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# Self-enhancement Values and Academic Achievement: An Interaction with Students' Parental Level of Education and Gender?

Short title: *Self-enhancement Values and School Grades*

In-Press at the [British Journal of Educational Psychology](#)

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## Abstract

**Background:** We investigated the link between the endorsement of self-enhancement values (e.g., ambition, influence, authority, social power) and school achievement (i.e., grades).

**Aim:** Adopting an intersectional framework, we argued that the link may be qualified by both students' gender and their parents' education level. We hypothesized that depending on students' different experiences in the school system as a function of their gender and their parents' level of educational attainment, the endorsement of self-enhancement values might be either beneficial or detrimental to their academic achievement.

**Samples:** We conducted two studies: a pilot study ( $N = 191$ ) and a preregistered main study ( $N = 652$ ).

**Method:** High-school students reported their endorsement of self-enhancement values, their gender, and their parents' education level. The school administration provided students' grade average.

**Results and Conclusions:** In the pilot study, we found an interaction effect between the endorsement of self-enhancement values, gender, and parental level of education on grades: For male students, endorsement of self-enhancement values was associated with lower grades when their parents had a lower education level, but there was no such association for male students whose parents had a higher education level. No such effect was found for female students. With an improved methodology, the main study found an interaction effect between the endorsement of self-enhancement values and gender on grades. Independent of parental education level, the endorsement of self-enhancement values had a positive effect on grades among male students. No effect of self-enhancement values on grades was found among female students.

**Keywords:** Self-enhancement values, achievement, gender, social class

## **Self-enhancement Values and Academic Achievement: An Interaction with Students' Parental Level of Education and Gender?**

Self-enhancement values involve the importance that one attaches to personal success and social status through demonstrating normative competence and acquiring a dominant position in a social system (for a review, see Schwartz, 2012). In other words, an individual who endorses self-enhancement values will consider it important to do better than others, to be in charge, to demonstrate their abilities, to lead, and to be influential. Past research has shown that self-enhancement values are linked to important outcomes in various societal domains, such as voting preferences (Caprara et al., 2006), environmental behavioural intentions (Urien & Kilbourne, 2011), ethical decision making in organizations (Fritzsche & Oz, 2007), and attitudes towards new technological developments (e.g., willingness to use autonomous cars, Hohenberger et al., 2017). The role of self-enhancement values in the school system has received less attention (for two notable exceptions, see Aelenei et al., 2017; Pulfrey & Butera, 2013), in particular when it comes to their relation to academic grades. Moreover, integrating literatures dealing with related concepts into the analysis (i.e., the literature on stereotypical masculine traits; Heyder & Kessels, 2013; Verniers et al., 2016) suggests that the relation between self-enhancement values and grades is not as straightforward, as it may be moderated by both students' gender and their parents' level of education.

### **Self-Enhancement Values and School-Related Outcomes**

The few studies investigating the effects of the endorsement of self-enhancement values in school have identified both negative and positive outcomes. Pulfrey and Butera (2013) showed that students' endorsement of self-enhancement values predicted both condoning of cheating and engagement in cheating behaviour in school. On another note, the endorsement of self-enhancement values was related to the adoption of performance-approach

goals (i.e., the motivation to perform better academically than others). Interestingly, performance-approach goals have been shown to be positively related to grades, but only for students whose parents had a high education level (Darnon et al., 2018). In another study (Aelenei et al., 2017), the authors experimentally created a value profile of a student endorsing either self-enhancement values (e.g., ambitious, competitive, influential, decisive, wanting to be in charge, dominant) or self-transcendence values (e.g., helpful, forgiving, responsible). Teachers from all teaching levels (i.e., primary school, junior high, and high school) were asked to assess the students' perceived likeability (i.e., pleasant, likeable, nice) and perceived competence (i.e., intelligent, competent, gifted). The results revealed that teachers judged a student profile characterized by strong endorsement of self-enhancement values negatively on both dimensions.

Although research on the specific link between self-enhancement values and school-related outcomes is scarce, quite semantically similar values have been discussed within the overarching concept of "masculine values." Indeed, at least in part, self-enhancement values reflect stereotypically male content (e.g., agency, instrumentality, for a review, Wood & Eagly, 2015) and are related to most of the characteristics which, in the literature, are conceptualized as stereotypically masculine traits, such as assertiveness, independence, and dominance (Cuddy et al., 2015; Heyder & Kessels, 2013; Verniers et al., 2016; Wood & Eagly, 2015). Extending our perspective and looking more broadly at how these traits influence students' grades adds to the complexity of the analysis. For instance, research has documented a negative link between traits such as being dictatorial, boastful, arrogant, and egotistical (labelled by the authors as "undesirable masculinity") and boys' grades among a sample of German high school students coming mostly from educationally deprived backgrounds (Heyder & Kessels, 2013).

To sum up, investigation of the link between self-enhancement values and grades reveals an inconclusive and rather contradictory pattern. On the one hand, self-enhancement values are positively related to performance-approach goals (Pulfrey & Butera, 2013), which are shown to positively predict grades for students with a high level of parental education (Darnon et al., 2018). On the other hand, characteristics related to self-enhancement values that fall within the rubric of masculine traits are negatively associated with grades among male students with a low level of parental education (Heyder & Kessels, 2013). Thus, in an attempt to clarify this ambiguous link between the endorsement of self-enhancement values and grades, we proposed that the endorsement of these values might be either beneficial or detrimental to academic achievement depending on students' gender as well as their parents' level of education.

### **Parental Education Level, Self-enhancement Values and Academic Achievement:**

#### **A gender issue?**

Past research has consistently documented that throughout their academic career, students from families with a lower parental education level may experience the school environment as less familiar compared to their counterparts whose parents attained a higher level of education (Bourdieu et al., 1990; Jury et al., 2017; Stephens et al., 2012). In addition, students whose parents have a lower level of education are also more likely to be victims of stereotype threat (i.e., fear of confirming the negative stereotype about their social group's intellectual capacity), and to experience higher fear of failure and uncertainty about their

capacity to succeed in school (Désert et al., 2009; Gecas, 1989; Spencer & Castano, 2007; Wiederkehr et al., 2015)<sup>1</sup>.

Thus, in educational settings, students whose parents have a lower level of education seem to be more vulnerable than their counterparts whose parents are more highly educated. Such a conclusion may be even truer for boys, who are also likely to represent a relatively vulnerable group in the context of school. Indeed, in almost all European countries, boys are overrepresented among the poorest performers, a higher percentage of boys than girls repeat a year during obligatory education, and a higher percentage among them leave school before graduating (EURYDICE, 2010; OECD, 2017). In other words, male students whose parents have a lower level of education may be particularly vulnerable in school settings (Entwisle et al., 2007).

We suggest that these differences in vulnerability may trigger differences in the expression of self-enhancement values in an academic context. More specifically, male students with lower parental education levels who endorse self-enhancement values, such as ambition, competitiveness, authority, influence, and dominance, may be more likely to adopt compensatory, non-academic ways of expressing these values (e.g., acting as the leader of the group that disturbs the class), which may be counterproductive to their school achievement. For instance, research has shown that fear of academic failure and fear of the “feminine” led

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<sup>1</sup> It should be noted that some of these studies did not solely use parental level of education to measure students’ social/educational background (i.e., parents’ occupation or income were also used; for a review see Goudeau et al., 2017). However, for the sake of clarity, and because these measures are often linked, we will use broader categories to refer to students’ background.

boys to express "laddish" behaviours, a label designating dominant ways of expressing "masculinity" in class (Jackson, 2002, 2003). The reverse effect may emerge for male students with higher parental education level. Because these students feel more familiar with the school system and more confident with regard to their academic competencies, they may be more likely to express self-enhancement values through academic-oriented behaviours (e.g., acting as a leader in a school project, competing for better grades), thus leading to higher achievement in school. The latter line of reasoning is consistent with findings that performance-approach goals positively predict grades only for students with a high parental education level (Darnon et al., 2018). In the same vein, Legewie and DiPrete (2012) found that boys from classrooms with high socio-economic status composition fared better in school than did boys from classrooms with low socio-economic status composition. The authors proposed that these results may be explained by the fact that the former were more likely to express their "masculinity" via academic competition, whereas the latter were more likely to express their "masculinity" via oppositional behaviour.

Such dynamics may characterize male students to a greater extent than female students. Consistent with this thesis, Heyder and Kessels (2013) found no effect of self-reported traits such as being dictatorial, boastful, or arrogant on female students' grades, although they ascribed these traits to themselves to a similar degree as their male counterparts. Similarly, Legewie and DiPrete (2012) demonstrated that girls are less sensitive than boys to the socio-economic composition of the classroom. Moreover, although female students could benefit from positive stereotypes regarding their academic competence, they may be more reticent about overtly acting on self-enhancement values (e.g., taking on the role of a project leader) because of the resulting backlash (Moss-Racusin & Rudman, 2010; Rudman, 1998).



## Overview and Hypothesis

In the present research, we argue that for male students, strong endorsement of self-enhancement values might lead either to higher or to lower school achievement depending on their parents' education level. Because male students with more educated parents are more familiar with the expectations of the school system (Bourdieu et al., 1990; Stephens et al., 2012), they may have more opportunities to demonstrate their competence by succeeding academically and, thus, may be more likely to express these values through academic-oriented behaviours. Conversely, because of higher fear of failure (Jackson, 2002, 2003; Jury et al., 2015) and more uncertainty about their capacity to succeed in school (Wiederkehr et al., 2015), male students with lower parental education levels may be less assertive about their academic competences and more likely to seek non-academic opportunities to self-enhance, thus leading to poorer achievement. It should be noted that based on the literature, no hypotheses could be formulated regarding female students.

We first conducted a pilot study on a convenience sample of high-school students. The research materials and the data set can be accessed at:

[https://osf.io/jpqnr/?view\\_only=0958fa92fbe649d8a3198f88e461028a](https://osf.io/jpqnr/?view_only=0958fa92fbe649d8a3198f88e461028a)

## Pilot Study

### Method

**Participants.** One hundred ninety-seven students participated in this study. All students were in the tenth grade (15 - 16 years old) in one of the eight classrooms in the same public high school in France. Because for two students it was not possible to determine their

parents' educational level, and for four students their grade average was not provided, our final sample comprised 191 participants (128 girls and 63 boys)<sup>2</sup>.

**Procedure and measures.** An institutional ethics committee approved the research protocol. The school director and students' parents provided all required authorizations. The study took place during students' independent study hours in school in the presence of the first author, who presented the study and the instructions for the completion of questionnaire. Students were informed that the participation was on a voluntary basis and only if their parents consented. Furthermore, we assured the students that their responses were confidential, that only the research team would have access to their responses, that the statistical analyses were conducted on a group-level, and that their individual responses would not be identifiable. Students responded to the seven items measuring self-enhancement values, adapted from the French version of the Portrait Values Questionnaire (Schwartz, 2006; Schwartz et al., 2001; French version validated by Wach & Hammer, 2003), on a 7-point Likert scale (1 = not at all important; 7 = very important;  $M = 4.83$ ,  $SD = 0.99$ ,  $\alpha = .74$  for the pilot study). The seven items are: "*It is important to me: to be ambitious / to be in charge and tell others what to do / to be the one who makes decisions and leads / to succeed brilliantly / to show my abilities / to do better than others / to be rich*". The Portrait items are created specifically for populations of children and teenagers to reflect a less abstract form of values

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<sup>2</sup> This gender disparity may be because the study took place in a general high school institution (as opposed to vocational) where, according to recent data (DEPP, 2018), the gender ratio is skewed in favor of girls. This will be taken into account when planning the main study, in which we will sample schools based on a review of their gender distribution in order to ensure a roughly 50/50 gender ratio.

endorsement. For instance, instead of presenting value-items as desirable end-states in noun form (e.g., competitiveness, dominance) or desirable ways of acting in adjective form (e.g., being competitive, dominant), this method presents operationalized value-items more closely related to the way in which individuals express these values rather than to simple endorsement.

Parents' level of educational attainment was dichotomized into two categories (Harackiewicz et al., 2014; Jury et al., 2018; Sommet et al., 2015; Stephens et al., 2012 for a similar classification). Participants who did not have at least one parent with a 2-year higher education degree were coded as lower parental education level. If at least one of the student's parents had earned a 2-year college degree or higher, the student was classified as higher parental education level. If a degree was reported for only one of the parents, then this single degree was used to code students' parental education level. As a backup, we also asked participants to report their parents' profession. For five participants who did not report their parents' educational level, but did report their parents' profession, we used this information to infer their parents' education level. Based on this coding system, 101 students were coded as lower parental education level (35 boys and 66 girls) and 90 as higher parental education level (28 boys and 62 girls).

At the end of the school year, the administration provided students' grade average, which could range from 0 to 20 (current range 6.20 to 18.12,  $M = 12.07$ ,  $SD = 2.64$ ). The grade average is calculated as the arithmetic mean of all the grades obtained during the school year. Means and standard deviations for grade and self-enhancement values are presented in Table 1.

## **Results and Discussion**

To test our hypothesis, we employed regression analyses with students' parental education level (-0.5 for lower parental education level, +0.5 for higher parental education

level), students' gender (-0.5 for male, +0.5 for female), and students' endorsement of self-enhancement values (mean-centered). Intercorrelations among variables are presented in Table 2. The regression model contained seven predictors: parental education level, gender, self-enhancement endorsement, the three two-way interactions terms, and the three-way interaction term<sup>3</sup>. Because the assumption of normality was violated (i.e., the Shapiro-Wilk's W test on unstandardized residuals was significant,  $p = .032$ ), we used the bootstrap approach to statistical inference (Berkovits et al., 2000) based on 10,000 bootstrap replicates. Moreover, the intraclass correlation coefficient (ICC) was calculated. As the ICC was relatively small (ICC = .06) and the random intercept was not significant (Wald  $Z = 1.15$ ,  $p = .251$ ), multi-level analyses were not warranted.

We regressed students' grade average on the predictors. The general regression model explained 25% of the variance in students' grades,  $R^2 = 0.25$ ,  $F(7,183) = 8.55$ ,  $p < .001$ . The effect of parental education level was significant,  $B = 2.23$ ,  $SE = 0.38$ , BCa 95% CI [1.49, 2.92],  $p < .001$ ,  $\eta_p^2 = .16$ . Students with a higher parental education level ( $M = 13.25$ ,  $SE = 0.28$ ) obtained higher grades than those with a lower parental education level ( $M = 11.02$ ,  $SE = 0.26$ ). This effect was qualified by a three-way interaction,  $B = -1.55$ ,  $SE = 0.70$ , BCa 95% CI [-2.90, -0.22],  $p = .023^4$ ,  $\eta_p^2 = .03$ . Student's gender qualified the interaction between student's parental education level and student's endorsement of self-enhancement values. Follow-up analyses revealed that for girls, the interaction between parental education level and endorsement of self-enhancement values was not significant,  $B = -0.34$ ,  $SE = 0.44$ , BCa

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<sup>3</sup> We verified in preliminary analyses that gender and parental education level did not interact to predict the level of endorsement of self-enhancement values ( $p = .515$ ).

<sup>4</sup> The three-way interaction remained significant when bootstrapping was not used ( $p = .033$ ).

95% CI [-1.20, 0.55],  $p = .435$ . Only the effect of parental education level was significant,  $B = 2.50$ ,  $SE = 0.43$ , BCa 95% CI [1.66, 3.38],  $p < .001$ ,  $\eta_p^2 = .16$ , showing that girls with higher parental education level ( $M = 13.46$ ,  $SE = 0.31$ ) obtained higher grades than girls with lower parental education level ( $M = 10.96$ ,  $SE = 0.29$ ). More importantly, the expected interaction between students' parental education level and endorsement of self-enhancement values was significant for boys,  $B = 1.20$ ,  $SE = 0.53$ , BCa 95% CI [0.14, 2.40],  $p = .018$ ,  $\eta_p^2 = .02$ , implying that the endorsement of self-enhancement values predicted the grade average differently, depending on boys' parental education level (Figure 1). The simple effects revealed that for boys with lower parental education level, endorsement of the self-enhancement values negatively predicted the grade average,  $B = -0.80$ ,  $SE = 0.38$ , BCa 95% CI [-1.59, -0.16],  $p = .027$ ,  $\eta_p^2 = .02$ . For boys with higher parental education level, although the trend was positive, the effect of endorsement of self-enhancement values on grade average did not reach significance,  $B = 0.40$ ,  $SE = 0.37$ , BCa 95% CI [-0.32, 1.15],  $p = .234$ . No other main effect or interaction effect was significant, all  $ps > .200$ .

The results of the pilot study supported the hypothesized interaction model. Indeed, whereas a high level of endorsement of self-enhancement values might lead to lower grades among boys with a lower parental education level, the effect was not significant for boys with a higher parental education level (in fact, the tendency seemed reversed for them). However, it should be acknowledged that our pilot data was not well balanced in terms of gender, with a relatively small sample of male students. Thus, the goal of the main study will be to replicate these preliminary findings with a bigger sample based on a priori power analysis.

## Main Study

### Method

As in the pilot study, the participants responded to seven items measuring their endorsement of self-enhancement values on a 7-point scale (1 = not at all important; 7 = very important;  $M = 4.50$ ,  $SD = 0.98$ ,  $\alpha = .71$  for the main study).

For students' parental education level, we applied the same classification criteria as in the pilot study. If at least one of the student's parents had earned a 2-year college degree or higher, the student was classified as higher parental education level. If neither parent has at least a 2-year higher education degree, students were coded as lower parental education level. If a degree was reported for only one of the parents, then this single degree was used to determine students' parental education level. As in the pilot study, we also asked participants to report their parents' profession. For participants who did not report their parents' educational level, but did report their parents' profession, we used this information to infer students' parental education level. This was the case for 17 students. Nine students did not report any information about their parents' education or profession, and were not included in the final sample. Based on this coding system, 255 students were coded as lower parental education level (166 girls and 87 boys; 2 missing) and 420 as higher parental education level (278 girls and 140 boys; 2 missing).

At the end of the first trimester or the school year, the school administration provided students' grade average, which could range from 0 to 20 (current range 3.75 to 19,  $M = 13.11$ ,  $SD = 2.32$ ). Means and standard deviations for grade and self-enhancement values are presented in Table 3.

**Participants.** Based on an a priori power analysis (see below), we aimed to recruit around 480 students, nested in 20 classrooms. To increase the generalizability of our findings, we sampled classrooms from different schools. In order to maintain a design with only one

nesting level, we planned to recruit only one classroom per school; thus, we needed 20 schools. During the 16-month data collection period (from September 2020 to December 2021), we recruited 684 students, nested in 41 classrooms from 12 different schools. To remain consistent with the pilot study, we sampled the same grade level, i.e., the tenth grade in each school.

**Power analysis.** To conduct the power analysis, we used the Simr package (Green & Macleod, 2016) in R, based on the data from the pilot study. This package calculates power for generalized linear mixed models, using simulation. We considered the effect size revealed in the pilot study (which is relatively small,  $\eta_p^2 = .03$ ) and we ran a mixed model, with the intercept as a random factor. The analysis indicated that 20 classes (hence, 20 schools since we planned to recruit one classroom per school) were necessary to achieve 90% power for the interaction effect. Estimating around 24 students per class, we needed around 480 students for the study.

**Preliminary checks.** We checked whether our sample was well balanced in terms of gender and parental level of education. To make sure that our sample was diverse, we contacted schools from socially diverse neighborhoods and from different French regions and we planned to review the gender ratio for each school, in order to sample schools with an approximatively 50/50 ratio. Given the difficulty of conducting studies in schools during the Covid-19 crisis, we finally contacted schools regardless of their gender ratio. The schools were randomly selected using contact information presented on the website of the Ministry of education. Some schools were specifically contacted based on the knowledge that they were situated in working- and middle-class neighborhoods. To avoid introducing a confounding variable and remain consistent with the pilot study, we targeted only general (not vocational) high-school institutions. We anticipated an imbalance in the ratio of students with lower and higher parental education. We therefore recruited around 200 extra students (more than

registered) to address this and reach the expected sample size for each subgroup in reference to the registered total sample size ( $N = 480$ ).

We also checked and confirmed that our continuous variables, namely level of endorsement of self-enhancement values and grades, did not present ceiling effects. Given the distributions observed in the pilot study for the first two variables, we were confident that this would not be the case.

**Handling missing data.** Participants who did not report their gender ( $N = 6$ ) or had missing data for both parental education level and parents' profession ( $N = 9$ ) were excluded from analyses. Participants for whom we were unable to obtain grade records were also excluded ( $N = 25$ ). If there were missing data on one or more items of the self-enhancement scale, we computed the mean of the variable based on the other items. The final sample included 652 students. Intercorrelations among variables are presented in Table 4.

**Main analyses.** The data, the codebook, the R script for the analyses, and the approved Stage 1 protocol are available at [https://osf.io/jpqnr/?view\\_only=0958fa92fbe649d8a3198f88e461028a](https://osf.io/jpqnr/?view_only=0958fa92fbe649d8a3198f88e461028a). Given the structure of our data (i.e., students nested in classrooms/schools), we used R (R Core Team, 2012) and lme4 (Bates et al., 2015) to perform linear mixed-effects analyses. The main dependent variable was students' grade average. As fixed effects, we entered seven predictors into the model: students' parental education level (-0.5 for lower parental education level, +0.5 for higher parental education level), students' gender (-0.5 for male, +0.5 for female), self-enhancement endorsement (mean-centered), the three two-way interaction terms, and the



three-way interaction term<sup>5</sup>. Given the complexity of our model, we employed the procedure detailed by Bates et al. (2015) to select the random effects in the final model (using the R package RePsychLing). Thus, our final model included intercepts for classrooms and by-classrooms slopes for the interaction effect between gender and parental education level as random effects. P-values were obtained by Satterthwaite approximation with the lmerTest package (Kuznetsova et al., 2017).

Visual inspection of residual plots did not reveal any obvious deviations from homoscedasticity or normality. Furthermore, the Shapiro-Wilk W test was not statistically significant,  $W = 0.99$ ,  $p = 0.214$ .

**Detecting Influential Observations.** To detect influential observations, we used Cook's distance with the R package *influence.ME* (Nieuwenhuis et al., 2012), which provides a summary measure of the change in all parameter estimates from when a particular case is included to when it is not included. Observations were considered as too influential if the associated value for Cook's distance exceeded the cut-off value of  $4/N$ , where N is the total number of students and if the deletion of the observation affected the level of significance of the variables in the model. For both the primary and secondary analyses, we looked for influential data in the final model (i.e., after we have proceeded with the selection of the random effects). Several observations exceeded the cut-off value for Cook's distance, but as their deletion did not affect the significance level of the predictors, they were retained in the data set.

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<sup>5</sup> As in the pilot study, we verified that gender and parental education level did not interact to predict the level of endorsement of self-enhancement values ( $p = .969$ ).

**Results.** Carrying out the linear mixed-effects analysis detailed above, we obtained two main effects and one interaction effect. The effect of parental education level was significant,  $B = 1.05$ ,  $SE = 0.19$ ,  $t(601) = 5.57$ ,  $p < .001$ ,  $\eta_p^2 = .049$ . Students with a higher parental education level ( $M = 13.61$ ,  $SE = 0.20$ ) obtained higher grades than those with a lower parental education level ( $M = 12.56$ ,  $SE = 0.22$ ). The endorsement of self-enhancement values had a positive effect on grades,  $B = 0.20$ ,  $SE = 0.10$ ,  $t(615) = 2.05$ ,  $p = .040$ ,  $\eta_p^2 = .007$ . Importantly, this effect was qualified by an interaction with student's gender,  $B = -0.42$ ,  $SE = 0.19$ ,  $t(614) = -2.17$ ,  $p = .030$ ,  $\eta_p^2 = .008$  (Figure 2). Follow-up analyses revealed that for girls, the endorsement of self-enhancement values did not have a significant effect on grades,  $B = -0.01$ ,  $SE = 0.11$ ,  $t(630) = -0.10$ ,  $p = .917$ ,  $\eta_p^2 = .000$ . For boys, however, the endorsement of self enhancement had a positive effect on grades,  $B = 0.41$ ,  $SE = 0.16$ ,  $t(605) = 2.54$ ,  $p = .011$ ,  $\eta_p^2 = .011$ . Looking at this interaction from a different perspective, among the students who reported a weak endorsement of self-enhancement values, girls obtained higher grades than boys,  $B = 0.65$ ,  $SE = 0.27$ ,  $t(633) = 2.41$ ,  $p = .016$ ,  $\eta_p^2 = .009$ . This was not the case among students who reported a strong endorsement of self-enhancement values, with boys performing as well as girls,  $B = -0.17$ ,  $SE = 0.27$ ,  $t(622) = -0.65$ ,  $p = .517$ ,  $\eta_p^2 = .001$ . This two-way interaction pattern was not moderated by students' parental education level; the three-way interaction between parental education level, gender, and endorsement of self-

enhancement values was not significant,  $B = 0.55$ ,  $SE = 0.39$ ,  $t(616) = 1.43$ ,  $p = .153$ ,  $\eta_p^2 = .003$ . No other main effect or interaction effect was significant, all  $p_s > .087^6$ .

Using a pre-registered protocol and a solid methodology, the goal of this main study was to replicate the preliminary findings documented in the pilot study. The results did not support the hypothesis of the two-way interaction between the endorsement of self-enhancement values, gender and parental education level on grades. The results revealed instead a simple interaction between gender and the endorsement of self-enhancement values, with a positive effect of self-enhancement endorsement on grades amongst boys, but not effect amongst girls.

### **General Discussion**

In the present research, we analysed the link between the endorsement of self-enhancement values (i.e., the importance attached to being the one in charge, showing one's abilities, and doing better than others) and school achievement (i.e., grades). We grounded this analysis in existing research showing that psychological variables which share a degree of semantic similarity with self-enhancement values (e.g., performance approach goals and stereotypical masculine values) have distinct effects on school achievement depending on students' sociodemographic characteristics, such as gender and socio-economic background. For instance, the endorsement of performance-approach goals was positively related to grades, but only for students with a high parental education level (Darnon et al., 2018).

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<sup>6</sup> Since the 41 classrooms were nested in 12 schools, we also conducted a linear mixed-effect analysis with two nesting levels (i.e., students in classrooms and classrooms in schools). The pattern of results did not change.

Moreover, Heyder and Kessels (2013) found a negative effect of self-reported stereotypical masculine traits (e.g. dominance and arrogance) on male students' grades amongst a sample of German high school students, mostly with a low parental education level. They found no effect of these traits on female students' grades. Thus, we took an intersectional approach and proposed that taking into account both students' gender and their parents' education level may contribute to better apprehending the relationship between the endorsement of self-enhancement values and school achievement. We predicted a positive link between the endorsement of self-enhancement values and grades for male students with higher parental education level, whereas this link was expected to be negative for male students with lower parental education level. In a pilot study, we found the predicted interaction effect between male students' endorsement of self-enhancement values and parental education level on grades. Specifically, the more the male students with lower parental education level endorsed self-enhancement values, the lower their grades were. In other words, striving to attain status and outperform others was associated with lower school achievement if students came from a lower social class background. As has previously been argued, male students from underprivileged social backgrounds might lack the means to fulfil their striving for competence and status by being successful in school, due to lower familiarity with the school system (Goudeau & Croizet, 2017; Jury et al., 2017), higher fear of failure (Jackson, 2002, 2003) and lower academic self-efficacy (Wiederkehr et al., 2015). Therefore, they might be more likely to engage in counterproductive tactics to attain social status and prestige, which would negatively affect their grades. Although there was a trend in the predicted direction, the positive link between the endorsement of self-enhancement values and grades was not significant for male students with higher parental education level. The results of this pilot study also showed that for female students, the level of endorsement of self-enhancement values neither predicted their grades nor interacted with their parental education level.

Following the pilot study, we designed and registered a main study to overcome its limitations. First, we recruited a sample comprising students from multiple high schools to rule out the possibility that, for whatever reasons, the results pattern obtained in the pilot study applied only to the one institution investigated. Second, we aimed to achieve a more gender-balanced sample by recruiting more male students, a relevant issue since the interaction effect was predicted for this specific population. The main study thus provided a test of our hypothesis with adequate statistical power and guaranteed the generalisation of our results beyond the single school used in the pilot study.

As in the pilot study, in the main study, female students' endorsement of self-enhancement values was not associated with their school achievement, and this pattern was not moderated by their parents' education level. Although a thorough further investigation is required, we suggest that these results could be, at least in part, explained by the fact that girls may restrain themselves from fully translating self-enhancement values into everyday class-behaviour (e.g., taking charge over a project, overtly competing for better grades, speaking up in class, or expressing and debating contradictory opinions), for fear of backlash (Moss-Racusin & Rudman, 2010). The backlash effect refers to the sanctions that counter-stereotypical girls (and boys) can encounter from peers and adults, from an early age (e.g., Sullivan et al., 2018). Insofar as self-enhancement values strongly relate to stereotypical masculine traits, as discussed in the introduction, girls may fear the potential sanctions if they overtly act on these values. However, it is worth noting that, both in the pilot study and the main study, boys endorsed self-enhancement values to a slightly higher degree than girls did (see Table 4), and the endorsement of self-enhancement values was relatively high for both groups, with similar distributions (see Table 3). Interestingly, this gender difference in self-enhancement values echoes a symmetric gender difference in self-transcendence values (e.g., helping others, listening to others, and having an interpersonal sense of harmony), with girls

endorsing self-transcendence values more than boys (Aelenei et al., 2017). Moreover, according to the same research (Aelenei et al., 2017), girls endorsed self-transcendence values more than self-enhancement values, raising the possibility that for girls, self-transcendence values, and not self-enhancement values, are predictive of their school achievement.

Regarding the male students, the results from the main study did not replicate the interaction between the endorsement of self-enhancement values and parental education level on grades obtained in the pilot study. Indeed, in the pilot study, the link between self-enhancement and grades was negative amongst boys with a lower parental education level, but not significant for boys with a higher parental education level. In the main study, the observed pattern was instead a main positive effect of self-enhancement values, namely, the more male students endorsed the self-enhancement values, the better their grades were, independent of their parents' education level. Our hypothesis was thus not supported by our data. Interestingly, the relation between self-enhancement values and school achievement appeared to only be moderated by students' gender, highlighting mainly a gender dynamic, which was found among students from both high and low socio-economic backgrounds. Looking into this dynamic more closely, our results from the main study also showed that the gender gap in academic achievement varied as a function of the endorsement of self-enhancement values. Among students who reported a weak endorsement of these values, girls obtained higher grades than boys did. This achievement gap disappeared among male and female students who reported a strong endorsement of self-enhancement values. In other words, whereas the endorsement of self-enhancement values does not help nor penalize female students, presumably because they may restrain themselves from fully translating self-enhancement values into everyday class-behaviour, it does have a positive effect on male students' school achievement, closing the gender gap in grades. On another note, these results contribute to a recent debate over the hypothesis of school feminisation as a potential

explanation for boys' underachievement in school compared to girls (Martinot et al., 2021; Verniers et al., 2016). Indeed, the present findings suggest that endorsing masculine values in school does not penalize boys, but is in fact beneficial for them, as it is associated with better achievement.

Two limitations of our work should be acknowledged. Our research was conducted in general high schools only (as opposed to vocational high schools). In the French educational system, the main difference between general and vocational high schools concerns the objective of the training. The general high school prepares students for higher education at university, whereas the vocational high school aims at a rapid integration into the work force after the vocational baccalaureate. Although we are not aware of specific research that documented differences – relevant to our study (for instance in terms of values endorsement) – between students in general versus vocational high schools, we cannot exclude the possibility that this may be the case. We decided to target only general high schools in order to avoid introducing a potentially confounding variable between the pilot and the main study. This increased the robustness of our statistical inference, but at the same time limits the generalization of our findings to general high schools only. Another limitation concerns the fact that our measure was limited to capturing the endorsement of self-enhancement values. As developed below, future research should investigate how this endorsement translates into everyday class behaviour.

To conclude, employing a pre-registered protocol and a solid methodology, our research clarifies the link between the endorsement of self-enhancement values and school achievement, a relationship which is far from being straightforward. Indeed, a strong endorsement of self-enhancement values can serve academic performance, but only amongst male (and not female) students. Future research will have to examine the mechanism underlying this pattern of effects. If, as we suggested, the mechanism is based on a fear of

backlash, with girls not fully translating their adherence to self-enhancement values into everyday school behaviours, future studies could investigate this dynamic. For instance, after each item, a follow-up question could ask explicitly what concrete behaviours are students displaying in class to reflect the value-content captured by the item. A results pattern supporting the fear of backlash explanation would show behavioural restraint amongst girls compared to boys, particularly at high levels of self-enhancement endorsement. Moreover, focusing on the male and female students who strongly endorse self-enhancement values highlights an interesting contribution to the literature on the gender achievement gap in school. Specifically, girls' better achievement in school compared to boys, so often presented as an established tendency (Voyer & Voyer, 2014), no longer holds up when boys endorse values of power and achievement.

Finally, by applying an intersectional approach in terms of gender and social class, our research contributes to the growing literature on the importance of taking into account students' group memberships to understand educational achievement (Buchmann et al., 2008; Connolly, 2006; Dekkers et al., 2000; Entwisle et al., 2007). In particular, the present research shows that not only do group memberships directly affect grades, they can also moderate the effects of individual variables (e.g., values endorsement) on educational attainment. This is an important contribution because so far, educational research has mostly examined either individual or group antecedents of academic performance, but rarely their interaction. Indeed, on one hand, research has documented gender and social class effects on academic attainment (Sirin, 2005; Voyer & Voyer, 2014). On the other hand, educational research has documented the impact of individual variables (e.g., motivation, personality, self-efficacy, e.g., Richardson et al., 2012) on academic achievement. The present research, in line with others (see Darnon et al., 2012, 2018), rather points to the fact that an individual variable may produce different effects depending on one's group membership.



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Table 1.

*Mean Self-Enhancement Value Endorsement and Grade (with Standard Deviations) in the Pilot Study*

	Self-enhancement values		Grade	
	Boys	Girls	Boys	Girls
Lower parental education level	5.10 (0.96)	4.76 (0.95)	10.86 (2.54)	10.95 (2.32)
Higher parental education level	5.14 (1.17)	4.61 (0.94)	13.17 (2.39)	13.52 (2.25)

Table 2.

*Intercorrelations among Variables in the Pilot Study*

	1	2	3
1. Self-enhancement values			
2. Gender	-.20*		
3. Parental education level	-.05	.04	
4. Grade Average	-.08	.06	.47**

Note. \* $p < .01$ , \*\* $p < .001$ . Gender was coded as - 0.5 for male and + 0.5 for female. Parental education level was coded as - 0.5 for lower parental education level and + 0.5 for higher parental education level.



Table 3.

*Mean Self-Enhancement Value Endorsement and Grade (with Standard Deviations) in the Main Study*

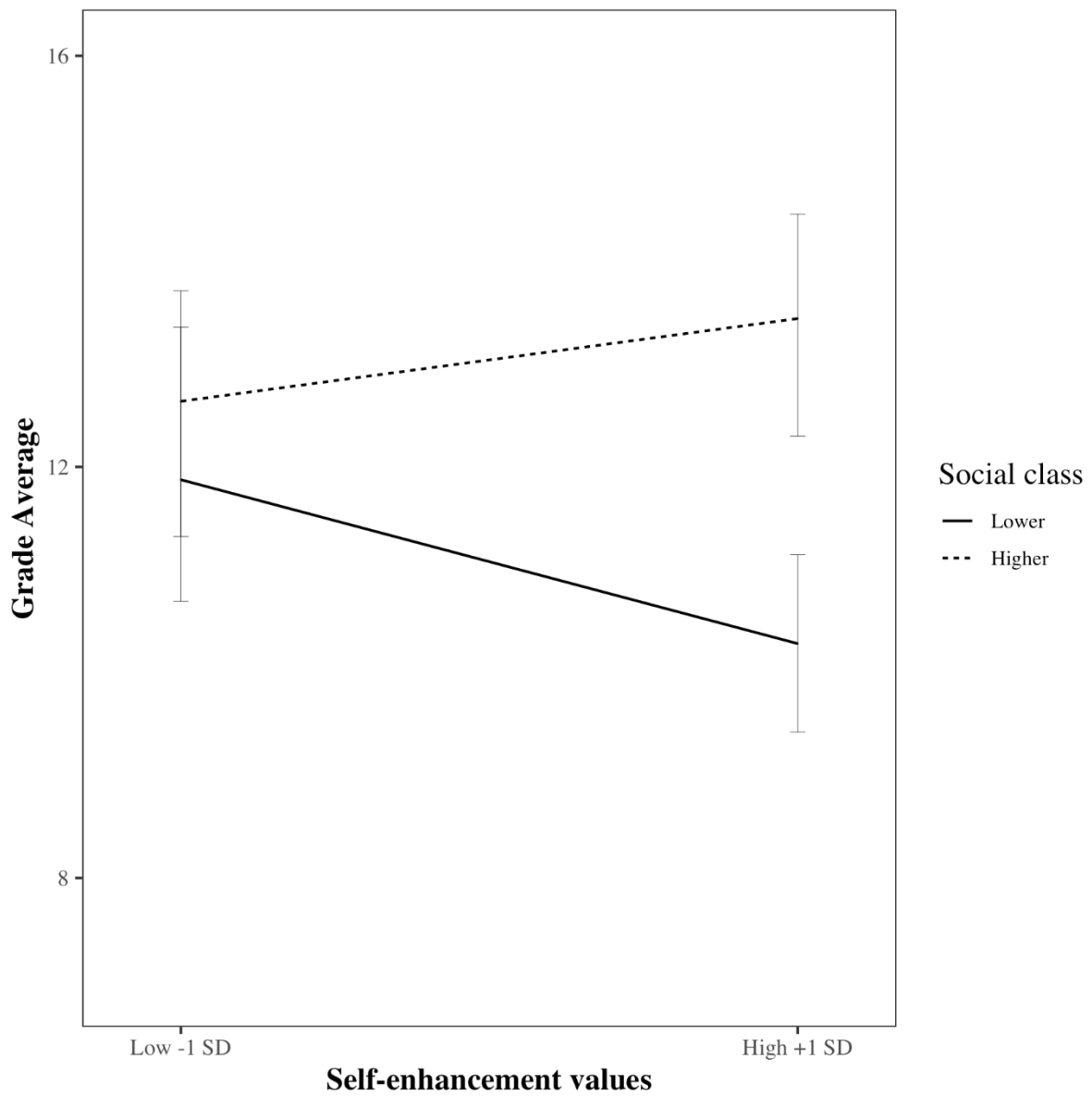
	Self-enhancement values		Grade	
	Boys	Girls	Boys	Girls
Lower parental education level	4.52 (0.88)	4.35 (0.96)	12.23 (2.31)	12.36 (2.01)
Higher parental education level	4.49 (1.00)	4.68 (0.99)	13.49 (2.28)	13.61 (2.34)

Table 4.

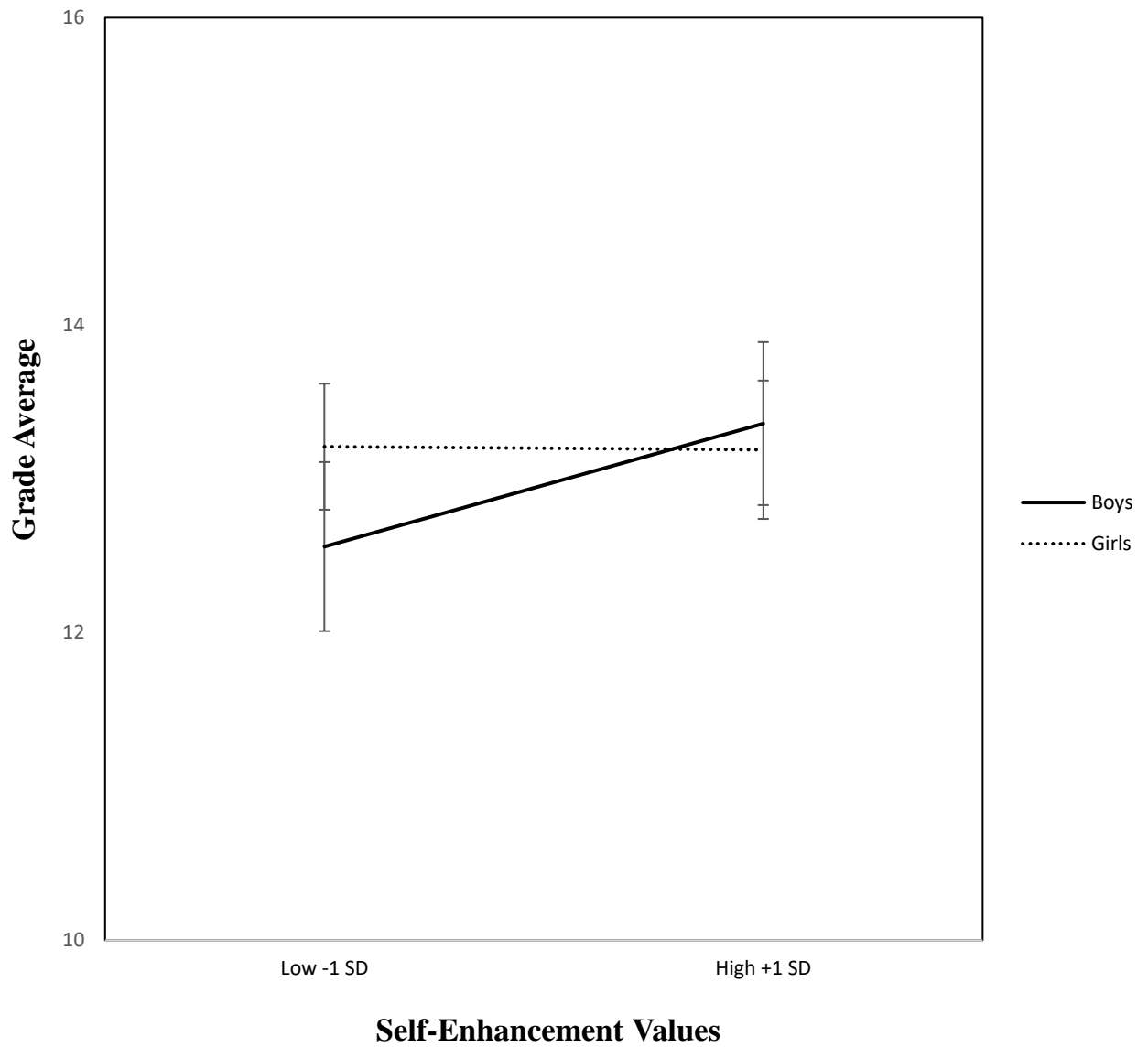
*Intercorrelations among Variables in the Main Study*

	1	2	3
1. Self-enhancement values			
2. Gender	-.09*		
3. Parental education level	.08	.00	
4. Grade Average	.05	.02	.26**

Note. \* $p < .05$ , \*\* $p < .001$ . Gender was coded as - 0.5 for male and + 0.5 for female. Parental education level was coded as - 0.5 for lower parental education level and + 0.5 for higher parental education level.



*Figure 1.* Male students' grade average as a function of social class (i.e., parental education level) and endorsement of the self-enhancement values in the Pilot study. Error bars represent 95% confidence intervals.



*Figure 2.* Students' grade average as a function of gender and endorsement of the self-enhancement values in the Main Study. Error bars represent 95% confidence intervals.