



The influences of multiple informants' ratings of inattention on preschoolers' emergent literacy skills growth[☆]



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ABSTRACT

There is strong evidence that inattention is a correlate of reading-related skills; however, less research has examined the unique and longitudinal relations between multiple informants' ratings of inattention and the development of early reading skills across the preschool year. This study used latent growth curve analysis to examine whether ratings of inattention, completed by multiple informants, were unique predictors of emergent literacy development in preschoolers. Participants included 284 preschool children. ADHD-rating scales were completed by three different informants (i.e., classroom teachers, project teachers, and examiners) and measures of emergent literacy skills, a measure of working memory, and a measure of non-verbal cognitive ability were completed by the preschoolers. Each informant's rating of inattention uniquely predicted children's initial emergent literacy skills, but only the ratings of inattention made by project teachers were uniquely associated with growth in emergent literacy skills over the course of the preschool year.

1. Introduction

Emergent literacy skills provide a crucial foundation for the development of conventional reading skills (Whitehurst & Lonigan, 1998). Inattention is a potentially malleable behavioral factor that consistently relates to academic achievement across development (Aaron, Joshi, Palmer, Smith, & Kirby, 2002; Walcott, Scheemaker, & Bielski, 2010; Willcutt, Pennington, & DeFries, 2000). Although the causal linkage between inattention and learning difficulties is not completely understood, many inattentive behaviors have been posited to impact achievement negatively by impeding learning-supportive behaviors (Ogg, Volpe, & Rogers, 2016). The early identification of academically impairing attention problems has the potential to inform intervention efforts and minimize children's long-term academic difficulties. An improved understanding of which informants provide inattention ratings that are most relevant to academic development will help streamline the early identification process and guide intervention decisions. In the present study, we examined the relations between multiple informants' ratings of inattention and children's emergent literacy

skill development over the preschool year.

1.1. Relations between inattention and emergent literacy development

Emergent literacy skills in preschool are predictive of reading skills across the early elementary years (Lonigan, Schatschneider, & Westberg, 2008). Multiple potential sources of influence on these important skills have been identified, including instructional factors (Piastra & Wagner, 2010), interest in literacy (Hume, Allan, & Lonigan, 2016), cognitive abilities (Rabiner & Coie, 2000), and behavioral factors like self-regulation (Purvis & Tannock, 2000). Inattention is a specific component of self-regulation that may interfere with the development of these skills (e.g., Welsh, Nix, Blair, Bierman, & Nelson, 2010). Deficits in attention can be represented by a variety of behavior problems, such as not completing tasks, being easily distracted, making careless mistakes, and being forgetful (American Psychiatric Association, 2013). In young children, attention is thought to be part of a group of distinct but related executive function skills that enable the resolution of conflicting information (Rueda, Posner, & Rothbart,

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2004). These self-regulatory skills have a period of rapid development between the ages of 2 and 6 years (Espy, 2004).

A large body of research supports the concurrent links between inattention and literacy skills (e.g., Aaron et al., 2002; Purvis & Tannock, 2000; Willcutt et al., 2000). Inattentive behaviors, such as those indicative of Attention Deficit/Hyperactivity Disorder (ADHD), are associated with reading difficulties during childhood (Willcutt et al., 2000) and adolescence (Willcutt & Pennington, 2000). With older children, attentional processes relate to both decoding and comprehension skills (Arrington, Kulesz, Francis, Fletcher, & Barnes, 2014). Although less research has examined the relation between inattention and literacy in the preschool years, there is both concurrent and longitudinal evidence that measures of inattention are negatively associated with preschoolers' emergent literacy skills (e.g., Lonigan et al., 1999; Sims & Lonigan, 2013; Walcott et al., 2010; Willcutt et al., 2007).

There also is a longitudinal link between inattention and the development of reading-related skills. For example, inattention in preschool predicts emergent literacy skills in kindergarten, after controlling for emergent literacy skills in preschool (Walcott et al., 2010). Inattention also predicts reading achievement across the elementary school years even after controlling for IQ, prior reading abilities, and behavior problems (Rabiner & Coie, 2000). Welsh et al. (2010) reported that direct measures of both inattention and working memory (WM) predicted emergent literacy skills in kindergarten when controlling for emergent literacy skills in preschool. These longitudinal studies identify inattention as a long-term predictor of risk. Given the significant relation between inattention and reading skills across development, research is needed to examine the early emergence of this link and to explore how different manifestations of inattention across contexts relate to growth in emergent literacy skills.

Attention is an important moderating factor in the effectiveness of reading interventions in school-age children, suggesting that deficits in attention may limit the ability of children to benefit from high-quality reading instruction (Dion et al., 2011). Dally (2006) pointed to the numerous instances in which the ability to “attend to” aspects of written and spoken language such as phonemes, graphemes, and orthographic elements (Share, 1995; Tunmer & Hoover, 1993) is cited as necessary to becoming a successful reader. Further, the inattentive characteristics and behaviors captured by the items on behavioral rating scales also may impact learning negatively. Distractibility, failure to listen, and failure to attend to details make it difficult to process and internalize the information presented during instruction. Organizational difficulties such as keeping track of materials may impact academic development by detracting from the time spent on active engagement in learning (Langberg, Epstein, Urbanowicz, Simon, & Graham, 2008). In sum, inattention may have an exponential negative effect on early reading development because it impedes learning both within and across academic lessons.

1.2. Measurement of inattention

One factor to consider when examining the relation between inattention and other constructs is the multiple types of informants who may be asked to provide ratings of a child's inattentive behaviors. One of the most common means of assessing attention problems in both clinical practice and research involves rating scales completed by teachers, parents and other observers. Teachers are considered a valuable source of information regarding children's behavior problems because they have regular contact with many children, giving them a good perspective for making decisions regarding how a particular child compares to other same-age children (e.g., Evans, Allen, Moore, & Strauss, 2005). Furthermore, teachers observe the child in activities that vary in structure, many of which require some degree of engagement and attention. Therefore, teachers can provide information about the child's inattentive behaviors as they occur during learning activities that require engagement. This is also true of individuals, such as

interventionists and specialists, who work with children primarily in small-group or individual academically-focused contexts. Examiners, who observe the child in a time-limited but highly structured performance-based setting, have also been informants of interest (Bauermeister et al., 2005; Kerr, Lunkenheimer, & Olson, 2007). These informants provide the opportunity to obtain information regarding a child's behavior in a relatively short time period.

Although different informants are asked to respond to similar or identical items to assess a child's behaviors, responses across informants are typically only weakly-to-moderately correlated (Collett, Ohan, & Myers, 2003; De Los Reyes & Kazdin, 2004; Phillips & Lonigan, 2010; Sims & Lonigan, 2012). For example, Phillips and Lonigan reported poor-to-moderate agreement between ratings of inattention made by teachers, parents, and trained observers (inter-rater intra-class coefficients = 0.13 to 0.46). Whereas the modest agreement between informants could be attributable to compromised reliability and potential bias in informant ratings (e.g., Hartung et al., 2010), the lack of strong agreement between raters may also be the result of true differences in children's behavior across settings (Mares, McLuckie, Schwartz, & Saini, 2007). Stronger agreement has been reported for individuals with similar roles who observe the child in a similar context (e.g., teachers; Loughran, 2003). Therefore, informants may provide valid information about a child that varies depending on the context in which the rating is made.

Evidence consistently demonstrates that the inclusion of reports from multiple informants improves the validity of ADHD diagnoses (Power et al., 1998). However, there is no consensus regarding how to best integrate information provided by different informants (e.g., Shemmassian & Lee, 2012). Because different informants may provide unique and meaningful information about a child's symptom presentation, symptom severity, and risk of associated deficits (De Los Reyes & Kazdin, 2004), there is an increased interest in leveraging the differences between informants to guide diagnostic and treatment decisions. Some individuals may be better informants of certain symptom clusters. For example, research with school-age children and adolescents suggests that teachers may be better informants of inattentive symptoms than are parents (Rommelse et al., 2015). Ratings made by different informants may also point to different co-occurring problems. For example, in studies of adolescents, caregivers' reports of inattention were associated with callous-unemotional traits whereas adolescents' reports of inattention were associated with internalizing symptoms (Hogue, Dauber, Lichvar, & Spiewak, 2014). Thus, inattention noted by different informants may suggest different risks for associated difficulties.

1.3. Identifying children at-risk for learning difficulties

In the context of education, there is a movement to provide children who are struggling academically with more timely additional support. Response to Intervention (RTI; U.S. Department of Education, 2004) is an approach to instruction in which children who are not progressing at expected rates are given increasingly intensive and individualized instruction based on their response to interventions. When children fail to meet benchmarks, a typical first step is to provide additional educational support in a small-group context. Small groups allow the student to have more personalized instruction and closer monitoring from the educator. If children do not respond sufficiently to this level of support, they may be provided more individualized support in a one-on-one context. Thus, young children who are demonstrating emerging academic difficulties may work with several different types of educators who observe their behaviors in different contexts. Although it is traditionally lead classroom teachers who are asked to provide behavioral ratings, individuals who observe the child in other, sometimes more focused, educational contexts may offer unique insights regarding children's learning- and performance-related behaviors. Determining which informants' ratings best predict slow rates of skill development

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