Published in final edited form as:
Elem Sch J. 2009 January 1; 109(3): 251–266. doi:10.1086/592306.

Who is Retained in First Grade? A Psychosocial Perspective

Victor L. Willson and **Jan N. Hughes**
Texas A&M University

Abstract

A sample of 784 children with below-median literacy performance in kindergarten or at the beginning of grade 1 was assessed in 5 areas of psychological and social variables: academic competence, sociodemographic characteristics, social/emotional/behavioral characteristics, school context, and home environment. We examined the contribution of academic competence to retention first, and then evaluated contributions of each of the other areas beyond academic competence. The 165 students retained in first grade were found to differ from promoted students on reading and mathematics achievement test scores, teacher-rated engagement and achievement, and intelligence as individual predictors of academic competence, but with direct effects only for reading and teacher-rated achievement when entered as a set of predictors. None additional variables had zero-order significant correlations with retention status. Using hierarchical logistic regression, beyond the effects of academic competence variables we found that only being underage for grade and the home environmental variables of positive parental perceptions of their child's school, sense of shared responsibility for education with the school, and parent communication with the school contributed significantly to retention. Implications for educational policy and intervention are discussed.

It is well established that early school failure forecasts long-term negative academic, behavioral, and occupational outcomes (Alexander, Entwisle, & Dauber, 1993; Finn, 1989; Reynolds & Bezruczko, 1993; Stipek, 2001). Retention in first grade, the topic of this study, is a clear indicator of early school failure. When a child fails to master grade-level skills, schools have to decide whether to pass the student to the next grade (social promotion) or to retain the student in the grade for a second year.

The increased emphasis beginning in the 1990s on school accountability and calls for ending social promotion contributed to a flurry of state legislation mandating that students demonstrate mastery of grade-level academic skills before progressing to the next grade (Sipple, Killeen, & Monk, 2004). Although such requirements are typically implemented in third grade or beyond, they are likely to influence retention policies at earlier grades. As a consequence, the incidence of grade retention at all grade levels is once again on the increase, following a period of decline in the 1990s (Gootman, 2005; Roderick, Bryk, Jacob, Easton, & Allensworth, 1999). The increased use of retention runs counter to the preponderance of empirical evidence from studies investigating the effects of grade retention on children's subsequent school adaptation, which indicates that retained students show little or no benefit or are harmed by this practice (for meta-analytic reviews, see Holmes, 1989; Holmes & Matthews, 1984; Jimerson, 2001). However, researchers have argued that methodological limitations of extant studies of the effect of retention provide a poor basis for reaching firm conclusions (Jimerson, 2001). The data reviewed are correlational rather than experimental, and failure to assure equivalence of retained and promoted children prior to selection for this intervention on

Correspondence concerning this article should be addressed to Victor Willson, 4225 TAMU, College Station, TX 77840-4225, E-mail: v-willson@tamu.edu.

variables associated with both retention and indices of school adjustment results in confounds between selection factors and outcomes (Wu, West, & Hughes, in press).

The purpose of this study was to identify child, classroom, and family variables that contribute to decisions to retain a student in first grade. An increased understanding of factors that place a child at risk for being retained in first grade is important for at least three reasons. First, there may be differences between espoused, or intended, bases for retaining a student and actual, perhaps unintended, bases. Awareness of such differences is a first step toward bringing actual practices more in line with intended practices. Second, a finding that a variable contributes to retention decisions after accounting for academic competence underscores the importance of additional research to determine whether that variable predicts responsiveness to (i.e., likely benefit from) retention. If, for example, being young at entry to first grade, relative to one's classmates, increases a child's probability of being retained in grade, future research is needed to determine if child's age at school entry moderates the effect of grade retention on child outcomes. If a variable predicts grade retention but does not predict a more positive result from being retained, the wisdom of considering that variable in decisions to retain a child is called into question. Third, considering grade retention as an indicator of early school failure, knowledge of factors that place a child at risk for grade retention informs early intervention programs and the developmental processes they target.

Previous studies of correlates of grade retention have provided a basis for selecting variables to investigate. Jimerson , Carlson, Rotert, Egeland, and Sroufe (1997) concluded that, relative to comparable low-achieving promoted peers, retained students were more likely to be male and to have poorer preretention emotional health, more maladjusted behaviors, and lower peer acceptance. Retained students' mothers had lower cognitive functioning, lower family income, and less education. McCoy and Reynolds (1999) concluded that the strongest predictors of retention were low early school academic performance, being male, low parent school participation, and high mobility. Meidel and Reynolds (1999) focused on parent participation, which was positively related to promotion and to later school achievement. They controlled statistically for family background. Although these studies did not investigate the full range of potential contributors to early academic success or failure, they identified important predictor variables beyond academic achievement.

A major limitation of the studies listed above is the incomplete representation of the psychological, environmental and social structures in which retained students function. Whereas most studies account for some aspects of general socioeconomic status (SES), such as student participation in free and reduced lunch programs (FRL), prior achievement or ability, and student personal characteristics such as gender or ethnicity, few researchers have examined in depth differences in cognitive functioning of children beyond global IQ, for example, differences in psychosocial processes, home environmental conditions, parents' aspirations related to education, or teacher and peer perceptions of children. No study or series of studies has attempted to examine all areas simultaneously for retention in grade 1.

Given the state of the empirical research on predictors of selection for retention in first grade, our study was largely exploratory rather than confirmatory of an integrated model of how factors at various levels of analysis (child, family, school) influence retention decisions. In addition to cognitive performance, we investigated variables representing four broad domains found in previous research to contribute to young children's early school adjustment, after controlling for cognitive performance (Hughes & Kwok, 2007; National Institute of Child Health and Development Early Child Care Research Network, 2003; Shonkoff & Phillips, 2000): Sociodemographic characteristics, including age at school entrance and family economic adversity; social, emotional, and behavioral functioning; classroom and school

contextual variables, including the provision of teacher support and school economic hardship; and the home environment, including parent involvement in education and family mobility.

The study of grade retention in first grade reported here, part of a prospective (beginning prior to retention of any participants), long-term follow-up of retained and promoted children, was conducted to understand the simultaneous covariation of these components of the child's world and their prediction of retention. Specifically, we intended to describe the variables that prospectively distinguished retained students from those promoted, and among them, those that add significant contributions to prediction after accounting for the differences due to the primary predictors of retention. Additionally, we conducted this study in the context of a state (Texas) mandate effective in 2001 that, similar to the federal legislation in No Child Left Behind (2002), requires mastery of minimum grade level competencies as a condition for promotion, beginning in third grade. Thus, this study was the first to examine correlates of grade retention in first grade in this educational context.

Method

Sample

The data come from a larger longitudinal study of the effects of grade retention. Seven hundred eighty-four first graders (47% female; average age = 6.57 years) participated in our study and attended schools in one of three school districts in Texas, one urban district within one of the five largest metropolitan statistical areas of the United States, and the other two districts in small cities within a census-defined metropolitan statistical area. Each district served over 6,000 students in grades K-12, and each was multiethnically diverse with at least 40% ethnic minority students. The sample had two cohorts from fall 2001 and fall 2002. Students were eligible for participation in the study if they obtained a score falling below their district's median (50^{th} percentile) on a state-approved literacy test administered at the end of kindergarten or at the beginning of first grade, spoke English or Spanish, and were not receiving special education services. Parental consent was obtained for 784 of 1374 children who scored below their district's median. Participants and nonparticipants did not differ significantly on gender, ethnic status, family language, eligibility for free or reduced-price lunch, or Limited English Proficiency (LEP) status (all comparisons based on chi-square statistics tested at significance level of .05).

The ethnic composition of the sample was 37% Hispanic, 34% Caucasian, 23% African American, and 6% "other" self-designation. Sixty-three percent of participants received free or reduced-price lunch. Fifteen students were initially selected and some information was collected but left the school systems before information on retention or promotion could be obtained, so the analyses in this article were based on 769 cases. Twenty percent of the students (n=165) were subsequently retained in first grade, and the others promoted (604). An earlier study by the authors (Willson & Hughes, 2006) analyzed predictors for a subsample of 283 Hispanic/Latino children. In this earlier study researchers examined several variables relevant only to Hispanic children (e.g., acculturation, bilingual classroom). We included the subsample of Hispanic/Latino children in the larger sample used here to maintain the variability we might expect in populations like that of our earlier study.

Children were tested individually after parental consent was obtained. All testing was conducted during school hours in separate testing rooms. Children were removed from their regular classroom for testing. Testing was conducted over two sessions of less than one hour each for most students.

We obtained teacher reports on children for 676 participating children (86%), and there were no significant differences in composition between these students and the 108 for whom teacher

reports were not returned using the same measures described above for participation. The parent questionnaire response rate was 64% (505 children), and children of respondents differed from those of nonrespondents only for ethnic minority status, with a significantly ($p<.05$) higher percentage of minority children's parents responding (74%) than white children's (60%). Peer response for sociometric interviews was requested for all children in classrooms with the participating target children, with a 68% positive response rate (n=603). Terry (1999 2000) reported that reliable and valid sociometric data can be collected using the unlimited nomination approach when as few as 40% of children in a classroom participate. When participation rates fall below 40%, results may not generalize to those that would have been obtained under conditions of full participation. Thus, we computed sociometric scores only for children in classrooms in which more than 40% of classmates participated in the sociometric assessment. Target children with and without peer sociometrics did not differ on any of the characteristics described earlier for initial participation comparisons. Results thus differ by source of information in the summary tables of data. We used multiple imputation to estimate missing data in child, teacher, and peer reports, discussed in detail below.

Study Variables

The study was designed to examine comprehensively five areas of theoretical and empirical constructs that previous research, in a fragmented manner, indicated were related to retention. The five areas include 1) academic competence; 2) sociodemographic characteristics; 3) social, emotional and behavioral characteristics; 4) classroom context; and 5) home environment. The complete data set contains 68 variables, excluding item data. A subset of the variables was considered for this study as representative and comprehensive for the five areas. The variables for each area are listed in Table 1. We selected them from the cumulative literatures on retention discussed earlier as the most salient to describe fully the children.

Assessment Procedures

During the late fall and early spring of first grade, research staff individually administered the Universal Nonverbal Intelligence Test (UNIT; Bracken & McCallum, 1998) and the Woodcock Johnson III Broad Reading and Broad Math tests (WJ III; Woodcock, McGrew, & Mather, 2001) or the comparable Spanish test of achievement, the Bateria Woodcock-Muñoz (Woodcock, R. W., & Muñoz-Sandoval, A. F., 1996). Children of Hispanic origin were individually administered a measure of English and Spanish Language Proficiency (Woodcock & Muñoz-Sandoval, 2001) to determine the language in which to administer measures. During the spring semester we mailed first grade teachers a questionnaire covering teacher perceptions of children's social, emotional, and behavioral adjustment, learning behaviors and performance; and resilience. Teachers also reported on the quality of the student-teacher and parent-teacher relationship. Parents were also mailed a questionnaire in the spring covering their perceptions of children's social, emotional, and behavioral adjustment; the home-school relationship; their educational aspirations for their child; family composition; and their employment and education. We paid teachers and parents $25.00 for their time in completing the questionnaires.

In the spring individual peer sociometric interviews were conducted with all children in the classroom whose parents gave consent for their participation. We used school district records to obtain information on children's eligibility for free or reduced-price lunch, age, ethnicity, and student mobility. School districts also provided information the following academic school year on students' current grade placement, which defined retention status.

Academic Competencies

Cognitive ability—Children were individually tested at school with the Universal Nonverbal Intelligence Test (UNIT; Bracken & McCallum, 1998). The UNIT is administered with the

use of culturally and linguistically universal hand and body gestures without any use of receptive or expressive language. It measures general intelligence by assessing complex memory and reasoning abilities. We used the abbreviated version of the UNIT, which yields a full-scale IQ that is highly correlated (r =.91) with scores obtained with the full battery and which has demonstrated good test-retest and internal consistency reliabilities as well as construct validity (Bracken & McCallum, 1998; Hooper, 2003).

Achievement (reading and math)—The WJ-III Tests of Achievement (Woodcock et al., 2001) is an individually administered measure of academic achievement. We used the WJ-III Broad Reading W Scores (letter-word identification, reading fluency, passage comprehension subtests) and the WJ-III Broad Math W Scores (calculations, math fluency, and math calculation skills subtests). W scores are based on the Rasch measurement model, yielding an equal-interval scale. Extensive research has documented the reliability and construct validity of the WJ-III and its predecessor (Woodcock & Johnson, 1989; Woodcock et al., 2001).

The*Batería Woodcock-Muñoz: Pruebas de aprovechamiento – Revisada* (Woodcock & Muñoz-Sandoval, 1996) is the comparable Spanish version of the *Woodcock--Johnson Tests of Achievement—Revised (WJ-R*; Woodcock & Johnson, 1989), the precursor of the *WJ-III*. The Woodcock Compuscore program yields Broad Reading and Broad Math W scores for the *Batería-R* that are reported to be comparable to W scores on the *WJ-R* used in this study (Woodcock & Muñoz-Sandoval, 2001).

Teacher perception of achievement—Teachers were asked to describe child-participants' academic performance on three items using a Likert-type scale ranging from 1 (almost never) to 6 (almost always). The items were "Performing academically at grade level", "Able to read grade level material and answer questions about what he/she has read" and "Able to solve grade level math problems". The internal consistency (alpha) of the scale for this sample was .94.

Teacher-rated engagement—Teachers rated children's classroom engagement on a 10-item scale, using a 1–5 rating scale (Hughes & Kwok, 2006). Example items include: "Is a reliable worker," "Perseveres until the task if finished," and "Sets and works toward goals." The internal consistency of the scale for our sample was .95.

Sociodemographic Variables—Child's age at entrance to first grade, gender (female=0; male = 1), and eligibility for free or reduced-price lunch (coded 0 if not eligible and 1 if eligible) were obtained from school records.

Social, Emotional, and Behavioral Adjustment

Peer ratings: In individual interviews conducted in the back of the classroom or in the hallway outside the classroom, research assistants (undergraduate psychology students enrolled in a research course) asked children to nominate as few or as many classmates as they wished who could best play each of several parts in a class play (Masten Morison, & Pelligrini, 1985). Prior to eliciting children's nominations, the interviewer read aloud the names of each child in the classroom and asked the children if they knew that child. If the child said no, the interviewer identified the child. Of interest in this study are the aggression (start fights, say mean things, or hit others), hyperactive (do strange things and make a lot of noise; they bother people who are trying to work), and emotional symptoms (cry a lot and look sad) and cooperative/leadership (gets along well with others; is a good leader) items. We calculated a score for each child in the classroom based on the number of nominations received. All nomination scores were standardized within classrooms. Procedures similar to these have demonstrated good test-retest reliabilities and construct validity (Hughes, 1990).

Teacher ratings of adjustment: Teachers completed the Strengths and Difficulties Questionnaire (SDQ, Goodman, 2001), a brief (25-item) screening measure for psychopathology. Each item is rated on a 0–2 scale (i.e., not true, somewhat true, certainly true). The SDQ yields five scales (aggression, hyperactivity, emotional problems, peer problems, and prosocial behaviors), each consisting of five items. The SDQ has good evidence of internal consistency, factor structure, and predictive validity (Goodman, 2001). Due to high correlations of the peer problems scale with three of the scales for our sample (Hill & Hughes, in press), we used all but the peer problems scale in this study. The teacher-rated measure of resilience was derived from a 15-item scale of ego control and ego-resiliency adapted from the California Child Q-Set (Caspi, Block, Block, & Klopp, 1992). Example items include resourceful in initiating activities; self reliant; persistent, rigidly repetitive (reverse scored), and falls to pieces under stress (reverse scored). The resulting alpha for this scale for the study sample was .85.

Composite variables for social-emotional adjustment: We computed composite scores for aggression, hyperactivity, emotional symptoms, and prosocial behaviors as the means of the standardized teacher and peer ratings for each of these constructs. Peer nominations as "depressed" and as "cooperative/leader" were considered as measures of constructs of emotional symptoms and prosocial behaviors, respectively. For each variable of the composites, peer and teacher ratings were significantly correlated (all p values < .001, range = .23 [emotional symptoms] to .56 [hyperactivity]; average r = .375). Reliability coefficients for these measures were estimated using Nunnally's method for composites with estimated scale reliabilities and ranged from .82 to .85.

School Context

Teacher-rated support and conflict: The Teacher Relationship Inventory (TRI; Hughes, Cavell, & Willson, 2001) asks teachers to indicate on a five-point Likert-type scale their level of support (16 items) or conflict (6 items) in their relationships with individual students. In our sample, internal consistency reliabilities (alphas) were .92 for support and .94 for conflict. The TRI has good evidence of construct validity (Hughes & Kwok, 2006; Meehan, Hughes, & Cavell, 2003).

School SES composition: We obtained the percentage of a child's schoolmates who were eligible for free or reduced-price lunch from district reports to the state.

Home Environment

Parent involvement in education: The Parent Report of Involvement Scale consists of 23 items adapted from the Parent-Teacher Involvement Questionnaire (Kohl et al., 2000) and six additional items covering parent-perceived parental self-efficacy and roles. Exploratory and confirmatory factor analysis on participants in the larger study found good support for each of the four theoretically derived dimensions of parent involvement, positive perceptions about school, communication, parent-teacher shared responsibilities, and parent school-based involvement (Wong and Hughes, in press). Reliability analyses revealed good internal consistency for the four subscales, ranging from .72 to .93.

Parent expectations for achievement: Parents were asked to indicate the highest level of education they expected their child to complete, from elementary school (1) to doctoral or professional degree (10). This single question has been found to make a unique contribution to the prediction of children's achievement (Ma, 2001).

Mobility: Mobility was coded as 0 (no) or 1 (yes) based on whether the student changed schools during a one year period.

Data Analysis—We conducted two sets of descriptive analyses. First, simple differences between the two samples of students, retained and promoted, were analyzed variable by variable within each set listed above. For intervally-measured variables we computed two-group t-statistics, either assuming homogeneity of variance or adjusted using Welch's correction for non-homogeneity (Levene's F-test, $p < .05$) for normally distributed data or the two-sample Mann-Whitney test for ranks if not normally distributed (kurtosis and skewness greater than ±2.0 was our criterion for non-normality, since various simulation studies have indicated relative robustness for covariance-focused analyses with smaller values) (DeCarlo, 1992). For nominal- and ordinal-level variables, we computed Pearson's chi-square association. Means, standard deviations, and group sample sizes or cell frequencies were reported for each measure. In addition, we computed a logistic regression for each variable as a predictor of retention and the odds-ratio for that variable. For all variables the significance for the logistic regression was identical to the Pearson correlation significance at .05 and .01 levels.

The second set of analyses evaluated the partial or unique contributions of each variable beyond the main effects of academic competence variables. Students were clustered in 207 classrooms, with an average cluster size of 3.77. The range of clustering included 44 classrooms with one student, 39 with two students, 24 with three, 28 with four, 19 with five students, 14 with six, 13 with seven, 7 classrooms with eight students, 4 with nine and 10, one with 11 students, and two classrooms with 13. We employed hierarchical (multilevel) logistic regression analyses using the MPLUS 4.2 program (Muthén & Muthén, 1997– Muthén & Muthén 2007) to enter Unit IQ, WJIII reading and math scores, teacher-rated achievement, and teacher-rated engagement in the first block; we entered each additional set of variables from our other constructs in the second block jointly as well entering each individual variable within the set separately. Testing almost 800 children individually required most of the school year. Because achievement changes can be expected to occur, particularly in reading, date of testing was used to predict reading and mathematics performance , and the estimated increase was removed in predicting reading and mathematics scores, so that we compared all children for the same testing date (selected as October 19, although any test date would produce the same variances and covariances).

Conditional estimates of the effect, the associated standard errors, and the probabilities for each additional variable's contribution above the academic competency block were reported. Because there are no agreed-upon measures for R-square contributions to date in multilevel logistic regression, we also analyzed the data as a single-level model to obtain the Nagelkerke R-square statistic (Nagelkerke, 1991), which compares the null model and fitted model likelihood functions as a proportion of the maximum possible R-square value.

To clarify this procedure, consider the first HLM analysis we performed in Table 2. The five academic competency measures predicted retention. The parameter estimates are given for each variable in this set, with standard errors and asymptotic z-statistic (normal) probability and the estimate of effect size based on commonly computed value for a t-statistic, with sample size replacing degrees of freedom. The R-square for all five predictors and chi square statistic with its significance are reported for the single-level logistic regression, since there are no agreed-upon measures in logistic HLM. The analysis of sociodemographic variables shown next first fixed the values from the Academic Competencies variable analysis and then freely fit the three sociodemographic variables as predictors in the logistic HLM analysis, each one separately and as a set. The individual contributions are given as b-weights with their standard errors and significance, and the contribution of the set of three is given as an R-square and chi square change statistic with significance. The succeeding analyses similarly all fit only the academic competency variables with the estimates of the first analysis and then added the variables for that grouping.

We subjected the dataset to multiple imputation using the NORM program (Schafer, 1999) to reduce bias due to missing data. Patterns of missingness were examined for indications of nonrandomness, and missing at random (MAR) was assumed. We regressed each predictor on other predictors and their missingness patterns as recommended by Shafer and Graham (2002). We found that the only significant relationships between missingness and any predictors were associated with parents' reports of their involvement with schools and their expectations for their child's education. We conducted a followup discriminant analysis predicting child ethnicity because we knew that nonresponse was higher for ethnic minorities. The home environment variables were concluded to be missing not at random (MNAR) because their missingness patterns were associated with ethnic membership. Because parent data were deemed unsuitable for imputation, we analyzed only observed data for the home environment block. This resulted in slightly different estimation for the academic competence block sum of squares, but we felt that the sample variation should be properly estimated for the parent data.

Results

Differences between children retained or promoted at the end of grade 1 are summarized below. Variables, test statistics, effect sizes and Pearson correlations or chi-square associations (for categorical measures), and promoted-retained group means and standard deviations or cell numbers are reported in Table 1. We also report logistic regression odds-ratios with the significance of their associated regression weights. For every correlation and logistic regression, the statistical significance was virtually identical.

Descriptive Differences

Academic competence—All five variables were significantly related to retention, and all indicated lower performance for retained children. Effect sizes calculated from point-biserial t-statistics for retention were all negative, ranging from about −0.24 to −0.52. Odds-ratios were all near 1.0, indicating small risk of retention individually by variable.

Sociodemographic characteristics—Economic disadvantage and age were both significantly related to retention, whereas gender was not. The ratio of retained students to promoted among economically disadvantaged was 117/351, and for non-disadvantaged the ratio was 48/253, approximate effect size of about 0.27 and odds-ratio of about. Retained children were younger (6.45 years, SD = .41) than promoted (6.60, SD = .41), effect size approximately 0.37, with an odds-ratio of almost 3, generally considered meaningful in many contexts.

Social, emotional, and behavioral characteristics—Ego resilience was significantly related to retention, with retained children exhibiting lower resilience (effect size −0.25). Retained and promoted students differed only on hyperactivity for the four composites based on teacher and peer ratings of behavioral adjustment. Effect size for hyperactivity was 0.23, with retained children rated more hyperactive. The odds-ratios were not greatly different from 1, indicating small relative risks associated with elevated predictors.

School context—Teacher support was negatively related to retention (−0.16 effect size), whereas school percentage economic disadvantage was positively related (0.22), but odd-ratios were little different from 1.0.

Home environment—Parent communication with school was related to retention, (effect size 0.29), as were parent positive perceptions of school (effect size 0.27), and parental aspirations for educational achievement of their child (effect size −0.20). The latter is interpreted as follows: parents with lower expectations for education tend to have children at

greater risk for retention. Finally, mobility was significant (43 of 165 among retained students, compared to 83 of 604 among promoted students, effect size 0.37 and odds-ratio of over 2, the second-largest ratio among the predictors of retention in this study.

Hierarchical logistic regression contributions to retention

We conducted hierarchical logistic regression analyses with the variables described in the earlier sections. Wald X^2statistics are reported for unique contributions of individual variables. For academic competency variables, the contribution of all five variables was always included first in a block-wise logistic regression to examine the additional contributions of the other sets of variables and of each variable within each set individually. The multilevel and single-level logistic regressions did not differ in significance for any variable at either the individual or multiple regression analysis except teacher-rated achievement, which was not significant individually in the single-level analysis but became significant in the multilevel analysis, noted below. Estimated regression weights and standard errors changed somewhat across the two analysis approaches.

Academic competence—The set of five predictors had a Nagelkerke R^2 of 0.25, $p < .001$. Although all five variables in this block were individually predictive of retention, only WJ Broad Reading W-score ($z = -4.16$, $p < .001$) and teacher rating of achievement ($z = -2.49$, $p < .001$) had direct effects in the multiple regression.

Sociodemographic characteristics—The three variables in this block increased the variance accounted for in retention to 0.30, with a significant increase over the academic competency block ($p < .001$). Only age had a significant ($z = -3.97$, $p < .001$) direct effect on retention in the multiple regression, whereas individually both age and economic disadvantage added significantly at $p < .05$ to the logistic regression when put in separately.

Social, emotional, and behavioral variables—None of the variables examined had direct effects on retention individually or in the multiple regression. The set did not increase R^2 significantly.

School context—The three school variables did not contribute to prediction of retention as a set significantly beyond academic competence as a set or individually.

Home environment—The six home environment variables made a significant additional contribution to retention beyond academic competence, increasing R^2 to 34%. Two variables had significant individual direct effects. Higher reported communication with the school ($p < .005$) and a higher parent positive perception of their school ($p < .002$) both predicted retention beyond academic competence individually. In the multiple regression, positive perception ($z = 3.07$, $p < .001$), communication ($z = 2.138$, $p < .05$), and shared responsibility ($z = -2.759$, $p < .003$) had significant direct effects at $p < .05$. The addition of sense of shared responsibility with the school for their child's educational achievement in the multiple regression, although not adding to the regression as a single variable, reflects the covariation of this variable with others that can occur in multivariate relationships not apparent in bivariate correlation.

Discussion

Consistent with most of the literature on retention, the results of this study confirm that children's academic competence is the greatest constellation of variables associated with, and arguably responsible for, retention in first grade. Our exploration of intra-child variables had greater depth than any other study of retention in first grade of which we are aware. The conclusion to be reached is that retained and promoted children exhibit such great variation in

their personality, social, emotional, and behavioral characteristics that finding systematic differences in typical school decisions regarding retention is probably unlikely in grade 1. Our exploration of children's circumstances, their environment and home support, although not unique in the retention literature, was more comprehensive than most and was the most detailed at grade 1.

As a set, the variables we termed academic competence predicted about 25% of the likelihood of retention. Among these variables, Woodcock-Johnson III Broad Reading W-score was most predictive, and when placed with the other academic predictors, was the sole variable to maintain a direct significant regression coefficient to retention. This indicates that literacy plays the dominant role in successful grade 1 progress. Given that IQ is not predictive when controlling for reading, retention is not related to cognitive ability but to preparation in a child's early years for schooling.

The sociodemographic variables we employed improved overall prediction of retention slightly to an R^2 of 30%, with both economic disadvantage and younger age having direct significant regression weights in the blockwise regression. Age alone retained a direct independent contribution to academic competency individually. This is also consistent with previous literature on the developmental role of age in hindering children's progress (Stipek & Byler, 2001). It is important to note that our measure of literacy, the WJ-III Broad Reading Literacy W score, is age-based. Thus, the conditional finding for age cannot be explained solely by younger children having less developed literacy skills. One alternative is that the interaction of age and literacy skills is particularly potent. To explore this we computed a centered interaction of the reading score and age and added it to the block, but it did not add significantly to either the overall regression ($p > 0.3$) or individually ($p > 0.3$). Perhaps children who have not matured sufficiently in social and emotional skills have difficulty progressing well in first grade, or perhaps teachers or parents believe younger children are more likely to benefit from an extra year in first grade. Gender was not a predictor in our study, contrary to the findings of Jimerson et al. (1997) and McCoy and Reynolds (1999).

In recent years researchers have paid increased attention to the construct of resilience. In our study teacher-rated resilience predicted retention in a simple logistic regression. With academic competence accounted for, however, it did not contribute further to the prediction. Perhaps resilience, as we measured it, affords protection from grade retention due to its effect on other processes that enhance academic competence.

The measures we took of social, emotional, and behavioral characteristics; aggression; hyperactivity; emotional problems; and prosocial behaviors were each composites based on both teacher and peer observations of the target children. These measures have been associated with various school problems or protective factors in different literatures and were potentially important predictors in understanding retention, but neither singly nor as a set did they improve prediction over academic competence. The low correlations indicate high variance in these measures across promoted and retained students that will likely prevent systematic prediction in other samples. Contrary to Jimerson et al.'s(1997) results, adjustment was not a predictor of retention, at least as we would define it in our social, emotional, and behavioral measures.

The variables we studied concerning school conditions produced results both perhaps new and somewhat surprising. Although we did not assess classroom climate or environment directly, we did measure teachers' direct support and conflict with target children. These proximal variables can be expected to be more salient to a child's performance than more general measures, and we found no evidence for their effect on retention.

The home environment variables had great potential to add to the understanding of retention. We focused on home-school involvement of parents or caregivers. The parents of retained

children had higher ratings of communication with their school and a positive perception overall. When academic competence was controlled, positive perception was positively associated with retention, and sense of shared responsibility for child's achievement still had direct effects on retention.

Dimensions, or types, of parent involvement, parents' shared responsibility for the child's educational achievement, and parents' expectations for their child's academic achievement have been most consistently predictive of student's educational outcomes (Jeynes, 2005; Reynolds, Mavrogenes, Bezruczko, & Hagemann, 1996; Weiss, Caspe, & Lopez, 2006). Our results about parental sense of shared responsibility with the school for their child's education wee mixed with respect to the previous literature. In our study this variable was unpredictive as a simple predictor or individually beyond academic achievement's contribution, whereas as a predictor within the set of home environment variables it did have a direct positive effect on higher retention. Lower sense of shared responsibility was associated with higher retention: to paraphrase, it is the school's task, not mine, to educate my child. Our measure of shared responsibility included items that asked parents to report on their direct involvement in learning activities at home (e.g., "I help my child at home with subjects when my child has difficulty") as well as their beliefs that they shared responsibility for their child's schooling outcomes (e.g., "I am responsible for solving my child's learning problems at school"). We also found significance for parent expectations of achievement as a simple predictor, but it did not add to the prediction of retention beyond the academic variables, which may accurately reflect the understanding parents have of their child's current school difficulties.

The finding that children of parents who held generally positive perceptions about the school (e.g., "This school is a good place for my child to be; "My child's school is doing a good job of preparing children for their future") were more likely to be retained in grade may appear counter intuitive. Perhaps parents of retained children tend to go along with teachers' and principals recommendations to retain their child out of a lack of self-efficacy for making educational decisions and a lack of knowledge about school processes and procedures. An ethnographic, longitudinal study of the participation of African American parents of 24 preschools in special education programs from kindergarten to first grade chronicled how communication between home and school for many parents reinforces acquiescence on the part of parents rather than collaboration (Harry, Allen, & McLaughlin, 1995). Our results suggest that parents of retained children are perhaps not sure how schooling works but hold a generally positive view of schools that is perhaps unrealistic or uninformed. They may be more likely to acquiesce to the school's recommendation to retain their child. Given their lesser sense of shared responsibility, they expect the school's decisions about retention to be appropriate.

Increasing mobility, moving one or more times during the first grade year, was predictive of retention, a fairly obvious result also that McCoy and Reynolds (1999) also obtained. When academic competence was controlled, however, the residuals did not add to the prediction of retention. The large standard error and small number of students who were retained and were mobile (n=43) indicate that this result is probably not stable or interpretable. It is inconsistent with the finding of Meidel and Reynolds (1999), whereas our simple correlation is consistent with other mobility literature.

Our study included children from many economic, social, and ethnic conditions. Academic competence, not demographics, psychosocial, or behavioral problems, was the primary determiner of retention. Home and environmental conditions, however, significantly and meaningfully contribute to retention. Some are amenable to change, such as better parental information about their role in children's early schooling, improved home literacy activities prior to schooling, or careful evaluation by schools of the age of entry of children into first

grade, whereas effects due to economic circumstances can only be remedied by improving economic opportunities for families.

The findings that parental direct involvement reduces risk of retention but that general satisfaction with school increases the risk of retention are consistent with the view that children benefit when parents assume responsibility for children's schooling and advocate for them, based on their perception of their child's needs. These findings point to the potential benefit of parent involvement programs prior to entrance to public school. The long-standing Chicago Child- Parent Centers program provides an excellent example of how efforts to actively involve parents in the education of their preschool children enhance children's future educational attainment. Indeed, the positive effects of children's participation in this program on their subsequent achievement were completely mediated by the effect of the program on parents' involvement in their children's schooling (Reynolds et al., 1996).

Acknowledgments

This research was supported in part by a grant to Jan N. Hughes from the National Institute of Child Health and Human Development (5 R01 HD39367-02).

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Table 1

Descriptive Statistics for all Study Variables

Variable	N	Mean	SD	Correlation with Retention	Effect Size	Odds-Ratio[a,b]
Retained (yes – no)	769	21.5	41.1	n/a	n/a	
Academic competencies:						
Woodcock-Johnson:						
Reading W	752	434.0	26.5	−0.273**	−0.52	1.032**
Math W	752	462.9	13.3	−0.131**	−0.28	1.021**
Teacher-rated achievement	669	4.02	1.42	−0.195**	−0.38	1.400**
Teacher-rated engagement	672	3.53	1.26	−0.145**	−0.29	1.460**
Unit IQ	775	92.8	14.7	−0.107**	−0.24	1.091**
Sociodemographic characteristics:						
% female[c]	784	52.6	50.0	0.048	0.12	1.264
Economic disadvantage[c]	750	61.3	48.7	0.101**	0.27	1.697**
Age in months	783	6.57	0.39	−0.150**	−0.32	2.959**
Social, emotional and behavioral characteristics:						
Ego resilience	673	3.51	0.81	−0.123*	−0.25	1.383**
Aggression	426	−0.014	0.85	0.025	0.05	1.073
Hyperactivity	426	0.002	0.87	0.114**	0.23	1.354**
Emotional problems	423	−0.013	0.78	0.045	0.09	1.140
Prosocial behavior	446	−0.048	0.81	−0.070	−0.12	1.236
School context:						
Teacher-rated support	670	3.75	0.77	−0.074*	−0.16	1.256*
Teacher-rated conflict	674	1.87	1.01	0.057	0.14	1.086
School % economic disadvantage	737	0.57	0.29	0.089*	0.22	1.009*
Home Environment:						
Parent-school:						
Communication	497	2.65	0.67	0.108*	0.24	1.485*
Involvement	499	2.26	0.53	0.039	0.08	1.189
Shared responsibility	498	4.37	0.48	−0.074	−0.14	1.264

Variable	N	Mean	SD	Correlation with Retention	Effect Size	Odds-Ratio[a,b]
Positive perception	499	4.21	0.75	0.113*	0.27	1.475*
Aspirations	581	7.65	2.01	−0.106*	−0.20	1.131*
Mobility[c]	769	16.1	34.9	0.137**	0.39	2.212**

*p < .05

**p < .01

[a]Odds-ratio equals probability of being retained over probability of being promoted per unit change for the correlated variable.

[b]Significance for chi square statistic associated with logistic regression with df = 1.

[c]contingency coefficient for binary variables denoted as % for Pearson association estimate of correlation, for logistic regression a binary predictor.

Table 2

Hierarchical Logistic Regression Analyses Predicting Retention from Child and School Variables

Model	N	b[a]	s(b)	Sig.[b]	Effect[c]	R^2 total[d]	$\Delta\chi^2$	Sig. ($\Delta\chi^2$)	df
1 Academic competence:	769					0.248	134.62[e]	.000	5
Unit IQ		−0.001	0.012	0.934	−0.003				
Woodcock-Johnson									
Reading W		−0.048	0.011	0.000	−0.155				
Math W		−0.007	0.014	0.617	−0.018				
Teacher-rated:									
Engagement		−0.071	0.160	0.657	−0.02				
Achievement		−0.512	0.206	0.012	−0.089				
2 Sociodemographics:	769					0.304	28.54	.000	3
Economic									
disadvantage		0.291	0.341	0.393	0.039				
2 Sociodemographics:									
% Female		0.020	0.282	0.943	0.003				
Age in months		−1.578	0.420	0.000	−0.169				
3 Social, emotional and behavioral characteristics:	769					0.262	7.882	.163	5
Ego resilience		0.134	0.185	0.469	0.033				
Aggression		−0.176	0.191	0.357	−0.042				
Hyperactivity		0.052	0.178	0.770	0.013				
Emotional problems		−0.077	0.183	0.674	−0.019				
Prosocial behaviors		−0.014	0.182	0.939	−0.004				
5 School context:	769					0.252	2.112	.550	3
School % economic Disadvantage		0.009	0.010	0.368	0.041				
Teacher-rated support		0.018	0.199	.928	−0.004				
Teacher-rated conflict		−0.119	0 .139	.391	−0.039				
6 Home environment:	480					0.344	25.85	.001	6
Parent-school:									
Communication		0.956	0.338	.005	0.128				
Positive perception		0.963	0.314	.002	0.139				
Sense of shared									

Model	N	b[a]	s(b)	Sig.[b]	Effect[c]	R^2 total[d]	$\Delta\chi^2$	Sig. ($\Delta\chi^2$)	df
responsibility		−0.590	0.508	.245	−0.053				
Home involvement		0.538	0.408	.187	0.060				
Educational aspiration		0.024	0.126	.849	0.009				
Mobility		0.832	0.509	.102	0.074				

[a] Regression coefficient predicting log-odds ratio

[b] Asymptotic normal distribution probability for b/s(b)

[c] Effect size as correlation computed as ratio of b/s(b) divided by square root of b/s(b) squared plus N

[d] R-square computed using Nagelkerke likelihood ratio statistic

[e] Model 1 involves only variables in the academic competence block. In each of the other models the variables were added hierarchically and sequentially to the academic competence block. Thus, all models except Model 1 involved two blocks, with academic competence always the first block. For Model 1, the regression weights are based on simultaneous entry of all variables in block 1. For all other models the regression weights are those for the individual variable added to the academic competence block.