

Review

Motivational, Emotional, and Social Factors Explain Academic Achievement in Children Aged 6–12 Years: A Meta-Analysis

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Abstract: Recent studies highlight the effect of cognitive factors on academic achievement, ignoring motivational, emotional, and social factors. This provides the background for the present study, a meta-analysis on the relationship between academic achievement and motivational factors (motivation, self-concept, and self-esteem), emotional factors (emotional intelligence, emotional competence, and emotional well-being), and social factors (social intelligence, social competence, and social skills) in children aged 6–12 years (37 samples, $n = 15,777$). The methodology based on the PRISMA protocols was applied: phases of inclusion and exclusion of articles, analysis of effect size, heterogeneity, publication bias, and, finally, meta-regressions and moderation analysis. The results showed a moderate positive effect size (0.321) for motivational and social factors (0.210) and a small positive effect size (0.172) for emotional factors. The moderating effects of age (65% on social factors) and geographical area (52% on motivational factors, 17% on emotional factors, and 76% on social factors) were studied. These results highlight the importance of motivational and social factors regarding academic achievement. In addition, along with the moderating effect of age, that of geographical area emerges strongly given the diversity of contexts studied. Our results highlight the importance that these factors have on academic performance and, therefore, the need to design school plans that address the correct development of these variables.

Keywords: meta-analysis; academic achievement; motivational factor; emotional factor; social factor



Citation: Quílez-Robres, A.; Moyano, N.; Cortés-Pascual, A. Motivational, Emotional, and Social Factors Explain Academic Achievement in Children Aged 6–12 Years: A Meta-Analysis. *Educ. Sci.* **2021**, *11*, 513. <https://doi.org/10.3390/educsci11090513>

Academic Editor: Eila Jeronen

Received: 29 July 2021

Accepted: 3 September 2021

Published: 7 September 2021

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1. Introduction

Educational authorities continually discuss factors that influence school failure or success and present management plans that aim to ensure an open and inclusive school environment to strengthen learning, social skills, motivation, and emotional well-being [1,2]. For many years, educational research has focused on academic achievement as a sign of success, considering achievement as students meeting established learning objectives [3]. The emergence of new concepts such as educational innovation, active learning methods, and changes in educational policies promoted by the Delors [4] have resulted in a clear change in research activity. However, a recent meta-analysis by Cortés-Pascual et al. [5] concludes that in primary education, studies on executive functions, and their relationship with academic achievement predominate. Therefore, it is necessary to conduct further comprehensive studies of motivational, emotional, and social factors [6–8] to expand and integrate existing knowledge about their effect on children's academic achievement.

1.1. Academic Achievement

Navarro [9] defines academic achievement as “a construct capable of presenting qualitative and quantitative values, helping to estimate the evidence and dimension of

the profile of skills, knowledge, attitudes, and values developed by the student in the teaching-learning process” (pp. 15–16). The same author states academic achievement cannot be studied from a unilateral perspective because of its multifactorial complexity. To explain school achievement, it is essential to consider students’ personal beliefs about their own capacities and to not only focus on general intelligence abilities [10–12]. Therefore, motivational, emotional, and social factors (motivation, emotional competence, social skills, and others) are key elements in understanding students’ behaviour regarding academic achievement [1,2].

1.2. Motivational Factor Components

Within this factor, two components are the most studied: motivation and self-concept, along with self-esteem by its intimate relationship with the latter [13–15]. Motivation, aimed at achieving a goal, is considered an important variable in the teaching-learning process; however, it is also involved in improving academic achievement [16]. This process is influenced by various aspects such as individual expectations, the results of an activity, self-efficacy, the interaction environment, and others [17–20]. Therefore, according to the different theories underpinning the concept of motivation, motivation can have different aspects. According to the expectancy-value theory, the reference is the perceived value, the expectation of success. This theory infers that behaviour is determined by the expectation of the person reaching a goal as a function of the value of the incentive. In this case, the person is an active element that chooses how and when to act according to the expectations and the value attached to the goal set [17]. On the other hand, attribution theory indicates that the results of a particular activity are explained by causes that students use to justify these results. Effort, skill, and task difficulty are the most important factors affecting achievement. Attributions according to the causal dimension are locus of control (internal versus external), stability where causes may change over time, and control over efficacy or skill [18,19]. However, for cognitive-social theory, self-efficacy is the main driver of motivation. For Cook and Arino [17], this theory is about learning where personal, behavioural, and environmental factors interact. Cognition is responsible for how individuals interpret their environment and self-regulate their actions, thoughts, and feelings. Finally, the self-determination theory [19] is based on the fact that motivation produces good performance when it is driven by interests (intrinsic: personal interest, enjoyment, curiosity, among others) and values (extrinsic) that tend to satisfy the psychosocial needs of the subject at a given moment. For Ryan and Deci [19] there are two categories of motivational behaviour: autonomous and controlled. The first are driven by interest and enjoyment and the latter are performed under some kind of internal or external pressure. Therefore, motivation is a goal-directed process that is in turn influenced by various intrinsic and extrinsic aspects, making a distinction between these two types of motivation. The first, intrinsic motivation, would be that which drives us to do things for the simple pleasure of doing them and the second, extrinsic motivation, would be that based on external pressure through rewards, punishments, or other determinations [16–20]. On the other hand, self-concept has been defined by van Soom and Donche [21] (p. 2) as “a subjective judgment of perceived capacity in an academic or learning context”. It is multidimensional, stable, and organized hierarchically and subject to change with experience and age [22,23]. Self-esteem is understood as a one-dimensional construct regarding the positive evaluation by an individual of their own worth, maintaining a positive affective relationship with themselves. It shapes the value dimension of self-concept [24] and is related to social competence and present throughout a person’s life. It is not stable, and its consistency changes depending on context variations [25,26].

1.3. Emotional Factor Components

Emotional factors, according to Billings et al. [27], Franco et al. [28], and Lv et al. [29], consist of three components: emotional intelligence, emotional competence, and emotional well-being. All three arise associated with different processes leading to the knowledge,

understanding, and regulation of emotions. The concept of emotional intelligence refers to the ability to regulate one's feelings and emotions, understand them, and use the information provided to guide actions [30]. If learning is an individual process that takes place in a social context where the different agents involved in the teaching-learning process interact, feelings and emotions play an important role by conditioning personal and social interaction [31]. This interaction must be constructive, adapting behaviour and actions to different situations. This process has been referred to in different ways: emotional competence, emotional intelligence, emotional regulation, and others, [32,33]. Ferragut and Fierro [34] (p. 97) describe the well-being of an individual as "the positive evaluation of their lives, based both on the congruence between aspirations and achievements and on having an optimal emotional and affective state". These emotional skills develop with age and range from the simplest to the most complex. Mastering the former leads to mastering the following and so on. Between the ages of eight and twelve years, children achieve an understanding of complex emotions, their adaptation to the context, and their association with moral or ethical values [28].

1.4. Social Factor Components

Within this factor, different authors mainly study three elements: social intelligence, social competence, and social skills [28,35–37]. For Goleman [38], people have what is called a "social brain", responsible for managing social interactions. He also considers that social intelligence can be trained by being aware of the effect social relations have on individuals themselves and on others. This type of intelligence is involved in the understanding of perceived stimuli, enabling balanced and positive social relationships. On the other hand, social competence refers to the set of skills, abilities, and behaviours needed to create comfortable social relationships [39]. Social skills (emotions, intentions, perceptions, and empathy) are those that allow interactions with others through socially acceptable behaviours. They avoid unacceptable responses by expressing ideas, feelings, and opinions, improving relationships, and strengthening a specific social situation [40–42]. The development of these skills allows successful communication in the school environment, avoiding social maladjustment and achieving effective academic achievement [37,43].

1.5. Motivational, Emotional, and Social Factors and Academic Achievement

To date, there are few studies on the relationship between academic achievement at the ages of 6–12 years and the variables described jointly. However, studies have been conducted independently addressing each of the variables mentioned with academic achievement. Some examples are found in the studies by Billings et al. [27], Franco et al. [28], or Garon-Carrier et al. [44], which respectively address emotional intelligence, emotional and social competence, and motivation.

Within motivational factors, Guay et al. [45] present two approaches in the search for understanding students' motivations. The first addresses motivation toward specific school areas or subjects, and the second examines motivation in the school framework in its multidimensional aspect (intensity-quality). As far as intensity is concerned, there are at least two important aspects to be examined: the structure of emotional intensity and the determinants of variation in intensity. Regarding the first, it is questioned whether intensity is a unitary concept or, on the contrary, a multidimensional one: emotional intensity can in fact be understood as intentionalities of a set of aspects without a close connection. As for the second: it questions the intensity of an emotion, or that of its aspects. Quality, on the other hand, has been described from an emotional point of view as a subjective aspect related to the individual's view of aspects of his or her life and how he or she interprets the context. These two approaches explain how motivational dynamics change depending on subjects and interests. Regarding self-concept, several authors, such as Guay et al. [46], Marsh and Craven [47], or Marsh and Martin [48], have stated that it is reciprocally related to academic achievement. In addition, it is determined by social factors such as comparisons with peers. Other authors found a positive link between academic

self-concept and academic achievement [49,50]. However, they also differentiated between global academic self-concept (general academic areas) and specific academic self-concept (mathematical self-concept, scientific, and others). Finally, self-esteem showed a positive relationship with academic achievement. Children with good school performance have high self-esteem. In contrast, those with low self-esteem have low academic achievement, do not strive to learn, and have feelings of failure and frustration because they do not feel effective [51,52].

Regarding emotional factors, there are studies that associate the understanding of emotions with learning because they are related to attention, willingness to learn, or behavioural self-regulation [53]. In addition, some authors, such as Ferragut and Fierro [34], differentiate between well-being and emotional intelligence but highlight the importance of these constructs for school achievement, finding a significant relationship between well-being and academic achievement. Here, it should be remembered that school-age children are influenced by several academic factors that affect their emotional well-being [54].

Finally, studies differ regarding social factors (social intelligence, social competence, and social skills), such as those by Caemmerer and Keith [55], and Rocha [56]. For the former, social skills are not a direct predictor of academic achievement, but play a mediating role in the academic domain. For the second, emotional understanding does not directly predict academic achievement because it is influenced by social competence. Further, both the study by Trentacosta et al. [57] and that by McKown et al. [58] suggest that satisfactory social relationships (teachers and classmates) and socioemotional skills lead to good academic achievement.

1.6. Sociodemographic Factors as Regulators between Motivational, Emotional, and Social Factors and Academic Achievement

Several sociodemographic factors impact academic achievement between 6 and 12 years of age. First, gender stands out, where some studies find differentiating characteristics between boys and girls regarding emotional components and unequal maturational development [59,60]. The differences between boys and girls, regarding social factors, seem to be related to interpersonal factors, where boys are more dominant and calculating and girls are more modest and affectionate [61,62]. In the same way, educational factors and socialization vary depending on the social and country context; therefore, behaviour according to gender will take place in a particular socio-cultural environment [63].

Second, regarding age, academic self-concept may change with experience and age [21]. In the same way, from 6 to 12 years of age, emotional skills gradually develop, mastering the simplest and navigating the most complex through a process of adaptation to the context and moral or ethical values [22]. Therefore, a socially competent and socially adapted child is a successful child [64,65]. In particular, age is a determining factor because older students can handle conflicting information in various contexts, a maturational process that allows for greater sensitivity, responsibility, and self-concept about their own academic and personal development [66–68].

Finally, culture is understood as a set of patterns transmitted throughout history, including norms, values, beliefs, and others, that identify its members [69]. Societies are classified into collectivists (cohesion with others) and individualists (prioritizing individual needs) [70]. This is merely a way of showing existing differences regarding social aspects, values, motivation, education, and others, between different countries, probably related to the socioeconomic development achieved, the political system established, and customs among other aspects [71]. Thus, geographical area and cultural context influences affective relationships and emotional manifestations; therefore, the acquisition of different competencies depends on the culture and geographical area of origin and, therefore, on the geographical area that includes that culture [32]. The norms learned, religion—education in short—are part of the socialization process within the family, playing an important role in curriculum development [72]. This sociocultural perspective shows that academic achievement is also determined by the context, norms, and values that may or may not help improve the teaching-learning process.

1.7. The Present Study

There are many studies related to the variables that influence academic achievement; these studies focus on variables of a cognitive nature, where the intelligence quotient or executive functions stand out [5]. However, there are few studies on motivational, emotional, and social variables, especially integrated into a comprehensive study regarding academic achievement. Therefore, the purpose of this study was to conduct a meta-analysis that integrates the predictive character of these variables classified into three groups: motivational (motivation, self-concept, and self-esteem), emotional (emotional intelligence, emotional competence, and emotional well-being), and social (social intelligence, social competence, and social skills) on academic achievement in students aged 6–12 years and the moderating effect of gender, age, and geographical area, variables that were reported by all the studies included in the meta-analysis and could therefore provide relevant data on their moderating power. Finally, the following research objectives are presented:

- (a) Analyse the predictive capacity of motivational variables on academic performance in students aged 6–12 years and moderating effect that gender, age, and geographical area.
- (b) Analyse the predictive capacity of emotional variables on academic performance in students aged 6–12 years and moderating effect that gender, age, and geographical area.
- (c) Analyse the predictive ability of social variables on academic performance in students aged 6–12 years and moderating effect that gender, age, and geographical area.

2. Materials and Methods

2.1. Search Procedure and Inclusion Criteria

Using various search strategies (following the criteria of Botella and Sánchez-Meca) [73], the first phase of the study was conducted from July to November 2018, followed by a second phase, updating information, in February–March 2019. The electronic databases consulted were PsycInfo, Scopus, PubMed, and Redalyc. These databases were selected in accordance with Botella and Sánchez-Meca [73], who suggest that at least two databases of scientific importance should be consulted when carrying out a meta-analysis. In addition, the selected databases stand out for their relevance in the collection of educational and psychological works and for their interdisciplinarity and diversification of languages. All this ensured a broad search of studies, avoiding a possible error of publication bias. The keywords “academic achievement” and “primary education” and “correlation” were used, limiting the years of publication to “2009–2019”. Subsequently, the following cross-terms were introduced, each of them independently with “primary education” and “correlation”: “motivation”, “self-concept”, “self-esteem”, “emotional intelligence”, “emotional competence”, “emotional well-being”, “social intelligence”, “social competence”, “social skills” by carrying out a follow-up table of studies in which the type of variable studied in the research was recorded and to which group of variables it belonged. It should be remembered that this study focuses on groups of variables by their characteristics and not on specific variables. These terms were searched in the abstract and title. Additional search strategies included a review of abstracts and statistical tables. Subsequently, the references of the selected studies were reviewed along with the literature published in Spanish. The studies included in this meta-analysis had to meet several criteria: (a) present correlation statistics between aspects pertaining to motivational, emotional, and social factors and academic achievement, (b) published between the years 2009–2019, (c) sample of 6–12-year-old children, and (d) academic achievement measured directly (grades, standardized results, and others) either globally or by subject (mathematics, language, and others). The exclusion criteria were (a) presenting, as the object of study, only a population with learning disorders, (b) studies without quantitative data suitable for analysis with CMA software, and (c) age range over 12 years. However, studies in which part of the sample exceeded the age range were retained because their duration added research value. The selection process resulted in 19 studies that provided 37 samples, of which 12 addressed motivational factors, 12 emotional factors, and 13 social factors, with a total of 15,777 participants (Figure 1).

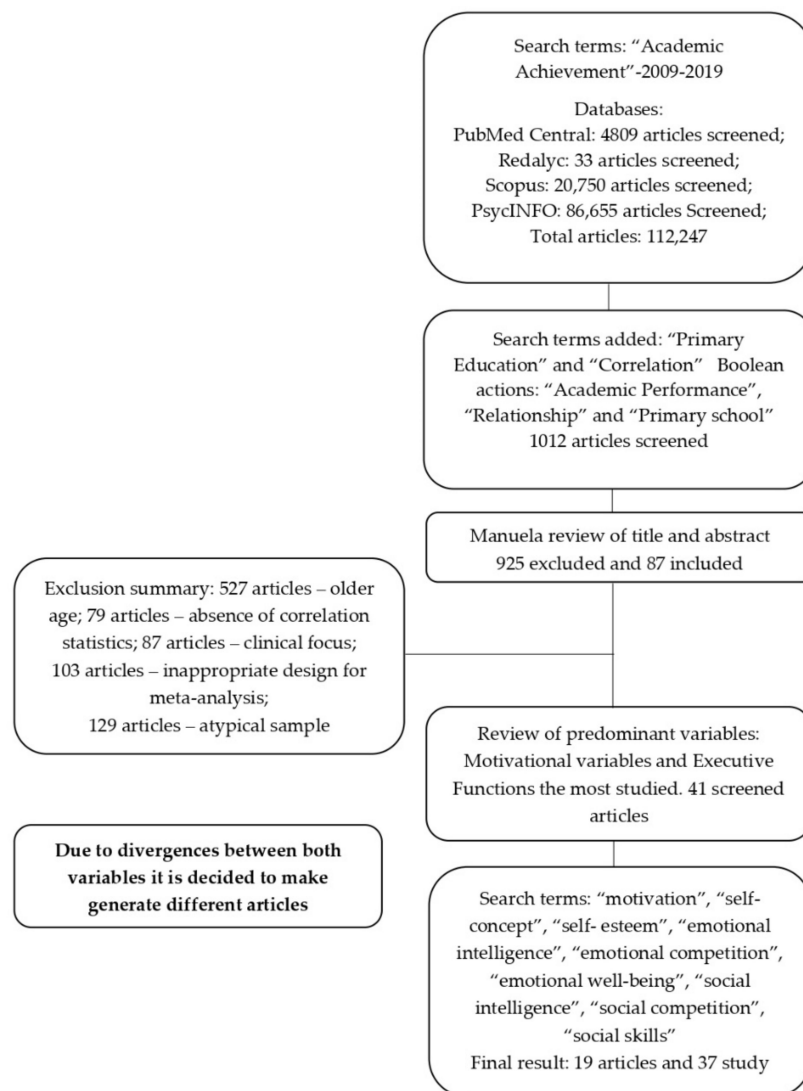


Figure 1. Flowchart of the search strategy.

2.2. Study Selection and Coding Procedure

For coding we used the PRISMA guidelines and point 1.2.2 of the Cochrane Handbook for Systematic Reviews of Interventions, version 5.1, specifically the procedure defined by Higgins and Green [74]. This handbook allowed setting clear objectives and specific search terms, following the eligibility criteria previously defined for the studies. The search and selection process was conducted by the three researchers and distributed in phases. Phase I was conducted by the first researcher, who analysed the titles. Phase II, which included Boolean searches and abstract reviews, was conducted by researchers one and two. Finally, Phases III, IV, and V, which required a deeper analysis of the studies, were conducted by researchers one and three (Figure 1). The procedure that was followed provided a level of agreement of 0.81 for the final sample, almost perfect agreement according to Landis and Koch [75].

Additionally, the types of variables studied in the articles were considered when coding and were classified into motivational, emotional, and social factors. Some factors included only one aspect (for example, motivation or emotional well-being), and the others included two. Each article was analysed individually. Academic achievement was measured in relation to the global assessments conducted by teachers (78.37% of the sample). There were exceptions, taking as a reference the subject of language, specifically,

the reading level (reading comprehension, reading fluency, and vocabulary), and the subject of mathematics because these were the most commonly reported by the selected studies.

2.3. Statistical Analyses

The following software was used for the statistical analysis of this meta-analysis: EZAnalyze and Comprehensive Meta-Analysis. The software used for descriptive statistical analysis was the EZAnalyze add-in (Microsoft Excel, 2013), and the Comprehensive Meta-Analysis software (CMA, Biostat, Englewood, NJ, USA) was used for meta-analysis calculations. Although each of these analyses is detailed below, it should be noted as an introduction that the statistical study of this meta-analysis is based on the development of different regression models that yield the predictive ability of each group of variables. First of all, the effect size of each of the studies included must be calculated, in this case, Pearson's r . Subsequently, it is necessary to carry out an analysis of the heterogeneity and variability in the data collection in order to identify possible errors that need to be clarified. Finally, it is necessary to determine the non-existence of these errors and possible bias using Funnel Plot analysis and the application of Egger tests.

2.3.1. Effect Size Calculation

A total of 207 effect sizes were coded using correlation indices as a reference and calculating the standard error and corresponding confidence intervals. All statistical data were coded twice, recalculating the different results. Pearson correlations (r effect size) were determined independently between each of the variables mentioned and academic achievement. However, to avoid whether such effect sizes could be due to sample size, they were transformed into Fisher Z-values. Subsequently and following the indications described by Cohen [76], the effect size was considered small if the existing correlation was less than 0.10, moderate if the existing correlation was 0.30, and large if the existing correlation was over 0.50.

2.3.2. Heterogeneity, Variability and Publication Bias

To study sample variability, Cochran's Q was applied to test the null hypothesis of homogeneity between studies, and I^2 was determined to indicate the proportion of variability. Following Higgins et al. [77], I^2 values of 25%, 50%, and over 75% were considered low, moderate, and high, respectively. This variability may be due to actual variability in the variance and effect size, the influence of a moderating variable, or sampling error. The different meta-analyses applied analysed separately those studies with possible outliers, finding no significant variation in the Q and I^2 values. However, in order to ensure that the variability and heterogeneity were not due to publication bias, the Egger test was carried out.

2.3.3. Meta-Regression

As described in the previous sections, meta-regression analyses were analysed taking into account a random effects analysis given the true variance variability of variance and effect size [78]. This type of analysis allowed the study of different predictive models and an analysis of the moderating variables of gender, age, and geographical area.

3. Results

3.1. General Description of the Included Studies

This section describes the characteristics of the studies included in this meta-analysis by describing their participants, age, gender, geographical area where the studies were conducted and including reference to the type of variable they address in relation to academic performance.

Selected studies were conducted in various parts of the world. Considering the variables that make up the motivational, emotional, and social factors, it is important to have studies conducted in societies whose values, traditions, and worldviews are very

different. From a total of 19 articles, 37 databases were extracted, and a total sample of 15,777 participants was obtained. Of the data reported, 52.04% were females, and 47.96% were males. By geographical area, the American continent accounted for 11.82% of the total sample, Europe accounted for 80.20%, Oceania accounted for 3.07%, and Asia accounted for 4.91%. Studies with a high multicultural component, such as those by Pulido and Herrera [60], must also be highlighted. In addition, notably, studies with greater numbers of participants addressed motivational factors [15,44,79,80], while the most homogeneous, in terms of the number of subjects, studied emotional factors. Only McArthur et al. [6] studied bad readers and low self-concept, while most studies (eight) addressed academic achievement from a global perspective (average of all subjects). It should be noted that five studies were longitudinal [13,15,35,44,78]. Gender, age, geographical area, culture, socioeconomic status, and parent education level were interests present in most of the articles studied. The geographical distribution of the studies within each country was very diverse. Studies were conducted in rural and urban areas, in a single school or in several schools of a single city, and in several cities or throughout the country (Table 1).

Table 1. Descriptive Data of the Studies.

Study	Country	Population	Male	Female	Age (Years)	Performance	Factor Studied	Distribution of Participants
Billings et al. (2014)	Australia	$n = 407$	200	207	9–13	Literacy and arithmetic	Emotional factor	Four schools in the city of Melbourne (Australia)
Brouzos, Misailidi, and Hadjimatheou (2014)	Cyprus	$n = 106$ $n = 99$	55; 48	51; 51	8–10; 11–13	Language and mathematics	Emotional factor	Twelve schools, mid-sized urban area of Cyprus
Ferragut and Fierro (2012)	Spain	$n = 166$	77	89	9–12	All subjects	Emotional factor	One school in the city of Malaga (Spain)
Franco et al. (2017)	Portugal	$n = 406$	210	196	6–11	Language and mathematics	Emotional factors; social factors	Four schools in Madeira (Portugal)
Garon-CARRIER et al. (2016)	Canada	$n = 1466$	699	767	7–10	Math	Motivational factors	Born 1997–1998 in the province of Quebec (Canada)
Grygiel et al. (2017)	Poland	$n = 4226$	1889	2337	8–11	Language and mathematics	Motivational factors	The whole country (Poland)
Gustavsen (2017)	Norway	$n = 2266$	1128	1138	6–14	Language, mathematics, and English	Social factors	Twenty-seven schools in 14 Norwegian municipalities
Jovarini et al. (2018)	Brazil	$n = 214$	111	103	11–17	All subjects	Social factors	Three schools in the state of Amazonas in Brazil
Lv et al. (2016)	China	$n = 419$	233	186	9–12	Language, mathematics, and English	Emotional factors	One Liaocheng urban area school (China)
McArthur et al. (2016)	Australia	$n = 77$	32	45	9–12	Reading, oral language and attention	Motivational factors	The whole country (Australia)

Table 1. Cont.

Study	Country	Population	Male	Female	Age (Years)	Performance	Factor Studied	Distribution of Participants
Pulido-Acosta and Herrera-Clavero (2017)	Spain	n = 404	193	211	6–12	All subjects	Emotional factors	Four schools in the city of Ceuta (Spain)
Pulido-Acosta and Herrera-Clavero (2018)	Spain	n = 764	403	361	7–12	All subjects	Emotional factors	Seven schools in the city of Ceuta (Spain)
Quirk et al. (2009)	USA	n = 185	82	103	7–9	Reading: fluency and efficiency	Motivational factors	Four rural area schools in the southeastern US
Rahmani (2011)	Iran	n = 200	100	100	7–11	All subjects	Motivational factors	Tabriz city schools, the industrial zone of Iran
Regueiro et al. (2015)	Spain	n = 1257	573	684	9–16	Language, mathematics, and English	Motivational factors	Eighteen schools in four provinces of northern Spain in urban and rural areas
Selimović et al. (2018)	Bosnia-Herzegovina	n = 846 n = 793	802	837	11–15	All subjects	Social factors	Seventeen schools in Central Bosnia
Wagner and Ruch (2015)	Switzerland	n = 179	92	87	10–12	All subjects	Social factors	Nine classrooms in three schools in the German-speaking area in Switzerland
Walgermo et al. (2018)	Norway	n = 1141	561	580	5–7	Reading	Motivational factors	Sixty-two classes in 19 urban schools in Norway
Zirak and Ahmadian (2015)	Iran	n = 156	80	76	10–11	All subjects	Emotional factor; Social factor	Torbat-e-Heydariieh city schools in northeastern Iran

3.2. Effect Size and Statistical Significance

An independent analysis was performed for each factor following a random effects model. The different effect sizes with 95% confidence intervals and significance $p < 0.001$ were as follows: motivational factor, moderately positive effect ($r = 0.321$) in a sample of $k = 12$ and a population of $n = 15.734$ (Figure 2); emotional factor, small positive effect ($r = 0.172$) in a sample of $k = 12$ and a population of $n = 3931$ (Figure 3); and social factor, moderately positive effect ($r = 0.210$) in a population of $n = 12.023$ (Figure 4).

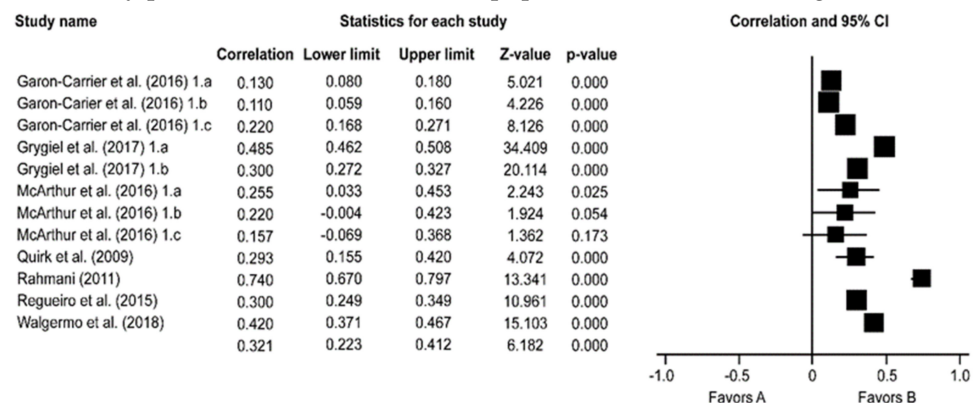


Figure 2. Forest plot, motivational factors.

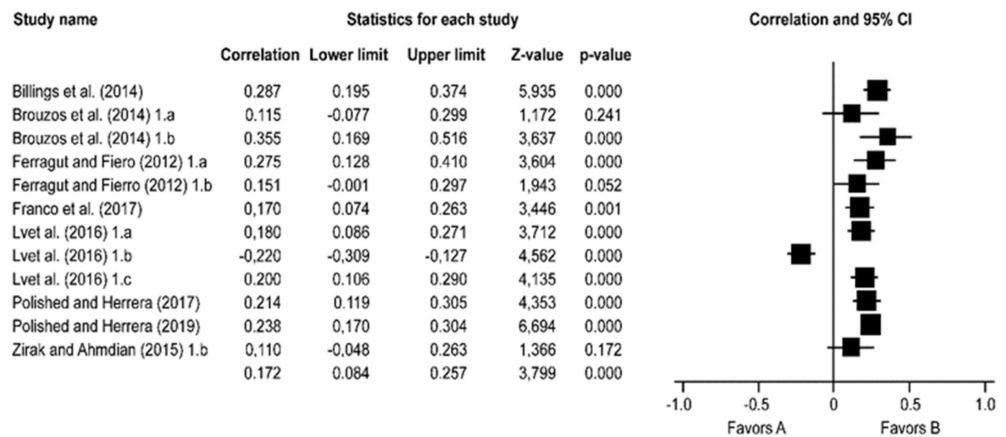


Figure 3. Forest plot, emotional factors.

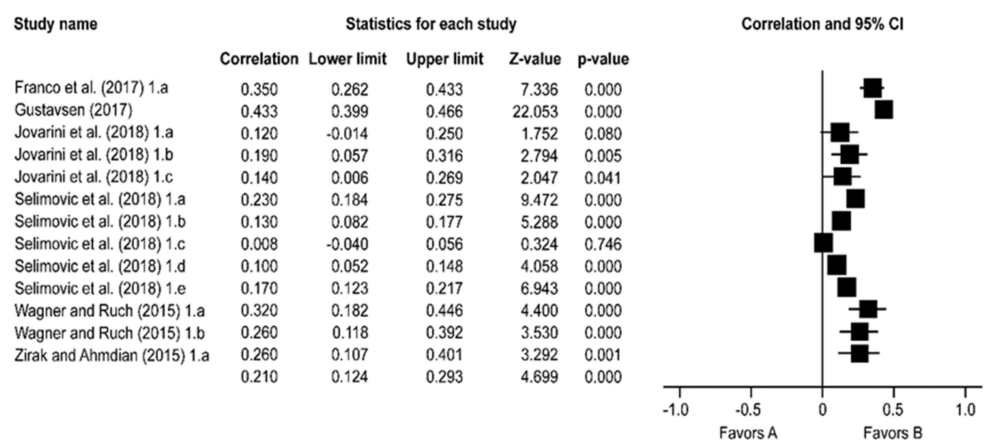


Figure 4. Forest plot, social factors.

3.3. Heterogeneity and Variability Analysis

Variability between the relationship of the different factors studied and academic achievement was significantly high (motivational factor: $Q = 407.016$, $df = 11$, $I^2 = 97.297$; emotional factor: $Q = 83.070$, $df = 11$, $I^2 = 86.758$; social factor: $Q = 261.681$, $df = 12$, $I^2 = 95.414$). In view of the results obtained, sample sensitivity was evaluated by performing a second series of meta-analyses. For emotional factors, the studies by Ferragut and Fierro [34], Lv et al. [29], and Zirak and Ahmadian [81] were excluded, resulting in a decrease (<50%). For social factors, the study by Jovarini et al. [36] and that by Selimović et al. [37] presented atypical data; therefore, the variability in the meta-analysis decreased by excluding them ($Q = 138.608$, $I^2 = 94.950$). Finally, for motivational factors, there were no studies with outliers; therefore, the variability derived from the effect size and variance. In view of these results, there were no exclusions because no sample represented 50% of the statistical weight. Additionally, no significant effect size variability was found for different factors.

3.4. Publication Bias Analysis

The funnel plots shown help verify the presence of bias, regardless of sample size (Figure 5). The plots show that the Z-values for the studies included in this meta-analysis are small (−1 and 1). According to Pérez and Rodríguez [82], these data indicate no bias because the presence of bias is indicated by values significantly different from 0. Further, when performing the Egger test, the Y-axis intersection points were −1.246 for motivational factors, 0.24 for emotional factors, and −0.006 for social factors. Therefore, it is deduced that there is no publication bias [83].

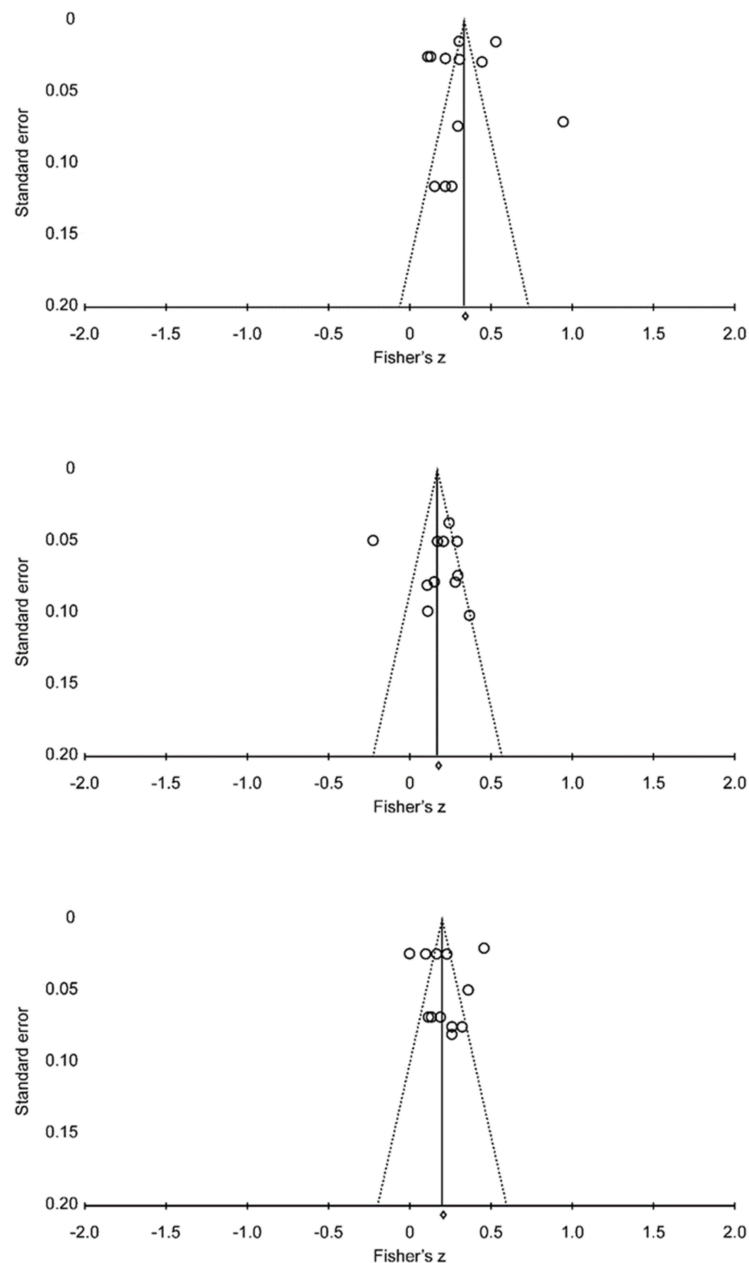


Figure 5. Funnel plot, motivational, emotional, and social factors.

3.5. Meta-Regression and Moderator Analyses

After reviewing the different studies, both gender and age were found to act as moderators of the motivational, emotional, and social factors [27–29,34,37,60,84,85]. Therefore, an analysis of these variables was performed to verify the explanatory power of the variance and its moderator index. First, a meta-regression of the moderating capacity of gender was performed and was not significant, contrary to expectations (Table 2). A second meta-regression that included age found that age only affected social factors (65%) (Table 2). Considering the studies analyzed, the cultural context was included as a moderating variable, and a third meta-regression was performed. The result showed that motivational factors were moderated by cultural aspects (52%), observing differences according to the prevailing geographical area between different geographical areas of the European continent (north-east with the south), Oceania and Asia (Tables 2 and 3). Similarly, for emotional factors, this moderating effect (17%) was different between studies in southern Europe and Oceania (Tables 2 and 4). Finally, for social factors, geographical area explained 76%

of the variance, observing diversity between the different geographical areas of Europe (highlighting the negative values of Eastern Europe) and Asia (Tables 2 and 5).

Table 2. Regression models.

Meta-Regression of Motivational Factors					
Model Name	TauSq	R²	Q	df	p-Value
'Model 1	0.0308	0	407.02	11	<0.001
'Model 2 Male	0.0308	0	407.02	11	<0.001
'Model 3 Female	0.0308	0.01	407.02	11	<0.001
'Model 4 Age	0.0308	0	407.02	11	<0.001
'Model 5	0.0308	0.52	407.02	11	<0.001
Geographical area	0.0308	0.52	407.02	11	<0.001
Meta-Regression of Emotional Factors					
Model Name	TauSq	R²	Q	df	p-Value
'Model 1	0.0208	0	83.07	11	<0.001
'Model 2 Male	0.0246	0.0208	83.07	11	<0.001
'Model 3 Female	0.0208	0	83.07	11	<0.001
'Model 4 age	0.0208	0	83.07	11	<0.001
'Model 5	0.0208	0.17	83.07	11	<0.001
Geographical area	0.0208	0.17	83.07	11	<0.001
Meta-Regression of Social Factors					
Model Name	TauSq	R²	Q	df	p-Value
'Model 1	0.024	0	261.68	12	<0.001
'Model 2 Male	0.024	0.01	261.68	12	<0.001
'Model 3 Female	0.024	0	261.68	12	<0.001
'Model 4 Age	0.024	0.65	261.68	12	<0.001
'Model 5	0.024	0.76	261.68	12	<0.001
Geographical area	0.024	0.76	261.68	12	<0.001

Table 3. Coefficient values of Motivational Factors Meta-Regression.

Covariate	Coefficient	Standard Error	95% Lower	95% Upper	Z-Value
M1. Simple	0.3324	0.0538	0.227	0.4378	6.18
M2. Male	0	0.0001	−0.0001	0.0002	0.17
M3. Female	0	0.0001	−0.0001	0.0001	0.22
M4. Age	−0.0028	0.0309	−0.0634	0.0578	−0.09
M5. Geographical area-Asia	0.7658	0.1551	0.4618	1.0697	4.94
M5. Geographical area-Eastern Europe	0.2348	0.108	0.0231	0.4466	2.17
M5. Geographical area-Northern Europe	0.263	0.1409	−0.0132	0.5392	1.87
M5. Geographical area-Southern Europe	0.1248	0.1406	−0.1508	0.4004	0.89
M5. Geographical area-Oceanian	0.0295	0.1165	−0.1989	0.258	0.25

Table 4. Coefficient values of Emotional Factors Meta-Regression.

Covariate	Coefficient	Standard Error	95% Lower	95% Upper	Z-Value
M1. Simple	0.1736	0.0457	0.084	0.2632	3.8
M2. Male	−0.0001	0.0005	−0.0011	0.0009	−0.25
M3. Female	0	0.0006	−0.0011	0.0011	0
M4. Age	0.0012	0.0439	−0.0849	0.0872	0.03
M5. Geographical area-Southern Europe	0.154	0.0913	−0.0249	0.3329	1.69
M5. Geographical area-Oceanian	0.2293	0.1578	−0.0799	0.5386	1.45

Table 5. Coefficient values of Social Factors Meta-Regression.

Covariate	Coefficient	Standard Error	95% Lower	95% Upper	Z-Value
M1. Simple	0.213	0.0453	0.1242	0.3019	4.7
M2. Male	0	0.0001	−0.0002	0.0002	−0.12
M3. Female	0	0.0001	−0.0002	0.0002	−0.17
M4. Age	−0.0705	0.022	−0.1137	−0.0273	−3.2
M5. Geographical area-Southern Europe	0.2142	0.1077	0.0031	0.4252	1.99
M5. Geographical area-Northern Europe	0.3123	0.0977	0.1207	0.5039	3.2
M5. Geographical area-Eastern Europe	−0.0223	0.0687	−0.1569	0.1123	−0.32
M5. Geographical area-Central Europe	0.1476	0.0955	−0.0397	0.3348	1.54
M5. Geographical area-Asia	0.1148	0.1251	−0.1303	0.36	0.92

As shown by the studies mentioned above, age, not gender, was the moderating variable with the greatest explanatory power, but only for social factors. However, geographical area was a better predictor than was age because it affected all three factors.

As shown by the studies mentioned above, age, not gender, was the moderating variable with the greatest explanatory power, but only for social factors. However, culture was a better predictor than was age because it affected all three factors.

4. Discussion

The purpose of this meta-analysis was to conduct integrated research on the relationship between motivational, emotional, and social variables and academic achievement in children aged 6–12 years during the last ten years. The results of this research indicate a moderate effect size for the motivational (0.321) and social factors (0.210) and a small effect size for emotional factors (0.172). Analyses of moderating effects revealed that age explains 65% of social factors and that geographical area explains 52% of motivational factors, 17% of emotional factors, and 76% of social factors, which are the most important findings of this research. Therefore, the present study concludes that academic achievement is closely related to motivational and social factors and, to a lesser extent, to emotional factors. In addition, geographical area plays a moderating role in all three factors while age only plays a role in social factors. These findings are consistent with previous studies in which motivational and social factors, as opposed to emotional factors, were related to academic achievement [55,56,86]. However, it should be noted have not been found studies that address all three factors together regarding school achievement at this educational stage.

4.1. Motivational Factors

These factors are formed by related motivational constructs, such as motivation, self-concept, and self-esteem. The results of this meta-analysis show a positive moderate relationship between motivational factors and academic achievement ($r = 0.321$; $p < 0.001$). In addition, the review of the selected studies shows that this relationship appears in both the general and specific domains.

Motivation appears to be related to good grades because students with poor grades have low motivation [87]. Thus, high achieving students are more motivated to work on homework assignments than are low achievers [80,88,89]. Regarding the specific domain of academic achievement, the intrinsic motivation for mathematics is positively correlated with mathematics achievement [44], and self-concept and motivation are positively correlated with reading skills and student goals [13,15]. Similarly, the relationship of bad readers with low self-concept suggests poor readers with multiple deficiencies in reading, language, and attention are at greater risk of low academic achievement and general self-concept [6]. Finally, and consistent with the findings of this meta-analysis, studies such as those by Lockett and Harrell [88], Rahmani [14], and Rastegar et al. [86] conclude that there is a correlation between self-esteem and academic achievement.

4.2. Emotional Factors

The findings of this meta-analysis (positive and significant relationship $r = 0.172$; $p < 0.001$) are consistent with previous research on emotional factors, where a weak relationship with academic achievement is present [27]. However, the difficulty of measuring emotional intelligence for the age in question should be noted, as children may have a limited capacity to understand their own emotions and report on them [27]. Within emotional factors and at this age, different aspects must be considered, such as positive or negative affect [29] or character strengths, which relate to positive behaviours in the classroom and help improve academic achievement [90]. Notably, there is a directly proportional relationship between academic achievement and emotional intelligence; therefore, the former increases as the score of the latter increases, with one being the best predictor of the other [60,84,91]. Additionally, personal well-being is related to emotional intelligence and academic achievement [34]. A child is content when emotional stability is reached (family-school), which in turn impacts school achievement.

4.3. Social Factors

The present meta-analysis indicates a significant moderate positive relationship between academic achievement and social factors ($r = 0.210$; $p < 0.001$). However, there are conflicting results, such as those reported by Selimović et al. [37], who conclude there is a low correlation. Other results are consistent with those reported in this study and corroborate this relationship [55,92]. It has also been found that the influence of social skills on school achievement varies according to academic ability [92]. Some studies report a significant relationship between social skills and academic results two years later (the correlation did not decrease in higher grades) [35]. Furthermore, some studies, such as that by Fu et al. [93], suggest that social factors predict the development and trajectory of academic achievement in children aged 6–9 years. As mentioned above, there is an interaction between social and emotional factors, which is evident between emotional understanding and social competence for predicting school success. The latter facilitates the relationship with others but is reinforced by appropriate and sufficient emotional understanding [28]. To conclude, social skills are not a direct predictor for later achievement but play a mediating role in academics through the interrelation between components of emotional and social factors [55].

4.4. Moderating Effect of Gender, Age, and Geographical Area

4.4.1. Gender

The results of this research do not show a moderating effect of gender; however, the opposite was expected because the population studied is at an age when there is strong biological and cognitive development, with early maturation in females. When the difference according to gender is analyzed in regard to motivational factors, the studies analyzed suggest that girls are more motivated than boys in reading, especially during the early years of primary school [13] and that boys are more motivated than girls in mathematics [44]. The divergence found on the influence of gender on emotional understanding, between studies conducted with samples of secondary school or university students and those with samples of primary education students, suggests that the differences appear in older children and are not well documented in early school years [94]. Regarding social skills by gender, some studies conducted in adolescents show that as children get older, intergroup processes contribute to discrimination based on sex and restrictive roles have consequences on the academic achievement of girls and the socioemotional development of boys [95–97]. The comparison made by Selimović et al. [37] between fifth- and eighth-graders (10–14 years) found a statistically significant difference between the social competence of female and male students (female students have a more positive perception). All the above is consistent with the results of the present study, which found, despite not being significant, a positive moderating trend of female gender on motivational factors and a positive moderating trend of male gender on social factors but a negative moderating trend on emotional factors.

4.4.2. Age

Self-regulation systems are not fully developed in primary education students (6–12 years); therefore, values vary depending on whether the population studied is in the early or last years of this stage [98,99]. Although age was not strictly a moderator of two of the three factors, the data point to maturational aspects and not so much to strict chronological age for emotional and motivational factors. The results suggest that the moderating effect of age is inversely related to motivational factors; therefore, motivation decreases with increasing age. However, age predicts 65% of the variance for social factors, as the social behaviour of students improves with increasing age because they have more resources for solving conflicts. Finally, some divergence is observed due to age and maturity.

Empirical studies yield mixed results in terms of the components of motivation. On the one hand, Regueiro et al. [80] and Garon-Carrier et al. [44] indicate there are statistically significant differences depending on the course and previous academic achievement, highlighting the moderating effect of age on motivation. Hong et al. [88] noted that younger students are more involved and persistent than older students; therefore, the motivation to complete homework assignments decreases as students advance through grade levels. This difference in results occurs depending on whether the relationship studied refers to the general domain or a specific domain [44,100,101].

Academic self-concept is subject to age-related dynamics, decreasing from early childhood to adolescence. In early childhood, it is characterized by the overestimation of one's own abilities, and with increasing age, it is influenced, to a large extent, by social comparisons with peers, with feedback from external factors such as parents and teachers [79]. The findings obtained for this variable also show differences depending on the general or specific domain considered. With the general academic domain, the relationship increases as students advance through grade levels, especially from 10 to 12 years [79]. The reverse occurs with reading performance, as the effect begins earlier than what research had indicated according to Conradi, Jang, and McKenna [102], Quirk et al. [13], and Walgermo et al. [15].

Regarding emotional factors and in full agreement with the conclusions of this meta-analysis, authors such as Austin [98] and Mayer et al. [99] infer that emotional intelligence skills develop with age. There is a null or weak relationship between emotional intelligence and well-being with academic achievement in early school years (6–10 years) and a slight increase in the last years of primary education (11–12 years) [27,34,60,84,85,103,104]. There

is no doubt a child's ability to adapt and use his or her emotions in daily life increases with age. The school plays a fundamental role because the child can meet arising challenges, associating this aspect with greater well-being, resulting in better academic outcomes.

To understand the learning process and school achievement, social interaction in school must be considered, in addition to motivation and emotions. During this educational stage (6–12 years), age emerges strongly in regard to its moderating effect on social factors, as this research concludes. Various studies, such as those by Ceconello and Koller [105], Selimović et al. [37], or Gustavsen [35], corroborate these results. All found a clear significant difference in social competence and social skills, between 10- and 12-year-old students, with the 12-year-olds scoring higher. However, the results were nonuniform because there was an increase from 6 to 8 years, then a plateau, and an increase again from 10 to 12 years. In summary, the results of this study are fully consistent with previous studies.

4.4.3. Geographical Area

Geographical area emerges strongly in regard to its moderating effect on the three factors addressed in this research (52% for motivational factors; 17% for emotional factors; 76% for social factors). This effect can be explained by cultural differences between different geographical areas of the European continent (north-central-south-east), Oceania, and Asia. In contrast, in countries on the American continents, there are no indications of the moderating effect of geographical area on any of the factors. Therefore, it follows that cultural aspects have a moderating function according to the type of society (individualist, collectivist), strongly influenced by the geographical-climatic and religious context where the studies were developed [47,71].

Within motivational factors, the highest values were obtained for Asia and the lowest for Oceania. An explanation can be drawn taking Chinese culture as an example. China has a collectivist society with a Confucian philosophy that values hard work and respect for education. Academic achievement has a social (group interest) and emotional (greater acceptance) significance that translates into increased motivation to achieve academic success [29]. In contrast, between the different zones of Europe, the highest value occurs in the north and central zones and the lowest in the south zone (the north and central zones are protestant individualists; the south includes mixed Christian and Muslim populations). These data also highlight the differences in educational systems. Take Norway as an example; this country values this educational stage (6–12 years) for its importance for life itself and not only as preparation for the subsequent stage. Activities are scheduled based on participation and free play without looking for specific results contrary to what happens in comprehensive educational systems [106].

For emotional factors, the highest values are obtained for Oceania and the lowest for southern Europe. These data show that geographical area and culture contributes to achieving personal balance (emotional adjustment, perceived well-being) and in turn improving academic performance when the context in which these factors operate is better controlled [71]. Along these lines, in Australian society (individualist), very different cultural habits coexist (Asian, European, Latin American, Arab, and others), where work is valued more than rapid success and a culture of work predominates [27]. Then again, individualist cultures (Australia) focus on individual needs, recognize quality of life, and give greater importance to the emotional world [71]. In the case of southern Europe, an example could be the study by Acosta and Clavero [84], Pulido-Acosta, and Herrera-Clavero [60] conducted in a pluricultural community dominated by Islamic culture and religion (therefore, with a predominantly collectivist society) but where the educational standards are totally Western (Ceuta-Spain). Their results showed emotional competencies are very important in socialization because attaining proper adjustment and control improves academic achievement. In contrast, in a collectivist society, individual needs are subordinated to the common good or group, paying less attention to the emotional world

(Muslim communities). Thus, there are different levels of emotional intelligence depending on the cultural group to which one belongs [107].

Finally, for social factors, geographical area plays a greater moderating role in northern Europe, followed by southern Europe, central Europe, Asia, and finally eastern Europe with negative values. To develop socially, one must internalize the norms, rules, and values of the society in which one lives [69]. With Norwegian culture as an example, Gustavsen [35] notes that social skills differ according to the students' native language, which indicates the importance of belonging to the dominant cultural group. Franco et al. [28] reach the same conclusions in Portugal, suggesting the importance of maternal education level in the development of social competence in children aged 6–9 years. Eastern Europe is unique in this respect, specifically Poland. The negative values found for the moderating effect of geographical area on social factors can be explained by its communist past, which has strongly influenced its way of life and educational system [37].

Therefore, culture and the different geographical areas translates into differences in educational systems and societal values in specific geographical-climatic and religious contexts. All these elements are related to motivational, emotional, and social factors that influence academic success.

Authors should discuss the results and how they can be interpreted from the perspective of previous studies and of the working hypotheses. The findings and their implications should be discussed in the broadest context possible. Future research directions may also be highlighted.

5. Conclusions

This study concludes by highlighting the relationship of motivational and social variables with academic achievement and the moderating effect of geographical area on the components of social and motivational factors, along with that of age on social factors. The results of this meta-analysis ascribe to motivational factors the same predictive capacity, regarding school performance, as executive functions and intelligence quotient in children aged 6–12 years [5]. These results indicate the need to address the motivational and social factors of students during the last years of primary education. This will facilitate the acquisition of knowledge and skills, leading to academic achievement in the subsequent educational stage, where these factors will become truly relevant. Additionally, the results indicate that emotional factors are not decisive during this educational stage. Nevertheless, it is necessary to implement actions to reinforce this component because it interacts strongly with social factors, as already shown.

Age, not gender, moderates school outcomes in regard to social factors. Unlike in the study by Cortés-Pascual et al. [5] where gender appeared as the main predictor of the relationship between executive functions and academic achievement during this educational stage, in this meta-analysis, age was the predictor. This moderating variable is fundamental for socialization in the peer-teacher relationship in the school context. In general, the importance of motivational factors decreases with age (increasing in the specific domain), and that of emotional and social factors increases with age. The relationship with academic achievement appears in the last courses of this educational stage (10–12 years), and thus, it will become relevant in the subsequent stage. Therefore, cognitive variables will have a greater influence on academic achievement between 6 and 12 years, and their effects will subsequently decrease. In contrast, personal factors (motivational, emotional, social) will gain relevance during the last courses of primary education, showing the importance of maturity.

The most surprising result was the strong moderating effect of geographical area on all three factors and especially its predictive power for social and motivational factors. The values it instils in society (family-school) and, above all, its effects on the creation of educational systems certainly influence academic results. However, there is an interrelation between the effect sizes obtained and the moderating effect of geographical area. Social factors have the second highest effect size, but geographical area has the highest moderating

effect on social factors, for which age has the only moderating effect. Therefore, social factors are important in explaining academic achievement for this age (6–12 years).

The literature review suggests an interconnection between the different factors studied and motivational variables. Additionally, there is a strong relationship between motivation and specific academic domains (reading, mathematics) and feedback between these variables and the school achievement. Emotional factors appear closely linked to social factors; therefore, on some occasions, each one appears as a moderator of the other for academic achievement. These two factors affect motivational factors and act in unison, due to their strong personal character, to predict academic achievement.

Regarding the limitations and foresight of this research, in view of the results obtained, a new study should be conducted to analyse the behaviour of the variables described during later educational stages. Such a study would illustrate how these factors influence academic achievement and its development along with the development of their moderators throughout compulsory education. Furthermore, this new study would provide information on how to impart a predictive counterbalance, regarding age, between traditional variables such as executive functions and intelligence quotient—very powerful at an early age—and the motivational, emotional, and social factors addressed in this study. Finally, the variable “geographical area” should evolve towards an in-depth study of cultural aspects that may influence the way of learning and, therefore, academic performance.

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

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Ethics Committee of CEIC Aragón (CEICA) (protocol code Acta N° 04/2019 (C.P.-C.I. PI19/050), 27 February 2019).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Acknowledgments: University of Zaragoza for its collaboration and support to make this study possible.

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

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