1. Assessing the Academic Achievements and Functional Performance of Youth With Disabilities

To provide a national picture of the academic achievements of American students, the National Center for Education Statistics has administered the National Assessment of Educational Progress (NAEP) periodically since 1969. Dubbed "The Nation's Report Card," NAEP involves assessments of the skills of a nationally representative sample of students in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts (National Center for Education Statistics 2005c). The design of NAEP permits trends in achievement to be identified; for example, 2005 NAEP data show that the proportion of eighth-graders who score at or above the level of basic mathematics skills has increased by 17 percentage points since 1990, to 69 percent (National Center for Education Statistics 2005a).

Although valuable in charting the academic performance of the general population of students, NAEP excludes students with disabilities if "the student's IEP team determines that the student cannot participate; or the student's cognitive functioning is so severely impaired that she or he cannot participate; or the student's IEP requires that the student has to be tested with an accommodation or adaptation that NAEP does not allow" (National Center for Education Statistics 2005b). Examples of disallowed accommodations or modifications are Braille materials, tape recorders, use of a calculator or arithmetic tables, or having the test read or responses given in a student's native language (National Center for Education Statistics 2005b). Further, the scores of youth with disabilities who are included in NAEP are not reported separately, so to date, there remains no national picture of the academic achievements of youth with disabilities.

The National Longitudinal Transition Study-2 (NLTS2), funded by the National Center for Special Education Research of the Institute of Education Sciences in the U.S. Department of Education, is filling this important gap in information about secondary-school-age students with disabilities.

Research Questions

In this report, NLTS2 findings are used to address the following questions regarding the academic achievement and functional performance of youth with disabilities:

- How well do youth with disabilities perform in the areas of language arts, mathematics, science, and social studies?
- How does their performance compare with the general population of same-age youth?
- What factors related to youths' disability and functioning, individual and household demographics, family support for their education, and previous school experiences are statistically associated with higher academic performance among youth with disabilities?
- What are the results of the functional ratings of youth's abilities?

As context for interpreting the findings related to these questions, the following sections of this chapter provide a brief overview of the NLTS2 design and sample. The assessments and

other data sources relevant to the report are described briefly, as are the characteristics of the youth for whom findings are reported.

Study Overview

NLTS2 is a 10-year-long study of the characteristics, experiences, and outcomes of a nationally representative sample of youth with disabilities who were ages 13 through 16 and receiving special education services in grade 7 or above on December 1, 2000. The study is designed to collect data on sample members from multiple sources in five waves—i.e., every 2 years from 2001 to 2009.

The NLTS2 sample was constructed in two stages. A stratified random sample of school districts was selected from the universe of approximately 12,000 that serve students receiving special education in at least one grade from 7th through 12th grades. These districts and 77 state-supported special schools that served primarily students with hearing and vision impairments and multiple disabilities were invited to participate in the study, with the intention of recruiting approximately 500 districts and as many special schools as possible from which to select a target sample of about 12,000 students. Recruitment efforts resulted in 501 school districts and 38 special schools agreeing to participate and providing rosters of students receiving special education in the designated age range, from which the student sample was selected.

The roster of all students in the NLTS2 age range who were receiving special education from each district and special school was stratified by primary disability category, as reported by the districts. Students then were selected randomly from each disability category. Sampling fractions were calculated that would produce enough students in each category so that, in the final study year, findings will generalize to most categories individually with an acceptable level of precision, accounting for attrition and for response rates to the parent/youth interview. A total of 11,276 students were selected and eligible to participate in NLTS2.

Data Sources

The five data sources that provide the information reported here are[1]

- a direct assessment of the academic achievement of youth with disabilities;
- an adult-completed rating of the functional performance of youth for whom the direct assessment was reported to be inappropriate;
- a telephone interview with parents of both groups of youth;
- self-administered surveys of school staff serving individual sample members; and
- school districts' reports of the primary disability category in which students were provided special education services when selected for the study.

Each source is described briefly below and discussed in greater detail in appendix A.

[1] Table A-9 in appendix A identifies the data source for each variable included in analyses in this report.

Youth Assessments

Because performance assessments can be labor intensive and costly, the NLTS2 design calls for only one assessment per sample member. An assessment was attempted for each NLTS2 sample member for whom a telephone interview or mail questionnaire had been completed by a parent and parental consent for the assessment had been provided. Youth were eligible for an assessment during the data collection wave in which they were 16 through 18 years old.[2] This age range was selected to limit the variability in performance that could be attributed to differences in the ages of the youth participating and to mesh with the every-2-year data collection cycle of the study. The study design linked the timing of assessments with school data collection (conducted in 2002 and 2004) because most direct assessments took place at school and most functional ratings were completed by teachers. The oldest two single-year age cohorts of youth (i.e., those ages 15 or 16 when sampled) reached the eligible age range in Wave 1 (2002); 5,071 youth met the eligibility criteria for assessment at that time. The younger two cohorts (those ages 13 or 14 when sampled) reached the eligible age range when Wave 2 school data were collected; 4,343 youth met the criteria in 2004.

Two forms of assessment are included in NLTS2 (described below) to accommodate the wide range of abilities among youth with disabilities. For each form of assessment, data are combined across two waves of data collection and reported here for all youth for whom each assessment was completed in either wave. A total of 5,222 youth participated in the NLTS2 direct assessment, and a functional rating was completed for 1,051 youth across the two waves. Taken together, this yields an overall assessment rate of 67 percent of eligible youth.[3]

Direct assessment. The direct assessment included in NLTS2 was selected by a workgroup of assessment and measurement experts over a 6-month period in 2000. The resulting direct assessment uses research editions of subtests of the Woodcock-Johnson III (WJ III); (Woodcock, McGrew, and Mather 2001) that test

- language arts skills (passage comprehension and the use of synonyms and antonyms);
- mathematics abilities (calculation procedures and solving applied problems); and
- content knowledge in science and social studies.

The research editions are shorter versions of the standard WJ III assessment battery and were developed for use in NLTS2 by the original WJ III developers (please see chapter 2 for additional information on the research versions). The WJ III is a comprehensive, norm-referenced, individually administered assessment of the academic skills and knowledge routinely used in school and other settings. The WJ III tests have strong psychometric properties (Cizek 2001) and are appropriate for administration to children as young as 2 years of age and to adults as old as 90. The WJ III subtests are particularly advantageous for NLTS2 because they permit comparisons with a general population norm group assessed in 2000.

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[2] Wave 1 assessments also included 10 youth whose assessments were not completed until shortly after their 19th birthdays.

[3] Similar direct and alternate assessment procedures were used to assess elementary and middle school students with disabilities in the Special Education Elementary Longitudinal Study (SEELS). NLTS2 response rates were in the mid-range of the SEELS rates, which were 63 percent, 73 percent, and 92 percent across the three waves of SEELS assessments.

Functional rating. NLTS2 includes a functional rating for youth with disabilities for whom the direct assessment was reported to be inappropriate because their sensory, physical, behavioral, or cognitive disabilities made them unable to follow instructions or answer questions reliably in spoken or written English, Braille, or large print. The functional rating instrument is the adult-completed *Scales of Independent Behavior-Revised* (SIB-R) (Bruininks et al. 1996). The SIB-R is a comprehensive measure of adaptive and problem behaviors related to functional independence and adaptive functioning in school, home, employment, and community settings. Its 14 18- to 20-item subtests focus on

- motor skills;
- social interaction and communication skills;
- personal living skills; and
- community living skills.

These four clusters also are combined into an overall scale referred to as "broad independence" (see chapter 5). The SIB-R has norm samples to allow comparison with the general population.

Parent/Guardian Interviews

Unlike the youth assessments, which were administered once for each youth, data are collected repeatedly from parents and, beginning in Wave 2, from youth themselves. Data from both Waves 1 and 2 are included in this report as independent variables in multivariate analyses and as descriptors of the youth in the direct assessment and functional rating groups.

Wave 1 parent/guardian interview/survey. The NLTS2 conceptual framework suggests that a youth's nonschool experiences, such as extracurricular activities and friendships; historical information, such as age when disability was first identified; household characteristics, such as socioeconomic status; and a family's level and type of involvement in school-related areas are crucial to youth outcomes. Parents/guardians are the most knowledgeable about these aspects of youth's lives. They also are important sources of information on outcomes across domains. Thus, parents/guardians of NLTS2 sample members were interviewed by telephone or surveyed by mail[4] in 2001, as part of Wave 1 data collection.

Wave 2 parent/guardian interview and youth interview/survey. NLTS2 sample members for whom working telephone numbers and addresses were available were eligible for the Wave 2 parent/youth telephone interview in 2003. The major distinction between the data collection methods in Waves 1 and 2 is that in the latter wave, interviews were sought both with parents of NLTS2 sample members and with the youth themselves if parents reported they were able to respond to questions by phone or on a mailed questionnaire.

[4] A mail survey was conducted for sample members whose parents could not be reached by telephone.

School Surveys

Some school-related data included in multivariate analyses in chapter 4 come from the following:

- *The NLTS2 Student's School Program Survey*. This mail survey was administered to school staff who were most knowledgeable about the overall school programs of NLTS2 sample members who attended their school.
- *The General Education Teacher Survey*. Respondents to this mail survey were teachers of general education academic classes attended by NLTS2 sample members, if students took such a class.

The surveys collected information about aspects of the classroom experiences of students with disabilities in general education academic classes and in vocational education and special education settings. Both surveys were administered in Waves 1 and 2 for youth still in secondary school at those times. If a youth's direct assessment was conducted in Wave 1, independent variables used school survey data from that wave; similarly, Wave 2 school survey data were used in analyses of youth whose assessment was conducted in that wave.

School- and School-District-Identified Primary Disability Category

Information about the primary disability category of NLTS2 sample members came from rosters of students in the NLTS2 age range receiving special education services in the 2000-01 school year under the auspices of participating school districts and state-supported special schools.[5]

Youth Included in the Report

The two groups of youth who are the focus of this report are distinguished by the form of their assessment. As mentioned above, membership in the two groups was determined from reports by school staff or parents regarding the feasibility and appropriateness of the direct assessment for specific youth. Those for whom it was not considered feasible or appropriate had a functional rating completed by a teacher who was familiar with their abilities if the youth were still in school, or by parents if they were no longer in school. Thus, the groups of youth with disabilities for whom the two forms of assessment were completed are intentionally different with regard to their abilities.[6] Appendix B provides detailed information regarding group differences, examples of which are summarized briefly here.

There are no statistically significant differences between youth with direct assessments and functional ratings with regard to age, gender, race/ethnicity, or household income. However, the two groups are significantly different in the disability categories they represent. For example, almost two-thirds of the direct assessment group are in the learning disability category, youth who comprise only about one-fourth of youth with functional ratings. In contrast, the percentage of youth in the mental retardation category is more than four times higher among youth with

[5] The definitions of the 12 primary disability categories used here are defined by law and presented in table A-10, appendix A.

[6] Note that there is no standardized measure of abilities that is common to the two groups on which their performance can be compared.

functional ratings than with a direct assessment ($p < .001$). The average age at which youth in the functional rating group first were identified as having a disability is significantly lower than those of direct assessment participants ($p < .01$), as are their functional abilities ($p < .001$). Differences in the characteristics of the school programs and the types of related services and supports received by youth in the direct assessment and functional rating groups include greater special education course taking ($p < .001$) and participation in some kinds of services (i.e., $p < .001$ comparing rates of receipt of speech/language pathology, occupational or physical therapy, or transportation services) among youth with a functional rating compared with direct assessment peers. Differences in the social experiences of the two groups entail greater involvement among direct assessment participants in social activities with friends, ($p < .001$) and in organized groups at school ($p < .05$).

Technical Notes

Readers should remember the following issues when interpreting the findings in this report

- **Findings are weighted.** NLTS2 was designed to provide a national picture of the characteristics, experiences, and achievements of youth with disabilities in the NLTS2 age range as they transition to young adulthood. Therefore, all the statistics presented in this report are weighted estimates of the national population of students receiving special education in the NLTS2 age group, and of each disability category individually. Each response for each sample member is weighted to represent the number of youth nationally that are in his or her disability category in the kind of school district (defined by region, student enrollment, and proportion of students in poverty) or special school from which he or she was selected.
- **Standard errors.** For each mean and percentage in this report, a standard error is presented that indicates the precision of the estimate. For example, a variable with a weighted estimated value of 50 percent and a standard error of 2.00 means that the value for the total population, if it had been measured, would, with 95 percent confidence, lie between 46 percent and 54 percent (i.e., within plus or minus 1.96 x 2 percentage points of 50 percent). Thus, smaller standard errors allow for greater confidence to be placed in the estimate, whereas larger ones require caution.
- **Small samples.** Although NLTS2 data are weighted to represent the population, the size of standard errors is influenced heavily by the actual number of youth in a given group (e.g., a disability category). Groups with very small samples have comparatively large standard errors (in fact, findings are not reported separately for groups that do not include at least 35 sample members). For example, because there are relatively few youth with deaf-blindness, estimates for that group have relatively large standard errors. Therefore, readers should be cautious in interpreting results for this group and others with small sample sizes and large standard errors.
- **Significant differences.** In discussions of the descriptive statistics, only differences among groups that reach a level of statistical significance of at least .05 in a two-tailed *F* test are mentioned in the text, accompanied by the specific significance levels.

Organization of the Report

Chapter 2 provides additional information on key aspects of the data and analysis approaches reported in this document. Chapter 3 presents the standard scores of youth with disabilities on the language arts, mathematics, science, and social studies WJ III subtests. Results of multivariate analyses that identify factors associated with variations in academic performance are presented in chapter 4, and chapter 5 describes the performance of youth with disabilities on the seven dimensions included in the functional rating. Chapter 6 summarizes key points from the report. Appendix A details the sample design and sample weighting strategies, sources of data for variables used in the analyses, and analysis approaches. Appendix B reports additional information on the characteristics of the youth participating in the direct assessment and for whom a functional rating was completed. Appendix C supplements the multivariate analysis results reported in chapter 4.