Development and Psychopathology, **13** (2001), 297–315
Copyright © 2001 Cambridge University Press
Printed in the United States of America

Effects of grade retention on academic performance and behavioral development

LINDA PAGANI, RICHARD E. TREMBLAY, FRANK VITARO, BERNARD BOULERICE, AND PIERRE MCDUFF
University of Montreal

Abstract
This study examined the controversial practice of grade retention and children's academic and behavioral adjustment using data from the Quebec Longitudinal Study of Kindergarten Children. We employed an autoregressive modeling technique to detect the impact of being held back during primary school on subsequent academic performance and behavioral development until age 12 years. The results indicate both a short- and long-term negative influence on academic performance for boys and girls. Children's anxious, inattentive, and disruptive behaviors persisted and, in some cases, worsened after grade retention. These prospective associations were long lasting and more pronounced when grade retention occurred early in primary school. Boys were more vulnerable to the negative influence of grade retention on academic performance and classroom disruptiveness. Disruptive behavior in girls was comparatively less associated with long-term consequences than boys. Nevertheless, girls experienced both short- and long-term academic performance problems in the aftermath of grade retention. Children's prosocial behavior appeared unaffected by grade retention. These results are independent of what would have been expected by the natural course of academic and behavioral development.

Each year a substantial percentage of pupil trajectories are disrupted because of grade retention (American Federation of Teachers, 1997; Shepard, 1997). The 1992–1995 Current Population Survey (CPS) reported a rise in retention rates from 11.1 to 13.3%, with the percentage for low-income children being as high as 18.2 in 1995 (U.S. Bureau of the Census, 1992, 1995). Established predictors of being held back include low socioeconomic and minority status, male gender, limited social competence, low birthweight, oral and auditory defects, enuresis, and even exposure to household secondary smoke (Byrd & Weitzman, 1994; Mâsse & Tremblay, 1999; Reynolds, 1992; Shepard, 1997). Grade retention represents an increasingly common consequence of academic failure, especially during the younger grades (Shepard, 1997; U.S. Bureau of the Census, 1995). Perhaps this is because teachers believe that it has no lasting harmful effects when it occurs between kindergarten and Grade 3 (Tomchin & Impara, 1992).

A perusal of the pertinent literature reveals mixed feelings about grade retention. Being held back gives the child a chance to mature and review material that was not mastered during the failed academic year. Primary and middle school teachers view grade retention as an acceptable corrective measure that prevents students from facing further failure on a daily basis (Tomchin & Impara, 1992). In a nonprospective study, Plummer and Graziano

This longitudinal study was supported by Quebec's funding agencies—FCAR, FRSQ, and CQRS—and Canada's SSHRC. The authors thank Hélène Beauchesne and Lucille David for coordinating the data collection, Nathalie Fréchette for assisting with the statistical analyses, Lyse Desmarais–Gervais and Nicole Daudelin for creating the data bank, Danielle Lebeau for the documentation, and Line Arès for formatting the manuscript.

Address correspondence and reprint requests to: L. Pagani, PhD, Research Unit on Children's Psychosocial Maladjustment, University of Montreal, CP 6128, succursale Centre-ville, Montreal, PQ H3C 3J7, Canada; E-mail: paganikl@grip.umontreal.ca.

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

(1987) found some beneficial effects on self-esteem. However, this result must be viewed with caution because the sample was drawn from a school with a large proportion of retained children. Some efficacy studies have reported academic-related benefits of grade retention (Gottfredson, Fink, & Graham, 1994), especially when students receive special support (Owen & Ranick, 1977; Peterson, DeGracie, & Ayabe, 1987). In fact, the small number of recent studies that suggest positive effects are not representative of the typical grade retention experience both in the characteristics of students and special help provided (Shepard, 1997).

Positive effects of grade retention, if detected, are limited (Gottfredson et al., 1994) and tend to diminish over time (Owen & Ranick, 1977; Peterson et al., 1987). Two excellent examples make this point. First, Mantzicopoulos and Morrison (1992) observed an academic advantage for retained children during their 2nd year in kindergarten compared to their matched promoted peers. However, this advantage quickly faded by Grade 1, with retainees continuing to perform below the norm for their school district. Other studies have found similar effects (e.g., Mantzicopoulos, Morrison, Hinshaw, & Carte, 1989). Second, Alexander, Entwisle, and Dauber (1994), monitored the school progress of 800 Baltimore children from first grade through middle school. More than 40% were held back during the study, with some twice. In some cases, the effects were positive. However, more profound examination of their data reveals less than positive outcomes. The largest group of retained children was one of first graders (n = 104). For these, the effects were quite discouraging. They did worse after retention than they did prior to retention. With retained second and third graders (n = 59 and n = 37, respectively), the authors examined whether retention would curb academic free fall. Although these children benefited during the repeated year, they resumed their rank in percentile (in relation to their new same-grade peers) to where they were when they first started the repeated grade. Hence, it appears that grade retention is less than even a qualified success.

Grade retention represents a costly measure, adding the expense of an extra year for every grade repeated (National Center for Educational Statistics, 1992). It is perhaps for this reason that most schools have insufficient funds to support special interventions for retainees (Frymeir, 1989). Although this well-intended educational intervention presents the child with an opportunity to master the developmental and educational objectives that were not met in an age-appropriate classroom, grade retention has psychosocial consequences.

An important number of efficacy studies paint a negative picture of retained students as being worse off academically and personally (Holmes, 1989; Holmes & Matthews, 1984; Jackson, 1975; Slavin & Madden, 1989; Smith & Shepard, 1988). Children experience diminished self-esteem, peer ridicule, labeling, and long-lasting distorted cognitions of retention as punishment or failure (Becker, 1963; Cuddy, Frame, & DeVincentis, 1987; Gottfredson et al., 1994; Grissom & Shepard, 1989; Kaplan, Peck, & Kaplan, 1994; Lemert, 1967; Shepard, 1997). Adding further salt to their wounds is a parental tendency toward punishment for being retained (Byrnes, 1989). Because these factors affect self-perceptions of competence and potential, they might cost taxpayers more over the long run than the total fiscal burden of a child's extended education due to grade retention.

Grade retention also predicts high school attrition (American Federation of Teachers, 1997; Grissom & Shepard, 1989; Hammack, 1987; Mann, 1987; U.S. Bureau of the Census, 1992, 1995). It is highly plausible that this prediction merely reflects the relationship between severe academic failure, the precursor of retention, and dropout. Academic failure is not only a predictor of high school dropout but is also associated with antisocial behavior (Cairns, Cairns, & Neckerman, 1989; Farrington, Loeber, Elliott, Hawkins, Kandel, Klein, McCord, Rowe, & Tremblay, 1990; Grissom & Shepard, 1989; Loeber, 1990). Of course, when considering this link, one must keep in mind evidence suggesting that behavioral problems predict later academic failure and retention (Hinshaw, 1992; Kazdin, 1997).

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

Such maladjustment is detectable during early childhood (Loeber, 1990; Tremblay, Pihl, Vitaro, & Dobkin, 1994) and has been suggested as a potential confound when examining the effects of grade retention (Gottfredson & Hirschi, 1990; Hinshaw, 1992). As stated by Cairns et al. (1989, pp. 1438) "[I]f severe behavioral and achievement problems become coalesced in a child's school adaptation, he or she is at heightened risk to become trapped in a developmental cycle leading to dropout." Leaving school gives closure to a long history of negative teacher–student experiences and achievement difficulties that escalated over time. Indeed, given the basic requirements for entry into today's workforce, even at unskilled levels, opportunities for life as an adult become quite limited without a high school diploma.

Although it seems straightforward to operationalize, the study of grade retention poses many methodological challenges (Chafe, 1984; Holmes, 1989; Holmes & Matthews, 1984; Jackson, 1975). Traditional approaches include one-group pre- and postcomparisons that follow-up within a small window of time (i.e., the end of the retention year) or the comparison of retained with promoted students. The latter approach often fails to control for the inherent characteristics that the child brings to the situation or that are related to the independent or dependent variables of interest. There has almost been an exclusive focus on the short-term impact of grade retention in kindergarten and Grade 1. Exceptions (e.g., Gottfredson et al., 1994; Plummer & Graziano, 1987) have concentrated on a given later school year while failing to control for early childhood behavioral and academic characteristics. Above and beyond such methodological issues, several major research design challenges remain: (a) simultaneous respect for both intraindividual and interindividual differences in the evolution of a characteristic and (b) simultaneous consideration of both categorical (i.e., person-oriented) and continuous (i.e., variable-oriented) research approaches.

Because of limitations in data sets and analytic techniques, research has yet to examine the impact of grade retention during primary school on the typical evolution of behavior and academic performance. An ideal strategy would be to use a prospective, genetically sensitive design with random assignment where one monozygotic twin experiencing academic failure would be assigned the retention condition and the other would be promoted despite academic failure. However, this approach is both impractical and expensive. A convincing alternative would be a prospective approach with structural equations, studying interindividual differences in intraindividual change (Muthén, 1991; Nesselroade, 1991; Pagani, Boulerice, Tremblay, & Vitaro, 1997). This option would require a large longitudinal data set that would have a distribution of grade retention as it naturally occurs within a population where this policy is implemented.

Using data from the Quebec Longitudinal Study of Kindergarten Children, this study examines the effects of grade retention on children's academic performance and behavioral development. We also address whether early grade retention, an increasingly common practice, is beneficial for children. We employed an autoregressive modeling technique to detect the effects of disruptions in academic progress during primary school on subsequent grades and behavior problems until age 12 years. This method allowed us to examine children's outcomes both in relation to their own individual developmental trajectories and in relation to a group of interest (i.e., their same-age peers and their same-grade peers). On a methodological level, retained children's academic performance and behavioral adjustment were rated by their teachers from year to year (comparing them to their same-grade peers) and, on a statistical level, retained children were compared to their (same-age) promoted peers.

Method

Subjects

This study took place within the context of a larger longitudinal investigation of development that included a random sample of 6,397 children attending kindergarten in French-speaking public elementary schools in all 11

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

Table 1. *Distribution of grade repetition from ages 6 through 12 years (i.e., Grades 1–6)*

	Boys	Girls
Grade retention between ages 6 and 8 years (repeating kindergarten or Grade 1)	55	35
Grade retention between ages 8 and 10 years (repeating Grade 2 or Grade 3)	55	58
Grade retention between ages 10 and 12 years (repeating Grade 4 or Grade 5)	85	60
Total number of children repeating a grade	195 (22%)	153 (16%)

Note: Repeating a grade means failing at the end of the school year. Children are typically 6 years old at the end of kindergarten. If they fail, it would have been at age 6 years. Repeating Grade 5 means failing at the end of the school year, when children are typically 11 years old. Because our study comprises outcome data from ages 6 through 12 years, we are able to examine the effects of repeating Grade 5 on Grade 6 performance.

administrative regions of the Canadian province of Quebec. Kindergarten teachers were requested to assess the behavior of between one and eight target children per classroom in the spring of 1986 and 1987. Parents were also asked to complete the same behavioral assessment. Between 58 and 95% of the children had both parent- and teacher-ratings, depending on the administrative region. Of this pool of subjects, 2,000 children (equally divided in boys and girls) were randomly selected for a follow-up that included another 294 boys and 230 girls that were rated one standard deviation above the mean on the disruptive component of the kindergarten (parent or teacher) assessment. More than half of these families were middle class, with the remainder of the sample being of either lower middle class (34.4%) or receiving government support (12.9%). The lower socioeconomic status sample was found to report the most adverse conditions, including younger maternal age at first childbirth, less educated parents, and lower occupational prestige (Vitaro, Desmarais–Gervais, Tremblay, & Gagnon, 1992).

This study examines children's behavioral adjustment over four assessments: ages 6, 8, 10, and 12 years. We also examine their academic performance at ages 8, 10, and 12 years. As reported in Table 1, some children experienced grade retention during the course of the longitudinal study that began at kindergarten.

Several criteria were used to select the sample for this investigation from the 2,524 children who participated in the longitudinal assessments from age 6 years: (a) no children in the study had intellectual, mental, or physical handicaps that prevented them from normal participation in a regular, mainstreamed classroom (n = 127 dropped from the study); (b) all children included in this study were not in kindergarten for the second time (n = 49 dropped); (c) data could not be missing for 2 or more consecutive years (n = 785 cases dropped); (d) covariates (maternal education and age at birth of target child) had to be available at age 6 years (n = 40 + 15 dropped); and (e) no child had experienced more than one repeated grade (n = 171 dropped). In many cases, suspects were not retained for overlapping reasons. The 1,830 children (875 boys and 955 girls) who met these criteria were retained for this study. They did not significantly differ from the overall sample on the independent and dependent variables.

During the course of data collection, children were followed from the end of kindergarten (M = 6.15, SD = 0.46) to the beginning of adolescence (M = 12.15, SD = 0.46). Mothers and fathers had, on average, completed high school (total years of schooling: mothers, 12.10, SD = 2.49; fathers, 12.19, SD = 3.30). The average maternal age at birth of the target child was 27.16 years.

Measures

Independent variables: Grade retention. Official records indicated whether the child failed and had to repeat a grade, from kindergarten to Grade 6.

Dependent variables.

Academic performance. At the end of each year, teachers provided an overall estimate of

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

children's academic performance at the end of Grades 2, 4, and 6 (i.e., ages 8, 10, and 12 years). They responded to the question about each child's global academic performance, choosing from the following options: (a) greatly above the classroom mean, (b) slightly above the classroom mean, (c) at the classroom mean, (d) slightly below the classroom mean, and (e) greatly below the classroom mean.

Social Behavior Questionnaire (*SBQ*). This behavioral assessment was completed by teachers at the end of kindergarten and Grades 2, 4, and 6. It comprises the main factor items of two instruments with well-established psychometric properties: (a) the Preschool Behavior Questionnaire (Behar & Stringfield, 1974; Fowler & Park, 1979; Hoge, Meginbir, Khan, & Weatherall, 1985; Rubin & Clark, 1983; Tremblay, Desmarais–Gervais, Gagnon, & Charlebois, 1987) and (2) the Prosocial Behavior Questionnaire (Weir & Duveen, 1981).

Four factors from the 38-item SBQ (established in Tremblay, Loeber, Gagnon, Charlebois, Larivée, & LeBlanc, 1991) were employed for this investigation: (a) disruptive behavior (13 items, $\alpha = 86$), (b) anxious behavior (5 items, $\alpha = .73$), (c) inattentive behavior (4 items, $\alpha = .85$), and (d) prosocial behavior (10 items, $\alpha = .90$). The aforementioned internal consistency coefficients represent average alphas from ages 6 through 12 years. The SBQ has a test–retest reliability ranging from .78 (disruptive subscale) to .55 (prosocial subscale) over a 2-month period (Tremblay et al., 1991). Behavior between ages 6 and 12 years has been significantly stable over time (ranging from $r = .24$ to $r = .32$), with the anxious and prosocial factors appearing less stable (yet significant) at .16 and .15, respectively. Intercorrelations among the factors range from .17 (anxious and disruptive behaviors, $p < .01$) to .47 (disruptive and inattentive behaviors, $p < .01$). Intercorrelations with prosocial behavior range from −.12 (with anxiety, $p < .01$) to −.28 (with disruptive behavior, $p < .01$). The kindergarten assessments have been found to be good predictors of social adjustment in later childhood and adolescence (Dobkin, Tremblay, Mâsse, & Vitaro, 1995; Mâsse & Tremblay, 1997; Tremblay et al., 1994).

Data analyses: Basic autoregressive model with a time invariant random effect

The basic model represents the typical evolution of behavior, regardless of the effects of external events such as grade retention (see Figure 1). It consists of a random time invariant factor (i.e., a constant factor over time or latent trait), measuring individual behavioral predispositions (Muthén, 1991; Pagani, Boulerice, Tremblay, & Vitaro, 1997). In the basic model, η_o represents a stable cross-time effect. When there were significant sex differences in the variance or covariance matrix for a variable, we analyzed the data separately. Otherwise the sex of the child was entered into the model as an explanatory variable for the latent predisposition. Time invariant covariates such as maternal education and age at birth of target child were then entered as explanatory variables for the latent predisposition, as these important sociodemographic characteristics have been found to predict academic failure (Pagani, Boulerice, & Tremblay, 1997). Last, because of the stability of inherent behavioral characteristics across development, we entered an early childhood measure of the independent variable as an explanatory variable for the latent predisposition (i.e., at kindergarten). We used a measure of kindergarten inattentiveness as an explanatory variable for the latent predisposition in the analyses concerning academic performance, given the strong predictive relationship observed between inattentiveness and later academic performance (Gordon, Mittelman, & Irwin, 1994; Tremblay & Zhou, 1991). This early childhood control variable has been previously tested in Pagani, Boulerice, & Tremblay, (1997).

The dynamic part of the model consists of a lag-one autoregressive component that measures the persistence of deviations from the latent predisposition in behavior over time (i.e., a regression of the deviations over the preceding time). The lag-one autoregressive component accounts for possible correlations between temporally adjacent deviation mea-

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

surements and thus induces dependence among all the deviation measurements. Any change in behavior could have a persistent effect at a later time through the autoregressive component. The effects of life events on behavior at a given time were measured beyond the persisting effect of other changes *prior* to the event. Thus, the model makes an implicit assumption that the effects of age are a shared component by all individuals at a given time and must be reflected in the mean structure.

Life events were measured by indicator variables that point out separately if grade retention occurred between two time points. Because grade retention can be preceded by behavioral or academic difficulties, we allowed grade retention to have a statistical control arrow toward children's prior adjustment. This method insured that grade retention effects on future adjustment were measured over previous adjustment problems that preceded grade retention. In other words, we measured the expected influences on future academic and behavioral development by holding previous levels of these constant. These indicators were treated as fixed (independent) variables in the analyses, so the corresponding parameter gives mean prospective associations with behavior while controlling for the preceding time and individual predisposition. Since, in the selected sample, grade retention always occurred in the life of a child who was previously in an age-appropriate classroom, the influence of grade retention on behavior at a given time was assessed in relation to those who remained in an age appropriate classroom at that given time. Further, the prospective associations between grade retention and future behavior were measured over and above any persisting (i.e., indirect) influence of *previous behavior* relative to those who remained in an age appropriate classroom.

It must be noted that because of the limited number of cases of grade retention that occurred between two time points (see Table 1), the power associated with the z score for these parameters remained low. All analyses were performed using LISREL VIII mean and covariance structure model (Jöreskog & Sörbom, 1993). The parameters corresponding to the fixed variables were held constant for the analyses (covariates and grade retention indicators). Parameter estimation was performed using the generally weighted least-square method.[1]

Results

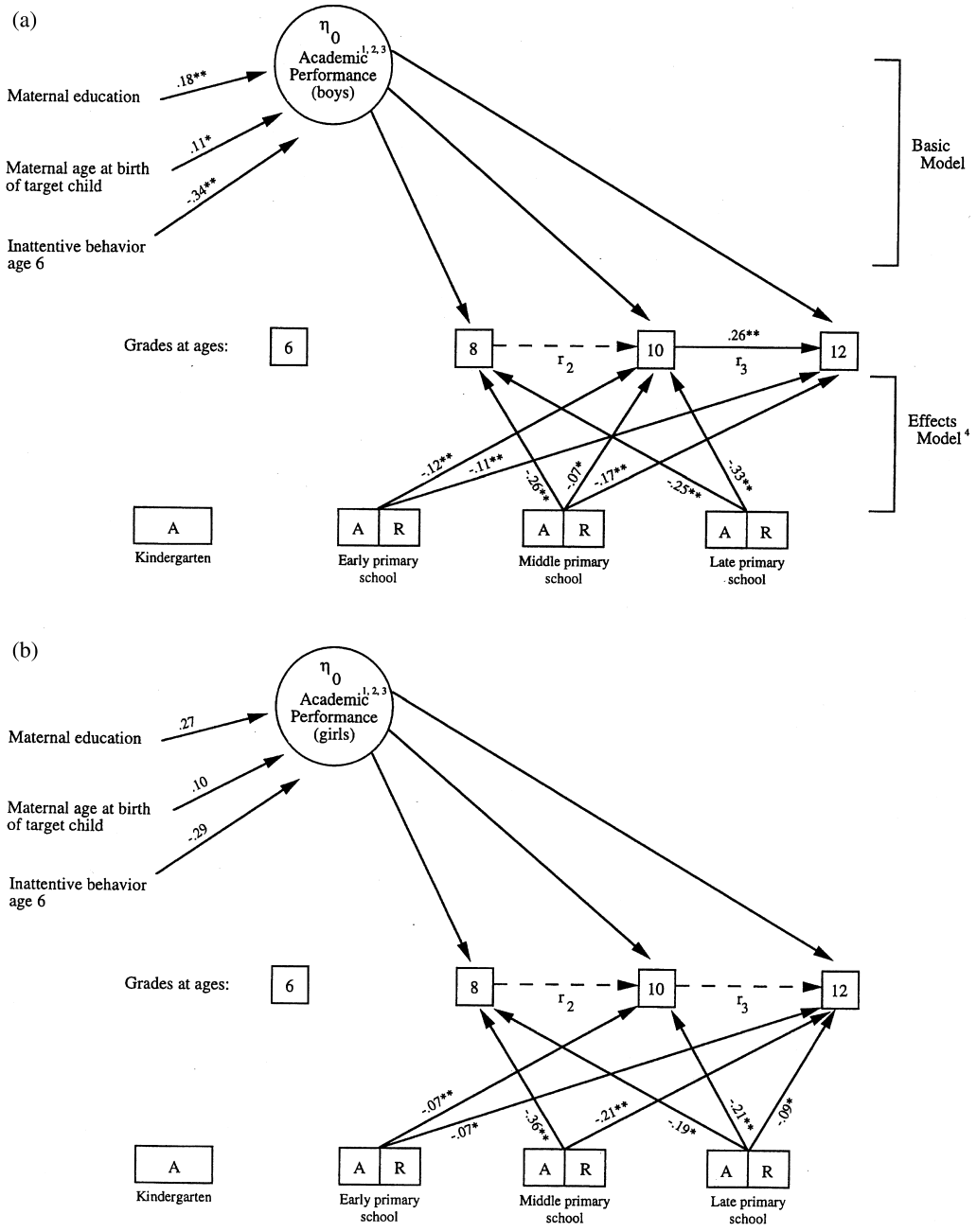
Figures 1–4 report the autoregressive modeling results that indicate the degree of persistence of departures from the latent predisposition in response to grade retention. For school performance and disruptive behavior, sex differences in the variance–covariance matrices and means were so great that, in order to model the data appropriately, we had to test the models separately for boys and girls. To ease relative comparisons of the significant results, all figures report completely standardized betas (basic model) and standardized betas (effects model), depending on the nature of the data (i.e., continuous or discrete independent variable). Table 2 reports descriptive statistics for each variable across time.

The model for boys' *academic performance*, shown in Figure 1a, had a good fit ($\chi^2 = 4.60$, $df = 4$, $p = .33$). The covariates explained approximately 16.5% of the variance in the latent predisposition. Maternal education and age at birth of target child and inattentive kindergarten behavior significantly influenced the model. Boys born to older, more educated mothers showed a tendency of having greater academic performance. As expected, inattentiveness and academic performance were inversely related. Inclusion of all three parameters as covariates improved the amount of explained variance in the model (to 56.3% by age 8 years, 59.4% by age 10 years, and 55.8% by age 12 years). The paths from η_o to the different ages (8, 10, and 12 years) represent a stable, cross-time effect.

Because data on academic performance were unavailable at age 6 years (i.e., the end of kindergarten), we were able to examine the effects of grade retention occurring during middle primary school (from age 8 to 10 years) and late primary school (from age 10

1. Results in the form of a covariance matrix are available from the first author.

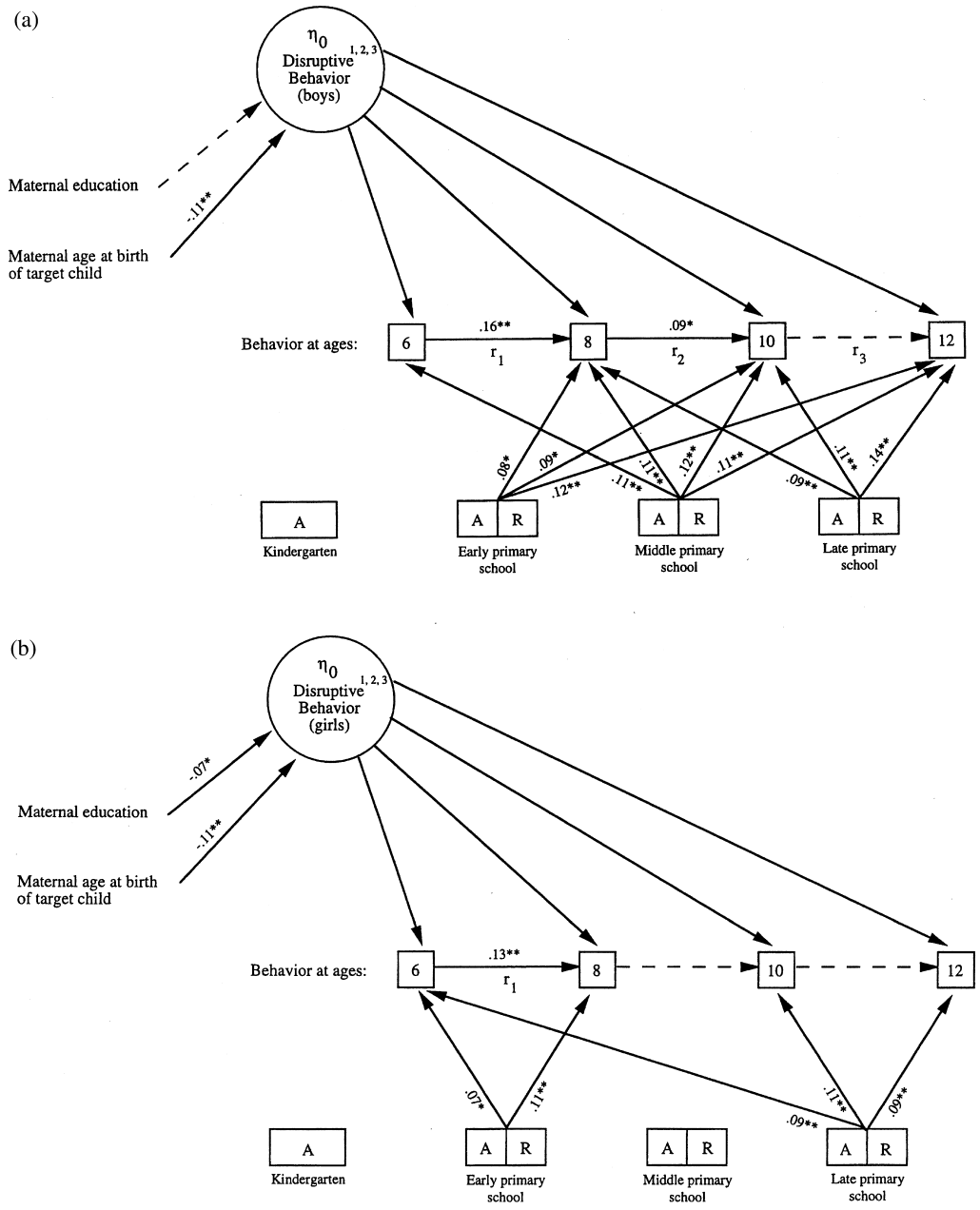
https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press



Note 1 A = age-appropriate classroom and R = retained
Note 2 Only significant effects are included
Note 3 * indicates $p < .05$ and ** indicates $p < .01$
Note 4 The unique contribution of grade retention in terms of explained variance (R^2) can be computed by squaring the corresponding path coefficient

Figure 1. The impact of grade retention on (a) boys' academic performance and (b) girls' academic performance.

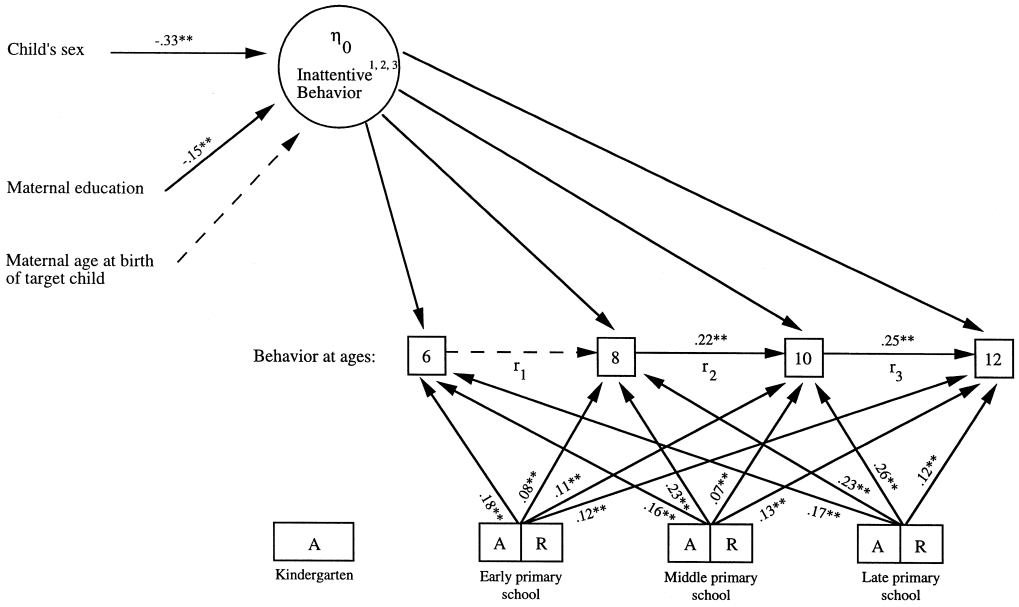
https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press



Note 1 A = age-appropriate classroom and R = retained
Note 2 Only significant effects are included
Note 3 * indicates $p < .05$ and ** indicates $p < .01$

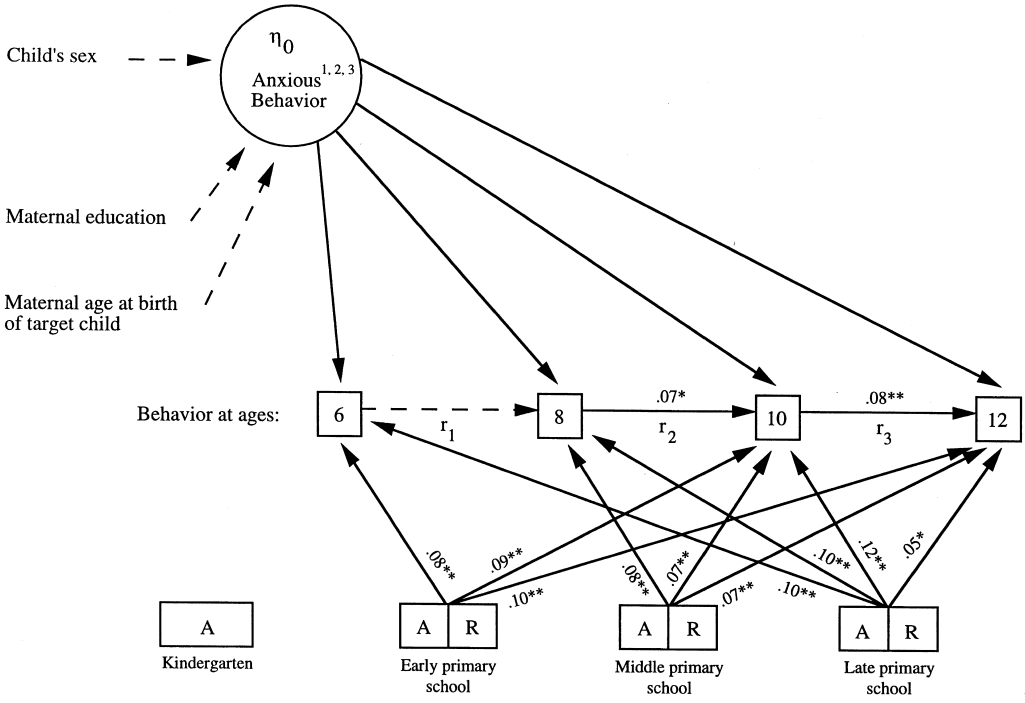
Figure 2. The impact of grade retention on (a) boys' disruptive behavior and (b) girls' disruptive behavior.

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press



Note 1 A = age-appropriate classroom and R = retained
Note 2 Only significant effects are included
Note 3 * indicates p < .05 and ** indicates p < .01

Figure 3. The impact of grade retention on children's inattentive behavior.



Note 1 A = age-appropriate classroom and R = retained
Note 2 Only significant effects are included
Note 3 * indicates p < .05 and ** indicates p < .01

Figure 4. The impact of grade retention on children's anxious behavior.

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

Table 2. *Means and standard deviations for academic and behavioral adjustment*

		Age 8		Age 10		Age 12	
	Age 6	Nonretained	Retained	Nonretained	Retained	Nonretained	Retained
Boys							
Academic performance	—	3.31 (1.01)	2.77 (0.78)	3.21 (1.05)	2.68 (0.73)	3.19 (1.07)	2.55 (0.80)
Disruptive behavior	5.75 (5.95)	4.46 (5.22)	6.98 (6.01)	4.21 (4.91)	7.13 (5.60)	3.54 (4.35)	5.84 (5.32)
Inattentive behavior	2.31 (2.37)	2.68 (2.44)	3.98 (2.16)	3.05 (2.66)	4.29 (2.44)	2.48 (2.50)	4.38 (2.55)
Anxious behavior	1.83 (2.08)	1.92 (2.09)	1.96 (1.98)	1.95 (2.00)	2.60 (1.82)	1.66 (1.94)	2.09 (2.10)
Prosocial behavior	6.28 (4.17)	6.55 (4.40)	6.56 (4.67)	6.61 (4.38)	6.87 (4.81)	5.13 (4.26)	5.54 (4.29)
Girls							
Academic performance	—	3.52 (1.05)	3.10 (0.66)	3.52 (1.05)	2.92 (0.79)	3.49 (1.03)	2.71 (0.87)
Disruptive behavior	2.86 (4.06)	2.18 (3.48)	4.69 (5.40)	2.01 (3.43)	2.40 (3.31)	1.66 (2.98)	3.02 (3.72)
Inattentive behavior	1.55 (1.98)	1.90 (2.24)	3.31 (2.69)	1.95 (2.32)	3.29 (2.27)	1.52 (2.08)	3.30 (2.78)
Anxious behavior	1.61 (1.91)	1.84 (1.93)	2.94 (1.97)	1.92 (2.02)	2.62 (2.20)	1.77 (1.92)	2.42 (2.30)
Prosocial behavior	8.09 (4.48)	8.08 (4.33)	6.83 (4.16)	8.25 (4.11)	8.24 (5.00)	6.60 (4.50)	5.75 (4.27)

to 12 years) only. Autoregressive parameters were nonsignificant from age 8 to 10 years. However, from age 10 to 12 years, persistence in departures from the latent predisposition (i.e., expected trajectory) for academic performance were significant. The standardized path coefficient of .26 indicates that departures from the expected trajectory at age 10 years are likely to remain persistent at age 12 years.

As expected, prior academic performance problems preceded grade retention. In order to control for preceding values on a dependent variable, the computational constraints of the autoregressive model are such that the relationship between earlier measures on a dependent variable must be predicted by later grade retention and not vice versa (hence the rationale for the direction of the arrows toward previous behavior in Figures 1–4).

Boys with problematic academic performance had experienced grade retention at some time during primary school. Departures from the latent predisposition were significant and over their natural persisting effects, indicating both a short- and long-term impact of grade retention. Grade retention in early primary school (i.e., between ages 6 and 8 years) had a negative long-term influence on academic performance, with deviations from the latent predisposition indicating negative academic outcomes 4–6 after repeating a grade. For example, the path coefficient of –.12 (resulting from grade retention between ages 6 and 8 years) indicates increasingly negative deviations from the expected "trait" trajectory for academic performance at age 10 years. Academic performance at both ages 8 and 10 years was associated with grade retention in late primary school. However, we found no effects of grade retention at age 12 years in this group once such preceding behavior was autoregressively controlled.

For girls, the model for academic performance showed a very good fit ($\chi^2 = 2.73$, $df = 4$, $p = .60$), with small residuals in the covariance and mean structure (see Figure 1b). The covariates explained approximately 17% of the variance in the latent predisposition. Maternal education and age at birth of the target child and inattentive behavior significantly influenced the model. Girls born to older, more educated mothers showed a tendency of having better academic performance. As with boys, inattentiveness was inversely related to academic performance. Inclusion of these parameters in the effects model generally improved the amount of explained variance in the effects model (to 69.3% by age 8 years, 65.0% by age 10 years, and 65.0% by age 12 years).

The autoregressive parameters were nonsignificant from age 8 to 12 years. This simply indicates stable (i.e., nonpersistent) departures from the latent predisposition for this variable throughout primary school. As with boys, prior academic performance problems were associated with later grade retention.

We observed a short- and long-term negative influence of grade retention during primary school. Departures from the latent predisposition were significant and over their natural persisting effects, with a sustained negative impact on academic performance after grade retention. Grade retention in early primary school had remarkable consequences for academic performance. Deviations from the latent predisposition for academic performance indicated a negative outcome 4–6 years after repeating a grade. This outcome was as negative as that evidenced by girls who had experienced grade retention in late primary school.

The model for boys' *disruptive behavior* shown in Figure 2a had an excellent overall fit ($\chi^2 = 7.0$, $df = 13$, $p > .90$), with small residuals in the covariance and mean structure. Maternal age at birth of target child significantly influenced the model, explaining only 2.0% of the variance in the latent predisposition. By comparison, inclusion of the parameters in the effects model increasingly improved the amount of explained variance across development (to 28.2% by age 6 years, 48.0% by age 8 years, 48.7% by age 10 years, and 52.5% by age 12 years).

Deviations from the autoregressive parameters became less persistent with age after early primary school, to the point that it was no longer significant between in late primary school.

There were both short- and long-term prospective associations between grade retention

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

and boys' disruptive behavior throughout the primary school years. The results also revealed a sustained negative impact on later disruptive behavior that persisted long after the occurrence of grade retention. Grade retention that occurred in early primary school had negative consequences at both ages 10 and 12 years. Similarly, grade retention that occurred during middle primary school showed negative prospective associations at age 12 years.

Two results were indicative of a negative influence of grade retention during early primary school: (a) disruptive behavior in boys not only persisted over time but increasingly worsened in response to early grade retention (indicated by rising mean effects values for those who experienced grade retention between ages 6 and 8 years); and (b) at age 12 years, mean effects values for disruptive behavior were comparatively higher for boys who experienced grade retention during the early primary school years than their peers who experienced it later.

The model for girls' disruptive behavior shown in Figure 2b had an excellent overall fit as well ($\chi^2 = 9.47$, $df = 13$, $p = .74$). The significant covariates, maternal education and age at birth of target child, influenced the latent predisposition in the basic model but explained only 1.8% of the variance. Inclusion of the parameters in the effects model generally improved the amount of explained variance across development (to 26.5% by age 6 years, 45.3% by age 8 years, 47.0 by age 10 years, and 48.1% by age 12 years).

Girls' disruptive behavior in early primary school showed significant deviations from the latent predisposition. The autoregressive parameters for this behavior became nonsignificant beyond that developmental period indicating nonpersistent deviations from the latent predisposition throughout middle and late primary school.

We found short-lived negative prospective associations between grade retention and girls' disruptive behavior beyond its natural persistence. Grade retention during early primary school had an influence at age 8 years, and this result had a greater short-term impact than when it occurred during late primary school. There were no long-term prospective relationships with grade retention. Preceding behavior was prospectively associated with grade retention to the point that, at age 6 years, disruptive behavior in girls was linked with grade retention in late primary school, indicating the importance of autoregressive controls.

The model for children's *inattentive behavior* showed a very good fit ($\chi^2 = 25.29$, $df = 17$, $p = .08$), with small residuals in the covariance and mean structure. As shown in Figure 3, the covariates explained approximately 13% of the variance in the latent predisposition. Maternal education and the child's sex significantly influenced the model. Children who were inattentive often had mothers with less education, and boys were more inattentive than girls. Inclusion of these parameters in the effects model generally improved the squared multiple correlations for structural equations across development (to 39% for ages 8, 10, and 12 years).

In the basic model, the autoregressive parameters were not significant in early primary school, indicating stability in the variations from the latent predisposition from age 6 to 8 years. Departures from the latent predisposition were significant and increasingly persistent in middle and late primary school.

For children who experienced grade retention, the results indicate both short- and long-term problems in inattentive behavior over its natural persisting trajectory. Inattentiveness increasingly worsened in response to early grade retention as evidenced by increasing autoregressive parameters over time. By age 12 years, children's inattentiveness in the group that experienced grade retention in early primary school was as high as that of children who had experienced grade retention between ages 10 and 12 years. That is, the long-term disruptions prospectively associated with early grade retention were as strong or stronger than the observed short-term influence of grade retention in middle and late primary school. Grade retention that occurred in middle primary school also had a long-term negative prospective relationship with inattentive behavior at age 12 years. The results acted in the same pattern, indicating a worsen-

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

ing in inattentiveness over time in this group as well. These results are remarkable, given that the analyses controlled for the autoregressive parameters for preceding behavior, which were all significant.

Shown in Figure 4, the model for children's *anxious behavior* showed a good overall fit ($\chi^2 = 16.20$, $df = 17$, $p > .51$), with small residuals in the covariance and mean structure. There were no significant sex differences in the latent predisposition, nor was there a significant influence of maternal education and age at birth of the target child. As such, the child's sex and the covariates (maternal education and age at child birth) explained only 0.6% of the variance in the latent predisposition of the basic model. Inclusion of these parameters in the effects model did improve the amount of explained variance across development (to 18.6% by age 6 years, 18.7% by age 8 years, 20.0 by age 10 years, and 21.0% by age 12 years).

The autoregressive parameters increased over time and were significant in middle and late primary school. Deviations, if any, from the latent predisposition at a given time became more persistent over time.

We observed both a short- and long-term significant influence of grade retention. When grade retention occurred in early primary school, we noted negative long-term prospective associations above and beyond what would have been expected by the natural persisting effects of previous behavior. Anxiety not only persisted but increasingly worsened in response to grade retention in early primary school. By age 12 years, children's anxiety was much higher in the group that experienced grade retention during early primary school. Although not as comparable in magnitude to that of early grade retention, when grade retention occurred during middle primary school it had a short- and long-term negative influence on anxiety at ages 10 and 12 years, respectively.

Also of note is the absence of an immediate short-term impact of early grade retention. Children who experienced grade retention in early primary school did not show short-term problems with anxiety in comparison to children who experienced grade retention in middle and late primary school. That is, there was a time lag in their initial reaction that was not observed when grade retention occurred later. Although most autoregressive parameters for preceding behavior were significant, the results generated are above and beyond such behavioral predispositions.

The model for children's *prosocial behavior* had a very good overall fit as well ($\chi^2 = 10.66$, $df = 17$, $p = .87$), with small residuals in the covariance and mean structure. The covariates explained 19% of the variance in the latent predisposition. Only the effect of sex was significant. Girls showed comparatively more prosocial behavior. The squared multiple correlations for structural equations explaining the variance in the latent predisposition hovered between 15.5 and 19.5%.

Departures from the latent predisposition were significantly persistent in middle primary school. The autoregressive parameters were not significant in early and late primary school, indicating stability in the variations from the latent predisposition for prosocial behavior during those age periods.

Teacher ratings of prior problems with prosocial behavior consistently preceded grade retention. Once preceding behavior was controlled autoregressively, we observed no significant short- or long-term influence of grade retention on prosocial behavior beyond its natural pattern of persistence.

Discussion

Grade retention negatively affected children's developmental outcomes *regardless* of the characteristics that they brought to their situation and the developmental trajectory predicted by such characteristics. These consequences were dramatic and often long lasting. In some cases, these varied according to sex. In others, grade retention affected children across the board.

This study meets an important methodological challenge in developmental psychopathology: Maladjustment has its developmental course, and this course must be respected in order to properly examine the influence of risk and protective factors on the individual. The increasingly persistent problems found

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

after grade retention do not simply reflect a continuation of maladjusted pattern. Another contribution worthy of mention is the consideration of time-lag effects. When looking at long-term outcomes, our statistical approach controlled for short-term outcomes. The long-term outcomes observed reflect much more than continuity in the short-term reaction to grade retention. Saying that there are long-term effects is important, but observing that such effects not only persisted but in some cases became stronger is perhaps the key empirical finding here. This way of looking at things most certainly makes us reconsider our choices in statistical treatment of longitudinal data. Statistical representation of growth trajectories and the idea of (persistent vs. nonpersistent) deviations from expected trajectories offer powerful implications for research pertaining to developmental issues and developmental psychopathology.

For both boys and girls, we found a sustained negative impact of grade retention on anxiety and inattentiveness. This impact was strongest for children who were retained in early primary school. The anxiety and inattentiveness problems were not only long lasting but became amplified over time. By the end of primary school, children who had been held back early on were worse off than those who had most recently been retained.

It is interesting to note that grade retention did not have an immediate effect on anxiety, but as children progressed in age and grade anxiety in those who were retained became significantly and increasingly problematic. Perhaps as children became older they became more conscious and identified by their peers as having been retained. Should this be the case, such increases in academic status awareness could have induced evaluation anxiety, feelings of peer ridicule, and other social fit problems. For example, when it comes to choosing play partners, younger classmates show a tendency to choose nonretained classmates (i.e., their same-age peers) over retained classmates (Plummer & Graziano, 1987). Inattentiveness could have been operating independently of this anxiety-provoking process, simply being explained by difficulty meeting the greater curricular demands during the postretention primary school years. However, it is likely that the increasing (perceived and actual) social pressure did not help the persistence and worsening of inattentiveness as well.

Grade retention had important consequences for both academic performance and disruptive behavior. These were long lasting. Sex differences were quite apparent, as the effects were comparatively stronger for boys than for girls.

For boys, we noted a dramatic and long-lasting impact of grade retention on both learning outcomes and disruptiveness. The co-occurrence of this sex difference is not unusual, given that these variables are correlated (ranging from $-.21$ to $-.29$, $p < .0001$, for boys in this study). In our data, the disruptiveness variable is composed of three lower level constructs associated with aggression: hyperactivity, fighting, and oppositionalism. Cairns et al. (1989) found that those most vulnerable to early school dropout (82% boys) were characterized by aggressiveness and low levels of academic performance by seventh grade. Our study suggests that boys might be more at risk of dropping out of school during early adolescence because their academic problems are not dealt with effectively. They are more at risk of being held back than girls (Shepard, 1997) and are also more likely to be held back earlier (Mâsse & Tremblay, 1999). Our results suggest that grade retention makes boys more disruptive and less inclined toward good academic performance compared to their *same-grade peers* (because teachers rated them compared to other children in their class) and compared to their *same-age peers* (because the autoregressive model compared the natural growth curve of such ratings for boys who experienced retention at a given time vs. those who were promoted).

For girls, academic performance was affected by grade retention in early, middle, and late primary school. The long-term consequences of being held back early seemed to remain quite strong. That is, the long-term impact of early grade retention was as negative as the short-term impact evidenced by girls who had experienced grade retention in late primary school.

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

In comparison to their same-sex peers who were not retained, we observed short-lived negative effects of grade retention on girls' disruptive behavior. Although their disruptiveness was acutely affected by grade retention in early and late primary school, our results suggest that, on the whole, grade retention affected such behavior much less than boys. After girls experienced the short-term impact of grade retention on behavior, they resumed low levels of behavior problems quickly thereafter. This appears to be another indication that boys are more vulnerable to problem behavior than girls. Perhaps girls found social integration during the repeated year easier than boys because they exhibited comparatively lower levels of maladjustment and were thus less noticeable by their teachers and same-grade peers.

Why these effects on academic performance and disruptiveness? On the one hand, there is overwhelming evidence that children experience postretention feelings of frustration, humiliation, shame, failure, and confusion (Becker, 1963; Cuddy et al., 1987; Gottfredson et al., 1994; Grissom & Shepard, 1989; Kaplan et al., 1994; Lemert, 1967; Shepard, 1997). This could have interfered with their learning processes and behavioral development. On the other hand, they could have also been bored, overconfident, or careless about the repeated curriculum during their repeated year. This has been suggested by previous research using parent reports (Smith & Shepard, 1988). Such an attitude could have continued and been detrimental in the face of increasing curricular demands of progressing grades.

Why were the outcome findings for academic performance and disruptive behavior more robust for boys? The above factors could have been operating more for boys than for girls, given their inherent increased risk status for maladjustment (Rutter, 1990). Further research, using a prospective design that focuses on such explanatory variables, is warranted. Another explanation generated from the data themselves relies on the fact that there were significantly fewer girls in our sample with behavioral and academic problems. The distributions were skewed, favoring better behavioral and academic outcomes for girls. As such, the analyses were less powerful in detecting effects of grade retention on girls.

Being held back in kindergarten or early primary school is becoming increasingly common (American Federation of Teachers, 1997; U.S. Bureau of the Census, 1992, 1995). Some believe that this need is attributable to a greater concentration of children living in adversity and increasing pressure on schools to demonstrate improvements in academic performance through standardized testing (Byrd & Weitzman, 1994). Nevertheless, research suggests that early retention is not an effective policy for young at-risk children (Mantzicopoulos & Morrison, 1992). The literature had yet to examine the long-term results of early grade retention, using rigorous statistical and methodological controls. When grade retention occurred in early primary school, we observed a long-term impact on children's behavioral problems and academic performance above and beyond what would have been expected by the natural course of behavioral development.

Why would early retention be so detrimental? There are reasons to believe that the psychosocial consequences of grade retention snowball into longer-term risks and negative outcomes. Children experience diminished self-esteem, humiliation, peer ridicule, labeling, and long-lasting distorted cognitions of retention as punishment or failure (Becker, 1963; Cuddy et al., 1987; Gottfredson et al., 1994; Grissom & Shepard, 1989; Kaplan et al., 1994; Lemert, 1967; Shepard, 1997), and there is a parental tendency toward reinforcement of these feelings (Byrnes, 1989). Such postretention feelings could foster negative internal working models of relationships (Bowlby, 1973; Sroufe, 1990), negatively affecting the expectations, attributions, and behavioral dispositions that children bring to situations (Downey & Feldman, 1996). Children's defensive expectations of becoming outcasts result in a predisposition to search for (minimal, nonintentional, or ambiguous) rejection cues. Such children readily perceive (or misperceive) rejection from others, fostering both affective and behavioral overreac-

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

tions, including hostility, anxiety, and aggression. Rejection sensitivity represents the disposition to defensively expect, readily perceive (or misperceive), and overreact to social rejection. This disposition can undermine children's psychosocial development. Downey, Lebolt, Rincón, and Freitas (1998) found that rejection-sensitive children behaved more aggressively, experienced increased interpersonal difficulties, and showed declines in academic functioning over time. Rejection sensitivity may explain the long-term deleterious effects of grade retention. Because our data set did not contain such variables, our explanation remains tentative. This represents the most important limitation to the study.

It is important to consider the multitude of social influences that interact with child's cognitive processes in the aftermath of retention. Children who are retained are not well accepted by their classmates, and peer discrimination may be one factor contributing to the negative effects of grade retention (Plummer & Graziano, 1987). They also tend to be older, and possibly more physically mature and disruptive. It is also possible that negative perceptions and low expectations on the part of teachers (authority figures) result in differential social treatment of these children (i.e., more reprimands, less reinforcement for positive actions, less tolerance) as in the Rosenthal effect. Such modeling and differential reinforcement has a direct impact on the adjustment and status of retained children and can also foster alienation, deprecatory self-perceptions, and disengagement from school as a social institution (Hymel, Comfort, Schonert–Reichl, & McDougall, 1996). As a consequence, they may seek to form cliques that correspond to their negative self-perceptions, thus increasing their exposure to deviant peers and reducing their opportunities for normative socialization experiences (Cairns, Cairns, Neckerman, Gest, & Gariépy, 1988).

Interestingly, Plummer and Graziano (1987) found that when having some academic difficulty, many younger, same-grade classmates tend to choose the older retained classmate over their same-age peers for academic help. This finding entertains the possibility that grade retention could have an effect on prosocial behavior because it gives the retainee an opportunity to help a peer. However, we found no such effect. In fact, prior problems with prosocial behavior preceded grade retention. Once this influence was controlled, grade retention had no short- or long-term effects on prosocial behavior. Because they had experienced severe academic problems, children who were eventually retained probably did not feel equipped to help their same-grade classmates during the repeated year. There is some support for this explanation (Reynolds, 1992). Another plausible explanation for the lack of effects is that, because the focus is usually on controlling problem behavior in the classroom, changes in prosocial behavior were much more difficult for teachers to detect in their daily classroom management strategies.

According to Zigler and Syfco (1996), social competence provides at-risk children with the requisite skills for learning in organized groups with a structured curriculum. Although controlled when looking at the outcomes of grade retention, there were many observed linkages between prior maladjustment and later grade retention. This supports research suggesting that a lack of social competence is associated with academic failure and that this variable should be an integral part of the concept of school readiness (Reynolds, 1992; Shepard, 1997).

Children of younger mothers who did not finish high school were less academically ready than their peers. It is reasonable to speculate that such parents had negative schooling experiences. Perhaps their children would benefit from educational enrichment programs that aim to prevent or treat academic failure that also include strategies for parental involvement and enrichment. It is clear that both parent and child must develop a better relationship with the school as a supportive institution to the family.

In summary, we have spent the last several decades grappling with the concept of academic readiness (Shepard, 1997; Tramontana, Hooper, & Selzer, 1988) and the consequence of one form or another of "unreadiness," academic failure. There are current national and international debates about the eroding aca-

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

demic performance of large numbers of children (American Federation of Teachers, 1997; Crnic & Lamberty, 1994; Morrison, Griffith, & Alberts, 1997; Shepard, 1997). The debate over the costs and benefits of grade retention have been characterized by rhetoric on both sides (American Federation of Teachers, 1997; Gottfredson et al., 1994; Karweit, 1991). The findings from this prospective study strongly recommend the search for strategies in the battle against children's eroding school performance, as grade retention (at least as it is typically implemented) does not seem to be beneficial for children. Because we did not address the issue, these results should not be considered support for social promotion. The practice of social promotion, without proper pupil support has important limitations, and is not very motivating for teachers (American Federation of Teachers, 1997; Karweit, 1991).

Some champion alternatives when it comes to intervening with "unready" at-risk children (e.g., Reynolds, 1992; Reynolds, Temple, & McCoy, 1997), including promotion plus tutoring; summer school; parental involvement programs; and nongraded instructional programs. Others (e.g., American Federation of Teachers, 1997) encourage the development of high-quality preschool and kindergarten enrichment strategies that would prevent problems before they snowball into an insurmountable challenge for both the student and teacher. The answer may not be as simple as choosing one option over others. What is needed is a research program that determines what works best and for whom.

Although the preponderance of evidence does not support the effectiveness of grade retention, it remains on the rise (Mantzicopoulos & Morrison, 1992; Shepard, 1997). This has engendered tremendous controversy in the politics of education (American Federation of Teachers, 1997). Whether the practice continues because of inadequate alternatives or a commitment to school retention lore (e.g., Smith & Shepard, 1988), this prospective study suggests that we should not underestimate the potential harm done by not using other means to intervene with academic failure.

References

Alexander, K. L., Entwisle, D. R., & Dauber, S. L. (1994). *On the success of failure: A reassessment of the effects of retention in the primary grades*. New York: Cambridge University Press.

American Federation of Teachers. (1997). *Promote or retain? Pendulum for students swings back again*. Washington, DC: Author.

Becker, H. S. (1963). *Outsiders*. New York: Free Press.

Behar, L. B., & Stringfield, S. (1974). A behavior rating scale for the preschool child. *Developmental Psychology, 10*, 601–610.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation*. New York: Basic Books.

Byrd, R. S., & Weitzman, M. L. (1994). Predictors of early grade retention among children in the United States. *Pediatrics, 93*, 481–487.

Byrnes, D. A. (1989). Attitudes of students, parents, and educators toward repeating a grade. In L. A. Shepart & M. L. Smith (Eds.), *Flunking grades: Research and policies on retention* (pp. 108–131). Philadelphia: Falmer Press.

Cairns, R. B., Cairns, B. D., & Neckerman, H. J. (1989). Early school dropout: Configurations and determinants. *Child Development, 60*, 1437–1452.

Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Gariépy, J.-L. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology, 24*, 815–823.

Chafe, D. (1984). *Grade retention: Research, policies, and decision making*. Unpublished Committee Report, Office of Education, San Mateo County, CA. (ERIC Document Reproduction Service No. ED 245 349)

Crnic, K., & Lamberty, G. (1994). Reconsidering school readiness: Conceptual and applied perspectives. *Early Education and Development, 5*, 91–105.

Cuddy, M. E., Frame, C., & DeVincentis, C. (1987, November). *The effects of grade retention upon the social and psychological adjustment of elementary school children*. Paper presented at the 21st Annual meeting of the Association for Advancement of Behavior Therapy, Boston, MA. (ERIC Document Reproduction Service No. ED 90 572)

Dobkin, P. L., Tremblay, R. E., Mâsse, L. C., & Vitaro, F. (1995). Individual and peer characteristics in predicting boys' early onset of substance abuse: A 7-year longitudinal study. *Child Development, 66*, 1198–1214.

Downey, G., & Feldman, S. I. (1996). The implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology, 70*, 1327–1343.

Downey, G., Lebolt, A., Rincón, C., & Freitas, A. (1998). Rejection sensitivity and children's interpersonal difficulties. *Child Development, 69*, 1074–1091.

Farrington, D. P., Loeber, R., Elliott, D. S., Hawkins, J. D., Kandel, D. B., Klein, M. W., McCord, J., Rowe, D. C., & Tremblay, R. E. (1990). Advancing knowledge about the onset of delinquency and crime. In B. B. Lahey & A. E. Kazdin (Eds.), *Advances in clini-*

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

cal child psychology (Vol. 13, pp. 283–342). New York: Plenum Press.
Fowler, P. O., & Park, R. M. (1979). Factor structure of the Preschool Behavior Questionnaire in a normal population. *Psychological Reports, 45*, 599–606.
Frymeir, J. (1989). *A study of students at risk: Collaborating to do research*. Bloomington, IN: Phi Delta Kappan Educational Foundation.
Gordon, M., Mittelman, B. B., & Irwin, M. (1994). Sustained attention and grade retention. *Perceptual and Motor Skills, 78*, 555–560.
Gottfredson, D. C., Fink, C. M., & Graham, N. (1994). Grade retention and problem behavior. *American Educational Research Journal, 31*, 761–784.
Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.
Grissom, J. B., & Shepard, L. A. (1989). Repeating and dropping out of school. In L. A. Shepard & M. L. Smith (Eds.), *Flunking grades: Research and policies on retention* (pp. 34–63). Philadelphia: Falmer Press.
Hammack, F. M. (1987). Large school systems' dropout reports: An analysis of definitions, procedures, and findings. In G. Natriello (Ed.), *School dropouts: Patterns and policies* (pp. 20–37). New York: Teachers College, Columbia University.
Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*, 127–155.
Hoge, R. D., Meginbir, L., Khan, Y., & Weatherall, D. (1985). A multitrait–multimethod analysis of the Preschool Behavior Questionnaire. *Journal of Abnormal Child Psychology, 13*, 119–127.
Holmes, C. T. (1989). Grade level retention effects: A meta-analysis of research studies. In L. A. Shepard & M. L. Smith (Eds.), *Flunking grades: Research and policies on retention* (pp. 16–33). London: Falmer Press.
Holmes, C. T., & Matthews, K. M. (1984). The effects of nonpromotion on elementary and junior high school pupils: A meta-analysis. *Reviews of Educational Research, 54*, 225–236.
Hymel, S., Comfort, C., Schonert–Reichl, K., & McDougall, P. (1996). Academic failure and school dropout: The influence of peers. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment* (pp. 313–345). Cambridge: Cambridge University Press.
Jackson, G. B. (1975). The research evidence on the effects of grade retention. *Review of Educational Research, 45*, 613–635.
Jöreskog, K. G., & Sörbom, D. (1993). *Lisrel VIII*. Chicago: Scientific Software International.
Kaplan, D. S., Peck, B. M., & Kaplan, H. (1994). Structural relations model of self-rejection, disposition to deviance, and academic failure. *Journal of Educational Research, 87*, 166–173.
Karweit, N. L. (1991). *Repeating a grade: Time to grow or denial of opportunity?* (Report No. 16). Baltimore, MD: Johns Hopkins University, Center for Research on Effective Schooling for Disadvantaged Students.
Kazdin, A. E. (1997). Conduct disorder across the lifespan. In S. S. Luthar, J. A. Burack, D. Cicchetti, & J. R. Weisz (Eds.), *Developmental psychopathology: Perspectives on adjustment, risk, and disorder*. New York: Cambridge University Press.
Lemert, E. M. (1967). *Human deviance, social problems, and social control*. Englewood Cliffs, NJ: Prentice–Hall.
Loeber, R. (1990). Development and risk factors of juvenile antisocial behavior and delinquency. *Clinical Psychology Review, 10*, 1–41.
Mann, D. (1987). Can we help dropouts? Thinking about the undoable. In G. Natriello (Ed.), *School dropouts: Patterns and policies* (pp. 3–19). New York: Teachers College, Columbia University.
Mantzicopoulos, P., & Morrison, D. C. (1992). Kindergarten retention: Academic and behavioral outcomes through the end of the second grade. *American Educational Research Journal, 29*, 182–198.
Mantzicopoulos, P., Morrison, D. C., Hinshaw, S. P., & Carte, E. T. (1989). Nonpromotion in kindergarten: The role of cognitive, perceptual, visual–motor, behavioral, achievement, socioeconomic, and demographic characteristics. *American Educational Research Journal, 26*, 107–121.
Mâsse, L. C., & Tremblay, R. E. (1997). Behavior of boys in kindergarten and the onset of substance use during adolescence. *Archives of General Psychiatry, 54*, 62–68.
Mâsse, L. C., & Tremblay, R. E. (1999). Kindergarten disruptive behavior, family adversity, gender, and elementary school failure. *International Journal of Behavioral Development, 23*, 225–240.
Morrison, F. J., Griffith, E. M., & Alberts, D. M. (1997). Nature–nurture in the classroom: Entrance age, school readiness, and learning in children. *Developmental Psychology, 33*, 254–262.
Muthén, B. O. (1991). Analysis of longitudinal data using latent variable models with varying parameters. In L. M. Collins & L. H. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 1–25). Washington, DC: American Psychological Association.
National Center for Educational Statistics, U.S. Department of Education, Office of Educational Research and Improvement. (1992). *Digest of educational statistics 1992*. Washington, DC: Author.
Nesselroade, J. R. (1991). Interindividual differences in intraindividual change. In L. M. Collins & L. H. Horn (Eds.), *Best methods for the analysis of change: Recent advances, unanswered questions, future directions* (pp. 92–105). Washington, DC: American Psychological Association.
Owen, S., & Ranick, D. L. (1977). The Greenville program: A commonsense approach to basics. *Phi Delta Kappan, 58*, 531–539.
Pagani, L. S., Boulerice, B., & Tremblay, R. E. (1997). The influence of poverty on children's classroom placement and behavior problems. In G. J. Duncan & J. Brooks-Gunn (Eds.), *Consequences of growing up poor* (pp. 311–339). New York: Sage.
Pagani, L. S., Boulerice, B., Tremblay, R. E., & Vitaro, F. (1997). Behavioural development in children of divorce and remarriage. *Journal of Child Psychology and Psychiatry, 38*, 769–781.
Peterson, S. E., DeGracie, J. S., & Ayabe, C. R. (1987). A longitudinal study of the effects of retention/promotion on academic achievement. *American Educational Research Journal, 24*, 107–118.
Plummer, D. L., & Graziano, W. G. (1987). Impact of grade retention on the social development of elementary school children. *Developmental Psychology, 23*, 267–275.
Reynolds, A. J. (1992). Grade retention and school ad-

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

justment: An explanatory analysis. *Educational Evaluation and Policy Analysis, 14*, 101–121.

Reynolds, A. J., Temple, J., & McCoy, A. (1997, September 17). *Commentary: Grade retention does not work*. Education Week on the Web: Editorial Projects on the Web.

Rubin, K. H., & Clark, M. L. (1983). Preschool teachers' ratings of behavioral problems: Observational, sociometric and social cognitive correlates. *Journal of Abnormal Child Psychology, 11*, 273–286.

Rutter, M. (1990). Psychosocial resilience and protective mechanisms. In J. E. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 181–214). New York: Cambridge University Press.

Shepard, L. A. (1997). Children not ready to learn? The invalidity of school readiness testing. *Psychology in the Schools, 34*, 85–97.

Slavin, R. E., & Madden, N. A. (1989). What works for students at risk: A research synthesis. *Educational Leadership, 46*, 4–13.

Smith, M. L., & Shepard, L. A. (1988). Kindergarten readiness and retention: A qualitative study of teachers beliefs and practices. *American Educational Research Journal, 25*, 307–333.

Sroufe, L. A. (1990). An organizational perspective on the self. In D. Cicchetti & M. Beeghly (Eds.), *The self in transition: Infancy to childhood* (pp. 281–307) Chicago: University of Chicago Press.

Tomchin, E. M., & Impara, J. C. (1992). Unraveling teachers' beliefs about grade retention. *American Educational Research Journal, 29*, 199–223.

Tramontana, M. G., Hooper, S., & Selzer, S. C. (1988). Research on the preschool prediction of later academic achievement: A review. *Developmental Review, 8*, 89–146.

Tremblay, R. E., Desmarais–Gervais, L., Gagnon, C., & Charlebois, P. (1987). The Preschool Behavior Questionnaire: Stability of its factor structure between cultures, sexes, ages and socioeconomic classes. *International Journal of Behavioral Development, 10*, 467–484.

Tremblay, R. E., Loeber, R., Gagnon, C., Charlebois, P., Larivée, S., & LeBlanc, M. (1991). Disruptive boys with stable and unstable high fighting behavior patterns during junior elementary school. *Journal of Abnormal Child Psychology, 19*, 285–300.

Tremblay, R. E., Pihl, R. O., Vitaro, F., & Dobkin, P. L. (1994). Predicting early onset of male antisocial behavior from preschool behavior: A test of two personality theories. *Archives of General Psychiatry, 51*, 732–739.

Tremblay, R. E., & Zhou, R.-M. (1991). *Le dépistage des difficultés d'adaptation sociale chez les garçons de milieux socio-économiques faibles: de la maternelle à la fin de l'école primaire* [Identification of maladjustment in boys from low-income areas: From kindergarten to the end of primary school. Report.]. Université de Montréal: Montréal, Canada: Groupe de Recherche sur l'Inadaptation Psychosociale Chez l'Enfant. Faculté des arts et des sciences.

U.S. Bureau of the Census. (1992). *Current population survey*. U.S. Department of Commerce. Washington, DC: Author.

U.S. Bureau of the Census. (1995). *Current population survey*. U.S. Department of Commerce. Washington, D.C.: Author.

Vitaro, F., Desmarais–Gervais, L., Tremblay, R. E., & Gagnon, C. (1992). Adaptation sociale en début de scolarisation et milieux de garde à la période préscolaire [Social adjustment at the beginning of elementary school and preschool day care arrangements]. *Revue des Sciences de l'Éducation, 18*, 1–15.

Weir, K., & Duveen, G. (1981). Further development and validation of the Prosocial Behavior Questionnaire for use by teachers. *Journal of Child Psychology and Psychiatry, 22*, 357–374.

Zigler, E. F., & Styfco, S. (1996). Head Start and early childhood intervention: The changing course of social science and social policy. In E. F. Zigler & S. L. Kagan (Eds.), *Children, families, and government: Preparing for the twenty-first century* (pp. 132–155). New York: Cambridge University Press.

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press

https://doi.org/10.1017/S0954579401002061 Published online by Cambridge University Press