Effortful control and school adjustment: The moderating role of classroom chaos

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ABSTRACT

Guided by the person by environment framework, the primary goal of this study was to determine whether classroom chaos moderated the relation between effortful control and kindergarteners' school adjustment. Classroom observers reported on children's ($N = 301$) effortful control in the fall. In the spring, teachers reported on classroom chaos and school adjustment outcomes (teacher-student relationship closeness and conflict, and school liking and avoidance). Cross-level interactions between effortful control and classroom chaos predicting school adjustment outcomes were assessed. A consistent pattern of interactions between effortful control and classroom chaos indicated that the relations between effortful control and the school adjustment outcomes were strongest in high chaos classrooms. Post-hoc analyses indicated that classroom chaos was associated with poor school adjustment when effortful control was low, suggesting that the combination of high chaos and low effortful control was associated with the poorest school outcomes.

1. Introduction

Educators and scholars have emphasized the importance of a successful adjustment during the transition to formal schooling for children's later learning and academic progress (Early, Pianta, Taylor, & Cox, 2001; Entwisle & Alexander, 1993; Pianta & Cox, 1999; Rimm-Kaufman & Pianta, 2000). For many children, kindergarten is likely the first experience in a formal learning environment. The environment of contemporary kindergarten classrooms is much more structured than preschool, childcare, or home settings, and kindergarteners are required to comply with school rules and procedures, attend to academic material for longer periods of time, and interact appropriately with teachers and peers (Rimm-Kaufman & Pianta, 2000). There is some support for the hypothesis that children high in effortful control (EC; the self-regulation component of temperament) are better equipped than those low in EC to handle these new demands (Eisenberg, Valiente, & Eggum, 2010; Love, Logue, Trudeau, & Thayer, 1992), but the relation of EC to school outcomes is generally modest, suggesting that the strength of the relation might be impacted by other contextual factors such as classroom chaos.

The classroom environment, including organization and behavior management, plays an important role in children's school adjustment (Ponitz, Rimm-Kaufman, Grimm, & Curby, 2009; Wachs, Gurkas, & Kontos, 2004). Scholars have extended and refined the original model of adaptation termed "person X environment" (Coie et al., 1993), to include children's temperament (i.e., "temperament X environment," *henceforth* referred to as T X E) in predicting adjustment (Ladd, Birch, & Buhs, 1999; Rothbart & Bates, 2006). Specifically, school adjustment is described as a function of risk and protective factors that are found within the child (i.e., temperament) and the environment (i.e., classroom; Ladd et al., 1999). When temperament is not adequately supported by the environment, adjustment is unlikely to be optimal (Rothbart & Bates, 2006). We sought to extend this literature by examining whether the strength of the relation between EC and school adjustment is moderated by classroom chaos.

1.1. Early indicators of school adjustment

Children's relationships with their teachers and emotional engagement are key indicators of early school adjustment (teacher–student relationship closeness and conflict, and school liking and avoidance). Studies demonstrated that the quality of the teacher–student relationship (TSR) is a robust predictor of early school success (Baker, 2006; Hamre & Pianta, 2001; Pianta & Stuhlman, 2004). Specifically, close

TSRs, characterized by warm interactions, are related to positive peer relationships, engagement in classroom activities, and academic achievement, whereas TSR conflict is related to difficulty with peer relationships and poorer academic achievement (Birch & Ladd, 1997; Hamre & Pianta, 2001; Pianta & Stuhlman, 2004).

Although the literature on children's emotional engagement at school is not quite as developed as the literature on children's relationships with their teachers, scholars have found that emotional engagement in school is also an important component of school adjustment (Fredricks, Blumenfeld, & Paris, 2004; Ladd, Buhs, & Seid, 2000; Ladd & Dinella, 2009). Emotional engagement has been conceptualized by Fredricks et al. (2004) and others (Ladd et al., 2000; Ladd & Dinella, 2009) as children's interest in school and positive attitudes about school. In this study, school liking and avoidance were two aspects of children's emotional engagement that were examined as separate school adjustment outcomes. Researchers have found that school liking positively, and avoidance negatively, predict behavioral engagement and academic achievement (Buhs, Ladd, & Herald, 2006; Ladd et al., 2000; Ladd & Dinella, 2009). Given the significance of the TSR and emotional engagement for school success, it is important to understand factors related to their development. The present study focuses on these four indicators of children's early school adjustment.

1.2. Children's EC and school adjustment

EC, which has been conceptualized as an individual's ability to effectively manage behaviors, emotions, and thoughts, as well as "inhibit a dominant response and/or activate a subdominant response, to plan, and to detect errors" (Rothbart & Bates, 2006, p. 129), is believed to play an important role in positive behavior, social interactions, and academic development (Blair & Raver, 2015; Clark, Pritchard, & Woodward, 2010; Eisenberg et al., 2010; Ponitz, Rimm-Kaufman, Brock et al., 2009; Ponitz, Rimm-Kaufman, Grimm et al., 2009; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008). Further, the individual components of EC—attentional control (e.g., focus on academic lessons) and inhibitory control (e.g., tuning out noise and distracting peers)—help children to adjust optimally to school (Blair, 2002; Eisenberg, Smith, & Spinrad, 2011).

Children's behavior relative to their classroom peers may be particularly important for understanding their early school adjustment. Several studies have found that children's behavioral problems (e.g., internalizing and externalizing) relative to their classroom peers' behavior problems predicted children's academic outcomes, such as their social competence in school and academic achievement (e.g., Bulotsky-Shearer, Dominguez, & Bell, 2012; Figlio, 2007; Yudron, Jones, & Raver, 2014). Only one study, to our knowledge, has examined children's EC relative to their classroom peers. Skibbe, Phillips, Day, Brophy-Herb, and Connor (2012) found that child-level and average classroom peers' EC was positively related to individual child growth in literacy across the school year. Skibbe et al. (2012) argued that it is important to consider children's individual EC within the context of the classroom, which includes peers' EC. Given the limited research on children's EC relative to their classroom peers, the following review uses the extant literature on child-level EC and four indicators of children's school adjustment (TSR closeness and conflict and children's school liking and avoidance) as a guide for the focal research questions addressed by this study.

1.2.1. Children's EC and TSR quality

Theorists have proposed that children's EC is associated with the quality of their relationships with others, including their teachers (Eisenberg et al., 2010). Children who demonstrate high EC are able to control their emotions (e.g., anger, sadness) in ways that promote positive social interactions in school; thus, they may have more positive relationships with teachers (Diaz et al., 2015). Conversely, it may be more difficult for teachers to connect with children with low EC

because their behaviors in school are less likely to be modulated or appropriately expressed (Eisenberg et al., 2010). Teachers and school administrators typically expect children to demonstrate self-regulation before entering kindergarten (Bassok, Latham, & Rorem, 2016; Blair & Raver, 2015), so failure to do so may create conflict between teachers and children. Children with higher EC are more likely to meet the expectations of teachers and subsequently adjust to school better than less regulated children (Ladd et al., 1999).

Findings from a few studies are consistent with the proposition that children's EC relates to the TSR. For example, EC has predicted lower TSR conflict, higher TSR closeness, and higher TSR quality (a composite measure of high closeness and low conflict) in preschool and kindergarten samples (Diaz et al., 2015; Rudasill & Rimm-Kaufman, 2008; Silva et al., 2011; Valiente, Swanson, & Lemery-Chalfant, 2012). Relatedly, both child inattention and impulsivity, measures closely related to low EC, have been associated with higher TSR conflict and lower TSR closeness from kindergarten to first grade (Portilla, Ballard, Adler, Boyce, & Obradović, 2014). Evidence on the EC to TSR is somewhat lacking, thus additional research is needed to help clarify the conditions under which the associations between EC and TSR quality are present.

1.2.2. Children's EC and emotional engagement

Although few researchers have directly examined the relation between children's EC and their emotional engagement with school (i.e., school liking and avoidance), there are theoretical and empirical reasons to believe that an association exists. Eisenberg et al. (2010) theorized that because children with higher EC are able to regulate their emotions, they are more likely to participate in and enjoy being in school. Additionally, EC facilitates positive school relationships and academic success (Eisenberg et al., 2010); thus, children with higher EC may benefit from more enjoyable and less stressful academic and social experiences in the school environment, which in turn may lead to greater liking and less avoidance of school (see review by Fredricks et al., 2004).

There is limited empirical support for the direct association of EC with children's school liking and avoidance. Correlations at the zero-order level demonstrate a negative association between EC and school avoidance across time and reporters (Iyer, Kochenderfer-Ladd, Eisenberg, & Thompson, 2010; Swanson, Valiente, & Lemery-Chalfant, 2012). Although zero-order correlations are useful for understanding if a relation between EC and school avoidance exists, they may artificially inflate relations because zero-order correlations cannot account for variation that is due to theoretically and empirically meaningful controls such as age, sex, socioeconomic status (SES), ethnicity, and previous academic skills. In one study that included controls, a positive relation between EC and school liking was found, even when controlling for SES (Valiente, Lemery-Chalfant, & Castro, 2007). Similarly, in a sample of children with and without autism, a positive partial correlation, controlling for mental age of the child, was found between EC and school liking, but not school avoidance (Jahromi, Bryce, & Swanson, 2013). These studies suggest that EC is related to emotional engagement; however, evidence is sparse and additional studies are needed to help clarify the extent to which EC is related to school liking and avoidance and in what contexts.

1.3. Classroom chaos and school adjustment

Noise, crowding, and lack of routine or stability, all which contribute to chaos in the classroom, can be detrimental to children's school adjustment (Maxwell, 2010). In this study, environmental chaos in the classroom was the focus and defined as teachers' perceptions of high levels of noise, crowding, and disruptions as well as lack of structural and routine organization (Wachs et al., 2004). Based on evidence demonstrating that noise, crowding, and instability in classrooms can disrupt communication between students and teachers as well as increase student withdrawal from classroom activities (as