

SORTING OUT SUCCESSFUL FAILURES: EXPLORATORY ANALYSES OF FACTORS ASSOCIATED WITH ACADEMIC AND BEHAVIORAL OUTCOMES OF RETAINED STUDENTS

PHILLIP FERGUSON

Uinta County School District Number One, Evanston, Wyoming

SHANE R. JIMERSON

University of California, Santa Barbara

MICHAEL J. DALTON

University of Wyoming

This prospective longitudinal study followed a sample of 106 kindergarten students through 11th grade examining the effects of family characteristics, school readiness, socialization, and student demographics on academic achievement and behavioral adjustment outcomes. These educational outcomes were contrasted among four groups consisting of: 1) early grade retainees; 2) transitionally placed retained students; 3) students recommended for transitional placement, but promoted; and 4) regularly promoted students. While previous studies examining the efficacy of early grade retention focus exclusively on between-group comparisons, this study examines the family and individual characteristics of successful and unsuccessful retained students by including both between-group and within-group effects on academic and behavioral outcomes. The results of this study demonstrate that retained students' initial school readiness, socioeconomic status, mother's level of education, parental value of education, kindergarten personal-social functioning, and chronological age are distinctly associated with subsequent academic or behavioral outcomes. Variables associated with relative educational success following early failure are delineated and research implications are discussed. © 2001 John Wiley & Sons, Inc.

Extra-year grade placements, often referred to as grade retention, have long been utilized as an intervention for children identified as at-risk for early school failure (Ames, 1980; Jackson, 1975). Yet, over 50 years of educational research has failed to support any form of grade retention as an effective intervention for low achievement or marginal socioemotional adjustment (Fowell & Lawton, 1992; Hauser, 1999; Jackson, 1975; Holmes & Matthews, 1984; Holmes, 1989; Jimeron, in press; McGill-Frantzen & Allington, 1993; Smith & Shepard, 1987). Many studies that have accordingly sought effective interventions to address school failure have focused upon between-group differences regarding retained, transitionally placed, and promoted group samples. However, no studies have been found which investigated within-group factors associated with academic and behavioral outcomes of retained students. In addition to providing further data regarding retained student and promoted student group differences, the purpose of this study was to examine within-group variables that may influence relative student success subsequent to early school failure.

Retention Research

A wealth of educational research has examined the efficacy of traditional grade retention and transitional grade placements. Recent retention research has concluded that, "... following retention, the retained students displayed exacerbated behavior problems . . .," and "... retaining these students . . . was ineffective, if not harmful, in terms of their adjustment" (Jimeron et al., 1997,

Correspondence to: Phillip Ferguson, Ed.D., School Psychologist, at Uinta County School District No. One, Box 6002, Evanston, WY 82931-6002 <pferguson@uinta1.k12.wy.us> or Shane Jimeron, Ph.D., University of California at Santa Barbara, Graduate School of Education, Counseling, Clinical, and School Psychology, 2208 Phelps Hall, Santa Barbara, CA 93106-9490 <Jimeron@education.ucsb.edu>.

p. 22). This longitudinal study found that in the 6th grade, after controlling for initial adaptations, retained students exhibited poorer socio-emotional adjustment when compared to similar low-achieving, but promoted students (Jimerson, 1997). Subsequent analyses of this same population through the high school years illustrated that retained students had lower levels of academic adjustment at the end of 11th grade, were more likely to drop out of high school by age 19, were less likely to receive a diploma by age 20, were less likely to be enrolled in a post-secondary education program, received lower education/employment status ratings, were paid less per hour, and received poorer employment competence ratings at age 20 in comparison to a similar group of low-achieving, promoted students (Jimerson, 1999).

The data from the above study is consistent with meta-analyses of retention research. Several meta-analyses report statistically significant differences favoring the promoted students in the following areas of assessment: academic achievement, language arts, reading, mathematics, work study skills, social studies, personal adjustment, social adjustment, emotional adjustment, behavior, self-concept, attitude toward school, and attendance (Holmes, 1989; Holmes & Matthews, 1984; Jimerson, in press). In comparison with promoted students, the retained students had lower academic achievement, poorer personal adjustment, lower self-concept, and held school in less favor than promoted students.

Transition Classroom Retention Research

Despite the abundance of research which fails to demonstrate the efficacy of early grade retention, school readiness retention programs have traditionally been endorsed for young or immature students, often on the basis that such programs provide a “gift of time” which will facilitate subsequent educational success in academic achievement and socioemotional adjustment (Bryant, Clifford, & Peisner, 1991; Cherry, 1996; Patton & Wortham, 1993; Shepard, 1990; Uphoff, 1990, 1995). However, the preponderance of research has not offered support for this type of retention (Buntaine & Costenbader, 1997; Earley, 1995; Ferguson, 1991; Ferguson & Streib, 1996; Karweit & Wasik, 1992; Shepard, 1991).

Beyond the short-term “grade replacement” effect of a year or two, students placed in transition classrooms do not reflect a durable academic or behavioral advantage over control samples (Berkey, 1994; Dennebaum & Kulberg, 1994; Kagan, 1992, 1990). By mid-elementary school, these transitional students are now a year older and have been found to achieve significantly below their grade-level peers who are a year younger (Ferguson, 1991; Meisels, 1992; Phillips, 1992; Shepard, 1989). By middle school, such group differences are well established. Wang & Johnstone (1997) found that whereas 83% of regularly promoted 8th grade students passed the Texas Assessment of Academic Skills test, only 32% of students placed in transitional classrooms passed the same test. Some studies noted a distinct disadvantage from transition classroom placement (Walsh et al., 1991), particularly arising from the homogeneity of having many at-risk students in self-contained classrooms. Thus, holding students back in any form has not been found to be academically helpful regardless of the name given to the what amounts to retention (Hauser, 1999; Jimerson, in press; Shepard & Smith, 1989).

Do Some Students Benefit from Retention?

Past studies have focused primarily on between-group comparisons of the academic outcomes between retained and non-retained samples (Ferguson, 1991; Siegel & Hanson, 1991). Wang & Johnstone (1997) raised a pivotal question, “Why do retained students appear to perform less well in subsequent grades than comparable at-risk peers who are promoted?” Whereas much research has demonstrated that retention does not lead to retained student group advantages over comparison promoted student groups, and retention does not assist students to keep academic pace

with their subsequent grade-level peers, there may be within-group factors among retained students which yield significant effects upon their academic outcomes. No studies have been found however, which examined the initial characteristics of successful or unsuccessful retained students and no studies have been found which examined within-group main-effects regarding academic or behavioral outcomes. Furthermore, in a review of the literature, no examination of within-group outcome effects of retained students was found to have addressed family characteristics such as mother's level of education and parental attitudes toward education, or students' initial socio-emotional or behavioral status within the school setting (Karweit & Wasik, 1992; Phelps et al., 1992).

Factors That May Influence Academic Success

Research examining the characteristics of transitionally-placed, regularly retained, and promoted students suggests that poor, young, non-Caucasian males tend to be designated for transitional classrooms (Cosden & Zimmer, 1993; Walsh, Ellwein, Eads, & Miller, 1991). Other studies have examined traditionally retained kindergarten samples (Jackson, 1975; Light, 1998; Mantzicopoulos, 1997; Smith & Shepard, 1987). When comparing kindergarten retainees with their promoted peers, Meisels & Liaw (1993) noted significant differences between subsequent grades and achievement, which varied with socioeconomic status (SES) as a main effect.

Jimerson and colleagues (1997) found parental attitudes towards school, parents' involvement with the schools, and students' elementary school social acceptance and emotional health ranking to be significant discriminatives that distinguished a population of retained students from low-achieving, yet promoted students. In this same study, student and parental intellectual variables were identified as non-discriminative. Reynolds (1991) noted that, among young at-risk students, family background and early social adjustment mediated later progress in school. Mother's level of education was included by Zill (1995) as a significant family risk factor related to early developmental delays. In other educational research, the family characteristics of higher socioeconomic status, higher maternal level of education and value of education have been positively associated with educational achievement outcomes, while the student characteristics of older age and higher levels of aggression have been negatively associated with similar achievement outcomes (Ferguson, 1991; Ferguson & Streib, 1996; Jimerson, Egeland, & Teo, 1999).

Research has demonstrated that children's initial social adaptability within school settings has a strong concurrent positive relationship to early readiness measures and to later achievement (Porwancher & DeLisi, 1993; Sanson, Smart, Prior, & Oberklaid, 1993). In most cases, early social adaptability is more predictive of achievement than early cognitive measures. Lack of early social skills competencies have also been found to be strong predictors of later student conduct problems (Olson & Rosenblum, 1998). Furthermore, the best clinical predictors of social maladjustment in children are home socialization factors (Murray & Myers, 1998). Pellegrini (1992) suggested that early social competencies themselves may be transformed into academic, school-based competencies such as literacy and other positive educational outcomes.

The factors related to academic outcomes presented above may also be related to success or failure following early grade retention. The current study examined *within-group* factors (among retained students) which may yield a significant effect on academic outcomes. In this study, specific academic and behavioral outcomes were designed as the dependent variables while the independent variables were socioeconomic status, mother's level of education, parental value of education, age and kindergarten personal social functioning. The following questions were addressed in this prospective longitudinal study of academic and behavioral outcomes of retained students.

1. Between the sample groups, are there differences in family characteristics, socialization, student demographics, and the provision of school-based support services?
2. Is there a relationship between family socioeconomic status and retained students' academic and behavioral outcomes?
3. Is there a relationship between mother's level of education and retained students' academic and behavioral outcomes?
4. Is there a relationship between parental value of education and retained students' academic and behavioral outcomes?
5. Is there a relationship between kindergarten personal social functioning and retained students' academic and behavioral outcomes?
6. Is there a relationship between age and retained students' academic and behavioral outcomes?
7. What is the combined predictive strength of the initial contextual variables relative to the early readiness indices on the academic outcomes of retained students?
8. Which variables are associated with "successful" and "highly successful" outcomes of retained students?

METHODS

Participants

This study explored factors associated with longitudinal academic and behavioral outcomes of 106 students followed from kindergarten through 11th grade. Students were initially classified into one of four categories reflecting their educational experience regarding grade retention. The first two categories consisted of students who had been retained in kindergarten, 1st or 2nd grade, either through a transitional program or by traditional early grade retention. The third and fourth categories included students who had been recommended for transitional grade placement, yet promoted, and students who had been regularly promoted on schedule. Each of these four groups are described below. To reduce between-group confounding effects, fourteen students from the sample were excluded because they had received special education services prior to 1st grade, had been held out of kindergarten prior to enrollment, were of minority status, had transferred into the school district during kindergarten, or had a substantial physical limitation. See Ferguson (1991) and Ferguson and Streib (1996) for further details of the research samples and measures.

Retained (R). The retained group of students (R) consisted of 13 male and 5 female students ($n = 18$) who had repeated either kindergarten, 1st, or 2nd grade. Students who had been placed in a transition classroom were not included in this group.

Transition Classroom Retained (TIR). This group included 20 males and 20 females ($n = 40$). They were identified for placement in the spring of their kindergarten year and placed in a transition 1st grade classroom for the upcoming year. The following year these students were in a regular 1st grade classroom.

Recommended Transition Classroom, But Promoted (TIP). This group of students ($n = 15$) was identified and recommended for placement in the transition 1st grade classroom during the spring of their kindergarten year, but were promoted (6 males and 9 females followed through 8th grade). They were promoted due to parental request not to retain or lack of available space in the transition classroom. Exploratory analyses found that this sample (TIP) did not significantly differ from the (TIR) sample on the research variables of family status, Gesell school readiness tests, school staff placement recommendations, individual characteristics, or student demographics (Ferguson, 1991).

Promoted (P). The promoted group (P) consisted of a stratified random sample of 17 male and 16 female students ($n = 33$) regularly promoted from grade to grade.

Given statistically insignificant differences between the first two groups of grade retention students, these groups were collapsed into a group referred to as “retained.” Likewise, the third and fourth student groups of promoted students were collapsed into a group referred to as “promoted.” Subsequent to the retained year, the promoted students are a year younger than retained students. All students were grade-level peers in 2nd grade. Attrition rates due to moves outside the school district were 25% (R), 14% (T1R), 21% (T1P), and 22% (P) for the study groups through 8th grade.

Measures

Brigance. The Brigance Kindergarten and First Grade Screen (Brigance, 1982; Boehm, 1985) was administered by a trained district staff member in the Spring, prior to kindergarten entrance. The Brigance provided a pre-kindergarten measure of school readiness.

Gesell School Readiness Test. The Gesell School Readiness Test (Ilg, Ames, Haines, & Gillespie, 1978; Bradely, 1985) was administered in the Spring of the kindergarten year by trained teachers, providing developmental age scores in three-month intervals. The Gesell provided a measure of school readiness. A second developmental age score was obtained by subtracting students’ Gesell Age score from students’ chronological age to obtain a “Development Delay” index.

Metropolitan Readiness Tests. The Metropolitan Readiness Tests (Clancy & Pianta, 1993; Nurss & McGauvran, 1976; Ravitch, 1985) were administered in students’ kindergarten or transitional year by trained school staff and were scored using the prereading composite and quantitative kindergarten norms. The Metropolitan provided two additional measures of school readiness.

Teacher Ratings of Academic Skills. A “teacher rating scale” was comprised of six three-item rating scale (1–9, very poor skills-to-extremely high skills) domain of academic skills (Social Skills, Performance, Engagement, Success, Self-Esteem, and Attentiveness). The composite of this rating was called Total Teacher Rating (TTR), and was measured in the Spring of 2nd grade. An example of one of the “Success” items is, “experiences success in classroom academics.” An example of one of the “Self-Esteem” items is, “expresses self-confidence and self-assuredness.” An Aggression domain (“exhibits aggressive physical or verbal behaviors”), was also secured in the 2nd grade and again in the 8th grade using a three point rating scale (no, some, yes; scored as “0, 1 or 2”), rated by 2nd grade teachers and by an interdisciplinary school-based team in the 8th grade.

Parent Survey. To secure “mother’s level of education” data, parent surveys were mailed in the spring of the 2nd grade and followed-up in the 8th grade; there was an 86% response rate. Mother’s level of education used a six point rating scale (i.e., 1–6): middle/junior high school, some high school, high school graduate, some college, college graduate, or graduate school. A “value of education” Likert-like rating scale (1–7) was also secured measuring the value that parents attach to education (“how important is education for your child’s future”).

Achievement. Achievement was measured by national percentile rankings on the composite scores of the Science Research Associates’ Survey of Basic Skills (SRA) Series Test which was administered in the 2nd and 5th grades, and by the Stanford Achievement Test 8th Edition (SAT) which was administered in the 8th and 11th grades. The Armed Services Vocational Aptitude Battery (ASVAB), using the Academic Ability Composite, was administered in 11th grade. Composite grade point averages (GPAs) were calculated using 7th, 8th, 9th, 10th, and 11th grade fourth quarter composite grades. The 9th through 11th grade outcomes were used minimally in the

analysis due to several retention group dropouts and the fact that students who repeated high school core classes might have confounded academic outcome analysis.

School Records. Students' enrollment and other school records were reviewed. Records of special education referral and placement beginning in the 1st grade were gathered in the 2nd and 8th grades. Socioeconomic status (SES) was also determined in 2nd grade by identifying students who had received free/reduced services. Records indicated when a student had participated in a high school sport.

Kindergarten Deficit Personal-Social Functioning. Teacher's ratings of kindergarten personal-social functioning levels were also examined. "Needs additional work" (yes) endorsements on the three "personal-social functioning" items ("I handle problems and frustrations in acceptable ways," "I have a positive self-image," and "I cooperate with others"), were tallied from semester and year-end kindergarten report cards to construct a variable with a possible high of six. This index reflects students' kindergarten personal-social functioning, with higher scores indicating deficit personal-social functioning (K-DPSF), as rated by teachers.

RESULTS

This study examined the eight research questions by employing descriptive statistical measures, multiple regression, analysis of variance (ANOVA), and Chi Square statistical analyses. Post hoc tests (e.g., Fisher's PLSD, Scheffe's and Bonferroni/Dunn) were employed when appropriate. The results of these analyses addressing each of the questions are presented below and a summary of relevant statistical information is included in Table 1. Earlier 2nd grade between-group achievement outcomes can be found in Ferguson (1991) and Ferguson and Streib (1996) for 4th grade outcomes.

1: Between the Sample Groups, Are There Differences Between Family Characteristics, Socialization, Student Demographics, and the Provision of School-Based Support Services?

The two retained groups (T1R and R) demonstrated statistically identical early school readiness scores, family socioeconomic status (SES), mother's level of education (MLOfED) and value of education (VofED) scores, and initial kindergarten deficit personal-social functioning (K-DPSF) ratings. These two groups also demonstrated no significant differences on 2nd through 11th grade academic and behavioral outcomes. These findings supported collapsing the two retainees groups into a single "retained" group for selected research purposes.

The two promoted groups (T1P & P) also demonstrated identical family SES, mother's level of education (MLOfED), value of education (VofED) scores, and initial kindergarten deficit social-functioning (K-DPSF) ratings. Their 2nd grade teacher ratings of academic skills (TTR) and their 5th grade Science Research Associates (SRA) academic outcomes were, however, significantly different ($P < .05$). The data revealed statistically identical 7th through 11th grade secondary academic outcomes and 2nd through 8th grade behavioral outcomes. These findings supported collapsing the two promoted student groups into a single "promoted" group for selected research purposes.

In examining family characteristics, the Chi-Square association comparing parental value of education (VofED) and promotion reached significance ($P < .01$), while comparisons between promotion and mother's level of education (MLOfED), and socioeconomic status (SES) did not. Higher student kindergarten personal-social deficits scores were also positively ($P < .05$) associated with retention; statistically significant statistical differences were found regarding 2nd grade special education referrals and placements for retained students when compared with promoted students. See Table 1 for Chi-Square results of retained students.

Table 1
Effects of Selected Variables on Retained Student Achievement and Behavioral Outcome: A Summary

	K-PSF	MLOfED	Age	VofED	SES
Chi-Square Effects (<i>P</i> -values)					
Nominal initial variables					
K-PSF	—	.05	NS	.05	.001
MLOfED	—	—	.001	.001	NS
AGE	—	—	—	.05	NS
VofED	—	—	—	—	NS
Nominal outcome variables					
2nd Grade Sp Ed Ref	.05	NS	NS	NS	.05
2nd Grade Sp Ed Place	.05	NS	NS	.05	.05
2nd Grade Aggression	.05	.01	NS	.05	.05
8th Grade Aggression	.05	.05	NS	.01	.05
8th Grade Sp Ed Place	.001	.001	NS	.01	.05
Anova Effects (<i>P</i> -values)					
Academic outcomes					
7th Grade GPA	.01	.001	.05	.001	.001
8th Grade SAT	NS	.05	NS	.001	NS
Correlations (<i>r</i>)					
Academic outcomes					
7th Grade GPA	-.48	.44	-.25	.14	-.43
8th Grade SAT	-.38	.13	-.20	.34	.12

Nominal key: K-PSF, 0 versus 1–6 rating scale; MLOfED, HS Graduate versus Non HS Graduate; Age, < than mean of all retained Students versus > than mean of all retained students; VofED, 1–4 rating scale versus 5; SES, received free/reduced lunch versus not received; 2nd grade special education referral or not; 2nd grade special education placement or not; 2nd grade aggression rating or not; 8th grade aggression rating or not; 8th grade special education placement or not.

2: *Is There a Relationship Between Family Socioeconomic Status (SES) and Retained Students' Academic and Behavioral Outcomes?*

Analysis of Variance (ANOVA) models revealed that retained students' socioeconomic status (SES) demonstrated a significant ($P < .001$) interactive effect on 7th grade grade point average (GPA). SES showed a moderate negative correlation with 7th grade GPA ($r = -.43$) and similar negative relationships with GPA at the secondary school level. For all retained students, SES yielded moderate to moderately low positive correlations with the kindergarten deficit personal-social functioning (K-DPSF) ratings ($r = .37$) and with mother's level of education (MLOfED) ($r = -.21$). Chi-Square analysis reached significance in the relationship between SES and 2nd and 8th grade special education placement as well as between SES and teacher ratings of students' aggressiveness.

3: *Is There a Relationship Between Mother's Level of Education and Retained Students' Academic and Behavioral Outcomes?*

Analysis of variance (ANOVA) between the retained student's family characteristics and academic outcomes revealed a positive relationship with mother's level of education (MLOfED) which reached statistical significance ($P < .05$) with the 2nd grade teacher ratings of students'

overall academic skills (TTR) and with 7th ($P < .001$), 8th ($P < .001$), 10th and 11th ($P < .05$) grade point average's (GPAs). Similar relationships were found between the 4th ($P < .01$) and 8th ($P < .05$) grade SRA and SAT achievement outcomes.

For retained students, the mother's level of education (MLOfED) correlation with 7th grade GPA was moderate and positive ($r = .44$). Among retained students, the correlation between mother's level of education (MLOfED) and 8th grade GPA was also positive ($r = .31$). Retained students, whose mother's level of education (MLOfED) was less than high school, demonstrated significantly ($P < .05$) higher kindergarten deficit personal-social functioning (K-DPSF) ratings when compared with retained students whose mother's level of education (MLOfED) was high school or beyond.

Finally, a positive correlation ($r = .24$) for mother's level of education (MLOfED) with the pre-kindergarten Brigance school readiness measure was noted for retained students, and, among these same students, mother's level of education (MLOfED) showed a moderate, negative relationship ($r = -.37$) with their initial kindergarten deficit personal-social functioning (K-DPSF) rating. Negative correlations ($r = -.17$) with parental value of education (VofED) and with age ($r = -.31$) were also apparent. Twenty-two percent of retained students had a mother with less than a high school education. Among all retained students, Chi-Square analyses demonstrated that the relationship between MLOfED and 2nd and 8th grade teacher ratings of students' aggressiveness reached significance ($P < .05$). A similar relationship between MLOfED and 8th grade special education placement was also found.

4: Is There a Relationship Between Parental Value of Education and Retained Students' Academic and Behavioral Outcomes?

Analysis of variance (ANOVA) models including the retained group's family characteristics and academic outcomes revealed a positive relationship with parents' value of education (VofED) which reached statistical significance ($P < .05$) with 2nd grade teacher ratings of overall academic skills (TTR), 4th ($P < .01$), 5th ($P < .05$), 8th ($P < .001$) grade SRA, SAT outcomes, and 7th ($P < .001$) and 8th grade GPA ($P < .01$) outcomes as well as with 11th grade GPA ($P < .05$) and the Armed Services Vocational Aptitude Battery (ASVAB) ($P < .05$). Chi-Square analysis of age of retained students by value of education (VofED) produced significant results ($P < .05$), confirming that younger aged students belonged to families which placed a higher value on education than did the families of older aged retained students. Chi-Square analysis also found VofED to be significantly related to 2nd and 8th grade teacher ratings of students' aggressiveness and special education placements.

For all retained students, value of education (VofED) positively correlated with 11th grade GPA ($r = .50$) and with 11th grade SAT ($r = .40$), demonstrating moderate relationships. Parental value of education (VofEd) correlated positively ($r = .25$) with the Spring Metropolitan Readiness Test and negatively ($r = -.36$) with 2nd grade teacher's student aggressive ratings, demonstrating moderate relationships. Finally, a low, negative relationship was found between parental value of education (VofED) and mother's level of education (MLOfED) ($r = -.17$).

5: Is There a Relationship Between Kindergarten Deficit Personal Social Functioning (K-DPSF) and Retained Students' Academic and Behavioral Outcomes?

ANOVA's between the retained group's social characteristics and academic outcomes revealed a positive relationship with kindergarten deficit personal social functioning which reached statistical significance ($P < .001$) with the 2nd grade teacher ratings of academic skills (TTR) and with

7th ($P < .01$) and 8th ($P < .05$) grade GPAs. ANOVA models between teacher ratings of 2nd grade aggressiveness and academic outcomes from the 2nd through 9th grades revealed significance ($P < .05$) for the retained students. Retained students had five times the mean kindergarten deficit personal-social functioning rating (K-DPSF) relative to promoted students.

Among all retained students, the kindergarten deficit personal-social functioning rating (K-DPSF) was negatively and moderately correlated with 7th grade GPA ($r = -.48$), 8th grade GPA ($r = -.40$) and SAT ($r = -.38$), and 9th grade GPA ($r = -.38$). A moderately low negative correlation ($r = -.26$) between the kindergarten deficit personal-social functioning rating (K-DPSF) and the pre-kindergarten Brigance was noted for all retained students, but a low negative relationship with retained students' age was found ($r = -.16$) with kindergarten deficit personal-social functioning (K-DPSF). Among all retained students, the relationship between kindergarten deficit personal-social functioning (K-DPSF) and early readiness (Fall Metropolitan Readiness Test) was moderate and negative ($r = -.37$).

For all retained students, the measure of kindergarten deficit personal-social functioning (K-DPSF) demonstrated a moderate, negative correlation with mother's level of education (MLOfED) ($r = -.38$). Seventy percent of retained students with deficits on the kindergarten deficit personal-social functioning (K-DPSF) scale were rated as aggressive in 2nd grade, following their retention year. This same group had a 1.6 GPA in 7th grade, and the three students in this group with the highest kindergarten deficit personal-social functioning (K-DPSF) ratings failed to complete the 9th grade. Chi-Square analysis found the kindergarten deficit personal-social functioning (K-DPSF) rating to be significantly related to 2nd and 8th grade teacher ratings of students' aggressiveness ($P < .05$) and special education placements ($P < .05$).

6: Is There a Relationship Between Age and Retained Students' Academic and Behavioral Outcomes?

ANOVA between the retained group demographics and academic outcomes revealed a positive relationship with age, which reached statistical significance ($P < .05$) with 7th through 11th grade GPAs, 5th and 11th grade SRA and SAT achievement outcomes, and the 11th grade Armed Services Vocational Aptitude Battery (ASVAB) scores. Chi-Square analysis of age of retained students reached significance with Mother's level of education (MLOfED) ($P < .001$) and with parents' value of education (VofED) ($P < .05$).

Age of all retained students was negatively correlated with 11th grade SAT ($r = -.39$) and with the Spring Metropolitan Readiness Test ($r = -.22$), indicating moderate relationships. "Age by achievement" correlations for all retained students demonstrated a negative relationship with 2nd through 11th grade academic outcomes, ranging from $-.06$ to $-.39$.

The oldest half of all retained students displayed greater readiness delays and more personal-social deficits than their younger retained counterparts. Younger retained students scored significantly higher than older retained students on their kindergarten Fall Metropolitan Readiness Tests, their 2nd and 5th grade SRA outcomes as well as on their 7th through 11th grade GPA outcomes.

Retained students' age showed moderate, negative correlations with mother's level of education (MLOfED) ($r = -.31$). Younger retained students belonged to families with higher SES, higher mother's level of education (MLOfED), higher value of education (VofED), had higher vocabulary development (obtained from the 8th grade Stanford Achievement Test), and more involvement in high school sports in comparison to older retained students; they also had fewer initial personal-social functioning deficiencies in kindergarten. Chi-Square analysis did not find age to be significantly related to 2nd and 8th grade teacher ratings of students' aggressiveness or special education placement enrollment.

7: *What Is the Combined Predictive Strength of the Initial Contextual Variables Relative to the Early Readiness Indices on the Academic Outcomes of Retained Students?*

Multiple regression analyses were used to further examine the associations between contextual independent variables (i.e., SES, mother's level of education (MLOfED), value of education (VofED), kindergarten deficit personal-social functioning (K-DPSF), and age) and 7th grade GPA (.58; $P < .0001$) and 8th grade SAT (.46; $P < .05$). When investigating the identical predictive variance using retained students' early readiness measures of the Brigance, Gesell (and "Developmental Delay") and Fall Metropolitan Readiness Tests (Prereading and the Mathematics Composite), the adjusted R^2 values were .32 (P NS) for 7th grade GPA and .50 ($P < .05$) for 8th grade SAT. Combined, the contextual and readiness variables yielded adjusted R squares of .82 ($P < .05$) and .86 ($P < .05$) respectfully on 7th grade GPA and 8th grade SAT, thereby explaining more than eighty percent of retained students' secondary academic outcomes.

The individual contextual variables of age and kindergarten deficit personal-social functioning (K-DPSF) provided an adjusted R^2 of .30 ($P < .0001$) and .13 ($P < .05$), respectfully, when regressed on 7th grade GPA and 8th grade SAT, while regression with the family contextual variables of mother's level of education (MLOfED), SES and parental value of education (VofED) provided adjusted the R^2 of .50 ($P < .0001$) and .23 ($P < .05$). The three contextual variables demonstrating the strongest correlations with 7th grade GPA were the Fall Metropolitan Readiness Prereading Composite ($r = .50$), kindergarten deficit personal-social functioning (K-DPSF) ($r = -.48$) and SES ($r = -.43$). Analysis of the relationships between 8th grade SAT outcomes and the Fall Metropolitan Readiness Prereading Composite, Fall Metropolitan Readiness Quantitative and the Brigance found correlations of .58, .51, and .40, respectively.

The results of the multiple regression analyses suggest that early demographic/social characteristics of the retained students appeared to predict student's subsequent GPA performance better than their early readiness measures. Early readiness measures and demographic/social factors, however, appeared equivalent in terms of their predictive power regarding standardized achievement outcomes.

8: *Which Variables Are Associated with "Successful" and "Highly Successful" Outcomes of Retained Students?*

Using the mean of all promoted students as the criteria of success in academic achievement, "successful" retention in this study was measured by using 7th grade GPA (3.2) and 8th grade SAT (53rd national percentile). "Successful" retained students, who represented about 25% of all retained students, were significantly ($P < .05$) more ready than all retained students on their early readiness measures, were significantly younger ($P < .05$), were far less aggressive ($P < .01$), and were far more socially adept in kindergarten ($P < .01$). They also were from families with a higher level of maternal education and who also placed a higher value on education for their child.

A "highly successful" retaineer was classified by having both a 7th grade GPA and 8th grade SAT score above the mean of promoted students. These "highly successful" retained students, who represented about 20% of all retained students, had mean scores on each of their readiness measures (i.e., the Gesell, the Brigance, and the Fall Metropolitan Readiness Test), which were significantly ($P < .05$) higher than the mean of all retained students and they were also younger in age.

"Successful" or "highly successful" retained students did not appear to have initial scores on any of their early readiness measures, indicating that they were initially significantly delayed. Contextual characteristics found to be associated with positive educational outcomes were higher

SES, higher mother's level of education, higher parental value of education, few kindergarten personal-social functioning deficits, higher early readiness scores and younger age.

DISCUSSION

In this study, the contextual characteristics of retained students (i.e., lower SES, lower levels of mother's education, lower parental value of education, poorer initial personal-social skills and students' older age) were found to be risk factors associated with their lack of early school readiness as well as their ensuing poor academic progress. These same contextual factors also appear to be associated with long-term behavioral problems, subsequent to early academic failure and grade retention.

The negative "age by readiness" correlation found in kindergarten for retained students is inconsistent with the traditional early developmental perspective, where age is noted as one of the primary determinants of school readiness (Freberg, 1991). Retained students were found to have inverse relationships with school readiness, chronological age and later achievement, while for all promoted students, "age by readiness" and "age by achievement" were positively associated in kindergarten and 2nd grade.

Students in kindergarten are often identified as at-risk precisely because they are older and not progressing appropriately along the anticipated academic trajectory. In this study, it is older retained students who tended to demonstrate lower school readiness and early personal-social deficits when compared with their younger counterparts. Older retained students tended to belong to lower income families and had mothers with lower levels of education who placed less value on educational attainment. Younger retained students, however, did not reflect these negative characteristics found among older retained students.

The findings from this study demonstrate that the family characteristics of mother's level of education and value of education, individual level socialization skills, and early readiness appear to be significant contextual factors related to the transitional classroom recommended, but promoted (T1P) students' academic success. The top three high performing transitional classroom promoted (T1P) students in 10th grade (each had at least a 3.99 GPA) had mothers who graduated from college, had only a two month mean delay on their Gesell "Developmental Delay" index, had no kindergarten personal-social functioning deficits, had SRA achievement scores between the 85th and 90th national percentile level in the 2nd and 5th grades, scored at the 80th percentile on their 8th grade SAT vocabulary subtest, and each participated in a 9th grade sport.

The top three high performing transitional classroom retained (T1R) students (who also had at least a 3.99 GPA) had a parent who attended college, scored significantly higher on their pre-kindergarten Brigance and Fall Metropolitan Readiness Test compared with the mean of all T1R students, had a mean Gesell "Developmental Delay" index of less than three months, had no rating of personal-social functioning deficits (K-DPSF) "needs improvement" in kindergarten, were significantly younger than the average transition retained student, averaged 96th percentile on their Spring Metropolitan Readiness Test, averaged 94th percentile on their 2nd grade SRA Composite, averaged 97th percentile on 2nd grade teacher's rating of academic skills (TTR), and had a 4.0 GPA at the end of 9th grade. Clearly, policy questions pertaining to why and how these proficient retained students were held back need to be examined. In particular, attention needs to be addressed to the question of why proficient transition classroom retained (T1R) students, who appeared to have been relatively proficient within their initial kindergarten year, were recommended and retained in a transition classroom. Perhaps parental "red-shirt" solicitation and/or children's young age were influential factors.

The three lowest performing 7th grade transitional classroom retained (T1R) students had a mean GPA of 0.36 (two of whom did not finish 9th grade), had mothers who did not graduate from

high school, and, as a subgroup, had an initial mean kindergarten deficit personal-social functioning (K-DPSF) rating 20 times higher than promoted students. These three low-performing transitional first grade retained (T1R) students were also substantially older than the average transitional classroom students. Similar contextual findings were noted for the three lowest performing traditionally retained (R only) students.

Within this study, nine out of the ten lowest GPAs for 7th or 9th grade outcomes were obtained by retained students. The ten retained students with the lowest 7th grade GPAs had initial kindergarten deficit personal-social functioning 20 times higher than promoted students. These ten lowest performing retained students were also significantly older and their mean mother's level of education and value of education scores were significantly lower when compared with their retained classmates.

Results of within-group analyses in this study illustrate that older retained students who demonstrated early personal-social deficits were especially disadvantaged by retention. Similar findings were revealed for retained students who belonged to families with a low level of maternal education, socioeconomic status or parental value of education in terms of their family characteristics. Early demographic and social factors appear to predict subsequent GPA performance of retained students better than early readiness scores, yet both set of factors appear equally predictive of subsequent standardized achievement outcomes.

Limitations and Implications for Further Research

Although gathering the breadth of data necessary for this prospective longitudinal study restricted the sample size, the sample groups included in this study are typical of those examining outcomes associated with early grade retention. However, the small sample size found in this study may pose some limitations in terms of generalizing the findings to a larger population. This study focused upon only a limited number of independent variables, representing a specific level of contextual analysis. The criteria for establishing the variable parameters may have, in some way, affected the validity of the study in terms of "what" was being measured. To the extent that these factors impact the results of the study, interpretations of the results should be made with caution.

The new millennium has ushered in a renewed public exuberance fueling political momentum that champions standards-based promotion and retention (Beyond Social Promotion and Retention, 1999; Harrington-Lueker, 1998). Fraught with contradictions and complications, critical analyses suggest that these "quick fix" solutions for enduring complex educational dilemmas have been unsuccessful (Light, 1998; Roderick, 1995). The preponderance of educational research is replete with suggestions that retention is ineffective, if not harmful, for most at-risk students, regardless of the type of retention used (Hauser, 1999; Holmes, 1989; Holmes & Matthews, 1984; Jimerson, 1999; Jimerson, et al., 1997; Walsh, et al., 1991).

Roderick (1995) concluded that repeating a grade may, in the long run, place students at a higher risk of dropping out of school. Something different must be done to head off educational problems before students have to repeat a grade (Viadero, 2000). Research-based alternatives are suggested in lieu of ineffective retention policies in order to address the growing problem of young children's struggles with escalating demands, standards, and benchmarks (Jimerson, in press; May, et al., 1994; Viadero, 1998). The efforts to redress the educational needs of these students who fail to meet benchmarks and standards may be better addressed through research driven intervention programs with demonstrated effectiveness, such as academic summer school programs, increased positive parental involvement, before and after school remedial and enrichment activities, individualized student educational programs as well as through a lengthened, more intensive, and enriched preschool experience (Forness, Kavale, Blum, & Lloyd, 1997; Knoff

& Batsche, 1995; National Association of School Psychologists, 1998; Slavin, Karweit, & Madden, 1989).

Parents' communication and interactive role with schools and their children appear to be associated with students' long-term educational success. Of interest would be qualitative analyses of contextual differentials between successful and unsuccessful retained students, examining the effects of the parental role such as supervision, privilege and discipline structures, and homework policies. In these research efforts, it is further suggested that other salient family contextual factors include a focus upon divorce, parental employment status, parental substance abuse, parental mental health factors, and legal involvement. By identifying individual and family characteristics, along with specific intervention efforts that optimize positive academic trajectories of at-risk youth, an opportunity to focus educational policy upon early intervention programs that facilitate educational success can be enhanced.

REFERENCES

- Ames, L.B. (1980). Retention: a step forward. *Early Years*, 11, 10–11.
- Berkey, J.M. (1994). Efficacy of a transitional first grade program. (Doctoral dissertation, Indiana University of Pennsylvania, 1994). *Dissertation Abstract International*, 55, 454A.
- Beyond social promotion and retention. (1999, Jan-Feb) *Educational Leadership*. pp 26–27.
- Boehm, A.E. (1985). Review of Brigance k and 1 screen for kindergarten and first grade. In J.V. Mitchell (Ed.), *Ninth mental measurements yearbook*, vol. 1. (pp. 223–225), Lincoln, NB: The Buros Institute of Mental Measurements of the University of Nebraska-Lincoln.
- Bradely, R.H. (1985). Review of the Gesell school readiness test. In J.V. Mitchell (Ed.), *Ninth mental measurements yearbook*, vol. 1. (pp. 607–608), Lincoln, NB: The Buros Institute of Mental Measurements of the University of Nebraska-Lincoln.
- Brigance, A.H. (1982). *Brigance k and 1 screen for kindergarten and first grade*. North Billerica, MA: Curriculum Associates, Inc.
- Bryant, D.M., Clifford, R.M., & Peisner, E.S. (1991). Best practices for beginners: Developmental appropriateness in kindergarten. *American Educational Research Journal*, 28, 783–803.
- Buntaine, R.L., & Costenbader, V.K. (1997). The effectiveness of a transitional prekindergarten program on later academic achievement. *Psychology in the Schools*, 43, 41–50.
- Cherry, C.J. (1996). Effective and efficient: An evaluation of teaching and developmentally appropriate practice. *Communiqué*, 24, 6–8, 10.
- Clancy, C.H., & Pianta, R.C. (1993). The Metropolitan Readiness Tests as a descriptor and predictor of children's competence in kindergarten through grade two. *Journal of Psychoeducational Assessment*, 11, 144–157.
- Cosden, M., & Zimmer, J. (1993). The impact of age, sex, and ethnicity on kindergarten entry and retention decisions. *Education and Policy Analysis*, 15, 209–222.
- Dennebaum J.M., & Kulberg, J.M. (1994). Kindergarten retention and transition classrooms: their relationship to achievement. *Psychology in the Schools*, 31, 5–12.
- Earley, S.F. (1995). A study of the effect of developmental kindergarten placement on student achievement: issues and other alternative for the "unready" child. (Doctoral dissertation, Western Michigan University, 1995). *Dissertation Abstract International*, 56, 1238.
- Ellwein, M.C., Walsh, D.J., Eads, G.M., & Miller, A. (1991). Using readiness tests to route kindergarten students: the snarled intersection of psychometrics, policy, and practice. *Educational Evaluation and Policy Analysis*, 13, 159–175.
- Erhardt, D., & Hinshaw, S.P. (1994). Initial sociometric impressions of attention-deficit hyperactivity disorder and comparison boys: predictions from social behaviors and from nonbehavioral variables. *Journal of Consulting and Clinical Psychology*, 62, 833–842.
- Ferguson, P. (1991). Longitudinal outcome differences among promoted and transitional at-risk kindergarten students. *Psychology in the Schools*, 28, 139–146. See also ERIC Documentation Reproduction Service-ED 324–091 for complete details of the study, along with samples of instruments.
- Ferguson, P., & Streib, M.M. (1996). Longitudinal outcome effects of non at risk and at risk transition first grade samples: a follow up study and further analysis. *Psychology in the Schools*, 33, 76–83.
- Forness, S.R., Kavale, K.A., Blum, I.M., & Lloyd, J.W. (1997). Mega-analysis of meta-analyses: what works in special education and related services. *Teaching Exceptional Children*, 29, 4–9.
- Fowell, N., & Lawton, J. (1992). An alternative view of appropriate practice in early childhood education. *Early Childhood Research Quarterly*, 7, 53–73.

- Freberg, L. (1991). Relationships between chronological age, developmental age, and standardized achievement tests in kindergarten. *Psychology in the Schools, 28*, 77–91.
- Harrington-Lueker, D. (1998, Aug). Retention vs. social promotion. *School Administrator, 55*, 6–12.
- Hauser, R.M. (1999, April 7). What if we ended social promotion? *Education Week, 64*, 37.
- Hollis, A.L. (1995). Predicting school readiness using cognitive screening, temperament, and school environment. (Doctoral dissertation, University of South Carolina, 1994). *Dissertation Abstract International, 56*, 143.
- Holmes, C.T. (1989). Grade level retention effects: A meta-analysis of research studies: In L.A. Shepard and M.L. Smith (Eds.). *Flunking grades: research and policies on retention* (pp. 16–33). Philadelphia: Taylor & Francis.
- Holmes, C.T., & Matthews, K.M. (1984). The effects of nonpromotion on elementary and junior high school pupils: A meta-analysis. *Review of Educational Research, 54*, 225–236.
- Holt, D.J. (2000). Testing's ups and downs predictable. *Education Week, 20*, 12–13.
- Ilg, F., Ames, L., Haines, J., & Gillespie, C. (1978). *School readiness: behavior tests used at the Gesell institute*. New York: Harper and Row.
- Jackson, G. (1975). The research evidence on the effects of grade retention. *Review of Educational Research, 45*, 613–635.
- Jimerson, S. (1999). On the failure of failure: examining the association of early grade retention and late adolescent education and employment outcomes. *Journal of School Psychology, 37*, 243–272.
- Jimerson, S. (in press). Grade retention review 2000: New directions for research and practice in the 21st century. *School Psychology Review*
- Jimerson, S., Egeland, B., & Teo, A., (1999). Achievement across time: a longitudinal study of deflections, considering early school and family factors. *Journal of Educational Psychology, 91*, 116–126.
- Jimerson, S., Rottert, M., Carlson, E., Egeland, B., & Sroufe, A.L. (1997). A prospective, longitudinal study of the correlates and consequences of early grade retention. *Journal of School Psychology, 35*, 3–14.
- Kagan, S.L. (1990). Readiness 2000: rethinking rhetoric and responsibility. *Phi Delta Kappan, 72*, 272–279.
- Kagan, S.L. (1992). Framing the readiness debate. Paper presented at the American Educational Research Association Annual Meeting, San Francisco.
- Karweit, N.L., & Wasik, B.A. (1992). A review of extra-year kindergarten programs and transitional first grades. Baltimore: John Hopkins University, Center for Research on Effective Schooling for Disadvantaged Students.
- Knoff, H., & Batsche, G. (1995). Project ACHIEVE: Analyzing school reform process for at-risk and underachieving students. *School Psychology Review, 24*, 579–603.
- Light, H.W. (1998). *Light's retention scale—Manual*. Novato: Academic Therapy Publication.
- Mantzicopoulos, P. (1997). Do certain groups of children profit from early retention? A follow-up study of kindergartners with attention problems. *Psychology in the Schools, 34*, 115–127.
- Mantzicopoulos, P., & Morrison, D. (1992). Kindergarten retention: academic and behavioral outcomes through the end of second grade. *American Educational Research Journal, 29*, 182–198.
- May, D., Kundert, D., Nikoloff, O., Welch, D., Garrett, M., & Brent, D. (1994). School readiness: an obstacle to intervention and inclusion. *Journal of Early Intervention, 18*, 290–301.
- McGill-Frantzen, A., & Allington, R. (1993). Flunk'em or get them classified: The contamination of primary grade accountability data. *Educational Researcher, 22*, 19–22.
- Meisels, S.J. (1992). Doing harm by doing good: iatrogenic effects of early childhood enrollment and promotion practices. *Early Childhood Research Quarterly, 7*, 155–174.
- Meisels, S.J., & Liaw, F-R. (1993). Failure in grades: do retained students catch up? *Journal of Educational Research, 87*, 69–77.
- Murray, B.A., & Myers, M.A. (1998). Avoiding the special education trap for conduct disordered students. *NASP Bulletin, 82*, 65–73.
- National Association of School Psychologists (NASP), (1998). *Position statement: Student grade retention and social promotion*. Silver Spring, MD: Author.
- Neil, D.M., & Medina, N.J. (1989). Standardized testing: harmful to educational health. *Phi Delta Kappan, 70*, 688–697.
- Nurss, J. & Mc Gauvran, R. (1976). *Metropolitan readiness tests, teacher's manual: part 2, interpretation and use of the test results*. New York: Harcourt, Brace and Jovanovich.
- Olson, S.L. & Rosenblum K. (1998). Preschool antecedents of internalizing problems in children. *Early Education and Development, 9*, 117–129.
- Patton, M.M., & Wortham, S.C. (1993). Transition classes, a growing concern. *Journal of Research in Childhood Education, 8*, 32–42.
- Pellegrini, A.D. (1992). Kindergarten children's social-cognitive status as a predictor of first grade success. *Early Childhood Research Quarterly, 7*, 565–577.

- Phelps, L., Dowdell, N., Rizzo, F.G., Ehrlich, P., & Wilczenski, F. (1992). Five to ten years after placement: the long-term efficacy of retention and pre-grade transition. *Journal of Psychoeducational Assessment*, 10, 116–123.
- Phillips, N.H. (1992). Two-tiered kindergartners: effectiveness for 5-year olds? *Early Childhood Research Quarterly*, 7, 205–224.
- Porwancher, D., & DeLisi, R. (1993). Developmental placement of kindergarten children based upon the Gesell School Readiness Test. *Early Childhood Research Quarterly*, 8, 149–166.
- Ravitch, M.M. (1985). Review of the metropolitan readiness tests. In J.V. Mitchell (Ed.), *Ninth mental measurements yearbook*, vol. 1. (pp. 968–970). Lincoln, NB: The Buros Institute of Mental Measurements of the University of Nebraska-Lincoln.
- Reynolds, A.J. (1992). Grade retention and school adjustment: an explanatory analysis. *Educational Evaluation and Policy Analysis*, 14, 101–121.
- Reynolds, A. (1991). Early school adjustment of children at risk. (ERIC Documentation Reproduction Service—ED 338405).
- Roderick, M. (1995). Grade retention and school dropout: Policy debate and research questions. *Phi Delta Kappa Center for Evaluation, Development and Research*, 15, 1–8.
- Sanson, A., Smart, D., Prior, M., & Oberklaid, F. (1993). Precursors of hyperactivity and aggression. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 1207–1216.
- Shepard, L.A. (1989). A review of research on kindergarten retention. In L. A. Shepard & M. L. Smith (Eds.). *Flunking grades: Research and policies on retention* (pp. 64–78). Philadelphia: Taylor & Francis.
- Shepard, L.A. (1990). Readiness testing in local school districts: An analysis of back door policies. *Politics of Education Association Yearbook*, (pp. 159–179). Philadelphia: Taylor & Francis.
- Shepard, L.A. (1991). Negative policies for dealing with diversity: when does assessment and diagnosis turn into sorting and segregation? In E. Hiebert (Ed.). *Literacy for a diverse society: perspectives, practices, and policies* (pp. 279–298). New York: Teachers College Press.
- Shepard, L.A. & Smith, M.L. (Eds.). (1989). *Flunking grades: Research and policies on retention*. Philadelphia: Taylor & Francis.
- Siegel, D.F., & Hanson, R.A. (1991). Kindergarten educational policies: Separating myth from reality. *Early Education and Development*, 2, 5–31.
- Slavin, R.E., Karweit, N.L. & Madden, N.A. (1989). *Effective programs for students at risk*. Boston: Allyn & Bacon.
- Smith, M.L., & Shepard, L.A. (1987). What doesn't work: explaining policies of retention in early grades. *Phi Delta Kappan*, 45, 129–134.
- Uphoff, J.K. (1990). Extra-year programs: An argument for transitional programs during transitional times. *Young Children*, 45, 19–20.
- Uphoff, J.K. (1995). *Real facts from real schools: What you're not supposed to know about school readiness and transition programs*. New Jersey: Modern Learning Press.
- Viadero, D. (2000, January 12). Study looks at retention policy in Chicago. *Education Week*, 17, 5.
- Viadero, D. (1998, April 22). Many children struggling to adjust to kindergarten. *Education Week*, 7.
- Wang, Y.L., & Johnstone, W. (1997). Evaluation of Pre-first Grade. *ERS Spectrum*, 15, 40–47. (ERIC Documentation Reproduction Service—ED 409348).
- Walsh, D.J., Ellwein, M.C., Eads, G.M. & Miller, A. (1991). Knocking on kindergarten's door: Who gets in? Who's kept out? *Early Childhood Research Quarterly*, 6, 89–100. (ERIC Documentation Reproduction Service—ED 319539).
- Zill, N. (1995). School readiness and children's developmental status. (ERIC Documentation Reproduction Service—ED 389475).