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Achievement attributions are associated with specific rather than general learning delays

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ABSTRACT

The causal attributions that children make for success and failure have been associated with later reading motivation and ability perceptions, which have the potential to impact future task engagement. Few studies have investigated whether such attributions are domain specific, that is linked with the specific skill in question, or a general motivational set. Even fewer studies have examined these relationships among diverse racial and ethnic subgroups. The present study examined differences in success and failure attributions among children with and without reading delay (RD) and general language impairments (LI), in a predominately Hispanic and African American sample. Participants were 1311 children, 8 to 15 years old. Significant differences in ability attributions were observed between participants with and without RD and LI, with no additive effect for cases with co-occurring reading and language impairments. When reading and vocabulary were evaluated continuously, significant and substantial positive relationships were observed between skill and ability attributions in situations of success, and negative associations observed in situations of failure. Weaker relationships were observed for vocabulary, though vocabulary did function as a moderator in the relationship between reading skill and ability attributions, with stronger associations at higher vocabulary levels. Overall, the findings suggest that ability attributions for reading success and failure are linked with reading skill and/or deficits, and not with general language impairments.

1. Introduction

Personal experiences with success and failure influence reading motivation and perceptions of ability that may in turn impact future achievement (Schiefele, Schaffner, Möller, & Wigfield, 2012; Weiner, 2010). Outside of the educational literature, investigations into the role that motivation plays in learning and instruction have become less prevalent. In the case of reading achievement, for example, more proximal factors have been identified that demonstrate profound explanatory power, including phonological awareness, letter-sound knowledge, elements of oral language, or naming speed (e.g., Elwér, Keenan, Olson, Byrne, & Samuelsson, 2013; Furnes & Samuelsson, 2010). While a significant proportion of the variance in reading skill can be explained by these factors, there is still a large portion that is unaccounted for. Motivation in the context of reading has been gaining attention as one factor that may fill this gap. Investigations of children's achievement motivation, including attributions, have the potential to contribute to understanding of learning mechanisms, but also can

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contribute at the system level by informing instructional design (Toland & Boyle, 2008). Causal attributions are one element of motivation given their relevance to prior learning experiences that may play an important role in future task choice and commitment (Pintrich, 2000; Weiner, 2010). How children perceive their experiences of success and failure in reading has implications for how and whether they choose to engage in similar tasks later (Wigfield & Eccles, 2002).

The present study examined relationships between reading-related causal attributions and reading achievement among students with a range of reading skills (i.e., those with and without reading challenges). One principle of achievement motivation that has emerged over the past several decades is that motivation is domain specific (Marsh, Walker, & Debus, 1991; Wigfield & Eccles, 2000). Given this, and the metacognitive nature of attributions (i.e., the explicit assignment of specific causes to success or failure), our investigation was also concerned with how attributions functioned differentially within a domain-specific (i.e., reading) and a domain non-specific (i.e., specific language) disability. Are causal attributions for reading specifically related to reading (and reading disability) itself, or do they extend more generally to vocabulary (and language disability)? Extant achievement motivation theory in which competence and/or self-efficacy is a central construct would predict the former (Guthrie, Wigfield, Metsala, & Cox, 1999; Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2007).

1.1. Attribution theory and reading achievement

Attributions refer to the causes that individuals associate with a previous behaviour or event. A psychological theory of attributions was initially proposed by Heider (1958) and was further developed by Weiner (1986, 2010), making contributions to achievement motivation research. Weiner's framework consists of a set of three attribution dimensions: stability, locus of causality, and controllability (internal control and external control). Stability refers to the likelihood that an attributable cause may change over time. The second dimension, locus of causality, describes perceived causes as being either internal (e.g., skill) or external (e.g., task difficulty) to the individual (Rotter, 1966; Weiner, 2010). Finally, the third dimension of controllability is concerned with whether the cause of an event is controllable (e.g., degree of effort being more easily controlled than luck).

Different types of attributions vary along these three dimensions. For instance, effort is often considered to be a relatively less stable, internal, and more controllable attribute. Past research has characterized particular attributions according to their adaptive functions in learning situations. Adaptive attribution styles are often described as those that associate learning outcomes with controllable causes (Pintrich, 2003). Similarly, Dweck's (1999, 2006) work on *implicit theories of intelligence* proposes a comparable framework suggesting that the way we view intelligence can be more, or less, adaptive. The entity theory views intelligence more as a measurable capacity for learning, and as more static. The more adaptable incremental theory encourages growth and views intelligence as a malleable trait that can be developed over time with strategy and effort (also see Yeager & Dweck, 2012; Muenks & Miele, 2017). Also relevant are how one views relationships between constructs such as ability and effort. A review by Muenks and Miele (2017) suggests that ability may be increased with greater effort. Alternatively, one may believe that greater effort is required due to limited ability. The former is arguably more adaptive by encouraging behaviours that support achievement. For instance, Romero, Master, Paunesku, Dweck, and Gross (2014) found that students who viewed intelligence as malleable, possibly via effort, had significantly higher grades in middle school and were more likely to take on advanced classes that were more challenging.

Attributions are indicative of future behaviour via associations with what Weiner (2010) described as psychological consequences, or the emotions (e.g., pride, guilt, hope) linked to perceived causes of success and failure. For instance, a learner who is successful in reading and associates performance with good reading ability is more likely to feel confident in abilities and in turn may show greater persistence with future reading tasks (for an example, see Núñez et al., 2005). Meanwhile, the opposite may be true for a reader who experiences failure and develops negative academic self-concepts less engagement with reading-related tasks in the future (see also Hulleman, Barron, Kosovich, & Lazowski, 2016). This contrast in achievement attribution pathways has been reported in past research comparing students with and without learning difficulties as well as in intervention work suggesting that altering negative or less adaptive attributions is associated with changes in behavioural and in turn performance outcomes (e.g., Berkeley, Mastropieri, & Scruggs, 2011; Borkowski, Weyhing, & Carr, 1988; Hulleman et al., 2016; Lazowski & Hulleman, 2016).

1.2. Motivation and attributions of individuals with learning difficulties

The Diagnostics Statistical Manual of Mental Disorders (DSM-5, American Psychiatric Association, 2013) identifies difficulties with performing learning and academic skills as specific learning disorders, including reading disabilities. Profound reading impairment, identified as dyslexia within some fields, is a neurodevelopmental disorder associated with core deficits in phonological processing (Bishop & Snowling, 2004; McArthur & Castles, 2013; Snowling, 1987; Snowling, 2013). Shared learning deficits across dyslexia and specific language impairment (SLI), particularly in areas of phonological and auditory processing, have led to research on the complex associations between the two disorders (Bishop & Snowling, 2004; Fraser, Goswami, & Conti-Ramsden, 2010; McArthur & Castles, 2013). SLI is characterized by a lag in oral language development (Bishop & Snowling, 2004; Leonard, 1998). A general language deficit may lead to broad learning impairments; however, research is needed into the neuropsychological, linguistic and motivational factors that may be shared across domains of delay (Pennington, 2006).

Learning difficulties have been associated with poor motivation, such as negative academic self-concept or task avoidance (Bender & Wall, 1994; Lee & Zentall, 2012; Roberts, Torgesen, Boardman, & Scammacca, 2008). Existing attribution studies have suggested that individuals with learning difficulties demonstrate less adaptive attribution styles (e.g., attributions to internal, stable, or uncontrollable causes such as ability in situations of failure and fewer attributions to controllable causes such as effort; Chodkiewicz & Boyle, 2014; Tabassam & Grainger, 2002). This may lead to feelings of limited control over future learning outcomes and a general perception of helplessness (Chapman, 1988; Chapman & Tunmer, 2003). However, not all studies have shown that lower achievement is associated with maladaptive or helpless attribution styles (e.g., Kistner et al., 1988; Núñez et al., 2005), suggesting that further investigation into individual differences in reading-related attributions is warranted.

While some research exists on the domain-specificity of some motivational processes (e.g., self-concept; interest; Marsh et al., 1991), there is much less research that addresses how generalized versus specific attributional effects are across skill areas. It is an open question whether the presence of general learning impairments is associated with domain-specific attributions. Moreover, if domain-specific attributions, such as reading, are associated with the presence of more general impairments (i.e., language), are there possible additive effects of multiple learning impairments in relation to the development of maladaptive attribution styles? Attribution retraining programs focus on teaching an understanding of how ability and effort are connected, often through strategy use, so that students learn metacognitive dialogue that expresses control over one's learning outcomes (Borkowski et al., 1988; Chodkiewicz & Boyle, 2014; Perry, Chipperfield, Hladkyj, Pekrun, & Hamm, 2014; Toland & Boyle, 2008). This framework suggests a supporting role for language skill in the formation of attributions. Language, and by extension, impairments in language, may then also be associated with the formation and maintenance of causal