

## ATTACHMENT 3—SURVEY APPLICATIONS

### ***A. Use of the NLSY79 for Diffusion of Useful Information on Labor***

The NLSY79 is widely used by Federal, State, and local government agencies; universities; news media; foundations; and other private organizations. The broad, omnibus nature of this data set reflects the charge to the Bureau of Labor Statistics to “...acquire and diffuse among the people of the United States useful information on subjects connected with labor, in the most general and comprehensive sense of that word, and especially upon its relation to capital, the hours of labor, the earnings of laboring men and women, and the means of promoting their material, social, intellectual, and moral prosperity” (Title 29 USC, Section 1).

Data from the NLSY79 are also used in congressional testimony. For example, in 2013 testimony was given before the Joint Economic Committee on the long-term problems of youth unemployment.

### ***B. Use of the NLSY79 for Examination of Department of Labor Employment and Training Programs***

The Youth Employment and Demonstration Projects Acts of 1977 and the 1978 amendments to CETA added several new programs to those designed to upgrade the skills of unemployed, underemployed, and economically disadvantaged youth. Beginning in FY 1984, the Job Training Partnership Act (JTPA) has involved further programmatic changes. Overall, 14.5 percent of the NLSY79 population had been involved in one of the programs by the 1983 survey date. Due to the oversampling of minorities and the economically disadvantaged by the NLSY79, the surveys contain substantial numbers of persons who participated in these programs, as well as many others who were eligible to participate but did not enroll. The data from the NLSY79 allow estimates of the proportion of eligible youth who participated in various types of programs. Further, the longitudinal nature of the NLSY79 permits the longitudinal comparison of the experiences of participants and eligible nonparticipants. Studies are under way to measure the long-term consequences of training programs. The NLSY79 sample has also been used as a control group for the evaluation of other Department of Labor programs.

With respect to the gains from participation over time, a wide variety of outcomes have been examined, including earnings, welfare and other transfer payment receipt, weeks of employment and unemployment, aspirations, job satisfaction, quality of working conditions, length of schooling, on-the-job training received, and job search activities. A variety of individual characteristics can be used to statistically “match” the participants and the comparison group. These include school status, prior labor force experience, family characteristics, marital status, race, sex, ethnic background, and several social-psychological variables, to mention only a few. Data will continue to be collected on local labor market conditions and type of employment and training services received. This information will help ascertain how these variables influence the impact of program participation.

In addition, participants have been asked their reactions to the program in which they participated, how it helped them in the labor market, and what facets of the program could have been improved. Responses can be related to the individual’s characteristics and backgrounds and to the specific services they received in an effort to discover why people choose to participate in employment and training programs, what services are being provided, how well they are received, who drops out of the programs, and what might be done to improve the programs.

The longitudinal nature of the NLSY79 has at least three important features for analysis of employment and training programs. First, and most important, the surveys can provide a long-term assessment of the

effects of participation in government employment and training programs on a variety of outcomes, including employment, education and high school completion or equivalence, and reliance on welfare and other government support programs as required by JTPA. Second, the analysis is facilitated by being able to aggregate participants over time. Such aggregation results in a larger pool of participants and permits analysis of the effectiveness of programs for relatively small subgroups. Third, the service mix of employment programs has changed in recent years, with more emphasis on training and less on subsidized employment. The impact of these changes can ultimately be measured.

### ***C. Use of the NLSY79 in Understanding Labor Markets***

#### **1. Orientation toward the Labor Market**

In the NLSY79, we have repeatedly asked respondents about their education, training, and labor force behavior. In earlier years we also collected data on aspirations and expectations for the future. As our respondents have advanced in their careers, we can examine the degree to which their aspirations have been met.

By virtue of the extensive event history on work behavior that has been collected, we can examine some of the most important (but hardest to answer) questions about the evolution of careers in the United States. We have data on temporary, consultant, and contract work status. In recent years this mode of work has expanded rapidly and many have voiced concern about the impact of these tenuous employer relationships on the careers of workers. We can trace these relationships and measure the extent to which these tenuous relationships do or do not lead to more stable work arrangements. Is this another form of job search with employers following a conservative strategy to ascertain a job match? In 2002, we added a new employer supplement with questions tailored to these nontraditional workers. Because respondents will answer questions more appropriate to their situation instead of the questions on regular employment, we hope to obtain better data and facilitate further investigation of this topic. Respondents gave us positive feedback on this new section in 2002, and we retained the questions for nontraditional workers in 2004 and beyond.

With the reports of layoffs and downsizing that appear in the popular press, many are wondering about the impact of a layoff on workers' careers. If there is a large return to employer-employee specific matches, then layoffs represent a significant degradation of the stock of match-specific capital in the workplace. On the other hand, if rewards to experience are not employer specific, then these layoffs will have less serious impact on the earnings of persons being downsized. The issue becomes one of the rate of return to tenure versus the rate of return to experience, and the NLSY79 is the best data set available to examine such issues since it tracks mobility among employers over a long period of time with great detail.

As many of the military respondents in this cohort approach retirement, we will be able to examine the extent to which military skills translate to civilian labor market earnings.

#### **2. Factors in Educational Progress**

The NLSY79 continues to yield detailed information on the progress of respondents in GED programs, college, and graduate school that is being used to provide answers to a number of policy-related questions concerning both the causes and consequences of premature school termination and the effects of post-secondary education. While the sample will be 53 to 60 years of age at the beginning of 2018, it will still include adults who have delayed educational completion or who are returning to school to supplement earlier education and employment experiences. NLSY79 data, both historical and current, help researchers to address the following questions:

- (a) What are the long-term consequences for high school students who withdraw without obtaining a diploma? What is the relative importance of such factors as differences in ability, differences in motivation, and differences in the economic status of the young adults and their families? Research completed with this data suggests that for both male and female youth dissatisfaction with schooling is a more important reason for leaving school than employment- or income-related reasons. After controlling for socio-economic differences, minority groups continue to have above-average high school non-completion rates. Linkages between these factors and child-specific characteristics can also now be considered using the collected cognitive, emotional, and physiological data about the children of the female respondents.
- (b) Are high school dropouts at a disadvantage compared with high school graduates in terms of earnings and occupational status as of mid-career? Do these differences narrow and/or disappear over time, or do they persist? In general, have declining labor market opportunities for semi-skilled and unskilled workers affected the relative wages for these groups? Cross-cohort comparisons between young men and women in the original Young Men cohort (in the late 1960s) with young adults in this cohort can directly address this important issue. In addition, the high school graduates and dropouts now have ample post-school employment records to clarify these critical issues. Comparisons with NLSY97 respondents will reveal how the effect of dropping out of high school may have changed in the last two decades.
- (c) The availability of high school transcript records and the Armed Services Vocational Aptitude Battery (ASVAB) scores for these youth greatly expand the utility of the interview data for measuring and tracking qualitative differences in the patterns of regular schooling of these youth in relation to outcomes in mid-career. Given that the respondents attended over 3000 high schools (public, private, inner city, suburban, and rural), detailed evaluation of the impact of different high school curricula and programs of study is possible. High school diplomas encompass a highly variable range of academic standards, course requirements, and learning achievements.

The presence of data on these factors makes possible more sophisticated rates-of-return models than those that simply rely on years of schooling completed. For example, by including the AFQT score and high school diploma receipt in the same wage equations, one can get a more accurate assessment of the dual effects from high school completion of diploma certification and human capital development on labor market success.

- (d) What is the long-term impact of out-of-school job-related training? Does it tend to widen or narrow the differences between graduates and dropouts at the time of the first job? To what extent is work experience while attending high school complementary to post-schooling jobs? More specifically, how successful are the work-study cooperative programs both for preparing the student for jobs after graduation and for keeping him/her in school? What evidence, if any, is there that work outside school hours affects retention rates in school? What are the factors that affect the match between post-school jobs and field of study while in college? Is there a greater mismatch between school training and out-of-school employment in a loose rather than in a tight labor market, and does this have an effect on dropout rates? In 2018, this cohort will be 53-60 years of age. As all members of this sample are well beyond high school age, we can examine the relationship between training, educational attainment, and employment success for fully representative samples of this cohort who have completed high school at different phases of the economy.

### **3. Transition from School to Work**

A critical area of research relates to the processes of early accommodation of youth to the labor market. This involves studying the nature of the bridge between formal education and training and the establishment of relatively stable attachments to given types of work, including experience with

temporary part-time jobs while in school and the early exploration of alternatives after leaving school. The continuing high unemployment rates among youth during schooling and in the several years following its termination, as well as high rates of job mobility during the early post-school years, suggest potentially serious social and economic problems for our society. However, little is known about the actual magnitude of this problem and its long-run implications for the individual. Issues that can be researched include the following:

- (a) To what extent are variations in the extent and character of youth's employment while in high school explained by characteristics of the school and of the local labor market, parent financial status, and social-psychological characteristics of the youth (including their attitudes toward school)?
- (b) Are individuals with certain socio-economic characteristics likely to enter and be trapped in low-paying jobs in which traditional human capital variables appear to be irrelevant, or does the labor market operate so as to sort individuals out among jobs equitably in terms of their productive capabilities? What are the processes of mobility, post-school training, work experience, and modification of goals that result in youth settling into long-term career jobs?
- (c) Does unsatisfactory experience (for example, extensive unemployment) in the immediate post-school years leave "scars" that affect later labor market behavior and experience, or are these problems essentially transitory, with no lasting effects? Research on the potential "scarring" effects of unemployment has been completed for the original NLS cohort of Young Men. It is now possible to undertake comparable analyses for this cohort who attained adulthood in the 1980s and to compare the experiences of NLSY79 respondents with those in the newer NLSY97 cohort.
- (d) What relationship, if any, is there between the high school experience, including work activity, and the post-school labor market activity of non-college-bound youth? Possible research topics focus on whether labor market success depends on the extent or type of work experience and whether the smoothness of the school-to-work transition affects later labor market outcomes.
- (e) How does the curriculum of students—whether vocational, college preparatory, or general—affect their later labor market success? Early analyses of the NLSY79 indicated that vocational and academic curricula have similar payoffs in the immediate post-high school period. A longer perspective, possible only with a longitudinal data set, is necessary, however. This cohort has many years of post-school employment experience that supports meaningful research on this critical question.

#### **4. The Work Environment**

The earlier National Longitudinal Surveys relied heavily on traditional economic variables to characterize the types of jobs held by respondents, such as earnings, hours worked, occupation, and industry. Other dimensions of employment include transportation time to work, perceived hazards of the work site, the respondent's perception of relationships with supervisors and co-workers, and his/her assessment of the long-term possibilities of the job. In 2018, new questions about job stress, work demands, and ageism in the workplace have been added to round out the picture of the work environment.

These kinds of information make possible a much more penetrating analysis of the character of work experience. For example, the following kinds of questions can be addressed.

- (a) To what extent may increased responsibility and improvement in job content occur without being reflected in a change in the job title or a change in employer, the conventional indicators of "job change?" In addition, what is the character of the extensive job changes made by adults? Does "job hopping" result in progressively better jobs along all of the dimensions described above, or does it

simply represent a string of equally poor employment opportunities? How does the answer to this question vary depending on the sex, race, ethnicity, and socio-economic and psychological characteristics of the respondent? What is the effect of variation in the economic environment? What is the role of job-specific experience relative to general labor market experience in explaining earnings growth?

- (b) What kinds of jobs do people consider desirable, and at what wage rates? What is the extent of variation in this regard by sex, race, ethnicity, and socio-economic status? What are the causes of job satisfaction or dissatisfaction? Does job dissatisfaction lead to job mobility? Research already completed shows that there are systematic differences in the desired characteristics of jobs at entry versus those at mid-life, at least among the non-college population. Young adults entering the labor market are thought to be more concerned with job security, perhaps because of their tendency to be in unstable positions, while mid-life workers are more concerned with promotions. This sample is well suited for studying this evolution of attitudes. Gender differences include a greater emphasis by women than men on job significance and good interpersonal relationships.

### **5. Racial, Sex, and Cultural Differences in Employment and Earnings**

One of the principal purposes of the NLSY79 study is to examine racial, sex, and ethnic differences in employment and earnings. At a descriptive level, gross differences in employment and earnings among various race, sex, and ethnic groups have been identified. In addition, multivariate techniques are currently being used to ascertain the underlying factors responsible for these gross differences. For example, human capital theory suggests that an individual's earning power in the labor market will reflect the effects of various types of human capital investments. Consequently, earnings should be significantly related to educational attainment, total work experience in the labor market, and tenure on the current job. In addition, various studies have identified a number of other factors that appear to be significantly related to earnings, such as ability (IQ), class of worker, health status, size of place of residence, and region of residence.

The kinds of analyses described above for the NLSY79 cohort have in many cases already been done for the original NLS cohorts. Consequently, several areas of considerable interest can be examined by comparing the new and old cohorts. Further, the questions asked of the NLSY97 respondents will permit comparisons with an even younger cohort in the next several years. For example, changes in the returns to various kinds of human capital investments for different groups can be measured. The extent of labor force attachment (and related labor market outcomes) among young women in the NLSY79 cohort compared with that of their counterparts in the predecessor cohorts has already been investigated. Additional research has considered changes reflecting demographics (such as changes in cohort sizes due to the baby boom), social change (such as the impact of the women's liberation movement), and the state of the economy. The answers to these questions are important for helping to guide public policy.

### **6. The Relationships between Economic and Social Factors and Family Transitions and Well-Being**

In recent years the percent of all births born to teenage mothers has fallen from over 15 percent to about 7 percent. Past research suggests that these women have much poorer prospects than those who have children later: teenage mothers receive less education, have more children, and have a higher risk of divorce and of becoming dependent on public assistance. For young men as well as young women, early parenthood may curtail the amount of education they receive and reduce their earnings potential. What are the implications of these early behaviors for the long-term development of adults?

The NLSY79—particularly as it has been enhanced by the detailed pregnancy histories incorporated into the fourth and subsequent rounds—makes it possible to study a variety of issues relating to these problems:

- (a) What are the cultural, familial, attitudinal, and economic factors that increase the chances of early childbearing, early marriage, and separation or divorce? How have these causal relationships changed over time, as indicated by comparisons of the 1979 youth cohort, the 1966 and 1968 youth cohorts, and the newer NLSY97 cohort? Research with the NLSY79 data has already documented important changes in the relationship between early childbirth and early school leaving and how early pregnancy is associated with a variety of family and outside influences. This research has documented the importance of alternate education programs, such as the GED, in helping mothers attain secondary school credentials.
- (b) What are the long-term social and economic consequences of early childbearing, marriage, and divorce? How do these effects vary according to sex, race, ethnicity, and socio-economic status? As NLSY79 respondents reach mid-career, the availability of more than 35 years of data permits significant exploration of these long-term effects in later life.
- (c) For individuals who assume the responsibilities of marriage and child rearing at early ages, and for young mothers whose marriages dissolve, what kinds of public interventions have been effective in promoting economic independence? What are the potential roles of the provision of childcare, counseling, access to continuing education, and job training? Increasing numbers of researchers are utilizing the NLSY79 data set to explore these important policy-relevant questions.
- (d) What are the implications of marital turbulence for mid-life outcomes? Do the effects of divorce depend upon when the divorce comes and the length of the marriage it terminated? What are the implications of marital status and especially divorce for measures of income equality?
- (e) The updating of the fertility histories in conjunction with the supplementary data on infant nutrition and maternal and child health included in the 1983 and subsequent survey rounds has permitted a careful causal examination of the longitudinal dimensions of childbearing, infant health and care, and the employment and employability of mothers. From an employment perspective, the data collected in the sixth (1984) and subsequent rounds permit an examination of the associations between having had a recent birth, the infant's health, and the ability of the mother to enter the labor force or maintain employment, if she is already working. Her pattern of employment will be related to her education and training background and prior marital and fertility experiences. The longer-term horizons that will permit using data through the forthcoming 2016 survey supplement on child outcomes will be highlighted below.

## **7. The Geographic Mobility of Young Baby Boomers**

The NLSY79 is being used to examine in detail the associations between geographic mobility, local and national levels of economic activity, and social, economic, and demographic characteristics of this cohort and their families. The longitudinal survey design, in conjunction with the interviewing of respondents regardless of where they move, enables researchers to model the determinants and consequences of geographic movement. In particular, the rich attitudinal content of the survey permits inferences with respect to the relative strength of economic motives in migration. This research is, however, only now becoming feasible, as it requires the cumulating of residence records for a number of years. As of the 2018 survey, the respondents will be 53-60 years of age and have left their parental household, completed their education, and formed their own households. Preliminary research has already been completed that has documented the levels of mobility for this cohort, and its linkages with leaving school and early family and employment transitions. This exploratory research highlights a more complete mobility

research agenda that can be accomplished with this data set. Research examining the economic consequences of their geographic moves, particularly how they relate to their employment and unemployment data, is becoming increasingly feasible. Because respondents are interviewed even if they leave the United States, studies of emigration (or return migration to the country of origin) are also possible.

## **8. The Measurement and Analysis of Gross Changes in Labor Market Status**

The NLSY79 permits quantification of gross changes in many aspects of the labor force status of young baby boomers. The oversampling of blacks and Hispanics permits comparative analyses of labor force transition patterns for male and female adults. A wide variety of background information also permits a careful examination of the extent to which variations in labor force behavior reflect differences in backgrounds, ethnic characteristics, and differential access to schooling. Patterns of labor force continuity and discontinuity for the various groups can be examined in great detail, and the social and economic costs of the variations in work attachment can be analyzed.

From a descriptive perspective, a variety of types of mobility of adults can be quantified: movement into and out of the labor force and between employment and unemployment, movements between jobs, and movement between full- and part-time employment. Moreover, the relationship between these changes and changes in school enrollment status, demographic events, and work attitudes can be analyzed. Examination of changes in labor force and employment status in relationship to changing levels of national and local unemployment permit the testing of the “discouraged worker” and the “additional worker” hypotheses and an analysis of a variety of dimensions of frictional and “disguised” unemployment. By 2018, the adults in this sample have been followed through a variety of economic climates, permitting a more careful examination of the extent to which these gross flows are sensitive to cyclical and regional variations in economic conditions.

Also, by contrasting the patterns of labor force dynamics of the original NLS samples of young men and women with the patterns of the NLSY79 cohort, the question of whether or not the relationships between these transitions and levels of economic activity have changed over the past decades can be considered. Finally, one is able to examine whether or not demographic and socio-economic factors such as marriage, childbearing, and changes in family income levels show the same association with gross labor force movement as was true in earlier decades.

## **9. Transition to Retirement**

As the baby boom generation retires, issues concerning retirement and aging will be the focus of much public policy debate. At the start of 2018, members of the NLSY79 are 53 to 60 years old. While some will have already retired, the majority are in various stages of preparation for retirement. As such, more emphasis in the study is being placed on retirement issues. A baseline health module was given to respondents as they turned 40, and an extensive health module was asked as they turned 50. Cognitive assessments were given to sample members as they turned 48. Questions concerning retirement planning have been part of the questionnaire since 2006. Questions on retirement expectations, pensions, and financing have been added. Together with the extensive history of employment, income, asset accumulation, and family relations, these will support research on a myriad of retirement and aging questions. These include the timing of retirement, joint retirement decisions, health and financial considerations of retirement decisions, and living conditions during retirement.

#### ***D. Use of the NLSY79 for Social Indicators Analysis***

Data derived from the NLSY79 used in conjunction with data from the Young Men (1966) and Young Women (1968)—the “original” youth cohorts—and from the NLSY97 represent a unique means of measuring certain dimensions of social change among young American adults. The NLSY79 cohort can be matched with comparable nationally representative cross-sections of male and female young adults in the 1960s from the original NLS cohorts and with today’s young adults in the NLSY97.

We are now able to measure trends in school attrition, labor force entries and exits, and family transitions. A variety of attitudinal measures, toward work, school, and home, are available for inter-temporal comparative purposes. From a more purely economic perspective, patterns of labor force behavior and experience of the cohorts can be compared. This kind of analysis permits insights into such questions as (a) the extent to which the draft and the Vietnam War conditioned labor market experiences of young men during the late 1960s, (b) the extent to which the labor market experience of the earlier cohort reflected the impact of their large numbers relative to the total labor force, and (c) the degree to which changing attitudes about the appropriate role of women have influenced the educational and labor market experience of the current group of women.

The 1960s youth cohorts and NLSY79 already have been used in this manner to compare early fertility patterns, work attitudes, and working propensities of youth in the late 1960s and late 1970s. Comparison of this cohort with the earlier NLS cohorts of young people has shown dramatic changes in work expectation over the intervening decade. In particular, the proportion of young women who anticipate being out of the labor force at age 35 has been reduced by over half. Young women still anticipate jobs that typically belong to females, but there has been a marked shift from aspirations for clerical to professional careers. At the same time, more young men are aspiring to jobs in the skilled trades than was the case in the 1960s. As NLSY97 respondents navigate the school-to-work transition, similar comparisons with that cohort will be possible.

#### **1. Delinquent Behavior, Arrest Records, and School Discipline**

The inclusion of self-reported delinquent behavior, school discipline, and arrest records in the 1980 NLSY79 interview has permitted examination of the effects of these deviant behaviors on adolescent employment activity. Combined with subsequent data on employment and education, these data permit examination of the extent to which (1) a sustained pattern of delinquent activities through adolescence and early adulthood is related to employment difficulties and (2) early deviant behaviors may be causally associated with a disposition toward excessive alcohol usage in later adolescence and adulthood. Several specific areas can be explored:

- (a) What are the long-term effects of delinquency on adult employment? How many adults with prior arrest records are in the labor force? Is prior official contact with the law in itself a barrier to employment, over and above the effects of factors leading to delinquent behavior? Are there differences in the employment implications of adolescent misbehavior for adults from different social strata or different ethnic groups? Are particular patterns of delinquent behavior associated with different patterns of employment? In this regard, recently completed research suggests that the relationship between illegal activity and employment does vary according to the type of crime involved. Among youth out of school, young men who engage in violent activities have trouble getting and keeping jobs, resulting in less time employed and more time unemployed than their more peaceable counterparts.
- (b) How do the factors associated with deviant behavior affect the performance and outcomes of subsequent government education and training programs? To what degree have such programs reached youth with police records? What implications does delinquency have for the accumulation of



skills and/or education? Do youth with school discipline problems face special difficulties in acquiring employment-related skills? What effect does a criminal record have on school completion? High school dropouts have relatively high levels both of self-reported illegal behavior and of criminal records. To what extent does delinquency or criminal records contribute to the employment problems of dropouts? For young women, in particular, how does a delinquency record interact with early school leaving and early pregnancy and motherhood?

## **2. Drug and Alcohol Use**

Funding from NIAAA has provided for collection of eight rounds (1982–85, 1988–89, 1992, 1994) of alcohol use data, and funds from NIDA permitted collection of drug use information in 1984, 1988, 1992, 1994, and 1998. The 2002, 2006, 2008, 2010, 2012, 2014, and 2016 surveys included a short series of questions on current alcohol use, with a short set of questions on cigarette use in 2008-2016 as well. We plan to include these questions regularly in future surveys including 2018. The pregnancy history section collects data on substance abuse during pregnancy. This year, in recognition of the crisis in opioid use, we are introducing questions on pain and the use and misuse of painkillers. Together, these sections profile the substance use patterns of these adults, a particularly important population. Evidence from drug abuse agencies indicates an increasing frequency of poly-drug abuse, but the dynamics of such abuse in the general population is unknown. The children and young adult offspring of the mothers of the NLSY79 represent a particularly important group, since substance abuse in these formative adult years may be important in preventing successful transitions into adult roles. Having substance use information on the NLSY79 permits research into a number of important areas:

- (a) What are the patterns of drug and alcohol use among this population? Information on drug use can be used to look at persistence and change in drug use patterns over time. What are the correlates of drug use? How do drug use patterns vary across ethnic groups and social classes? Which people are most likely to persist in drug use? How are health incidents such as injuries or medical procedures related to addiction to opioids? Of particular interest is research on use of various combinations of drugs and alcohol, and the relationships between these combinations and successful life cycle transitions.

Research already completed indicates that there are sharp differences in the levels of alcohol use between men and women and between black men and other men. Women and black men report much lower levels of alcohol use, and especially much lower frequency of heavy drinking, than do white or Hispanic men. The data set will permit examination of the demographics of changes in alcohol use patterns over time and the impact of marriage, school, and parenthood transitions on drinking.

- (b) Do labor market conditions, particularly high unemployment rates, affect the incidence and prevalence of drug use? Can we predict which unemployed will turn to drugs, based on their background characteristics, and conversely how drug use may lead to unemployment? The multiple rounds of information on alcohol use will allow causal inferences to be made, controlling for levels of alcohol use preceding spells of unemployment.
- (c) Use of alcohol and some drugs are an integral part of social life among wide segments of society, and at the same time they are known contributors to major social problems. The data set may permit researchers to distinguish between socially acceptable and socially destructive patterns and combinations of drug use.

### ***E. Use of the NLSY79 to Measure Maternal and Child Inputs and Outcomes***

For many years, NICHD has provided funds for the collection of detailed fertility histories for the respondents as well as for a variety of supplemental materials on maternal and infant health. These data

include (but are not limited to) a comprehensive longitudinal battery on childcare, infant feeding practices, maternal health care during pregnancy (including the use of cigarettes or alcohol during the pregnancy), the availability and use of maternity leave, employment before and after a birth, and maternal and infant health care during the first year of life. Thus, in summary, we have available a data set that links economic, social, and health-related behaviors and attitudes in a continuing longitudinal, temporal context, in a manner superior to any data set in existence. The availability of these data elements over time, across generations, within and across families, and for minorities is unique, and they offer opportunities for basic as well as policy-oriented research relevant to the needs and interests of several agencies and many academics. The juxtaposition of all the dimensions specified above permits analyses of issues of critical concern to our society and its government. The data permit a careful examination of the ways in which family structure, parents' employment, childcare, economic well-being, and family background intersect to affect the well-being of young children and their families.

Several previous survey rounds gathered information on a number of outcome measures relating to the children of the female respondents. These data greatly enhance the utility of the overall data set for examining a variety of issues relating to the impact that family background and parents' employment, earnings, and other personal characteristics and behaviors have on critical dimensions of child and adolescent development.

This data collection enormously enhances the utility of the overall data set for researchers and practitioners in a number of disciplines, including medicine, health, economics, psychology, and sociology. The availability of these child outcome measures permits researchers to address in detail the following critically important research agenda. For the most part, other data sets do not permit researchers to comprehensively address these issues in an appropriate analytical manner.

### **1. Research Issues Linking Employment, Income, and Child Outcomes**

The following abbreviated list indicates some of the more important employment and income-related issues that can be addressed using these child outcome measures.

- (a) Linkages between the extensive employment histories, other maternal behaviors, and child outcomes permit researchers to carefully and uniquely consider a variety of policy-relevant issues. First, and most directly, what impact does the patterning, extensiveness, and type of a woman's employment during pregnancy and in the period after a birth have in the short and long run on an infant's or child's physical, emotional, and intellectual well-being? The NLSY79 includes great detail not only on the extensiveness of a woman's employment before and after a birth, but also on the woman's satisfaction with that work and the physical demands of the job. Paralleling this direct employment information, we have available detailed information about the income, earnings, and assets situation of the family unit as well as whether the woman has access to maternity leave. From a health perspective, we know about the extent to which the woman used prenatal health care services, and, to some degree, her own health status and health care (for example, cigarette and alcohol use, general health status, weight gain). Finally, we have some knowledge about post-birth experiences, the infant's birth weight and length of gestation, the mother's infant-feeding practices, childcare practices, and medical care during the first year of life. Thus, with the information about the child's cognitive, physical, and emotional well-being, many researchers are considering questions like the following: What is the effect of a mother's employment on a child's well-being? How is this association mediated by the myriad of social, economic, and family factors typically associated with a woman's employment? This is an issue of fundamental importance in contemporary American society.
- (b) Several issues that are intimately interwoven with the general employment and child well-being association can also be carefully evaluated and resolved. First, to what extent does infant feeding

inhibit a woman's ability to work in the immediate post-birth period or, conversely, to what extent does female employment inhibit nursing during a child's first year of life? There have been substantial increases in breastfeeding among American mothers during the past two decades and issues relating to the relationship between feeding practices, employment behavior, and child health outcomes are of great contemporary, social, and political concern. In addition, these associations vary between mothers and children from different socio-economic, racial, and ethnic backgrounds.

- (c) The NLSY79 since 1986 has included a wealth of information on the childcare practices of young mothers. Contrary to popular opinion, most childcare arrangements are relatively informal, not in highly structured public or private day care centers. The NLSY79 includes information not only on the nature of the arrangement (including location, type, and costs) but great detail about the actual family structure where more casual within-family arrangements exist. Thus, incorporation of child outcomes to the survey permits a much more comprehensive examination of the effects of various childcare arrangements for a full cross-section of American mothers (including care by the child's mother) on child outcomes, independent of all the related social and economic factors that normally confound such analyses. The children in the survey cover a full spectrum of family and childcare environments. That is, both for family situations where two parents and one parent are present, we can define relatively large samples of children where (1) the mother is at home, (2) the mother is absent but the child is watched by a relative or non-relative in the home, (3) the child is cared for outside of the home by relatives/non-relatives in household situations, or (4) the child is cared for in more formal public or private day care environments. It is possible to contrast the development (and early school success, for those of school age) of children who followed different family/childcare arrangement paths controlling for other relevant social and economic background factors. It also provides important clarification of the effect of a mother's employment on her children and suggests what might be more optimal strategies for enhancing a child's well-being in an environment where mothers with young children need or want to work.
- (d) It has been estimated that as many as 50 percent of contemporary marriages will end in separation or divorce. Reflecting this phenomenon, a substantial number of children will spend at least part of their childhood in one-parent or in blended households. This is particularly true for the children of women who begin marriage and childbearing at a young age. The NLSY79 child data set permits careful analyses of not only the effect on children of early marriage and childbearing, but also the implications of single parenthood for the emotional, physiological, and cognitive development of the child. The wealth of economic and educational background information permit researchers to separate out the direct and indirect effects of single parenthood per se on child development from the effects of differences between single and married parents in economic well-being, including the employment status of the parent and other family members. From a non-economic perspective, the longitudinal dimensions of the data make it possible to clarify whether or not younger mothers and/or single parents are intrinsically different in their child raising patterns or whether differences in child raising patterns between these mothers and their later-marrying or currently married counterparts reflect their family circumstances. Research on this topic can follow the NLSY79 children into adolescence and early adulthood, examining the long-term effects of family disruption. From a policy perspective, it is possible to measure the extent to which AFDC/TANF, other transfer payments, and federally sponsored education and training programs ultimately translate into improved outcomes for the children of single parents. An important related area of research is the extent to which repeat childbearing by these mothers further complicates child raising, as defined by less satisfactory child outcomes.
- (e) A major objective of the NLSY79 child data-collection effort has been to increase our knowledge about the technology of child development. Adopting the notion of a production function from economics, one can think of the determinants of cognitive achievement and socio-affective traits as

inputs that, when combined in particular proportions, produce a child development output. These inputs are in part subject to parental choice (for example, the amount of parental time spent with the child) and are in part endowed (such as innate talents). The inputs that can be varied are chosen by parents according to some objective, and are subject to whatever financial and social constraints they face. The unique feature of this survey is that it contains by far the most comprehensive set of inputs available for the study of child development.

These data have enabled researchers to estimate the relative contribution of different inputs to child development outcomes. An important implication of the behavioral model is that input choices depend on the endowment level; these choices are possibly observed to some extent by the parents, but are not observed by the researcher. Thus, if families with children of high intelligence behave differently—for example, they spend less time with their children—the true effect of those inputs will be contaminated by their relationship to endowments. It will look like spending time with children has a smaller (presumably positive) impact than in actuality. Because we are surveying all children in the same family, the difficulty that arises from variation in family-specific endowments can be handled statistically. That is, we can look at the relationship between within-family input variation and within-family child development outcomes. In other words, we can see how differences in treatment (inputs) of different children in the same family are related to different child outcomes within the same family. If families know the endowments of their individual children, and allocate resources differentially based on those child-specific endowments, then it is necessary to observe the same child over time in order to obtain correct estimates of technology. Extensive research using this perspective has been completed.

In this view, the role of economic variables such as income, wage rates, and prices is to alter the level of inputs chosen. Thus, women with high wage rates will work more and be likely to allocate somewhat less time to children while possibly substituting other inputs like educational toys or specialized childcare services. These behavioral, as opposed to technological, relationships can also be explored with these data. Moreover, although the methodology is not well developed at this point, the data can in principle be used to understand the effect of unanticipated (by the parents) child development outcomes on behavior. There are no other data sets that can be used to study these complex interactions.

- (f) Having a full range of psychological inputs/outcomes permits researchers to model contemporary female labor supply in a more comprehensive manner than has ever been possible. Since the physical, cognitive, and social development patterns of the children are measured as well as the parental inputs to this development process, it will be feasible to measure the extent to which the relative “success” of children affects mothers’ hours and patterns of work as well as use of childcare. Many of the dimensions of childcare “quality” that are central to female labor supply analyses, but for which only very crude proxies are usually available, are measured with great precision in the NLSY79. Thus, tradeoffs between hours of female employment and hours spent in “quality” childcare can be more appropriately defined.

Given the fact that we have “developed ability” measures for both mothers and children, it is possible to more directly and comprehensively address issues related to quality vs. quantity of childcare, in particular the effects of and reasons for substituting quality (own-time input) for quantity. Further, the selection of this particular trade-off may be associated with specific characteristics of women, as measured by “developed ability,” education, family structure, or other factors.

- (g) There is important but inadequate literature in social-psychology that strongly suggests that the actual characteristics of a woman’s job, and the extent to which she may be satisfied with her employment, may have a greater effect on a child’s development than simply whether or not the mother is

employed or is frequently absent from the home. The more important dimension may be the quality of the mother-child interaction rather than the quantity or amount of time spent together. First, a mother who is satisfied with her employment (or non-employment, for that matter) will probably have a better relationship with her children, which should translate into more positive social and perhaps intellectual traits in the child.

Second, the nature and characteristics of the job per se, whether the mother has supervisory responsibilities, has a job requiring extensive thinking, or has rigidly controlled work hours, affect the values that a mother will transmit to her children. Such values can have a major effect on a child's social and emotional traits and ultimately on the child's educational and vocational development. These issues are becoming increasingly important as more mothers are working, but our knowledge about the psychological impact of mother's employment on the mother-child interaction process and child outcomes is slight. The NLSY79 child data set is being used extensively to address these important issues.

- (h) From a social as well as a cost-benefit perspective, it is possible to examine to what extent social intervention programs for aiding the poor have been effective in helping mothers work or learn skills and helping to narrow child outcome differentials between more advantaged and less economically advantaged children. In addition to the voluminous education and training program data available, the NLSY79 collects information on sick and well care received by infants, and on whether or not this care was received in a publicly funded facility. Thus, it will be possible to sort out which kinds of children (in terms of economic, racial, and geographic backgrounds) have received assistance, and subsequently, how this assistance has affected development as well as early progress in school.

The rich body of data on transfer payments that has been collected since the inception of the survey makes it possible to examine whether or not a variety of presumably health-related inputs have affected the health of the mother and her children in the household. For example, information on the receipt of AFDC/TANF payments, food stamps, and other welfare payments is available. It is possible to measure whether or not these federal- and state-sponsored inputs to family well-being have any direct or indirect effects on the health of the mother or on the physical or cognitive development of her children.

- (i) A research area of considerable interest, which has been handicapped by the inadequacy of available data, relates to the extent to which intact family units handle childcare needs by staggering the employment hours of the father and mother, as well as how different patterns of employment may impact child outcomes. At one extreme, what is the effect of having a father caring for a child full-time while the mother works, in comparison with the more traditional family employment pattern? In between these two extremes is a continuum of parent employment combinations, in conjunction with the potential availability of childcare services by other family members who may be present. How might these different patterns impact on the psychological development of the child?
- (j) In previous rounds, assessment material collected from the children permitted researchers to consider the level of a child's intellectual and socio-emotional development in relation to the full range of background information available. Multiple observations of child development allowed researchers to link other facts with the development outcome information at more than one point in time, measuring how changes in intellectual or socio-emotional development are linked to other attributes and changes in other attributes. However, the number of children eligible for these assessments is now under 100. For this reason, in 2016, we stopped assessing child cognitive achievement and socio-emotional development. We continue to measure other appropriate outcomes in order to allow researchers to measure the relationship of child inputs to outputs in adolescence and adulthood.

## 2. Other Research Issues Relating Family Structure and Child Outcomes

The above research issues are meant to be suggestive of some of the important employment-related questions that can be resolved using the NLSY79 and NLSY79 child data. Equally as important are the large number of medically and social-psychologically based research issues that can be comprehensively addressed. Many of the following issues are of fundamental importance for helping program and policymakers in the social and health fields make better informed judgments about the most appropriate distribution of federal funds. The following are several important areas of research in the social-medical sphere that can be effectively addressed with the addition of the child attribute outcomes:

- (a) At a most basic level of analysis, it is possible to carefully examine differentials in child development between black, white, and Hispanic children, controlling for the many social and economic factors known to differ between the racial and ethnic groups. For example, to what extent do differential child outcomes reflect economic differences (including mother's employment differentials) between black, white, and Hispanic families?
- (b) At a second level of analysis, it is possible to measure the extent to which these differences in child outcomes are associated with differentials in other critical intervening factors. These include differences in maternal health care during pregnancy; mother's use of cigarettes, drugs, or alcohol; employment during pregnancy; and infant health care (including propensity to nurse) during the first year of life. Other important intervening variables that can, of course, be affected by many of these health-related factors are the birth weight of the child, the length of gestation, and the changed weight of the mother during pregnancy as well as her weight at the initiation of the pregnancy. To our knowledge, the NLSY79 represents the only data set that includes all of these critical data inputs and outcomes for representative samples of younger American women of all races and ethnic groups.
- (c) One other research area focuses on the extent to which the various child outcomes are correlated with each other and the extent to which they either separately or jointly impact on childhood educational behavior. Our ability to answer these questions is enhanced since we have gathered child developmental outcome measures and school outcome information for a number of years. Such data permit researchers to untangle the nature of the causality between the various psychological components (cognitive, socio-affective, and physical) and school outcomes. These factors can obviously reinforce each other over time, as success or lack of success in school can impact on social and cognitive development, which can in turn affect school success. These phenomena can be explored more thoroughly within a longitudinal context.

Also, research can consider the extent to which the effect of social or cognitive development on school outcomes is conditioned by other factors in the child's contemporaneous situation or earlier background. For example, we have already considered the issue of how a mother's employment may affect a child's cognitive or social development. The issue being raised here is whether a given cognitive state (for example, level of intelligence) translates into different school outcomes, depending on various dimensions of the child's mother's employment. Similarly, how does a family's economic well-being, its structure (including number of siblings and the presence of a spouse), the educational level of the parents, and so on affect the relationship between measured intelligence and school outcomes? From a program perspective, the answers to these questions affect whether program funds and social interventions should be aimed at the child life cycle stage where particular cognitive conditions are being enhanced or at the point where these aptitudes are presumably being translated into school success or failure.

- (d) We have already addressed the issue of early childbearing, marital status, and its effect on childbearing from an economic perspective. From a social-psychological perspective, the data set permits a careful examination of the effect that early childbearing can have on later child outcomes.

At this time, we can examine long-term child outcomes into later adolescence and early adulthood. Information on whether or not the child was “wanted” by the mother as of the point of conception is available, as are a myriad of intervening health care variables. Indeed, completed research with the NLSY79 suggests that young mothers who did not want a particular pregnancy at the time they conceived were less likely to begin prenatal care early in pregnancy and, on average, have slightly lower birth weight babies, a factor that is known to be strongly associated with an above average level of infant health problems and infant mortality. Comprehensive modeling of the early childbearing-maternal/infant health-later child outcomes temporal progression incorporating relevant economic and family factors permits researchers to resolve a number of important questions. For instance, they are able to address how much of an independent effect early childbearing has on child outcomes per se, and how much of the effect reflects the possibility that the characteristics of early child bearers and their environment are less conducive to satisfactory child development.

Related to this issue, there is considerable interest in the health care and social demography community about the joint effects of early childbearing and early marriage on child development. Because many of the children who were born to young mothers are now adolescents or young adults, we can examine this issue using a long-term perspective.

- (e) The NLSY79 sample includes a large number of sister pairs where both sisters have been interviewed. This unique sampling element permits researchers to carefully examine the extent to which common origin effects and intervening economic, social, and health behaviors by young women separately and jointly impact on child outcomes. For example, it is possible to follow sister pairs who come out of the same environment and examine the extent to which they follow similar or different behavior paths (such as early employment, smoking, drinking, general health care), as well as witness how these factors translate into different or similar child outcomes. This unique analysis permits far stronger statements to be made regarding the relative influence of innate traits versus the influence of environment than is usually possible. It also permits researchers to pinpoint the influence of specific health care practices as determinants of early child development.
- (f) One of the most common social problems in contemporary American society is that of adolescent childbearing and its linkages with premature school termination, as well as with a host of other social problems of adolescence. While the dimensions of this problem have been well described, information is inadequate on the causes of this problem. For example, the extent to which early pregnancy and early school leaving may be intimately linked with prior attitudes and behaviors determined inside and outside of the home has not been well defined. Clearly many of the children raised in difficult environments have a relatively problem-free adolescence, whereas others encounter many difficulties. Extensive research on this topic is underway. The NLSY79 represents a unique data-collection vehicle for gathering information that could provide important insights into this adolescent development process.

The NLSY79 data set already includes a vast battery of information about the children’s maternal and family background, as well as cognitive, emotional, and physiological assessment information. As already noted, we no longer perform child assessments, but we continue to interview children 12 years old and older. The 2018 survey round will repeat a battery of questions (addressed both to children age 12 and over and to their mothers) about a variety of issues related to the child’s interaction with parents and peers, his or her school success, and his/her preteen and adolescent behaviors. This information provides important insights into how prior family and maternal behaviors are linked with a variety of pre-adolescent and adolescent outcomes and how these outcomes are linked with long- and short-term changes in cognitive and emotional development. The continued collection of these data about children’s patterns of interaction with parents and peers provides important information about, and insights into, the processes associated with the transition to

adolescence, and how social, intellectual, and physiological factors may impede or contribute to early sexual activity or premature school termination.

The above list of major research themes is not intended to be exhaustive, but rather is meant to suggest how the child outcome measures augment the value of the data set for policy-relevant research of interest to many government agencies. The comprehensive longitudinal database on employment, training, income, and family background for a large national sample and the heavy overrepresentation of minority respondents make the NLSY79 a totally unique data set for considering these issues. The child aptitude tests broaden immensely the scope of labor force research that has traditionally been the focus of the survey. Many of the unanswered questions about the effects of women's employment on family life are now answerable. Equally important, the data provide significant clarification of the extent to which women's employment is affected by family, specifically by the presence of children.