Children of the NLSY79: a unique data resource

The survey provides a wealth of information on the education, socioeconomic background, and cognitive, social, and emotional development of children aged 14 and younger; and on the workforce participation, education, marital, and fertility behaviors of young adults aged 15 or older; the data have been heavily used by researchers across a wide range of disciplines

Lawrence L. Wu
and
Jui-Chung Allen Li

A remarkable design aspect of the National Longitudinal Survey of Youth 1979 (NLSY79) is the availability of longitudinal data on *all* children born to women in the original NLSY79 sample. The resulting data from the Children of the NLSY79 provide a resource that is unique in many respects. Perhaps not surprisingly, these data have been used by researchers across a wide range of disciplines, including child development, demography, economics, epidemiology, family studies, social policy, and sociology. Much of the usefulness of these data stem from two key factors: they can be linked to the rich longitudinal data for the NLSY79 mothers, and the child and young adult surveys are themselves longitudinal, covering a wide range of ages from early childhood and adolescence through the young adult years.

Sample design

As noted in other articles in this issue of the *Monthly Labor Review*, the main respondents in the NLSY79 are a nationally representative sample of individuals aged 14–22 in 1979, with surveys conducted annually through 1994 and biennially since 1996. The child sample—consisting of offspring aged 14 or younger—was begun in 1986, while the young adult sample—

consisting of offspring aged 15 or older—was begun in 1994, with both the child and young adult samples fielded biennially since initial data collection.[1] The survey instruments differ substantially in the child and young adult surveys, as reviewed below. Because of the longitudinal design of the child and young adult samples, offspring are interviewed initially in the child sample, and then in the young adult sample as they reach adolescence. Thus by design, sample sizes in the two samples will vary from wave to wave, but as of the 2002 wave, the child sample contained 11,340 children, and the young adult sample contained 4,648 young adults.

These data do not provide a nationally representative sample of children or young adults, although they are appropriately regarded as representative of the population of offspring born to U.S. women who were aged 14–22 in 1979. Sample coverage of this latter population is excellent. However, the child and young adult samples do not cover children of NLSY79 women who were concealed from the survey (for example, children born to a NLSY79 woman but given up for adoption), children who died before the initial 1986 children survey, or children in NLSY79 households who were lost to the survey because they were not interviewed. The numbers of children in the latter

Lawrence L. Wu is professor and chair, and Jui-Chung Allen Li is a Ph.D. candidate, in the Department of Sociology at New York University.
E-mail:
lawrence.wu@nyu.edu

category far outweigh the numbers in the other two categories, but, by current survey standards, sample attrition is modest. In the 2002 wave, for example, roughly 84 percent of NLSY79 women who had one or more births were successfully interviewed, compared with only 74 percent of women who had no children.

Child assessment battery

A major interview component of the Children of the NLSY79 is the child assessment battery, which gauges the child's socio-emotional and cognitive development from birth to age 14 and provides measures of the home environment that are thought to be important for child development. The validity and reliability for these child assessments are high, with these measures available for roughly 90 percent of surveyed children. (An exception is the Home Observation of the Environment-Short Form (HOME–SF) (see below) for infants under age 3.) While these child assessment instruments were designed to be administered in a face-to-face interview, they are nevertheless close in quality to similar diagnostic instruments used in the clinical settings of child assessments. The battery covers multiple domains of a child's developmental trajectories, as well as the home environment for the child.

Home observation of the environment. The quality of a child's home environment is measured by the HOME–SF.[2] This instrument assesses the cognitive stimulation and emotional support for children under the age of 15. Examples of questions include, "How many children's books does your child have?" and "If your child got so angry that he/she hit you, what would you do?" with the specific questions administered varying according to age suitability. These data have been widely analyzed, with the instrument adopted by other surveys (for example, the child assessment module in the New Immigrant Survey[3]).

Socio-emotional development. Data on child temperament are obtained from mothers for children under age 3 and from interviewers for children between ages 3 and 6. This temperament scale is intended to measure the child's activity level, affective attributes, attachment styles, compliance, sociability, and more generally, how a child usually acts. It was adapted from Rothbart's Infant Behavior Questionnaire and Kagan's compliance scale.[4] The Behavior Problem Index (BPI), completed by mothers with children from age 4 to age 14, has been widely used to gauge problem behaviors in children.[5] Researchers have typically distinguished between two major BPI subscales: "externalizing behaviors" measuring behaviors such as aggression, over-activity, and conflictual relations with peers; and "internalizing behaviors" measuring frustration and negative affect toward oneself. Although

many other studies (usually small-scale studies) have collected BPI data, a unique aspect of the data from the Children of the NLSY79 survey is its longitudinal nature, with BPI measures repeated every 2 years since 1986. Thus, for some children, BPI is measured at as many as six longitudinal data points.

Cognitive development. The major instruments evaluating the cognitive development for the NLSY79 children are three subscales of the Peabody Individual Achievement Tests (PIAT)—Mathematics, Reading Recognition, and Reading Comprehension—for children between ages 5 to 14 and the Peabody Picture Vocabulary Test – Revised (PPVT–R) for children. The Memory for Digit Span subscale of the widely known Wechsler Intelligence Scale for Children – Revised (WISC–R) is also included. These assessments of cognitive ability are administered in all waves since 1986. Thus, as in the case of BPI, repeated measures of cognitive ability are available for individual children, which have proven of great value to the research community. Less widely used measures of cognitive ability in these data include "body parts recognition" (for children between ages 1 to 3 years; in the 1986 and 1988 waves), "memory for locations" (for children between 8 months and 4 years of age; in the 1986 and 1988 waves), and the short-term memory of auditory stimuli subscale from the McCarthy Scales of Children's Abilities (for children between ages 3 and 7 years; in the 1986 to 1994 waves). Taken together, these multiple-repeated measures provide a comprehensive developmental portrait of early cognitive ability.

Education, health, neighborhoods

Educational experiences are also assessed longitudinally, including the child's participation in the Head Start program, grade retention, number of the child's friends that the parent knows (a classic measure of "social capital"[6]), attendance in advanced classes, school activities, and basic school information. Researchers may request permission to view data on school characteristics, which were gathered in a 1995/1996 school survey, and on neighborhood characteristics, which are available from geocode information. These items, taken collectively, provide an unusually comprehensive portrait of the child's early formal schooling experiences in ways that exceed the educational data available for the original NLSY79 respondents.[7]

Various health-related questions include detailed perinatal conditions (for example, mother's smoking and drug use during pregnancy, her access to prenatal care, and child's birth weight), hospitalization history, general health conditions, specific illnesses, height, and weight. Many of these variables are available longitudinally.

Young adult data

Yet another extremely important design decision in the off-spring data is that the young adult survey instrument—administered when offspring are aged 15 or older—in many ways mirrors the survey instrument given to their NLSY79 mothers. The young adult ages are similar to NLSY79 mothers when they were first surveyed, and the period marks when adolescents and young adults begin transitioning from school to work. Thus, behavioral domains cover the continuing educational experiences of offspring, but also their employment histories, income, and program participation. Health-related behavioral items include detailed batteries on substance use (cigarette, alcohol, marijuana, and other drugs/substance), but also items related to both general and specific mental and physical health conditions. Demographic data include information on exposure to sex education, pregnancy, and detailed fertility and marital histories. Since 1994, a series of questions on computer use has been available, reflecting the survey's continuing sensitivity to various sources of social change.[8]

Advantages of the Children of the NLSY79

Several design elements of the Children of the NLSY79 make these data unique. For example, offspring data are available in the Panel Study of Income Dynamics (PSID), which is also a nationally representative longitudinal survey of respondents in the United States. However, the PSID child supplement consists of only two waves of data to-date; hence, the PSID parent/child data consists of a long panel of data for parents but only a short panel for children. By contrast, the National Survey of Families and Households (NSFH), another national probability survey, contains longitudinal data on both parents and offspring, but limits data on offspring to a single focal child within a specific age range. In addition, the NSFH contains only three waves of data, with interviews occurring 5 or more years apart. By contrast, the NLSY child and young adult surveys are administered biennially, contain *all* children born to a given mother, and provide a long panel of closely-spaced longitudinal data for both mothers and offspring.

As noted earlier, the major limitation of the NLSY79 data has to do with how the sample is generated. The sample cannot be regarded as a nationally representative sample of any cross-sectional population of children in the United States, but is representative of the population of children whose mothers were born between 1958 and 1965. Because children are added as they are born, the initial data in the child sample overrepresented children born to the youngest mothers, who tended to be from disadvantaged socioeconomic backgrounds. Children in the initial rounds of data were observed to do worse than other children of similar ages on a variety of indicators for cognitive, physical, and socio-emotional developments. These disadvantages are likely due to their disadvantaged social and economic circumstances. However, with time, more children have been added to the child sample as the NLSY79 women have completed their childbearing; hence, what was problematic in the early history of the child sample has become much less so as the joint mother-child age distribution has "normalized." Similar issues hold for the young adult data. The research community has been sensitive to these issues, and a variety of modeling strategies can be employed to deal with them.[9]

Retrospect and prospect

Although the majority of published refereed research papers have been in journals specializing in the areas of the family and child development, studies using these data have also appeared in fields such as demography, economics, epidemiology, and sociology. (See table 1.) The use of these data by researchers in child psychology, pediatrics, and psychiatry is particularly noteworthy because, traditionally, these fields have not relied on analyses of national probability samples, but have rather focused heavily on smaller experimental and clinical samples.

The topics examined with these data are very diverse. Published studies to-date have examined the consequences on children's well-being and cognitive and socio-emotional development of factors such as maternal employment, pov-

Table 1. Articles using data from the Children of the NLSY79 published in academic journals

Journal name	Rank	Number of articles
Journal of Marriage and the Family	1	31
Child Development	2	13
Journal of Human Resources	3	12
Demography	4	10
Pediatrics	5	9
Social Forces	5	9
Developmental Psychology	7	8
Journal of Family Issues	7	8
Perspectives on Sexual & Reproductive Health (previously, Family Planning Perspectives)	9	7
American Sociological Review	10	6
American Journal of Public Health	11	4
Intelligence	11	4
Journal of Health and Social Behavior	11	4
Archives of Pediatric & Adolescent Medicine	14	3
Journal of Economic Literature	14	3
Journal of Family and Economic Issues	14	3
Journal of Health Economics	14	3

NOTE: Journals that have only published less than three papers are not included, but they include such flagship journals as *American Journal of Sociology*, *Journal of Political Economy*, *American Economic Review*, *American Educational Research Journal*, and *Population and Development Review*.

erty and program participation (for example, the Temporary Assistance for Needy Families (TANF) program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)), parenting practices, and parental marital history. Similarly, pediatric researchers have used these data to estimate the association of child obesity and television viewing and how parents deal with children during mealtimes.[10]

Use of the young adult sample has increased over time as offspring have aged into this sample. A bibliography maintained by the NLS lists 45 journal articles, book chapters, theses and dissertations, conference papers, and working papers that have used the young adult data.[11] As noted above, early waves of the young adult data heavily overrepresented offspring born to very young mothers, but selection of offspring on mother's age has become far less problematic as offspring born to older mothers have aged into the young adult sample. As a consequence, research uses of the young adult data should continue to gain momentum as more waves of data become available and as parent/offspring characteristics become less skewed.

Researchers can employ advanced statistical techniques exploiting unique design elements in these data. For example, researchers have often noted that siblings are more likely to resemble one another on a variety of behavioral outcomes than are two otherwise similar but unrelated individuals chosen randomly from the same population. Such resemblance, it is argued, may reflect characteristics of siblings—how they were raised, characteristics of their parents and home environment, and genetic influences—that are not captured by the rich array of variables available in data such as the NLSY79. To deal with this issue, researchers have increasingly used a variety of statistical modeling techniques (for example, fixed effect models) that rely on the availability of sibling data to purge out the influence of hypothesized unobserved factors. An innovative elaboration of this idea involves comparisons of siblings, cousins, and unrelated individuals, a research design that is possible with the offspring data because both siblings and cousins can be identified. A similar idea relies on the identification of half-siblings, both among the original NLSY79 respondents and in the offspring data, which has been used to examine certain models of genetic similarity. ☐

Notes

[1] Members of the Center for Human Resource Research (CHRR) and, in particular, Frank Mott played a crucial role in developing and designing the child and young adult surveys. Because plans to collect data on offspring were not part of the original NLSY79 data design, external funding sources were required to collect these data. As a consequence, the availability of offspring data were dependent on the foresight of Frank Mott, who in the early 1980s spearheaded efforts by staff at CHRR and NLS to secure external support for collecting data on the Children of the NLSY79. It is also important to recognize that at the time of initial data collection, many of the substantive issues, as well as statistical and methodological techniques appropriate for these data, were in their infancy. In these and others ways, those who envisioned these data in the early 1980s were well ahead of their time.

[2] HOME–SF is a modification of the HOME inventory, see Bettye M. Caldwell and Robert H. Bradley, *Home Observation for Measurement of the Environment* (Little Rock, AR, University of Arkansas, Center for Child Development and Education, 1984).

[3] For further information about the New Immigrant Survey, see **http://nis.princeton.edu**.

[4] At the time of the first child survey in 1986, there was no existing temperament scale appropriate for use in a survey setting. As a result, the temperament scale developed and fielded by NLS investigators lacked a national norm. Subsequent work has established the psychometric and measurement properties of this scale. See Frank L. Mott, Paula C. Baker, David E. Ball, Canada K. Keck, and Steven M. Lenhart, *The NLSY Children 1992: Description and Evaluation* (Columbus, OH, Ohio State University, Center for Human Resource Research, 1995).

[5] The BPI was developed by Nicholas Zill and James L. Peterson, *Behavior Problems Index* (Washington, DC, Child Trends Inc., 1986) by adapting primarily the Achenbach Behavior Problems Checklist. See Thomas M. Achenbach and C. S. Edelbrock, *Manual for the Child Behavior Checklist and Revised Child Behavior Profile* (Burlington, VT, University of Vermont, Department of Psychology, 1983).

[6] See James S. Coleman, "Social Capital in the Creation of Human Capital," *American Journal of Sociology* 94, (The University of Chicago Press, 1988), pp.S95–S120.

[7] See Kenneth I. Wolpin, "Education data in the NLSY79: a premiere research tool," *Monthly Labor Review*, February 2005, 15–20.

[8] Data on substance use, health conditions, sex education, and computer use are also available in the child sample. The fact that similar items are present in both the child and young adult surveys permits investigators to compare and combine data from the two samples to assess, for example, issues of reliability and stability/change in these variables.

[9] See Mark R. Rosenzweig and Kenneth I. Wolpin, "Are There Increasing Returns to the Intergenerational Production of Human Capital? Maternal Schooling and Child Intellectual Achievement," *Journal of Human Resources* 29 (The University of Wisconsin Press, 1994), pp. 670–93.

[10] See Laura K. Certain and Robert S. Kahn, "Prevalence, Correlates, and Trajectories of Television Viewing Among Infants and Toddlers," *Pediatrics* 109 (American Academy of Pediatrics, 2002), pp.634–42; Myles S. Faith, Stanley Heshka, Kathleen L. Keller, Bettylou Sherry, Patty E. Matz, Angelo Pietrobelli, and David B. Allison, "Maternal-Child Feeding Patterns and Child Body Weight: Findings from a Population-Based Sample," *Archives of Pediatric and Adolescent Medicine* 157 (American Medical Association, 2003), pp.926–32.

[11] A searchable online bibliography of all sources that have used the NLS data is on the Internet at **http://www.nlsbibliography.org**.