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Kindergarten predictors of third grade writing

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ABSTRACT

The primary goal of the present study was to examine the relations of kindergarten transcription, oral language, word reading, and attention skills to writing skills in third grade. Children ($N = 157$) were assessed on their letter writing automaticity, spelling, oral language, word reading, and attention in kindergarten. Then, they were assessed on writing in third grade using three writing tasks — one narrative and two expository prompts. Children's written compositions were evaluated in terms of writing quality (the extent to which ideas were developed and presented in an organized manner). Structural equation modeling showed that kindergarten oral language and lexical literacy skills (i.e., word reading and spelling) were independently predicted third grade narrative writing quality, and kindergarten literacy skill uniquely predicted third grade expository writing quality. In contrast, attention and letter writing automaticity were not independently related to writing quality in either narrative or expository genre. These results are discussed in light of theoretical and practical implications.

1. Introduction

The ability to express one's thoughts and ideas in writing is critical for success in school, in the workforce, and in participating in modern society. Despite the critical role of good written communication, recent statistics indicate that only 30% of students in grades 8 and 12 can write at or above a proficient level (National Center for Education Statistics, 2012). As such, it is not surprising that the Common Core State Standards, which were adopted by the majority of states in the United States, explicitly lay out expectations for students' writing skills even as young as kindergarten (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). As expected, the standards become more demanding as children develop such that by grade 3, children are, for instance, expected to write not only stories (or narratives) but also opinion pieces that support a point of view with reasons, and to write informative/explanatory texts that "examine[s] a topic and convey[s] ideas and information clearly." (p. 19).

Research in the area of reading has provided strong evidence that precursor component skills of reading can be identified (e.g., phonological awareness, alphabet knowledge, oral language; see Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004 and National Early Literacy Panel, 2008). Furthermore, targeting these early reading skills through intervention is key to preventing future reading failure and promoting successful reading acquisition (National Research Council, 1998; Torgesen, 1998). A similar approach to research in writing is needed to identify the precursor component skills for writing early on so that teachers may also promote proficient writing and help children meet grade level writing expectations.

1.2. Theoretical models of writing for developing writers

Juel, Griffith, and Gough (1986) proposed the simple view of writing in which writing is a function of two necessary component skills, ideation and transcription. Ideation refers to planning, generating, and organizing texts whereas transcription refers to getting the generated texts into print. Juel and her colleagues found that oral language production which captures ideation and spelling which captures transcription were both related to writing for children in grades 1 and 2.

Another prominent theoretical model of writing is the "not-so-simple view of writing" proposed by Berninger and Winn (2006). According to this model, multiple skills involved in writing are clustered into three primary parts – transcription, text generation (i.e., "mental production of a linguistic message", McCutchen, 2006, p. 121), and executive functions and self-regulations – and working memory plays a central role in coordinating and integrating these three parts. Compared to the simple view of writing, the not-so-simple view of writing explicitly underscores the roles of self-regulatory and attentional processes and working memory. Finally, Bereiter and Scardamalia (1987) have proposed another theoretical account for developing writers, the knowledge-telling model. According to this model, children's writing, particularly for beginning writers, is dominated by knowledge-telling

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approach, in which the child's writing is transcription of what they know about topic (content knowledge) and genre (i.e., discourse knowledge). According to these three models, the following skills appear to contribute to writing for developing writers: transcription skills, oral language, executive function (e.g., working memory) and self-regulation (e.g., attention), and content and discourse knowledge. Previous studies have shown evidence for these as component skills of writing for children from kindergarten to middle school (e.g., Abbott & Berninger, 1993; Berninger & Abbott, 2010; Berninger, Abbott, Abbott, Graham, & Richards, 2002; Berninger & Swanson, 1994; Graham, 2006; Graham, Berninger, Abbott, Abbott, & Whitaker, 1997; Hooper, Swartz, Wakely, de Kruif, & Montomery, 2002, Hooper et al., 2011; Kim et al., 2011, 2013; Kim, Al Otaiba, Sidler, Greulich, & Puranik, 2014; McCutchen, 2006; Olinghouse, 2008; Olinghouse & Graham, 2009; Shanahan, 2006). However, the majority of these studies were concurrent predictions, and longitudinal predictive studies are lacking. In the present study, we examined the relations of transcription, oral language, word reading, and attention in kindergarten to writing quality in third grade. Below is a review of literature on the relations of these skills to writing.

1.3. Transcription skills and writing

Transcription, including spelling and handwriting fluency, is a necessary component skill for writing (Berninger, 1999; Berninger & Swanson, 1994; Berninger et al., 2002; Graham et al., 1997) because writing requires written output. As children become proficient with their transcription skills, they can utilize their cognitive resources such as attention and working memory for higher order cognitive processes including idea generation and translating those ideas into oral language (Graham, 1990; Graham et al., 1997; McCutchen, 2006; Scardamalia, Bereiter, & Goleman, 1982). It should be noted that although both handwriting fluency and spelling are considered transcription skills, spelling and handwriting fluency are hypothesized to tap into different processes (Graham et al., 1997). Handwriting fluency refers to the accuracy and rate of writing letters and words, and is typically measured by asking the child to write alphabet letters accurately with speed within a specified time (letter writing automaticity; Berninger et al., 1992, 2002; Jones & Christensen, 1999; Kim et al., 2011, 2013, 2014) or asking the child to copy as many words and sentences as possible within a specified time (paragraph copying; Graham et al., 1997; Wagner et al., 2011). On the other hand, the transcription skill of spelling, is typically assessed as an accuracy measure, and is a function of multiple skills such as letter–sound correspondence knowledge, morphological awareness, phonological awareness, and orthographic awareness (e.g., Apel & Masterson, 2001; Bourassa, Treiman, & Kessler, 2006; Kim et al., 2013). Previous studies have shown somewhat different relations of handwriting fluency and spelling to writing. Handwriting fluency has been consistently related to both writing quality and productivity (Author et al., 2011; Berninger et al., 1997; Graham, 1990; Graham et al., 1997; Kim et al., 2014; Kim, Al Otaiba, et al., in press; Wagner et al., 2011). In contrast, the relation of spelling to writing appears to be somewhat inconsistent. For the writing quality outcome, spelling was independently related in a study with children in grades 2 and 3 (Kim, Al Otaiba, et al., in press) whereas it was not in other studies with children in primary and intermediate grades (Graham et al., 1997; Kim et al., 2014). Similarly, spelling was related to writing productivity in some studies (Author et al., 2011; Graham et al., 1997), but not in others for children in primary grades (Kim, Al Otaiba, et al., in press). Longitudinal relations of transcription skills to writing have been less explored, but a recent study showed that letter writing automaticity in kindergarten was not directly related to first grade writing after accounting for kindergarten writing (Kent, Wanzek, Petscher, Al Otaiba, & Kim, 2014). In contrast, lexical level literacy skill (i.e., spelling and word reading) in kindergarten was directly related to writing quality and productivity (Kent et al., 2014).

1.4. Oral language and writing

Oral language is another component skill of writing according to the simple view and not-so-simple view of writing. “Ideation” in the simple view of writing and “text generation” in the not-so-simple view of writing are primarily operationalized as oral language because generated ideas have to go through a translation process at the word, sentence, and discourse levels to put the generated ideas into oral language (Berninger et al., 2002) — the writer selects the right words, puts them in an appropriate order, and organizes them at the discourse level. Despite its importance in the translation process, however, research on the relation of oral language to writing has been limited (Shanahan, 2006). Extant studies, however, do show that oral language skills make a contribution to writing concurrently for children at various stages of development ranging from kindergarten to middle school (Author et al., 2011;Berninger & Abbott, 2010; Duin & Graves, 1986; Juel et al., 1986; Kim et al., 2014; Kim, Al Otaiba, et al., in press; Olinghouse, 2008). Further evidence of salience of oral language in writing development may be found in studies involving students who have impaired oral language. Previous findings suggest that compared to students without oral language impairment, students with oral language impairment produce written texts with poor grammar and vocabulary (Dockrell & Connelly, 2009, in press; Dockrell, Lindsay, & Connelly, 2009) and demonstrate poor organization. Even as early as first grade, students with oral language impairment also produce fewer words and ideas, even after accounting for their expressive vocabulary, reading, and transcription skills (Kim, Puranik, et al., in press). However, the importance of the role of early oral language in writing longitudinally is less clear. For example, Coker's study (2006) showed that children's receptive vocabulary in grade 1 predicted writing (description of a picture) concurrently but did not predict writing growth rates from grade 1 to grade 3.

1.5. Attention and writing

According to the not-so-simple view of writing, executive function and self-regulatory attentional processes[1] are also important to writing. As writing requires juggling of multiple processes, it necessitates focused and sustained attention, and continuous monitoring of performance. In the present study, attention was included as one aspect of the larger executive function and self-regulatory attentional construct. Cross-sectional studies have shown the relation of attention to writing for children in primary grades. For instance, Hooper et al. (2011) showed that a latent variable composed of attention and executive function measures was concurrently related to writing in grades 1 and 2, but attention in grade 1 was not related to writing in grade 2 after accounting for children's fine motor and oral language-based[2] skills (Hooper et al., 2011). However, it should be noted that the writing outcome in Hooper's study was not written composition, but was composed of letter writing automaticity, writing fluency (i.e., writing words related to a topic), and sentence combining tasks. In our previous study, we found that children attention using a teacher-rated SWAN measure was concurrently related to writing for children in grade 1 (Kim et al., 2013). Furthermore, children's attention in kindergarten has been shown to be predictive of their writing in grade 1 (Kent et al., 2014). Another source of evidence for the role of attention in writing comes from studies with children with attention deficit or hyperactivity disorder (ADHD). These studies have shown that children with ADHD

[1] Note that although Berninger and Winn (2006) used the term, executive function, to refer to a broad cognitive system that involves inhibitory control, goal setting, planning, regulating attention, and self-monitoring (Berninger & Winn, 2006), we use the term, executive function and self-regulatory attentional processes, given varied definitions of executive function (see Miyake et al., 2000; Welsh, Pennington, & Groisser, 1991; Zelazo, Carter, Reznick, & Frye, 1997).

[2] The oral language latent variable in Hooper et al.'s (2011) study included alphabet letter knowledge, phonological awareness, and vocabulary.