



## Social and behavioral skills and the gender gap in early educational achievement

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### ABSTRACT

Though many studies have suggested that social and behavioral skills play a central role in gender stratification processes, we know little about the extent to which these skills affect gender gaps in academic achievement. Analyzing data from the Early Child Longitudinal Study–Kindergarten Cohort, we demonstrate that social and behavioral skills have substantively important effects on academic outcomes from kindergarten through fifth grade. Gender differences in the acquisition of these skills, moreover, explain a considerable fraction of the gender gap in academic outcomes during early elementary school. Boys get roughly the same academic return to social and behavioral skills as their female peers, but girls begin school with more advanced social and behavioral skills and their skill advantage grows over time. While part of the effect may reflect an evaluation process that rewards students who better conform to school norms, our results imply that the acquisition of social and behavioral skills enhances learning as well. Our results call for a reconsideration of the family and school-level processes that produce gender gaps in social and behavioral skills and the advantages they confer for academic and later success.

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### 1. Introduction

A large and growing literature in psychology, economics, and sociology has documented the impact of social and behavioral skills on cognitive outcomes, educational attainment, and labor market success (Coie and Krehbiel, 1984; Alexander et al., 2003; Ladd et al., 1999; Normandeau and Guay, 1998; Raver, 2005). The lack of standard terminology across these studies reflects the multidimensional character of these skills as well as the multidisciplinary collection of scholars who study their consequences. Psychologists classify many of these skills under the categories of cognitive self-regulation, self-discipline, effortful control, or executive function (Blair and Diamond, 2008; Blair and Razza, 2007; Bull and Scerif, 2001; Bull et al., 2008; Duckworth and Seligman, 2005; Duncan et al., 2007; Clair-Thompson et al., 2006). These skills include planning, sustaining attention, effortful control of attention or action, task persistence, and inhibition of impulsive responses. A second set of skills, often referred to by psychologists as “emotional self-regulation,” includes the ability to control anger, sadness, joy, and other emotional reactions, which predict both externalizing and internalizing problem behaviors (Campos et al., 2004; Cole et al., 2004; Raver, 2004). Economists, led by Heckman and colleagues, have referred broadly to these skills as “non-cognitive,” (Heckman and Rubenstein, 2001; Cawley et al., 2001; Carneiro and Heckman, 2003; Cunha et al., 2006; Heckman and Masterov, 2007; Heckman et al., 2006; Urzua, 2006), while still others contest the use of this term and prefer instead to discuss these skills as personality traits (Borghans et al., 2008). Sociologists have studied these skills using a variety of terms, including non-cognitive skills, behavior, social-psychological factors, cultural capital, and engagement in schooling (Arum et al., 2003; Farkas, 2003; Jencks et al., 1972; Kirkpatrick-Johnson et al., 2001; Lareau, 2003). Though

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scholars continue to debate the specific skills that matter and the size of their effects, there is a consensus across disciplines that what we will refer to below as “social and behavioral skills” influences children’s educational outcomes.

Left largely unaddressed in this literature is the role of social and behavioral skills in producing gender differences in educational outcomes. Abundant literature reports that boys have higher rates of developmental problems, disruptive behavior, attention disorders, reading disabilities, mental retardation, stuttering, delayed speech, and other related phenomena (Buchmann et al., 2008; Halpern, 1997; Muter, 2003; Rutter et al., 2004). Several studies have demonstrated stronger tendencies towards externalizing behavior by boys (Entwisle et al., 2005; Raffaelli et al., 2005). Gilliam (2005) reports that boys are five times as likely as girls to be expelled from pre-kindergarten. In early elementary school boys continue to be more disruptive than girls, and they also are less engaged in classroom learning (Ready et al., 2005; Zill and West, 2000). These gender differences persist through high school (Downey and Vogt Yuan, 2005; Dumais, 2005).

These findings have largely remained separate from a growing literature documenting academic performance differences between girls and boys, starting from elementary school. Entwisle et al. (2007) find that the gender gap emerges relatively late in the elementary school experience in their data collected in Baltimore in the 1980s. Other studies analyzing more recent data, however, show that girls have better reading skills than boys in kindergarten (Chatterji, 2006; Tach and Farkas, 2006; West et al., 2000), and that this pattern persists into middle school and beyond (Trzesniewski et al., 2006; US Department of Education, 2006).<sup>1</sup> Some scholars have found generally similar performance of girls and boys in mathematics and reading tests in the early grades, though their trajectories are different: boys gain in mathematics achievement relative to girls during elementary school (Penner and Paret, 2008), while girls gain in reading achievement relative to boys (Maccoby and Jacklin, 1974; Willingham and Cole, 1997). Still other studies drawing on test scores from state standardized tests find convergence in mean math performance in recent data (Hyde et al., 2008).

Also unsettled in this literature is the extent to which the gender gap in behavior and achievement arises from family or school processes linked to social class. Using data from the Baltimore Beginning School Study (BSS), Alexander et al. (2003) determined that the gender gap in retention rates was larger for poor children (i.e. those eligible for free or reduced price lunch) than for non-poor children. Other scholars have also found a social class component to the gender gap in reading (Bianchi, 1984; Burbidge, 1991; Mickelson, 2003). Entwisle et al. (2007) report that significant gender gap in conduct marks, in retention, and in reading scores and reading score growth from first to fifth grade for poor children, though all these gaps are negligible for non-poor children. In their data, 44% of the female advantage in reading gain for poor children by fifth grade was explained by teacher conduct marks in years 2 and 4, even as conduct has no relationship with reading gain for non-poor children.

Some scholars have attributed the female advantage in social and behavioral skills, by which we mean a difference in mean female and male performance that favors girls, to elementary school teachers’ middle class and female demographic profile. This hypothesis implicitly draws on a large body of literature on in-group bias in psychology finding strong evidence that individuals assign higher ratings and more favorable characteristics to members of their own group (Bettencourt et al., 2001; Brewer, 1979; Hewstone et al., 2002; Mullen et al., 1992; Pettigrew, 1998). For example, Entwisle et al. (2007) argue that girls have better social and behavioral ratings not so much because of differences in maturation rates but rather because “they find the student role more compatible than boys do” (p. 134).<sup>2</sup> As further evidence of this bias, they find that social and behavioral skills affect academic achievement differently for boys and girls; in particular, they report that boys with poor conduct grades were more likely to be retained in first grade than were girls. This finding parallels Farkas et al. (1990), who reported from their Southwestern City School District data that boys apparently suffered lower course grades for being disruptive, while girls did not.

Given the types of data that are currently available, measurement problems with the teacher bias perspective make it difficult to fully evaluate its validity. For example, the findings from Entwisle et al.’s Beginning School Study are consistent with the conclusion that teachers evaluate girls more favorably than boys because of gender bias, but they are equally consistent with the contrary hypothesis that parents and teachers accurately observe gender differences in behavior, which affect both learning itself and the production of materials (like homework, reports, and presentations) that factor into the academic evaluation process. While data containing external evaluation measures could adjudicate between these possibilities, no such data are currently available for large samples of students. Similarly, class-based gender disparities in educational outcomes could imply that the family and neighborhood environment of poor children differentially encourages boys to behave in ways that inhibit academic achievement. It could also imply that parents of lower-class children do not work as effectively to compensate for biologically-based gender differences in behavioral propensities that would otherwise

<sup>1</sup> Trzesniewski et al. (2006) found that the correlation between anti-social behavior and reading was significantly stronger for boys than for girls in the E-Risk Longitudinal Twin Study. Environmental rather than genetic factors explain most of the correlation between these variables. They further found that antisocial behavior may have a causal impact on reading for both genders, but that the reciprocal effect (poor reading leading to antisocial behavior) appears to apply only to boys.

<sup>2</sup> Some scholars go so far as to characterize school-based standards for behavior as “feminine” and irrelevant to the masculine sense of self of black youth (Holland, 1992; Noguera, 2003; Watson and Hodges, 1991). One reviewer suggested that we explicitly test for the bias concerns raised in this section by comparing the ratings of male and female teachers. Indeed, a number of studies have found that students make more progress on standardized tests when they have a teacher of their own gender. Results such as these suggest that something different is happening in classrooms when there are student–teacher gender matches, and it is plausible that boys actually behave better when faced with a male teacher. As a result, we cannot distinguish truly better behavior from better rated behavior using these data, and thus did not pursue this strategy. We also note that unlike Alexander et al.’s (1987) study, our data do not allow us to test for the impact of teachers’ social class background on the academic ratings they assign to poor and non-poor students.

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