



Academic motivation predicts educational attainment: Does gender make a difference?



Michele Vecchione*, Guido Alessandri, Gilda Marsicano

*Sapienza University of Rome, Italy

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ABSTRACT

The study adopts self-determination theory as a theoretical framework, focusing on how academic motivation of male and female students is related to school success. The predictive role of intrinsic motivation, external regulation, and amotivation has been investigated across different educational levels, from elementary school to university, taking into account major antecedents of educational attainment (i.e. socioeconomic status, general intelligence). Participants were 419 Italian students, 212 males and 207 females, ranging in age from 9 to 22 years ($M = 13.8$). Academic motivation was found to be meaningfully related to a variety of academic outcomes, such as cumulative grades, school attendance, and classroom conduct. Gender differences were observed in the way and the extent to which motivational orientations affect scholastic success. The predictive value of intrinsic motivation tended to be stronger for females than for males across all educational levels. The effect of external regulation, by contrast, tended to be stronger for males. Theoretical and practical implications of results are discussed and linked to educational practices that may enhance students' academic pursuits.

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Motivational processes underlying learning behavior are among major determinants of scholastic achievement (Dweck, 1986). Several studies have found meaningful relationships between academic motivation and a number of educational outcomes, including school grades, effort and persistence at school, satisfaction with academic activities, and drop-out behavior (Eccles, Adler, & Meece, 1984; Vallerand & Bissonnette, 1992; Vallerand, Blais, Briere, & Pelletier, 1989). Among empirically based theory of students' motivation toward learning, self-determination theory (SDT) is one of the most acknowledged (Deci & Ryan, 1985). Studies embedded within the SDT have identified different types of academic motivation that fall along a motivational continuum of self-determination, from intrinsic motivation to external regulation (Deci, Vallerand, Pelletier, & Ryan, 1991). Intrinsic motivation is the most self-determined form of motivation (Deci et al., 1991; Vallerand et al., 1993). It refers to a particular kind of motivation to know that leads to value learning as an end in itself (i.e., learning for the satisfaction and the pleasure that derive from it). At the opposite end of the continuum, external regulation leads to conceive learning as an instrumental means to achieve a valued end (Ryan & Deci, 2000a). It refers to the process of pursuing an activity to satisfy external demands or contingencies (e.g., learning to avoid punishment). Most earlier studies have found that adaptive outcomes are positively related to intrinsic motivation, and either negatively related or unrelated to external regulation (Vallerand, Pelletier, & Koestner, 2008).

Whereas the mechanisms linking academic motivation to scholastic outcomes have been widely documented (Deci et al., 1991; Vallerand et al., 1989, 1992, 1993), there is a paucity of studies aimed to investigate whether motivational processes operate differently across male and female students. Vallerand, Fortier, and Guay (1997), for example, argued that "very little research has addressed gender differences in outcomes as a function of motivation" (p. 1171).

Previous studies, indeed, have either ignored gender differences (e.g. Fortier, Vallerand, & Guay, 1995), or have been limited to mean-level differences in academic motivation between males and females. Most of these studies reveal that females have higher levels of intrinsic motivation than males, while males have higher level of extrinsic motivation and amotivation (Ratelle, Guay, Larose, & Senecal, 2004; Vallerand, 1997; Vallerand & Bissonnette, 1992; Vallerand et al., 1997; Vallerand et al., 1992).

Based on these premises, the present study focuses on how the processes that lead to academic success may vary by gender. Specifically, it investigates how intrinsic motivation and external regulation of male and female students are linked to scholastic outcomes across different grade levels, from elementary school to university. These relationships were examined by controlling for variations in amotivation (i.e., lack of motivation), and other major antecedents of educational attainment, such as socio-economic level and general intelligence (Kuncel, Hezlett, & Ones, 2004; Sirin, 2005).

In accordance with earlier studies, we expect that intrinsic motivation predicts adaptive scholastic outcomes across all educational levels. Although this study is exploratory in nature, the following lines of reasoning lead us to expect this effect to be stronger for females than for males. Females have a more self-determined motivational profile

* Corresponding author at: Department of Psychology, "Sapienza" University of Rome, Via dei Marsi 78, 00185 Rome, Italy.

E-mail address: michele.vecchione@uniroma1.it (M. Vecchione).

than males in various domains of functioning (Vallerand, 1993), are more oriented toward autonomy in general, and feel more autonomous at school (Deci & Ryan, 1985; Vallerand & Bissonnette, 1992; Vallerand et al., 1997). Moreover, they have higher levels of perceived internal control for both success and failure outcomes (Cooper, Burger, & Good, 1981; Crandall, Katkovsky, & Crandall, 1965). As stated by Ryan and Deci (2000b), “feelings of competence will not enhance intrinsic motivation unless accompanied by a sense of autonomy, or, in attributional terms, by an internal locus of causality” (p. 70). Additionally, “intrinsic motivation is more likely to flourish in contexts characterized by a sense of security and relatedness” (Deci & Ryan, 2000, p. 71). Although school climate is the same for all students within the same class, research findings reveal that females tend to build stronger relationships with teachers with respect to males (Matthews, Ponitz, & Frederick, 2009), thus experiencing more feelings of connectedness and belongingness at school.

External regulation, by contrast, was expected to have a negative effect on adaptive outcomes. When scholastic and familial environments induce a high extrinsic motivation, for example through the use of tangible rewards or coercive strategies, students' sense of competence may be undermined. This may reduce interests of students in school activities, as well as their effort and persistence (Ryan & Deci, 2000a). Literature, however, documents a certain degree of variability with regard to this effect, given that some studies have found a null or weak relationship between external regulation and academic outcomes (e.g., Grolnick & Ryan, 1987; Vallerand & Bissonnette, 1992).

In the current research we examined the extent to which such variability is due to gender and educational level. We focus in particular on the effect of rewards, which has prompted a considerable amount of discussion over the past decades (Cameron, 2001; Deci, Koestner, & Ryan, 1999a, 1999b, 2001). We expect the effect of external regulation to be stronger for male than female students. Males, indeed, have a higher susceptibility to reward compared to females (e.g. Aluja & Blanch, 2011). Moreover, we expect the effect of external regulation to be less pronounced at the highest educational levels. This prediction accords with the meta-analytic results by Deci et al. (1999a), who found that tangible rewards offered as inducements for undertaking an experimental task were more detrimental for children than for college students. We examined whether results from an experimental based-paradigm generalize to a real-life educational setting.

Finally, we expect that amotivation negatively predicts scholastic performance of male and female students. As previously stated (Vallerand et al., 1997), engaging in academic activities without any sense of purpose may lead to negative outcomes, irrespective of gender and educational level.

1. Method

1.1. Participants

Participants were 419 students, 212 males and 207 females, enrolled in four educational levels: 4th and 5th grades of elementary school (sample 1, $n = 149$, 50% females), 6th and 7th grades of junior high school (sample 2, $n = 82$, 55% females), 11th and 12th grades of high school (sample 3, $n = 102$, 47% females), and first year of the university (sample 4, $n = 86$, 49% females). Participants from samples 1–3 were drawn from elementary, junior high, and high schools of a small city located in South Italy. Participants from sample 4 were undergraduate psychology students enrolled at Sapienza, the University of Rome (Italy).

1.2. Procedures

Participants were students of different educational levels who participated in one of two studies conducted at the University of Rome. Participants in samples 1–2 were part of an investigation of academic motivation and its outcomes. Participants in samples 3–4

take part in a larger investigation on the relationships among cognitive ability, academic motivation, and scholastic achievement. In each sample, participants completed a self-report measure of academic motivation. Participants in samples 3–4 also completed a measure of general intelligence. Data were collected in February/March, in the classrooms, by a team of trained researchers. Academic achievement was assessed in July, at the end of the scholastic year. In samples 1–3, the research was approved by a school council composed of parent and teacher representatives of the respective schools.

1.3. Measures

1.3.1. Academic motivation

Participants completed the Academic Motivation Scale (AMS, Vallerand et al., 1989, 1992). The scale contains 20 items, to which students respond to the question of why they are going to school (samples 1–3) or university (sample 4), using a 5-point Likert scale. The items are aimed to assess individual differences in five different types of motivation (i.e. intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation), with 4 items each. In the present study we focused on the subset of items that assess intrinsic motivation (IM), external regulation (ER), and amotivation (AM). Item samples were “because I experience pleasure and satisfaction while learning new things” (IM), “Because I want to lead a comfortable life later on” (ER), and “Honestly, I don't know; I really feel that I am wasting my time at school” (AM).

1.3.2. Scholastic achievement

In samples 1–3, students' final grades were obtained from school records. Grades were assigned by the teachers on a scale that ranges from 1 to 10, in accordance with the Italian educational system. A composite measure of scholastic achievement was created by averaging grades of principal subjects matters (e.g. Italian, mathematics, history, foreign languages). In sample 4, participants self-reported the mean examination mark (ranging from 18 to 30). Since performance at university also depend by the number of exams successfully passed, mean grades were weighted by the ratio of passed exams relative to total exams scheduled for the first year of university. For sake of simplicity, we refer to this variable as university grades.

We also considered two further scholastic outcomes, such as absences from school (samples 2–3) and appropriateness of students' behavior (samples 1–3). Absences from school refer to the number of hours of absence at the end of the year, such that higher scores indicate lower school attendance. Students' behavior was assigned by the teachers on a 1 to 10 scale, where low scores indicates that the student behave in disruptive or inappropriate ways that may compromise its performance (for example through aggressive conduct, or breaking the rules).

In sample 1, we also included engagement in learning activities and quality of relationship. Engagement refers to children's investment in scholastic activities, such as level of effort applied to schoolwork or attention in class (Fredricks, Blumenfeld, & Paris, 2004). Quality of relationship refers to the interpersonal relationship students have with their peers (Risi, Gerhardtstein, & Kistner, 2003). Both indicators were rated by the teachers on a 4-point Likert scale, which ranged from 1 “Improvable” to 4 “Very good”, in accordance with the evaluation program scheduled by the school.

1.3.3. Socioeconomic status

In each sample, SES was calculated on the basis of parental self-reporting of household income, and fathers' and mothers' educational level and occupation (e.g. Sirin, 2005). Annual income mode was ‘from 16,000 to 29,000 euro’ in each sample (percentages of cases in the modal category ranged from 24.7% in sample 1 to 32.0% in sample 3). Educational levels of fathers in samples 1–4 were respectively as follows: 3.6%, 4.1%, 3.8%, and 4.2% had an elementary school education, 42.5%, 48.0%, 43.1%, and 45.2% completed junior high school, 41.7%,

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