework. The following year, however these relationships did not hold. In 1980, Concentrators were much more likely than the average to report the use of advertising, but not the following year.

Favorite strategies also vary with specialty; in particular, students in two areas showed distinct tendencies to use specific search techniques. The first group consists of those who had specialized in trade and industry; these graduates were significantly more likely to use their friends and relatives in their job searches. The second group consists of those who had no specialties, either because they had taken no vocational coursework, or because they did not concentrate in an area. These respondents tended to use school employment services. This significant trend held true for all three survey years.

Strategy choice and educational enrollment. Enrollment and educational level also affect the choice of job search techniques. Young people who are enrolled in school use school employment services at least ten times as often as those who are not. The use of school services as a job search strategy is further affected by educational level. Students in their third and fourth years of post-secondary school use school employment services two or three times more than the average for all job seekers.

Various other trends emerge. First, in 1979 there was an extraordinarily high use of direct employer contact; *all* job searchers who were completing fifteen years of education reported using this strategy. The following two years, however, the figures dropped to about the average for those with other levels of education. During 1979, another strategy was very heavily used by those who had completed thirteen years of education: nearly twice as many respondents used school placement services as during an average year.

Whatever the cause of these peaks, it is evident that the use of school employment services depends heavily on whether the student is enrolled. Students who have left school, although they may have lost a previous job and are searching again, do not seem to see the school placement agency as available or useful to them.

For secondary schools in particular, these findings suggest directions that school

employment services can take. Where these agencies are effective in helping young people find jobs, follow-up programs extending the agencies' help to graduates may be appropriate. Groups that may be targeted are Concentrators and those with no vocational education, both groups for which school employment services are somewhat effective. For students who are not helped by school employment services, the services may be changed and improved; alternatively, the users may be directed to other job strategies.

Strategy choice, gender, and race. Among the NLS Youth respondents, gender and race play a role in the choice of job search strategies. One significant association is that white men use advertisements consistently less often than job seekers on the average. The impact of this choice is somewhat unclear. There is evidence that answering advertisements has a relatively low success rate (in terms of gaining job offers) of 12 percent; other evidence suggests, however, that this strategy is productive and should be used more often.

A second finding is both more clear-cut and more troubling: black men and women are consistently above average in their use of state employment agencies. The reason this is a potentially serious problem is that the success rate of state agencies has been reported to be as low as 5 percent (Egan 1976). In fact, for black youths in general, this is the least productive strategy. (The only less productive strategy for black men is the school employment service.) This finding suggests that black graduates can be helped by instruction in job search strategies. One approach is for vocational programs to teach what the various strategies are, with emphasis on their success rates.

Strategies and reasons for the job search. To some degree, a job seeker's employment status affects the strategy chosen. In two of the three years surveyed, those who had lost their jobs were much more likely to register with state employment services. (This may be associated with requirements to register in order to qualify for unemployment compensation.)

Whether the work sought was full-time or part-time also made a difference in the respondents' choice of strategy. Those who were looking for part-time work tended not to use state employment services. In two of the three years, they did tend to use school employment services more than the average.

The effect of labor force status. The choice of a search strategy also varies with the job seeker's employment status. Those who are unemployed, like those who have lost their jobs, use state employment services more than the average. Those who have been out of the labor force (rather than unemployed) and are now reentering make less than average use of this service, as well as less use of advertisements; they make more use of school employment services. For young adults, a common reason for being out of the labor force is enrollment in school, so this high use of school services is consistent with the high use by those who are enrolled.

The success rates of job search strategies. Probably the single most significant issue in the question of search methods is how well they work for those who use them. For the NLS Youth respondents, effectiveness varied to some degree with the degree of vocational concentration, as follows:

- State employment services were especially ineffective for those with the greatest concentration in vocational education; and became more effective as concentration decreased.
- Private employment services were also increasingly effective as concentration decreased.
- Advertisements were most effective for Concentrators and Concentrator/Explorers; they were less useful for Limited Concentrators.
- Direct employer contact and contacts made through friends and relatives were most effective for those with little

or no vocational training. Otherwise, trends were not apparent for the use of these two strategies.

Since the latter strategies usually have high success rates, vocational education may address the issue of how vocational students are—and are not—using them. It may be that students are not familiar or comfortable with these strategies or do not understand their potential usefulness. More effective job search orientation should help students choose the most useful strategies. There are other ways by which schools could help students use these strategies, such as arranging for effective employer contacts.

Overall use of job search strategies. On the whole, vocational participants depart from the average in their use of two "broker" strategies, state employment services and school employment services. These two services are used by different groups of job seekers. State agencies are used by the unemployed, blacks, those not enrolled in school and those who are searching because they lost their jobs. School agencies are used by those returning to the labor force; those seeking part-time work; some who are searching for jobs because of hardship; those who have completed thirteen, fifteen, or sixteen years of school; and those currently enrolled.

In general, vocational education graduates do not show significant differences from the overall sample in their choice of strategy. The few exceptions to this pattern are worth noting.

Training on how to choose job search strategies seems fundamental, since this choice is related to success.

Concentrators, in two of the three years, tended to use state employment services a little more than average. They had even less success than the sample as a whole, which generally received a low percentage of job offers through these services. Furthermore, these Concentrators were choosing an ineffective strategy at the expense of one that is usually more effective (contacting friends and relatives). This they did somewhat less often than the rest of the sample.

When they used direct employer contacts, Concentrators and Concentrator/Explorers were only half as successful as Incidental/Personal participants and those with no vocational training at all. Some of the strategies Concentrators used were more successful. In two of the three years they made average or above-average use of advertisements, with success rates that were well above average. When Concentrator/Explorers used this strategy, they too had well-above-average success.

The overall experience reported by vocational students in the job search suggests that much can be done to facilitate their efforts. The exact nature of what should be offered needs careful consideration. Training on how to choose job search strategies seems fundamental, since this choice is related to success. Job seekers need numerous other skills, including how to secure interviews and how to present themselves in interviews. These skills are presently taught as part of the vocational education curriculum in some schools. With employment rates low for some groups of students, the inclusion of job search training is a valid consideration for addition to any vocational program.

The Early Career

Vocational education has the potential to affect the graduate's work experience in a number of specific ways already discussed, such as employment, types of jobs held, and earnings. There are also labor force effects

that are career related and represent interactions between the individual and the labor force over a period of time. These include labor force experience, job tenure, multiple job holding, and job separation and turnover.

Labor force experience. The term *labor force experience* refers to the total time spent working, whether on one job or on multiple jobs. Because total work experience is related to such other aspects of working as tenure and rate of pay, it is an important consideration when examining the effects of vocational education.

Among the NLS Youth respondents, men with some concentration in a vocational specialty had from one to three months' more work experience than men with no vocational education. In part, this seems to be an indirect effect of higher rates of participation in vocational education, since such participants tend to go directly to work after graduation. They are thus likely to be accumulating work experience while others are going on to postsecondary education. When considering women who have been out of school for at least two years, women with high concentration in vocational education have three to five months' more experience than otherwise similar women who had no vocational education.

These results are not easily interpreted; at the same time, they occur with enough young people to be meaningful. Labor force experience, because of its effect on other aspects of working, should be taken into account when evaluating the effects of vocational education.

Job tenure. Although labor force experience refers to the total time spent working, job tenure refers to the time spent in a specific job or with a specific organization. As may be expected, tenure has been found to relate to other labor market outcomes, such as higher rates of pay.

Higher vocational concentration is associated with one to two months' longer tenure for men and white women. This trend does not appear for minority women; for them, in fact, a high school education with little or no vocational participation may lead to longer tenure. Minority women outside the office specialties also seem to have a specific work pattern, accumulating less tenure on the job and changing jobs more often. It seems to be a positive pattern, since for this group tenure is actually associated with lower, rather than higher, hourly earnings.

Multiple job holding and number of jobs. Tenure, turnover, and available income are all related to the number of jobs a young person has held, and to whether more than one job is held at a given time. Multiple job holding does not seem to be an important or consistent effect of vocational education, although it does occur. Those who concentrate most highly on vocational education are more likely than other young people to hold multiple jobs during more than four months of the two-year period studied. On the whole, however, the NLS Youth respondents held multiple jobs at a rate of less than half the national average.

In the time period studied, men with vocational concentration were less likely than other male high school graduates to hold four or more jobs. For women no such trend emerged. The total number of distinct jobs held, as reported in the 1979 and 1980 surveys, is shown in tables 9 and 10.

These data can be seen as one indication of labor market stability. Although there is no established description of a stable employment experience, it is generally agreed that it includes some degree of tenure; frequent job change is disruptive for employers and workers alike.

For vocational education, this is an important issue, reflecting the level of adjustment in the transition from school to labor force. This adjustment, for men who concentrate in vocational education, seems smooth; they are more likely than other men to have held two or three jobs than to have held either very few or very many. In con-

TABLE 9

TOTAL NUMBER OF JOBS HELD BY VOCATIONAL EDUCATION PATTERNS, MEN (PERCENTAGE DISTRIBUTION)

Patterns	Number of Jobs 0	1	2	3	4+	n
Concentrator						
Full sample [a]	0.6	34.2	40.2	21.6	3.5	124
Not enrolled [b]	0.0	38.4	37.2	20.9	3.6	67
Limited Concentrator						
Full sample	1.9	43.6	28.0	19.9	6.6	224
Not enrolled	0.0	46.5	29.1	17.8	6.6	107
Concentrator/Explorer						
Full sample	3.1	36.4	37.6	16.9	6.0	109
Not enrolled	0.0	38.6	36.4	17.3	7.8	47
Explorer						
Full sample	0.0	31.9	40.4	19.3	8.5	21
Not enrolled	0.0	32.5	49.5	18.0	0.0	12
Incidental/Personal						
Full sample	2.4	34.4	34.7	20.0	8.5	582
Not enrolled	1.6	41.4	29.7	16.5	10.8	205
Nonvocational						
Full sample	4.7	41.7	28.1	16.1	9.4	439
Not enrolled	0.6	45.2	22.9	16.4	14.9*	144
Incomplete transcript						
Full sample	3.6	34.9	34.4	19.4	7.8	693
Not enrolled	0.4	40.3	31.8	18.3	9.3	284
Total						
Full sample	3.1	33.1	33.1	18.9	7.9	2193
Not enrolled	0.6	41.8	30.4	17.6	9.6	866

NOTE: Percentages shown in the table may not add up to 100 due to rounding.

[a] Complete sample of high school graduates.

[b] High school graduates, not enrolled since 1977.

*$P \leq .05$.

TABLE 10

TOTAL NUMBER OF JOBS HELD BY VOCATIONAL EDUCATION PATTERNS, WOMEN (PERCENTAGE DISTRIBUTION)

Patterns	Number of Jobs 0	1	2	3	4+	n
Concentrator						
Full sample [a]	3.8	46.7	28.1	15.5	5.9	229
Not enrolled [b]	2.6	52.0	20.3*	20.3	4.8	114
Limited Concentrator						
Full sample	3.1*	40.2	33.1	26.6	7.1	360
Not enrolled	3.1	37.5	37.5	13.1	8.9	165
Concentrator/Explorer						
Full sample	4.4	40.2	35.6	15.0	4.8	231
Not enrolled	4.4	36.9	34.6	18.6	5.6	107
Explorer						
Full sample	0.0	56.1	19.0	211.1	13.8	27
Not enrolled	0.0	48.7	16.6	12.7	22.0	8
Incidental/Personal						
Full sample	6.3	37.1	35.5	16.2	4.8	633
Not enrolled	2.8	34.4	42.7	17.0	3.2*	194
Nonvocational						
Full sample	9.4*	39.4	33.7	12.3	5.2	268
Not enrolled	6.5	37.7	33.7	12.8	9.4	72
Incomplete transcript						
Full sample	6.0	36.9	33.5	15.9	7.8	833
Not enrolled	5.3	37.0	34.5	14.9	8.3	415
Total						
Full sample	5.6	39.0	33.5	15.5	6.3	258
Not enrolled	4.2	38.3	34.8	15.8	7.0	1076

NOTE: Percentages shown in the table may not add up to 100 due to rounding.

[a] Complete sample of high school graduates.

[b] High school graduates, not enrolled since 1977.

* $P \leq .05$.

trast, men who have little or no vocational coursework change jobs more often than all graduates in general. Of those who were not enrolled, approximately 15 percent of these nonvocational men had held at least four jobs; the expected frequency for all respondents in this sample was approximately 10 percent.

These patterns hold when different types of jobs are counted. (These types include full-time jobs involving at least thirty-five hours a week of work; jobs held for at least four months; full-time jobs held at least four months; and jobs held less than four months.) In terms of the length of time jobs are held, nonvocational men seem to change jobs more frequently than other graduates, and may therefore show less stability in their early careers. This tendency appears both in the full sample and when the sample is restricted to those not recently enrolled, so it seems unlikely that it can be attributed to the short-term employment associated with postsecondary schooling.

Female Concentrators in the NLS Youth survey were more likely than other female graduates to report holding at least one job; they were much less likely to have held exactly two. In general, women changed full-time jobs less often than men. For both sexes, those most likely to have held several jobs were those who had not been enrolled in school since 1977 and were thus likely to have spent the most time in the labor force.

Employment and Unemployment

According to the U.S. Department of Labor, an individual who is actively looking for work or who is employed is considered to be in the labor force. Employment is not measured in terms of being in the labor force, but in terms of actual weeks employed or unemployed during a specific period of time. The analysis here refers to NLS Youth respondents who were in the labor force during 1978 or 1979. The sample was limited to those who were not enrolled in any school, or who had exactly twelve years of education, since attendance at a postsecondary institution is a very common reason for people in this age range to be unemployed.

More often than other respondents, male Concentrators worked at least half of the year. For women, vocational participation was related to employment in a more general way; women with any amount of vocational education tended to work at least half the year more often than women with no vocational credits.

Since most vocational programs sponsor some school-supervised work, the question of the influence of high school work experience on later employment is an important one. There is strong evidence that this influence is positive; those who worked while in high school reported less unemployment in the first year or two after high school. Moreover, as the length of time spent working during high school increased, later unemployment decreased.

. . .those individuals who take part in vocational programs are less likely to be unemployed in the years after high school. This suggests that vocational education has a positive, if moderate, influence on employment.

Different kinds of work during high school are associated with different employment rates after school. Later unemployment was lower for those respondents who had worked only in outside jobs than for those who worked only in school-supervised jobs, and was lowest for those who had worked both kinds of jobs during high school. This does not, however, clearly define the relationship of vocational education to employ-

ment in later years. Not all school-supervised jobs are held by vocational education students; vocational students may hold outside jobs, in which they may use skills developed in their vocational classes. To the degree that vocational programs contribute to working while in high school, they probably contribute indirectly to reduced unemployment in the post-high school years.

In the final analysis, those individuals who take part in vocational programs are less likely to be unemployed in the years after high school. This suggests that vocational education has a positive, if moderate, influence on employment.

Job Separation and Turnover

Young people in general experience high rates of job turnover. This is equally true for those with concentration in vocational education. Several hypotheses have been offered in the ongoing debate over the reasons for this high unemployment.

One argument is that youths are simply unstable and jump from job to job with no sense of commitment either to the specific job or to working. Here the fault is seen as lying with individual young people, whose behavior is viewed as unstable and purposeless.

A second theory argues that young people do initiate the frequent job changes that lead to high unemployment rates, but that the rapid turnover is purposeful—an experience search designed to learn about the job market and different jobs (Leighton and Mincer 1979).

A third hypothesis fits well with the dual labor market theory of Doeringer and Piore (1971), which maintains that most young people can obtain only undesirable jobs with little incentive for commitment. These jobs are of uncertain duration, offer few fringe benefits, and give little opportunity for growth and development. Therefore, this argument holds, the fault lies more with the jobs than with the youths who leave them; leaving them is the natural thing to do in the face of how little these jobs offer.

A fourth hypothesis similarly focuses on the nature of the labor market for young people, claiming that employers see youths in general as having little to offer and therefore discriminate against them. Like women and minorities, they are last hired and first fired. This means that frequent separations are not freely chosen, but are the result of variations in demand. This theory holds, then, that the fault for the high unemployment rate of young people lies primarily in the unstable economy and the discriminatory way hiring decisions are made.

Theories that claim that youths are responsible for their own unstable job behavior have been countered by suggestions that job separation is related to post-high school education. Young adults often enter and leave the labor force in accordance with breaks in the school year, or with decisions to leave the labor market and return to school. This argument, then, sees the labor force instability of youths as a matter of seasonal variation, attributable in large part to educational commitments.

This reasoning can be tested through analysis of the NLS Youth data. If the argument is valid, there should be obvious differences between the job separation behavior of the entire sample and that of respondents who had not been enrolled since 1977. This is not the case. When the two years for which there is complete employment data are examined, there is no consistent tendency. In 1979, young people in the full sample did tend to separate from jobs more frequently, but no such tendency is evident in 1978. The differences between all NLS Youth respondents and those whose job separations were not related to enrollment are neither consistent nor substantial.

The question of whether young people who participate in vocational education fit

one hypothetical pattern more neatly than another can best be answered by examining a number of related issues; in itself, the data on job separations are not adequate. Nevertheless, any clear differences in job separation behavior between vocational and nonvocational students should help define this issue.

To begin with, if young people with vocational concentration left their jobs more often than other young people, that might indicate tendencies to accept undesirable jobs or to be unstable in the labor market. But the data show no higher incidence of turnover than that found for other youth. Vocational respondents are also no more likely than others to separate voluntarily from their jobs, or to seek new jobs while still employed; both tendencies would probably be apparent if vocationally educated youth were more likely to seek rapid advancement. One conclusion that can therefore be drawn from the NLS data is that a sizable body of information gives no reason to see vocational respondents as more unstable than others.

Finally, the rate of involuntary job separation is no different for former vocational students than for the NLS Youth respondents as a whole. This means that vocational students are no more or less likely to be laid off from their jobs than others.

As yet, there is no widespread agreement on how to interpret and explain the labor market behavior of youths in general. Equally, the NLS Youth data do not give us the means to explain the labor force experiences of those with vocational education backgrounds. It does allow some conclusions: in general, young people with concentration in vocational education behave no differently from other youths in terms of job separation and turnover.

Job Satisfaction

One of the most important findings to emerge from recent research is that former vocational students are likely to be more satisfied with their jobs than others. The implications of this effect are significant. Insofar as the human experience of the workplace is important, job satisfaction should be given importance in any evaluation of the effects of a vocational curriculum.

Much attention has been given to defining job satisfaction. This discussion focuses on satisfaction with specific factors of the job, a measure that seems more exact in an area that is by its nature difficult to define. Consideration of global job satisfaction—roughly, the sense of having needs and values met by the job—is, however, a useful starting point.

Among former vocational students, the extent of global job satisfaction varies. When personal and contextual characteristics are controlled, men with more vocational training are significantly more satisfied with their jobs (Mertens, Seitz, and Cox 1982). Women show the same tendency, although the magnitude of the differences cannot be estimated precisely. Surprisingly, dropping out of school, which does affect labor market experience, does not seem to affect job satisfaction significantly, a finding that has also been reported in the past (O'Malley, Bachman, and Johnson 1977). Graduates and dropouts alike, vocational participants tend to be more satisfied with their jobs.

. . . former vocational students are likely to be more satisfied with their jobs than others.

A complex phenomenon, job satisfaction is associated with numerous variables, as shown in table 11. For men, they include lack of involvement with drugs or the criminal justice system, high self-esteem, low scores on the WOW test (Knowledge of the World of

TABLE 11

THE SIGNIFICANT CORRELATES OF JOB SATISFACTION (REGRESSION COEFFICIENTS)

Variable	Personal On-the-Job Development		Working Conditions		Job Rewards		Human Interaction	
	1979	1980	1979	1980	1979	1980	1979	1980
Job characteristics								
Small firm size	1.05*	.71*	.62*	.68*			.34*	.29*
Medium firm size	.75*		.83*	.52*		-.36	.23	
Large firm size	.52		.73*	.55*	-.49			
Union	-.30		-.75*	-.37*	.25		-.17	
Evening shift	-.39*	-.47*	-.33	-.29				
Split shift		-.62*						
Hours per week	.42*	.25*	-.32*	-.40*				
Fringe benefits								
Paid vacation	.31*				.56*	.39*		
Health insurance				-.24	.34*	.43*		
Life insurance					.35*	.40*		
Education								
Concentrator			.63*					
Limited concentrator			.55*					
No vocational credits							-.23	
Personal characteristics								
Race and sex								
Black male		-.37*			-.34			-.31*
Black female			.49*	.40*		-.60*		-.27*
Hispanic female			.62*	.57*				
White female		.25	.44*	.30*		-.23		
SES		-.01						

TABLE 11 *(Continued)*

Variable	Personal On-the-Job Development		Working Conditions		Job Rewards		Human Interaction	
	1979	1980	1979	1980	1979	1980	1979	1980
Motivation								
Self-esteem		.04*	.04*	.06*	.03	.03	.02*	.02*
Job and aspirations match	.73*	.53*		.19	.35*			
Educational Level								
Highest grade completed—15		-.39	.41	-.46				
Highest grade completed—16				.43				
Occupation								
Professional	2.02*	1.62*	.57	.53	.58	.46		
Managerial	1.01*	1.41*	1.60*	1.25*	.82*	1.03*		
Sales	.93*	.93*	1.49*	1.36*	.65*			
Clerical	.75*	.79*	1.35*	1.27*	.43	.58*		
Crafts	1.04*	1.08*	.54*	.66*				
Farm	1.56*				1.24*	.81		
Operatives			.52*	.36				
Service		.61*	.35	.44*				
Private household			2.08*	1.61		1.64		
Age		.08		-.09*	-.10*	-.08*	-.80	
Hourly rate of pay (in dollars)	.07	.09			.29*	.19*		-.04*
Training-related job		.25						
n	2304	2674	2304	2674	2304	2674	2304	2674

NOTE: All values are significant at the .05 level. An * indicates values significant at or above the .01 level. The numbers represent a unit change in the scale of job satisfaction corresponding to a unit change in the scale of each explanatory variable.

Work), and living in the West or the South. For women, higher job satisfaction is associated with less involvement with drugs or theft, late marriage, high self-esteem, and living in a rural area or an area with relatively little manufacturing.

Examining global job satisfaction reveals broad patterns; this effect is further illuminated in terms of examination of its components. Campbell et al. (1982) analyzed the data from NLS Youth respondents in terms of four factors that contribute to a total sense of satisfaction with the job: the ability to develop skills and learn new skills; safe, healthy, and pleasant working conditions; job-related rewards, including pay, job security, and opportunity for advancement; and the human interactions in the workplace with both supervisors and coworkers.

Satisfaction with personal on-the-job development. Satisfaction with opportunities to learn on the job is not confined to young people with specifically vocational backgrounds, but is much the same for all NLS Youth respondents. The only educational variable that is significantly related to this form of satisfaction is the completion of sixteen years of schooling. If vocational education affects this specific kind of job satisfaction, the effect must be indirect, operating through job or personal characteristics, motivation, or occupation.

A good match between the job a worker aspires to and the current job seems likely to lead to more satisfaction with opportunities for on-the-job development.

Vocational participants are associated with three variables distinctly related to this kind of job satisfaction: firm size, the match between aspiration and current job, and occupation. Firm size is clearly associated with satisfaction; the larger the firm, the less likely a young person is to be satisfied with the opportunities for personal development. Since male vocational Concentrators are more likely to work in small firms, it may be that vocational programs tend to direct these students toward work situations where they perceive greater opportunity to develop their skills and learn new ones on the job.

Aspirations are also related to job satisfaction in this area. A good match between the job a worker aspires to and the current job seems likely to lead to more satisfaction with opportunities for on-the-job development. Among the NLS Youth respondents, both male and female Concentrators report this congruence between their aspirations and their present work more often than those who have less vocational education or none at all. It has also been found (Campbell et al. 1981) that those with a high level of vocational participation are more likely to be in jobs for which they trained than are young people with little vocational education. This, too, may be expected to lead to more opportunity to learn on the job.

A final way to examine satisfaction with personal on-the-job development is through the association of this factor with occupation. Occupational areas are associated with differing levels of job satisfaction. Three that show strong, substantial positive associations with satisfaction of this kind are clerical, crafts, and sales occupations. A substantial proportion of those who participate in vocational education train in these areas, especially the first two. Assuming that many go on to work in these fields, the choice of occupation itself may be expected to lead to some job satisfaction.

Satisfaction with working conditions. Satisfaction with working conditions shows some association with concentration in vocational education. There is a consistent and significant association for vocational Concentrators with satisfaction with working conditions and, in one interview year, also for Limited Concentrators.

As was noted previously, NLS Youth respondents in small firms are more likely to be satisfied with their opportunities for personal development. Working conditions are also perceived to be better in small firms, which should influence job satisfaction in this area for vocational concentrators. Sales, clerical, and service occupations selected by many vocational participants are seen as having satisfactory working conditions. Satisfaction with working conditions can itself be related to other variables; it tends to be positively related to self-esteem but negatively related to hourly rate of pay. Of these influences, the most powerful is occupation.

Satisfaction with job rewards. The job-related rewards are defined as satisfactory pay, job security, and chance for advancement. Vocational education is not significantly associated with this form of satisfaction, nor is any particular educational level. However, insofar as education influences occupation, there is probably an indirect effect for vocational participants. Three of the fields for which vocational education prepares young people—sales, clerical, and farming—are fields in which the NLS Youth respondents reported satisfaction with job rewards.

The length of the workweek also seems to be associated with this form of job satisfaction. Graduates who concentrate in vocational specialties work more hours per week (Gardner, Campbell, and Seitz 1982). They may also experience increased satisfaction with job rewards because respondents who worked longer hours were, in general, more satisfied with the rewards of their jobs.

Clearly, satisfaction with job rewards is not firmly tied to pay . . .

Small firms are associated with other kinds of job satisfaction, but are not seen as places where job rewards are especially high. The larger firms seem to be most desirable in this respect. These are also the firms most likely to have unions. Unionized workers, interestingly, do not report more satisfaction with job rewards, even though in general they receive a substantially higher hourly wage. It may be that this occurs because union-generated increases are often compensation for difficult working conditions.

Clearly, satisfaction with job rewards is not firmly tied to pay, even though satisfactory pay is one element in this category. Nothing could demonstrate this more neatly than the high rates of satisfaction with job rewards reported by young people in clerical, sales, and farming fields, all occupations associated with relatively low rates of pay.

Satisfaction with human interactions. A fourth form of job satisfaction can be identified in the NLS Youth data, satisfaction with the interactions that take place with other workers and supervisors. As may be expected, firm size and self-esteem are two variables that consistently affect this form of satisfaction. Smaller firms provide more opportunity for personal interaction with the entire work force, often including owners and managers. Self-esteem is an equally logical correlate; people who like and value themselves are probably more adept at forming good relationships with those around them.

Generally, the data confirm the existence of this kind of satisfaction, but provide little else on which to base interpretation. Because the only consistent trends are firm size and self-esteem, and because self-esteem is significantly related to satisfaction with interpersonal relations, it seems likely that this form of satisfaction depends more on the makeup of the individual than on external factors.

Training-related jobs and job satisfaction. Training-related jobs may indirectly affect job satisfaction. The likelihood of this

effect varies with the particular comparison made. When two groups of vocationally trained youth are compared, one composed of workers in training-related jobs and one composed of those who are not, there are no differences in the level of satisfaction. However, when vocationally trained youths in training-related jobs are compared to those with no secondary vocational coursework, differences do emerge. Those in the first group showed more satisfaction with their personal on-the-job development, although not with the other forms of job satisfaction. Among the vocational Concentrators who were not working in training-related jobs, there were instances of much greater satisfaction with job conditions, rewards, and interpersonal relations.

. . . substantial numbers of these graduates may trade off the satisfaction of working in the areas for which they have trained in order to find other forms of job satisfaction.

These findings are difficult to interpret. They suggest that vocationally trained youths are often more satisfied with some aspects of their jobs than those who are not so trained. They also suggest that substantial numbers of these graduates may trade off the satisfaction of working in the areas for which they have trained in order to find other forms of job satisfaction.

Income and Earnings

Earnings, the traditional measure of productivity in a job, are usually seen as one of the most significant outcomes of vocational education. It is important to be aware, however, of the difficulty in actually measuring earnings. Any generalization about the earnings of vocational graduates must discuss numerous exceptions. Consider the number of variables that must be taken into account: an analysis that uses four race/gender groupings; three categories of vocational participation; four areas of specialization; and three measures of income can arrive at over one hundred comparisons.

With these limitations in mind, it is possible to sketch the general outlines of the relationship of vocational education to later earnings. When background and contextual variables are controlled, male high school graduates with high participation in vocational education earn, on the average, up to 10 percent less per hour than their otherwise similar counterparts with no vocational credits (see table 12). In terms of weekly earnings, however, there is no significant difference between the two groups.

When annual income is measured, the relationship again changes, showing advantages for male Concentrators that are sometimes considerable. This analysis controls for current enrollment status, since graduates with little or no vocational education are more likely than those with higher participation to enroll in postsecondary programs. Even after this adjustment is made, however, table 13 shows that male vocational Concentrators reported higher annual incomes. This advantage can be attributed to the longer hours these men worked and to their tendency to be employed more weeks of the year. For respondents who had not been regular students for two years, this advantage was between $1,200 and $1,800 in 1978; in 1979, it narrowed to between $300 and $800 annually. This range indicates differences in annual income between men with high participation and those with little or no vocational participation that are significant in practical terms.

For women with high concentration in vocational education, income also increases when earnings are measured over a longer period of time. Women, however, also show higher hourly earnings than their nonvocational peers, an advantage that ranges from

TABLE 12

PERCENTAGE DIFFERENTIALS IN HOURLY EARNINGS, COMPARISON GROUP: GRADUATES WITH NO VOCATIONAL CREDITS

Patterns	White Males	Minority Males	White Females	Minority Females
Concentrator	-10.1	- 3.3	16.7	2.8
Limited Concentrator	- 0.2	-13.8	10.8	- 8.1
Concentrator/Explorer	- 2.3	- 9.0	3.8	- 0.5
Agriculture	4.8	4.5	—	—
Trade and industry	0.6	0.7	—	—
Occupational home economics	—	—	- 3.7	3.1
Office	—	—	- 3.9	11.0
(n)	(835)	(435)	(848)	(438)
Average hourly earnings	$5.27	$4.88	$3.99	$3.85

SOURCE: Gardner, Campbell, and Seitz (1982, tables 4-14, 4-19, 4-27, and 4-32).

NOTE: These estimates of earnings differentials are drawn from a system of Ordinary Least Squares (OLS) regression equations that control for socioeconomic background, residence, race, and sex, and that allow vocational education to exert indirect effects on earnings through educational attainment, tenure on the job, occupation, industry, labor force experience, and unionization. Estimates are additive. For example, a white female Concentrator specializing in Office has a 12.8 percent earnings differential, compared to a high school graduate with no vocational credits.

TABLE 13

ANNUAL INCOME BY PATTERNS OF PARTICIPATION IN VOCATIONAL EDUCATION: RESPONDENTS NOT ENROLLED IN 1978 OR 1979 (1979 DOLLARS)

Patterns	Males		Females	
	1978	1979	1978	1979
Concentrator	$7,003 (71)	$ 9,667 (69)	$5,472 (102)	$6,212 (98)
Limited Concentrator	7,539 (99)	9,574 (100)	3,971 (162)	6,405 (157)
Concentrator/Explorer	7,464 (41)	10,143 (44)	3,838 (111)	4,677 (115)
Explorer	9,780 (12)	10,274 (13)	3,128 (10)	6,484 (11)
Incidental/Personal	7,294 (176)	10,784 (168)	3,790 (177)	5,356 (181)
Nonvocational	5,854 (121)	9,283 (112)	3,046 (75)	4,358 (75)
Incomplete transcript	6,685 (309)	8,012 (376)	3,790 (474)	4,344 (528)

SOURCE: Gardner, Campbell, and Seitz (1982, tables 4-2, 4-3, 4-5, and 4-6).

NOTE: Numbers in parentheses are unweighted cases.

5 to 15 percent for minority women. (Since most female vocational Concentrators in the NLS Youth data were business/office specialists, these estimates apply more to that specialty than to female vocational graduates in general.) For women not recently enrolled in school, the annual differentials ranged between $1,000 and $2,000 in both years analyzed. As with men, the advantage can be attributed to longer hours and more weeks worked per year.

In addition to participation in vocational education, other variables are related to earnings in ways that deserve consideration.

First is the effect of dropping out of high school on later earnings. Dropping out seems to negate any earnings advantages vocational students might have had. Young dropouts in general earn less per hour and per week than comparable graduates, and those with vocational participation are not significantly different from those who had none.

High school work experience also affects subsequent earnings, and in different ways, depending on the race/ethnicity and gender of the respondent. Working while in high school is associated (although not significantly) with lower post-high school earnings, both hourly and weekly for white men, and with higher later earnings for minority men and white women. White women who work during high school earn as much as 25 percent more per hour and per week. In general, experience in outside jobs is associated with higher earnings more often for this group than is experience in school-supervised jobs, and those with dual work experience had an even larger earnings advantage in later years.

Finally, job satisfaction is related to hourly earnings in ways that differ for different factors. Satisfaction with working conditions is related consistently and strongly with lower hourly rates of pay, probably due to the fact that jobs that are unpleasant, dangerous, or in unhealthy environments command a higher rate of pay. A second factor, satisfaction with job rewards, is strongly related to higher pay, an association that may seem tautological, since wages are a key element of job rewards. However, several occupations in which wages are below average—notably sales, clerical, and farming—are strongly related to satisfaction with job rewards. Thus it appears that this form of satisfaction is not synonymous with hourly wages.

The two other forms of job satisfaction discussed previously are personal on-the-job development and satisfaction with human interactions. The former is associated with higher rates of pay, whereas the latter is associated with lower rates. Both factors are also associated with firm size and occupation, which may influence satisfaction with the job.

Estimates of relative earnings differ with the measurement used. On an hourly basis, male vocational Concentrators seem to earn slightly less than their counterparts who had no high school vocational education; on an annual basis, however, they earn more. In evaluating the effects of vocational education, it is essential to consider the method used to measure earnings. It may be that a more comprehensive approach, which considers both hourly and annual wage, gives a better definition of the financial outcome of vocational education.

The Working Graduate

From the kind of employer to the hours worked, the labor market experience of the vocational graduate is influenced by numerous factors. An obvious example is the impact [illegible] blacks and women have experienced in the labor market that are unique to [illegible] national patterns vary so widely. These and many other factors, the evaluate the labor market experience, vocational graduate must be careful to take as much as possible into account. For these graduates, the extent of participation in vocational education is very often a significant factor. As the following discussion of

elements of the work experience illustrates, the vocational graduate's experience is often directly related to the degree of concentration.

Choice of occupation. In this, as in other areas, the patterns for men and women differ. Compared to graduates who had no vocational education, the men in the age group studied were more likely to work in jobs in the craft area. They were a little less likely to be in managerial positions and tended not to work in manual labor, operative, or service jobs. Those who specialized in agriculture were more likely to work as farmers or farm laborers than in any other occupations.

Women Concentrators showed distinctly different occupational patterns from both their male classmates and women in the general sample. They were much more likely to work in clerical jobs after graduation, and much less likely than other pattern groups to work in health occupations. This last may be due in part to the fact that postsecondary education is required in many health occupations; vocational youths are more likely than others to go directly to work out of high school, although substantial numbers do go on to postsecondary education.

There are other, weaker patterns in the jobs female graduates choose. Concentrators are a little more likely to work as laborers and a little less likely to work as operatives or in professional or managerial positions. Female vocational graduates, in general, are unlikely to choose personal service occupations, which is perhaps understandable in that they have trained for jobs that are likely to offer more rewards.

. . . commitment to nonsexist education means that all vocational programs should emphasize that the full range of choice is available for both male and female students.

In view of the fact that many female Concentrators go into the traditionally female clerical field, vocational education has sometimes been accused of sexism. These findings cannot be said to bear out that accusation, since the data do not include information on the students' occupational aspirations before they entered their programs. Vocational choices are influenced by numerous external and personal factors well before high school age. Many students probably enter their programs with acculturated ideas as to what fields they can "appropriately" select. But the finding that male vocational graduates are somewhat more likely to work in clerical jobs than nonvocational students indicates that, at least for some students, vocational programs are permitting choice without reference to role distinctions. Certainly, commitment to nonsexist education means that all vocational programs should emphasize that the full range of choice is available for both male and female students.

The Employer

Types of employment. The types of employment can be broadly defined as private sector, government, entrepreneurial, and family. In terms of the type of employer sought, men and women showed no trends in common, and sometimes showed divergent tendencies. For example, the more concentrated in vocational education they were, the less likely men were to work for the government. Women with more concentration were slightly more likely to do so. An external influence operating in this area is undoubtedly the fact that the government employs few craftsworkers, but a great many clerical workers, and women are more likely to be in the clerical field than men.

One unusual and significant difference in the occupational choices of men and women is shown in the study, although the number of cases available is small. This is the finding that male Concentrators were much more likely than their nonvocational counterparts to be self-employed. In the case of those men

who had not been enrolled in postsecondary education since 1977, this was even more likely to be true. Women, on the other hand, were less likely to be self-employed than women who had taken no vocational training. This disparity may be the result of a number of factors, including the personal attributes of men and women who are attracted to vocational programs, the types of training they receive, and the types of self-employment that specific training can lead to.

Firm size. The size of the firm in which people are employed is at least as important as the kind of firm. For one thing, good jobs tend to be found in larger firms (Doeringer and Piore 1971). These "good jobs" tend to have elements usually considered desirable: more regular hours, greater job security, more fringe benefits, and higher earnings. Large employers tend to supply other, less-tangible benefits, too, such as more explicit work rules and clearer, more formalized paths to advancement.

Given all this, many vocational graduates nevertheless choose to work in small firms. As the study on job satisfaction shows, there can be good reasons for this. The worker in a small company is more likely to get close to both fellow employees and management. Morale may be better. Hours may be more flexible. Given an environment that is more satisfying in these ways, one may conjecture that the higher wages paid by larger firms are a means of compensation for other lacks, and in fact, this possibility has been considered by Duncan and Stafford (1980).

Overall, 54 percent of male graduates of vocational programs worked in firms with over a thousand employees. Men with the highest degree of concentration in vocational education, like respondents with no vocational credits, were more likely to work in firms with under a thousand employees. It is those with limited involvement in vocational education who tended to be in larger firms.

It is important that students be informed of the possible outcomes of their choices . . .

Although the patterns for men are weak, those for women are much clearer. The greater the woman's concentration in vocational education, the more likely it is that she will work in a multiestablishment firm, and in a large firm. Conversely, women with no vocational credits are least likely to work in large firms. This can probably be attributed to the fact that a high proportion of women students specialize in the clerical field, and larger firms hire greater proportions of clerical workers.

Obviously, job seekers are not always able to pick among employers and work for firms of the exact kind and size they might prefer. The job market, the graduate's specialty, and personal value all influence the kind and size of employer. Just as there is no average graduate, there is no ideal employer for graduates of vocational education programs; the ideal is specific to the individual and formed by individual values. It is important that students be informed of the possible outcomes of their choices, not only in terms of potential earnings, but with reference to the general features of different kinds of employers.

The Nature of Employment

Job content. One characteristic of a job is its job content—the types and levels of skill, ability, and educational development needed to perform the job. Predictably, market values tend to increase with the demands of the job. Secondary vocational education is strongly associated with middle-level job content. For this study, job content was estimated on the five-level scale (des-

cribed in chapter 3 in "Characteristics of High School Jobs").

It is no surprise that job content varies with numerous factors, including gender and extent of participation in vocational education. Female Concentrators are more likely to be in the middle category of job content, whereas males are spread across the three middle levels of the scale. Women with little vocational education are much less likely to be in the middle category and more likely to be in the low category; men with little vocational training are less likely to be in the middle category, but not significantly so. Women with no vocational training are significantly more likely to be in the two highest levels of job content, but their male counterparts are little different from the average distribution.

In general, the NLS Youth data show that graduates of vocational programs worked at jobs whose content fell in the middle range; very few worked at jobs demanding the highest level of ability, which is true of most young adults. A substantial portion of all young adults work in jobs with the lowest content levels. In part, this distribution is probably due to the age range of the NLS Youth cohort—seventeen to twenty-six. Few people this young have had enough time to gather the experience and/or education necessary to fill jobs with the highest content. However, vocational education graduates with significant concentration were less likely than average to work at such jobs.

Job prestige. The relative prestige of the jobs held by vocational graduates was examined, but the data are suggestive rather than definitive. The prestige scale used in the studies, developed by Siegel (1971), is constructed in such a way that it cannot differentiate between occupations that are close together in their social standing, as is the case with the jobs reported by this sample. When personal and contextual variables for both men and women were controlled, concentration in vocational education was associated with higher occupational prestige. Because of the nature of the scale, however, this relationship can only be considered suggestive.

Union/nonunion. The incidence of work in unionized jobs varies markedly according to the graduate's participation in vocational education, but not always in ways one might expect. Slightly more than 30 percent of those with little or no vocational training worked in unionized jobs, compared to 16 percent of white male Concentrators; for minority males, the overall level of unionization was about six to ten points higher, depending on the subsample. Overall, male Concentrators were much less likely to be in unionized jobs. And, when the sample is restricted to those with exactly twelve years of education, it is the Concentrator/Explorers who show the highest level of unionization of any of the patterns of participation.

These associations gain importance in light of the fact that unionized jobs generally pay more than nonunion jobs. On examination, however, the difference appears to be related not to levels of participation, but to occupational choice. Concentrators who were craft members and craftsworkers in manufacturing tended to be in nonunionized jobs. Since 33 percent of male Concentrators work in crafts, the influence of this choice on both unionization and earnings is significant.

For women, the pattern is neatly reversed. Those who were Concentrators and Concentrator/Explorers were more likely to work in unionized jobs than women with less participation in vocational education. The patterns for minority women were more varied, and generalizations are difficult except in one instance: minority female Concentrators were much more likely to be in unionized jobs than women with less participation.

This strong association between concentration and unionization helps explain why women—especially minority women—gain an earnings advantage through vocational education more often than men. Inasmuch as that advantage is often valued, students should be informed of the likelihood of var-

ious occupational specialties leading to unionized work.

Shifts. About 60 percent of all men and women in the NLS Youth survey worked regular day shift. Approximately 10 percent worked a regular evening shift, 5 percent the night shift, and 2 percent a split shift. (The remainder responded that they worked varying shifts, an undefined category.) Those with greater participation in vocational education were more likely to work regular day shifts and less likely to work night or split shifts. This, too, has implications in terms of the earnings of vocational graduates. Because night shifts and split shifts are less desirable, additional wages are commonly paid as compensation. Hence, the differences in patterns of shift work may contribute to the difference in earnings reported for vocational students.

Full-time/part-time. Vocational graduates differ from the general sample in another significant area—hours worked per week. Compared to the full sample, these graduates were more likely to be steadily employed full-time. Over four-fifths of the male Concentrators in the 1980 survey reported that they usually worked at least thirty-five hours a week. Men in this category were also much more likely to work over sixty hours a week. Nonvocational youth showed opposite tendencies. The experience of female Concentrators was similar: they were more likely to hold full-time jobs and less likely to work part-time. For both men and women, it seems likely that there is a link between full-time work and vocational education.

Work patterns were substantially different for graduates who had not been enrolled since 1977. The data show that, in this category, nearly all male Concentrators (92 percent) were employed full-time. More than other respondents, these men tended to work sixty hours a week or more. The number of women among those not enrolled since 1977 who had worked no more than twenty hours a week dropped dramatically; far more of the women in this sample worked full-time.

Compared to the full sample, these graduates were more likely to be steadily employed full-time.

Not only were vocational education graduates more likely to work full-time, but those who worked while in high school were likely to work longer hours after graduation. If they worked in school-supervised jobs, these graduates were likely to work from two to five hours more per week than others. In the case of minority respondents, self-obtained work during high school showed a very different configuration. The greater the self-obtained work experience, the lower the hours worked per week in later years.

Time spent on the job is intrinsically related to earnings. Many vocational graduates who earned less per hour—perhaps because they chose low-paying fields, such as agriculture—also worked longer weeks and earned greater weekly or annual wages.

Fringe benefits. Many analyses of compensation assume that the individual's earnings, in terms of pay from the employer, represent his or her actual compensation for the job. This is the result of a major shortcoming of the data sets that have been available for this purpose, and have not included other forms of compensation. In fact, it is common knowledge that fringe benefits are a financially significant element of compensation. Logically, all financial benefits must be included in an assessment of the total compensation for a job.

The NLS Youth survey did attempt to gather information on three major kinds of fringe benefits: health insurance, life insurance, and paid vacation. Unfortunately, the data are not extensive enough to show the value of the fringe benefits reported. They do show some differences in the availability of fringe benefits to graduates at various levels

of participation, although these are slight differences, and not usually significant. For example, Concentrators are a little more likely to have employer-paid health or life insurance or paid vacations.

Logically, all financial benefits must be included in an assessment of the total compensation for a job.

Since the NLS data do not show the value of these fringe benefits, it is not yet possible to estimate their meaning in the total compensation graduates receive. The present estimates of earnings, based on pay alone, show that men with vocational education earned less per hour than those with none. Including the value of fringe benefits in analyses of earnings may change these patterns, although we cannot predict the extent of such a change. If, on the average, the benefits vocational graduates receive are distinctly more valuable than those received by other workers, then relative total compensation will reflect a more favorable position for vocational graduates than do earnings alone.

Using vocational training. Federal vocational education legislation has reflected the commonly held viewpoint that training is socially productive in proportion to the number of students who use that specific training later on in the workplace. Graduates of high school vocational programs often do work in jobs that are clearly related to their training. Of those who do not, it seems likely that many transfer basic skills to occupations for which they did not specifically train.

When Campbell et al. (1981) examined the NLS Youth data, they found that students with heavier concentrations of vocational coursework did tend to use their specialties after graduation. These students were significantly more likely than those with less concentration to go on to related jobs after high school. This relationship was confirmed by Mertens, Seitz, and Cox (1982).

Dropouts do not follow this pattern. Even those with high levels of participation in high school vocational education were no more often employed in training-related work than those with lower levels. This should be evaluated with the fact in mind that there were few dropouts in the NLS cohort with three or more credits in vocational education

CHAPTER 4

SUMMARY AND CONCLUSIONS

Summary

A major theme of this report has been the need for more comprehensive methods of evaluating vocational programs, a need that is emphasized by the variety of outcomes discussed in this research. Customarily, vocational education has been evaluated as an investment, with primary attention given to the hourly earnings of graduates. Two other outcomes of the vocational curriculum—the employment of graduates and the extent to which they work in training related to their vocational specialties—are also frequently considered. Although measurement of labor market outcomes is valid and necessary, the research summarized in this report can be used to formulate more comprehensive methods of evaluating this and other outcomes of vocational education.

During high school, vocational programs seem to have certain effects that are significant. An important example is the apparent retentive effect of participation in vocational education: The more vocational education that students take part in, the less likely they are to drop out of school. This outcome, which has important indirect effects on labor market experience, should be measured in evaluations of vocational education.

Vocational programs can also be evaluated in terms of the extent to which they are used. Most students take some vocational courses, for a variety of reasons that may including learning specific skills or exploring career options. This high participation suggests that not just vocational Concentrators but also students in other curricula find vocational education useful.

Evaluations of the usefulness of vocational education have often measured the extent to which vocational students go on to work in fields directly related to their training. This measurement is one that should be used with care. First, like every other outcome, training-related placement varies with the student's level of participation in vocational education; for the sake of precision, any evaluation should distinguish between students with high concentration in vocational education and those with minimal participation. Second, training-related placement is higher among students who worked in school-supervised jobs during high school. Any evaluation of the direct use of specific vocational training after graduation should measure this factor for students with school-supervised work experience and for those without.

Finally, the emphasis on training-related placement as a highly desirable outcome is one that should be reexamined. It is becoming increasingly apparent that many basic skills are transferable to jobs other than that for which an individual trained, and that most workers change fields during the course of their careers. The fact that many vocational graduates work in other fields indicates that employers see the basic skills taught in vocational programs as useful even though they may not need the specific skills represented by the graduate's area of specialty.

Ultimately, high employment rates may be a more significant outcome of vocational training than training-related employment.

In general, evaluations of the high school experience of vocational students should include comparison with other groups of students. One example of this is the higher degree of deviant behavior shown by working students. This phenomenon, which is by no means fully understood, occurs among all working high school students, and cannot be considered a specific outcome of vocational programs or of school-supervised work programs.

Evaluations of vocational education have generally given less attention to the high school experience than to labor market outcomes. The findings summarized here strongly suggest that labor market outcomes should be evaluated with reference to significant factors that have commonly been excluded. Perhaps the most important factor is earnings, normally measured in terms of hourly wage; a more meaningful index is annual income. Although hourly wage is lower for some vocational graduates, annual income is higher, reflecting the fact that these graduates work more weeks per year and have lower rates of unemployment than graduates of other curricula.

Measurements of economic outcomes should also take into account the influence of the type of employment vocational graduates have. Significant numbers of these graduates work in smaller, nonunionized firms, where wages are lower than in larger firms. Their earnings reflect choices, and may represent trade-offs of some financial benefits for better working conditions and more job satisfaction.

It is also important to consider other labor market outcomes that are not directly economic in nature. Tenure, an index of job stability, should be measured. Employment is obviously another important outcome. Job satisfaction is almost certainly more important to individuals than most evaluations reflect.

Evaluations of vocational programs are necessarily based on concepts of desirable outcomes. It is important that these evaluations take into account a wide range of outcomes, in particular those that seem to reflect the values of vocational students and graduates. Although there are many ways the material presented in this report can be used, it is especially suitable for a reconsideration of the perspective from which we view and evaluate vocational training.

Directions for Further Research

The NLS Youth database and the supplementary transcripts have given researchers a body of information that is larger and more complete than anything available in the past. Through the analysis of this material, much new information on the direct and indirect effects of vocational education is now available. Both this research and the size and complexity of the database point to the possibility of further investigations in several areas.

Our present insight into the issue of retention suggests several ways to explore methods of working with high-risk students. Missing from our body of knowledge is a collection of case studies designed to explore further the retentive effects of vocational education. This information should be complemented by comparisons of the labor market experiences of dropouts to those of graduates. With more complete knowledge, it should be possible to design intervention strategies to diminish dropout rates.

Once a range of interventions that seem likely to be effective are hypothesized, experiments should be designed to determine their effects. An example is the provision of vocational education at earlier grade levels, with data to be gathered on the kinds of high-risk students who are helped by this and the degree to which they are helped. There are other intervention strategies that equally need to be tested for their effectiveness, with a view to arriving at the most potent combination of intervention strategies. In considering the problem of dropping out, research

should also examine ways to help those who have already dropped out and who might be encouraged to complete their degrees.

Other important investigations of retention remain to be done. One area that present knowledge suggests is that of the possible causal relationships among self-esteem, criminal behavior, and dropping out. Another is the examination of the effects of contextual variables, such as race and SES, on dropping out. School characteristics also seem to be related to this phenomenon, as well as to labor market experience, associations whose examination may yield useful knowledge. Other lines of research could include the effects of self-selection bias, the use of causal modeling techniques to examine this issue, and the effects of school characteristics on dropping out.

The significant problem of retention is one that is appropriately addressed on the national level. The federal government can provide leadership, support research, and give technical assistance to programs designed to improve the educational experiences of youth who seem likely to drop out of high school. Equally, efforts to improve the job search and employment skills of high-risk youths should be nationally supported. With this leadership, state and local educators could cooperate in planning and implementing effective programs for this high-risk segment of our nation's youth.

Much remains to be learned about the high school experience of vocational education students. At present, measures of attitudes and aspirations both before and after participation in vocational education are available for only a small fraction of the NLS Youth sample. More complete measures are needed if we are to understand the effects of vocational programs on young people.

There are other important aspects of the high school vocational experience about which little is known. The impact of student organizations and the possible effect of vocational education on depressed communities are two areas that need to be understood better if policy is to be effective.

Support is needed for additional research on job satisfaction and its relationship to vocational education. The factors that make up job satisfaction must be more precisely defined. Research should examine the ways in which respondents interpret the rating scales used to assess job satisfaction. Do individuals respond out of a uniform understanding, or is there diversity in their interpretations of the scales?

The relationship between job satisfaction and aspirations deserves further exploration. The present analyses account for very little of the variance; future research that is more closely tied to a theoretical framework should allow a more precise investigation into this question.

Job satisfaction seems increasingly to be valued by many, yet is a phenomenon that is little understood. For instance, the dynamics that operate in a job setting to influence the individual's level of satisfaction need to be understood much better; results in this area could be of great use in improving the quality of the work experience. The consequences of job satisfaction are equally important and should be examined for each level of satisfaction. Finally, because vocational students report higher-than-average job satisfaction, the relationship between vocational education and eventual job satisfaction should be further explored.

In many areas, effects of vocational participation are suggested by the research summarized here. Some suggest the possibility of meaningful changes and improvements in programs, others suggest areas to improve evaluation. Until the field is better understood, policy decisions are handicapped by a lack of knowledge. A continuing commitment to research in vocational education is not just desirable, but necessary if informed policy decisions are to be made.

APPENDIX

THE NLS YOUTH DATABASE

This report compiles information from four studies based primarily on data taken from a subsample of the National Longitudinal Survey of Labor Market Experience—Youth Cohort (NLS Youth), combined with information from the respondents' high school transcripts. The extensive NLS Youth survey is a national probability sample of 12,686 youths whose ages ranged between fourteen and twenty-one at the time of the original selection. The collection was initiated in 1979 by the Center for Human Resource Research (CHRR) with support from the U.S. Departments of Labor and Defense. Additional information is obtained annually through interviews of the participants.

At the time of their first NLS interview, respondents were asked to sign a form permitting release of their transcripts. In 1980, with funding from the U.S. Department of Education, Office of Vocational and Adult Education, and under a collaborative agreement with CHRR, the National Center for Research in Vocational Education began to obtain these transcripts.

By 1982, two rounds of transcripts had been collected, representing those who were fifteen years old and older at the time of the first interview. Collection of transcripts for those who were fourteen at the time of the first interview will be complete by January 1984, and additional studies will be conducted using this full data set. Since the interview data were collected through funding by the U.S. Department of Labor, and not via an agency directly concerned with education, it represents an objective third-party view. The merger of these two data sources has given researchers the most complete and comprehensive database in existence on the high school and post-high school experience.

The studies compiled here work primarily from this database; each represents a significant advance in knowledge and/or methodology. Most significant is the development of a more effective measure of the degree of participation in vocational education. Additionally, the job satisfaction study explores the interdependence of satisfaction with various elements of the job. The report on dropouts makes a major contribution in its determination of tendencies to drop out that may be evident before the student enters the vocational program. The study of high school work experience is unique in its focus on the role of school-related jobs. The study of labor market effects considers both direct and indirect effects in an extensive way. Together, these reports are an important addition to the body of documented information on vocational education.

The NLS Youth Cohort

The 12,686 youths in the NLS sample were selected in the fall of 1978. The three stages of the sample included a cross section; a supplemental sample of blacks, Hispanics, and economically disadvantaged whites; and a sample of young persons serving in the military. All three samples were stratified by sex to obtain relatively equal proportions of males and females. (The military sample, roughly one-third women, includes an oversampling of women.) Weights

were applied as appropriate, depending on the analysis undertaken.

The first interview of respondents to the survey gathered extensive background information about family, schooling, work history, and training, as well as current educational and labor market activities. In 1980, the first of five annual follow-up interviews was conducted; the 4.3 percent attrition rate yielded a sample size of 12,134.

The Transcripts

Transcript collection was initiated through a subcontract let by the National Center for Research in Vocational Education to the National Opinion Research Center (NORC) at the University of Chicago. The effort included distribution of a school questionnaire and a student's record information questionnaire. The first round of transcript collection targeted youths who had been seventeen or older at the time of the last interview, and excluded those in the military sample and those in foreign high schools.

Where transcripts were not complete because students had transferred, extensive efforts were made to locate the new schools and obtain the students' complete records. This initial collection effort, with follow-up activities that included mail outs, telephone calls, and on-site data collection, yielded a 77 percent response rate. Subsequent collections have achieved similar rates.

Information obtained from the transcripts included days absent, academic rank, and math and verbal scores on aptitude tests. Course information included specific courses, when they were taken, grades, and credits received. Course credits were converted to the Carnegie credit unit, which provides a method of comparing time spent in the classroom rather than courses taken, since the latter may vary in their requirements.

At the time of the transcript collection, CHRR also distributed the Student's School Record Information, a questionnaire to be completed by school personnel. The resulting data, which have been merged with the NLS data and transcript files, include the date and reason the student left school (e.g., graduation, expulsion, transfer), scores on aptitude tests, and information on whether the student participated in a remedial or bilingual education program. The NLS School Survey developed by CHRR, containing information about school characteristics, is also part of the information in the NLS Youth and transcripts database.

The Data

The subsample used for this research was selected from those respondents ages seventeen to twenty-one for whom transcripts were available. It is a relatively heterogeneous sample in terms of exposure to vocational programs, since student experiences varied widely. Students who completed four-year high school programs, for example, may have had different opportunities than students who attended three-year high schools, and may have had different labor market experiences than students who dropped out before earning degrees.

The sociodemographic distribution of the subsample was also considered, in order that the results of the studies might be applied to the general youth population. The distribution of the sample was examined with respect to such variables as geographic region, rural/urban residence, and family socioeconomic status. Although the representativeness of the sample may be slightly affected by the school response rate, this database contains extensive and valuable information on young people of this age range.

The distribution by gender and race of the resulting subsample of high school

graduates is shown in table 14; as are comparable population estimates. The percentages shown in the unweighted column represent the proportions of actual cases used for analysis. Blacks and Hispanics are overrepresented, primarily because of the oversampling of these groups in the NLS Youth survey; their proportions are also affected by graduation rates. The high proportion of women relative to men is partially due to the fact that more women graduated.

The gender and race distributions of the sample may have implications for future studies of vocational participation. To adjust for these uneven distributions, the weighted sample was used in these studies whenever possible. Table 14 shows the composition of this sample by gender and race, as well as population estimates for high school graduates as of 1979, published by the Bureau of Labor Statistics (U.S. Department of Labor 1981). The comparability of these sources on these two significant variables supports the representativeness of the NLS Youth data. Overall, the combined data provide an information base that can be used to examine the high school experiences of youths on a national level.

TABLE 14

SAMPLE AND ESTIMATED POPULATION COMPARISON OF HIGH SCHOOL GRADUATES BY SEX AND RACE

Sex/Race	Sample and Estimated Population			
	Unweighted NLS Sample of High School Graduates with Complete Transcripts	Weighted NLS Sample of High School Graduates with Complete Transcripts	BLS Population Estimates of High School Graduates [a]	Percentage Point Difference between the Weighted NLS and BLS
Male	44.3%	48.0%	46.1%	+ 1.9
Female	55.7%	52.0%	53.9%	- 1.9
White	68.5%	86.9%	85.2%	+ 1.7
Black	19.4%	9.1%	10.5%	- 1.4
Hispanic	12.1%	3.9%	4.3%	- 0.4
Total	100.0%	100.0%	100.0%	

NOTE: The age range of persons selected for the two independent samples (which are used to obtain population estimates) varies somewhat; the NLS estimates are based on a sample of youths from ages fourteen to twenty-one and the U.S. Bureau of Labor Statistics (BLS) estimates included persons between the ages of sixteen and twenty-four. Both estimates represent the noninstitutional civilian population.

[a] U.S. Department of Labor (1981, p. 45).

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