Gender differences in behavioral regulation in four societies: The United States, Taiwan, South Korea, and China

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1. Introduction

Accumulating evidence in the United States and Asia suggests that boys may be at risk for a host of difficulties as they move through school (United Nations Economic and Social Commission for Asia and the Pacific, 2011; Wetzstein, 2011), with particular difficulties in aspects of self-regulation (Caudias, Salvatere, & Stroufe, 2012; Heckman, Stixrod, & Urzuza, 2006; McClelland, Acoc, Piccinin, Rhea, & Stallings, 2012; Merritt, Wanless, Cameron Ponitz, & Rimm-Kauffman, 2012; Moffitt et al., 2011). Although previous research has focused on samples from the United States, initial findings suggest that this phenomenon may extend to other parts of the world. Research on young children in Asia, for example, suggests that compared to girls, boys are more aggressive, and have more difficulty with academic and social skills when rated by peers and teachers (Chen & Li, 2000; Chen, Cen, Li, & He, 2005; Coie & Dodge, 1998; Lai, 2010). In contrast, Asian girls are more inhibited than boys (Jose, Huntsinger, Huntsinger, & Liaw, 2000), which is related to positive social and psychological outcomes in Asia (Chen & French, 2008; Rubin et al., 2006). We built on these previous studies by examining the universality or cultural specificity of gender differences in behavioral aspects of self-regulation in the United States and Asia.

1.1. The importance of behavioral regulation for school readiness

Behavioral regulation is a set of developmentally acquired skills involved in controlling, directing, and planning one's cognitions and behavior, and includes inhibitory control, attentional or cognitive flexibility, and working memory (Carlson & Moses, 2001; Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Mischel, 2006).
Shoda, & Rodriguez, 1989). Research supports the notion that behavioral regulation includes these aspects of executive function skills and reflects the integration of these cognitive processes into behavior (McClelland and Cameron Ponitz, 2012; McClelland, Cameron, Wanless, & Murray, 2007; McClelland, Cameron Ponitz, Messersmith, & Tomainey, 2010). The term behavioral regulation is related to similar constructs such as executive function (from the cognitive psychology and neuroscience fields), effortful control (from the fields of temperament and personality) and approaches to learning or learning-related skills (from the applied developmental field). We use the term behavioral regulation because our focus is on how the cognitive processes underlying behavioral regulation are manifested into behavior in important learning contexts such as classrooms (McClelland and Cameron Ponitz, 2012; McClelland et al., 2010). This conceptualization of behavioral regulation as an educationally relevant construct aligns with a recent review of many constructs that fall under the umbrella of self-regulation but reflect different levels of analysis (Rimm-Kaufman & Wanless, 2012).


We conceptualize individual behavioral regulation as a child’s behavioral regulation skills in a one-on-one situation and classroom behavioral regulation as a child’s behavioral regulation skills in the context of a classroom with peers and teachers. There may be differences in children’s abilities to activate their regulatory abilities in an individual versus a socially complex classroom context. Despite these contextual differences, individual and classroom behavioral regulation seem to be overlapping constructs stemming from similar underlying processes including inhibitory control, attentional or cognitive flexibility, and working memory. Previous research has found moderate correlations between direct assessments of individual behavioral regulation and teacher-ratings of classroom behavioral regulation of about $r = .30$, suggesting a degree of shared variance (Matthews et al., 2009). Further, an examination of the items that teachers rate to assess classroom behavioral regulation suggests that in addition to tapping individual behavioral regulation, they may also reflect a broader construct, akin to “approaches to learning” and “learning-related skills,” including skills such as independence (Li-Grining, Votruba-Drzal, Maldonado-Carreno, & Haas, 2010). The unshared variance may reflect these differences, as well as differences in measurement sources (direct assessment versus teacher rating).

1.2. Extending previous analyses

The present study is an extension of a previous study examining the relation between behavioral regulation and academic achievement in the United States, Taiwan, South Korea, and China. Specifically, the previous study examined the relations between individual behavioral regulation and school readiness, controlling for gender (Wanless, McClelland, Accock, Cameron Ponitz, et al., 2011). In the presence of other variables, gender was significantly related to math for children in the United States, but not to any other school readiness outcomes in Taiwan, South Korea, or China. Results showed a limited effect of gender on school readiness, but did not investigate the differences in boys’ and girls’ behavioral regulation or the differences in the extent to which behavioral regulation supports school readiness.

Questions about the role of gender in these relations were motivated by two issues. First, research by Matthews et al. (2009) documented girls’ advantage in individual and classroom behavioral regulation in the United States. Second, in Asia, a study of Chinese children was recently published showing that boys had significantly higher externalizing problems than girls (Liu, Cheng, & Leung, 2011). Because externalizing problems have been related to earlier problems with behavioral regulation (Eisenberg et al., 2003), there is a need to examine the role of gender in behavioral regulation. If higher behavioral regulation is related to higher school readiness, as we showed in our previous study (Wanless, McClelland, Accock, Cameron Ponitz, et al., 2011), it is important to determine whether boys and girls have similar behavioral regulation skills.

It is also important to document if behavioral regulation skills are equally related to later school readiness for boys and girls. Previous research has found that the positive effect of individual behavioral regulation is universal across children with multiple risk factors (such as low maternal education or family income; McClelland and Wanless, 2012) but differences by gender may be present, especially in Asia, given cultural differences in gender expectations (Best, 2010). For example, Asian societies tend to have relatively patriarchal values that teach girls that they should serve the needs of the family or group, with an emphasis on passivity and submission (Pyeke & Johnson, 2003). As is true of all societies, however, there is variability in the degree to which families and teachers in a society subscribe to particular values.

1.3. Cultural differences in behavioral regulation

The present study is situated in the field of cross-cultural psychology and aims to examine psychological research questions in samples that extend beyond the United States to include the “neglected 95%” of children who are often overlooked in psychological research (Arnett, 2008). Further, we investigate our research questions across four societies to provide evidence of whether findings are universal or culturally specific (Flynn & Rahbar, 1993). The study of gender, behavioral regulation, and school readiness is particularly ripe for a cross-cultural approach because behavioral regulation and school readiness are influenced by early experiences, which vary by the child’s gender and culture (Best, 2010; Rimm-Kaufman & Wanless, 2012).

Culture influences gender differences via the early experiences in which children are encouraged to participate (Stockard, 2006). Specifically, children are socialized into their gender when adults communicate expectations for children’s behavior and play (Best, 2010). Girls’ strong individual and classroom behavioral regulation, for example, may be a function of the type of play they engage in and culturally specific expectations of the most appropriate types of play for girls. For example, research suggests that in many societies, girls engage in significantly more sociodramatic play than boys (Edwards, 2000), although this finding has not been upheld in Taiwan (Pan, 1994). Gendered experiences in sociodramatic play are relevant because they provide children the opportunity to practice being in pretend roles that require high regulation, and this has been positively related to behavioral regulation development (Bodrova & Leong, 2006; Elias & Berk, 2002). Gendered differences in sociodramatic play in the United States, but not in Taiwan, suggest that gender differences in behavioral regulation may be more pronounced in the United States.

In early childhood, children are also afforded varying experiences to practice regulating themselves based on cultural
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