Original Research

SAGE Open
July-September 2021: 1–14

DOI: 10.1177/21582440211047573
journals.sagepub.com/home/sgo
SAGE

Secondary School Teachers' Views of Gender Differences in School Achievement and Study Choices in Spain

Milagros Sáinz[1], Jordi Solé[1], Sergi Fàbregues[1], and Sara García-Cuesta[2]

Abstract

This study examines Spanish secondary school teachers' views of gender differences in academic achievement and study choices. Thirty-six secondary school teachers participated in semi-structured interviews. Most teachers acknowledged that girls had better school performance, particularly in reading comprehension. Some were also acquainted with a higher predisposition to underachieve in boys. However, the teachers used different biology-centered arguments to explain these gender disparities. For many of the participants, that girls matured earlier than their male counterparts facilitates their adaptation to school demands. Likewise, a few teachers argued that the feminization of school favors girls' adjustment to school demands, whereas a number of them discussed that male adolescents do not consider school to be part of their gender identity. The usual attribution of intellectual abilities and effort to boys and girls was also discussed. In addition, socio-cultural and biological factors were accounted for gender differences in study choices.

Keywords

achievement, gender, school adjustment, secondary teachers, study choices

Introduction

Several studies show that in many Western countries boys lag behind girls in various academic indicators, such as school achievement and early school drop-out (see Hadjar et al., 2014; Heyder & Kessels, 2013). However, this tendency is not observed in developing OECD countries like Bangladesh, India, Pakistan, or Malaysia, where girls lag behind boys in the afore-mentioned indicators (Asadullah et al., 2019; Islam & Asadullah, 2018). In countries like Spain, boys are more likely than girls to fail in school. That is, the percentage of students who did not attain a diploma from compulsory secondary school was higher for boys (64.6%) than for girls (78.9%) (Martínez-Enguita et al., 2010). Moreover, during the last decade boys show a higher disposition to drop out of school earlier than their female counterparts—for instance, in 2019, 21.4% for boys and 13% for girls (MEFP, 2020).

With regards to gender differences in school achievement, PISA tests and the average OECD findings show that girls outperformed boys in reading comprehension by an average of 29 score points in Spain, a smaller-than-average gender gap (the OECD average gap was 38, 27, and 30 score points). This gender gap in reading comprehension has remained stable since 2000 (MEFP, 2020; OECD, 2017). Contrastingly, the gender gap in math has systematically favored boys in Spain, and the average OECD countries over time (MEFP, 2020). But this gender gap has been also reduced across time (in 2012, 2015, and 2018 the average gap was 16, 16, and 7 score points for Spain and 11, 8, and 5 score points for the OECD average; MEFP, 2020). In 2012, 2015, and 2018, Spanish boys outperformed girls in science, albeit by a small margin (7, 7, and 2 score points respectively), whereas in 2006, both boys and girls performed equally well. The OECD average gap was 1, 4, and 10 score points in the abovementioned years. The proportion of boys below the baseline performance level decreased by more than four percentage points from 19.6% in 2006 to 15.9% in 2012, while the proportion of girls with low performance remained stable (MEFP, 2020; Tourón et al., 2019). Paradoxically, PISA reports such as the one from 2009 show that across all countries secondary teachers consistently gave girls higher marks in math, even when boys and girls performed similarly on the PISA math test (Schleicher, 2019). This tendency seems to

[1]Universitat Oberta de Catalunya, Castelldefels, Barcelona, Spain
[2]Universidad de La Laguna, Islas Canarias, Spain

Corresponding Author:
Milagros Sáinz, Internet Interdisciplinary Institute, Universitat Oberta de Catalunya, Avinguda Carl Friedrich Gauss, 5, Parc Mediterrani de la Tecnologia, Castelldefels 08060, Spain.
Email: msainzi@uoc.edu

be associated with teachers' gender stereotypes and expectations about math competences. That is, "girls are frequently perceived as 'good students'–attentive in class and respectful of authority–, whereas boys may have less self-control" (Schleicher, 2019, p. 35).

On the other hand, Spanish boys and girls continue choosing academic paths congruent with gender roles. While the number of women enrolled in health-related studies (such as medicine) and science (mathematics and chemistry) has increased during the last 10 years—respectively 74.29% and 58.75%—(MECD, 2017), the number of girls interested in technology remains low (27.41%). Similarly, the number of boys interested in the humanities continues to be very low (35.05%). The dearth of women in some Science, Technology, Engineering, and Mathematics (STEM) disciplines has several practical implications, such as their uneven participation in the production and design of technical devices and services in current digital society (European Parliament, 2020; Sáinz, 2020). In addition, women tend to systematically hold occupations frequently associated with the provision of care and low decision-making opportunities (Sáinz, 2020; UNESCO, 2018). Furthermore, and on the other side of the coin, men are underrepresented in health and education-related occupations (MEFP, 2020; Sáinz, 2020; UNESCO, 2018).

Spanish Secondary Schooling and Gender Equality Policies

Secondary education in Spain is divided into 4 years of compulsory education (the ESO, ages 12–16) and a further of 2 years of post-obligatory education (ages 17–18), which are divided into either the baccalaureate—*Bachillerato*—(2 years before university studies) or vocational training (2 years to complete junior vocational training and 3 years to finish higher vocational training). During baccalaureate students can choose one out of the available five academic tracks: technology, science, arts, humanities, and social sciences. Generally, vocational studies and non-STEM career pathways are respectively regarded as less prestigious in terms of difficulty, academic achievement, and professional aspirations than STEM career pathways and university studies (López-Sáez et al., 2011; Sáinz, 2020). During the academic course 2017 to 2018 women represented 58.7% of the teaching workforce of secondary education, although with a high concentration of women teaching in the arts and humanities-related subjects and of men in technology-related subjects and academic itineraries (MEFP, 2020).

The most important step for gender equality policy was the approval of Organic Law 3/2007 on effective equality between women and men (known as the Equality Law), which applies at national, regional (autonomous communities), and local levels (European Institute for Gender Equality, 2020). This includes the promotion of effective equality between men and women throughout the whole educational system, rejecting stereotypes that involve discrimination based on gender. Although the attainment of gender equality in schooling has been a priority in Spain during the last decades, there is a dearth of research in Spain analyzing secondary teachers' views of the existing gender gap in school achievement and the choice of studies (Sáinz et al., 2012).

The present study aims to examine the views of a group of Spanish secondary school teachers about gender differences in academic achievement and study choices. Secondary school teachers are actors of change and may play a crucial role in the fight against sexist academic beliefs and behavior (Leaper & Brown, 2014). Their experiences and visions can provide insightful guidelines for intervention and the attainment of a more gender-equal education.

School Contexts and Their Role Shaping Gender Socialization

In many countries, boys and girls are often raised differently, based on two distinct models of socialization (Hadjar et al., 2014). This phenomenon may affect the types of activities they engage in, with potential impact on achievement at school, the kinds of skills they acquire and develop, and what they expect for their future—all of which, in turn, reinforce gender stereotypes and disparities in labor market outcomes (OECD, 2019). Schools are important contexts for the socialization of young adolescents' gender attitudes and behaviors (Bigler et al., 2013; Eccles et al., 1999; Sáinz et al., 2012). Teachers directly influence gender differentiation by providing boys and girls with different learning opportunities and feedback (Bigler et al., 2013). The expectancy-value theory of achievement motivation (EVT)—a theoretical framework of the social, cultural, and psychological influences on achievement-related choices—predicts gendered patterns in students' choices and behaviors (Eccles, 2011). This theory has partly inspired the present research since it integrates gender socialization with views related to the idea of selecting personal and academic pathways (Eccles, 2015). According to research drawing on this theory, teachers tend to socialize boys and girls differently encouraging them to engage in activities and academic pathways congruent with masculine or feminine roles (Eccles, 2015; Eccles et al., 1999; Farkas & Leaper, 2016). For instance, since science and math have been traditionally considered male domains, some teachers tend to more likely encourage boys to engage in different activities related to these two domains (Eccles et al., 1999). Therefore, girls develop a lower self-concept of ability and attach less value than their male counterparts to these domains for what they would do in the future (Eccles et al., 1999). Congruently with further research drawing on gender socialization, teachers tend to socialize boys to strategically avoid values, attitudes, and behaviors that are socially constructed as "feminine" or even considered "gay," such as

being dependent, cooperative, and social (Harris & Harper, 2008; Mickelson, 1989; Orr, 2011).

Teachers' perceptions of students' school adjustment are frequently gender-biased because they are affected by both teachers' and students' characteristics (Bol & Berry, 2005; Farkas & Leaper, 2016). For instance, teachers tend to regard female learners as more agreeable or more likely to exert effort in the classroom in comparison with male peers (Butler, 2014). However, females are also less likely to be perceived as having academic potential or to receive time and attention in class (Butler, 2014). Meanwhile, teachers also regard male learners to be more detached from their studies compared to their female peers and more likely to misbehave during the course of secondary school years (Farkas & Leaper, 2016; Legewie & DiPrete, 2012).

In addition, several studies attribute observed gender differences in school achievement and participation to educational practices delivered through textbooks, teachers, and further educational instruments that provide teaching beyond existing curriculum (the so-called hidden curriculum) and gender bias in learning materials (Asadullah et al., 2019; Blumberg, 2005; Bol & Berry, 2005; Islam & Asadullah, 2018; Warren et al., 2019). Messages transmitted by teachers in the classroom, along with textbooks through language and other didactic resources portray women in traditional occupational roles and encourage gender stereotypes (Blumberg, 2005; López-Navajas, 2015; Papadakis, 2018; Vaillo, 2016; Warren et al., 2019).

Besides, and according to some empirical research, co-educational schools may exacerbate gendered academic stereotypes about girls' competence for students and teachers (Bowe et al., 2017). Accordingly, girls made more math achievement gains in single-sex classrooms than in co-educational schools (Bowe et al., 2017). However, a previous meta-analysis corroborated that results from the highest quality studies do not support the view that single-sex schooling provides benefits (i.e., increase students' achievement or academic interest) compared with co-educational schooling (Pahlke et al., 2014).

Teachers' Endorsement of Gender Stereotypes about Achievement: Effects on Instruction and Differences in School Engagement

Many teachers tend to endorse cultural gender stereotypes to their students' achievement—for example, boys have higher math abilities than girls, girls are better at languages (Eccles, 2007). Teachers' perceptions of their students' achievement have typically been investigated using quantitative methods in the framework of the attribution theory of motivation (Wang & Hall, 2018)—included in major theoretical motivation approaches like the EVT. In this regard, teachers tend to attribute girls' academic achievements to difficulty or good luck—external causes—, whereas they associate boys' academic achievements to intelligence or effort—internal causes (Espinoza et al., 2014; Jussim et al., 1996). Consequently, girls are expected to have a lower performance than boys in "challenging" subject areas like maths (Sainz & Eccles, 2012; Steele, 1997). Differences in expectations between boys and girls could partly be explained by the teachers' perceptions of students' work habits (Upadyaya & Eccles, 2015). For this reason, female students are generally perceived by their teachers to work harder and produce higher-quality work (Sáinz et al., 2012; Timmermans et al., 2016).

Regardless, the quality of girls' and boys' relationships with their teachers seems to play a major role in predicting the importance that girls and boys place on doing well in school and their interest in different subject areas (Upadyaya & Eccles, 2015). For instance, some teachers give more attention to boys than to girls in some classrooms (Butler, 2014). This undoubtedly shapes boys' and girls' attitudes toward schooling, along with their interest in the available curriculum subject areas. Compliance with teachers may in turn be related to adopting behaviors that facilitate school success and are related to the female gender role—for example, listening attentively or following directions (Farkas & Leaper, 2016; Schleicher, 2019).

These differential perceptions of boys' and girls' school achievement have important educational implications (Heyder & Kessels, 2013; Jussim et al., 1996; Wang & Hall, 2018). On the one hand, these perceptions influence teachers' decisions regarding achievement levels (Riley, 2014). In addition, teachers' attributions of their students' academic success or failure not only shape the way they perceive and behave toward their students, but also influence how students perceive their own potential, their motivation toward school, and their attitudes toward learning. For instance, teachers who endorse the stereotype that boys are worse at reading or languages than their female counterparts may be less inclined to provide male learners with educational opportunities and resources or to motivate male learners to achieve in these areas (Riley, 2014).

Moreover, teachers' gender-stereotyped beliefs about girls' and boys' aptitudes explain gender differences in students' competence beliefs, values, and achievement-related behavior (Eccles, 2015; Heyder et al., 2019; Hyde & Kling, 2001; Jussim et al., 1996; Upadyaya & Eccles, 2015). Meanwhile, these influences may lead boys to excel in stereotypically masculine domains, such as math, science, and sports (Eccles, 2015; Leaper & Brown, 2014; Sáinz et al., 2012), and girls to excel in stereotypically feminine domains such as language (Eccles & Wigfield, 2002). Besides, secondary school teachers' perceptions and beliefs regarding studies and occupations as well as students' academic abilities play a crucial role in the final choices that students make (Eccles, 2015; Eccles et al., 1999; Eccles & Wigfield, 2002; Sáinz et al., 2012; Upadyaya & Eccles, 2015). Consequently, boys and girls tend to pursue studies and occupations congruent with those stereotypical domains (Eccles, 2015;

Eccles et al., 1999). Teachers influence students' perceptions of the available alternatives through the information and experiences they provide regarding those possibilities (Eccles, 2011, 2015). Furthermore, having more female teachers in STEM subjects lacking female role models such as technology, computing, or physical science may increase girls' interest in scientific and technological careers (Johnson et al., 2020).

The Present Study

Delving into secondary teachers' discourse on the reasons why gender differences in school achievement and study choices persist can provide researchers, policy-makers, and practitioners with concrete clues about how to implement gender-transformative interventions in the schooling context. Also, it may inform about other factors intersecting with gender that may explain these gender gaps. Moreover, this is a timely study, since Spain has one of the highest share of early school dropouts in the European Union (Eurostat, 2016; MEFP, 2020). Early school dropout and school failure—both frequent indicators of school achievement—are frequently associated with boys. Since this negative stereotype may influence boys' and girls' achievement (Butler, 2014; Hadjar et al., 2014; Leaper & Brown, 2014), analyzing secondary teachers' views of these issues seems crucial.

Furthermore, many secondary teachers and students often share the misconception that gender parity has been achieved in schooling (Legewie & DiPrete, 2012). This misconception may affect the value they attach to the existing gender disparities in education. Prior qualitative research in Spain suggests that both secondary teachers and parents perceive that they play a secondary role in the adolescents' study choices (Sáinz et al., 2012). However, several studies conducted with self-reported surveys inform about the crucial role that teachers play in shaping young people's gendered motivation and career-related decisions (Legewie & DiPrete, 2012; Riley, 2014; Upadyaya & Eccles, 2015). Teacher expectations and biases play a role in the kinds of explanations and instructional practices implemented to address gender gaps in school achievement and study choices (Bol & Berry, 2005).

Moreover, despite the important role that teachers' gender stereotypical beliefs play in educational practice (Eccles, 2015), there is a lack of research in general, and of qualitative research in particular, about how secondary teachers perceive the influence of these biases on their students' academic aspirations and decisions. To fill this gap in the literature, the following four research questions were formulated:

- R.Q.1.What type of assumptions do secondary school teachers make to tackle boys' and girls' different academic achievements?
- R.Q.2.To what extent do secondary teachers consider the role of school and other socializers in shaping boys' and girls' different academic achievements?
- R.Q.3. What type of evidence do secondary school teachers provide to address their view of boys' and girls' different study choices?
- R.Q.4. To what extent do secondary teachers recognize the role of school and other socializers when explaining boys' and girls' different academic and occupational interests?

Method

Design

Given the exploratory nature of this study, a qualitative descriptive design was implemented. Compared to other qualitative approaches, such as grounded theory or ethnography, and consistent with the study research questions, qualitative description is not guided by an explicit set of theoretical and philosophical assumptions (Kahlke, 2014; Lambert & Lambert, 2012). In particular, "qualitative description involves low-inference interpretations to perform a comprehensive, detailed, and nuanced examination of a phenomenon of interest in the 'everyday terms' of this phenomenon" (Sandelowski, 2000, p. 336). This approach is particularly suited for pragmatic studies aimed at obtaining straightforward answers to questions relevant to practitioners and policy. Accordingly, in this study, a qualitative description was thereby used to investigate Spanish teachers' views on boys' and girls' different achievement levels and study choices.

Sample

This qualitative study is part of a broader multi-method study aiming at analyzing the development of gendered motivation STEM pathways among secondary students, which also included a six-wave quantitative longitudinal survey with secondary students. Thirty-six secondary school teachers were recruited using purposive maximum variation sampling (Patton, 2002). Given our interest in identifying common patterns that cut across variations, this sampling strategy enabled us to purposefully identify teachers with a broad range of attributes and experiences working in 10 public schools from Madrid and Barcelona (the two main capital cities of Spain).

Variation was sought for gender, age, disciplinary background, teaching role, and type of contract. Participant schools were identified using snowball sampling. This sampling strategy allowed us to initially identify more than 50 schools, 10 of which agreed to participate during the 6-year of the study. Public schools were sought in our study, since public schools in Spain represent 67.2% of the educational institutions, with approximately 75% of the Spanish students enrolled in secondary education (MEFP, 2019). Besides, two out of 10 of these public schools are concentrated in Madrid and Barcelona (MEFP, 2019). Seventy-eight percent of the students with immigrant backgrounds attend public schools.

Table 1. Characteristics of the Study Participants ($N = 36$).

	Total
Mean age (*SD*)	45 (8.5)
Mean of years of teaching experience (*SD*)	17 (9.5)
Gender, *n* (%)	
Male	16 (44)
Female	20 (56)
Place of residence, *n* (%)	
Barcelona	14 (39)
Madrid	22 (61)
Teaching discipline, *n* (%)	
Arts and humanities	14 (39)
Science	7 (19)
Social sciences	9 (25)
Technology	6 (17)

Public schools in Spain, therefore guarantee heterogeneity of profiles, since they consist of students from different socioeconomic backgrounds.

Teachers were homogeneously distributed across 10 public schools located in the metropolitan areas of Madrid and Barcelona. Fifty-three percent of them were women (see Table 1). The mean age of participants was 45 years ($SD = 8.5$), and the mean of teaching experience was 17 years ($SD = 9.5$). Forty-four percent of the teachers were from the field of humanities (mainly teaching Spanish, Catalan, and English), 22% from science, 22% from the social sciences, and 11% from technology. Accordingly, 39% of them taught subjects related to humanities; 17% technology-related subjects; 19% scientific subjects, and 32% subjects related to the social sciences. Among the 36 teachers, 20% were course coordinators or worked as career advisors, and 64% were tutors for different compulsory secondary school courses, with at least 1 year of experience. Sixty-seven percent of them held a tenure-track position.

Procedure

Semi-structured interviews were held with the 36 teachers. Access to participants was achieved through the school principals, who informed them about the study and asked potential participants whether they were willing to be contacted by our research team to take part in the study. The study was approved by the IRB (Institutional Review Board) and informed consent and authorization to record the responses were previously obtained from the participants. The interview guide (based on the research questions and the review of the literature) had two sections. In the first section, teachers were shown a chart depicting the PISA results for Spain in science, math, and reading skills by gender and were asked a number of questions regarding gender differences in school achievement and how they explained these gender differences (i.e., to what extend are these gender gaps in PISA competences familiar to you? have you observed these gaps in your classroom? how do you tackle them? why do you believe that boys and girls have different performance in math, science, and reading?). All teachers were informed about the scale used to plot the PISA data (i.e., mean and level of competence).

The second section of the interview guide revolved around gender differences in the choice of studies and how teachers explained them (i.e., do you think that boys and girls have differential academic interests? how are these academic interests translated into different study and occupational choices? why do you believe that boys and girls develop different academic interests?). All interviews were conducted and audio-recorded by the first author of this study. The length of the interviews ranged from 50 to 75 minutes. Prior to conducting the interviews, written informed consent was obtained from the school administration and the participants.

Data Analysis

Interview data were coded and analyzed using thematic analysis. Boyatzis (1998) hybrid strategy was used to generate the coding scheme. Based on the combination of deductive theory-driven and inductive data-driven approaches to code development, this strategy enabled us to build on previous research and theory while, at the same time, to accurately capture the essence of topics identified in the interview data. The steps described by Boyatzis were followed. First, a list of a priori codes based on the literature and the research questions was generated. Second, a subsample of interviews was randomly selected and read multiple times by the first and second author. Third, after familiarization with the data, themes contained in the subsample were included in an interview summary. Summaries were then compared and common themes identified. Fourth, the resulting themes were converted in codes, assigned a definition, and merged with the initial list of a priori codes.

This merging exercise entailed, on the one hand, adjusting the inductive codes so they more accurately reflect the concepts of the literature and, on the other hand, retaining the a priori codes that referred to aspects not reported in the interviews. This process yielded a coding scheme in which the codes referred to R.Q.1 (assumptions that secondary school teachers make to tackle boys' and girls' different academic achievements) and R.Q.3 (evidence that secondary school teachers provide to address their view of boys' and girls' different study choices) were mainly inductive, whereas the codes related to R.Q.2 (the extent to which secondary teachers consider the role of school and other socializers in shaping boys' and girls' different academic achievements) and R.Q.4 (the extent to which secondary teachers recognize the role of school and other socializers when explaining boys' and girls' different academic and occupational interests) were mainly deductive. Fifth, following Neuendorf's (2011) recommendations, a pilot reliability test of the coding scheme

Table 2. Coding Categories and Descriptors for the Interviews With Secondary Teachers.

Research questions	Coding categories	Descriptors
RQ1.What type of assumptions do secondary school teachers make to tackle boys' and girls' different academic achievements?	Recognition of differences in PISA ($n = 15$)	Girls show better verbal comprehension than boys
	Gaps in school achievement ($n = 14$)	Girls get better grades at school than boys
	Disparities in school failure ($n = 5$)	Boys show more school failure than boys
RQ2. To what extent do secondary teachers consider the role of school and other socializers in shaping boys' and girls' different academic achievements?	Different school adaptation ($n = 10$)	Girls are well-adapted to school, whereas boys deploy a challenging behavior
	Influence of immediate social context ($n = 11$)	Influence of parents, peer-group, teachers, families, mass media, etc.
	Structure of school curriculum ($n = 4$)	The school curriculum favors gender differences in academic achievement
	Feminization of school ($n = 3$)	There is a higher number of female teachers and female students
	Differential maturity process ($n = 10$)	Girls mature earlier than boys, particularly in early secondary school years
	Causal attribution of academic success ($n = 6$)	Girls deploy more academic effort, while boys are associated with intelligence
	Attribution of differences of difficulty to subject areas ($n = 4$)	Scientific subjects are difficult, while language subjects are easy
RQ3. What type of evidence do secondary school teachers provide to address their view of boys' and girls' different study choices?	Different academic interests ($n = 16$)	Boys choose technology and vocational training, whereas girls choose humanities, and health and social sciences
	School activities congruent with gender roles ($n = 13$)	Boys get engaged in manual tasks, while girls lack of interest in technical tasks
RQ4. To what extent do secondary teachers recognize the role of school and other socializers when explaining boys' and girls' different academic and occupational interests?	Influence of significant others ($n = 13$)	Influence of parents, teachers, friends, or mass media
	School vs. labor market ($n = 7$)	Labor market discriminates women's access and career progress
	SES and cultural influences ($n = 9$)	Adjustment to social expectations of the reference group
	Ethnic effects ($n = 13$)	People from Latin America or Morocco having traditional values
	Devaluation of feminized titles ($n = 2$)	Humanities (feminized) vs. technological (masculinized) fields
	Unequal value of study and professional gateways ($n = 6$)	Arts are related to low prestige, while science and engineering are associated with high prestige

was conducted by the first and second author with six randomly selected interviews representing 15% of the full interview sample. During the test, discrepancies between the coders were used to amend the coding scheme and maximize common understanding and, as a result, coder reliability. The final coding scheme was composed by 17 codes that were organized around the study research questions. Lastly, a second reliability test was conducted after the first and second authors coded 33% of the interviews, yielding reasonable (with values ranging between .65 and 1) Kappa coefficients in all codes.

Results

Coding categories and descriptors associated with the four study research questions are presented in Table 2.

Teachers' Views of Gender Differences in Academic Achievement

Recognition of differences in PISA. When questioned about concrete PISA findings as a way to address R.Q.1 (teachers' assumptions of gender differences in school achievement), the majority of participants acknowledged that girls tend to score higher in reading comprehension than their male counterparts. However, they did not give much importance to the small gender difference in maths, which favored boys.

Gaps in school achievement. In addition, a considerable number of teachers also declared that girls get better academic marks in all subjects than boys, particularly during the first years of compulsory secondary school education.

"Girls have more developed all the verbal part and it facilitates both the verbal and writing expressions" (44 year-old female career advisor with 10 years of experience).

Disparities in school failure. However, few teachers explicitly recognized that school failure and abandonment were more frequent among boys.

"Right now we can observe that the gender gap in school achievement has turned down. Boys are currently the problem" (49 year-old female English teacher, with 15 years of experience).

Indeed, for some teachers, boys were the great losers of the educational system, but only two teachers suggested the implementation of compensatory measures to prevent boys' underachievement and academic failure. In this regard, these teachers perceived that these measures should not be grounded on gender segregation policies.

"Right now (. . .) Boys are currently the problem. I am very worried about this (. . .) Historically, several positive discrimination measures have been carried out to improve the situation of women. Maybe we should try to implement some measures to compensate boys in this regard (. . .), but without segregating boys and girls. . ." (49-year-old female English teacher with more than 15 years of teaching experience)

Different school adaptation. Nevertheless and responding to R.Q.2 (teachers' views of the role of school and other socializers in shaping gender differences in school achievements), almost half of the teachers believed that girls are better adapted to school during the first years of secondary school than their male counterparts. Being a good student was considered by some teachers a feminine value as opposed to the expected masculine image in a male adolescent. For some teachers, these behaviors were unintentionally encouraged by some colleagues. Strikingly, various teachers justified boys' poor adjustment to the demands of the educational system, saying that boys tended to be more absent-minded, irresponsible, immature, or lacked school discipline. Thus, for these teachers boys were more predisposed to disruptive attitudes toward school than girls. On the contrary, these teachers believed that girls behave more quietly and were, in general, better adapted to school values (i.e., they listen attentively or do not interrupt the classroom dynamics with their behavior).

"The developmental stage boys get through sometimes leads them to adopt challenging behaviours to settle down their role" (50 year-old male Spanish teacher, with 25 years of experience).

Influence of immediate social context. More than half of the teachers explicitly mentioned that gender differences in academic achievement were a result of the influence of the most immediate social contexts such as family, school, peers, or the mass media. The family's socioeconomic and cultural backgrounds therefore conditioned students' achievement. According to these teachers, parents from middle and upper classes provided children with more extra-curricular support, which favored their academic learning and achievement. In addition, these teachers perceived that boys were prompted by families to develop more action rather than reflection-oriented activities.

"By all means, this is a result of what they do in their homes and it could also be related to the roles they play since we still continue fostering the idea that boys are more involved in more dynamic, action- rather than reflection-oriented tasks" (39-year-old female science teacher with a degree in Biology and 9 years of teaching experience).

Structure of school curriculum. Similarly, some teachers associated gender differences in academic achievement with the structure and development of the school curriculum. They talked about the need to make the secondary school curricular programs more flexible and attractive for students, especially for boys, who easily disengage.

"Girls have a better predisposition to get integrated in our educational system, where showing serenity, persistence, and a neat presentation and expression are extremely valued" (51 year-old male Geography and History teacher, with 26 years of experience).

Feminization of school. Interestingly, only few participants suggested that the feminization of school might negatively influence boys' school adaptation.

"Men have the impression that good students are a bit 'cry baby', a bit feminine (. . .). Could it be due to the fact that most teachers are females and therefore we're teaching them in a biased way? It's possible that teaching is becoming more feminized." (49-year-old female English teacher with more than 15 years of teaching experience).

Differential maturity process. A great deal of teachers also believed that the fact that girls mature earlier than boys favored girls' positive attitude toward school and their adaptation to school demands. However, they believed that this gender gap seems to diminish as they grow up.

"The maturity process does not favour that boys can catch up with girls" (44 year-old female career advisor, with 10 years of experience)

Causal attribution of academic success. When talking about excellent students (i.e., academic success), some teachers attributed it to girls' higher predisposition to schoolwork. In this regard, teachers deemed girls to be very responsible or "busy bees." That is, girls' academic achievement was attributed more to effort than intelligence. On the reverse, several

teachers recognized the usual tendency to associate boys' good academic performance with intelligence.

> "Among teachers it was said 'This boy is intelligent, this girl is very hard-working'" (51 year-old male Geography and History teacher, with 26 years of experience).

Attribution of differences of difficulty to subject areas. In consonance with this, various metonymic allusions about the arts and sciences also emerged to attribute difficulty differences to subject areas. While a quarter of the teachers perceived science to be the most difficult field of knowledge (oriented to the brightest students), the arts were appraised as the easiest field (less demanding of intellectual competences).

> "If you are good you belong to science, that is, you are a good student" (34 year-old female English teacher, with 6 years of experience).

Teachers' Views of Gender Differences in Academic and Occupational Choices

Different academic interest. In order to respond to R.Q.3 (evidence provided by secondary school teachers to address gender differences in study choices), most teachers recognized that while girls were underrepresented in science and technology high school, boys were underrepresented in the humanities and social sciences. For some teachers, this gender gap was even wider among students enrolled in vocational training, where most of the courses had a highly masculine focus. But some teachers also acknowledged that science and technology disciplines also presented gender differences, with girls choosing to a higher extend health-related courses and boys technological ones.

> "Among science studies, girls choose the bio-medical branch, whereas boys the technological one" (36 year-old female Technology teacher, with 5 years of experience).

School activities congruent with gender roles. Interestingly, many teachers believed that students reproduced gender roles and engaged in school activities even when they made academic and occupational decisions. For technology teachers, boys and girls developed different roles in the classroom, especially when manipulative tasks were performed. According to these technology teachers, while boys tended to more likely perform manual tasks in the atelier, girls preferred dealing with other non-manual tasks (such as writing reports).

> "I have to fight against girls sitting with just girls and away from boys, and the same goes for boys (. . .) there is a division of roles in the atelier. Girls nearly always write the technical report and deal with the paperwork, whereas boys are in charge of construction activities" (36-year-old female technology teacher with a degree in Physical Science and 5 years of teaching experience).

On the other hand and aligned with R.Q.4 (teachers' views of the role played by school and other socializers when addressing gender differences in study choices), half of the teachers believed that students' academic and occupational expectations depend on the influence of significant others. The family was therefore identified as the primary agent in promoting gender differences in study choices, as long as they observed that students reproduced their parents' expectations and choices.

> "Boys are expected to gain economic success and assume the breadwinner role. Women, on the contrary, want to dedicate themselves to something that gives them the opportunity to reach stability." (34 year-old female English teacher, with 6 years of experience).

School versus labor market. Almost half of the teachers recognized that, in contrast to school, the labor market discriminated against women on the basis women were not expected to work in male-dominated occupations whereas men were expected to achieve professional goals. Therefore, congruent with these teachers' views, while boys looked for challenging jobs, girls searched jobs that were easily compatible with stability and raising a family.

> "If you look carefully, there are more women in the public sector and less in the private sector. Why? Because in the public sector nobody will look at them badly because they go on maternity leave" (36 year-old female Technology teacher, with 5 years of experience)

SES and cultural influences. However, some teachers affirmed that their students' choices depend to a high degree not only on the influence of both SES and cultural factors to adjust to social expectations of the reference group. According to them, families from different SES (especially those belonging to lower SES) and mass media enhanced the reproduction of gender roles. In addition, these teachers also mentioned that mass media promoted the development of unrealistic future expectations, mostly among adolescents with a low–intermediate SES. While some male students aspired to become football players, some girls aspired to become famous on TV.

> "People from low SES do not seek that women study; they want boys to study something and they dedicate economic efforts to achieve this" (50 year-old male Technical Drawing teacher, with 25 years of experience).

Ethnic effects. Furthermore, several teachers considered that this vocational segregation was particularly encouraged by families with a low SES and strong sexist values, like those with gypsy origins or coming from Morocco or Latin

America (i.e., Ecuador or Peru). In this regard, these teachers believed that it was very rare that girls from those families continued their education beyond compulsory secondary schooling. Congruently with these teachers, these girls were therefore expected to raise a family or provide economic or domestic support to the extended family. Teachers acknowledged feeling helpless in the face of these circumstances.

> "Many families from Morocco and Latin-America think that girls once they have completed compulsory secondary education are ready to get married" (34 year-old female English teacher, with 6 years of experience).

Devaluation of feminized academic titles. Finally, few teachers explicitly endorsed that highly feminized academic titles were undervalued. Thus, it was believed that "masculine studies" were more highly valued because they were associated with difficulty, prestige, respect, and authority, whereas "feminine studies" were related to the opposite. In fact, these few teachers assumed that this differential pattern of social appraisal reinforced the preponderance of the masculine model of professional success.

> "Feminized studies are attached a lower value. A job becomes devalued as it gets feminized" (50 year-old male History teacher, with 26 years of experience).

Unequal Value of Study and Professional Gateways

In this regard, some teachers recognized that among teachers scientific gateways are more prestigious than arts and humanities and that the best students were recommended to pursue the scientific branches.

> "I have had brilliant students who wanted to go for arts, but due to social pressures they ended up going for the scientific track" (41 year-old female French and English teacher, with 12 years of experience).

Discussion

This qualitative study reflects upon the important role that the distribution of gender roles for men and women plays in secondary school teachers' views of students' achievements and aspirations (Riley, 2014; Sáinz et al., 2012). It contributes to the understanding of the links between students' gendered outcomes as well as the role that teachers believe they play in shaping young people's achievements and interests. Also, one of the strengths of this study has to do with the analysis of how teachers perceive the reasons behind current gender differences in school achievement (i.e., the feminization of school; gender differences in causal attribution regarding academic success; differential maturity process for boys and girls; or school curriculum favoring those gender differences) and study choices (i.e., the influence of significant others; SES and cultural influences; the devaluation of feminine titles, or the unequal value of academic and professional gateways—Arts vs. science titles) during secondary school. Furthermore, this research provides empirical evidence on the tendency of some teachers to associate girls' higher school achievement with differential socialization practices employed by different agents.

While teachers recognized a higher responsibility of school in shaping gender differences in academic achievement, they also placed the responsibility outside school (through cultural beliefs) in conditioning gender differences in study choices. In this regard, they attached a great deal of value to the socialization of gender at school as a way of explaining gender disparities in academic achievement and boys' tendency to underachieve. Interestingly, teachers attached less value to the impact of school on boys' and girls' vocational segregation. This may suggest that while they feel they play a direct role in shaping boys' and girls' academic achievement, their responsibility in shaping gender differences in study choices is more scattered.

Teachers' Appraisals of Gender Differences in Academic Achievement

In line with previous research (Butler, 2014; Farkas & Leaper, 2016; Orr, 2011; Sáinz et al., 2012; Timmermans et al., 2016; Wang & Hall, 2018), a considerable number of teachers unintentionally seemed to expect more positive behaviors toward school from girls than from boys. Most teachers assumed that girls score better than boys in most subject areas, particularly in reading comprehension. For some teachers, boys' weakness in reading comprehension could explain their lower academic achievement. Interestingly and in consistence with research on attribution theory, they developed a kind of "benevolent sexism" toward boys' underachievement, as they attributed boys' lack of effort and interest in school values to their immaturity and other non-internal causes such as lack of academic discipline (Arbeau & Coplan, 2007). This finding suggests that many teachers tend to base their expectations of boys and girls on how they perceive them to behave rather than on their actual behavior in the classroom (Timmermans et al., 2016).

Congruently with motivation research drawing on gender socialization (Butler, 2014; Eccles, 2015; Eccles et al., 1999), most of the participant teachers perceived a higher misfit among boys than among girls. Additionally, and in support of research based on the EVT theory, some of the teachers contributed to reinforce the stereotypical belief regarding boys' lack of interest in attaining good academic outcomes (Farkas & Leaper, 2014). Besides, several teachers perceived that boys represent the two extremes of a continuum: there are boys among the group of students with low performance and the students with high achievement. This biased perception of boys' performance may have negative consequences for those in the middle of that continuum, not identified neither

as low nor as high achievers. Interestingly and in light of research on gender differences in scholastic achievement (Pahlke et al., 2014; Schleicher, 2019; Voyer & Voyer, 2014), some teachers agreed on the importance that measures to tackle gender differences in school achievement should not support sex-segregated education.

Likewise, teachers' opinions' suggest how social pressures on adolescents to conform to traditional roles may help explain why gender differences in cognitive abilities sometimes become more noticeable as children enter adolescence (Eccles & Wigfield, 2002). This finding confirms the results of another research performed in Spain, where parents and secondary teachers considered that gender differences where more salient at the beginning of puberty when students start compulsory secondary education (Sáinz et al., 2020).

Similar to other studies, the findings reveal that gender pressures affect teachers' and students' school values (Heyder & Kessels, 2013; Jussim et al., 1996; Mickelson, 1989). While the prevalent masculine role in our society disheartens boys to succeed in schools, the feminine role urges girls to have satisfactory academic outputs (Farkas & Leaper, 2016; Mickelson, 1989; Orr, 2011). These gender socialization may also result in boys showing disruptive behaviors as well as negative attitudes about school (Farkas & Leaper, 2016; Orr, 2011). In congruence with other empirical research (Harris & Harper, 2008; Schleicher, 2019), some teachers also perceived that boys' manifestation of disruptive behavior is the norm at this age. However, if all of this is true, teachers did not comment on possible ways to compensate boys' negative attitudes and change the beliefs that associate school with "a girl thing."

For some teachers, the family's socioeconomic background also had a great deal of influence on students' academic outcomes (Riley, 2014; Sáinz & Müller, 2018). This issue was particularly raised by teachers with teaching experience in schools located in unfavorable socioeconomic environments. In line with empirical research (Asadullah et al., 2019; Sáinz & Müller, 2018), many participants perceived that families with strong traditional values (i.e., Latin-American, Asian, or North-African, or with gypsy origins) were more likely to encourage girls to leave school even before they complete secondary school. Strikingly, some of these families also tended to invest resources in encouraging boys (not girls) to continue beyond compulsory secondary school. This finding confirms research from developing OECD countries (Asadullah et al., 2019; Islam & Asadullah, 2018), where parents tend to give priority to boys' education.

It is also noteworthy that some teachers, particularly in the field of technology, wondered how the way they teach could facilitate the distribution and reproduction of gender roles. This finding corroborates the results of another qualitative study carried out in Spain with teachers and parents, where technology teachers were particularly worried about the presence of these gender gaps within the classroom dynamics (Sáinz et al., 2020). Thereby, it would be worth delving more into how the current academic structure and curriculum across different subject areas promote the preponderance of these gender roles in the classroom. Also, teachers' own gender socialization could also play a major role in the way they perceive and construct gender in classroom dynamics. It is also remarkable to observe how, contrary to research carried out in other contexts (Heyder & Kessels, 2013), only a few teachers mentioned that the feminization of school could be a major factor conditioning gender differences in academic achievement. This also could be associated with the fact that, in Spain, secondary school teaching is not as feminized as primary school teaching (MECD, 2017; MEFP, 2020).

In several instances, some teachers tended to attribute boys' underachievement to their maturity. However, they explained girls' overall achievement in terms of effort (Butler, 2014; Eccles et al., 1999; Jussim et al., 1996; Tiedemann, 2000). This predisposition in teachers to explain achievement as a result of intelligence and effort could also have an impact on the way students think about the malleability or non-malleability of their intellectual capacities (Dweck & Molden, 2007). It could, however, also be a sign of teachers' lack of recognition of their role in polishing these gender differences with their opinions, attitudes, and behaviors. Besides, some teachers thought that girls' early maturity favors their achievement because they are more responsible and attentive to teachers' instruction.

Congruent with research based on attribution theory, while boys are attributed to high intellectual competence when they show excellent academic outputs, girls are generally perceived as better adapted to the educational system (Jussim et al., 1996; Leaper & Brown, 2014; Timmermans et al., 2016). This differential attribution pattern of academic excellence for boys and girls may have important implications for the formation of students' attributions as well as other motivation indicators, such as students' self-perception of competence in the different subject areas (Eccles & Wigfield, 2002; Wang & Hall, 2018). This adaptation capability in girls was linked to unstable internal causes such as hard work or effort, but not to intelligence (Butler, 2014; Dweck & Molden, 2007). Consequently, teachers might foster the development of a "helpless" achievement orientation in students (particularly to girls) if they praise them for working hard when they succeed but criticize their lack of ability when they fail (Dweck & Molden, 2007). However, teachers might promote the development of a mastery-oriented strategy in boys since they attribute boys' excellence to their intelligence (Dweck & Molden, 2007).

Finally, some teachers talked in terms of arts versus science when discussing the prevalence of gender differences in academic achievement. This reductionist view of the available academic potential simplifies a complex phenomenon that revolves around the dissimilar value attached to the available subject areas and associated occupational paths

(López-Sáez et al., 2011). Arts-related subjects are associated with less prestige than scientific subjects because of the limited job gateways and lower difficulty in terms of ability, intelligence, and effort (Sáinz, 2020; Sáinz et al., 2012). In contrast, science-related subjects are attached more prestige, given the associated numerous job opportunities and difficulty (López-Sáez et al., 2011; Sainz et al., 2019; UNESCO, 2018). This dissimilar value attached to the different academic pathways has important practical implications since women in Spain are highly represented in arts-related disciplines, whereas men outnumber women in many science-related disciplines (MEFP, 2020).

Teachers' Appraisals of Gender Differences in Study Choices

Most teachers were aware of the vocational segregation and believed that this gender gap is wider in the 2 years of secondary school before university when students have already chosen from a different set of academic options (MEFP, 2020; Sáinz, 2020). However, not all teachers contemplated how academic interests were strongly shaped by gender role expectations (Eccles & Wigfield, 2002). Interestingly, and congruently with previous research conducted in Spain (Sáinz et al., 2012), few of the participants recognized their role in the reproduction of gender roles in study choices.

Some teachers believed that different forces (e.g., family, peers, or the mass media) played a role in shaping girls' and boys' future aspirations (Eccles, 2015; OECD, 2019). This gender socialization process therefore implies that boys develop a higher interest in masculine-type subject areas such as science or mathematics, whereas girls are encouraged to excel in subject areas traditionally associated with the feminine gender role like the ones related to arts and humanities (Eccles et al., 1999; Leaper & Brown, 2014). In many instances, teachers unintentionally justified these expectations for boys and girls and did not reflect on how this could affect students' learning and academic trajectories. However, in line with previous research in the Spanish context, they believed that parents play the most influential role in shaping secondary school students' decisions (Sáinz et al., 2012, 2020). Likewise, it is worth highlighting the recognition of the insignificant role that for many teachers the school context and secondary teachers play in shaping young people's gendered study choices.

Consistent with previous research carried out in Spain, teachers recognized that the labor market discriminates more than the educational setting (Sáinz et al., 2012). However, this assumption should not excuse their responsibility in combating the reproduction of gender roles in the choice of studies and occupations. Moreover, families' socioeconomic and cultural backgrounds played an important role in the different life decisions that boys and girls make. In support of motivation research drawing on gender socialization in Western cultures (Eccles & Wigfield, 2002; Farkas & Leaper, 2016; Sáinz & Müller, 2018), many teachers also admitted that parents from cultures and ethnical groups with a traditional division of labor tend to encourage girls to engage in nurturance activities.

According to several teachers, and congruently with empirical research (Wille et al., 2018), the influence of the mass media may also reinforce the acquisition of gender roles and the development of unrealistic aspirations. More concretely, for these teachers, some TV programs in Spain targeting young people tend to transmit opposite values to the ones taught in school, based on effort and self-determination. However, few of the participating teachers explicitly reflected on concrete actions to be performed (e.g., that TV serials portray the actual tasks that professionals across different fields develop) in order to counterbalance the influence of the mass media on the acquisition of unrealistic academic and occupational expectations, and fight against existing gender roles and stereotypes.

Consistently with other studies (Cejka & Eagly, 1999; Ochsenfeld, 2014), it is interesting to observe that a small number of teachers discussed about the fact that feminized titles like education or humanities tend to be associated less social value. For this reason, those titles are considered less prestigious and academically challenging. In fact, for some teachers, the greater prestige attached to scientific fields and the associated professional gateways encourages that some colleagues guide the brightest students to choose scientific studies and professions.

Study Limitations

This study has several limitations. First, despite we aimed for the diversity of participants in terms of their characteristics and experiences, the sample of secondary teachers is not necessarily representative of the universe of secondary school teachers working in Spain. Consequently, scholars must be careful with the potential transferability of the findings to secondary teachers with other educational and cultural backgrounds or working in other educational settings. Second, the findings are exploratory in nature; therefore, further quantitative research is required to elaborate and corroborate the observed conclusions with a broader sample of secondary teachers. Third, since the views expressed by the teachers were identified from the interview questions and not from a predefined set of items, we could not specify the endorsement of every particular teacher to each concrete theme. Thereby, the fact that teachers did not explicitly express an opinion on an issue does not necessarily mean that they did not endorse that view.

Intervention Guidelines and Future Research

The present study suggests that interventions should be designed to fight against teachers' gendered views that can negatively affect their students' achievement and choices. It

is necessary to design a vocational guidance strategy that incorporates personal, social, academic, and vocational experiences that could limit the effects of gender socialization at schools on the reproduction of gender roles accordingly to the groups of origin. This strategy should also engage parents and other community actors, including the mass media. Furthermore, and provided that the measurement of school performance may not only be based on actual grades but also students' attitudes, secondary school teachers must receive gender-sensitive training throughout their professional development to overcome the influence of gender biases when evaluating students' achievement.

On the other hand, the teachers' discourse proposes that the stereotypical portrayal of being a "good student" corresponds more easily with attitudes and behaviors deployed by girls and students from families with an intermediate SES. However, students from low socioeconomic backgrounds (particularly boys) are more likely to have lower academic performance. This suggests that future research should consider the intersection of gender and SES in the study of academic achievement.

Future studies should also incorporate more qualitative research in the analysis of gender differences in school achievement and study choices. Moreover, future studies should work on identifying effective means to prevent and minimize gender-biased attitudes and behavior in the learning and teaching process. In line with Bigler et al. (2013), future research is also needed to incorporate teachers' views on the experiences of children who do not conform to traditional gender roles (e.g., children with same-sex parents or who are transgendered). It will be also interesting that future research analyzes the extent to which secondary teachers' views converge or not with the ones held by students.

Since most of the literature on these issues has been done in the context of Western societies, more cross-cultural research is needed focused on how secondary teachers from different cultures perceive their role in reducing existing gender differences in school achievement and study choices. This could provide insightful results on the influence of cultural and gender role beliefs on the choice of studies and occupations.

Finally, given the potential influence of teachers' appraisals upon learners' perceptions of themselves and each other, increased effort needs to be made to ensure teachers understand how their biases may influence the decisions about and the treatment of learners. In this regard, current pedagogy might incorporate gender-relevant curricula that engage boys and girls equally in the different subject areas. Similarly, future research should tackle the role that teachers' training with a gender perspective may have on reducing or not gender differences in students' school achievement and study choices. Eventually, more research about the extent to which the educational setting is less discriminatory than the labor market in Spain would be desirable.

Acknowledgments

The authors would like to thank the participant teachers for their valuable contributions.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research is part of a broader research financed by the Spanish Ministry of Science and Innovation (FEM2011-24117).

ORCID iD

Milagros Sáinz https://orcid.org/0000-0003-4803-1597

References

Arbeau, K. A., & Coplan, R. J. (2007). Kindergarten teachers' beliefs and responses to hypothetical prosocial, asocial, and antisocial children. *Merrill-Palmer Quarterly*, *53*, 291–318. https://doi.org/10.1353/mpq.2007.0007

Asadullah, M. N., Amin, S., & Chaudhury, N. (2019). Support for gender stereotypes: Does Madrasah education matter? *The Journal of Development Studies*, *55*, 39–56.

Bigler, R., Hayes, A., & Hamilton, V. (2013). The role of schools in the early socialization of gender differences. In C. Martin, R. E. Tremblay, M. Boivin, & R. D. Peters (Eds.), *Encyclopedia of early childhood development* (pp. 14–17). Centre of Excellence for Early Childhood Development and Strategic Knowledge Charter on Early Childhood Development.

Blumberg, R. L. (2015). *Eliminating gender bias in textbooks: Pushing for policy reforms that promote gender equity in education*. Retrieved December 23, 2020, from https://unesdoc.unesco.org/ark:/48223/pf0000232452

Bol, L., & Berry, R. Q., III. (2005). Secondary mathematics teachers' perceptions of the achievement gap. *The High School Journal*, *88*(4), 32–45. https://doi.org/10.1353/hsj.2005.0007

Bowe, A. G., Desjardins, C. D., Covington Clarkson, L. M., & Lawrenz, F. (2017). Urban elementary single-sex math classrooms: Mitigating stereotype threat for African American girls. *Urban Education*, *52*(3), 370–398. https://doi.org/10.1177/0042085915574521

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. SAGE.

Butler, R. (2014). Motivation in educational context. Does gender matter? In L. Liben & R. Bigler (Eds.), *Advances in child development and behavior, vol. 47: The role of gender in educational contexts and outcomes* (pp. 1–41). Elsevier.

Cejka, M. A., & Eagly, A. H. (1999). Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Personality and Social Psychology Bulletin*, *25*(4), 413–423. https://doi.org/10.1177/0146167299025004002

Dweck, C. S., & Molden, D. C. (2007). Self-theories: Their impact on competence motivation and adquisition. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 122–140). The Guilford Press.

Eccles, J. (2011). Gendered educational and occupational choices: Applying the Eccles et al. model of achievement-related choices. *International Journal of Behavioral Development*, *35*(3), 195–201. https://doi.org/10.1177/0165025411398185

Eccles, J. S. (2007). Where are all the women? Gender differences in participation in physical science and engineering. In S. J. Ceci & W. M. Williams (Eds.), *Why aren't more women in science? Top researchers debate the evidence* (pp. 199–210). American Psychological Association.

Eccles, J. S. (2015). Gendered socialization of STEM interests in the family. *International Journal of Gender, Science and Technology*, *7*(2), 116–132.

Eccles, J. S., Barber, B., & Jozefowicz, D. (1999). Linking gender to educational occupation, and recreational choices: Applying the Eccles et al model of achievement-related choices. In W. B. Swann, J. H. Langlois, & L. A. Gilbert (Eds.), *Sexism and stereotypes in modern society: The gender science of Janet Taylor Spence* (pp. 153–192). APA Press.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values and goals. *Annual Review of Psychology*, *53*, 109–132. https://doi.org/10.1146/annurev.psych.53.100901.135153

Espinoza, P., Arêas da Luz Fontes, A. B., & Arms-Chavez, C. J. (2014). Attributional gender bias: Teachers' ability and effort explanations for students' math performance. *Social Psychology of Education*, *17*, 105–126. https://doi.org/10.1007/s11218-013-9226-6

European Institute for Gender Equality (EIGE). (2020). *Gender mainstreaming*. https://eige.europa.eu/gender-mainstreaming/countries/spain [Date of consult: June 9, 2020].

European Parliament. (2020). *Education and employment of women in science, technology and the digital economy, including AI and its influence on gender equality*. https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_STU(2020)651042 [Date of consult: April 30, 2020].

Eurostat. (2016). *Europe 2020 education indicators in 2015*. Retrieved June 16, 2017, from http://europa.eu/rapid/press-release_STAT-16-1590_en.htm

Farkas, T., & Leaper, C. (2014). Is having an older brother or older sister related to young siblings' gender typing? A meta-analysis. In P. J. Leman & H. Tenenbaum (Eds.), *Gender and development* (Current issues in developmental psychology, pp. 63–77). Psychology Press.

Farkas, T., & Leaper, C. (2016). The psychology of boys. In Y. J. Wong & S. R. Wester (Eds.), *APA handbook of men and masculinities* (pp. 357–387). American Psychological Association.

Hadjar, A., Krolak-Schwerdt, S., Priem, K., & Glock, S. (2014). Gender and educational achievement. *Educational Researcher*, *56*, 117–125. https://doi.org/10.1080/00131881.2014.898908

Harris, F., III, & Harper, S. R., III. (2008). Masculinities go to community college: understanding male identity socialization and gender role conflict. In J. Lester (Ed.), *Gendered perspectives in community colleges. New directions for community colleges* (pp. 25–35). Jossey-Bass.

Heyder, A., & Kessels, U. (2013). Is school feminine? Implicit gender stereotyping of school as a predictor of academic achievement. *Sex Roles*, *69*(11–12), 605–617. https://doi.org/10.1007/s11199-013-0309-9

Heyder, A., Steinmayr, R., & Kessels, U. (2019). Do teachers' beliefs about math aptitude and brilliance explain gender differences in children's math ability self-concept? *Frontiers in Education*, *4*, 183–217. https://doi.org/10.3389/feduc.2019.00034

Hyde, J. S., & Kling, K. C. (2001). Women, motivation, and achievement. *Psychology of Women Quarterly*, *25*(4), 364–378. https://doi.org/10.1111/1471-6402.00035

Islam, K., & Asadullah, M. N. (2018). Gender stereotypes and education: A comparative content analysis of Malaysian, Indonesian, Pakistani and Bangladeshi school textbooks. *PLoS ONE*, *13*(1), e0190807. https://doi.org/10.1371/journal.pone.0190807

Johnson, C. C., Mohr-Schroeder, M. J., Moore, T. J., & English, L. D. (2020). *Handbook of research on STEM education*. Routledge.

Jussim, L., Eccles, J. S., & Madon, S. (1996). Social perception, social stereotypes, and teacher expectations: Accuracy and the quest for the powerful self-fulfilling prophecy. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 281–388). Academic Press.

Kahlke, R. M. (2014). Generic qualitative approaches: Pitfalls and benefits of methodological mixology. *International Journal of Qualitative Methods*, *13*, 37–52. https://doi.org/10.1177/160940691401300119

Lambert, V. A., & Lambert, C. E. (2012). Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research*, *16*(4), 255–256.

Leaper, C., & Brown, C. S. (2014). Sexism in schools. In L. Liben & R. Bigler (Eds.), *Advances in child development and behavior* (pp. 189–223). Academic Press.

Legewie, J., & DiPrete, T. A. (2012). School context and the gender gap in educational achievement. *American Sociological Review*, *77*(3), 463–485. https://doi.org/10.1177/0003122412440802

López-Navajas, A. (2015). *Las mujeres que nos faltan. Análisis de la ausencia de las mujeres en los manuales escolares [The women we lack. Analysis of the dearth of women in school textbooks]* [Doctoral dissertation]. http://hdl.handle.net/10550/50940 [Date of consult: June 9, 2020].

López-Sáez, M., Puertas, S., & Sáinz, M. (2011). Why don't girls choose technological studies? Adolescents' stereotypes and attitudes towards studies related to medicine or engineering. *The Spanish Journal of Psychology*, *14*(1), 74–87. https://doi.org/10.5209/rev_SJOP.2011.v14.n1.6

Martínez-Enguita, M. F., Martínez, L. M., & Gómez, J. R. (2010). *Fracaso y abandono escolar en España [School failure and abandonment in Spain]*. Fundación La Caixa.

MECD [Spanish Ministry of Education]. (2017). *Enseñanzas no universitarias [Non-university studies]*. Retrieved June 16, 2017, from http://www.mecd.gob.es/servicios-al-ciudadano-mecd/estadisticas/educacion/no-universitaria.html

MEFP [Spanish Ministry of Education]. (2019). *Data and figures of academic course 2019-2020*. https://sede.educacion.gob.es/publiventa/datos-y-cifras-curso-escolar-20192020/ensenanza-estadisticas/23109 [Data of consult: June 18, 2020].

MEFP [Spanish Ministry of Education]. (2020). *Equality in figures*. https://www.educacionyfp.gob.es/dam/jcr:914e956e-9241-49c5-b9a6-d99d6eade751/igualdad-en-cifras-2020-online.pdf [Date of consult: April 21, 2020].

Mickelson, R. A. (1989). Why does Jane read and write so well? The anomaly of women's achievement. *Sociology of Education*, *62*(1), 47–63. https://doi.org/10.2307/2112823

Neuendorf, K. A. (2011). Content analysis—a methodological primer for gender research. *Sex Roles*, *64*(3–4), 276–289. https://doi.org/10.1007/s11199-010-9893-0

Ochsenfeld, F. (2014). Why do women's fields of study pay less? A test of devaluation, human capital, and gender role theory. *European Sociological Review*, *30*, 536–548. https://doi.org/10.1093/esr/jcu060

OECD. (2017). *Spain. Country note. Results from PISA 2012*. Retrieved June 16, 2017, from http://www.oecd.org/pisa/key-findings/PISA-2012-results-spain.pdf

OECD. (2019). *PISA 2018 results (volume II): Where all students can succeed?* https://www.oecd-ilibrary.org/docserver/f54b6a75-en.pdf?expires=1594133676&id=id&accname=guest&checksum=7B2241F1E89CD855321BE2008B455073 [Data of consult: July 9, 2020].

Orr, A. J. (2011). Gendered capital: Childhood socialization and the "boy crisis" in education. *Sex Roles*, *65*(3–4), 271–284. https://doi.org/10.1007/s11199-011-0016-3

Pahlke, E., Hyde, J. S., & Allison, C. M. (2014). The effects of single-sex compared with coeducational schooling on students' performance and attitudes: A meta-analysis. *Psychological Bulletin*, *140*, 1042–1072.

Papadakis, S. (2018). Gender stereotypes in Greek computer science school textbooks. *International Journal of Teaching and Case Studies*, *9*, 48. https://doi.org/10.1504/IJTCS.2018.090196

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). SAGE.

Riley, T. A. (2014). Boys are like puppies, girls aim to please: How teachers' gender stereotypes may influence student placement decisions and classroom teaching. *Alberta Journal of Educational Research*, *60*(1), 1–21.

Sáinz, M. (2020). *Brechas y sesgos de género en la elección de estudios STEM. ¿por qué ocurren y cómo actuar para eliminarlas? [Gender gaps and biases in the choice of STEM. Why they occur and how to act to eradicate them?]*. Centro de Estudios Andaluces.

Sáinz, M., Fàbregues, S., & Solé, J. (2020). Parents' and teachers' depictions of gender gaps in secondary students' appraisals of their academic competences. *Frontiers in Psychology*, *11*, 573752. https://doi.org/10.3389/fpsyg.2020.573752

Sáinz, M. & Eccles, J. (2012). Self-concept of computer and math ability: Gender implications across time and within ICT studies. *Journal of Vocational Behavior*, *80*(2), 486–499. https://doi.org/10.1016/j.jvb.2011.08.005

Sáinz, M., Martínez-Cantos, J. L., Rodó-de-Zárate, M., Romano, M. J., Arroyo, L. & Fàbregues, S. (2019). Young Spanish people's gendered representations of people working in STEM. A qualitative study. *Frontiers in Psychology*, *10*, 996. https://doi.org/10.3389/fpsyg.2019.00996

Sáinz, M., & Müller, J. (2018). Gender and family influences on Spanish students' aspirations and values in stem fields. *International Journal of Science Education*, *40*(2), 188–203. https://doi.org/10.1080/09500693.2017.1405464

Sáinz, M., Pálmen, R., & García-Cuesta, S. (2012). Parental and secondary school teachers' perceptions of ICT professionals, gender differences and their role in the choice of studies. *Sex Roles*, *66*(3–4), 235–249. https://doi.org/10.1007/s11199-011-0055-9

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, *23*(4), 334–340.

Schleicher, A. (2019). *PISA 2018: Insights and interpretations*. https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf [Data of consult: June 9, 2020].

Steele, C. M. (1997). A Threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, *52*(6), 613–629. https://doi.org/10.1037/0003-066X.52.6.613

Tiedemann, J. (2000). Gender-related beliefs of teachers in elementary school mathematics. *Educational Studies in Mathematics*, *41*(2), 191–207. https://doi.org/10.1023/A:1003953801526

Timmermans, A. C., de Boer, H., & van der Werf, M. P. C. (2016). An investigation of the relationship between teachers' expectations and teachers' perceptions of student attributes. *Social Psychology of Education*, *19*, 217–240. https://doi.org/10.1007/s11218-015-9326-6

Tourón, J., Navarro-Asencio, E., Lizasoain, L., López-González, E., & García-San Pedro, M. J. (2019). How teachers' practices and students' attitudes towards technology affect mathematics achievement: Results and insights from PISA 2012. *Research Papers in Education*, *34*(3), 263–275. https://doi.org/10.1080/02671522.2018.1424927

UNESCO. (2018). *Cracking the code. Girls' and women's education in science, technology, engineering and mathematics (STEM)*. https://unesdoc.unesco.org/ark:/48223/pf0000253479>.56 [Date of consult: April 20, 2018].

Upadyaya, K., & Eccles, J. (2015). Do teachers' perceptions of children's math and reading related ability and effort predict children's self-concept of ability in math and reading? *Educational Psychologist*, *35*(1), 110–127. https://doi.org/10.1080/01443410.2014.915927

Vaillo, M. (2016). La investigación sobre libros de texto desde la perspectiva de género: ¿hacia la renovación de los materiales didácticos? / Research on textbooks from a gender perspective: Towards the renovation of educational materials. *Tendencias Pedagógicas*, *27*, 97–124. https://doi.org/10.15366/tp2016.27.003

Voyer, D., & Voyer, S. D. (2014). Gender differences in scholastic achievement: A meta-analysis. *Psychological Bulletin*, *140*, 1174–1204. https://doi.org/10.1037/a0036620

Wang, H., & Hall, N. C. (2018). A systematic review of teachers' causal attributions: Prevalence, correlates, and consequences. *Frontiers in Psychology*, *9*, 2305–2327. https://doi.org/10.3389/fpsyg.2018.02305

Warren, K., Mitten, D., D'Amore, C., & Lotz, E. (2019). The gendered hidden curriculum of adventure education. *Journal of Experiential Education*, *42*(2), 140–154. https://doi.org/10.1177/1053825918813398

Wille, E., Gaspard, H., Trautwein, U., Oschatz, K., Scheiter, K., & Nagengast, B. (2018). Gender stereotypes in a children's television program: Effects on girls' and boys' stereotype endorsement, math performance, motivational dispositions, and attitudes. *Frontiers in Psychology*, *9*, 2435. https://doi.org/10.3389/fpsyg.2018.02435