



Increasing pre-kindergarten early literacy skills in children with developmental disabilities and delays

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ABSTRACT

Two hundred and nine children receiving early childhood special education services for developmental disabilities or delays who also had behavioral, social, or attentional difficulties were included in a study of an intervention to increase school readiness, including early literacy skills. Results showed that the intervention had a significant positive effect on children's literacy skills from baseline to the end of summer before the start of kindergarten ($d = .14$). The intervention also had significant indirect effects on teacher ratings of children's literacy skills during the fall of their kindergarten year ($\beta = .09$). Additionally, when scores were compared to standard benchmarks, a greater percentage of the children who received the intervention moved from being at risk for reading difficulties to having low risk. Overall, this study demonstrates that a school readiness intervention delivered prior to the start of kindergarten may help increase children's early literacy skills.

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1. Introduction

Efforts to ensure that young children with developmental disabilities and delays receive early intervention have been central to federal education legislation for the past several decades and have stimulated the development of a range of Early Childhood Special Education (ECSE) services and supports (Gargiulo & Kilgo, 2011). One of the major goals of such early intervention is to reduce the need for special education services once children enter school, thus readying them to enter general education (Phillips & Meloy, 2012). For all children, school readiness skills are critical in determining academic and social success through the subsequent school years and even into adulthood (Campbell et al., 2008; Schweinhart et al., 2005). Among school readiness competencies, early literacy skills that form the foundation for reading may be particularly important to academic achievement (Torgesen, 1998) which is linked to social and behavioral adjustment in school (Bennett, Brown, Boyle, Racine, & Offord, 2003; Halonen, Aunola, Ahonen, & Nurmi, 2006). The promotion of those skills may thus be important to school psychologists working to prevent future difficulties for students. This study describes the results of an evaluation of the Kids in Transition to School (KITS) Program, an intervention designed to prepare children with developmental disabilities and delays with concurrent behavioral, social, or attentional problems for the transition to kindergarten. The KITS Program promotes critical early literacy skills among other school readiness abilities. (Because behavioral, social, and attentional problems all represent some difficulty with behaviors, we collectively refer to them as "behavioral problems".)

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1.1. Early literacy and school readiness

Early literacy skills, such as knowing one's letters, letter sounds, and basic concepts about print, are the foundational skills for reading and represent an important component of school readiness. Children who begin school without these skills may struggle academically and, once they fall behind their peers, find it increasingly difficult to catch up (Torgesen, 1998). Early literacy skills positively predict ($r_s = .44-.47$) both reading and math achievement through elementary and middle school (Duncan et al., 2007). Poor reading ability has further been linked to behavioral difficulties at school (Halonen et al., 2006), and the long-term consequences of poor literacy include school drop-out, involvement in antisocial activities, and poor educational and occupational attainment (Bennett et al., 2003; Maughan, Gray, & Rutter, 1985). In the current study, we focused on several early literacy skills, including phonological and phonemic awareness, letter naming, and understanding of concepts about print. Phonological awareness (e.g., the understanding that words are comprised of a variety of sounds) and phonemic awareness (e.g., the ability to identify the distinct sounds in a word) are two of the strongest predictors of early reading skills (Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). The ability to correctly identify letters is also a robust predictor of reading outcomes (National Institute for Literacy, 2009; Schatschneider et al., 2004). In addition, understanding concepts about print (e.g., left to right orientation, differentiation of words from pictures) is key to reading comprehension (National Research Council, 1998) and is associated with other early literacy skills such as phonological awareness (Levy, Gong, Hessels, Evans, & Jared, 2006) and letter identification (Diamond, Gerde, & Powell, 2008).

1.2. Early literacy skills, developmental disabilities and delays, and behavior problems

Despite the critical importance of early literacy skills to reading and other academic outcomes, there is very little literature on these skills in children with developmental disabilities and delays prior to school entry. One of the few studies of kindergarten readiness in children with developmental disabilities and delays found that 58–96% of the children, depending on disability category, were not demonstrating the skills that a child transitioning to kindergarten would need to be successful, and thus were “not ready” for the transition (Lloyd, Irwin, & Hertzman, 2009). Further, 62% of those children were performing below academic standards in reading when they were assessed again at fourth grade (Lloyd et al., 2009). A better understanding of the early literacy skills of this group of vulnerable children is critical in order to help them to achieve later school success.

Among children with developmental disabilities and delays, those with behavioral or social difficulties are at the highest risk for a range of poor outcomes including low academic performance, low educational attainment, and early involvement in criminal activities (Trout, Nordness, Pierce, & Epstein, 2003). A number of studies, both in typically developing children and those with developmental disabilities, have found associations between reading ability and problematic behavior (Anderson, Kutash, & Duchnowski, 2001; Gray, Carter, Briggs-Gowan, Jones, & Wagmiller, 2014; King, Lembke, & Reinke, 2015; Morgan, Farkas, Tufis, & Sperling, 2008). Children with early behavioral difficulties, particularly inattention, are more likely to experience difficulties with early reading (Gray et al., 2014). Conversely, early reading difficulties appear to elevate a child's chances of developing problem behaviors over time (Morgan et al., 2008).

Particularly worrisome for children with developmental delays and behavioral difficulties are findings that deficits in skills essential to reading appear to increase with the severity of behavioral and/or social problems (Trout, Epstein, Nelson, Synhorst, & Hurley, 2006). Over time, while reading skills improve in children with disabilities but without behavioral problems, children with concurrent behavioral issues do not show such gains (Anderson et al., 2001). Thus, children with developmental disabilities and behavioral problems may start school with worse skills than their peers and their resulting difficulties in reading may then exacerbate their behavioral problems. Increasing foundational reading skills through early intervention could help to prevent escalating academic and behavioral problems in these children.

1.3. Improving early literacy skills

Although children with developmental disabilities and delays by law receive services to remediate those delays, only relatively recently has there been a move to make early literacy skills a specific focus of these services (Carta & Kong, 2007). Head Start programs are mandated to include children with developmental disabilities and delays and the recent Head Start Impact Study found that these children appear to benefit from Head Start in math and socio-emotional development (U.S. Department of Health and Human Services, Administration for Children and Families, 2010). Children with developmental disabilities and delays who attend universal and inclusive pre-kindergarten programs show increases in early literacy similar to those of their peers without disabilities (Phillips & Meloy, 2012). However, not all children with developmental disabilities and delays will have opportunities to attend Head Start or pre-kindergarten programs, as spaces in Head Start and other preschool programs are becoming increasingly limited and universal pre-kindergarten is not yet widely available (Casey & Foundation, 2014).

Perhaps one of the largest missed opportunities for many early intervention and early education programs is that many of them run on an academic year calendar. This creates a summer services gap during which the most vulnerable, highest-risk children may lose or fail to gain valuable skills (Alexander, Entwisle, & Olson, 2001), and children with special education needs may experience the largest losses (Allinder & Eicher, 1994; Patton & Reschly, 2013). Additionally, the transition into school seems to be an optimal time to intervene on school readiness (Pianta & Cox, 1999). As children's school readiness skills can make a critical difference to their academic and social progress (Duncan et al., 2007), programming to augment those skills and to fill any

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