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NATIONAL EDUCATION LONGITUDINAL STUDY OF 1988

**SECOND FOLLOW-UP: STUDENT COMPONENT
DATA FILE USER'S MANUAL**

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"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United Sates and in other nations."--Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e-1).

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Foreword

This manual has been produced to familiarize data users with the procedures followed for data collection and processing of the second follow-up student component of the National Education Longitudinal Study of 1988 (NELS:88). A corollary objective is to provide the necessary documentation for use of the data file.

Use of the data set does not require the analyst to be a sophisticated statistician or computer programmer. Most social scientists and policy analysts should find the data set organized and equipped in a manner that facilitates straightforward production of statistical summaries and analyses. This manual provides extensive documentation of the content of the data file and how to use it. **Chapter VII and Appendix I, in particular, contain essential information that allows the user to immediately proceed with minimal startup cost. A careful reading of Chapter VII and Appendix I will help users to avoid common mistakes that result in costly computer job failures or incorrect results.**

The rest of the manual provides a wide range of information on the design and conduct of the National Education Longitudinal Study of 1988 (NELS:88). Chapter I begins with an overview and history of NCES's National Education Longitudinal Studies program and the various studies that it comprises. Chapter II contains a general description of the data collection instruments used in the NELS:88 second follow-up.

The sample design and weighting procedures used in the second follow-up study are documented in Chapter III, as well as standard errors and design effects, non-sampling measurement errors, and problematic variables.

Data collection procedures, schedules, and results are presented in Chapter IV. Chapter V describes data control and preparation activities such as monitoring receipt of questionnaires, editing, and data retrieval. Chapter VI describes data processing activities including machine editing and construction of the cleaned data tape. Finally, Chapter VII describes the organization and contents of the data file and provides important suggestions for using it.

The appendices contain a list of other NCES NELS:88 publications; guidelines for Statistical Analysis System (SAS) users; the second follow-up student questionnaire; the record layout for the student questionnaire; specifications for the composite variables; the content areas of the second follow-up components; a glossary of project terms; a discussion of conducting cross-cohort trend analyses of students; and a codebook for the student questionnaire data.

In addition to the study described in this manual, a number of supplemental NELS:88 components are also described in Appendix A.

Earlier NCES longitudinal studies that may be of interest to NELS:88 users are described in Appendix B including the following: the High School and Beyond (HS&B) base year files; merged HS&B first, second, third, and fourth follow-up files; related HS&B files; and assorted files related to the National Longitudinal Study of the High School Class of 1972 (NLS-72).

A Note on Data Use and Confidentiality

The NELS:88 second follow-up data files are released in accordance with the provisions of the General Education Provisions Act (GEPA) [20-USC 122e 1] and the Carl D. Perkins Vocational Education Act. The GEPA assures privacy by ensuring that respondents will never be individually identified.

The National Center for Education Statistics (NCES) is responsible under the Privacy Act and Public Law 100-297 for protecting the confidentiality of individually identifiable respondents, and is releasing this data set to be used for statistical purposes only. Record matching or deductive disclosure by any user is prohibited.

To ensure that the confidentiality provisions contained in PL 100-297 and the Privacy Act have been fully implemented, procedures commonly applied for disclosure avoidance in other Government-sponsored surveys were used in preparing the data file associated with this manual. These include suppressing, abridging, and recoding identifiable variables. Every effort has been made to provide the maximum research information that is consistent with reasonable confidentiality protection. Deleted, abridged, and/or recoded variables appear with an explanatory footnote in the codebook attached to each user's manual.

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NELS:88 Student Data Weights,

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Weights

Cross-sectional analysis of second follow-up student data requires that the **F2QWT** weight variable be applied. Longitudinal analyses, on the other hand, require use of **F2F1PNWT** or **F2PNLWT** panel weights, with the difference hinging upon the time points that define the student panel that the user wishes to examine.

F2QWT	use for producing weighted twelfth-grade student statistics in cross-sectional analyses .
F2F1PNWT	use for producing weighted student panel statistics when both first follow-up and second follow-up data are employed in the analysis.
F2PNLWT	use for producing weighted student panel statistics when all three survey waves (base year, first follow-up and second follow-up) data are included in the analysis.
F2CXTWT	use for producing weighted student contextual component statistics, in conjunction with either cross-sectional analyses that also involve school administrator and/or teacher data.
F2TRSCWT	use for conducting cross-sectional analysis of transcript data.
F2TRP1WT	use for conducting panel analyses using the transcript component data with the panel of 1988 eighth graders four years later in 1992.
F2TRP2WT	use for conducting panel analyses using the transcript component data with the panel of 1990 tenth -graders two years later in 1992.

Detailed discussion of second follow-up weighting procedures appears in Chapter III of this manual.

Flags

The following indicators are to be used in conjunction with the weights created specifically for these populations. The stem of the variable name for the flag and for the corresponding statistical weight are the same.

F2BYF1PN   Indicates whether or not sample member on second follow-up file is part of the base year/first follow-up panel sample (1988 to 1990 longitudinal panel).

        0   = Sample member is not a member of the base year to first follow-up panel (did not complete a base year student questionnaire and an first follow-up student or dropout questionnaire).

        1   = Sample member is a member of the base year to first follow-up panel (completed a base year student questionnaire and an first follow-up student or dropout questionnaire).

F2F1PNFL Indicates whether or not sample member on second follow-up file is a member of the first follow-up/second follow-up panel sample (1990 to 1992 longitudinal panel).

> 0 = Sample member is not a member of the first follow-up/second follow-up panel (did not complete both a first follow-up questionnaire and a second follow-up questionnaire).

> 1 = Sample member is a member of the first follow-up to second follow-up panel, but not a member of the sophomore panel (was not enrolled in the tenth grade in the spring of 1990, but completed a first follow-up student or dropout questionnaire and second follow-up student or dropout questionnaire).

> 2 = Sample member is a member of the first follow-up to second follow-up panel, and a member of the sophomore panel (was enrolled in the tenth grade in the spring of 1990 and completed a first follow-up student questionnaire and a second follow-up student or dropout questionnaire).

F2PNLFLG Indicates whether or not sample member on second follow-up file is a member of the base year/first follow-up/second follow-up panel sample (participation in all three waves of NELS:88:1988,1990, and 1992).

> 0 = Sample member is not a member of the BY-F 1-F2 panel sample (did not complete a questionnaire in all three rounds of NELS:88).

> 1 = Sample member is a member of the BY-F 1-F2 panel sample (completed a base year student questionnaire and a first follow-up student or dropout questionnaire and a second follow-up student or dropout questionnaire).

The following flags indicate the completion (and presence on the data file of corresponding information) or not of specified documents. A value of 1 or 2 specifies that the document was completed, 0 that it was not.

F2BYQFLG Indicates whether or not sample member completed a base year student questionnaire.

> 0 = Sample member did not complete a base year student questionnaire.

> 1 = Sample member completed a base year student questionnaire.

F2F1QFLG Indicates whether or not sample member completed a first follow-up student or dropout questionnaire.

> 0 = Sample member did not complete a first follow-up questionnaire.

> 1 = Sample member completed a first follow-up student questionnaire.

> 2 = Sample member completed a first follow-up dropout questionnaire.

F2QFLG   Indicates whether or not sample member completed a second follow-up student or dropout questionnaire.

>   0 = Sample member did not complete a second follow-up questionnaire.

>   1 = Sample member completed a second follow-up student questionnaire.

>   2 = Sample member completed a second follow-up dropout questionnaire.

>   This variable can also serve as a participation flag. If the value of **F2QFLG** is greater than 0, then the case is a second follow-up participant. If the value of **F2QFLG** is 0, then the sample member is a second follow-up non-participant.

F2TXFLG   Indicates whether or not sample member completed a second follow-up cognitive test.

>   0 = Sample member did not complete a second follow-up cognitive test.

>   1 = Sample member completed a second follow-up cognitive test.

>   This flag appears on the dropout file even though the test scores do not; dropout test scores appear only on the student data files.

F2NSSFLG Indicates whether or not sample member completed a second follow-up new student supplement (second follow-up freshened student or did not complete a base year student questionnaire or a first follow-up NSS).

>   0 = Sample member did not complete a second follow-up new student supplement.

>   1 = Sample member completed a second follow-up new student supplement (if second follow-up freshened student or did not complete either a base year student questionnaire or first follow-up NSS).

        The following flags identify sample members for whom school administrator, parent, transcript, or teacher data were collected, and whether or not a contextual weight is available for the student.

F2ADMFLG Indicates whether or not a school administrator questionnaire is available for all sample members on the file.

>   0 = The sample member is a member of the contextual components sample and the school administrator did not complete a second follow-up school questionnaire.

>   1 = The sample member is a member of the contextual components sample and the school administrator completed a second follow-up school questionnaire.

2 = Not applicable--the sample member is not a member of the contextual components sample.

F2PAQFLG Indicates whether or not a second follow-up parent questionnaire was completed by an eligible parent, who was not subsampled out of the second follow-up, of a student or dropout sample member who completed a second follow-up student or dropout questionnaire.

O = A parent questionnaire was not completed for the sample member.

1= A parent questionnaire was completed for the sample member.

F2TRSCFL 0 = The sample member is a member of the transcript study but the transcript was not collected.

1 = The sample member is a member of the transcript study and the transcript was collected.

2 = Not applicable. The sample member is not a member of the transcript study.

F2TRP1FL Indicates whether or not a sample member was a part of both the eighth- to twelfth-grade student panel, a participant in all three rounds, and a transcript was collected for the sample member.

0 = The sample member was not included in both the eighth- to twelfth-grade panel and the transcripts study, or did not complete a questionnaire in all three rounds.

1 = The sample member is a member of the eighth- to twelfth-grade panel and transcripts data is also available for the student, and the sample member completed a questionnaire in all three rounds.

F2TRP2FL Indicates whether or not a sample member was a part of both the tenth- to twelfth-grade panel, a participant in the first and second follow-up, and a transcript was collected for the sample member.

0 = The sample member was either 1) not a member of the 1990-1992 completers who also were included in the transcript component; 2) a member of the 1990 - 1992 panel and the transcript component but did not complete a questionnaire in the first follow-up or second follow-up; or 3) a member of the 1990-1992 panel and the transcript component but a transcript was not collected for the sample member.

1 = The sample member is included in the 1990-1992 panel sample, completed a first follow-up and second follow-up questionnaire, and a transcript was collected for the sample member. However, the student was not enrolled in the tenth grade in the spring of 1990.

2 = The sample member was enrolled in the tenth grade in the spring of 1990 and was member of the 1990 -1992 panel, completed a first and second follow-up questionnaire, and transcript data is available for the sample member.

F2TEQFLG Indicates whether a student sample member was eligible for the teacher survey and whether or not a teacher report was completed for the sample member.

O = The student was eligible for a teacher report, but student's teacher did not complete a teacher report for that student.

1 = A teacher report is available for the student on the teacher file.

2 = The student was not eligible for the teacher survey because the student was not enrolled in a mathematics or science course.

3 = *The* student was not eligible for the teacher survey because the student was not a part of the contextual components sample.

F2CXTFLG Indicates that a sample member belongs to the contextual components sample. Use this variable for identifying sample members enrolled in an eligible contextual school (eligible for collection of school administrator and teacher data) and who completed a second follow-up student questionnaire. This indicator is analogous to F2QFLG but for the contextual sample. As with the F2QFLG, if users are interested in conducting twelfth-grade cross-sectional analyses of students with contextual data, users will need to invoke this flag (F2CXTFLG > 0) in conjunction with either the grade sequence flag, F2SEQFLG, or the twelfth-grade cohort flag, G12COHRT.

0 = Sample member is not a member of the contextual components sample.

1 = Sample member is a member of the contextual components sample and completed a second follow-up student questionnaire

2 = Sample member is a member of the contextual components sample but did not complete a second follow-up student questionnaire

The following flags identify all sample members on the tape regardless of participation, enrollment status or eligibility.

G8COHORT Indicates whether or not sample member is a member of the 8th grade cohort (whether or not sample member was enrolled in the 8th grade during the 1987-88 school year)

0 = Sample member is not a member of the 8th grade cohort (was not enrolled in 8th grade in the spring of 1988, i.e., first follow-up and second follow-up freshened sample members).

1 = Sample member is a "survey" eligible member of the 8th grade cohort (was enrolled in school in the 8th grade in the spring of 1988 and eligible to complete a NELS:88 base year student questionnaire).

3 = Sample member is a "survey" ineligible member of the 8th grade cohort (was enrolled in 8th grade in the spring of 1988 but was excluded from the study owing to a mental or physical disability or language barrier to participation).

G10COHRT Indicates whether or not sample member is a member of the 10th grade cohort (whether or not sample member was enrolled in the 10th grade during the 1989-90 school year)

0 = Sample member is not a member of the 10th grade cohort (was not enrolled in the 10th grade in the spring of 1990, i.e., second follow-up freshened sample members, dropouts, sample members who are out of the modal grade sequence, deceased sample members, and other than first follow-up freshened out-of-USA sample members).

1 = Sample member is a member of the spring-defined 10th grade cohort (was enrolled in school in the 10th grade in the spring of 1990 and eligible to complete a NELS:88 first follow-up student questionnaire).

2 = Sample member is a member of the fall-defined *only* 10th grade cohort (first follow-up freshened student who was enrolled in school in the 10th grade in the fall of 1989, but dropped out by spring of 1990). These cases do not appear on the public use data files.

3 = Sample member is a "survey" ineligible member of the 10th grade cohort (was enrolled in 10th grade in the spring of 1990 but was excluded from the study owing to a mental or physical disability or language barrier to participation or was a first follow-up freshened student who moved out of the USA by spring of 1990).

G12COHRT Indicates whether or not sample member is a member of the 12th grade cohort (whether or not sample member was enrolled in the 12th grade during the 1991-92 school year)

0 = Sample member is not a member of the 12th grade cohort (was not enrolled in the 12th grade in the spring of 1992, i.e., dropouts, sample members who are out of the modal grade sequence, deceased sample members, unlocatables, and other than second follow-up freshened out-of-country sample members).

1 = Sample member is a member of the spring-defined 12th grade cohort (was enrolled in school in the 12th grade in the spring of 1992 and eligible to complete a NELS:88 second follow-up student questionnaire).

2 = Sample member is a member of the fall-defined *only* 12th grade cohort (second follow-up freshened student who was enrolled in school in the 12th grade in the fall of 1991, but dropped out by spring of 1992). These cases do not appear on the public use data files.

3 = Sample member is a "survey" ineligible member of the 12th grade cohort (was enrolled in 12th grade in the spring of 1992 but was excluded from the study owing to a mental or physical disability or language barrier to participation or was a second follow-up freshened student who moved out of the USA by the spring of 1992).

F2STAT Indicates final status in the second follow-up for sample members who appear on the file.

00 = Sample member participated.

01 = Other reasons, nonrespondent.

02 = Sample member unlocatable.

03 = Sample member or parent refusal.

04 = Sample member is ineligible for survey owing to language barrier, or mental or physical disability.

05 = Sample member is out of USA in this round.

06 = Sample member is deceased.

F2RWTST Indicates the sample member's second follow-up weighting enrollment status, real or imputed, used in calculating second follow-up weights, including F2TRSCWT. This variable must be used in conjunction with F2TRSCWT to identify the proper weighting status of each sample member in the transcript study.

1 = The sample member was eligible for the second follow-up survey and was enrolled in school in the twelfth grade in 1992.

2 = The sample member was eligible for the second follow-up and was enrolled in school, but not in the twelfth grade in 1992.

3 = The sample member was eligible for the second follow-up and was a dropout or alternative completer in 1992.

4 = The sample member was ineligible for the second follow-up or was out-of-scope for the second follow-up.

F2DOSTAT Indicates enrollment status, either dropout or student, as of the second follow-up *only*. Also permits identification of dropouts according to either the NELS:88 first follow-up definition of a dropout (i.e., dropouts only: use values 4 and 5) and the HS&B/NELS:88 second follow-up definition of a dropout (i.e., dropouts plus alternative completers: use values 3, 4, and 5).

0 = Student (sample member was not a school dropout or a stopout in the second follow-up).

1 =   Enrollment status was not determined (includes out-of-country, deceased, and enrollment status unknown cases).

2 =   Stopout (sample member dropped out of school at one time in second follow-up, but subsequently returned to school).

3 =   Alternative completer (enrolled in or completed an alternative non-diploma program [e.g., GED test preparation classes, or passed GED test or received other alternative certification]).

4 =   Dropout--school confirmed (sample member was reported by the school to be a dropout but status was not also confirmed by sample member and/or family).

5 =   Dropout-doubled confirmed (sample member dropped out of school--confirmed by sample member and/or family).

F2SEQFLG   Indicates whether or not participating students are currently enrolled in 12th grade. Also identifies dropouts, regardless of their participation status (values 4 and 5).

0 =   Sample member is enrolled in 12th grade in a traditional diploma-granting program (value pertains to participants only).

1 =   Sample member is an early graduate--enrolled in 12th grade in a traditional diploma-granting program but graduated early (value pertains to participants only).

2 =   Sample member is enrolled in a grade other than 12th grade in a traditional diploma-granting program (value pertains to participants only).

3 =   Not applicable--sample member is a non-participant (includes out-of-USA, deceased, ineligible students, and others who did not complete the second follow-up survey questionnaires).

4 =   Not applicable–sample member is an alternative completer (this value pertains to both participating and non-participating sample members).

5 =   Not applicable--sample member is a dropout, school-only confirmed or double-confirmed by sample member and/or family as well (this value pertains to both participating and non-participating sample members).

F2SMPFLG   Indicates how and when sample members were brought into the study: base year (eighth-grade cohort or base year ineligible), first or second follow-up freshened student.

00 =   Eighth-grade cohort member.

        Second follow-up or ----- grade freshened ~~~~~~

02 = First follow-up or 10th grade freshened student.

03 = Base year Ineligible sample member.

F2EGDFLG Distinguishes early graduates and GED completers from other types of sample members.

0 = Sample member was neither an early graduate nor a GED completer prior to April 1,1992.

1 = Sample member was an early graduate prior to April 1,1992.

2 = Sample member was a GED completer prior to April 1,1992.

F2F1DOST Indicates the dropout status of a sample member in the first follow-up. F2F1DOST is like F1DOSTAT, except that it reflects the correction of sampling errors included in the second follow-up release of the first follow-up files.

00 = The sample member was a student in the first follow-up.

01 = The enrollment status of the sample member was not determined in the first follow-up.

02 = The sample member was a stopout (sample member dropped out of school at one time but returned to school) in the first follow-up.

03 = The sample member was a homestudy student in the first follow-up.

04 = The sample member was a dropout in the first follow-up as confirmed by the sample member's school.

05 = The sample member was a dropout in the first follow-up as confirmed by both the sample member's school and the sample member/family.

06 = Not applicable. The student entered NELS:88 through freshening in the second follow-up.

F2EVDOST Indicates whether or not sample member has ever dropped out in the first follow-up or second follow-up.

0 = Sample member has not dropped out since the beginning of the first follow-up, March 1989.

1 = Sample member has dropped out at least once since the beginning of the first follow-up, March 1989.

Student-level Composite Variables

F2SEX   Most complete indicator of **sample members' gender.** For the **BYI** sample and for BY dropouts, F1SEX was created with first follow-up new student supplement data (in F1N2) or with information on NORC's Survey Management System. For all samples, F2SEX is based on the first follow-up (F1SEX) composite and is augmented by second follow-up new student supplement information (in F2N2) if appropriate or, if still missing, by imputation from student first names.

    1 =   Male

    2 =   Female

F2RACE1   Indicates student's race. For the **BYI** sample and BY dropouts, F1RACE was created with data from the first follow-up new student supplement (in F1N8A) or from information in NORC's Survey Management System. For all samples, F2RACE1 is based on F1RACE and is supplemented when appropriate with second follow-up new student supplement data (in F2N17). If F2RACE1 was still missing, available information from NORC's Survey Management System was used to fill in missing values.

    1 =   Asian, Pacific Islander

    2 =   Hispanic

    3 =   Black, not Hispanic

    4 =   White, not Hispanic

    5 =   American Indian, Alaskan native

    8 =   Missing

F2API   Further divides the "Asian, Pacific Islander" F2RACE1 category into sub-categories. F2API was constructed in the same manner as F2RACE1 (described above). For the base year ineligible sample and BY dropouts, F1API was created with data from the first follow-up new student supplement (in F1N8B) or from information in NORC's survey management systems. For all samples, F2API is based on F1API and is supplemented when appropriate with second follow-up new student supplement data (in F2N18). If F2API was still missing, available information from NORC's Survey Management System was used to fill in missing values.

F2API	F2N18	F1API	F2RACE1	LABEL
0	(any value)	(any value)	2-5	Non-Asian
1	01-05	1	1	East Asian
2	07	3	1	South Asian
3	06	4	1	Pacific Islander
4	08, 96, 97 or 98	2 or 5	1	Specific API unknown
8	96, 97 or 98	8	8	Race missing

Employing the sum of the subgroups in **F2API** is appropriate for comparisons to the NELS:88 base year and first follow-up. Since the race composite in HS&B defined Asians and Pacific Islanders broadly, and since the questionnaires granted great latitude to respondent self-definition, **F2API** should also be generally appropriate for use in trend comparisons to HS&B.

Because the terms "Asian" and "Asian/Pacific Islander" are used differently in various surveys and statistical records systems, analysts will need to combine and recombine these categories in various ways when making comparisons with data sources other than those mentioned above.

F2HISP Further divides the "Hispanic, regardless of race" **F2RACE1** category into sub-categories. **F2HISP** was constructed in the same manner described for **F2RACE1**. However, because a composite comparable to **F2HISP** was not created in the first follow-up, **F2HISP** was constructed using data from the base year composite HISP, and was supplemented with data from the second follow-up NSS (item F2N19) and the first follow-up NSS (item F1N8C). If **F2HISP** was still missing, available information from NORC's Survey Management System was used to fill in missing values.

F2HISP	F2N19	F1N8C	HISP	F2RACE1	LABEL
0	(any value)	(any value)	(any value)	1,3-5	Non-Hispanic
1	1	1	1	2	Mexican
2	2	2	2	2	Cuban
3	3	3	3	2	Puerto Rican
4	4,6,7 or 8	4,6,7 or 8	4,6,7 or 8	2	Specific Hispanic unknown
8	6,7 or 8	6,7 or 8	8	8	Race missing

F2BIRTHM **F2BIRTHM** was taken from an updated version of **F1BIRTHM** which included birth data for base year ineligible students and other teen sample members for whom **F1BIRTHM** was previously missing. For first follow-up nonrespondents and students who were freshened in the second follow-up, **F2N3MO** from second follow-up new student supplement data were used. The range of **F2BIRTHM** is 1-12 with 98 indicating missing.

F2BIRTHY **F2BIRTHY** was created by using an updated version of **F1BIRTHY** which included data for base year ineligible students and other teen sample members for whom birth data were previously missing. For first follow-up nonrespondents and students who were freshened in the second follow-up, **F2N3YR** from the second follow-up new student supplement data were used. For the public use student component data file, all cases with years before 1972 were recoded to '72,' and all cases with years after 1975 were recoded to '75' to protect respondent confidentiality.

Socioeconomic Status. The second follow-up files contain three versions of a continuous variable, "F2SES-", which indicates the sample member's socioeconomic status. F2SES1 was derived from the base year parent questionnaire data, the base year student questionnaire data, or the first or second follow-up new student supplement data. Both F2SES2 and F2SES3 are constructed with second follow-up

parent questionnaire data. F2SES3 incorporates the 1989 revision[1] of Duncan's Socioeconomic Index (SEI), whereas F2SES1 and F2SES2 utilize the original (1961)[2] version that was used in NLS-72, HS&B, and the NELS:88 base year and first follow-up.[3] F2SES1 has been constructed for all sample members and appears on the student file, but F2SES2 and F2SES3 appear only on the parent component data file and, therefore, have only been constructed for the subset of student and dropout sample members for whom parent data were collected.

F2SES1   Continuous variable indicating sample member's socioeconomic status. F2SES1 was constructed using base year parent questionnaire data, when available. The following parent data were used: father's education level, mother's education level, father's occupation, mother's occupation, and family income (data coming from BYP30, BYP31, BYP34B, BYP37B and BYP80). Education-level data were recoded according to the definition of BYPARED (with the exception of category "7", which was recoded as missing for F2SES1 calculations). Occupational data were recoded using the Duncan SEI, as used in NLS-72, HS&B, and earlier NELS:88 socioeconomic status variables as indicated below. Parent data were used to construct F2SES1 if at least one component was not missing.

If all parent data components were missing, the following base year student questionnaire items were used to calculate F2SES1 for base year respondents: father's educational level (BYS34A), mother's educational level (BYS34B), father's occupation (BYS7B), mother's occupation (BYS4B) and presence of household items (BYS35A-P). For base year nonrespondents and first or second follow-up freshened students, the equivalent new student supplement items were used (F1N20A or F2N8A, F1N20B or F2N8B, F1N7B or F2N7, F1N5B or F2N5 and F1N21A-P or F2N12A-P respectively). The first four components from the base year student/NSS data are the same as the components from the base year parent data (i.e., educational-level data, BYS34A/F1N20A/F2N8A and BYS34B/F1N20B/F2N8B, similarly recoded; occupational data, BYS4B/F1N7B/F2N7 and BYS7B/F1N5B/F2N5 of student data, also recoded). The fifth component for F2SES1 from the student data was derived by summing the non-missing household items listed in BYS35A-P or in F1N21A-P/F2N12A-P (after recoding "Not Have Item" from "2" to "0"), calculating a simple mean of these items, and then standardizing this mean. If eight or more BYS35A-P or F1N21A-P/F2N12A-P were nonmissing, this component was computed; otherwise it was set to missing.

Each nonmissing component (after any necessary recoding) was standardized to a mean of O and a standard deviation of 1. Nonmissing standardized components were averaged yielding the F2SES1 composite.

[1]   Nakao, K., and Treas, J. (1992). *The 1989 Socioeconomic Index of Occupations: Construction from the 1989 Occupational Prestige Scores*: General Social Survey Methodological Report No. 74. Chicago: NORC.

[2]   Duncan, O.D. (1961). "A Socioeconomic Index for All Occupations. " In *Occupations and Social Status*, A.J. Reiss et al. eds. New York: Free Press.

[3]   Note that one value in the occupational prestige scale was transposed in earlier releases of the socioeconomic status composite variable and has been corrected in the present version of F2SES1.

Response code	Duncan's SEI	Label
01	56.58	Clerical
02	27.41	Craftsperson
03	28.00	Farmer
04		Homemaker/Housewife
05	7.33	Laborer
06	67.73	Manager/Administrator
07		Military
08	19.18	Operative
09	70.21	Professional (accountant)
10	70.21	Professional (MD, lawyer)
11	49.70	Proprietor/Owner
12	38.00	Protective service
13	54.42	Sales
14	70.21	School teacher
15	15.90	Service
16	61.40	Technical
17		Never worked
18		Other
19		Missing

Finally, minor errors in the construction of this variable and released on first follow-up files as "F1SES" have been corrected in this release. Changes apply to the quartile F2SES1Q as well.

F2SES1Q   Indicates the quartile into which F2SES1 falls. It is constructed by recoding F2SES1 into quartiles based on the weighted (with F2QWT) marginal distribution.

1 = Quartile 1 Low

2 = Quartile 2

3 = Quartile 3

4 = Quartile 4 High

8 = Missing

F2LOCUS1 This composite of the locus of control items in the second follow-up student and dropout questionnaires is designed to be *as comparable as possible* to HS&B and NLS-72 data. All locus of control items are in student question 66 (and dropout question 57). They are F2S66B (F2D57B), F2S66C (F2D57C), F2S66F (F2D57F), F2S66G (F2D57G), F2S66K (F2D57K), and F2S66M (F2D57M).

As in the base year and first follow-up, three of these items are comparable to HS&B and NLS-72 items. They are F2S66C (F2D57C), F2S66F (F2D57F), and F2S66G (F2D57G).

Each of the above three items were standardized separately to a mean of zero and a standard deviation of 1, using F2QWT. All nonmissing components were averaged. That is, if none of the three items was missing, all three standardized values were added, then divided by 3; if one item was missing, the other two (nonmissing) standardized values were added, then divided by 2. Any teen sample member missing all three components was assigned a missing value (8).

While always comparable to the items in the earlier studies, these items are not identical. Some modifications in these items were made in order to make them more comprehensible to eighth graders; other alterations were effected for methodological reasons (e.g., to remove a response set bias). The NELS:88 second follow-up items are listed below for comparison, with the HS&B and NLS-72 item wording in parentheses:

F2S66C/F2D57C: "In my life, good luck is more important than hard work for success. " ("Good luck is more important than hard work for success.")

F2S66F/F2D57F: "Every time I try to get ahead, something or somebody stops me. " [text identical]

F2S66G/F2D57G: "My plans hardly ever work out, so planning only makes me unhappy. " ("Planning only makes a person unhappy, since plans hardly ever work out anyway.")

F2LOCUS2   This composite uses *all* of the second follow-up locus of control items in student question 66 (and dropout question 57). These are F2S66B (F2D57B), F2S66C (F2D57C), F2S66F (F2D57F), F2S66G (F2D57G), F2S66K (F2D57K), and F2S66M (F2D57M).

As with F2LOCUS1, each of the above six items was standardized separately to a mean of zero and a standard deviation of 1, using F2QWT. All nonmissing components are averaged. Any teen sample member missing all six components was assigned a missing value (8). Refer to F2LOCUS1 above for detailed procedures.

Note that item F2S66K (F2D57K) is a reverse scoring item; therefore, the values were reversed before the composite was created.

F2LOCU2Q Quartile distribution of F2LOCUS2. It was constructed by recoding F2LOCUS2 into four categories based on the weighted (F2QWT) marginal distribution.

1   = Quartile 1 Low

2   = Quartile 2

3   = Quartile 3

4   = Quartile 4 High

8   = Missing

F2CNCPT1 This composite of self-concept items was designed to be *as comparable as possible* to HS&B and NLS-72 data. All self-concept items are in student question 66 (and dropout question 57). These are F2S66A (F2D57A), F2S66D (F2D57D), F2S66E (F2D57E), F2S66H (F2D57H), F2S66I (F2D57I), F2S66J (F2D57J), and F2S66L (F2D57L).

As in the base year and first follow-up, four of these items are comparable to HS&B and NLS-72 items. These are F2S66A (F2D57A), F2S66D (F2D57D), F2S66E (F2D57E), and F2S66H (F2D57H).

As with F2LOCUS1, each of the above four items were standardized separately to a mean of zero and a standard deviation of 1, using F2QWT. All nonmissing components were averaged. Any sample member missing all four components was assigned a missing value (8). (See F2LOCUS1 above for detailed procedures.)

All four items are reverse scoring items; therefore, the values were reversed before the composite was created. It is important to note that, while always comparable to the items in the earlier studies, these items are not identical. The NELS:88 second follow-up items are listed below for comparison, with the HS&B and NLS-72 item wording in parentheses:

F2S66A/F2D57A: "I feel good about myself. " ("I take a positive attitude toward myself.")

F2S66D/F2D57D: "I feel I am a person of worth, the equal of other people. " ("I feel I am a person of worth, on an equal plane with others.")

F2S66E/F2D57E: "I am able to do things as well as most other people. " [text identical]

F2S66H/F2D57H: "On the whole, I am satisfied with myself. " [text identical]

F2CNCPT2 This composite employs *all* of the self-concept items in student question 66 (and dropout question 57). They are F2S66A (F2D57A), F2S66D (F2D57D), F2S66E (F2D57E), F2S66H (F2D57H), F2S66I (F2D57I), F2S66J (F2D57J), and F2S66L (F2D57L).

As with F2LOCUS1, each of the above seven items was standardized separately to a mean of zero and a standard deviation of 1, using F2QWT. All nonmissing components were averaged. Any student missing all seven components were assigned a missing value (8). (See F2LOCUS1 above for detailed procedures.)

Four of these items--F2S66A (F2D57A), F2S66D (F2D57D), F2S66E (F2D57E), and F2S66H (F2D57H)--are reverse scoring items; therefore, the values were reversed before the composite was created.

F2CNCP2Q F2CNCP2Q is the quartile distribution of F2CNCPT2. It was constructed by recoding F2CNCPT2 into four categories based on the weighted (F2QWT) marginal distribution.

1   = Quartile 1 Low

    2   = Quartile 2

    3   = Quartile 3

    4   = Quartile 4 High

    8   = Missing

F2F1SCFL   F1-F2 Same School **Flag.** Indicates that the student's school data were collected from the same school in both the first follow-up and the second follow-up. This variable does not indicate that a student was at the same school continuously (some small portion of students may have moved from a first follow-up school, then subsequently returned to the school by the time of data collection in the second follow-up). This variable is only relevant for sample members who were eligible students in both the first follow-up and second follow-up rounds of the study. This variable is present only on restricted use **files.**

        0 =   Not in the same school in the first follow-up and second follow-up of NELS:88--the sample member was an eligible student in both rounds of the survey but did *not* attend the same school during data collection (phase 3) of the first and second follow-up.

        1 =   In the same school in the first follow-up and second follow-up of NELS:88--the sample member was an eligible student in both rounds of the survey and did attend the same school during data collection (phase 3) of the first and second follow-up.

        2 =   Missing--the sample member was an eligible student in the first follow-up and the second follow-up of NELS:88 but specific school data required for coding this indicator were missing (for either the first follow-up OR the second follow-up).

        3 =   Not Applicable–the sample member was *not* an eligible student *both* in the first follow-up and the second follow-up of NELS:88. This classification includes second follow-up freshened students and sample members who were dropouts, alternatives, ineligibles or out-of-scopes in the first follow-up *or* the second follow-up of the study.

F2HSPROG This composite categorizes the student-reported high school program--either the type of high school program in which the student is enrolled or the last program in which the dropout was enrolled (as reported in the second follow-up). The source is the student questionnaire item 12A (F2S12A) or the dropout questionnaire item 20 (F2D20). The categories were recoded as follows:

F1HSPROG	F2S12A or F2D20	Label
00	NA or 00	Never attended high school
01	01 or 01	General high school program
02	02 or 02	Academic/College prep program

03	03-11 or 03-11	Vocational/Technical program
04	12 or 12	Other specialized high school program
05	13 or 13	Special education program
06	15 or 15	Alternative/Dropout Prevention program
07	14 or 14	Don't know
08	98 or 98	Missing
BLANK	F2QFLG=0	Did not complete a student/dropout questionnaire

School-Level Composites. School-level composites are based on the school, rather than the sample member. They do not appear for dropouts on the initial second follow-up restricted and public files, but are added in the final second follow-up releases. Although the modal grade for the cohort is Grade 12 in the second follow-up, not all sample members were seniors in the spring of 1992. Indeed for dropouts, school-level composites reference the school last attended, as reported in the dropout questionnaire. Others may be enrolled in programs that are cited in regular schools but these sample members may not be enrolled in a program leading to a high school diploma.

G12CTRL1 Classifies the student's second follow-up school type into public, Catholic or other private, as reported by the school.

01 = Public school

02 = Catholic school

03 = Private school, other religious affiliation

04 = Private school, no religious affiliation

05 = Private school, type not ascertained

06 = Not enrolled in any school or not enrolled in a traditional diploma-granting school (dropouts and alternative completers)

98 = Missing (includes out-of-country, deceased, and enrollment status unknown cases)

G12CTRL2 Classifies the student's second follow-up school type into public, Catholic, private NAIS, and other private-not NAIS, as obtained from Quality Education Data (QED) and membership lists provided by the National Association of Independent Schools. This variable appears only on restricted use files.

01 = Public school

02 = Catholic school

03 = NAIS school

04 = Other private school - not NAIS or Catholic

05 = Not enrolled in any school or not enrolled in a traditional diploma-granting school (dropouts and alternative completers)

98 = Missing (includes out-of-country, deceased, and enrollment status unknown cases)

G12URBN3 Trichotomizes the urbanicity of the area in which the sample member's second follow-up school is located. This metropolitan status is defined by QED for public school districts, for Catholic dioceses, or in some cases for the county in which the school is located. QED bases the classifications on the Federal Information Processing Standards as used by the U.S. Census.

1 = Urban--central city

2 = Suburban--area surrounding a central city within a county constituting the MSA

3 = Rural--outside MSA

4 = Not enrolled in any school or not enrolled in a traditional diploma-granting school (dropouts and alternative completers)

8 = Missing (includes out-of-country, deceased, and enrollment status unknown cases)

G12REGON Indicates in which of the four US Census regions the student's second follow-up school is located, created by collapsing the categories of the school state.

01 = Northeast--New England and Middle Atlantic states

02 = Midwest-East North Central and West North Central states

03 = South--South Atlantic, East South Central and West South Central states

04 = West--Mountain and Pacific states

05 = Not enrolled in any school or not enrolled in a traditional diploma-granting school (dropouts and alternative completers)

98 = Missing (includes out-of-country, deceased, and enrollment status unknown cases)

G12STATE Indicates the student's second follow-up school state. The values for this variable are the standard two-column Postal Office state abbreviations (additional values are listed below). This variable appears only on restricted use files.

XX = Not enrolled in any school or not enrolled in a traditional diploma-granting school (dropouts and alternative completers)

98 = Missing (includes out-of-country, deceased, and enrollment status unknown cases)

Universe **Variables.** These five variables have been constructed to show the status of each sample member in every wave of NELS:88.

F2UNIV1   Indicates simultaneously the base year, first follow-up and second follow-up situation of every student sample member ever in the study. This variable has 107 valid values that account for every pattern encountered in NELS:88. Note however that not all cases are delivered on the public files in every component, so there will be gaps in the range of codes displayed in the codebook and on different files. Value labels in the codebooks begin with BY status, followed by F1 and then F2 status. SAS and SPSS-X value labels follow the same sequence but are, of necessity, much shorter. The following abbreviations were developed for the SAS and SPSS-X cards:

BY = Base year
F1 = First follow-up
F2 = Second follow-up
I = Ineligible for questionnaire administration (mental/physical disability, language barrier)
A = In-school, in-grade
B = In-school, out-of-grade
DO = Dropout
E = Eligible for questionnaire administration
FR = Freshened
NA = Not Applicable (not yet "freshened" into the sample)
X = Out-of-scope (deceased, out-of-USA)
? = Status unknown

F2UNIV2A   Indicates how the student sample member entered the sample.

1 = Base year eligible

2 = Base year ineligible for questionnaire administration (mental/physical disability, language barrier)

3 = F1 freshened

4 = F2 freshened

F2UNIV2B   Indicates base year status of sample member.

0 = Freshened in first or second follow-up, not yet in study

1 = In school, in grade

4 = Ineligible for BY questionnaire administration (mental/physical disability, language barrier)

F2UNIV2C   Indicates first follow-up status of sample member.

　　　0　=　　　Freshened in second follow-up, not yet in study

　　　1　=　　　In school, in grade

　　　2　=　　　In school, out of grade

　　　3　=　　　Dropout

　　　4　=　　　Ineligible for F 1 questionnaire administration (mental/physical disability, language barrier)

　　　5　=　　　Out of scope (deceased, out of USA in this round)

　　　6　=　　　Status unknown in this round

F2UNIV2D   Indicates second follow-up status of sample member.

　　　1　=　　　In school, in grade

　　　2　=　　　In school, out of grade

　　　3　=　　　Dropout

　　　4　=　　　Ineligible for F2 questionnaire administration (mental/physical disability, language barrier)

　　　5　=　　　Out of scope (deceased, out of USA in this round)

　　　6　=　　　Status unknown in this round

Transcript Composites

F2RAB88   Number of days absent in 1988 (This variable appears only on restricted-use files)
F2RAB89   Number of days absent in 1989 (This variable appears only on restricted-use files)
F2RAB90   Number of days absent in 1990 (This variable appears only on restricted-use files)
F2RAB91   Number of days absent in 1991 (This variable appears only on restricted-use files)
F2RSPFLG   Participation in specialized courses or programs
F2RRANK   Class rank last year attended (This variable appears only on restricted-use files)
F2RCSIZE   Class size last year attended (This variable appears only on restricted-use files)
F2RDTLMO   Month student left school
F2RDTLYR   Year student left school
F2RREASL   Reason student left school
F2RRLVRB   Verbatim other reason student left school
F2RGPA   Cumulative grade point average for last year attended
F2RPSATM   Preliminary Scholastic Aptitude Test (PSAT) math score (This variable appears only on restricted-use files)

F2RPSATV   Preliminary Scholastic Aptitude Test (PSAT) verbal score **(This** variable appears **only** on restricted-use **files)**

F2RSATM   Scholastic Aptitude Test (SAT) mathematics score **(This** variable appears **only** on restricted-use **files)**

F2RSATV   Scholastic Aptitude Test (SAT) verbal score **(This** variable appears **only** on **restricted-use files)**

F2RACTC   American College Test (ACT) composite score **(This** variable appears **only** on restricted-use **files)**

F2RACTE   American College Test (ACT) English score **(This** variable appears **only** on **restricted-use files)**

F2RACTM   American College Test (ACT) mathematics score **(This** variable appears **only** on restricted-use **files)**

F2RACTR   American College Test (ACT) reading score **(This** variable appears **only** on **restricted-use files)**

F2RACTS   American College Test (ACT) science reasoning score **(This** variable appears only on restricted-use **files)**

School-Level Composites.   School-level composites are based on the school, rather than the sample member. Composites with the prefix "TRN" reference the last school attended by the sample member according to transcript data. Although the modal grade for the cohort is grade 12 in the second follow-up, not all sample members were seniors in the spring of 1992. (Note that transcripts were collected from regular high schools, and not from alternative programs.)

TRNCTRL2 Classifies the last school attended by the sample member-according to transcript data--by school type (public, Catholic, private NAIS, and other private-not NAIS) as obtained from Quality Education Data (QED) and membership lists provided by the National Association of Independent Schools. This variable appears only on restricted-use **files.**

01 =   Public school

02 =   Catholic school

03 =   NAIS school

04 =   Other private school - not NAIS or Catholic

98 =   Missing

TRNURBN3 Trichotomizes the urbanicity of the area in which the last school attended by the sample member–according to transcript data--is located. This metropolitan status is defined by QED for public school districts, for Catholic dioceses, or in some cases for the county in which the school is located. QED bases the classifications on the Federal Information Processing Standards as used by the U.S. Census.

1 =   Urban--central city

2 =   Suburban--area surrounding a central city within a county constituting the MSA

3 =   Rural--outside MSA

8 =   Missing

TRNREGON   Indicates in which of the four US Census regions the school last attended by the sample member--according to transcript data--is located, created by collapsing the categories of the school state.

01 =   Northeast--New England and Middle Atlantic states

02 =   Midwest--East North Central and West North Central states

03 =   South--South Atlantic, East South Central and West South Central states

04 =   West--Mountain and Pacific states

98 =   Missing

F2RCRLST   Indicates the type of course list submitted by the school. The course list was used to identify course titles on a sample member's transcript.

1 =   Course catalog

2 =   Student handbook

3 =   Other course list

4 =   No list submitted

TRNSTATE   Indicates the state of the last school attended by the sample member according to transcript data. The values for this variable are the standard-two-column Postal Office state abbreviations, This variable appears only on restricted-use files.

Transcript Flags. The following four flags may be used to identify sample members for whom data for a particular grade level are present in the course file. By using all four flags, the analyst can identify those sample members for whom complete high school course-taking histories are available.

F2RTR09   Indicates whether ninth grade transcript data are available.

0 =   No ninth grade course records appear in the course file.

1 =   At least one ninth grade course record appears in the course file.

F2RTR10   Indicates whether tenth-grade transcript data are available.

0 =   No tenth-grade course records appear in the course file.

1 =   At least one tenth-grade course record appears in the course file.

F2RTR11   Indicates whether eleventh grade transcript data are available.

> 0 =   No eleventh grade course records appear in the course file.

> 1 =   At least one eleventh grade course record appears in the course file.

F2RTR12   Indicates whether twelfth-grade transcript data are available.

> 0 =   No twelfth-grade course records appear in the course file.

> 1 =   At least one twelfth-grade course record appears in the course file.

Student and Course Level Transcript Composite **Variables. The** following composite variables were constructed from student and course-level transcript data and have been included on the transcript component student file to facilitate analyses.

F2RTROUT Indicates the sample member's educational outcome, as reported by the school on the sample member's transcript.   This variable was constructed from F2RREASL, F2RDTLMO, and F2RDTLYR. Because precise graduation date data are sometimes missing, there are more "status unknown" cases in F2RTROUT than in F2RREASL. Also, high school transcripts systematically under-report completion of alternative credentials (such as the GED).

> 01 =   Spring 1992 graduate (graduated between April 1 and June 30, 1992)
> 02 =   Other 1992 graduate
> 03 =   Pre-1992 graduate
> 04 =   Diploma with special education adjustments
> 05 =   Certificate of attendance
> 06 =   Still enrolled in school
> 07 =   Dropped out
> 08 =   Transferred
> 09 =   Aged out
> 10 =   Died
> 11 =   Left for health-related reason
> 12 =   Received GED
> 13 =   Other
> 14 =   Status cannot be determined

F2TRSTYP When the same or very similar information is collected from multiple sources, apparent or real contradictions can arise.   With the NELS:88 second follow-up, apparent contradictions arise between transcript and survey data because of the lack of a common anchor in time for asking about enrollment status. Schools were surveyed at any time from the beginning to the end of the 1991-92 school year spring term, but transcripts were collected in the subsequent (1992-93) school year.

For example, a student may have been out of school for twenty or more consecutive days as of survey day but may have returned to school prior to the end of the spring term. Survey records (as reflected in F2DOSTAT) would characterize the sample member as a dropout, but school records (as reflected in F2TROUT) might characterize this individual as a student. Or, a sample member may have

been surveyed as a student (say in January or February) but have subsequently dropped out (say in March or April). Survey records would classify this individual as a student, but the transcript would indicate a dropout. A further source of apparent contradictions between survey and records data is difference in definition of a dropout. Survey records classify individuals with twenty or more consecutive unexcused absences as dropouts, but schools were not constrained to the same definition. While contradictions between survey and transcript reports of enrollment status are typically only apparent, genuinely contradictory reports sometimes arise as well.

A special dropout status enrollment indicator, F2TRSTYP, has been created to serve several purposes. First, F2TRSTYP alerts data users to inconsistencies between survey and school records sources. In addition, it comprehensively categorizes the contradictions that arise. This permits users to see which contradictions are merely apparent, and which are real, and to develop sensible strategies for dealing with the latter.[4] F2TRSTYP appears only on the student and transcript component data files.

Four enrollment status indices were used in the construction of F2TRSTYP, one transcript-derived enrollment status indicator, F2TROUT[5], and three survey derived enrollment status indicators, F2DOSTAT[6], F2RWTST[7], and F2QFLG[8]. Two additional transcript variables, F2RDTLMO (month student left school) and F2RDTLYR (year student left school), were also employed to assess whether the classification of "dropout" on the transcript variable, F2TROUT, pertained to sample members whose records indicate they dropped out before or during the spring of 1992 or after the spring of 1992. Cases

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[4]   While the purpose of F2TRSTYP is to illuminate any inconsistencies between different sources of the enrollment status of sample members, more than 95 percent of the cases on the second follow-up student files do have identical enrollment status across all sources.

[5]   There are actually two transcript derived enrollment indicators, F2TROUT and F2REASL. F2TROUT indicates sample members' education outcome, as reported by the school on the sample members' transcript. F2REASL indicates the reason sample members left school, if at all, as reported by the school on the sample members' transcripts. F2TROUT was constructed from F2REASL. The two indicators differ in terms of the information they provide about the timing of students' graduation from high school. F2REASL indicates only that students graduated from high school while F2TROUT provides information on whether they are a "spring 1992 graduate" or an "other 1992 graduate" or are a "pre-1992 graduate". Since this difference does not influence the form inconsistencies might take or the resolution of them, for simplicity of construction, only one transcript-derived indicator, F2TROUT, was used in the construction of F2TRSTYP.

[6]   F2DOSTAT indicates sample member enrollment status, either student or dropout, as of the second follow-up only, according to school officials' or parents' reports, in the case of non-participating sample members, or based on the type of questionnaire sample members completed (either dropout or student), in the case of participating sample members.

[7]   F2RWTST indicates, for sample members of unknown enrollment status per the student or dropout survey, the enrollment classification probabilistically assigned to them (i. e., imputed). For sample members of known status based on survey information, F2RWTST reflects their known classification. For purposes of deriving final adjusted student questionnaire and panel weights, enrollment status was imputed for non-survey participating sample members of unknown status. This imputation scheme employed with the student survey and used in adjusting student questionnaire and panel weights was carried over to the transcript component and used in the construction of transcript weights.

[8]   F2QFLG indicates whether sample members completed a second follow-up questionnaire and the type of questionnaire they completed (0 = did not complete a second follow-up questionnaire; 1 = completed a second follow-up student questionnaire; 2 = completed a second follow-up dropout questionnaire).

with a value of "dropout" on **F2TROUT** *and* a date of after June 1992 on **F2RDTLMO** and **F2RDTLYR**, were recoded to the **F2TRSTYP** category "T-S" which indicates that, according to transcript records, sample members were students. This additional cleaning was done to preserve the study's status definition of a dropout, that is, a sample member who was not enrolled in school in the spring term of the 1991-1992 school year.[9]

Comparison among the different sources of enrollment status and other transcript variables rendered a variable with 32 categories. The 32 categories reflect all the different combinations of contradictions that exist between transcript-derived enrollment status indicators and student-derived enrollment status indicators. The 32 categories of **F2TRSTYP** are listed below.

Each value label for **F2TRSTYP** is composed of four terms which correspond to the four sources of enrollment status information on which **F2TRSTYP** reports. The first term of the category value labels represents enrollment status according to the transcript variable **F2TROUT**. The second term of the category labels reflects enrollment status according to the survey variable **F2DOSTAT**. The third and four terms of the category labels indicate enrollment status as of the survey-derived variables **F2RWTST** and **F2QFLG**, respectively. The abbreviations for the four terms are:

T = the sample member's status as indicated by **F2TROUT**
S = the sample member's status as indicated by **F2DOSTAT**
W = the sample member's status as indicated by **F2RWTST**
Q = the sample member's status as indicated by **F2QFLG**

Each of the four terms of **F2TRSTYP** is followed by a second abbreviation for the enrollment status which the source reports for that sample member:

s = student
d = dropout
p = stopout
t = transfer
? = unknown
sq = student questionnaire completer
dq = dropout questionnaire completer
nq = did not complete a questionnaire

_____

[9] Of course, NELS:88 supports multiple cohort status dropout definitions. In particular, information provided by the study permits researchers to view individuals who have left regular high school diploma programs but are making efforts to prepare for the GED examination or other alternative certification, to be classified as students, to be classified as dropouts, or to be separately categorized. When survey and school records enrollment indicators are compared, however, dropouts may most readily be defined as individuals who have left high school diploma programs, without regard to whether they are receiving an alternative form of instruction. This is the case because the transcript study only sought records data from regular high schools, and not from alternative programs, and because high schools in most cases did not know whether dropouts from the school were receiving alternative forms of instruction.

Table **G-1 F2TRSTYP values** and meanings

Values	Value Labels	Sources of enrollment status information			
		F2TROUT:	**F2DOSTAT:**	**F2RWTST:**	**F2QFLG:**
01	T-s S-s W-s Q-sq	Student	Student	Student	Student quex
02	T-s S-p W-s Q-sq	Student	Stopout	Student	Student quex
03	T-s S-s W-s Q-nq	Student	Student	Student	None
04	T-s S-p W-s Q-nq	Student	Stopout	Student	None
05	T-s S-? W-d Q-nq	Student	Unknown	Dropout	None
06	T-s S-d W-d Q-sq	Student	Dropout	Dropout	Student quex
07	T-s S-d W-d Q-dq	Student	Dropout	Dropout	Dropout quex
08	T-s S-d W-d Q-nq	Student	Dropout	Dropout	None
09	T-d S-d W-d Q-dq	Dropout	Dropout	Dropout	Dropout quex
10	T-d S-d W-d Q-sq	Dropout	Dropout	Dropout	Student quex
11	T-d S-d W-d Q-nq	Dropout	Dropout	Dropout	None
12	T-d S-? W-d Q-nq	Dropout	Unknown	Dropout	None
13	T-d S-s W-s Q-sq	Dropout	Student	Student	Student quex
14	T-d S-p W-s Q-sq	Dropout	Stopout	Student	Student quex
15	T-d S-s W-s Q-nq	Dropout	Student	Student	None
16	T-d S-p W-s Q-nq	Dropout	Stopout	Student	None
17	T-t S-s W-s Q-sq	Transfer	Student	Student	Student quex
18	T-t S-p W-s Q-sq	Transfer	Stopout	Student	Student quex
19	T-t S-s W-s Q-nq	Transfer	Student	Student	None
20	T-t S-p W-s Q-nq	Transfer	Stopout	Student	None
21	T-t S-? W-d Q-nq	Transfer	Unknown	Dropout	None
22	T-t S-d W-d Q-sq	Transfer	Dropout	Dropout	Student quex
23	T-t S-d W-d Q-dq	Transfer	Dropout	Dropout	Dropout quex
24	T-t S-d W-d Q-nq	Transfer	Dropout	Dropout	None
25	T-? S-s W-s Q-sq	Unknown	Student	Student	Student quex
26	T-? S-p W-s Q-sq	Unknown	Stopout	Student	Student quex
27	T-? S-s W-s Q-nq	Unknown	Student	Student	None
28	T-? S-p W-s Q-nq	Unknown	Stopout	Student	None
29	T-? S-? W-d Q-nq	Unknown	Unknown	Dropout	None
30	T-? S-d W-d Q-sq	Unknown	Dropout	Dropout	Student quex
31	T-? S-d W-d Q-dq	Unknown	Dropout	Dropout	Dropout quex
32	T-? S-d W-d Q-nq	Unknown	Dropout	Dropout	None
33	NA-NOT IN TRAN	(Not applicable-- not in transcript study)			

Using F2TRSTYP, researchers may resolve inconsistencies by reviewing enrollment status reports in light of additional questionnaire and transcript information. While F2TRSTYP gives analysts the information needed to interpret and make their own determinations of how to classify sample members' 1992 spring term enrollment status, in cases of genuine contradiction, some general assumptions about what constitutes the "best source" of data may be defensible. For example, an extremely high degree of credence should be given to cases in which F2DOSTAT indicates that the individual was a dropout and the individual completed a dropout questionnaire. For such cases, dropout status had normally been

double-confirmed (the school report was verified by the sample member's family or by the sample member), and, at the time of questionnaire administration, the individual had been available to survey staff who could verify that the dropout questionnaire was the appropriate instrument to administer. On the other hand, status reports from survey data for individuals who were not successfully interviewed may be less certain. Transcript data are generally reliable, although schools did not, for their own records purposes, always use a definition that was consistent with the NELS:88 dropout definition. Finally, the F2RWTST variable is not a very reliable guide to the enrollment status of individual cases. It provides an imputed value for cases with an unknown status. Such imputation is valuable in the aggregate, for improving estimates of dropout rates or for adjusting questionnaire weights, but does not provide definitive status information at the individual level. Further information relevant to 1992 enrollment status has been collected in the NELS:88 third follow-up (1994), and will be available in 1995.

F2RTRPRG Indicates the sample member's high school program, as determined from transcript course-taking data. This composite variable is constructed from the NAEP-equivalent subject area summary composite variables.

> 01 = Rigorous academic track
> F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 03.00 and F2RMAT_C GE 03.00 and F2RCOM_C GE 00.50 and F2RFOR_C GE 02.00
>
> 02 = Academic track
> (F2RENG_C + F2RSOC_C + F2RSCI_C + F2RMAT_C) GE 12.00
>
> 03 = Vocational track
> F2RVAG_C GE 03.00 or F2RVBU_C GE 03.00 or F2RVGN_C GE 03.00 or F2RVHE_C GE 03.00 or F2RVHO_C GE 03.00 or F2RVMA_C GE 03.00 or F2RVTE_C GE 03.00 or F2RVTR_C GE 03.00
>
> 04 = Rigorous academic and vocational
> Criteria for values 01 and 03 met.
>
> 05 = Academic and vocational
> Criteria for values 02 and 03, but not 01, met.
>
> 06 = None of the above

New Basics Flags. The HS&B- and NAEP-equivalent New Basics subject area summary composite variables were used to construct two sets of flags indicating whether the sample member earned a certain minimum number of Carnegie units in the New Basics subject areas.

HS&B-Equivalent New Basics Flags

F2RNWB1A Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, two units in foreign language, and half of a unit in computer science.

> 0 = Failed threshold

    1   =   Met threshold
    F2RHEN_C GE 04.00 and F2RHSO_C GE 03.00 and
    F2RHSC_C GE 03.00 and F2RHMA_C GE 03.00 and
    F2RHCO_C GE 00.50 and F2RHFO_C GE 02.00

F2RNWB2A Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, and half of a unit in computer science.

    0   =   Failed threshold

    1   =   Met threshold
    F2RHEN_C GE 04.00 and F2RHSO_C GE 03.00 and
    F2RHSC_C GE 03.00 and F2RHMA_C GE 03.00 and
    F2RHCO_C GE 00.50

F2RNWB3A Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, and two units in foreign language.

    0   =   Failed threshold

    1   =   Met threshold
    F2RHEN_C GE 04.00 and F2RHSO_C GE 03.00 and
    F2RHSC_C GE 03.00 and F2RHMA_C GE 03.00 and
    F2RHFO_C GE 02.00

F2RNWB4A Indicates whether the sample member earned at least four Carnegie units in English and three units in each of social studies, science, and math.

    0   =   Failed threshold

    1   =   Met threshold
    F2RHEN_C GE 04.00 and F2RHSO_C GE 03.00 and
    F2RHSC_C GE 03.00 and F2RHMA_C GE 03.00

F2RNWB5A Indicates whether the sample member earned at least four Carnegie units in English, three units in social studies, two units in science, two units in math.

    0   =   Failed threshold

    1   =   Met threshold
    F2RHEN_C GE 04.00 and F2RHSO_C GE 03.00 and
    F2RHSC_C GE 02.00 and F2RHMA_C GE 02.00

NAEP-Equivalent New Basics Flags

F2RNWB1B Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, two units in foreign language, and half of a unit in computer science.

0   =   Failed threshold

1   =   Met threshold
F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 03.00 and F2RMAT_C GE 03.00 and F2RCOM_C GE 00.50 and F2RFOR_C GE 02.00

F2RNWB2B Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, and half of a unit in computer science.

0   =   Failed threshold

1   =   Met threshold
F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 03.00 and F2RMAT_C GE 03.00 and F2RCOM_C GE 00.50

F2RNWB3B Indicates whether the sample member earned at least four Carnegie units in English, three units in each of social studies, science, and math, and two units in foreign language.

0   =   Failed threshold

1   =   Met threshold
F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 03.00 and F2RMAT_C GE 03.00 and F2RFOR_C GE 02.00

F2RNWB4B Indicates whether the sample member earned at least four Carnegie units in English and three units in each of social studies, science, and math.

0   =   Failed threshold

1   =   Met threshold
F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 03.00 and F2RMAT_C GE 03.00

F2RNWB5B Indicates whether the sample member earned at least four Carnegie units in English, three units in social studies, two units in science, two units in math.

0   =   Failed threshold

1   =   Met threshold
F2RENG_C GE 04.00 and F2RSOC_C GE 03.00 and F2RSCI_C GE 02.00 and F2RMAT_C GE 02.00

Subject **Area** Summary Composite **Variables.** Three groups of composite variables aggregating Carnegie units by sample member and subject area have been constructed from course data and have been included on the transcript component student file. Lists of the CSSC course codes aggregated to create

each summary composite variable appear in Appendix H of the ***Transcript Component Data File User's Manual. The*** first group of variables are comparable to composite variables constructed for analyses conducted for the National Center for Education Statistics using data from the 1982 High School and Beyond Transcript Study. HS&B-equivalent variables were constructed only for the New Basics subject areas.

F2RHEN_C Total Carnegie units in ENGLISH
F2RHMA_C Total Carnegie units in MATHEMATICS
F2RHSC_C   Total Carnegie units in SCIENCE
F2RHSO_C Total Carnegie units in SOCIAL STUDIES
F2RHCO_C Total Carnegie units in COMPUTER SCIENCE/PROGRAMMING/
            DATA PROCESSING
F2RHFO_C Total Carnegie units in FOREIGN LANGUAGES

The average grade for courses in each New Basics subject area was also calculated.

F2RHENG2 Average grade in ENGLISH
F2RHMAG2 Average grade in MATHEMATICS
F2RHSCG2 Average grade in SCIENCE
F2RHSOG2 Average grade in SOCIAL STUDIES
F2RHCOG2 Average grade in COMPUTER SCIENCE/PROGRAMMING/
            DATA PROCESSING
F2RHFOG2 Average grade in FOREIGN LANGUAGES

The second group of variables are equivalent to a subset of the "stubs" created for the 1987 and 1990 NAEP High School Transcript Studies. NAEP-equivalent variables were constructed for the New Basics subject areas, vocational subject areas, and several lower-order course categories, such as Algebra II and Earth Science.

F2RENG_C   Total Carnegie units in ENGLISH
F2RFOR_C   Total Carnegie units in FOREIGN LANGUAGES
F2RMAT_C   Total Carnegie units in MATHEMATICS
F2RAL1_C   Total Carnegie units in ALGEBRA I
F2RAL2_C   Total Carnegie units in ALGEBRA II
F2RGEO_C   Total Carnegie units in GEOMETRY
F2RTRI_C   Total Carnegie units in TRIGONOMETRY
F2RPRE_C   Total Carnegie units in PRE-CALCULUS
F2RCAL_C   Total Carnegie units in CALCULUS
F2ROMA_C   Total Carnegie units in OTHER MATHEMATICS COURSES
F2RSCI_C   Total Carnegie units in SCIENCE
F2REAR_C   Total Carnegie units in EARTH SCIENCE
F2RBIO_C   Total Carnegie units in BIOLOGY
F2RCHE_C   Total Carnegie units in CHEMISTRY
F2RPHY_C   Total Carnegie units in PHYSICS
F2ROSC_C   Total Carnegie units in OTHER SCIENCE COURSES
F2RSOC_C   Total Carnegie units in SOCIAL STUDIES
F2RHIS_C   Total Carnegie units in HISTORY
F2ROSO_C   Total Carnegie units in OTHER SOCIAL STUDIES COURSES

F2RCOM_C   Total Carnegie units in COMPUTER SCIENCE/PROGRAMMING/DATA PROCESSING
F2RVAG_C   Total Carnegie units in AGRICULTURE
F2RVBU_C   Total Carnegie units in BUSINESS
F2RVGN_C   Total Carnegie units in GENERAL INTRODUCTORY VOCATIONAL COURSES
F2RVHE_C   Total Carnegie units in HEALTH AND HUMAN RESOURCES
F2RVHO_C   Total Carnegie units in VOCATIONAL HOME ECONOMICS
F2RVMA_C   Total Carnegie units in MARKETING AND DISTRIBUTION
F2RVTE_C   Total Carnegie units in TECHNICAL
F2RVTR_C   Total Carnegie units in TRADE AND INDUSTRY

The taxonomy used to create the HS&B New Basics summary composite variables is more conservative than the NAEP taxonomy. In general, remedial or basic courses (e.g., 270601 Basic Math 1) and seventh and eighth-grade courses were excluded from the course lists for the HS&B-equivalent composite variables. These courses were included in the lists for the NAEP-equivalent variables. Special education courses were excluded from lists for both groups of variables.

Cognitive Test Results

The following section contains information about cognitive test variables. The cognitive test battery consisted of multiple choice tests in four subject areas: reading comprehension, mathematics, science, and history/citizenship/geography.

Multiple Test Forms. In the base year, all students received the same set of tests. Analysis of eighth-grade test results showed a wide range of student achievement. This diversity was expected to increase as students progressed through high school with some taking advanced courses and making substantial gains in achievement, while others remained at a relatively low level. A single test form administered to all students in the follow-up surveys would have had the potential for serious "ceiling" and "floor" effects, that is, many students getting all items correct because the test was too easy for them, while others could only guess at most of the questions because they lacked sufficient background. When this situation occurs, it is impossible to accurately assess the level of achievement for the highest and lowest scoring students.

The reading and mathematics tests were selected for development of multiple forms targeted to students' ability levels in the first follow-up. The same pattern was repeated for the second follow-up. While the other subject areas might have profited from this "tailored testing" approach as well, the complexity of administering multiple forms dictated that their use be as limited as possible.

The reading test was chosen because the time burden of reading the passages before questions about them could be answered meant that relatively few test items could be administered in the time allotted for the test. With the smallest number of items of any subject area, the reading test could least afford any "wasted" questions: those that were much too hard or much too easy for a particular test taker. Two forms of the reading test were developed; the easy form was administered to students who had scored below the sample mean in the first follow-up, while those scoring above the mean received a set of passages and items that was, on average, more difficult. Students who were new to the NELS:88 sample in the second follow-up received the easier form.

In the case of the mathematics test, the need for multiple forms was based on the diversity of exposure to course work that could be expected by senior year. Academic track students would have, by this time, taken courses in algebra, geometry, and higher-level mathematics. Those in general or vocational programs might have only taken general or business math, essentially arithmetic, or none at all. Unlike science and history, where many topics might have been introduced at a lower level of sophistication in earlier grades, much of the material covered in advanced mathematics courses would be completely unfamiliar to students who had not taken these courses. Three mathematics test forms were administered in the second follow-up. The easiest and hardest forms were given to the students who had scored in the low and high quartile, respectively, in the first follow-up; students in the middle half of the distribution received the middle-difficulty test, as did those who were not tested in the earlier year.

Item Response Theory (IRT) Scoring. Raw scores achieved on tests which vary in average difficulty are not comparable to each other. For example, a student who took the middle difficulty mathematics form in the second follow-up would probably have gotten more questions correct if he or she had taken the easiest form, and fewer if the hardest form had been administered. Item Response Theory (IRT) was employed to calculate scores that could be compared regardless of which test form a student took. A core of items shared among the different test forms made it possible to establish a common scale. IRT uses the pattern of right, wrong, and omitted responses to the items actually administered in a test form, and the difficulty, discriminating ability, and "guess-ability" of each item, to place each student on a continuous ability scale. It is then possible to estimate the score the student would have achieved for any arbitrary subset of test items calibrated on this scale.

Thus, IRT scoring makes possible measurement of gains in achievement over the four year time span of the survey even though the tests used were not identical at the three points in time. As was the case with the multiple forms of the second follow-up tests described above, the tests shared common items that were present in more than one test administration. These overlapping items made it possible to use IRT scoring to develop scores that are on the same scale and thus can be compared to measure gains over time.

IRT has several other advantages over raw number-right scoring. By using the overall *pattern* of right and wrong responses to estimate ability, it can compensate for the possibility of a low-ability student guessing several hard items correctly. If answers on several easy items are wrong, a correct difficult item is, in effect, assumed to have been guessed. Omitted items are also less likely to cause distortion of scores, as long as enough items have been answered right and wrong to establish a clear pattern. Raw scoring necessarily treats omitted items as if they had been answered incorrectly. While this may be a reasonable assumption in a motivated test, where it is in students' interest to try their best on all items, this may not always be the case in the NELS:88 situation.

In each of the four subject areas, the IRT scale was calibrated using PARSCALE software. The test responses of the longitudinal sample members, that is, those that had completed a test in that subject in all three years of the survey, were used for the calibration. Item parameters were computed for all test items that had appeared in any of the test forms at any time: a total of 54 in reading, 81 in mathematics, 38 in science, and 47 in history. Holding these parameters fixed, Bayesian estimates of placement on the continuous ability scale were obtained for all test takers at all three points in time. The procedure used takes into account group membership (year and test form) in order to minimize floor and ceiling effects. These ability estimates were used in conjunction with the item parameters to compute the IRT scores in the database.

Description of Scores

     IRT-Estimated Number Right: raw score metric, total item pool. This score is an estimate of how many correct responses a test taker would have given if he or she had answered all of the items in the total item pool for the subject area (all items administered at all times). The IRT-based estimate is the probability of a correct answer, given a person's demonstrated ability and the parameters of the item, summed over all of the test items. This sum of probabilities is not an integer, but can be interpreted as an estimated count of correct answers. The highest possible score would be the total number of test items for the subject area. The lowest score is not zero, but is an estimate of how many test items a person of extremely low ability might have guessed correctly. This score may be used for either cross-sectional or longitudinal analyses. **However,** it is essential that for longitudinal **analyses,** the base year and first follow-up scores *that have been re-scaled to the second follow-up metric* **be used to measure gains. It would be incorrect to compare second follow-up scores with earlier** releases of the first two waves **that were based on a different metric.** Refer to the section "Measuring Gains over Time" below for additional information.

     IRT-Estimated Number Right: t-score. This is a transformation of the IRT-estimated Number Right, converted to a standardized (t-score) metric. For NELS:88 core sample cases at one point in time, weighted by the within-year questionnaire weight, this score has a mean of 50 and standard deviation of 10. This norm-referenced score is primarily useful for making cross-sectional comparisons.

     Achievement Quartile. Using core sample cases and within-year questionnaire weight, the IRT-estimated Number Right scores were divided into quartiles. A score of 1 represents the lowest population quartile, and 4 the highest.

     IRT Theta: t-score. Like the t-score based on IRT-estimated Number Right described above, this score is standardized to a mean of 50 and standard deviation of 10. However, it is different in three ways. First, it is a transformation of the IRT-estimated ability scale (theta) rather than of a count of estimated correct answers on test items. Second, the standardization is done across years, rather than within year. Each test taker in the panel sample had three thetas: the measurements of ability at the base year, first follow-up, and second follow-up. The scores are standardized so that the mean score within each subject area is 50, and the standard deviation is equal to 10 when scores are aggregated over all students *and* all three observations for each student. The parameters for standardizing were computed for the panel sample, using panel weights, and then applied to all test scores. Thus, the mean of these scores for the base year test takers alone would be less than 50, for the first follow-up around 50, and for the second follow-up, more than 50. By contrast, the t-score for IRT number right was computed *within year*. Hence, these scores have a mean of 50 and a standard deviation of 10 when aggregated within each *single wave* of data. The third difference is a consequence of the second difference. Since all three waves are used in standardizing, the resulting scores are normally distributed across years, and the distributions within year, particularly for the earliest and the latest observations, would be somewhat skewed. Thus, this score is most useful for analysis of longitudinal gains rather than cross-sectional comparisons. Gains in this metric can be computed by subtracting earlier scores from later ones.

     Reading + Math Composite t-score and Quartile. These composites are provided for users who want a simple, overall continuous or discrete measure of cognitive ability to use as a control variable for cross-sectional analysis of data. The t-score is the equally-weighted average of the standardized reading and mathematics, which is then re-standardized within year, using the questionnaire weight, to have a mean of 50 and standard deviation of 10. For the small number of test takers (fewer than 1 percent) who had only a reading or a mathematics score but not both, the composite is based on the single score that

was available. Like the achievement quartiles for each subject area described above, the Reading + Math Composite is divided into quartiles based on population estimates.

Proficiency Scores. The proficiency scores provide a means of distinguishing total scores and score gains, as measured by overall IRT-Estimated Number Right scores and the norm-referenced t-scores, from criterion-referenced measurements of specific skills. At several points along the score scale of the reading, mathematics, and science tests, four-item clusters of test questions having similar content and difficulty were identified. A student was assumed to have mastered a particular level of proficiency if at least three of the four items in the cluster were answered correctly, and to have failed at this level if two or more items were wrong. Clusters of items provide a more reliable test of proficiency than do single items because of the possibility of guessing in a multiple choice test: it is very unlikely that a student who has not mastered a particular skill would be able to guess enough answers correctly in a four item cluster. (For some of the students who had not answered critical items, an IRT-based procedure was undertaken to resolve proficiency score assignments.) The proficiency levels were assumed to follow a Guttman model, that is, a student passing a particular skill level was expected to have mastered all lower levels; a failure should have indicated non-mastery at higher levels. A small percentage of students (3.5 percent on the reading test, 9.7 percent in mathematics, and 8.8 percent in science) had response patterns that did not follow the Guttman model. They were not assigned proficiency scores since evidence based only on the items in the clusters was contradictory. However, the proficiency probability scores described below, which are based on the test as a whole, can still be used for anyone with a valid test score.

Three levels of proficiency were marked in the reading test, five in the mathematics test, and three in the science test, defined as follows:

Reading Level 1:	Simple reading comprehension including reproduction of detail and/or the author's main thought.
Reading Level 2:	Ability to make relatively simple inferences beyond the author's main thought and/or understand and evaluate relatively abstract concepts.
Reading Level 3:	Ability to make complex inferences or evaluative judgments that require piecing together multiple sources of information from the passage.
Math Level 1:	Simple arithmetical operations on whole numbers: essentially single step operations which rely on rote memory.
Math Level 2:	Simple operations with decimals, fractions, powers and roots.
Math Level 3:	Simple problem solving, requiring the understanding of low level mathematical concepts.
Math Level 4:	Understanding of intermediate level mathematical concepts and/or having the ability to formulate multi-step solutions to word problems.
Math Level 5:	Proficiency in solving complex multi-step word problems and/or the ability to demonstrate knowledge of mathematics material found in advanced mathematics courses.
Science Level 1:	Understanding of everyday science concepts; "common knowledge" that can be acquired in everyday life.
Science Level 2:	Understanding of fundamental science concepts upon which more complex science knowledge can be built.
Science Level 3:	Understanding of relatively complex scientific concepts; typically requiring an additional problem solving step.

Proficiency Level Pass/Fail and Overall Proficiency. These scores are assigned only for students who had complete and consistent response patterns for the item clusters within each subject area. The presence of reversal patterns, or of too many critical items omitted, resulted in second follow-up proficiency scores not being assigned for about 4 percent of the students who took the reading test, 11 percent of mathematics test takers, and 10 percent of those with science test scores. The pass/fail scores indicate performance at each level, while the overall proficiency score summarizes the pattern.

Probability of Proficiency. In addition to the scores indicating students' actual responses to the item clusters, probabilities of proficiency are reported for each level in each subject area. These estimates were obtained using IRT methods to estimate students' probabilities of mastery at each level, treating clusters of items as single items for the purpose of IRT calibration. Since the proficiency probability scores are estimates based on each student's overall performance in the subject area (theta), they are computed for everyone who had a storable test, not only for those with complete and consistent data on the item clusters. For example, if a test taker had omitted several test items in the "level 2" cluster, it might be impossible to assign the item-based proficiency level score. However, the probability of proficiency on that cluster could still be estimated based on the level of performance demonstrated by responses to the other test questions. These measures of probability of mastery at each proficiency level are particularly useful in analyzing achievement gains over time. They provide a way of relating students' background and experiences to improvements in skills that are more specific than the overall scores in reading, mathematics and science.

Measuring Gains Over Time. Users who wish to analyze the relationship of students' characteristics and experiences to gains in achievement over time will be interested in comparing performance at second follow-up to measurements obtained in the earlier years. For this purpose, the base year and first follow-up data have been resealed so that a common metric exists for all three test administrations. It is essential that **comparisons of second follow-up scores with the other waves be done using these rescaled scores. Computing gains by subtracting scores on the original data files for base year and first follow-up from the second follow-up scores is incorrect because the scores are not in the same metric.** Gains in overall achievement over time can best be computed by using the IRT-estimated Number Right (raw score metric), or the IRT Theta (t-score metric, standardized across years), and subtracting earlier from later scores. For measuring gains in mastery of particular skills, the Probability of Proficiency scores can be used in the same manner.[10]

Although these scores are described as "gain" scores, not all of them represent an improvement in measured skills. Some of the gain scores are negative. Factors that contribute to negative gain scores include students' forgetting material that they once knew but have not practiced, and measurement error produced primarily by some students' lack of motivation in responding to the test questions.

The standardized IRT scores, Achievement Quartiles, and Reading + Math Composite are primarily intended for cross-sectional rather than longitudinal analysis.

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[10] The probability of proficiency scores are *continuous*. For an example of gain score analysis using the proficiency probabilities, see Scott, Rock, Pollack and Ingels (NCES, 1994), *Two Years Later: Cognitive Gains and School Transitions of NELS:88 Eighth Graders*. However, the NELS:88 *dichotomous* proficiency scores can also be used to examine patterns of change with respect to proficiency levels. For an example of this kind of change analysis, see Rock, Owings and Lee (NCES, 1994)--*Changes in Math Proficiency Between 8th and 10th Grades*.

Equated 1992 Mathematics Score: NELS:88-NAEP. The National Assessment of Educational Progress (NAEP) administered a mathematics test to a nationally representative sample of high school seniors in the spring of 1992. Since the target population, the time of year, and the content of the test were similar to NELS, equivalent scores for the two tests could be determined on the basis of the score distributions in the tested populations. The NAEP-Equated Math Score is the NAEP-scaled equivalent of the IRT-Estimated Number Right.

However, analysts comparing NAEP and NELS:88 mathematics test scores should consider differences between the NAEP and NELS:88 samples. Whereas NAEP tested high school seniors or 17 year olds, NELS:88 tested dropouts, out-of-sequences students, early graduates, as well as high school seniors. A NAEP-equated mathematics score is reported for every NELS:88 sample member who completed a 1992 mathematics test, although the scores were calibrated on 1992 high school seniors only. The *NELS:88* Second *Follow-Up Psychometric Report* contains additional information on the procedures used for equating NAEP and NELS:88 test scores. For example, the NAEP-equated math score assigned to a person scoring at the 90th percentile of the weighted distribution of NELS:88 scores would be the score that represented the 90th percentile of the NAEP distribution of scaled scores. The score transformation was computed by matching the distributions of scores for the subsets of the NELS:88 and NAEP samples who were high school seniors in the spring of 1992. Once the transformation of NELS:88 to NAEP scale was determined, NAEP-equated scores could also be assigned for NELS:88 second follow-up participants who were not high school seniors.

Notes on Changes from Original Base Year and First Follow-up User Files. Researchers who have worked with the original releases of the base year and first follow-up user files may note some differences in the rescaled score files.

- The most important difference is the new metric for IRT scores. As described earlier, these scores are now based on the total pool of test items that were given at all three time points. As a result, score means and ranges are higher than in the original files. If comparisons of second follow-up scores with those of earlier waves are to be done, the resealed base year and first follow-up scores *must* be used.

- The IRT procedure used for the resealing uses Bayesian estimation to minimize floor and ceiling effects. As a result, the most extreme low and high scores are somewhat shrunken toward the mean of the distribution.

- The number of cases with a Reading + Math Composite score in first follow-up has increased slightly. Formerly, the first follow-up data file had this score only if *both* reading and math tests were present. The resealed scores contain the composite if *either or both* was present, in order to be consistent with the method used in base year and second follow-up.

- In comparing the original base year file with the resealed scores, users may note that some students have different quartile scores in the two versions, in a few cases a discrepancy of two levels. The original base year quartiles were based on the distribution of raw scores. This was not possible in the later administrations, when raw score comparisons were not meaningful because of the use of multiple test forms. For these later administrations, and in the resealed base year data set, the quartiles are based on the distribution of IRT-estimated Number Right. The discrepancy in quartile assignments is a consequence of this switch to IRT procedures. Most of the larger discrepancies occur

for students with a very specific response pattern: correct answers for all or almost all of the questions at the beginning of the test, with the rest of the questions omitted. Quartiles based on raw counts of correct answers would place these people low in the distribution: if they didn't answer many items, they couldn't have many correct. But IRT methods look at the pattern of right and wrong answers, and would judge this group to be of high ability because most of the questions answered were correct.

• The resealed base year and first follow-up data sets contain proficiency probability scores for skill levels that were not present in the original user files. In the case of science, proficiency levels were not a part of the original score reporting plan but were developed later from NELS data in the context of another project, and later added to the database. In reading and mathematics, the proficiencies reported were limited to those tested at each time point: *three* math levels in base year and four in first follow-up, and two reading levels at each of these times. These are the only levels possible for the proficiency level pass/fail scores, which are based on actual item responses. But the proficiency probability scores are based *on* overall performance on whatever test form was administered to each student, and these performance estimates are all put on the same scale. The IRT model enables us to estimate the probability of a person passing the level 5 math cluster, given his or her overall ability, even if those test items were not given on that form or in that grade.

Test Composites

F22XRIRR	Reading IRT-Estimated Number Right
F22XRSTD	Reading Standardized Score
F22XRQ	Reading Quartile (1=low)
F22XMIRR	Math IRT-Estimated Number Right
F22XMSTD	Math Standardized Score
F22XMQ	Math Quartile (1=low)
F22XSIRR	Science IRT-Estimated Number Right
F22XSSTD	Science Standardized Score
F22XSQ	Science Quartile (1=low)
F22XHIRR	Hist/Cit/Geog IRT-Estimated # Right
F22XHSTD	Hist/Cit/Geog Standardized Score
F22XHQ	Hist/Cit/Geog Quartile (1=low)
F22XRTH	Reading Theta T Score
F22XMTH	Math Theta T Score
F22XSTH	Science Theta T Score
F22XHTH	History/Citizenship/Geography Theta T Score
F22XCOMP	Standardized Test Composite (reading, math)
F22XQURT	Standardized Test Quartile (1=low)
F22XRPL1	Reading Proficiency - Level 1
F22XRPL2	Reading Proficiency - Level 2
F22XRPL3	Reading Proficiency - Level 3
F22XRPRO	Overall Reading Proficiency
F22XRPP1	Reading Level 1: Probability of Proficiency
F22XRPP2	Reading Level 2: Probability of Proficiency
F22XRPP3	Reading Level 3: Probability of Proficiency
F22XMPL1	Math Proficiency - Level 1

F22XMPL2	Math Proficiency - Level 2
F22XMPL3	Math Proficiency- Level 3
F22XMPL4	Math Proficiency- Level 4
F22XMPL5	Math Proficiency- Level 5
F22XMPRO	Overall Math Proficiency
F22XMPP1	Math Level 1: Probability of Proficiency
F22XMPP2	Math Level 2: Probability of Proficiency
F22XMPP3	Math Level 3: Probability of Proficiency
F22XMPP4	Math Level 4: Probability of Proficiency
F22XMPP5	Math Level 5: Probability of Proficiency
F22XSPL1	Science Proficiency Level 1
F22XSPL2	Science Proficiency Level 2
F22XSPL3	Science Proficiency Level 3
F22XSPRO	Overall Science Proficiency
F22XSPP1	Science Level 1: Probability of Proficiency
F22XSPP2	Science Level 2: Probability of Proficiency
F22XSPP3	Science Level 3: Probability of Proficiency
F22XNAEP	NAEP and NELS:88 Link