Journal of School Psychology 68 (2018) 142–153

Contents lists available at ScienceDirect

Journal of School Psychology

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

An examination of student reading outcomes following tier II exit decisions

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ARTICLE INFO

Action Editor: Nicholas Benson

Keywords:
Reading
Intervention
Maintenance
Prevention

ABSTRACT

The current study examined reading skills at two distal time-points for 6828 students who received support from a tier II reading intervention program in the 2015 and 2016 school years. The first follow-up assessment occurred at the end of the year in which intervention was provided and the second assessment occurred at the beginning of the next year. Multilevel models were fit to the data to predict the log odds that a student would meet spring and fall reading benchmarks depending on a variety of student- and school-level predictors. Of most interest was the probability of future success as a function of whether students met intervention exit criteria, defined as consistent grade-level performance on a progress monitoring measure. Meeting intervention exit criteria was a statistically and practically significant predictor of scoring above the spring and fall benchmark the following school year. Yet despite improved outcomes relative to students not exited from the intervention, many students who met exit criteria due to grade-level performance failed to meet spring and fall benchmarks. The proportion of students meeting state-defined proficiency criteria, duration of intervention, and proportion of students receiving free or reduced lunch at the school-level did not influence the association between meeting exit criteria and scoring above benchmark at either screening period. Results suggest that future research is needed to evaluate and guide "downward movement" in an RtI model (i.e., ensuring gains made during tier II intervention are maintained after that support is removed).

1. Introduction

Early reading skills are widely recognized as critical for school success (Kamil et al., 2008; National Reading Panel, 2000; Wagner & Torgesen, 1987). In particular, the time between kindergarten and third grade is regarded as a key period for the development of literacy skills. This time-sensitive window presents an opportunity to build a foundation for a lifetime of academic and economic success (Lesnick, Goerge, Smithgall, & Gwynne, 2010). Indeed, children who read proficiently by third grade are four times more likely to graduate high school than those who do not (Hernandez, 2011). Highlighting the importance of proficient reading skills is particularly relevant as recent data from the National Assessment of Education Progress indicate that 64% of students are below expectations for proficiency in reading by fourth grade, a number that increases among students from low-income households (NAEP, 2016).

The general importance of reading skills, combined with a little-changed status quo for performance among early elementary students, has been the primary impetus for decades of research on promising instructional strategies and interventions for students at

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https://doi.org/10.1016/j.jsp.2018.03.003
Received 8 May 2017; Received in revised form 19 January 2018; Accepted 12 March 2018

risk for reading problems (Ehri, Nunes, Stahl, & Willows, 2001; Kamil et al., 2008; Swanson & Hoskyn, 1998). The quality of evidence for those strategies and interventions ranges from large-scale, rigorous evaluations to small-scale studies addressing specific reading deficits (Markovitz, Hernandez, Hedberg, & Silberglitt, 2014; Meisch et al., 2011; Therrien, 2004). In schools, that body of research is used to guide service delivery that is consistent with a tiered model of support in which all students are exposed to high quality instruction and data are used to identify an increasingly smaller number of students who receive more intensive evidence-based support (Jimerson, Burns, & VanDerHeyden, 2016). For example, in the context of reading, schools use data from short screening tests to determine which students are at risk for difficulties and typically provide them targeted reading support (i.e., tier II interventions). The parameters of tier II reading interventions vary across schools; however, students commonly receive 30 min of support, 3–5 times a week, for at least nine weeks (Johnson, Mellard, Fuchs, & McKnight, 2006).

To facilitate efficient resource allocation within tiered models of support, data are also used to monitor student response to intervention and determine if support should be maintained, modified, or removed (Mellard, McKnight, & Woods, 2009). Of these data-based decisions, the latter is particularly important for resource allocation as students exited from intervention free resources to support new students. Indeed, the bidirectional movement of students between high and low levels of support is a fundamental assumption of tiered systems of service delivery (Marston, 2005; Tilly, 2008). Nevertheless, despite research to evaluate the quality of data-based decisions for when students do (or do not) respond to intervention (Burns, Scholin, Kosciolek, & Livingston, 2010; Van Norman, Parker, & Nelson, 2017; VanDerHeyden, Witt, & Gilbertson, 2007), the empirical basis for decisions to *remove* support is less clear. This is relevant because whether a student responds to an intervention or not is a substantively different decision than whether a student no longer needs intervention. Exit decisions represent one end of a continuum of response to intervention decisions. Whereas a complete lack of response is often considered part of formal special education eligibility determinations (VanDerHeyden et al., 2007), and partial or incomplete response informs ongoing tier II support (Fuchs & Fuchs, 2005), removal of support is predicated on a determination that intervention response has been full and complete. Thus, applied research to evaluate the longitudinal performance of students exited from tier II intervention according to existing guidelines for adequate performance may be useful for informing practice and research on data-based decision-making.

1.1. Reading theory and long-term intervention outcomes

In considering the long-term outcomes for students receiving reading interventions, it is useful to consider the hypothesized association between short- and long-term gains in core reading skills. For students in early elementary grades, researchers widely recognize that efficient word recognition skills at both the word- and sub-word level are necessary for reading proficiency (Perfetti, 1985; Pressley, 2002; Snow, Burns, & Griffin, 1998). Those skills are recognized in recent policy-related documents (e.g., Foorman et al., 2016; National Governor's Association, 2010), and have been central to the study of reading development for over 30 years. The Simple View of Reading (Gough & Tunmer, 1986), for example, recognized reading competence as including both code-focused and meaning-focused elements, and has been empirically supported by research that establishes connections between word- and sub-word level reading skills and measures of reading comprehension (i.e., Ehri et al., 2001; Therrien, 2004). In addition, using latent class modeling, recent longitudinal studies support direct associations between word- and sub-word level reading skills and comprehension through second grade (Foorman, Herrera, Petscher, Mitchell, & Truckenmiller, 2015). Word- and sub-word level skills even appear relevant for reading comprehension when subsumed within higher-order factors (e.g., a general oral language construct) well into secondary school (Foorman et al., 2015).

Thus, from a theoretical perspective, targeted intervention that improves word and sub-word level skills should produce a longitudinal impact on reading outcomes (Gough & Tunmer, 1986). Indeed, meta-analytic research on phonics intervention has observed effects for younger students that persist up to one year later (Ehri et al., 2001). Further, optimal responders to kindergarten intervention have shown sustained gains, especially when receiving quality core instruction in first grade (Coyne, Kame'enui, Simmons, & Harn, 2004), and phonemic awareness interventions among young students have demonstrated relatively strong maintenance over time with evidence of transfer to other reading skills (Suggate, 2016).

Yet despite evidence for intervention effects at follow-up intervals, it appears that success during (or at the end of) intervention is not deterministic of future reading success. Even for interventions with existing evidence of longitudinal maintenance, effects tend to decrease over time; and analyses for effects on broader measures of the reading construct are lacking (Blachman et al., 2014; Ehri et al., 2001). Existing research also suggests age and type of measure might be related to observed maintenance of intervention effects. In a study that followed kindergarten students through third grade, future risk status for students who had received intervention was considerably greater when assessed with an oral reading fluency measure relative to other measures of reading skills (Simmons et al., 2008). Further, a follow-up period of approximately 11 months led to an observed reduction in intervention effect size from $d = 0.37$ at initial post-test to $d = 0.22$, and both phonics and fluency interventions tended toward reduced maintenance of intervention effects during follow-up periods (Suggate, 2016).

A related body of research on the maintenance of reading skills has examined the trajectory of at-risk students between academic calendar years. The evaluation of maintenance effects across this period of time is a particularly useful complement to other longitudinal measures of performance because of the lack of instruction that occurs between spring and fall. With few exceptions (e.g., Helf, Konrad, & Algozzine, 2008), substantial research highlights the stagnating (Skibbe, Grimm, Bowles, & Morrison, 2012) or detrimental impact of summer break on student reading proficiency (Sandberg Patton & Reschly, 2013), which may have implications for students exited from intervention (Alexander, Entwisle, & Olson, 2001; Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Such findings suggest that intervention effects may be contingent on the frequency and nature of exposure to reading instruction and practice outside of the intervention and call into question the longer-term accuracy of decisions to exit students from