



The development of social science motivation across the transition to high school education

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Abstract

The present four-wave longitudinal study examines the cross-lagged associations between adolescent students' intrinsic value, self-concept of ability, and expectations in social sciences during and after the transition from compulsory secondary education to the Spanish high school. 2,032 students enrolled in the last three years of secondary school and the second year of high school education participated. The analyses showed that the associations between the different motivational dimensions declined during the transition to high school education. In addition, students' self-concept of ability strongly predicted the other two aspects of motivation. Moreover, males and students from higher SES backgrounds and with high academic performance at the beginning of the study experienced higher intrinsic value, self-concept, and expectations in social sciences than females and students from lower SES families and with a lower level of performance. The results are discussed from the viewpoint of their theoretical and practical implications related to youth motivation and career planning.

Keywords Self-concept of ability · Intrinsic value · Expectancies · Performance · Social sciences

Introduction

Most research on cross-lagged associations between different aspects of motivation (e.g., self-concept of ability, task values, and expectancies) has been conducted with a focus on STEM disciplines such as engineering, physical science, or computer science, which have a significant underrepresentation of women. However, research in the field of social sciences has been neglected by contemporary literature, despite the fact that the development of motivation is domain specific (Chow & Salmela-Aro, 2011; Marsh et al., 2004; Marsh et al., 2015), and despite the significant role that social science disciplines play in both educational and occupational settings. For instance, the subject area of social sciences plays a major role in the secondary and university education curricula (MEFP, 2020).

In Spain, during the 2017–2018 academic year, the social sciences pathway at the high school level agglutinated approximately 35% of all high school enrollments. Moreover, girls represented 54.9% of the enrollments in the social sciences high school track (MEFP, 2020).

On the other hand, during the 2018–2019 academic year, 58.3% of the graduates in Spain earned a university degree in the fields of law and social sciences (MEFP, 2020). In addition, across social sciences a disparity of participation among women can be observed. Whereas women are highly represented in the fields of education (83.3%) and psychology (73.21%), the share of women's enrollments in the studies of economy (41.24%) is lower than that of their male counterparts. Similarly, participation by women in law (55.26%) and sociology, social and cultural anthropology (56.46%) is equal to that of their male counterparts (MEFP, 2020).

All these data supply information on the important role that social sciences play in educational settings and suggest that social science disciplines provide significant contributions to different societal problems. In the current pandemic context, the perspective of social science disciplines is crucial in providing insightful solutions to emerging social, educational, health, and economic problems derived from the current health emergency (Sharp et al., 2020).

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Theoretical framework: expectancy-value theory

According to the Expectancy-Value Theory (EVT), motivation can be divided into two components: ability beliefs (expectancies) and subjective task values (Eccles & Wigfield, 2020). Students will thereby pursue studies they think they can master and that have a high value for them (Eccles & Wigfield, 2020). However, being capable or good at a given subject area does not necessarily mean that students will pursue that subject area or enjoy it (Wang & Degol, 2013). That is, ability self-concept is a necessary but not sufficient predictor of academic and career choices (e.g. Updegraff et al., 1996; Wang, 2012; González-Nuevo et al., 2023). Eccles and colleagues (Eccles & Wigfield, 2020; Wigfield et al., 1997; Wigfield et al., 2020) found that domain-specific expectations for success and ability self-concepts load on the same factor and, therefore, can be treated empirically as the same construct. This ability/expectancy/competence factor refers to perceptions of how talented students are at a task (present expectation) and how well they think they will do at a task (future expectation). That is, “I am good at math, so I can succeed in engineering.” In this study we have used this double connotation (the self-perception of ability and the expectation of success) in the domain of social sciences.

On the other hand, the task value component includes other four sub-components: intrinsic, utility, importance, and cost (Eccles & Wigfield, 2020). Whereas the intrinsic or attainment value refers to how much the students like the task, the utility value refers to how useful the task is for what the students would like to do in the future, the importance value refers to how important is the task, and the perception of psychological costs of getting involved in those tasks (Wigfield et al., 2020).

Although expectations for success (i.e. competence-related beliefs) and subjective task values are distinct factors, they are correlated (Eccles & Wigfield, 2020). Therefore, students tend to value those domains (i.e., social sciences) in which they feel competent (Eccles & Wigfield, 2020; Wigfield et al., 2020). Moreover, both factors typically predict achievement-related outcomes. Expectations for success are more strongly tied to performance. For instance, students who believe they will do well in social sciences tend to get higher grades in social sciences than students who do not expect to do well in the same domain. However, task values are more strongly linked to achievement-related choices. For example, students who value social sciences are more likely to take advanced social sciences courses than students who do not value social sciences.

Given that EVT highlights the major role of competence-related beliefs and values in explaining motivation (Eccles & Wigfield, 2020), in the present study we have focused on the

intrinsic (interest) value as representative of the subjective value. In addition, the two constructs of the expectancy component (the expectation for success and self-concept of ability) are also the target of this research. In comparison to self-concept of ability, the expectancy of success construct has been used less frequently in the literature on motivation. The present study aims to fill this research gap through a longitudinal analysis of both conceptualizations of the expectancy component.

Longitudinal associations across motivation

Models containing reciprocal effects between the target variables have been systematically conducted in recent research to show causal effects over time (Kearney, 2017; Wigfield et al., 2020; Zee et al., 2021). More specifically, empirical studies based on this method have shown that academic self-concept is both a cause and an effect of achievement (i.e., Denissen et al., 2007; Hübner et al., 2023; Marsh et al., 2015; Wu et al., 2021). In addition, Marsh et al. (2015), under the framework of the Internal/External Frame of Reference (I/E), concluded that prior academic self-concept significantly affected subsequent academic interest, school grades, and standardized test scores. However, prior academic interest had only a small effect on later math self-concept. In addition, following the EVT, self-concepts and intrinsic values had substantial effects on subsequent course choices. That is, for the I/E model, domain-specific math self-concept and intrinsic value were positively related to course choices in math, but negatively related to choices in languages (Nagy et al., 2007).

Motivational indicators like academic self-concepts or intrinsic values seem to be subject to age-related dynamics and declines from young age through adolescence (i.e., Arens et al., 2019; Jacobs et al., 2002; Marsh et al., 2015; Updegraff et al., 2016; Wigfield et al., 2020). Cross-lagged models capture reciprocal effects between the different variables of interest (in this study, self-concept of ability, intrinsic value, and expectations in social sciences) and include stabilities over time for each variable (see also Spinath & Steinmayr, 2008; Skaalvik & Valås, 1999; Upadyaya et al., 2012).

Moreover, research suggests gender differences in students' motivation (Petersen & Hyde, 2014; Jiang et al., 2020) and that variation exists in the ways these disparities develop over time (Spinath & Steinmayr, 2008). In this regard, performance for boys and girls declines as a consequence of students developing more realistic views of their competence over the course of elementary (Spinath & Steinmayr, 2008) or secondary schooling (Jacobs et al., 2002; Jiang et al., 2020; Watt, 2004). Therefore, students may develop less positive ability self-concepts, expectations, and intrinsic values over time (Arens et al., 2019;

González-Nuevo et al., 2023; Spinath & Steinmayr, 2008). As girls tend to have lower self-concept of math ability than their male counterparts, their interest in math also declines (Wang & Degol, 2013).

The present study

Most of the research showing the declines in students' motivation have been conducted in relation to language and STEM subjects such as math (i.e., Lauermaun et al., 2017; Marsh et al., 2015; Upadyaya & Eccles, 2014), but there is an inadequacy of research analyzing the development of motivation in social sciences over time. In this research, we aim to bridge this empirical gap by analyzing the cross-lagged associations between three motivational constructs (e.g., self-concept of ability, intrinsic value, and expectations) in social sciences. The field of social sciences includes a wide range of disciplines with a great impact on current digital societies, such as Education, Psychology, Economy, Geography, History, Political Science, Sociology, or Business Administration. However, despite the crucial role that social science disciplines play in modern society, there is a lack of research tackling cross-lagged associations between motivational constructs in social sciences. For instance, a recent study highlights the importance of psychological and material support that teachers and schools in the UK provided to students during lockdown and confinement in spring 2020, especially to those students coming from vulnerable backgrounds or who are children of keyworkers who were on the front line fighting in the health emergency (Sharp et al., 2020). Similarly, to the authors' knowledge research on the development of motivation in social sciences throughout secondary school years is scarce. This study attempts to bridge these research gaps by analyzing the development of Spanish secondary students' motivation in social sciences.

In the present research, therefore, we will look at developmental dynamics via cross-lagged associations between three components of EVT: self-concept of ability, expectancies, and intrinsic value in social sciences. We will explore the extent to which these three components show cross-lagged reciprocal effects over the course of four consecutive academic years when adolescent students are transitioning to high school education. Given that the development of motivation is domain specific (Chow & Salmela-Aro, 2011; Marsh et al., 2004; Wigfield et al., 2020), information about how a group of Spanish secondary students' motivation in social sciences develop over time will expand our understanding of the dynamics of motivation in social sciences over the course of the secondary school years. More specifically, we will analyze the role of achievement in social sciences and the reciprocal relationships between achievement

and ability self-concepts in social sciences over the transition to high school.

Aims and hypotheses

The aim of this four-wave longitudinal study was to examine the cross-lagged associations between adolescent students' intrinsic value, self-concept of ability, and expectations in social sciences during and after the transition from secondary school to high school education. In addition, the role of a group of antecedents (e.g., grades in social sciences at time 1, mothers' and fathers' SES, and gender) in predicting students' intrinsic value, self-concept of ability, and expectations in social sciences was also examined.

This study, therefore, examined the following research questions:

- (1) What kind of cross-lagged association between the three motivational dimensions (self-concept of ability, intrinsic value, and expectations) in social sciences can be found during the transition from secondary school to high school education?
- (2) To what extent are students' gender, parental socioeconomic status, and performance in social sciences at time 1 associated with their self-concept of ability, intrinsic value, and expectancies in social sciences?
- (3) Are the cross-lagged associations between self-concept of ability, intrinsic value, and expectancies different for male and female students?

Consequently, based on earlier literature in the field, the hypotheses were formulated as follows:

Hypothesis 1. The three aspects of motivation form positively reciprocal associations during secondary school and high school education (Arens et al., 2019; Lauermaun et al., 2017; Spinath & Steinmyer, 2008).

Hypothesis 2. As a part of students' adaptation to the new study environment, the associations between the different dimensions of motivation in social sciences will momentarily decline during the transition to high school education (Bailey et al., 2020; Jacobs et al., 2002; Jiang et al., 2020; Spinath & Steinmyer, 2008; Wang & Degol, 2013).

Hypothesis 3. Males and students from higher SES backgrounds and with high academic performance at the beginning of the study will experience higher intrinsic value, self-concept, and expectations in social sciences than females and students from lower SES families and with a lower level of performance (Wang & Degol, 2013; Watt, 2004).

Hypothesis 4. We also expected especially that students' self-concept of ability would strongly predict the other two aspects of motivation (Eccles & Wigfield, 2020; Marsh et al., 2006).

Hypothesis 5. In addition, a high intrinsic value, self-concept, and expectancies in social sciences at Time 3 will positively predict students' subsequent intrinsic value, self-concept, and expectancies in social sciences (Spanish History) at time 4 (Denissen et al., 2007; Skaalvik & Valås, 1999; Wigfield et al., 2020).

Method

In Spain secondary education (ESO) is compulsory up to 16 years and consists of four courses. During these four years, the social sciences subject area is taught under the umbrella of the subject area Social Sciences, which is a common subject across the four years whose content covers several dimensions (historical, geographical, cultural and artistic, and citizenship) tackling some social topics like demography, social structure, religion, along with topics related to economics, human rights, or the role played by women in history and current societies. In addition, Baccalaureate (high school) is the post-compulsory secondary school that leads to university and comprises two years (first and two years of high school), where students have to choose one out the following five academic tracks: humanities, social sciences, science, technology, and arts high school. Contemporary History and Spanish History are respectively compulsory subject areas across the different academic pathways within the first and second courses of high school. Consequently, in the present research we considered motivational constructs related to the subjects Social Sciences (for T1, T2, T3) and Spanish History (for T4, since it is a common social scientific-related subject across the different high school academic tracks) as a proxy to the study of the development of motivation in the social sciences domain.

Sample

The total sample consisted of a group of 2,032 (50,2% girls) secondary students. The number of participants at each measurement time was as follows: Time 1 (N = 807), Time 2 (N = 796), Time 3 (N = 796) and Time 4 (N = 864). Times 1, 2 and 3 were before the transition, while Time 4 took place after the transition to high school education. At times T1 – T4 the average age of the students was respectively 13, 14, 15, and 17 years old. That is, students were enrolled respectively in the second (T1), third (T2) and fourth (T3) courses of secondary education (ESO), and second course of

high school (T4). Most students (54%) belonged to families with an intermediate socioeconomic background. The family SES was calculated based on the occupational and educational level of the students' parents (see below).

Educational level of both parents

Using a 4-point ranking scale, students rated the highest level of education completed by both parents. The options were: 1. No studies, 2. Primary school, 3. Secondary education, and 4. University studies. Most parents had intermediate educational achievements: 57,8% of fathers and 56,7% of mothers had completed post-compulsory secondary education. Likewise, a significant number of parents had high educational achievements (38,5% of fathers and 40,4% of mothers had completed university studies), while only 3,7% of fathers and 2,9% of mothers had low educational achievements (they had only completed primary school or less).

Occupational achievements of both parents

Students were asked to describe both of their parents' jobs. Most of the parents worked in intermediate level occupations: 67,6% of both fathers and 58,9% mothers had occupations such as taxi drivers, police officers, office workers, clerks, salespersons, schoolteachers, or officers. The rest of the parents worked either in high level (25% of fathers and 12% of mothers worked in occupations such as medical doctors or professors) or low level occupations (26,5% of fathers and 18,2% of mothers were unemployed, homemakers, or retired).

Parental SES

Three values (high, intermediate, and low) resulted after merging the values corresponding to low, intermediate, and high educational achievements with the corresponding high, intermediate, and low occupational achievements. Consequently, 18,4% of parents had a high SES, 61,7% had an intermediate SES, and 18,4% a low SES.

The students were enrolled consecutively in the second, third, and fourth years of secondary education and the second year of high school education. Of the total number of participants enrolled in the second year of high school education, 28,6% were enrolled in the science track, 10,3% in the humanities track, 30,2% in the social sciences track, 17,9% in the technology track, and 13% in the arts track.

Procedure

All participants completed the questionnaires in the springs of 2012, 2013, 2014, and 2016, during school hours. A total of 10 public secondary schools from Madrid and Barcelona took part in the study, after consent obtained from parents

and school authorities. More than 50 public schools were targeted, but only 10 agreed on having a long-term participation. Most schools were randomly selected from the metropolitan areas of Madrid and Barcelona. In order to promote the engagement of schools, school principals were informed that an annual report with main findings will be delivered at the end of every academic year and that seminars with the educational community would be organized to provide return on the results of the project.

After a brief introduction of the purpose of the study, students completed a questionnaire that took, on average, around 35–45 minutes to finish. Participation in the study was voluntary, with no remuneration or course credits. Students were informed that they could quit the research at any time, but none of them did so. Both the anonymity and confidentiality of the data collected were assured. The research was approved by the university IRB (Institutional Review Board). Informed consent and authorization were obtained from parents and the school authorities prior to collecting the data. Informed consent was obtained from all individual participants included in the study.

Measures

Academic performance in social sciences

The students reported their final grade in their final social sciences academic year. That is, we controlled for the final grades obtained in social sciences when they were enrolled in the second course of compulsory secondary education (T1). Answers ranged from 1 (the lowest value, equivalent to Fail) to 5 (the highest value, equivalent to Outstanding).

Social sciences self-concept of ability

Self-concept of ability in social sciences was measured with a translated version of the Eccles and Harold (1991) scale (Sáinz & Eccles, 2012). One sample item reads as follows: “How good are you at social sciences?”, “In comparison to other classmates, how good are you at social sciences?” This scale consists of 5 items with values ranging from 1 (low competence) to 7 (high competence). Cronbach’s reliabilities were .89, .89, and .89, and McDonald’s Ω were .90, .90, and .90 for Time 1, Time 2 and Time 3. Bartlett’s test of sphericity is statistically significant ($\chi^2(15) = 3475$, $p < .001$). Kaiser’s measure for sample of adequacy was .91. This explained 72,6% of the total variance.

Social sciences intrinsic value

Students’ intrinsic value in social sciences was measured with a translated version of the Eccles and Harold (1991) scale. The scale consists of 3 items with values ranging from

1 (low competence) to 7 (high competence). One sample item reads as follows: “How much do you like social sciences?”, and “In comparison to other subject areas, how much do you like social sciences?”. Cronbach’s reliabilities were .92, .90, and .91, and McDonald’s Ω were .92, .91, and .92 for each measurement time. Bartlett’s test of sphericity is statistically significant ($\chi^2(3) = 2073,649$, $p < .001$). Kaiser’s measure for sample of adequacy was .73. This explained 87,4% of the total variance.

Expectancies of success in social sciences

Students’ expectancies in social sciences were measured with a translated version of the Eccles and Harold (1991) scale. This scale consists of 2 items with values ranging from 1 (low competence) to 7 (high competence). One sample item reads as follows: “How good would you expect to be at social sciences in the future” and “How good would you be in a career that requires good abilities in social sciences?”. Cronbach’s α reliabilities were .88, .85, and .87, and McDonald’s Ω were .88, .86, and .88. Bartlett’s test of sphericity is statistically significant ($\chi^2(3) = 1552,182$, $p < .001$). Kaiser’s measure for sample of adequacy was .74. This explained 84% of the total variance.

Statistical analyses

The research questions were analyzed using cross-lagged path models with regression coefficients. The statistical analyses were performed using the Mplus statistical package (Version 7.31; Muthén & Muthén, 1998–2017) with a missing data method. The missing-data method uses all the data that are available to estimate the model without imputing the data. The model parameters were estimated using the MLR estimator (Muthén & Muthén, 1998–2017). Goodness-of-fit was evaluated using four indicators: χ^2 test, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA).

First, a path model was constructed to examine the cross-lagged associations between students’ intrinsic value, self-concept of ability, and expectations in social sciences. Cross-lagged panel models estimate the directional influence variables have on each other over time (Selig & Little, 2012). All the endogenous variables were allowed to covary. The tested model included stability coefficients for each aspect of motivation, as well as cross-lagged paths from the earlier aspect of motivation to subsequent intrinsic value, self-concept of ability, and expectations in social sciences. Next, the participants’ gender, parents’ SES, and academic performance were added in the model as antecedents of the three aspects of social sciences motivation. In addition, intrinsic value, self-concept, and expectations in Spanish history were

added as outcomes in the model. To identify the final model, all statistically non-significant paths were set to zero.

Next, to examine whether the final model would show the same fit for male and female students, all the analyses were also conducted using the Mplus multigroup procedure (Muthén & Muthén, 1998–2017). In these analyses, the data were divided into two samples according to students' gender. If the fit of the model was good and no significant modification indices were found, the model was assumed to fit the groups equally.

Results

The results showed that the final model fit the data well $\chi^2(79, N=2032)=187,36, p=ns, CFI=.99, TLI=.98, SRMR=.09, RMSEA=.03$; Fig. 1). In addition to the estimated paths, the model included three associations suggested by the modification indices: a path from social sciences performance to self-concept of ability at Time 3, a path from gender to intrinsic value at Time 2, and a correlation between intrinsic values at Time 1 and Time 3. In line with Hypothesis 1, distinct aspects of social sciences motivation were positively associated with each other (Table 1). However, the associations between self-concept and expectancies weakened over time, in line with Hypothesis 2. Aligned with Hypothesis 3, the results showed that male students displayed higher self-concept and intrinsic value in social sciences than female students, and students with high performance showed an overall high motivation in social sciences at the beginning of the study.

Congruent with Hypothesis 4, expectancies in social sciences (Time 1 and Time 2) positively predicted students' social sciences intrinsic value (Time 2 and Time 3) and self-concept of ability (Time 3) during secondary education. In addition, students' self-concept of ability in social sciences

at Time 1 and Time 2 positively predicted their subsequent expectancies in social sciences. Similarly, and in line with Hypothesis 5, high self-concept in social sciences during secondary school (Time 3) positively predicted students' expectancies in social sciences (History) after the transition to high school education (Time 4).

Finally, to examine whether the same model would show the same fit for male and female students, the analyses were also carried out using the Mplus multigroup comparison (Muthén & Muthén, 1998–2017). The final multigroup model fitted the data well $\chi^2(145, N=2031)=228,78, p=ns, CFI=.99, TLI=.99, SRMR=.11, RMSEA=.02$). The results showed that expectancies in social sciences (Time 2) positively predicted self-concept of social sciences ability (Time 3) only among female students (*s.e.* = .20, *p* < .05). In addition, self-concept of social sciences ability (Time 2) positively predicted intrinsic value (Time 3) only among male students (*s.e.* = .20, *p* < .01). No other statistically significant differences were found between the groups (Hypothesis 5).

Discussion

The present longitudinal study examined cross-lagged associations between different dimensions of social science motivation over the course of secondary and high school education. Particularly, this study shows the significant role that social sciences play in the curriculum of Spanish secondary and high school education. It is the first one conducted in the context of Spain focusing on the developmental dynamics of students' motivation in social sciences across the secondary school and high school years. Cross-lagged associations between students' motivation in social science (i.e. competence beliefs, intrinsic value, and expectations) were examined during the transition to high school education. This study therefore confirms research showing that

Fig. 1 Cross-Lagged Associations Between Self-Concept of Ability, Intrinsic Value, and Expectancies in Social Sciences, Antecedents, and Outcome

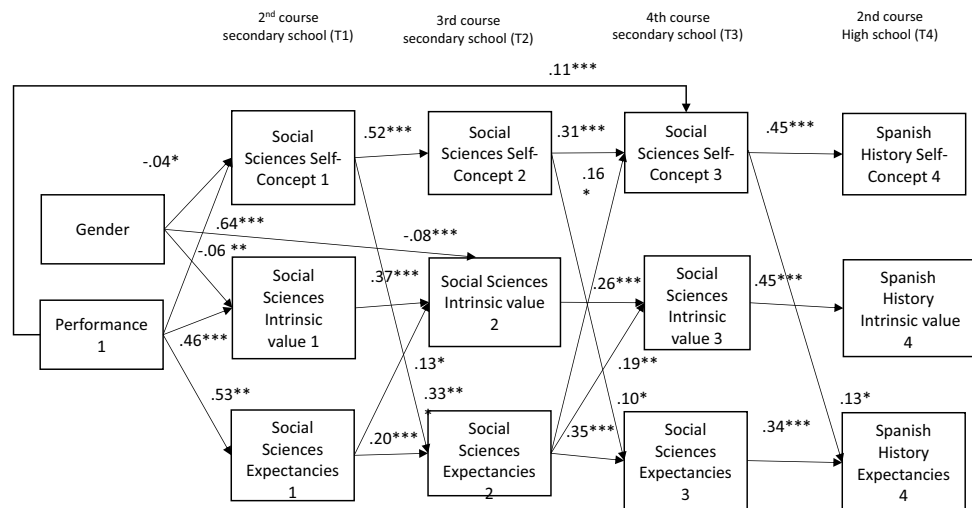


Table 1 Means, variances, and correlations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. SCA1																
2. SCA 2	.75***															
3. SCA 3	.68***	.41***														
4. INT 1	.72***	.26***	.37***													
5. INT 2	.43***	.72***	.24***	.49***												
6. INT 3	.93***	.25***	.72***	.49***	.35***											
7. EXP 1	.82***	.41***	.33***	.77***	.37***	.39***										
8. EXP 2	.43***	.83***	.36***	.82***	.76***	.38***	.49***									
9. EXP 3	.33***	.41***	.82***	.41***	.37***	.79***	.46***	.44***								
10. Gender	-.04	.02	.09	-.16**	-.15**	-.12*	.13**	.08	.06							
11. Performance	.65***	.13**	.21***	.46***	.22***	.13*	.40***	.36***	.16*	-.00						
12. Mothers' SES	.29***	.08*	.10**	-.02	.08	.08	.17***	.10*	.10*	.01	.33***					
13. Fathers' SES	.18***	.15***	.11**	.09*	.11**	.09*	.16***	.17***	.10**	.01	.27***	.63***				
14. SCA Spanish history	.41***	.32***	.49***	.31***	.15*	.31***	.31***	.27***	.42***	-.10**	.31***	.18***	.20***			
15. INT Spanish history	.26***	.21**	.40***	.38***	.25***	.46***	.60***	.22**	.43***	-.14***	.18**	.12**	.73***	.70***		
16. EXP Spanish history	.36***	.28***	.46***	.34***	.21**	.40***	.33***	.29***	.47***	-.11**	.24***	.17***	.83***	.85***	.76***	
<i>M</i>	4.66	4.76	4.70	4.24	4.39	4.23	4.65	4.76	4.60	1.50	2.86	4.12	4.14	4.59	3.88	4.41
<i>Var</i>	.39	.39	.39	.39	.39	.39	.39	.39	.39	1.00	.39	.99	.95	.42	.42	.42

motivation develops typically domain specifically (Chow & Salmela-Aro, 2011; Marsh et al., 2004; Wu et al., 2021; Wigfield et al., 2020). Thus, the main contribution of this research is the focus on the development of three indicators of motivation in social sciences, a domain often neglected in literature. The results of this study expand our knowledge about the development of secondary students' motivation in social sciences in the transition to high school. That is, they show how the relations between the three constructs of the EV model (expectancy, self-concept of ability, and intrinsic value) develop over time.

Longitudinal relations among motivation constructs

The results of this study confirm previous research conducted with domains other than social sciences and during earlier educational stages (Arens et al., 2019; Aunola et al., 2004; Jacobs et al., 2002; Watt, 2004; Wigfield et al., 2020; Zee et al., 2021). In this study, three factors of the expectancy component (students' present self-perception of ability, future expectations about their ability, and intrinsic value) identified by the EVT were examined.

In line with Hypothesis 1 and research traditionally focusing on math and languages (Andrews et al., 2017; Bailey et al., 2020; Lauermaun et al., 2017; Spinath & Steinmayr, 2008; Wigfield et al., 2020), cross-lagged associations between the constructs emerged across the transition to high school education. Distinct factors of social sciences motivation showed stability across the transition. This stability may be associated with the role that subjects linked to social sciences play in the Spanish high school curriculum. The same is not true for other subject areas such as math, as students who are not engaged in STEM high school specializations, such as students on the Arts or Humanities tracks, can skip math during high school specialization.

Interestingly, in line with Hypothesis 2, the results indicated that the reciprocal associations between self-concept and expectations in social sciences slightly weakened across the secondary education path (Jacobs et al., 2002; Grygiel et al., 2017). At the beginning of the study, students' motivational indicators were high (especially students' self-concept of ability and intrinsic value in social sciences), but they decreased over the years. However, the associations between students' expectancies and intrinsic value in social sciences became stronger over time (Eccles & Roeser, 2010; Eccles & Wigfield, 2020). This might have to do with students' specialization in high school, as the domain of social sciences plays a significant role for those who selected the social sciences high school or were planning to choose it the previous academic courses.

Males showed higher self-concept and interest in social sciences than females at some time points. Partially in line with Hypothesis 3, the results showed that male students and students with high performance at the beginning of the

study displayed higher self-concept and intrinsic value in social sciences than female students and students with lower performance. This finding suggests significant implications for career pathways, since this can help us understand the large-scale patterns of male representation by field, given the persistence of gender roles in the industry and the labor market (Eccles & Wigfield, 2020). Despite women are over-represented in some social sciences disciplines such as education, psychology, and pedagogy, many females have not developed a high intrinsic value and interest in social sciences because they might not associate future career pathways in social sciences belonging mostly to women. Gathering further information about the type of content taught with regard to the social sciences subject areas over time in the different schools could provide teachers and practitioners with further clues about how to increase students' intrinsic value in social sciences. Career guidance programs should enhance the wide spectrum of future career opportunities in social sciences, which are suitable for both men and women.

However, contrary to our expectations, students with higher SES did not show higher motivation in social sciences than students with lower SES. These results could be related to the fact that for Spanish families with high SES social sciences are not as prestigious as other domains, such as those related to science and technology (Sáinz & Müller, 2018). That is, according to the EVT (Eccles & Wigfield, 2020) these families may not attach to social sciences the same utility value as they do to other subject areas, like science and technology (Andrews et al., 2017; Vinni-Laakso et al., 2022; Zucker et al., 2021). This lack of academic prestige may condition young people (especially male students) not to develop an interest in social sciences. It would be therefore essential to develop more professional guidance programs informing parents about the value of future career pathways associated with social sciences disciplines.

In addition, and partially in line with Hypothesis 4, students' self-concept of ability in social sciences across all the measurement times positively predicted their subsequent expectancies in social sciences (Marsh et al., 2006; Lauermaun et al., 2017). Interestingly, over time self-concept of ability predicted expectancy beliefs to a higher degree than the reverse. This corroborates the important role that self-concept of ability (present ability perceptions about students' competence) plays in the causal model. Moreover, expectancies in social sciences during secondary school positively predicted students' later social sciences intrinsic value and self-concept of ability during secondary education. These results corroborate the significant role that self-concept of ability plays in shaping future motivation indicators, particularly future expectancies of success in social sciences (Eccles & Wigfield, 2020; Spinath & Steinmayr, 2008).

Interestingly, and confirming Hypothesis 5, self-concept in social sciences during secondary school (time 3)

positively predicted students' expectancies of success in social sciences (history) over time. These results indicated a strong connection between the two aspects of the expectancy component. In addition, expectancies predicted intrinsic value and self-concept of ability of social sciences, but only at the end of secondary school. In this study, students who are in high school education (time 4) have already chosen an academic specialization; in fact, some have chosen the social sciences pathway. These experiences may promote students' realistic views of their expectancies for success in the close future, either in university studies or upper-level vocational training (Wigfield et al., 2020). That is, students at this stage are in an academic context where their academic interests and the appraisal of their competences in the different subject areas are salient. These findings also feed on stage-environment-fit theory since changes in school experiences (mainly across school transitions) lead to declines and increases in EVT constructs (Eccles & Roeser, 2010).

Expectancies in social sciences at time 1 and time 2 positively predicted respectively intrinsic value in social sciences at time 2 and 3. These results suggest that intrinsic value in social sciences could be predicted by other factors than those examined here (i.e. teachers' and parents' perceptions of students' achievement, or peer evaluation). Interestingly, peer evaluation may also play a major role in the development of intrinsic value and other motivation constructs, given the importance that students give to peers throughout the secondary school years (Jacobs et al., 2002). But, the lack of association of intrinsic values with other variables in the model is an interesting finding, since it suggests that feeling competent in social sciences does not necessarily mean that students will develop a high interest and enjoyment in social sciences (Wang, 2012; Wang & Degol, 2013). This lack of association also corroborates previous research, where no significant longitudinal relations between academic self-concept and intrinsic value were observed (Skaalvik & Valas, 1999; Spinath & Steinmayr, 2008).

Since intrinsic value in social sciences could be a powerful construct shaping students' choices over time, the cultivation of students' intrinsic values in social sciences across secondary school and high school years could contribute to a more engaged, motivated, learning experience for students. When students place high intrinsic value on a given activity they often become deeply engaged in it and can persist at it for a long time (Eccles & Wigfield, 2020). This finding also suggests the need to help young people cultivate their capacity for intrinsically motivated learning.

In the current pandemic context, it seems crucial to continue collecting longitudinal data on how students' motivation (particularly the constructs intrinsic value and self-concept of ability) develops over time. This could provide evidence of the way young people's engagement does or does not decline in times of difficulties and compare it with

previous academic years. Future research should further analyze longitudinal relations between self-concept of ability in social sciences and other subjective task-value components (i.e. utility value, or the importance attached to social sciences) beyond intrinsic value (Arens et al., 2019), as well as possible spillover effects to and from other academic domains (Andrews et al., 2017; Vinni-Laakso et al., 2022).

Limitations

This study has several limitations that should be considered when generalizing the results. First, although one of the main strengths of the study was the focus on social sciences, one should be cautious in any attempt to generalize the results in other domains. In addition, to better understand the associations between different motivational constructs in social sciences, more studies would be needed to examine these associations further. Second, the study focused on Spanish secondary school students' motivation, and more studies would be needed to examine similar associations among students from diverse cultural backgrounds and educational levels. Third, other variables that were not examined in this study, such as teachers' and parents' perceptions concerning students' achievement, which might have affected the development of students' self-concept, intrinsic values, and expectancies in social sciences. More studies would be needed in the future examining various social factors that may influence students' motivation in social sciences. Fourth, it is possible that different homogeneous latent profiles of students can be identified according to the level and changes in their social sciences motivation. This study did not capture such profiles, however, and future studies should examine them further. Finally, the use of Spanish History as an outcome variable in T4 is not representative of the specificities of all social sciences disciplines. As previously specified, it was the only subject related to social sciences common to all the academic tracks of first year high school (T4 in the present study).

Conclusions

The results of this research suggest several practical implications. First, they suggest the significant role that analyzing the development of social sciences motivation might play in the formation of the different high school specializations in Spain. The results also indicate that the focus that social sciences has on Spanish History when students are in the first year of high school education (at time 4 in our research) may be discouraging for many students who, while highly interested in the social sciences subject area in secondary

school, do not like or are not interested in the specificities of the content taught in the Spanish History subject.

Moreover, the results of the present research have important implications for theories of career choice and career planning and counselling related to career decision making self-efficacy (i.e. Lent & Brown, 2019; Lent et al., 2000). Encouraging young people (especially females) to develop a higher intrinsic value related to the content associated with social sciences throughout secondary education is not a minor issue, given the high representation that social sciences-related careers have in Spain in the spectrum of future career pathways. The encouragement of parents, teachers, school counsellors, and peers is an important ingredient to be taken into consideration when helping young people to decide on which career pathway to choose and to what extent it is related to social sciences.

School authorities as well as decision makers specialized in youth issues can benefit from the results of this research in strengthening the role that different sources (i.e. teachers, peers, families, or social media) have in providing young people with different motivational tools that contribute to the development of proper social sciences motivation over time.

Congruently with research on youth career planning, educators (particularly those specialized in the social sciences high school) should include career planning in the curriculum of social sciences. Several canals including family involvement can be therefore used to help students define their career goals based on their competences and interests in the different academic options across the social sciences career pathway. For instance, these career planning strategy could be focused on highlighting the important utility value that the different social science disciplines provides for the solutions to major global challenges (such as the fight against climate change, current and future health pandemics, or violence against women). The findings of the present research show how increasing students' motivation in social sciences is an important issue, given the already high levels of social science-related majors present in the Spanish educational system and their connection with current digitalization jobs. For instance, there is an increasing demand for social scientists who get engaged in interdisciplinary teams in order to contribute to the analysis and interpretation of massive big data gathered in different digital settings.

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Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval The research complies with ethical standards since approval was obtained from the ethics committee of the Universitat Oberta of Catalonia (UOC). The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Informed consent Informed consent was obtained from all individual participants included in the study, their parents, and legal guardians.

Competing interests The authors have no competing interests to declare that are relevant to the content of this article.

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