



Will not want: Self-control rather than motivation explains the female advantage in report card grades[☆]



Angela L. Duckworth^{a,*}, Elizabeth P. Shulman^b, Andrew J. Mastrorarde^a, Sarah D. Patrick^a, Jinghui Zhang^c, Jeremy Druckman^a

^a Positive Psychology Center, University of Pennsylvania, 3701 Market St., Room 215, Philadelphia, PA 19104, USA

^b Department of Psychology, Brock University, 500 Glenridge Avenue, St. Catharines, Ontario L2S 3A1, Canada

^c Smith College, 1 Chapin Way, Northampton, MA 01063, USA

ARTICLE INFO

Article history:

Received 22 November 2013

Received in revised form 21 August 2014

Accepted 18 February 2015

Keywords:

Gender

Self-control

Impulsivity

School motivation

Academic performance

ABSTRACT

Girls earn better grades than boys, but the mechanism explaining this gender difference is not well understood. We examined the relative importance of self-control and motivation in explaining the female advantage in grades. In Study 1, we surveyed middle school teachers and found that they judged girls to be higher in both school motivation and self-control. In Studies 2 and 3—using self-reported motivation and teacher- and/or parent-reported self-control, and quarterly and final grades obtained from school records—we find that self-control, but not school motivation, helps to explain the gender gap in academic performance. In these studies, girls appeared to be more self-controlled than boys, but—contrary to teacher judgments in Study 1—did not appear to be more motivated to do well in school.

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1. Introduction

Why do girls earn better grades than boys? The female advantage in course grades has been documented at every level of formal education, from elementary school through college, in all major subjects including math and science (American Association of University Women Educational Foundation [AAUWEF], 1998; Cole, 1997; Clark & Grandy, 1984; Kimball, 1989; Mau & Lynn, 2001; Pomerantz, Altermatt, & Saxon, 2002; Willingham & Cole, 1997). Whereas it has been suggested that, in college, female undergraduates earn higher GPAs because they choose easier courses (Elliott & Strenta, 1988; Keller, Crouse, & Trusheim, 1993; Young, 1991), course selection cannot explain the female advantage in grades among younger students who are largely enrolled in identical classes (Cornwell, Mustard, & Van Parys, 2013). Girls are not smarter than boys (Neisser et al., 1996), and differences in general intelligence fail to explain why girls earn higher grades (Duckworth & Seligman, 2006; Steinmayr & Spinath, 2008).

[☆] The writing of this article was supported by the Character Lab, the Templeton Foundation, the National Institute on Aging grant 5-K01-AG033182-02, and the National Institute on Aging grant R24 AG048081-01. The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

* Corresponding author. Tel.: +1 215 898 1339.

E-mail addresses: duckwort@psych.upenn.edu (A.L. Duckworth), lizshulman@gmail.com (E.P. Shulman), amastrorarde@gmail.com (A.J. Mastrorarde), sarahpatrick@gmail.com (S.D. Patrick), elaine.zjh@gmail.com (J. Zhang), jeremydruckman@gmail.com (J. Druckman).

Logic dictates that if girls outperform boys but are comparable in cognitive ability, they may be trying harder. Indeed, girls devote more time and energy to academic work in middle school (e.g., participating in class, completing homework) than do boys (Jacob, 2002; Willingham, Pollack, & Lewis, 2002). And, in a national study of several thousands of primary school children, Cornwell et al. (2013) found that the female advantage in course grades was eliminated when accounting for teacher ratings of classroom behavior (e.g., working on an assignment to completion, resisting distractions). This raises the question, why do girls try harder? Do girls simply want to do well in school more than boys do, finding it either more interesting or important (i.e., a difference in motivation)? Or, are girls similarly motivated but better than boys at willing themselves to do the work needed to earn good grades (i.e., a difference in volition)? In the current investigation, we examine the degree to which motivational vs. volitional factors give girls an edge in the classroom. First, we conducted a survey of middle school teachers to assess their intuitions about gender differences in self-control and school motivation. Next, in two longitudinal studies of middle school students, we examined the extent to which the female advantage in academic course grades is explained by motivation, operationalized as self-reported interest in and perceived importance of academic work, or by volition, operationalized as adult informant (i.e., teacher or parent) ratings of self-control.

Duckworth and Seligman (2006) proposed that female students outperform their male counterparts in the classroom because they are more self-controlled (i.e., better at regulating their attention, emotion,

and behavior in the service of subjectively valued goals). In two samples of eighth grade students, they found that girls earned higher grades than boys despite comparable standardized achievement and IQ test scores. A composite measure of self-control that included parent, teacher, and self-report ratings as well as delay of gratification measures mediated the gender difference in grades in both samples. Likewise, Kling, Nofle, and Robins (2012) found in a study of undergraduates that self-reported conscientiousness at least partially mediated the association between being female and the tendency to earn higher GPAs than would be predicted by SAT scores.

A growing body of research supports the two component claims in the mediation model proposed by Duckworth and Seligman (2006). First, several studies have found that girls are indeed more self-controlled than boys of the same age throughout childhood and adolescence, whether self-control is measured with informant ratings, self-report ratings, or performance tasks (Chapple, Vaske, & Hope, 2010; Cole, 1986; Davis, 1995; Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Hartshorne & May, 1928; Humphrey, 1982; Kendall & Wilcox, 1979; LaGrange & Silverman, 1999; Matthews, Ponitz, & Morrison, 2009; Saarni, 1984; Silverman, 2003). Second, self-control and closely related constructs have been shown to predict academic achievement at every level of schooling from preschool through college; indeed, the effect of self-control on academic achievement is larger than for any other facet of temperament or personality (Duckworth & Allred, 2012; Duckworth & Carlson, submitted for publication; Poropat, 2009). Unfortunately, studies examining gender and self-control, or self-control and achievement, have generally excluded measures of academic motivation. Thus, the possibility that girls simply *want* to do better, rather than *will*¹ themselves to do so, has not yet been examined directly in empirical research.

1.1. Motivation vs. volition

The present investigation was inspired by informal conversations with teachers about individual and group differences in academic achievement. When discussing the tendency for girls to earn better grades than boys, teachers would often comment, by way of explanation, that girls in their classes were more “motivated” than boys. When asked to elaborate, some teachers would describe their more motivated students as caring more about doing well in school than their lower-performing peers. In contrast, other teachers described motivated students as those who had “the will” to complete their homework, pay attention in class, and otherwise work hard. These diverse implicit definitions suggest that teachers may use the term “motivation” very generally to describe how engaged students are in their studies. Likewise, the term motivation is sometimes employed broadly in the psychology literature to encompass all goal-directed, intentional processes (as opposed to automatic, involuntary processes like reflexes).

However, motivation can also be used more narrowly to refer to a particular stage in the generation of goal-directed action. Specifically, motivation is often distinguished from volition (see the Rubicon model, Achtziger & Gollwitzer, 2010; Heckhausen & Gollwitzer, 1987; Hofmann & Kotabe, 2012; Kuhl, 1984). Used in this way, motivation refers to the initial stage of selecting goals and committing to them on the basis of their expected value. In contrast, volition refers to the subsequent stage of planning and enacting behaviors in pursuit of goals to which individuals have committed. In other words, motivation entails *wanting* particular goals, whereas volition entails subsequently *willing* oneself to take action toward their realization. It seems fair to say that we have all experienced failures of volition despite the presence of motivation. Students, too, are capable of maintaining goals toward which they fail to take effective action, instead giving in to sundry temptations that are more pleasurable and less effortful in the moment. Thus,

¹ Here, we are using “will” as a synonym for willpower or self-control (e.g., Baumeister, Vohs, & Tice, 2007; Mischel, Cantor, & Feldman, 1996).

despite vernacular usage, self-control is better understood as a volitional construct than a motivational one (Kuhl, 1984). The capacity to bring attention, emotion, and behavior into alignment with chosen goals is downstream of, and not at all guaranteed by, commitment to goals themselves. In theory, girls might work harder than boys in school for motivational reasons, for volitional reasons, or both.

With respect to motivation, both the value of a goal and the likelihood of its attainment are relevant: Individuals commit themselves most strongly to goals that they appraise as both desirable and feasible (Eccles & Wigfield, 2002). Hence, motivation to do well in school is a function of both academic self-efficacy (i.e., confidence in academic ability) and the subjective value of schoolwork (i.e., interest in and/or perceived importance of schoolwork; Eccles, Adler, & Meece, 1984; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield & Eccles, 2000). If girls are indeed more motivated than boys to do well in school, it could be that they are more confident in their ability to do so, or because they find school more interesting or important.

Collectively, prior empirical studies have not found support for a female advantage in academic self-efficacy. In fact, a recent meta-analysis summarizing over 247 independent studies found that despite some variation by course subject, girls are slightly *less* confident in their overall academic abilities compared to boys ($d = -.08$; Huang, 2013). Thus, it is unlikely that superior academic confidence is the mechanism by which girls tend to earn higher grades than boys in all of their courses.

The empirical evidence for gender differences in the subjective value of school is mixed. Some studies have found that girls tend to value language arts more than boys do, but boys tend to value math more than girls do (e.g., Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2003; Skaalvik & Skaalvik, 2005; Wolters & Pintrich, 1998). Using domain-general measures, some studies have reported that female students are more motivated than male students (e.g., Baumert & Demmrich, 2001; Levitt, List, Neckermann, & Sadoff, 2012; Segal, 2012; Vallerand et al., 1992), while others have not (e.g., Vallerand, Gagné, Senécal, & Pelletier, 1994).

However, secular trends suggest that female students might value school more today than in prior years. Female students have now surpassed their male counterparts in college enrollment and persistence (Buchmann, DiPrete, & McDaniel, 2008; Mather & Adams, 2007; Pollard, 2011). Likewise, for the first time in history, American women now place greater importance on a high-paying career than do their male counterparts (Patten & Parker, 2012). From the 1980s to the 2000s, the proportion of American high school girls intending to earn a post-graduate degree increased, a shift which is sufficient to account for a growing female advantage in report card grades over the same period (Fortin, Oreopoulos, Phipps, 2013). Considering these developments, we remained open to the prospect that girls in our studies would find school more interesting and important than would their male classmates.

1.2. Current investigation

In the current investigation, we conducted three studies. Study 1 was a survey assessing middle school teachers' beliefs about gender differences in self-control and school motivation. Studies 2 and 3 were prospective, longitudinal studies of middle school students taking the same courses in their major academic subjects. In Study 2, teachers and parents at two middle schools rated students on self-control in the fall while students completed self-report questionnaires assessing school motivation. We then collected school records of academic course grades in the spring. Using structural equation modeling (SEM) to correct for measurement error and allow for analysis of all available data, we estimated the extent to which self-control and school motivation uniquely explained gender differences in final academic performance. We also examined their ability to account for gender differences in *changes* in academic performance over the school year. A finding of self-control or

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