Journal of School Psychology 54 (2016) 77–93

Contents lists available at ScienceDirect

Journal of School Psychology

journal homepage: www.elsevier.com/locate/jschpsyc

The effects of early grade retention: Effect modification by prior achievement and age

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ARTICLE INFO

Article history:
Received 16 December 2014
Received in revised form 23 October 2015
Accepted 23 October 2015
Available online 18 November 2015

Keywords:
Grade retention
Longitudinal study
Effect modification
Time-varying propensity score weighting
CBPS

ABSTRACT

This study examines the effects of early grade retention and different effects according to prior achievement and age. Within a population of children at risk of early retention, we compared the development throughout primary school in mathematics achievement after kindergarten retention, first-grade retention, and continuous promotion. Analyzing data from a large-scale longitudinal study using covariate balancing propensity score weighting, the findings revealed that early grade repeaters would score higher in mathematics if they were promoted each year instead. However, the effects diminished or even disappeared in the long term. Compared to kindergarten retention, first-grade retention was found to be more harmful for the mathematics development of younger children specifically.

During the last few decades, grade retention has gained increased attention in educational practice, research, and policy. Grade retention refers to the practice of retaining struggling children in the same grade for an extra school year. The practice is based on the conviction that repeating a grade is beneficial for students who have not mastered their grade's curriculum. In European countries like Belgium, Spain, France, The Netherlands, and Luxembourg, this idea is generally supported by the teaching profession, the school community, and parents (Eurydice Network, 2011). Early meta-analyses by Holmes (1989) and Jimerson (2001), however, showed that grade retention generally has negative effects on student outcomes. Recently, these meta-analyses have been criticized for being based on studies that show significant methodological shortcomings (e.g., Allen, Chen, Willson, & Hughes, 2009; Lorence, 2006). Also, it is not clear which subgroups of students are more or less prone to certain grade retention effects. The goals of the current study were therefore to evaluate the impact of early grade retention on development in mathematics and to determine whether the effects differed according to the timing of retention (kindergarten versus first grade), prior achievement, or age.

1. Grade retention and children's development

The literature on the effects of grade retention is conflicting. Strong arguments have been put forth both in support and against grade retention.

First, there are several theories that suggest the potential advantages of grade retention in promoting children's development. From a developmental perspective, the early intervention theory states that granting a child more time to develop prevents failure

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Action Editor: Amy Briesch.

http://dx.doi.org/10.1016/j.jsp.2015.10.004
0022-4405/

and frustration in later life (Smith & Shepard, 1988). Struggling children who are promoted anyway are more likely to suffer from repeated experiences of academic failure. The frustration self-esteem model predicts that academic failure increases children's likelihood of having lower school-related self-esteem, which might lead to frustration, problematic behavior, and eventually dropping out (Finn, 1989). Early intervention is also supported by the *rate of return to investment curve* (Carneiro, 2003). The curve summarizes the body of evidence that the rate of return to investment is higher at younger ages for a constant level of investment. This view hypothesizes that addressing a child's shortcomings as early as possible has a higher positive impact than doing so at an older age. For example, Vandecandelaere, Schmitt, Vanlaar, De Fraine, and Van Damme (2014, 2015) found kindergarten retention to be more positive for children's psychosocial development and less harmful for their academic performance compared to first-grade retention. With regard to social development, social comparison theory (Festinger, 1954) suggests that children create self-knowledge based on others' opinions and cues in their environment and by comparing themselves with their classmates (Buunk & Gibbons, 2007). When a child is retained, the reference group changes. The new class group is younger and the retained child has an extra year of education, maturation, and experience in socializing with peers. Several studies have shown a positive effect on well-being when students perceive themselves as slightly better off than others (Buunk & Gibbons, 2007). It is therefore expected that grade repeaters gain a higher level of well-being and competence in peer relations, which may induce higher achievement levels. Previous research has provided evidence for positive psychosocial effects of early grade retention (Hong & Yu, 2008; Wu, West, & Hughes, 2010).

With regard to learning outcomes, both sociocultural theory (Vygotsky, 1978) and the bioecological model of development (Bronfenbrenner & Ceci, 1994) suggest that positive or negative effects of either promotion or retention are expected when the corresponding learning environment is more or less aligned with the child's "zone of proximal development." Grade repeaters are exposed to the same subject matter twice, including the content that they already mastered. Opponents argue that this deprives repeaters of access to meaningful, age-relevant challenges, which can disrupt their development of self-regulation and academic skills (Morrison, Alberts, & Griffith, 1997). For example, studies by Hong and Raudenbush (2005, 2006) and Hong and Yu (2007) suggest that kindergarten repeaters would have achieved better results for reading and mathematics at the end of the treatment year had they been promoted instead. In the long run, however, these negative effects seem to diminish. Similarly, Vandecandelaere et al. (2014) and Goos, Van Damme, Onghena, Petry, and de Bilde (2013) demonstrated negative effects of kindergarten retention and first-grade retention on academic outcomes. Finally, negative outcomes may be expected based on the labeling theory. This theory describes how identity and behavior are influenced by how people are classified (Becker, 1963; Lemert, 1967). Grade retention might be harmful because of the negative connotation of the label "repeater." The labeling theory predicts that repeaters are more likely to withdraw from social activities and to have lower levels of self-confidence and self-esteem (Hong & Yu, 2008). Some studies have found negative effects of retention on certain psychosocial outcomes (Goos et al., 2013). Moreover, the stigma may lead to lower teacher, parent and self-expectations, which may induce a self-fulfilling prophecy of underachievement (Shepard, 1989).

1.1. Shortcomings in previous research

In general, previous research had found either negative or no effects of retention on academic outcomes. This research has been summarized in meta-analyses by Holmes (1989) and Jimerson (2001). However, the studies included in the meta-analyses show three important shortcomings: a lack of a viable comparison group, the disregard of post-treatment retention, and the limited research on effect modification.

1.1.1. Lack of a viable comparison group

In the majority of the studies included in the meta-analyses, there was no viable comparison group for the group of grade repeaters. In contrast with randomized control trials, grade retention studies are bound to use non-experimental data in which the treatment (i.e., grade retention) is not randomly assigned. As a consequence, repeaters and promoted children may differ with regard to pre-treatment variables that simultaneously affect the selection process for retention and the outcome. For example, underachievers are more likely to be retained compared to high achievers. Not controlling for pre-treatment achievement could lead to a spurious relationship between retention and later achievement. Accordingly, differences in later achievement caused by retention cannot be distinguished from differences caused by pre-treatment achievement. Allen et al. (2009) demonstrated that studies that more successfully control for student characteristics associated with selection into retention are less likely to find negative effects on achievement.

A recent generation of studies has more adequately used techniques to adjust for pre-treatment differences. Pioneers in this regard were Hong and Raudenbush (2005, 2006), who applied propensity score methods. Other researchers have dealt with systematic bias by means of instrumental variable methods (e.g., Jacob & Lefgren, 2009), regression discontinuity methods (e.g., Jacob & Lefgren, 2004), and difference-in-differences methods (e.g., Greene & Winters, 2007). The results of these recent studies were more nuanced. As summarized by Goos et al. (2013), these studies showed that grade repeaters would score higher if they would be promoted instead but that these effects disappear in the long term.

1.1.2. The disregard of post-treatment retention

A second shortcoming of the existing literature is the fact that previous studies most often treated retention in a specific grade as a single intervention. In reality, however, children who are on the edge of being retained in the grade of interest, but who are promoted anyway, are very likely to be retained in the next grade (Jacob & Lefgren, 2009; Vandecandelaere et al., 2014; Wu,