

The roles of anxious and prosocial behavior in early academic performance: A population-based study examining unique and moderated effects^{☆,☆☆,☆☆☆}

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ABSTRACT

We examined two social and emotional behaviors (anxious and prosocial behavior) and their links with academic achievement among kindergarten students. We conducted a population-level examination among kindergarten students in New South Wales in 2009 and 2012 ($N = 206,210$) of the extent to which the two behaviors are associated with kindergarten achievement (unique and moderated effects). With a subsample ($n = 52,661$), we examined additional links to grade 3 achievement. Findings showed that anxious behavior was not, whereas prosocial behavior was, meaningfully associated with kindergarten achievement. There was no evidence of moderation. With the subsample, prosocial behavior was meaningfully associated with kindergarten achievement, and kindergarten achievement was associated with grade 3 achievement. An indirect association from prosocial behavior to grade 3 achievement via kindergarten achievement was also evident. Together, the findings yield information that is relevant to efforts aiming to promote academic achievement in the early years of schooling.

1. Introduction

Kindergarten is a crucial time of development for young children and sets the scene for school success (Rimm-Kaufman & Kagan, 2005). An essential component for success in kindergarten (and beyond) is children's social and emotional behavior (e.g., Denham, 2006; Duchesne, Vitaro, Larose, & Tremblay, 2008; Guhn, Gadermann, Almas, Schonert-Reichl, & Hertzman, 2016; Nix, Bierman, Domitrovich, & Gill, 2013). In the current study, we investigated two social and emotional behaviors: anxious and prosocial behavior. In particular, we were interested in how they are uniquely and jointly associated with concurrent and subsequent academic achievement. Although anxious and prosocial behaviors have been investigated alongside one another in prior work (e.g., Duchesne, Larose, Vitaro, & Tremblay, 2010;

Haapasalo, Tremblay, Boulerice, & Vitaro, 2000), this has often involved examination alongside other developmental variables (e.g., cognitive development, aggressive behavior; Collie, Martin, Nassar, & Roberts, 2018; McWayne, Hahs-Vaughn, Cheung, & Wright, 2012; Sabol & Pianta, 2012). Such work provides important knowledge about how social and emotional behaviors act within a broader network of factors. At the same time, there is also merit in examining only anxious and prosocial behaviors to enable a more targeted consideration of their interrelationship (without shared variance being explained by other factors). Such approaches can yield understanding about the extent to which these constructs overlap as well as unique differences in relation to important outcome variables. We suggest there are specific aspects of anxious behavior that are also reflected in prosocial behavior and we sought to disentangle their unique and joint associations with academic

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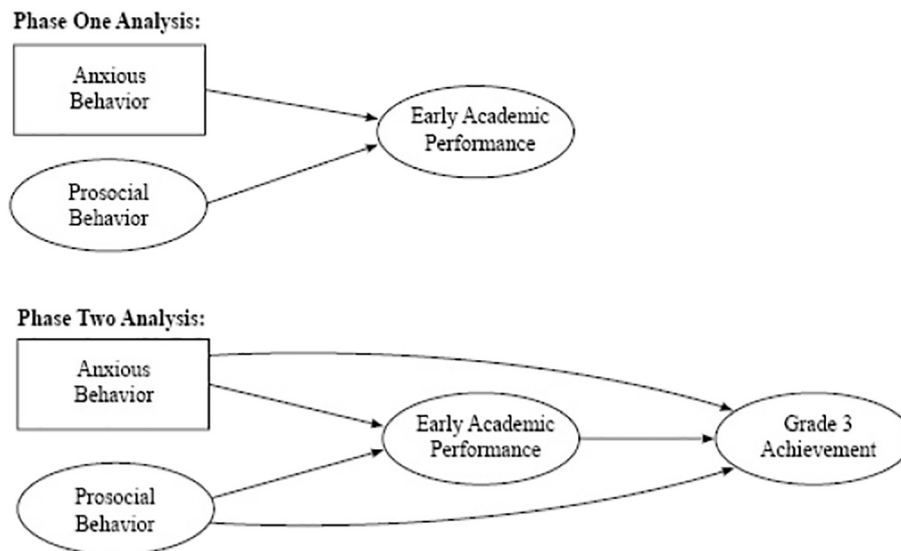


Fig. 1. Hypothesized models showing relationships among the substantive factors of anxious behavior, prosocial behavior, kindergarten achievement, and grade 3 achievement. Anxious behavior and prosocial behavior were correlated in the models. Covariates were controlled for all factors.

achievement.

Thus, the main aim of the current study was to determine the extent to which anxious and prosocial behaviors in kindergarten are uniquely associated with concurrent (kindergarten) and subsequent (grade 3) academic achievement. This targeted approach may offer new yield for intervention such as where attention is best focused—that is, in relation to anxious behavior, prosocial behavior, or both behaviors. Moreover, given mixed findings in prior work on the link between anxious behavior and achievement (e.g., DiPerna, Lei, & Reid, 2007; Ma, 1999; Romano, Babchishin, Pagani, & Kohen, 2010), our study may also help to shed further light in that area.

In phase one of the current study, we examined the behaviors' unique associations with kindergarten achievement (see Fig. 1). We also examined the extent to which prosocial behavior moderates the relationship between anxious behavior and kindergarten achievement. For this, we employed population-level data drawn from the Australian Early Development Census (AEDC), which is conducted with children in the first year of schooling across the entire country. In Australia, most children begin school between the ages of four and six (Janus, Brinkman, & Duku, 2011). In phase one, we examined data from children who underwent a teacher assessment in the AEDC in New South Wales, Australia's most populous state. In phase two, we extended our analyses by considering a subsample of the population for whom we also had grade 3 achievement data. Here, we examined the extent to which anxious behavior and prosocial behavior are associated with kindergarten achievement and, in turn, the extent to which all three variables are associated with grade 3 achievement. Indirect effects testing was also conducted to ascertain the extent to which kindergarten achievement mediates the relationships that anxious and prosocial behaviors have with grade 3 achievement—that is, whether the behaviors are associated with grade 3 achievement via kindergarten achievement. Grade 3 achievement data was taken from national standardized tests, the National Assessment Program – Literacy and Numeracy.

1.1. Conceptual overview

In the current study, we harnessed a relevant framework on social and emotional competence, which refers to individuals' effectiveness in managing their intrapersonal and interpersonal social and emotional experiences (Denham, 2006; Rose-Krasnor, 1997; Weissberg, Durlak, Domitrovich, & Gullotta, 2015). Rose-Krasnor's (1997) theoretical

model of social competence, since adapted to refer to both social and emotional competence by Denham (2006), establishes that the foundations of social and emotional competence are social and emotional motivations, skills, and behaviors (Rose-Krasnor, 1997). Motivations refer to the child's goals in their interactions, such as whether they prioritize peer dominance or equality (Denham, 2006). Skills include self-awareness (being able to recognize one's emotions, thoughts, behaviors), self-regulation (being able to regulate one's emotions, thoughts, and behaviors), responsible decision making (being able to make decisions that are constructive and respectful), relationship skills (being able to make and maintain high quality relationships), and social awareness (being able to consider others' perspectives; Collaborative for Academic, Social, and Emotional Learning (CASEL), 2013; Denham, 2006; Rose-Krasnor, 1997). Finally, behaviors refer to the outward manifestations of the skills and motivations. For example, self-awareness, self-regulation, and relationship skills are evidenced by prosocial behaviors such as listening to others, taking turns, following rules, and helping those in need (Denham, 2006). In contrast, self-regulation may be evidenced by low or moderate levels of worried or shy behavior (i.e., anxious behavior) as it reflects children's ability to redirect their attention or self-distract from feelings of anxiety that may then lead to anxious behaviors (Fox, 2010).

As noted above, our study involved investigating two social and emotional behaviors: anxious and prosocial behaviors. We focused on these two behaviors because there is some commonality between them and by examining them together it may be possible to gain more specific understanding of anxious behavior and why it has yielded mixed findings in prior research. Researchers have established that anxious and prosocial behaviors are negatively associated (Duchesne et al., 2010; Vitaro, Brendgen, Larose, & Trembaly, 2005) and we suggest that this might occur due to the social dimensions of both constructs. In the case of prosocial behavior, this involves outward social interaction, whereas for anxious behavior this often involves the reverse (social withdrawal). By examining the behaviors together, it is possible to disentangle any shared variance and determine the remaining unique variance in relation to academic achievement.

1.2. Anxious behavior

Anxious behavior is a behavioral indicator of anxiety. Anxiety is a complex construct that is made up of different processes—both cognitive and affective—such as worried thoughts, self-consciousness, and

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