sustainability

MDPI

Article

Self-Esteem and Motivation for Learning in Academic Achievement: The Mediating Role of Reasoning and Verbal Fluidity

Nieves Moyano [1], Alberto Quílez-Robres [2,*] and Alejandra Cortés Pascual [3]

[1] Departamento de Psicología Evolutiva y de la Educación, Facultad de Humanidades y Ciencias de la Educación, Universidad de Jaén, 23009 Jaén, Spain; mnmoyano@ujaen.es

[2] Departamento de Ciencias de la Educación, Facultad de Ciencias Humanas y de la Educación, Universidad de Zaragoza, 50001 Zaragoza, Spain

[3] Departamento de Ciencias de la Educación, Facultad de Educación, Universidad de Zaragoza, 50001 Zaragoza, Spain; alcortes@unizar.es

* Correspondence: aquilez@unizar.es; Tel.: +34-616-48-45-29

Received: 26 June 2020; Accepted: 16 July 2020; Published: 17 July 2020

Abstract: The goal of the present study was to analyze the joint role that non-cognitive (motivation and self-esteem) and cognitive (verbal fluency and reasoning) factors play on academic achievement, both as a global score and in relation to specific subjects, such as language and literature and mathematics. We also analyzed the mediating role of cognitive factors. We recruited a sample of 133 primary education students (aged 6–9 years old) (47.6% girls, 52.6% boys), to whom various measures of the above-indicated variables were administered. Several predictive models were tested through a mediational regression analysis. The results indicated the relevance of intrinsic motivation together with self-esteem as predictors of academic achievement mediated by the cognitive abilities verbal fluency and reasoning. These relationships differed depending on the specific subject. We discuss the educational implications of these findings and emphasize, on the one hand, that academic achievement depends on both cognitive and non-cognitive factors and, on the other hand, the malleability of cognitive factors, as they seem to improve based on motivation and self-esteem.

Keywords: self-esteem; motivation for learning; academic achievement; reasoning; verbal fluidity

1. Introduction

Learning and, consequently, its measurement in the educational field through academic success, which is commonly evaluated by academic performance, is a topic of interest for public institutions. An example of this is the annual Programme for International Student Assessment (PISA) [1] reports used as an indicator of students' general knowledge in different countries.

Currently, there are two broad research lines to analyze the predictors of academic performance, understood as the product of the learning process that results from the different factors acting on it [2]. On the one hand, a research line has focused on cognitive factors, such as executive functions [3], general intelligence [4], or cognitive ability. Regarding the last one, academic performance involves abilities such as reasoning [5] and those related to the verbal component [6], from which more information is obtained for educational practice, as these abilities go beyond general intelligence and are useful for explaining the students' variety of academic skills [7,8]. On the other hand, another research line highlights the role of non-cognitive factors, such as motivation [9] and self-esteem [10], as crucial elements in academic performance.

Despite the role that cognitive abilities play in academic performance, very few studies have analyzed specific cognitive abilities, such as verbal fluency and reasoning, in the academic performance of children aged 6–9 years. Schneider and McGrew [11] conclude that both the verbal component and reasoning are the bases for adequate academic performance, as these factors are key predictors for school success, although cognitive abilities alone do not completely predict school success [12,13]. Among the non-cognitive factors, motivation and self-esteem stand out. On the one hand, motivation is understood as the process that aims to achieve a goal [14,15]. On the other hand, self-esteem is someone's perception of him/herself and of how he/she is valued to achieve the proposed goals [16,17]. Both motivation and self-esteem are considered important in the teaching–learning process, and they also improve academic performance by being influenced by the environment or context in which they interact [18,19].

The study of motivational variables has been commonly approached from the Self-Determination Theory [20], which considers two types of motivation: intrinsic and extrinsic. While intrinsic motivation is internal, driven by interest, curiosity, or enjoyment, extrinsic is determined by context and is, therefore, influenced by sources external to or beyond the subject [20].

In the continuum of intrinsic and extrinsic motivation, Montero and Alonso [21] propose the following types of motivation: motivation for learning, motivation for results, and fear of failure. The first two are the main reason why the student strives, acquires initiative and perseverance, and drains his/her cognitive capacity to achieve favorable academic performance. However, the fear of failure would act as a demotivating element that reduces one's cognitive faculties and represses effort and perseverance oriented to achieve a clear goal [22]. These three components of motivation encompass both the intrinsic character (of learning and fear of failure) and the extrinsic nature manifested by the motivation of the achieved result [14,21]. This decomposition into dimensions allows us to examine how motivation for learning is related—to a greater extent than motivation for results—to school performance in the absence of external pressures [23,24].

Self-esteem is related to academic performance in such a way that it is linked with school success or failure. In an attempt to categorize self-esteem, it has been classified as high and low self-esteem [25]. Children with good school performance have high self-esteem, trust their abilities, are self-effective, and feel valuable [10]. In some studies, poor school performance has been associated with feelings of ineffectiveness, lack of expectations, and also with feelings of failure and frustration [26,27]. In line with this, the school context is a significant variable for students' self-esteem [28]. Briefly, positive self-esteem lays the foundation for high academic achievement [29].

Regarding the influence that non-cognitive factors (motivation, self-esteem) have on cognitive factors (reason, verbal fluency), in relation to the former, it has been shown that the students driven by intrinsic motivation have better cognitive abilities than those regulated by extrinsic reward styles [30]. The enjoyment itself of performing an activity (essence of intrinsic motivation) is an important predictor of performance in a wide variety of domains [31]. In this regard, some studies indicate that the verbal fluency of those with low motivation levels—e.g., apathy [32]—declines [33]. Other authors emphasize that the link between intrinsic motivation and performance in certain subjects differs depending on the cognitive ability type [34,35].

Perceiving that one possesses the cognitive abilities to overcome difficulties and to achieve academic success facilitates the development of healthy self-esteem. Indeed, when cognitive abilities are scarce, students tend to show less self-esteem as they themselves predict the achievement of poor academic results [36]. Therefore, a relationship between self-esteem and reasoning [37] and verbal fluency appears, although this relationship sometimes requires the mediation of other variables [38]. Finally, the relationship linking self-esteem and cognitive abilities has also been analyzed in the opposite direction: that is, focused on the impact that cognitive abilities have on self-esteem [39].

Cognitive abilities explain much of the variability of academic skills in certain subjects. Among the most widely analyzed subjects, we found language and literature and mathematics [40,41]. The association between academic domains links verbal fluency with the language and literature subject, and reasoning with mathematics [41,42]. Moreover, a bidirectional association between intrinsic motivation and competition in a specific domain is observed. The better the results in mathematics, the more motivation

for that subject [43]. Such relations do not seem to exist so clearly in self-esteem because it is globally defined [44].

Gender differences appear in non-cognitive factors and the academic performance of certain subjects. On the one hand, girls (10–18 years old) present lower extrinsic motivation levels and better perceive failure. In turn, they obtain better marks in language and literature and approach learning in a more adaptive way [45]. On the contrary, for self-esteem, boys (10–18 years old) show higher levels than girls, which is related to their better performance in mathematics [46]. Indirect evidence indicates that academic performance in certain subjects—linked with certain cognitive abilities—differs depending on gender, with males feeling more motivated with mathematics and females with the language area [47,48].

To date, very few publications have analyzed the impact that motivation, self-esteem, and their joint impact have on the academic performance of students in elementary education (6–9 years old), and the possible mediation of cognitive abilities, such as verbal fluency and reasoning and gender in specific areas. As the ability to solve academic problems, such as mathematical or reading-related problems, can predict future academic or educational consequences [49,50], their analysis is fundamental at early ages. Academic performance in elementary school predicts academic performance in later education stages, as indicated by several longitudinal design studies done with pupils aged 6–14 years old [40,51,52] and those in secondary education and university education stages [53]. Richaud, Filippetti, and Mesurado [54] highlight that motivational and emotional factors are directly related to learning processes in the education field. However, they point out that knowledge about the connection with neuroscience is still limited, along with the study of personal factors and their impact on learning processes and academic performance.

Studying the relationship between motivation and self-esteem with academic performance in elementary education is justified by motivation tending to decrease with age [55]. In this stage, the consolidation of self-esteem is crucial because, within this range, self-esteem is usually high and unreal at around the age of 8, so the socio-cultural environment should encourage self-esteem to be properly constructed [56].

With a sample of elementary education schoolchildren, our objective was to focus on: analyzing the relationship between non-cognitive factors (motivation, self-esteem) and a possible mediation of cognitive abilities (reasoning, verbal fluency) and gender for global academic performance by considering the average mark obtained by averaging all the subjects taken; and the specific academic performance in language and literature and mathematics**.** To do so, a predictive model of motivation (learning, outcome, fear of failure) and self-esteem in global and specific academic performance were tested, in which the possible mediating role of cognitive reasoning and verbal fluency was evaluated.

2. Materials and Methods

2.1. Participants

The sample was made up of 133 primary students, who were distributed into courses as follows: 35.3% in year 1; 31.6% in year 2; 33.1% in year 3. They all attended a state-assisted school in the center of a medium-sized city in Spain. The families' socio-economic level was medium–high (30.000–45.000 net euros per year). Of the sample, 47.4% were girls and 52.6% boys, all aged between 6 and 9 years (M = 7.54, SD = 0.95). Regarding academic performance, the values obtained after considering the grades in all their subjects ranged between 5 and 9.4 (M = 7.88; SD = 0.94). The sampling method was incidental.

2.2. Measures

Academic performance was evaluated with the average grades (scores from 0 to 10) obtained by all the students taught during the 2018–2019 academic year.

The Motivation Questionnaire towards Learning and Execution (MAPE-II) [20] was used. This scale assessed motivation. It comprised 74 items that make statements about work capacity, performance, and motivation level. The answer options were Yes/No. Items were grouped into three second-order dimensions: motivation for learning, motivation for results, and fear of failure. The learning motivation dimension was made up of 43 items (e.g., "I am happy when I do difficult tasks") and high scores that detected those students who work harder, obtain better results, and reject non-effort behaviors because

they are driven by satisfaction from the task itself. The second dimension was made up of 25 items (e.g., "when I grow up, I want to be someone important"), where the highest scores indicated the search for prestige, demonstration of one's own worth, and anxiety, which resulted in higher performance. The third dimension, or fear of failure, was made up of 12 items (e.g., "when I fail, I get discouraged"), where high scores indicated a lack of confidence in one's own ability, anxiety, and blockage when facing difficulties. Its authors indicated adequate reliability indices through Cronbach's alpha ranging between 0.67 and 0.84.

The Coopersmith Self-Esteem Scale [57] measured self-esteem in children and adolescents. We utilized the school version validated in Spanish [58]. It was used to measure evaluative attitudes toward oneself globally in the school environment. It comprised 58 items and referred to the level of acceptance of the academic type in relation to classmates, teachers, and parents. The response options were True / False (e.g., "I feel discouraged at school"). A high score indicated a more self-supportive profile. Cronbach's alpha values were adequate, with 0.81 for the global scale.

The RAVEN Progressive Matrix Test [59] instrument measured analogical reasoning, abstraction, and perception. It allowed the possibilities or the learning potential to be determined, and general intelligence or the "g" factor to be estimated. It used a series of abstract incomplete figures that appeared gradually and in ascending levels of difficulty. The test applied to children from 5 to 11 years old was called the Progressive Color Matrix and consisted of three series (A, Ab, B) of 12 elements. Series A and B were the same as those applied at other ages, but with color, by introducing series Ab between both. Direct scores were obtained by correcting figures solved appropriately on the three scales. This direct score was transformed into its corresponding percentile score to thus facilitate its interpretation. Reliability by the two halves method indicated values ranging from 0.73 to 0.94.

Effective reading/reading games [60] were used to measure verbal fluency. They evaluated skills and abilities in developing reading skills. They responded to the international PISA criteria and MECES diagnostic tests. They addressed elementary education students, who were first given a text of 30/50 words for year 1 students, 150/250 for year 2, and 300/400 words for year 3 of elementary education. Next, they answered two blocks of questionnaires with no time limit. The first consisted of 10 questions for years 1 and 2, and 20 for year 3. They were closed questions of three types: relation among data, global idea, and inferences. The response options were correct, similar, or false. The second block consisted of five questions for years 1 and 2, and 10 questions for year 3. The answer options were True/False. Cognitive processes, such as memory, attention, flexibility, decoding, or comprehension, were necessary to adequately answer the questionnaires. The total sum provided a measure of verbal fluency.

2.3. Procedure

To conduct this study, we obtained the school's authorization and collaboration. We sent information to parents and, in turn, they authorized their children's participation by completing informed consent forms. Data confidentiality and anonymity were guaranteed. The guidance team participated, as well as the tutors of the involved courses. The different tests were applied in tutoring hours by a single researcher and jointly with the students of each course to ensure privacy conditions, and to guarantee honesty when completing tests. To adjust sessions to school hours, they lasted 45 min each and took place during the last quarter of the 2018–2019 academic year. The sequence of test applications was as follows: motivation, self-esteem, reasoning, and verbal fluency. The study was previously approved by the Research Ethics Committee of the Autonomous Community of Aragon: CEICA (No. 04/2019; 27 of 02 of 2019). This committee is in charge of evaluating research projects with people or personal data from BLINDED University.

2.4. Statistical Analysis

First, the descriptive statistics of the evaluated variables were performed. Later, in order to observe the relationship between these variables, Pearson correlations were carried out. Third, a regression analysis was used to examine the predictive power of the variables' motivation (learning, outcome, fear of failure), self-esteem, and gender on global academic performance. No cognitive variables (reasoning, verbal fluency) were included in this analysis as possible mediating variables to avoid any effects from obtaining better grades in some subjects or others. To prevent biases, they were only taken into account when

analyzing the predictive models on the specific language and literature and mathematics subjects. Therefore, four mediation analyses were independently performed to analyze the likely mediating role of the reasoning and verbal fluency variables between the motivational variables and self-esteem on academic performance in these subjects [61] (following the recommendations of Walters and Mandracchia [62], by which the order of causal relations and the direction thereof were established). In the tested models, the dependent variable was academic performance in language and literature or academic performance in mathematics. The analyses were performed with PROCESS macro [63] in SPSS, which allowed the analysis of the mediating role of variables [61]. Analyses were carried out through bootstrapping with 5000 samples at the 95% confidence level.

3. Results

First, descriptive statistics were obtained and the correlation analysis among motivation, self-esteem, and academic performance was done. As observed in Table 1, there were significant correlations between motivation and academic performance, specifically with motivation for learning (r = 0.31, $p < 0.001$), and negatively with fear of failure (r = -0.25, $p < 0.01$). However, motivation for results was not significant in relation to academic performance. Likewise, self-esteem and academic performance were significantly correlated (r = 0.42, $p < 0.001$). Gender was only correlated significantly, but negatively, with motivation for results (r = 0.26, $p < 0.01$). Therefore, to a greater extent, more boys felt more motivated for the result than girls.

A second correlation analysis was performed between academic performance in specific subjects (language and literature and mathematics) and the other evaluated variables, as well as reasoning and verbal fluency. As seen in Table 2, regarding the motivation dimensions, learning motivation correlated significantly with performance (r = 0.21, $p < 0.05$) (r = 0.23, $p < 0.01$) for language and literature and mathematics, respectively. Fear of failure also correlated negatively with performance in mathematics (r = −0.20, $p < 0.05$). Moderate correlations were obtained between self-esteem and with academic performance in both subjects (r = 0.32, $p < 0.001$).

Table 1. Descriptive statistics, correlations and collinearity of academic achievement, motivation for learning, for the results, fear of failure, self-esteem, and sex.

	Range	*M*	*SD*	1	2	3	4	5	6	Tolerance	VIF [1]	CI [2]
1. Academic achievement	0–10	7.88	1.03							–	–	–
2. Motivation for Learning	0–43	28.02	5.27	0.31 ***						0.82	1.21	4.55
3. Motivation for the Results	0–25	11.98	4.52	−0.12	0.27 **					0.82	1.21	7.61
4. Fear of Failure	0–12	4.64	2.83	−0.25 **	−0.16	0.15				0.62	1.59	8.43
5. Self-esteem	0–58	41.34	7.45	0.42 ***	0.28 **	−0.11	−0.59 ***			0.59	1.69	16.36
6. Sex	1–2	1.53	0.50	−0.06	0.06	0.26 **	0.02	−0.09		0.91	1.09	27.91

[1] VIF: Variance Inflation Factor; [2] CI: Condition Index. *** $p < 0.001$; ** $p < 0.01$.

Table 2. Correlations between academic achievement in language and literature and mathematics and motivation for learning, for the results, fear of failure, self-esteem, and sex.

	Range	M	SD	1	2	3	4	5	6	7	8	9	Tolerance	VIF	CI
1. Academic achievement in Language and Literature	0–10	7.71	1.32												
2. Academic achievement in Mathematics	0–10	7.68	1.37	0.87 ***											
3. Motivation for Learning	0–43	28.02	5.27	0.21 *	0.23 **								0.76	1.31	5.11
4. Motivation for the Results	0–25	11.98	4.52	−0.14	−0.06	0.27 **							0.75	1.33	6.94
5. Fear of Failure	0–12	4.64	2.83	−0.16	−0.20 *	−0.16	0.15						0.58	1.71	9.72
6. Self-esteem	0–58	41.34	7.45	0.32 ***	0.32 ***	0.28 **	−0.11	−0.59 **					0.55	1.79	10.04
7. Verbal fluidity	0–166	80.92	30.14	0.37 ***	0.32 ***	0.22 *	−0.16	0.07	0.15				0.82	1.22	13.43
8. Reasoning (percentile)	0–99	70.14	19.00	0.46 ***	0.61 ***	0.15	−0.08	−0.13	0.21 *	0.13			0.91	1.09	19.05
9. Sex	1–2	1.53	0.50	−0.04	0.03	0.06	0.26 **	−0.02	−0.09	0.02	0.08		0.89	1.11	32.47

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

To examine the predictive power of motivation and self-esteem in academic performance, a multiple linear regression was performed, in which the criterion variable was academic performance. Variables that were significant in the correlation analysis were used in the regression model—specifically, motivation for learning, fear of failure, and self-esteem. We continued with the method of successive steps. As seen in Table 3, self-esteem ($\beta = 0.403$, $p < 0.001$) and motivation for learning ($\beta = 0.289$, $p < 0.001$) were the predictors of academic performance, with self-esteem as the most important predictor. Therefore, the more self-esteem and motivation for learning, the better the academic performance was. Together, they explained 23% of variance. In other words, 23% of academic performance values would be explained by the values obtained in self-esteem and motivation for learning.

Table 3. Hierarchical regression analysis for predicting academic achievement.

	B	*β*	*T*	*p*
Motivation for Learning	0.057	0.289	3.35	0.001
Self-esteem	0.056	0.403	3.85	0.001

Subsequently, the predictive power of motivation and self-esteem on academic performance in language and literature and mathematics was analyzed by a mediational analysis, and by analyzing the mediating role of cognitive abilities—reasoning and verbal fluency, respectively—for each subject. Figures 1 and 2 show the standardized coefficients and their respective standard errors, as well as the level of significance of each variable regarding verbal fluency, reasoning, or academic performance. Figure 1 shows that the predictive variables of academic performance in language and literature were motivation for results and the motivation for learning, mediated by verbal fluency. Self-esteem had a direct effect on performance in Language and literature. Therefore, the subjects with more motivation for both results and learning presented better verbal fluency levels, which, in turn, favored better grades in this subject. Likewise, having more self-esteem favored better grades. This model predicted 28% of variance.

With the predictive model of academic performance in Mathematics, the predictive power of learning motivation and self-esteem was observed—the latter of which was mediated by reasoning ability. Therefore, subjects with more motivation to learn obtained better grades in this subject. Likewise, higher self-esteem predicted reasoning ability, which, in turn, favored obtaining better grades. This model predicted 42% of variance.

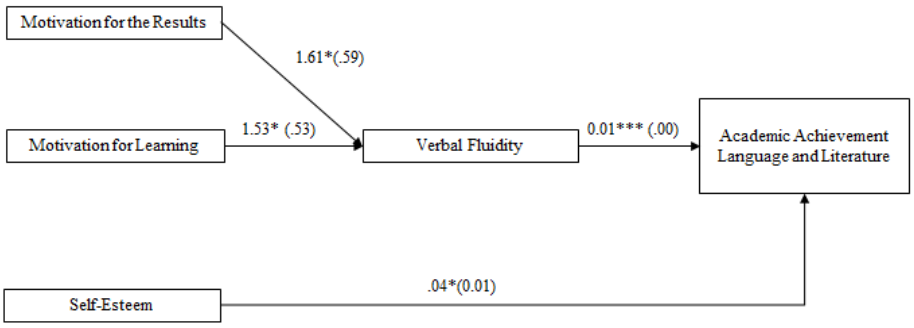

Figure 1. Predictive model for academic achievement in language and literature. *** $p < 0.001$; * $p < 0.05$.

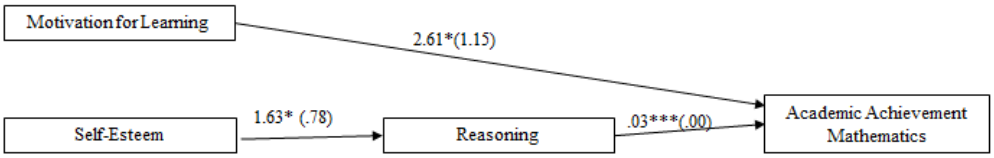

Figure 2. Predictive model for academic achievement in mathematics. *** $p < 0.001$; * $p < 0.05$.

4. Discussion

The main objective of this study, conducted with elementary students, was to analyze the joint relation of non-cognitive factors (motivation, self-esteem) and cognitive factors (reason, verbal fluency) on academic performance by examining the possible mediating role of cognitive factors when analyzing academic performance in the specific subjects of language and literature and mathematics. The results show that intrinsic motivation—specifically, motivation to learn—predicts overall academic performance and performance in the specific examined subjects, and also in language and literature together with the predictive power of outcome motivation, and both for verbal fluency. Self-esteem is a predictor of global and specific academic performance and, in mathematics, is mediated by reasoning. On the one hand, the role of intrinsic motivation that leads the subject to strive and learn, together with his/her self-esteem, is highlighted because it leads to improved cognitive abilities, which are ultimately translated into more academic success. On the other hand, the relationships between the predictor and mediator variables differ according to the specific subject in which academic performance is analyzed. This allows knowledge about differential predictive factors according to students' interests, competences, or abilities.

Our findings support previous studies on the relationship between motivation and self-esteem with academic performance. Regarding motivation, it is observed that students with intrinsic motivation styles acquire better cognitive abilities and develop verbal fluency and reasoning to a greater extent than those who are regulated by extrinsic reward styles [30]. Developing an activity for enjoyment for the sake of it—a characteristic of intrinsic motivation—is an important predictor of performance in a wide variety of domains [31]. These results fall in line with previous studies in which motivated students obtained better grades [64–67]. Likewise, students with more self-esteem obtain better results, which thus confirms previous studies [15,68]. Self-esteem is related to the motivation to learn and academic performance, in such a way that the students who display adequate school performance also have high self-esteem, and vice versa [69]. Self-esteem is, therefore, linked not only with motivation as a predictor of academic achievement, but also with general student learning [70–73].

Differentiating academic performance according to a specific subject is crucial to better distinguish the predictive elements that form part of it [48,73,74] if we consider that reciprocity exists between the skills for a specific area and the motivation toward it [75–77]. Traditionally, interest has been shown in the subjects of language and literature and mathematics [65]. Regarding the academic performance for both these subjects, this study finds, on the one hand, the importance of motivation (learning and results) mediated by verbal fluency for language and literature, and the motivation of learning as a direct predictor of performance in mathematics.

Academic achievement in language and literature is predicted indirectly by motivation for both learning and results (intrinsic and extrinsic, respectively) through verbal fluency, and, directly, by self-esteem. On the one hand, and given the cross-sectional nature of the present study, it is likely that the relationship between motivation and verbal fluency is reciprocal and susceptible to an inverse reading. In other words, students with few abilities or skills in the verbal component are barely motivated given their limitations [47,78]. On the other hand, in relation to the direct role of self-esteem, previous evidence is supported insofar as academic performance is influenced by self-esteem [79] and motivation [65–67].

Furthermore, the way in which individuals feel about themselves, as well as their self-concept, which is a variable closely related to self-esteem, are crucial for their success [80], which is consistent with the relevant role that emotions play in education [81]. Together, motivation and emotion direct human attention to what is relevant to store circuits in memory [82].

In the predictive model of performance in mathematics, in which the motivation to learn directly predicts success, previous studies, such as that of Garon-Carrier et al. [40], point out that this subject exposes students to increasing challenges, which leads them to believe that it is more difficult for them to study and, therefore, it requires high motivation to learn. Mathematics presents a symbolic and abstract language that requires added effort and entails difficulty when involving maturing brain areas at these young ages [83]. Self-esteem is an indirect predictor mediated by reasoning ability. Previous studies indicate that self-esteem has an indirect effect mediated by skills in relation to intelligence [84]. Thus, higher self-esteem is closely related to mathematical ability [85]. In summary, the students who are more successful in mathematics are highly motivated students to learn, and this is probably the deepest form of motivation with a higher positive evaluation of itself, which influences their reasoning ability.

This research work found no differences in the possible role of gender in predicting academic performance according to the specific subject. Only at the correlational level was it appreciated that girls reported more motivation for results than boys. These data fall in line with previous studies that generally highlight more motivation among girls [86] and more academic success [87], as well as a greater capacity for early self-regulation in various areas [88]. Some authors do not indicate any major differences between boys and girls in childhood [89], and that it is not until adolescence when the difference in socialization intensifies according to gender. Therefore, these possible differences grow. Another likely interpretation is that the effects of gender on academic performance are influenced or moderated by the effect of other variables, such as ethnicity, socio-economic status, or the school context [86]. Given the homogeneity of our sample, similarities in the socio-demographic or contextual variables possibly attenuate possible gender differences.

The present study has certain limitations that are set out below. Firstly, the analyzed sample does not represent all Spanish students. Thus, the generalization of the present results is limited to the socio-demographic characteristics of the employed sample, which was, moreover, incidentally collected. Secondly, the impact of other relevant variables on academic performance, such as families' cultural, educational, and socio-economic contexts, was unknown, as the study was carried out in an education center with a very homogeneous profile as far as these variables are concerned. A subsequent study should analyze the possible differences between the various school settings. Thirdly, as the study is cross-sectional, the cause–effect relations between the examined variables are unknown. Future studies should propose longitudinal designs that provide a better understanding of the studied variables.

5. Conclusions

The findings of the present study have a series of relevant implications for the education field in elementary education. Theoretically, in relation to the analyzed constructs, it is concluded that although cognitive factors and academic performance are closely related, they are not identical, which supports previous theoretical positions [90]. Academic performance depends not only on cognitive factors, but also on non-cognitive factors, such as motivation and self-esteem [68,91]. Specifically, cognitive factors can be improved from non-cognitive factors related to motivation—especially the motivation to learn—and self-esteem. Hence, the malleability of cognitive ability and intelligence is emphasized, and is not a fixed static factor [92]. This leads to relevant theoretical and practical implications where, through the improvement of the non-cognitive factors related to students' "self," they can allow cognitive factors to improve. Despite the predictive models of academic performance, it is necessary to clarify which other variables explain the percentage of variance not herein expressed. For this reason, future research lines should consider jointly studying certain specific executive functions—such as memory, inhibition, planning, etc.—that could explain part of the variance in academic performance. Finally, to achieve school success, it is necessary not only to improve academic skills, but to also promote students' positive perception of their skills [93,94]. In addition, our findings have led us to recommend the development of educational programs that integrate

motivation and self-esteem as some of the main goals among children aged 6 to 9 years old. This would significantly improve their cognitive ability and their success in academic performance.

Author Contributions: Conceptualization, N.M., A.Q.R., and A.C.P.; methodology, N.M., A.Q.R., and A.C.P.; formal analysis, N.M., and A.Q.R.; investigation, A.Q.R.; writing—original draft preparation and review and editing, N.M., A.Q.R., and A.C.P. All the authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: Colegio Sagrado Corazón Moncayo for its collaboration and support to make this study possible, and the participating students.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Organisation for Economic Co-operation and Development. (OECD) *PISA 2018 Results: What Students Know and Can Do*; OECD Publishing: Paris, France, 2019; Volume 1, doi:10.1787/5f07c754-en.2019.
2. Lamas, H.A. Sobre el rendimiento escolar. *Propósitos y Represent.* **2015**, *3*, 313–386, doi:10.20511/pyr2015.v3n1.74.
3. Cortés, A.; Moyano, N.; y Quílez Robres, A. The relationship between executive functions and academic performance in primary education: Review and meta-analysis. *Front. Psychol.* **2019**, *10*, 1–18, doi:103389/fpsyg.2019.01582.
4. Ren, X.; Schweizer, K.; Wang, T.; y Xu, F. The prediction of students' academic performance with fluid intelligence in giving special consideration to the contribution of learning. *Adv. Cogn. Psychol.* **2015**, *11*, 97–105, doi:10.5709/acp-0175-z.
5. Hunt, E. Educating the developing mind: The view from cognitive psychology. *Educ. Psychol. Rev.* **2012**, *24*, 1–7, doi:10.1007/s10648-011-9186-3.
6. Wechsler, D. *Wechsler Intelligence Scale for Children*, 4th Ed.; *(WESC-IV)* The Psychological Corporation: San Antonio, TX, USA, doi: 10.1177/0734282906288389.2003.
7. Floyd, R.G.; McGrew, K.S.; Evans, J.J. The relative contributions of the Cattell-Horn-Carroll cognitive abilities in explaining writing achievement during childhood and adolescence. *Psychol. Sch.* **2008**, *45*, 132–144, doi:10.1002/pits.20284.
8. Vanderwood, M.L.; McGrew; K.S.; Flanagan, D.P.; Keith, T.Z. The contribution of general and specific cognitive abilities to reading achievement. *Learn. Individ. Differ.* **2002**, *13*, 159–188, doi:10.1016/S1041-6080(02)00077-8.
9. Mercader, J.; Presentación, M.J.; Siegenthaler, R.; Molinero, V.;Miranda, A. Motivación y rendimiento académico en matemáticas: Un estudio longitudinal en las primeras etapas educativas. *Rev. Psicodidáctica* **2017**, *22*, 157–163, doi:10.1016/j.psicod.2017.05.007.
10. Birkeland, M.S.; Melkevik, O.; Holsen, I.;Wold, B. Trajectories of global self-esteem development during adolescence. *J. Adolesc.* **2012**, *35*, 43–54, doi:10.1016/j.adolescence.2011.06.006.
11. Schneider, W.J.; McGrew, K.S. The Cattell-Horn-Carroll model of intelligence. In *Contemporary Intellectual Assessment: Theories, Tests, and Issues*; Flanagan, D.P., Harrison, P.L., Eds.; The Guilford Press: New York, NY, USA, 2012; pp. 99–144
12. Nielson, K.A.; Bryant, T. The effects of non-contingent extrinsic and intrinsic rewards on memory consolidation. *Neurobiol. Learn. Mem.* **2005**, *84*, 42–48, doi:10.1016/j.nlm.2005.03.004.
13. Sáez, F.M.; Bustos, C.E.; Pérez; M.V.; Mella, J.A.; Lobos, K.A.; Díaz, A.E. Disposición al estudio, autoeficacia y atribuciones causales en estudiantes universitarios chilenos. *Propósitos Represent.* **2018**, *6*, 199–245, doi:10.20511/pyr2018.v6n1.179.
14. Cook, D.A.; Artino, A.R. Motivation to learn: An overview of contemporary theories. *Med Educ.* **2016**, *50*, 997–1014, doi:10.1111/medu.13074.
15. Wigfield, A.; Cambria, J.; Eccles, J.S. Motivation in education. In *The Oxford Handbook of Human Motivation*; Ryan, R.M., Ed.; Oxford University Press: New York, NY, USA, 2012; pp. 463–478.
16. Kiviruusu, O.; Berg, N.; Huurre, T.; Aro, H.; Marttunen, M.; Haukkala, A. Interpersonal conflicts and development of self-esteem from adolescence to mid-adulthood. A 26-year follow-up. *PLoS ONE* **2016**, *11*, doi:10.1371/journal.pone.0164942.
17. Orth, U.; Robins, R.W. Development of self-esteem across the lifespan. In *Handbook of Personality Development*; McAdams, D.P., Shiner, R.L., Tackett, J.L., Eds.; The Guilford Press: New York, NY, USA, 2019; pp. 328–344.

18. Kernis, M.H. *Self-Esteem Issues and Answers: A Sourcebook of Current Perspectives*; Psychology Press: New York, NY, USA, 2013; doi:10.4324/9780203759745.
19. Usán, P.; Salavera, C.; Teruel, P. School motivation, goal orientation and academic performance in secondary education students. *Psychol. Res. Behav. Manag.* **2019**, *12*, 877–887, doi0.214: 7/PRBM.S215641.
20. Deci, E.L.; Ryan, R.M. Self-determination theory: A macrotheory of human motivation, development and health. *Can. Psychol.* **2008**, *49*, 183–185, doi:10.1037/a0012801.
21. Montero, I.; Alonso, J. Validez predictiva de los cuestionarios MAPE-II y EMA-II. In *Motivar en la Adolescencia: Teoría, Evaluación e Intervención;* Tapia, J.A., Ed.; Ediciones de la Universidad Autónoma: Madrid, Spain, 1992; pp. 263–280.
22. Tapia, J.A.; Montero, I.; Huertas, J.A. *Evaluación de la Motivación en Sujetos Adultos: El Cuestionario MAPE–3*; Ediciones de la Universidad Autónoma: Madrid, Spain, 2014.
23. Dolmans, D.H.J.M.; Loyens, S.M.M.; Marcq, H.; Gijbels, D. Deep and Surface learning in problema-based learning: A review of the literatura. *Adv. Health Sci. Educ.* **2016**, *21*, 1087–1112, doi:101007/s10459-015-9645-6.
24. Fortus, D.; Vedder-Weiss, D. Measuring students' continuing motivation for science learning. *J. Res. Sci. Teach.* **2014**, *51*, 497–522, doi:10.1002/tea.21136.
25. López, M.S. Análisis del orden en el que el autoconcepto, la autoestima y la autoimagen deberían aparecer en el proceso de maduración personal para alcanzar el bienestar emocional. *Int. J. Dev. and Educ. Psychol.* **2017**, *2*, 257–264, doi:10.17060/ijodaep.2017.n2.v1.1126.
26. Caso Niebla, J.; Hernández Guzmán, L. Modelo Explicativo del Bajo Rendimiento Escolar: Un Estudio con Adolescentes Mexicanos. RIEE. Revista Iberoamericana de Evaluación Educativa. Available online: https://repositorio.uam.es/handle/10486/661617 (accessed on 3 February 2010).
27. DuBois, D.L.; Bull, C.A.; Sherman, M.D.; Roberts, M. Self-esteem and adjustment in early adolescence: A social-contextual perspective. *J. Youth Adolesc.* **1998**, *27*, 557–583, doi:10.1023/A:1022831006887.
28. Hyseni Duraku, Z.; Hoxha, L. Self-esteem, study skills, self-concept, social support, psychological distress, and coping mechanism effects on test anxiety and academic performance. *Health Psychol. Open* **2018**, *5*, 1–9, doi:10.1177/2055102918799963.
29. De Tejada, M. Evaluación de la autoestima en un grupo de escolares de la Gran Caracas. *Liberabit* **2010**, *16*, 95–104.
30. Sosic-Vasic, Z.; Keis, O.; Lau, M.; Spitzer, M.; Streb, J. The impact of motivation and teacher's autonomy support on children's executive functions. *Front. Psychol.* **2015**, *6*, 1–12, doi:10.3389 / fpsyg.2015.00146.
31. Cerasoli, C.P.; Nicklin, J.M.; Ford, M.T. Intrinsic motivation and extrinsic incentives jointly predict performance: A 40-year meta-analysis. *Psychol. Bull.* **2014**, *140*, 980–1008, doi:10.1037/a0035661.
32. Levy, R.; Dubois, B. Apathy and the functional anatomy of the prefrontal cortex–basal ganglia circuits. *Cereb. Cortex* **2006**, *16*, 916–928, doi:10.1093/cercor/bhj043.
33. Foley, J.A.; Foltynie, T.; Zrinzo, L.; Hyam, J.A.; Limousin, P.; Cipolotti, L. Apathy and reduced speed of processing underlie decline in verbal fluency following DBS. *Behav. Neurol.* **2017**, 1–10, doi:10.1155/2017/7348101.
34. Jôgi, A.L.; Kikas, E.; Lerkkanen, M.K.; Mägi, K. Cross-lagged relations between math-related interest, performance goals and skills in groups of children with different general abilities. *Learn. Individ. Differ.* **2015**, *39*, 105–113, doi:10.1016/j.lindif.2015.03.018.
35. McGrew, K.S.; Wendling, B.J. Cattell-Horn-Carroll cognitive-achievement relations: What we have learned from the past 20 years of research? *Psychol. Sch.* **2010**, *47*, 651–675, doi:10.1002/pits.20497.
36. Nascimento, S.; Peixoto, F. Relações entre o estatuto escolar e o autoconceito, auto-estima e orientações motivacionais em alunos do 9º ano de escolaridade. *Anál. Psicol.* **2012**, *30*, 421–434.
37. Evans, J.S. In two minds: Dual-process accounts of reasoning. *Trends Cogn. Sci.* **2003**, *7*, 454–459, doi:10.1016/j.tics.2003.08.012.
38. Nie, J.; Zhang, W.; Liu, Y. Exploring depression, self-esteem and verbal fluency with different degrees of internet addiction among Chinese college students. *Compr. Psychiatry* **2017**, *72*, 114–120, doi:10.1016/j.comppsych.2016.10.006.
39. McArthur, G.; Castles, A.; Khonen, S.; Banales, E. Low self-concept in por readers: Prevalence, heterogeneity, and risk. *PeerJ* **2016**, *4*, 1–25, doi:10.7717/peerj.2669.
40. Garon-Carrier, G.; Boivin, M.; Guay, F.; Kovas, Y.; Dionne, G.; Lemelin, J.P.; Tremblay, R.E. Intrinsic motivation and achievement in mathematics in elementary school: A longitudinal investigation of their association. *Child. Dev.* **2016**, *87*, 165–175, doi:10.1111/cdev.12458.

41. Green, C.T.; Bunge, S.A.; Briones Chiongbian, V.; Barrow, M.; Ferrer, E. Fluid reasoning predicts future mathematics among children and adolescents. *J. Exp. Child. Psychol.* **2017**, *157*, 125–143, doi:10.1016/j.jecp.2016.12.005.
42. Pasta, T.; Mendola; M.; Longobardi, C.; Prino, L.E.; Gastaldi, F.G.M. Attributional style of children with and without Specific Learning Disability. *Electron. J. Res. Educ. Psychol.* **2013**, *11*, 649–664, doi:10.1111/j.2044-8279.2011.02039.x.
43. Viljaranta, J.; Lerkkanen, M.K.; Poikkeus, A.M.; Aunola, K.; Nurmi, J.E. Cross-lagged relations between task motivation and performance in arithmetic and literacy in kindergarten. *Learn. Instr.* **2009**, *19*, 335–344, doi:10.1016/j.learninstruc.2008.06.011.
44. Marsh, H.W.; Martín, A.J. Academic self-concept and academic achievement: Relations and causal ordering. *Br. J. Educ. Psychol.* **2011**, *81*, 59–77, doi:10.1348/000709910X503501.
45. Cerezo Rusillo, M.T.; Casanova Arias, P.F. Diferencias de género en la motivación académica de los alumnos de Educación Secundaria Obligatoria. *Electron. J. Res. Educ. Psychol.* **2004**, *2*, 97–112.
46. Magnusson, C.; Nermo, M. From childhood to young adulthood: The importance of self-esteem during childhood for occupational achievements among young men and women. *J. Youth Stud.* **2018**, *21*, 1392–1410, doi:10.1080/13676261.2018.1468876.
47. Quirk, M.; Schwanenflugel, P.J.; Webb, M.Y. A short-term longitudinal study of the relationship between motivation to read and reading fluency skill in second grade. *J. Lit. Res.* **2009**, *41*, 196–227, doi:10.1080/10862960902908467.
48. Schiefele, U.; Stutz, F.; Schaffner, E. Longitudinal relations between reading motivation and reading comprehension in the early elementary grades. *Learn. Individ. Differ.* **2016**, *51*, 49–58, doi:10.1016/j.lindif.2016.08.031.
49. Coyle, T.R.; Pillow, D.R. SAT and ACT predict college GPA after removing g. *Intelligence* **2008**, *36*, 719–729, doi:10.1016/j.intell.2008.05.001.
50. Fischbach, A.; Keller, U.; Preckel, F.; Brunner, M. PISA proficiency scores predict educational outcomes. *Learn. Individ. Differ.* **2013**, *24*, 63–72, doi:10.1016/j.lindif.2012.10.012.
51. Grygiel, P.; Modzelewski, M.; Pisarek, J. Academic self-concept and achievement in Polish primary schools: Cross-lagged modelling and gender-specific effects. *Eur. J. Psychol. Educ.* **2017**, *32*, 407–429, doi:10.1007/s10212-016-0300-2.
52. Gustavsen, A.M. Longitudinal relationship between social skills and academic achievement in a gender perspective. *Cogent Educ.* **2017**, *4*, 1–16, doi:10.1080/2331186X.2017.1411035.
53. Rodríguez, S.; Fita, E.; Torrado, M. El rendimiento académico en la transición secundaria-universidad. *Rev. Educ.* **2004**, *334*, 391–414.
54. Richaud, M.C.; Filippetti, V.A.; Mesurado, B. Bridging Cognitive, Affective, and Social Neuroscience with Eduction. In *Psychiatry and Neuroscience Update*; Gargiulo, P., Arroyo, M.H., Eds.; Springer: New York, NY, USA, 2019; pp. 287–297,doi:10.1007/978-3-319-95360-1_23.
55. Hong, E.; Peng, Y.; Rowell, L.L. Homework self-regulation: Grade, gender, and achievement-level differences. *Learn. Individ. Differ.* **2009**, *19*, 269–276, doi:10.1016/j.lindif.2008.11.009.
56. Orth, U.; Maes, J.; Schmitt, M. Self-esteem development across the life span: A longitudinal study with a large sample from Germany. *Dev. Psychol.* **2015**, *51*, 248, doi:10.1037/a0038481.
57. Coopersmith, S. *The Antecedents of Self-Esteem*; Freeman and Company: San Francisco, SF, USA, 1967.
58. Miranda Esquer, J.B.; Miranda Esquer, J.F.; Enríquez Valdenebro, A.L. Adaptación del Inventario de Autoestima Coopersmith para alumnos mexicanos de educación primaria. *Prax. Investig. ReDIE Rev. Electrón. Red Durango Investig. Educ.* **2011**, *3*, 5–14.
59. Raven, J.C.; Court, J.H. *Test de Matrices Progresivas de Raven*; Pearson-Anaya: Madrid, Spain, 2010.
60. Grupo Editorial Bruño. *Lectura Eficaz–Juegos de Lectura*; Editorial Bruño, S.L: Madrid, Spain, 2017.
61. Hayes, A.F. PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling. Available online: https://www.afhayes.com/public/process2012.pdf (accessed on 23 September 2019).
62. Walters, G.D.; Mandracchia, J.T. Testing criminological theory through causal mediation analysis: Current status and future directions. *J. Crim. Justice* **2017**, *49*, 53–64, doi:10.1016/j.jcrimjus.2017.02.002.
63. Preacher, K.J.; Hayes, A.F. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav. Res. Methods* **2008**, *40*, 879–891, doi:10.3758/BRM.40.3.879.

64. Cleary, T.; Chen, P. Self-regulation, motivation, and math achievement in middle school: Variations across grade level and math context. *J. Sch. Psychol.* **2009**, *47*, 291–314, doi:10.1016/j.jsp.2009.04.002.
65. Miñano, P.; Castejón, J.L. Variables cognitivas y motivacionales en el rendimiento académico en Lengua y Matemáticas: Un modelo estructural. *Rev. Psicodidáct.* **2011**, *16*, 203–230.
66. Rosário, P.; Lourenço, A.; Paiva, M.O.; Núñez, J.C.; González-Pienda, J.A.; Valle, A. Autoeficacia y utilidad percibida como condiciones necesarias para un aprendizaje académico autorregulado. *An. Psicol.* **2012**, *28*, 37–44.
67. Rosário, P.; Núñez, J.; Valle, A.; González-Pienda, J.; Lourenço, A. Grade level, study time, and grade retention and their effects on motivation, self-regulated learning strategies, and mathematics achievement: A structural equation model. *Eur. J. Psychol. Educ.* **2013**, doi:10.1007/ s10212-012-0167-9.
68. Diseth, Å.; Meland, E.; Breidablik, H.J. Self-beliefs among students: Grade level and gender differences in self-esteem, self-efficacy and implicit theories of intelligence. *Learn. and Individ. Differ.* **2014**, *35*, 1–8, doi:10.1016/j.lindif.2014.06.003.
69. Arshad, M.; Zaidi, S.M.I.H.;Mahmood, K. Self-esteem y academic performance among university students. *J. Educ. Pract.* **2015**, *6*, 156–162.
70. Spinath, B.; Spinath, F.M. Longitudinal analysis of the link between learning motivation and competence beliefs among elementary school children. *Learn. Instr.* **2005**, *15*, 87–102, doi:10.1016/j.learninstruc.2005.04.008.
71. Valentine, J.C.; DuBois, D.L.; Cooper, H. The relation between self-beliefs and academic achievement: A meta-analytic review. *Educ. Psychol.* **2004**, *39*, 111–133, doi:10.1207/s15326985ep3902_3.
72. Wagner, L.; Ruch, W. Good character at school: Positive classroom behavior mediates the link between character strengths and school achievement. *Front. Psychol.* **2005**, *6*, 1–13, doi:10.3389/fpsyg.2015.00610.
73. Weber, M.; Wagner, L.; Ruch, W. Positive feelings at school: On the relationships between students' carácter strengths, school-related affect, and school functioning. *J. Happiness Stud.* **2014**, *17*, doi:10.1007/s10902-014-9597-1.
74. Chanal, J.; Guay, F. Are autonomous and controlled motivations school-subjects-specific? *Plos One,* **2015**, *10*, 1–21, doi:10.6084/m9.figshare.1360121.
75. Van Soom, C.; Donche, V. Profiling first-year students in STEM programs based on autonomous motivation and academic self-concept and relationship with academic achievement. *PLoS ONE* **2014**, *9*, doi:10.1371/journal.pone.0112489.
76. Conradi, K.; Jang, B.G.; McKenna, M.C. Motivation terminology in Reading research: A conceptual review. *Educ. Psychol. Rev.* **2014**, *26*, 127–164, doi:10.1007/s10648-013-9245-z.
77. Luo, Y.L.; Kovas, Y.; Haworth, C.; Plomin, R. The etiology of mathematical self-evaluation and mathematics achievement: Understanding the relationship using a cross-lagged twin study from ages 9 to 12. *Learn. Individ. Differ.* **2011**, *21*, 710–718, doi:10.1016/j.lindif.2011.09.001.
78. Walgermo, B.R.; Foldnes, N.; Uppstad, P.H.; Solheim, O.J. Developmental dynamics of early reading skill, literacy interest and readers' self-concept within the first year of formal schooling. *Read. Writ.* **2018**, *31*, 1379–1399, doi:10.1007/s11145-018-9843-8.
79. Rahmani, P. The relationship between self-esteem, achievement goals and academic achievement among the primary school students. *Procedia Soc. Behav. Sci.* **2011**, *29*, 803–808, doi:10.1016/j.sbspro.2011.11.308.
80. Veas, A.; Castejón, J.L.; Miñano, P.; Gilar-Corbí, R. Actitudes en la adolescencia inicial y rendimiento académico: El rol mediacional del autoconcepto académico. *Rev. Psicodidáct.,* **2019**, *24*, 71–77, doi:10.1016/j.psicod.2018.11.001.
81. Meyer, D.K.; Turner, J.C. Scaffolding Emotions in Classrooms. In *Emotion in Education*; Schutz, P., Pekrun, R., Eds.; Academic Press: Cambridge, MA, USA, 2007; pp. 243–258.
82. Posner, M.I.; Rothbart, M.K.; Sheese, B.E.; Voelker, P. Control networks and neuromodulators of early development. *Dev. Psychol.* **2012**, *48*, 827, doi:10.1037/a0025530.
83. Bäuml, J.G.; Meng, C.; Daamen, M.; Baumann, N.; Busch, B.; Bartmann, P.; Jaekel, J. The association of children's mathematic abilities with both adults' cognitive abilities and intrinsic fronto-parietal networks is altered in preterm-born individuals. *Brain Struct. Funct.* **2017**, *222*, 799–812, doi:10.1007/s00429-016-1247-4.
84. Giofrè, D.; Borella, E.; Mammarella, I.C. The relationship between intelligence, working memory, academic self-esteem, and academic achievement. *J. Cogn. Psychol.* **2017**, *29*, 731–747, doi:10.1080/20445911.2017.1310110.
85. Levpuscek, M.P.; Zupancic, M.; Socan, G. Predicting achievement in mathematics in adolescent students: The role of individual and social factors. *J. Early Adolesc.* **2012**, *33*, 523–551, doi:10.1177/0272431612450949.
86. Meece, J.L.; Bower, B.; Burg, S. Gender and motivation. *J. Sch. Psychol.* **2006**, *44*, 351–373, doi:10.1016/j.jsp.2006.04.004.
87. Voyer, D.; Voyer, S.D. Gender differences in scholastic achievement: A meta-analysis. *Psychol. Bull.* **2014**, *140*, 1174, doi:10.1037/a0036620.

88. Matthews, J.S.; Ponitz, C.C.; Morrison, F.J. Early gender differences in self-regulation and academic achievement. *J. Educ. Psychol*. **2009**, *101*, 689, doi:10.1037/a0014240.
89. Zuckerman, M.; Li, C.; Hall, J.A. When men and women differ in self-esteem and when they don't: A meta-analysis. *J. Res. Personal.* **2016**, *64*, 34–51, doi:10.1016/j.jrp.2016.07.007.
90. Rajchert, J.M.; Żułtak, T.; Smulczyk, M. Predicting reading literacy and its improvement in the Polish national extension of the PISA study: The role of intelligence, trait-and state-anxiety, socio-economic status and school-type. *Learn. Individ. Differ.* **2014**, *33*, 1–11, doi:10.1016/j.lindif.2014.04.003.
91. Marsh, H.W.; Craven, R.G. Reciprocal effects of self-concept and performance from a multidimensional perspective: Beyond seductive pleasure and unidimensional perspectives. *Perspect. Psychol. Sci.* **2006**, *1*, 133–163, doi:10.1111/j.1745-6916.2006.00010.x.
92. De Castella, K.; Byrne, D. My intelligence may be more malleable than yours: The revised implicit theories of intelligence (self-theory) scale is a better predictor of achievement, motivation, and student disengagement. *Eur. J. Psychol. Educ.* **2005**, *30*, 245–267, doi:10.1007/s10212-015-0244-y.
93. Seaton, M.; Parker, P.; Marsh, H.W.; Craven, R.G.; Yeung, A.S. The reciprocal relations between self-concept, motivation and achievement: Juxtaposing academic self-concept and achievement goal orientations for mathematics success. *Educ. Psychol.* **2014**, *34*, 49–72, doi:10.1080/01443410. 2013.825232.
94. Ambady, N.; Shih, M.; Kim, A.; Pittinsky, T.L. Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychol. Sci*. **2001**, *12*, 385–390, doi:10.1111/1467-9280.00371.