Staying the Course:
Patterns of Nonresponse in a National Longitudinal Study of Young Children

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This paper is intended to promote the exchange of ideas among researchers and policy makers. The views expressed in it are part of ongoing research and analysis and do not necessarily reflect the position of the Department of Education.

KEYWORDS: Nonresponse, longitudinal studies, national studies, sample attrition

Introduction

The Early Childhood Longitudinal Study: Kindergarten Class of 1998-99 (ECLS-K), sponsored by the National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, follows a national sample of children from the start of kindergarten through the fifth grade. To date, five waves of the study have been completed, the last when most of the children were in third grade. A feature of the study design is that the interval between subsequent waves of data collection varies over the life of the study and for different samples of children. While ECLS-K data are collected from the children themselves, their teachers, and schools, the focus of this study is on response rates for the telephone interviews conducted with the children's parents. This paper examines nonresponse to the parent interview at each wave of the study and across waves. Particular attention is paid to how the length of the interval between subsequent waves affects nonresponse. The paper examines the effect an extra data collection point, and thus a shortened interval between collections, has on survey response, and whether particular groups of study subjects are affected more than others by the elapsed time between data collections.

Background

Once subjects participate in the initial wave of a longitudinal study, there are a number of factors affecting the likelihood of their participation in subsequent waves. The amount of time between waves can be an influential factor because the chances of a panel member moving increases as time goes by and for those who do move, locating information gets older and less reliable as time passes. The number of data collection waves can also be an important factor because nonresponse is typically cumulative, increasing with each successive wave (Laurie et al. 1999; Lepkowski, and Couper 2002). This is due to 1) the increasing numbers of respondents moving over the course of the study and the difficulty of having to locate larger numbers of movers and 2) respondent fatigue — repeated interview requests increase the burden of participation and can decrease cooperation. At each wave of the study, and across waves, certain social and economic characteristics of respondents (e.g., education level, race/ethnicity, whether or not the family has moved between waves) may affect the likelihood of response — and the chances of locating, contacting and gaining the cooperation of the panel members. The strength and direction of these relationships can vary depending on whether they are studied using bivariate or multivariate models and on the component of survey response that is being investigated (Groves and Couper 1998; Johnson et al. 2002). Lepkowski and Couper (2002) found that two and one-half years after the first contact in the America's Changing Lives Study (ACL), Black panel members were less likely to be located, but no more or less likely to cooperate once located. Education and family income were related to the likelihood of being located, but not to the propensity to cooperate. In the same study, they found that cooperation rates (contingent on locating) to the two-year follow-up of the 1990 National Elections Studies (NES) were higher for Black and more highly educated respondents. In both the ACL and the NES, if the respondent had moved since the last contact lowered the success rate in locating respondents for the next wave of data collection, but it only affected cooperation in the NES.

Early Childhood Longitudinal Study – Kindergarten Class of 1998-99 (ECLS-K)

Sample

A nationally representative sample of 22,782 children enrolled in 1,277 kindergarten programs during the 1998–99 school year was selected to participate in the ECLS-K. The children attended both public and private kindergartens that offered full-day and part-day programs. The sample included children from different racial/ethnic and socioeconomic backgrounds. Asian and Pacific Islander children and private kindergartners were oversampled.

The ECLS-K sample was chosen using a dual-frame, multistage design. The first stage of sampling involved the selection of 100 primary sampling units (PSU) from a national sample of PSUs. The PSUs were counties and county groups. Public and private schools were then selected within the PSUs, and children were sampled from the selected schools. Public schools were selected from the Common Core of Data, a public school frame, and private schools were selected from a private school frame developed

from the Private School Survey.[1] Approximately 23 kindergartners were selected on average in each of the sampled schools.[2] Data were collected twice in the kindergarten and first grade years of the study, once in the fall and again in the spring. Fall kindergarten data were collected from September to December 1998. Spring kindergarten data were collected from March to June 1999. Fall first grade data were obtained from September to November 1999. Spring first grade data were collected from March to July 2000.

While all students still enrolled in their base-year schools were re-contacted in the first grade, only a subsample of base-year students (and their parents) who had moved from their kindergarten school was followed (see below). For information on the ECLS-K sample and the subsampling of movers, refer to the *ECLS-K First Grade Public-Use Data Files User's Manual* (NCES 2002).

School Response Rates

A total of 944 of the 1,277 originally sampled schools participated during the base year of the study. This translates into a weighted response rate of 74 percent for the base year of the study. The school response rate during the spring of the base year (74.2 percent) was higher than during the fall (69.4 percent), due to some of the schools that originally declined to participate deciding to participate in the spring. Nearly all (99.4 percent) of the schools that participated in the fall of the base year also participated in the spring.[3]

Movers

In order to control survey costs, movers were sampled in both the fall and spring of first grade. In the fall of first grade, 30 percent of the base year schools were sampled and 50 percent of the study children attending these schools were flagged to be followed if they transferred schools between kindergarten and first grade. In the spring of first grade, every base year school had a 50 percent chance of having its ECLS-K transfer students followed, and any transfer student who had been followed in fall-first grade was still followed in spring-first grade. This later condition helped to maximize the amount of longitudinal data available to analysts.

Parent Interview

At each wave of the study, a computer-assisted interview (CAI) was conducted with a parent/guardian of each child in the study. Most of these interviews were conducted by telephone, but some were conducted in-person when there was no telephone available. The parent interviews were conducted primarily in English, but provisions were made to interview parents who spoke other languages.

Typically, the parent interview was completed with the mother of the child; however, the respondent could be a father, stepparent, adoptive parent, foster parent, grandparent, another relative, or a nonrelative guardian. The respondent had to be knowledgeable about the child's care and education, be 18 years of age or older, and be living in the household with the child. Respondents for the parent interview were selected according to the following order of preference: 1) respondent from the previous round, if applicable, 2) child's mother, 3) another parent or guardian, and 4) another household member.

Findings

Several different analyses were performed to examine in greater detail the response rates for the ECLS-K parent interviews. The first set of analyses examines response rates at each data collection wave and across the first five waves of the study. These analyses look at whether rates vary by certain characteristics of the parents and their children. The second set of analyses examines the relationship between the elapsed time since subjects were last sampled to complete a parent interview and their participation at the next wave of the study. Other analyses follow and explore the question, does participation at a specific wave relate to the number of times a subject has been chosen to participate in the study? The final set of analyses elaborate on this last question, asking the question, does participation in the prior wave of a study thus shortening the elapse time between requests to participate, increase the likelihood of parents participating at a later time?

Response Rates Within and Across Waves of Data Collection

Table 1 presents the aggregate parent response rates and response rates for different groups of subjects for each of the five waves of data collection.[4] The aggregate response rates for the parent interview in waves 1-5 ranged from about 79-89 percent.[5]

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[1] During the spring of 1998, Westat, the ECLS-K data collection contractor, identified new schools that were not found on either frame. A sample of these schools was included in the ECLS-K school sample.

[2] In the spring of first grade, the sample was freshened to include children who did not attend kindergarten during the 1998–99 school year. The analyses reported in this paper do not include these children or their parents.

[3] About 8 percent of the children in the sample changed schools from the fall to the spring of the kindergarten year.

[4] The parent response rates reported throughout this paper do not adjust for the base-year school-level response rate.

[5] All response rates in this paper are unweighted rates. The weighted rates for the parent interviews overall and for most of the characteristics used in this paper are included in the ECLS-K Base-Year (NCES 2001) and First-Grade User's Manuals (NCES 2002).

The response rates for different groups of parents vary both within round and across rounds.[6] Over the five waves of data collection, lower SES parents and parents raising minority children are less likely to respond at each wave and to continue their participation in the study compared to others.[7] For example, the response rates for those in the highest 20 percent of the SES distribution increases from 3.5 to 18.5 percentage points higher than the rates for those in the lowest 20 percent of the SES distribution across waves 1-5.

Table 1 – Response rates (unweighted) for the first 5 waves of the ECLS-K, by school type, socioeconomic status, home language, child's race/ethnicity, and location: 1998-2002

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Date	Fall 1998	Spring 1999	Fall 1999	Spring 2000	Spring 2002
Total eligible N	22,769	22,666	5,687	18,451	17,118
Overall response rate	79.5	83.6	89.2	84.7	78.8
Base year school type					
Public	85.6	88.3	88.3	83.8	77.7
Private	83.6	93.4	92.3	89.0	83.9
SES					
Low 20 %	87.7	90.5	86.2	79.8	70.8
Middle 60%	90.1	94.4	92.8	88.2	81.6
High 20%	91.0	97.4	95.7	93.0	89.3
Home language					
Non-English	84.2	92.4	87.2	80.8	72.4
English	91.2	94.7	93.0	88.9	82.9
Race/ethnicity					
White, non-Hispanic	87.4	92.8	92.7	89.7	85.1
Black, non-Hispanic	82.1	84.2	83.2	77.2	68.1
Hispanic	85.1	88.3	84.9	80.5	73.6
Asian	71.6	77.9	85.2	72.2	66.8
Other	88.8	88.8	90.9	85.4	79.7
Location					
City	86.7	87.8	88.1	82.0	75.9
Town/suburbs	83.4	89.9	88.5	84.9	79.4
Small town/ rural	85.2	91.7	92.5	90.3	83.8

Note: Total N includes all eligible children and those with unknown eligibility. To be eligible for waves 3, 4, and 5, the child and/or his parent must have participated in either wave 1 or wave 2.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.


There are very few differences in the weighted and unweighted rates and where there are differences, they are very small.
[6] All differences cited in this paper are statistically significant at the .05 level. Test statistics have been adjusted for the average design effect.
[7] There are two exceptions to this pattern. At waves 1 and 3, there is no detectable difference in the response rates for parents in the middle 60% of the SES distribution and those in the top 20 percent.

Furthermore, over the course of the study, the response rates for those in the lowest 20 percent of the SES distribution decreased more than those in the middle 60% or upper 20% (see figure 1). From the second wave of data collection, when the response rates were highest to the fifth wave of data collection, the response rate for those in the lowest 20% decreased by about 20 percentage points while the rate for those in the upper 20% decreased by 8 percentage points. The response rates for the parents of Black and Hispanic children also decreased more over this period than did the rate for the parents of White children.

Figure 1 – Response rates (unweighted) for the first five data collection waves, by socioeconomic status
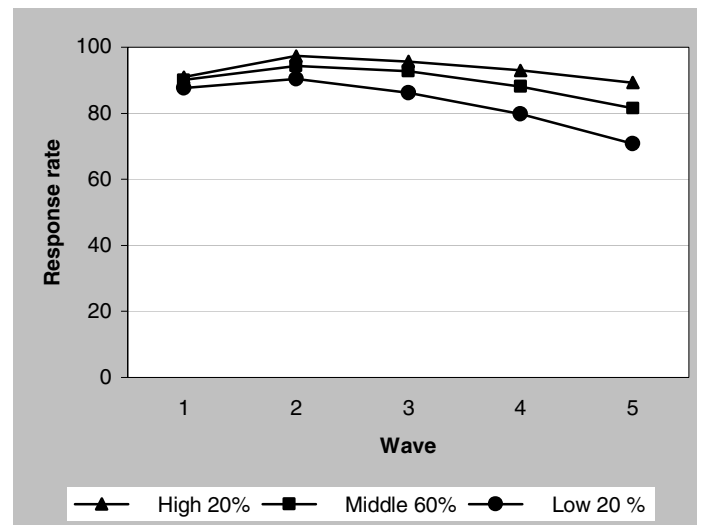
Note: Wave 1- fall 1998; Wave 2 – spring 1999; Wave 3 - fall 1999, Wave 4 – spring 2000; Wave 5 – spring 2002
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

Elapsed Time Between Waves

Approximately 30 percent of the ECLS-K children were randomly selected to participate in wave 3 of the study, which took place in the fall of the first grade year. This design feature offers the opportunity to examine the impact that the amount of time that elapsed since the last data collection might have on response rates. For these analyses, wave 3 response rates for those subsampled in wave 3 (fall first grade) are compared to the rates obtained in wave 4 for

those persons not subsampled in wave 3.[8] Only wave 2 responders are selected for these analyses to hold constant any effect of the prior round response. Table 3 shows these response rates by the elapsed time since the respondents' last opportunity to participate. For wave 2 responders who were in the wave 3 subsample, 94.7 percent responded when the next opportunity was about six months later (fall, first grade). Among those that responded in wave 2 and were not sampled again (and not given the opportunity to participate) for about one year (spring, first grade), 91.4 percent responded at that time.

Table 2 – Response rates by elapsed time

	Time since last sampled	
	6 months	12 months
Total N eligible	5,133	11,291
Respondent	4,861	10,318
Nonrespondent	272	973
Response rate	94.7%	91.4%

Note: The 6 month data are from fall 1999 for those in the fall first grade subsample; the 12-month data are from spring 2000 for those not included in the fall first grade subsample. All rates are for those who responded in spring 1999 when the children were in kindergarten.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

A logistic regression analysis was run to test the effect of elapsed time on parent response rates in conjunction with a variety of other potentially influential variables. Initially, children's race/ethnicity, family socioeconomic status, parental education, location, home language, and whether the child had moved (changed schools) since the last data collection were tested as possible main effects, along with the time that elapsed between data collection waves. In addition, all interactions between these variables and elapsed time were included in the initial model in order to test whether elapsed time had a differential effect on response rates for different groups of parents. Home language was not related to parents' probability of responding alone (main effect) or in combination with other variables (interaction effect) and was dropped from the final model. The only interaction between elapsed time and the other variables that was significant and included in the final model was the interaction of elapsed

time and race/ethnicity. Table 3 presents the logistic regression results for the final model.

Table 3 – Logistic regression analysis results (final model) for the likelihood of response by the amount of time since child was last sampled and selected characteristics

Variables	B	S.E.	df	Sig.
Elapsed time (12 months)	.610	.149	1	.000
Moved since last sampled (no)	-.384	.106	1	.000
Location (city)			2	.000
Large town/suburbs	.107	.077	1	.164
Small town/rural	.648	.113	1	.000
Parent education (up to HS)			2	.000
Some college	.327	.092	1	.000
College degree	.767	.141	1	.000
Race/ethnicity (White, non-Hispanic)			4	.000
Black, non-Hispanic	-.993	.108	1	.000
Hispanic	-.601	.110	1	.000
Asian	-1.586	.131	1	.000
Other	-.605	.190	1	.001
Socioeconomic status	.137	.068	1	.043
Elapsed time (12 months) * Race (White, non-Hispanic)			4	.032
Black, non-Hispanic	.101	.224	1	.651
Hispanic	-.278	.217	1	.200
Asian	.793	.351	1	.024
Other	.371	.410	1	.366
Constant	2.706	.103	1	.000

Note: Comparison group is listed in parenthesis.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

The results in table 3 suggest that parents whose next data collection point is 6 months after their last response are more likely to respond than those whose next opportunity to participate was 12 months after their last response. Response rates also vary for different groups — movers, those with lower levels of education, and minorities are less likely to respond than others. The significant interaction of elapsed time and race/ethnicity suggests that the effect of time since last data collection is not the same for the parents of White and Asian children. To illustrate this interaction, table 4 shows the response rates (unadjusted for other variables in the model) by elapsed time and race/ethnicity.

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[8] The third wave of the ECLS-K included the child assessments and a 30-minute parent interview that asked mostly questions about the child's summer between kindergarten and first grade. The fourth and fifth waves of data collection included the full study design: child assessments, school and teacher questionnaires, and a 50 minute parent interview that asked about the child's current and school year experiences.

Table 4 – Response rates (unadjusted) by elapsed time and race/ethnicity.

Elapsed time	White	Black	Hispanic	Asian	Other
			Race/ethnicity		
6 months					
Total N	2890	728	828	250	353
Response rate	97.9%	93.1%	92.9%	95.2%	97.2%
12 months					
Total N	6515	1482	1906	634	509
Response rate	96.4%	87.4%	90.6%	84.1%	93.1%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

The difference in response rates under the two elapsed time conditions was larger for the parents of Asian children. Compared to the parents of White children whose response rates differed by 1.5 percentage points, there is an 11.1 percentage point difference in the response rates of parents of Asian children whose last response was 6 month earlier compared to 12 months earlier.

Number of Waves

The fall first grade subsample in the ECLS-K also offers an opportunity to examine whether response rates are associated with the number of times a respondent is selected to participate. Unlike the prior analysis, which compared response rates for the next wave (either wave 3 or 4) of data collection by the amount of time that had passed since subjects' previous response in wave 2, this analysis compares response rates for wave 4 by whether or not the parent was sampled to participate in wave 3. The amount of time since a previous response is different for these two groups, but only for those parents who were chosen for the wave 3 subsample and who responded in wave 3.

Looking just at those parents who responded at wave 2 (spring kindergarten), table 5 shows that the response rate in wave 4 (spring, first grade) did not differ very much between parents who were included in the wave 3 subsample (90.1%) and those who were not sampled for wave 3 (91.4%). However, the response rate at wave 4 was lower for those parents who were sampled for wave 3 and did not respond (36.9%) than it was for either those that were sampled at wave 3 and responded or those who were not sampled for wave 3.

Table 5 - Wave 4 response rates for wave 2 responders, by wave 3 status.

Wave 3 status	Respondent	Non-respondent	Response rate
	Wave 4		
Total	14,938	1,481	91.0
Not sampled	10,318	973	91.4
Sampled	4,620	508	90.1
Respondent	4,520	337	93.1
Nonrespondent	100	171	36.9

Note: Totals include only those that responded in round 2 and were eligible to respond in both round 3 and in round 4.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

A logistic regression analysis was run to test the effect of having been in the wave 3 sample on wave 4 response rates when controlling for a variety of other characteristics that may be related to whether or not parents participate in the wave 4 interview. Once again, children's race/ethnicity, family socioeconomic status, parental education, location, home language, and whether the child moved since the last data collection were tested as possible main effects, along with the wave 3 sampling status of parents. All interactions between these variables and parents' wave 3 status were included in the initial model in order to test whether the relationship between having an extra data collection point and the probability of responding varied for different groups of parents. None of the interaction effects were significant; thus, they were not retained in the final model. Table 6 presents the logistic regression results for the final model.

Table 6 - Logistic regression analysis results (final model) for the likelihood of response in wave 4 by whether sampled in wave 3 and selected characteristics

	B	S.E.	df	Sig.
Sampled in wave 3 (no)	-.079	.072	1	.271
Moved since wave 2 (no)	-.414	.096	1	.000
Location (city)			2	.000
Large town/suburbs	.154	.073	1	.035
Small town/rural	.602	.104	1	.000
Parent education (up to HS)			2	.000
Some college	.254	.086	1	.003
College degree	.654	.130	1	.000
Race (White, non-Hispanic)			4	.000
Black, non-Hispanic	-.933	.092	1	.000
Hispanic	-.574	.094	1	.000
Asian	-1.490	.113	1	.000
Other	-.644	.148	1	.000
Socioeconomic status	.205	.062	1	.001
Constant	2.808	.106	1	.000

Note: Comparison group is listed in parenthesis.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

Like the previous analysis, this analysis finds that certain characteristics of the parents are related to the likelihood of response – movers, city residents, those with lower education levels, and minorities are less likely to participate than others. The likelihood of parents responding at wave 4 is not, however, related to whether or not they were in the wave 3 subsample. Nor did this characteristic interact with any of the other variables to influence the probability of responding at wave 4.

A final logistic regression analysis compares wave 4 response rates for those not sampled in wave 3 to parents who were wave 3 respondents and nonrespondents. Table 7 presents these results.

Table 7 - Logistic regression analysis results (final model) for the likelihood of response in wave 4 by the wave 3 response status and selected characteristics

	B	S.E.	df	Sig.
Wave 3 (not sampled)			2	.000
Wave 3 nonrespondent	-2.750	.312	1	.000
Wave 3 respondent	.203	.131	1	.121
Location (city)	-.377	.098	1	.000
Large town/suburbs			2	.000
Small town/rural	.146	.074	1	.049
Moved since wave 2	.600	.106	1	.000
Parent education (up to HS)			2	.000
Some college	.218	.087	1	.013
College degree	.623	.132	1	.000
Race/ethnicity (White)			4	.000
Black	-.989	.108	1	.000
Hispanic	-.605	.110	1	.000
Asian	-1.578	.131	1	.000
Other	-.587	.190	1	.002
Socioeconomic status	.203	.063	1	.001
Wave 3 (not sampled) *race/ethnicity			8	.016
Wave 3 Nonrespondent				
Black	.836	.449	1	.062
Hispanic	1.221	.434	1	.005
Asian	2.849	.861	1	.001
Other	-.452	.824	1	.583
Wave 3 Respondent				
Black	.226	.206	1	.271
Hispanic	.106	.210	1	.613
Asian	.142	.264	1	.592
Other	-.123	.320	1	.701
Constant	2.773	.101	1	.000

Note: Comparison group is listed in parenthesis.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

Parents who were sampled for wave 3 and who did not participate were less likely to participate at wave 4 than parents who were not sampled for wave 3. However, there was no detectable difference in the response rates between wave 3 respondents and those who were not sampled for wave 3.

The magnitude of the difference in response rates at wave 4 for wave 3 nonrespondents versus parents who were not sampled for wave 3 this is not the same for all race/ethnicities. The absolute difference is smaller for the parents of Hispanic and Asian children compared to the parents of White children. Table 8 illustrates this interaction effect.

Table 8 – Response rates (unadjusted) in wave 4, by wave 3 response status and children's race/ethnicity

Round 3 status	Race/ethnicity					
	White	Black	Hispanic	Asian	Other	Total
Not sampled	96.4	87.4	90.6	84.1	93.1	93.3
Sampled	94.5	86.2	88.4	85.6	89.5	91.5
Nonrespondent	30.6	33.3	46.8	60.0	26.7	37.3
Respondent	95.4	89.5	90.5	86.1	91.0	93.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Kindergarten Class of 1998-99; Unpublished data.

Summary and Discussion

The findings reported above provide new evidence of a positive effect of shorter intervals between data collection waves on survey response in a longitudinal study. While the difference in response rates was not large (about 3 percent), neither was the difference in the elapsed time between data collections (6 versus 12 months). Moreover, the difference in response rates for the two elapsed times was statistically significant after controlling for a number of individual and family factors that often are suspected of influencing survey response.

The analysis did not distinguish the different components of survey response (e.g., ability to locate, contact, and obtain the cooperation of the sampled case), but instead focused on whether or not a sampled case completed the parent interview. Thus, it is not possible from this analysis to determine whether differences in elapsed time have more or less of an effect on locating and contacting potential cases, or on their willingness to participate once located. The very low wave 4 response rates for those parents who were selected to participate in wave 3 but who did not complete a parent interview reminds us of how important it is to find and locate sampled cases at each wave of a panel study. Many in this group were not located and contacted for an interview at wave 3 and the chances of locating and contacting them 4-9 months later in the spring of the first-grade year is even more problematic. More analysis needs to be done to better understand this group and its high rate of attrition.

Not surprisingly, in each of the logistic regressions, movers were less likely to respond than nonmovers. Across waves of the ECLS-K, movers have become an increasingly larger group and represent a larger share of nonresponse.[9] Thus, it has become even more important to locate movers and to gain their cooperation. One factor that may contribute to the participation of parents who move is the continued

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[9] See the ECLS-K Third Grade User's Manual (NCES 2003) and the ECLS-K Methodology Report (NCES forthcoming).

participation of their children. In order to control costs, for ECLS-K children who moved outside of the PSU in which they were sampled only the parent interview was completed. For these children, no attempt was made to conduct the child assessments nor to contact and obtain survey data from the children's schools and teachers. Preliminary analyses suggests that the parent response rates for these children is less than one-half the response rates for those movers whose children continued to participate fully in the study.

The findings reported here once again suggest that certain sociodemographic and economic characteristics are related to the likelihood that individuals will participate in a survey. In this case, it is the likelihood that a parent will participate in a telephone survey conducted as a part of a national longitudinal study that involves the participation of their son or daughter. The finding that participation varies by race/ethnicity and SES is consistent with findings reported elsewhere (Grove and Couper 1998; Johnson et al. 2002). That response rates for low SES families and for the parents of minority children decline more than the rates for others is a concern for the ECLS-K. However, as noted above, this analysis did not attempt to examine these patterns as they relate separately to locating, contacting, and obtaining the cooperation of parents. Additional study of how each of the components of survey response is affected by this set of characteristics using the ECLS-K data is needed. Why the parents of Asian children seem more affected by differences in elapsed times between waves of data collection also requires more research. More analysis of the differences in participation of movers and non-movers is also needed. These analyses should include SES, race/ethnicity, and other child and family characteristics because these may confound the relationships between mover status and survey participation.

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