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Changes in the study abroad gender gap: A European cross-country analysis

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Abstract

Although it is well-established that female participation in study abroad programmes is higher than the male participation, less is known about how this gap has changed over time. Using student-level data from the nationally representative surveys of three European countries (France, Germany and Italy), this paper begins by examining changes in the relationship between gender and participation in study abroad programmes between the beginning of the 2000s and the mid-2010s. It then explores to what extent these changes can be explained by different characteristics of men and women. The results suggest that in none of the countries there is evidence of a systematic decline over time in women's over-representation in study abroad programmes. However, the size of the gap is consistently significantly reduced (or even the sign of the gap reversed) once gender differences in observable traits are accounted for. Field of study and academic performance are important factors contributing to the gender disparity in study abroad.

Abstract

Mentre è noto che le donne partecipano a programmi internazionali di mobilitá studentesca più degli uomini, si sa meno sull'evoluzione di questo divario nel corso degli anni. Utilizzando microdati provenienti da inchieste

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rappresentative condotte in tre paesi europei (Francia, Germania e Italia), il presente lavoro inizia con l'esaminare come la relazione tra genere e partecipazione a programmi internazionali di mobilitá studentesca sia cambiata tra l'inizio degli anni 2000 ed il 2015 circa. Successivamente, analizza la misura in cui le variazioni osservate possano essere attribuite a differenti caratteristiche di uomini e donne. I risultati indicano come in nessuno dei tre paesi si registri una sistematica riduzione nel corso del tempo del vantaggio delle donne nello studiare all'estero. Tuttavia, tale vantaggio si riduce fortemente (o addirittura si capovolge) se si considerano le differenti caratteristiche di uomini e donne. Tra queste ultime, particolare importanza hanno la materia studiata all'universitá ed il rendimento scolastico.

1 | INTRODUCTION

The number of students temporarily studying abroad within the framework of a higher education programme at their home institutions has been rapidly rising worldwide. However, women tend to participate in international mobility activities at a higher rate than men. For instance, in the United States in the academic year 2013–2014, women accounted for approximately 65.3% of American students studying abroad (Institute of International Education, 2015). Similarly, in the same academic year, female participation rate in Erasmus, the European Union (EU)'s flagship student mobility scheme, was about 60.2% (European Commission, 2015). This gender imbalance is a matter of concern among many scholars and policymakers. In a recent article, Hurst (2019, p. 1253) refers to this issue as 'one of the enduring small mysteries of student life'. At the European level, the European Commission has been asked to do more to promote the gender equality with respect to participation in the Erasmus programme (Flausch, 2017). Equality among men and women is one of the EU's policy priorities in the fields of education, training, youth and sport (European Commission, 2018).

A wide study abroad gap in favour of women implies that a large number of men miss out the opportunity to have a learning experience that they are unlikely to get at home. Increased proficiency in a foreign language, cultural awareness and adaptability to different situations are important benefits associated with studying abroad that prepare students for careers in a global business environment (Teichler & Janson, 2007). Additionally, participation in study abroad programmes is found to be very important in supporting the students' personal growth (Zimmermann & Neyer, 2013). Using data from a survey addressed to former internationally mobile students, Paige et al. (2009) find that respondents view study abroad as the activity that most impacted their life during the undergraduate years.

Several arguments have been put forward in an attempt to explain the gender gap in study abroad. Tompkins et al. (2017) argue that women exhibit higher intercultural sensitivity than men as they are more motivated to understand, value and accept differences among cultures. According to Salisbury et al. (2010), gender disparities in study abroad participation emerge because men and women react differently to several factors. For instance, whilst male students are less likely to go abroad as interactions with peers increase in frequency, this does not occur for female students. Moreover, influential authority figures (e.g., parents and teachers) exert a stronger influence on the educational decisions—including whether or not to study abroad—of women than men. In the same

vein, Shirley (2006) concludes that the effect of various variables (e.g., family background/environment) on the decision to study abroad varies across gender. Additionally, Bloomfield (2004) and Thirolf (2014) note that female students are over-represented in subject areas providing greater opportunities to study abroad.

Whilst it is well-known that women disproportionately participate in study abroad programmes, much less attention has been given to how the study abroad gender gap changes over time. Studying the evolution of such gap is very important as it helps to gain a better understanding of the magnitude of this issue. Observing a wide gap is not the same thing as observing a widening gap. Based on the above, our first research question is:

1. How has the study abroad gender gap changed over time in Europe?

Furthermore, it is also relevant to investigate the extent to which different observable characteristics of men and women contribute to explaining the observed gap, and how these contributions vary across years. Although several observable predictors of this gap have been identified in the relevant literature, they are often separately analysed. Hence, there is a lack of studies examining the simultaneous impact of these factors. The importance of this line of investigation is also acknowledged by Tompkins et al. (2017) who suggest that more research is needed to understand how multiple student characteristics affect the decision to study abroad. Findings from such an exercise may provide meaningful insights into the nature of the issue that can help in the design of measures aimed at reducing the gap. Therefore, our second research questions is:

2. How and to what extent differences in individual characteristics contribute to explaining the study abroad gender gap in Europe?

In this paper, we look at changes in the study abroad gender gap over a period of just over 10 years, from the early 2000s to the mid-2010s. A decomposition technique is employed in order to quantify the relative importance of different individual traits in explaining the study abroad gender gap. Specifically, in our analysis we consider socioeconomic status (proxied by parental education), age at upper secondary school completion, academic performance, participation in upper secondary vocational education and field of study. However, our attention is focused on the last three characteristics given that, as discussed in the next Section, there are theoretical reasons to believe that they may play an important role in accounting for the gender gap in study abroad. It is also worth noting that the decomposition analysis allows us to examine the role of one factor in explaining the study abroad gender gap whilst accounting for the contributions of other characteristics.

Additionally, to account for the diversity across different countries within Europe, we examine three different countries: France, Germany and Italy. Although these countries are all characterised by a large number of outgoing study abroad students, there is some evidence that they may differ with respect to the extent of the study abroad gender gap. Using data from the 2011–2012 Erasmus programme, Böttcher et al. (2016) conclude that this gap appears to be larger in Germany than in France or Italy. This study adds to this evidence by analysing the participation in any study abroad programme (not just Erasmus) and looking at the trend in the gender gap rather than providing a snapshot for a single year. One may also note that using data for several countries over time allows us to strengthen the generalisability of the findings, thereby improving the external validity of the research. One of the advantages of applying broadly the same analysis to each of the three countries is that one can establish whether similar patterns hold across them.

The remainder of the paper is as follows. Section 2 presents a theoretical framework and the hypotheses to be tested. Section 3 describes the data employed in this study and presents some descriptive statistics. Section 4 briefly outlines the methodology used for the estimation of the unadjusted and adjusted gender gap in study abroad participation as well as for the decomposition analysis. Section 5 presents and discusses the empirical results. Section 6 concludes.

2 | THEORETICAL BACKGROUND

One might expect that women's over-representation in study abroad programmes would have persisted or even increased in France, Germany and Italy between the early 2000s and the mid-2010s. One reason for this expectation is that women, who have seen their employment numbers increase rapidly in these countries during this period (Fernández & Martínez-Turégano, 2018), may view a study abroad experience as a way to distinguish themselves from men in an attempt to close the gender gap in the labour market. This idea has been advanced by Braquet-Dorel (1985) whose study documents the perception of many female business graduates about the important role played by study abroad background in facilitating their entry into professional occupations that are typically dominated by males. In Italy, female university students may be especially eager to participate in study abroad programmes given that an international education experience is highly valued by Italian employers (Van Mol, 2017). A similar situation may occur in France where a study period at an elite foreign institution may prove particularly valuable to gain access to prestigious and well-paid occupations (Munk, 2009). Finally, Petzold (in press) provides evidence that studying abroad is rewarded by German employers. In light of the above considerations, our first hypothesis is:

> H1: The study abroad gender gap has not declined between the early 2000s and the mid-2010s in France, Germany and Italy.

Our next hypotheses regard the contribution of three individual characteristics in explaining gender differences in participation in study abroad programmes.

To start with, as stated earlier, women tend to study subject areas offering more opportunities to study abroad. For instance, women outnumber men in Humanities and Social Sciences whose students participate in study abroad programmes at a higher rate compared to those enrolled in other subjects (Böttcher et al., 2016). These fields of study are characterised by a more flexible curriculum that allows for abroad stays without delaying the time to graduation (Goldstein & Kim, 2006; Netz et al., 2020). It is also possible that faculty in Humanities and Social Sciences contribute more actively in terms of promoting mobility opportunities and offering extra support for students interested in international mobility (Schnepf & Colagrossi, 2020). In a recent study, Van Mol (in press) finds that in the Netherlands female higher education students are more likely to study subject areas in which it is more common and advisable to study abroad, such as Social Sciences and Arts. Similarly, Bandyopadhyay and Bandyopadhyay (2015) and Daly (2011) argue that field of study partly contributes to explaining the gender differences in study abroad participation in the United States and Australia, respectively. As a result, the following hypothesis is proposed:

> H2: Field of study contributes to explaining the gender gap in study abroad participation.

Another factor that may partly account for the larger participation of women in study abroad programmes is academic performance. Many studies (see, for instance, Department for Education, 2019; van Hek et al., 2019) document a gender gap in school performance, with girls outperforming boys in subjects such as reading and writing. This gap is found to persist or even widen as students enter and progress through university (Van Broekhuizen & Spaull, 2017). Hence the better academic performance of women may enable them to succeed in selection procedures for study abroad that are often based on academic merit. Study abroad scholarships/places are increasingly allocated on a competitive basis and successful students must be able to show an excellent academic track record. A higher academic aptitude may also allow students to take more courses in a semester, thereby reducing the opportunity cost of studying abroad the next semester (Lingo, 2019). Van Mol et al. (in press) conclude that Dutch students with higher academic achievements are more likely to study abroad. In Italy and France students who have poorly performed at high school

are found to be significantly less likely to take part in the Erasmus programme when compared to their peers whose performance was excellent (Di Pietro & Page, 2008). Thus, our third hypothesis is:

H3: Academic performance partly accounts for gender differences in study abroad participation.

Finally, the stratified nature of the educational system could also be responsible for producing systematic unequal opportunities to study abroad between women and men. Rodgers and Boyer (2006) note that in many European countries (including France, Germany and Italy) the proportion of boys enrolled at vocational schools is significantly higher than that of girls. Jürges and Schneider (2011) find that in Germany boys have a lower probability than girls of getting an academic track recommendation from their teachers, and as a result of this they have lower chances of enrolling in the academic track. Not only may girls have, on average, higher academic ability than boys, but, according to gendered socialisation, sexes may be treated differently due to the different expectations that are placed on them (Eccles, 2011). In contrast to academic schools, vocationally oriented ones offer a curriculum and learning opportunities that are less conducive to studying abroad (Lörz et al., 2016). They provide, for example, fewer opportunities to learn foreign languages, whereas lack of foreign languages skills is often considered to be an important barrier to international student mobility. Therefore, our final hypothesis is:

H4: The study abroad gender gap is reduced once participation in vocational education is controlled for.

3 | DATA

Three cross-sectional nationally representative individual-level data sets are analysed:

Italy: *Indagine sui percorsi di studio e di lavoro dei diplomati* (Survey on upper secondary school leavers' employment and study pathways), which is carried out by the Italian National Statistical Institute (ISTAT). We use data from the following waves (years): 2004, 2007, 2011 and 2015.

France: *Enquête conditions de vie des étudiants* (Survey on students' living conditions), which is carried out by the National Observatory of Student Life (OVE). We use data from the following waves (years): 2000, 2003, 2006, 2010 and 2013.

Germany: *Sozialerhebung*- (Social Survey), which is carried out by the German Centre for Higher Education Research and Science Studies (DZHW). We use data from the following waves (years): 2000, 2003, 2006, 2009 and 2012.

In contrast to the French and German surveys, which are targeted to university students, respondents to the Italian survey are upper secondary school leavers who are interviewed 3 or 4 years after the end of their studies.[1] However, since a significant proportion of upper secondary school leavers enrol at university immediately after completing their studies (around 40%–45%), this survey allows us to track cohorts of Italian university students in their third or fourth year of study.[2] Hence, in an attempt to make our sample homogeneous, we select only French and German university students who are at a similar stage in their academic career to the Italian students.[3]

Our study abroad measure is a binary indicator of whether or not the student has spent some time at a foreign higher education institution during his/her university studies. Therefore, such a definition does not consider other study abroad experiences such as, for instance, internships, language courses or summer schools. Whilst this information is collected in the French and German surveys, it is not reported in the Italian survey.

In addition to the factors discussed in the previous Section that may help to explain the gender gap in study abroad (i.e., field of university study, participation in upper secondary vocational education[4] and academic performance, here measured by the grades students received at the end of upper secondary school[5]), two control variables are included in the analysis: age at upper secondary school completion and parental education.[6] Students

from more advantaged family backgrounds are typically found to have a higher probability to study abroad (Messer & Wolter, 2007), whereas younger students may lack a 'mobility culture' (Maiworm, 2001). Students with missing information on any of the covariates are excluded from the sample.[7]

Table 1 reports participation rate in study abroad programmes by gender and cohort in Italy, France and Germany.[8] Apart from three cases (2000 and 2010 cohorts in France and 2000 cohort in Germany), participation rate in study abroad programmes is found to be higher among women than men. Looking at changes in the study abroad gender gap over time, it has not declined in any of the countries considered here. In Germany, the gap widened in favour of women between 2000 and 2009, but slightly narrowed afterwards. An up and down pattern is instead observed both in Italy and France. In France, study abroad participation rate increased faster for women than for men during the mid-2000s, but this pattern reversed in 2006 and then changed direction again in 2010. Almost the opposite pattern is seen in Italy.

Means of individual traits across gender by country and cohort are reported in Appendices 1, 2 and 3.

4 | METHODOLOGY

In this Section, we sketch the methodological approaches employed in this study for the estimation of the unadjusted and adjusted gender gap in study abroad as well as for the decomposition analysis.

The raw (unadjusted) relationship between gender and study abroad participation is estimated separately for each country and each cohort using the following binary response regression model:

$$Y_i = \alpha_1 + \beta_1 F_i + \varepsilon_i \tag{1}$$

where:

Y_i=A binary indicator of whether student i participated in study abroad programmes (1 = yes; 0 = no).

F_i= A dichotomous variable taking the value 1 if student i is female, 0 otherwise.

ε_i = Random error term.

TABLE 1 Participation rate in study abroad programmes by country, gender and cohort

	Cohorts				
Italy					
		2004	*2007*	*2011*	*2015*
Females		0.042	0.044	0.069	0.068
Males		0.031	0.040	0.046	0.066
Difference		0.011	0.004	0.023	0.002
France					
	2000	*2003*	*2006*	*2010*	*2013*
Females	0.047	0.058	0.063	0.138	0.155
Males	0.048	0.044	0.036	0.148	0.113
Difference	−0.001	0.014	0.027	−0.010	0.042
Germany					
	2000	*2003*	*2006*	*2009*	*2012*
Females	0.040	0.045	0.046	0.154	0.142
Males	0.042	0.035	0.027	0.118	0.110
Difference	−0.002	0.010	0.019	0.036	0.032

The parameter of interest is β_1 measuring the raw difference in participation rate in study abroad programmes between females and males. A vector of explanatory variables, X_i, can be added to the right side of Equation (1). Hence, we have:

$$Y_i = \alpha_2 + \beta_2 F_i + \varnothing X_i + \mu_i \tag{2}$$

The parameter of interest is now β_2—the adjusted gender gap in study abroad. It measures the gender disparity in study abroad participation that would exist if men and women were similar in all the personal characteristics included in X(i.e., age at upper secondary school completion, parental education, field of university study, participation in upper secondary vocational education and performance at the end of upper secondary school).

Both Equations (1) and (2) are estimated using a logit model and the parameters β_1 and β_2 are reported as marginal effects.

Next, using the procedure developed by Fairlie (2005), the gender gap in study abroad participation is decomposed into two components.[9] One component is the part of the gap that can be explained by gender differences in the distribution of individual characteristics.[10] The second component shows the part of the gap that cannot be explained and should be attributed to covariates affecting participation in study abroad programmes differently across gender as well as to unmeasured and omitted variables. Writing the logistic equation for participation in study abroad programmes as $Y = F(X\hat{\beta})$ where F is the cumulative distribution function of the logistic distribution, the decomposition of the difference in participation in study abroad programmes between female and male students is given by:

$$\overline{Y}^F - \overline{Y}^M = \left[\sum_{i=1}^{N^F} \frac{F(X_i^F \hat{\beta}^M)}{N^F} - \sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^M)}{N^M}\right] + \left[\sum_{i=1}^{N^F} \frac{F\left(X_i^F \hat{\beta}^F\right)}{N^F} - \sum_{i=1}^{N^F} \frac{F\left(X_i^F \hat{\beta}^M\right)}{N^F}\right] \tag{3}$$

where $\overline{Y}$ is the average probability to take part in study abroad programmes, N indicates sample size and superscripts F and M indicate females and males, respectively. We use the 'Fairlie' decomposition command in STATA with 1000 replications.

5 | RESULTS

Logit results for study abroad participation in Italy, France and Germany for each cohort separately are shown in Tables 2–4, respectively.[11] Whilst uneven columns of these Tables report estimates for Equation (1), even columns display estimates for Equation (2). These estimates are presented as the marginal effect of each variable, with all the other variables held constant at their means. An examination of these results gives us an understanding of which factors are relevant predictors of study abroad participation as well as facilitating an understanding of the decomposition outcomes. A few patterns are noteworthy. Students in Humanities, Economics and Law are more likely to study abroad than students in other subjects. In Italy and France, students whose performance in upper secondary school was excellent have a greater probability of participating in study abroad programmes relative to their peers who performed poorly. In Italy, having attended an upper secondary vocational school is systematically associated with a decrease in students' likelihood of studying abroad. Additionally, in line with expectations, students from more advantaged backgrounds tend to be significantly more likely to take part in study abroad programmes relative to those from less advantaged backgrounds. Moreover, age does not appear to be consistently related to study abroad participation in any of the three countries.

Moving on to the primary interest in this study, in Figure 1 we plotted unadjusted and adjusted estimates of the gender gap in study abroad in each country for all cohorts based on the logit model. The trends depicted in

TABLE 2 Logistic regression for study abroad programme participation—Italy

	Cohort							
	2004		2007		2011		2015	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	0.011*	0.002	0.004	−0.006	0.023***	0.015**	0.001	−0.007
	(0.005)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)	(0.006)
At least one parent with a higher education degree		0.014**		0.018***		0.022***		0.021***
		(0.006)		(0.005)		(0.007)		(0.007)
Vocational school		−0.018***		−0.014***		−0.027***		−0.026***
		(0.004)		(0.004)		(0.006)		(0.005)
Age at upper secondary school completion (Reference is =>20)								
<=18		−0.012**		0.016		−0.014		−0.003
		(0.005)		(0.013)		(0.011)		(0.015)
19		−0.009		0.011**		−0.003		−0.012
		(0.007)		(0.006)		(0.009)		(0.010)
Performance at the end of upper secondary school (Reference is Poor)								
Good		0.012		0.002		0.005		0.025**
		(0.009)		(0.008)		(0.009)		(0.013)
Very good		0.027**		0.013		0.009		0.051**
		(0.011)		(0.009)		(0.009)		(0.015)
Excellent		0.035***		0.026***		0.021**		0.079**
		(0.10)		(0.009)		(0.009)		(0.018)
Subject studied at university (Reference is Humanities, Economics and Law)								
Engineering		−0.025***		−0.033***		−0.030***		−0.022***
		(0.004)		(0.003)		(0.006)		(0.006)
Science		−0.025***		−0.024***		−0.032***		−0.048***
		(0.004)		(0.004)		(0.007)		(0.005)

(Continues)

TABLE 2 (Continued)

	Cohort							
	2004		2007		2011		2015	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Medicine		−0.026***		−0.024***		−0.036***		−0.058***
		(0.003)		(0.004)		(0.005)		(0.005)
Sport		−0.017**		−0.028***		−0.043***		−0.024*
		(0.007)		(0.005)		(0.007)		(0.014)
N	8360	8360	12,754	12,754	11,803	11,803	10,706	10,706

Note: Robust standard errors are in parentheses. Coefficients are presented as marginal effects so constant term is not shown.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

TABLE 3 Logistic regression for study abroad programme participation—France

	Cohort									
	2000		2003		2006		2010		2013	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	−0.001	−0.011	0.014	0.010	0.027***	0.019***	−0.011	−0.033**	0.042***	0.016
	(0.008)	(0.008)	(0.010)	(0.008)	(0.009)	(0.007)	(0.014)	(0.014)	(0.015)	(0.015)
At least one parent with a higher education degree		0.014*		0.018**		0.016*		0.052***		0.046***
		(0.007)		(0.009)		(0.008)		(0.013)		(0.015)
Vocational school		0.030**		0.051**		0.009		−0.044**		−0.036*
		(0.014)		(0.017)		(0.009)		(0.020)		(0.019)
Age at upper secondary school completion (Reference is =>20)										
<=18		0.014		0.001		−0.006		0.071		0.009
		(0.012)		(0.013)		(0.014)		(0.027)***		(0.032)
19		0.013		0.003		−0.005		0.053		0.015
		(0.016)		(0.014)		(0.013)		(0.047)		(0.036)
Performance at the end of upper secondary school (Reference is Poor)										
Good		0.027***		0.018		0.024**		0.027*		0.039**
		(0.009)		(0.011)		(0.010)		(0.015)		(0.017)
Very good		0.046**		0.029		0.005		0.113***		0.097***
		(0.018)		(0.018)		(0.010)		(0.024)		(0.025)
Excellent		0.100***		0.104**		0.127***		0.096**		0.188***
		(0.038)		(0.044)		(0.044)		(0.041)		(0.042)
Subject studied at university (Reference is Humanities, Economics and Law										
Engineering		−0.035***		−0.002		−0.001		−0.058***		−0.043**
		(0.008)		(0.011)		(0.012)		(0.017)		(0.022)
Science		−0.025***		−0.022**		0.016		−0.080***		−0.066***
		(0.007)		(0.009)		(0.014)		(0.012)		(0.016)

(Continues)

TABLE 3 (Continued)

	Cohort									
	2000		2003		2006		2010		2013	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Medicine		−0.024***		−0.028**		−0.034***		−0.105***		−0.105***
		(0.009)		(0.012)		(0.007)		(0.011)		(0.011)
Sport		−0.024***		−0.018		−0.035***		0.008		
		(0.009)		(0.018)		(0.008)		(0.061)		
N	3855	3855	3491	3491	4166	4166	3613	3613	3351	3340

Note: Robust standard errors are in parentheses. Coefficients are presented as marginal effects so constant term is not shown. Sport has been omitted in the specification whose estimates are reported in Column (10) since this variable perfectly predicts lack of study abroad programme participation.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

TABLE 4 Logistic regression for study abroad programme participation—Germany

	Cohort									
	2000		2003		2006		2009		2012	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	−0.001	−0.007	0.010	−0.001	0.019**	0.006	0.037**	0.009	0.032	−0.007
	(0.010)	(0.009)	(0.007)	(0.007)	(0.008)	(0.007)	(0.016)	(0.016)	(0.021)	(0.020)
At least one parent with a higher education degree		−0.004		0.005		0.018***		0.048***		0.052***
		(0.008)		(0.007)		(0.006)		(0.015)		(0.020)
Vocational school		−0.013		−0.012		−0.011		−0.052**		−0.026
		(0.010)		(0.011)		(0.008)		(0.021)		(0.025)
Age at upper secondary school completion (Reference is =>20)										
<=18		−0.010		−0.011		−0.006		−0.052**		−0.017
		(0.011)		(0.010)		(0.010)		(0.022)		(0.033)
19		−0.006		0.015*		0.012		−0.007		0.004
		(0.008)		(0.008)		(0.008)		(0.016)		(0.021)
Subject studied at university (Reference is Humanities, Economics and Law)										
Engineering		−0.030***		−0.022***		−0.016**		−0.114***		−0.104***
		(0.008)		(0.008)		(0.007)		(0.014)		(0.019)
Science		−0.032***		−0.011		−0.026***		−0.062***		−0.084***
		(0.007)		(0.009)		(0.005)		(0.015)		(0.017)
Medicine		−0.033***		−0.028***		−0.025***		−0.091***		−0.088***
		(0.006)		(0.007)		(0.005)		(0.015)		(0.015)
Sport		−0.018				−0.017		−0.087***		
		(0.015)				(0.011)		(0.021)		
N	2064	2064	3007	2969	2589	2589	2012	2012	1188	1177

Note: Robust standard errors are in parentheses. Coefficients are presented as marginal effects so constant term is not shown. Sport has been omitted in the specification whose estimates are reported in Columns (4) and (10) since this variable perfectly predicts lack of study abroad programme participation.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

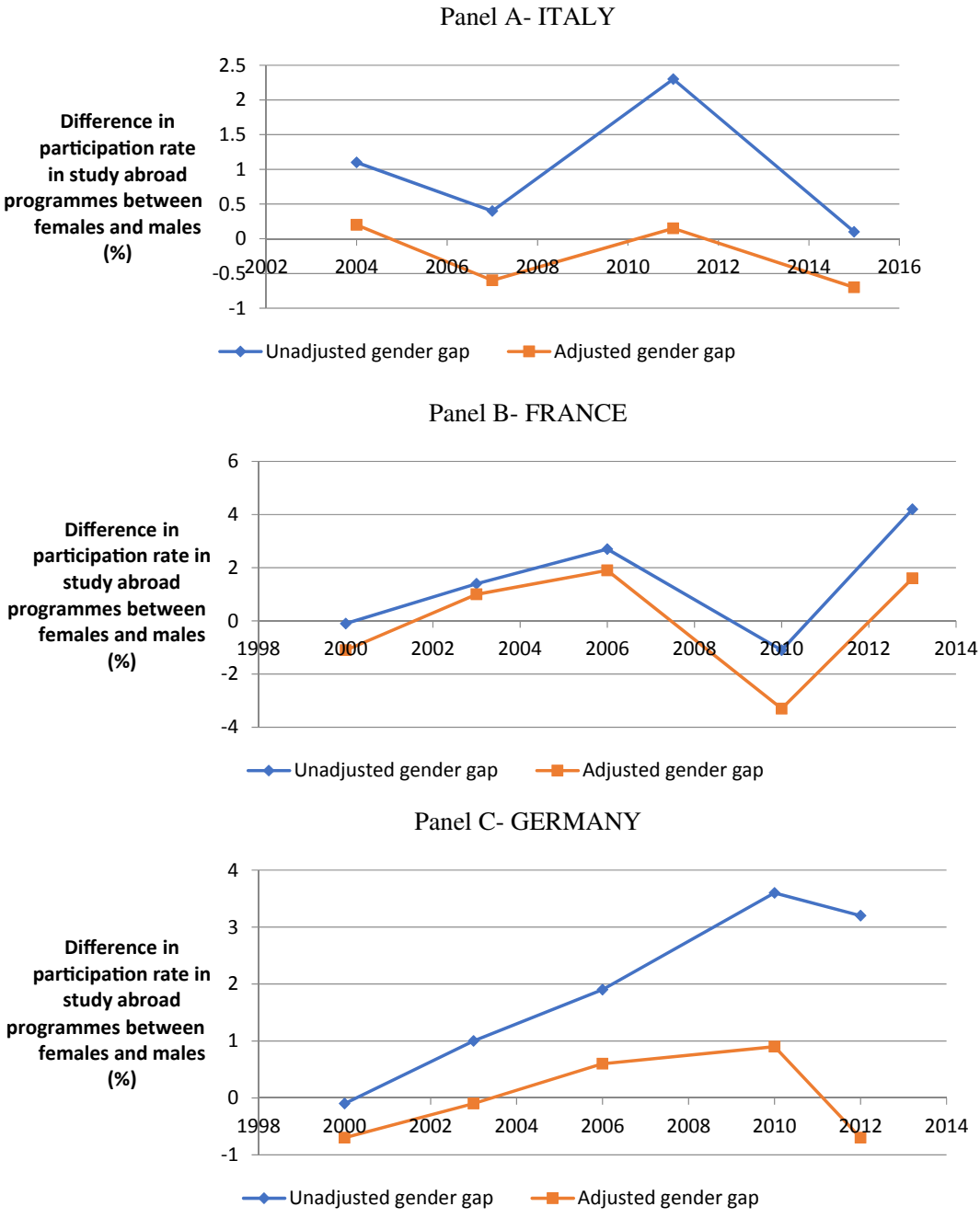

FIGURE 1 Trends in unadjusted and adjusted gender gap in study abroad participation. Panel A—ITALY. Panel B—FRANCE, Panel C—GERMANY

Figure 1 are broadly consistent with those emerging from Table 1, thereby supporting H1. Furthermore, one may note that adjusted estimates are always lower than the unadjusted estimates, indicating that our model's covariates consistently work in the direction of making women more likely to study abroad. This means that, though females generally display a higher study abroad participation rate than males, the size of the gap is substantially

TABLE 5 Fairlie decomposition results—Italy

	Cohort			
	2004	2007	2011	2015
Gender gap in study abroad participation	0.011	0.004	0.023	0.001
Total explained	0.009	0.010	0.008	0.009
Total per cent explained	82.7%	279.7%	34.6%	696.4%
At least one parent with a higher education degree	−0.002**	−0.002**	−0.002***	−0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
	[−15.5%]	*[−49.4%]*	*[−8.5%]*	*[−149.2%]*
<=18	−0.001	−0.000	0.000	−0.000
	(0.001)	(0.001)	(0.000)	(0.000)
19	−0.000	0.001	−0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Tot. Age	−0.001	0.001	−0.000	−0.001
	[−11.9%]	*[19%]*	*[−0.5%]*	*[−51.3%]*
Good	−0.001	−0.000	−0.000	−0.002
	(0.002)	(0.001)	(0.001)	(0.002)
Very good	−0.000	0.000	0.000	0.002
	(0.002)	(0.001)	(0.001)	(0.003)
Excellent	0.005*	0.004**	0.003**	0.005
	(0.003)	(0.002)	(0.001)	(0.004)
Tot. Performance at the end of upper secondary school	0.004	0.004	0.003	0.006
	[37.6%]	*[121.5%]*	*[12.2%]*	*[424.1%]*
Vocational school	−0.000	−0.000	0.000	0.000
	(0.001)	(0.000)	(0.001)	(0.001)
	[−4.2%]	*[−7.4%]*	*[0.1%]*	*[20.8%]*
Engineering	0.008***	0.007***	0.007***	0.005***
	(0.002)	(0.001)	(0.001)	(0.002)
Science	0.001**	0.000	0.001	0.001
	(0.000)	(0.000)	(0.001)	(0.001)
Medicine	−0.001**	−0.001**	−0.001	−0.000
	(0.000)	(0.000)	(0.001)	(0.001)
Sport	0.000**	0.000***	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Tot. Subject studied at university	0.008	0.007	0.007	0.006
	[76.7%]	*[196%]*	*[31.3%]*	*[450%]*

Note: Standard errors are in parentheses, and per cent contribution is shown below standard errors.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

TABLE 6 Fairlie decomposition results—France

	Cohort				
	2000	2003	2006	2010	2013
Gender gap in study abroad participation	−0.001	0.014	0.027	−0.011	0.042
Total explained	0.010	0.001	0.005	0.022	0.025
Total per cent explained	−1307.4%	10.5%	18.1%	−204.4%	58.1%
At least one parent with a higher education degree	0.000	−0.000	−0.000	−0.002	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
	[−3.4%]	*[−0.7%]*	*[−0.1%]*	*[15.6%]*	*[7.8%]*
<=18	0.002	0.000	−0.001	0.006	0.001
	(0.003)	(0.002)	(0.002)	(0.005)	(0.004)
19	−0.001	−0.000	−0.000	−0.003	−0.001
	(0.002)	(0.001)	(0.001)	(0.004)	(0.002)
Tot. Age	0.001	−0.000	−0.001	0.003	0.000
	[−176.3%]	*[−0.7%]*	*[−2.2%]*	*[−31.1%]*	*[0.5%]*
Good	−0.000	−0.001	−0.000	0.000	−0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Very good	0.001	−0.001	−0.000	0.004***	−0.001
	(0.001)	(0.001)	(0.000)	(0.001)	(0.002)
Excellent	0.001	0.005***	0.006***	−0.000	0.013***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)
Tot. Performance at the end of upper secondary school	0.001	0.003	0.006	0.004	0.012
	[−168.7%]	*[23.1%]*	*[22.1%]*	*[−35%]*	*[27.6%]*
Vocational school	−0.002	−0.005**	−0.001	0.002*	−0.001
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
	[282.2%]	*[−36.6%]*	*[−2.6%]*	*[−18.2%]*	*[−1.4%]*
Engineering	0.007	0.001	0.000	0.008***	0.006*
	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Science	0.002	0.002	−0.001	0.007***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Medicine	0.000	0.000	0.000	−0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Sport	0.001	0.001	0.001***	−0.000	_
	(0.000)	(0.001)	(0.000)	(0.001)	
Tot. Subject studied at university	0.010	0.004	0.000	0.014	0.010
	[−1241.2%]	*[25.4%]*	*[0.9%]*	*[−135.7%]*	*[23.6%]*

Note: Standard errors are in parentheses, and per cent contribution is shown below standard errors.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

reduced (or the sign of the gap even reversed in a few cases) once gender differences in observable characteristics are controlled for. For instance, in Germany the increase in gender inequality in access to study abroad programmes observed between 2000 and 2009 is much smaller when covariates are accounted for.

Tables 5–7 present our across gender decompositions of study abroad participation by cohort in Italy, France and Germany, respectively. The total gap and the per cent of the total gap explained by the model's covariates are reported.

Our covariates tend to narrow the gender gap in study abroad participation (Total per cent explained is positive) in all but three cases. In 2000 and 2010 cohorts in France and in 2000 cohort in Germany, given that participation rate in study abroad programmes is higher among men relative to women, the covariates act to widen the gender gap (Total per cent explained is negative). Results indicate that the explanatory variables of the model help

TABLE 7 Fairlie decomposition results—Germany

	Cohort				
	2000	2003	2006	2009	2012
Gender gap in study abroad participation	−0.001	0.010	0.019	0.037	0.032
Total explained	0.006	0.010	0.012	0.028	0.038
Total per cent explained	−487.9%	105.8%	62.6%	75.9%	116.6%
At least one parent with a higher education degree	−0.00	0.000	−0.000	−0.001	0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.003)
	[11%]	*[1.1%]*	*[−0.9%]*	*[−2.7%]*	*[1.9%]*
<=18	−0.001	−0.001	−0.000	−0.003*	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
19	−0.002	0.004*	0.004*	−0.001	0.000
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Tot. Age	−0.003	0.003	0.004	−0.004	−0.000
	[217.3%]	*[34%]*	*[22%]*	*[−10.8%]*	*[−1.4%]*
Vocational school	0.001	0.001	0.001	0.004**	0.003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
	[−67.3%]	*[11.1%]*	*[6.3%]*	*[10.6%]*	*[9.4%]*
Engineering	0.008***	0.006***	0.008**	0.021***	0.031***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.006)
Science	0.002**	0.000	0.001	0.009***	0.005**
	(0.001)	(0.000)	(0.001)	(0.003)	(0.002)
Medicine	−0.001***	−0.001**	−0.002***	−0.002*	−0.002
	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
Sport	−0.000	–	0.000	0.002**	–
	(0.000)		(0.000)	(0.001)	
Tot. Subject studied at university	0.009	0.006	0.007	0.029	0.035
	[−648.9%]	*[59.6%]*	*[35.2%]*	*[78.8%]*	*[106.7%]*

Note: Standard errors are in parentheses, and per cent contribution is shown below standard errors.

***Statistical significance at 1%.

**Statistical significance at 5%.

*Statistical significance at 10%.

to explain a significant portion of the gap especially in Italy and Germany. It is also interesting to observe that for 2007 and 2015 cohorts in Italy and for 2003 and 2012 cohorts in Germany, not only is the Total per cent explained positive, but it is above 100%. This reflects the fact that in these cases the gender marginal effect changes from positive to negative after differences in individual characteristics between men and women are accounted for—basically the advantage of women in studying abroad is reversed once gender differences in observable traits are controlled for.

Consistent with H2, subject of study appears to be a relevant factor contributing to the gender disparity in study abroad, particularly in Italy and Germany. Similarly, in line with H3, another variable contributing to explain the gender difference in study abroad participation in Italy and France is upper secondary school performance. The greater proportion of students showing excellent performance at upper secondary school among females relative to males combined with the positive relationship between excellent performance at upper secondary school and study abroad participation works to narrow the gap.

Moreover, there is no support for H4. In Italy, although participation in upper secondary vocational education is found to be a significant negative predictor of studying abroad, its relevance in explaining the gender gap is limited given the small difference in the proportion of men and women attending vocational upper secondary schools. A similar conclusion is reached for Germany, but for the opposite reason. Even though in Germany there is a considerable difference in vocational education participation across gender, attending vocational upper secondary school turns out not to be an important determinant of studying abroad.[12]

6 | CONCLUSIONS

Whilst the number of participants in study abroad programmes has been rapidly rising worldwide (at least before COVID-19[13]), there is a concern that men are increasingly under-represented. In an attempt to shed light on such issue, this paper has examined the extent of and the trends in study abroad gender gap in Europe. We focus our attention on three European countries (France, Germany and Italy) and consider the period between the beginning of the 2000s and the mid-2010s. In particular, we had two objectives: (a) to establish how gender inequality in access to study abroad programmes has changed since the turn of the millennium and (b) to determine to what extent the observed gender imbalance in study abroad is explained by three different sets of individual characteristics.

The results indicate that in none of the countries considered there has been a systematic decline over time in women's over-representation in study abroad programmes. In Germany, the gender difference in study abroad participation has actually widened in favour of women between 2000 and 2009, though it slightly narrowed afterwards. Nevertheless, in all the three countries the size of the gap is consistently significantly smaller (or even the sign of the gap reversed) once gender differences in observable traits are controlled for.

The results of the decomposition analysis suggest that gender differences in subject of study are the most relevant contributors in explaining the raw gap. Women tend to study disciplines, such as Humanities and Social Sciences, which are over-represented in the study abroad population. Another factor helping to explain the study abroad gender gap in Italy and France is academic performance (this variable is unfortunately missing for Germany). Women exhibit, on average, better academic performance, which is likely to be correlated with higher chances of studying abroad given that study abroad places/scholarships are often allocated following a competitive process based on academic merit. Moreover, differences in participation in upper secondary vocational education between women and men do not appear to account for the gap.

One shortcoming of the analyses carried out in this study is that data come from three national surveys differing in content and coverage. Although we attempted to homogenise the samples, there are inevitable limitations in terms of comparability of the results across countries. Hopefully, in the future researchers will be able to use data from comparable international surveys containing information on study abroad participation.

Moving on to the policy implications, the findings of this study indicate that more efforts should be made to reduce the gender gap in study abroad. Previous policies do not seem to have worked well. Based on the results of this paper, it is suggested that more opportunities to study abroad could be created in male-dominated subject areas such as Engineering and Computer Sciences. Other possible measures may include providing students with additional information on the potential advantages associated with studying abroad especially in terms of future employment prospects. Many male students may be unaware or overlook the importance of these benefits. Additionally, a larger number of men who have had rewarding study abroad experiences could be recruited by university study abroad offices in order to promote participation in international mobility programmes. They could report on their experiences, especially targeting male-dominated social groups such as athletic teams. Finally, it would be interesting to investigate how the increased offer of online courses to international students due to COVID-19 impacted the gender gap in study abroad. There is the possibility that virtual international mobility may be an option especially suitable to male students who are often more reluctant to study abroad because they are less willing to leave their friends and their comfort zone (Selingo, 2019).

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CONFLICT OF INTEREST

No potential conflict of interest was reported by the author.

DATA AVAILABILITY STATEMENT

Data on Italy used in this study can be obtained from ISTAT (https://www.istat.it/en/analysis-and-products/microdata-files).

Data on Germany used in this study can be obtained from DZHW (https://fdz.dzhw.eu/en).

Data on France used in this study can be obtained from the French Data Archives of social sciences (https://quetelet.casd.eu/fr/utilisateur/connexion).

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ENDNOTES

[1] In the 2004 and 2007 waves upper secondary school leavers are interviewed 3 years after the end of their studies, whereas in the 2011 and 2015 waves they are contacted 4 years following the completion of their studies.

[2] Unfortunately, the 2015 wave, as opposed to earlier waves, does not report information on when students enrolled at university. Although this does not represent a big concern since in Italy the very large majority of students begin university straight after completion of upper secondary school, it means that our sample for the 2015 wave includes, in addition to fourth year students, also some students who may be in their third, second or even first year of study.

[3] More precisely, third year students are selected in the 2000, 2003 and 2006 waves of both the German and French surveys. Fourth year students are selected in the 2010 and 2103 waves of the French survey and in the 2009 and 2012 waves of the German survey.

[4] In Italy, upper secondary vocational schools consists of *istituti professionali*, *istituti tecnici*, *istituti magistrali* and *istituti d'arte*. In France, upper secondary vocational schools comprise *lycée professionnel* and *lycée technologique*. In Germany, this category includes students who have a Fachhochschulreife (a qualification to enter a university of applied sciences) or those who have a Fachgebundene Hochschulreife (a qualification to enter a university of applied sciences or a specialist university).

[5] Following Di Pietro and Page (2008), in Italy 'poor' means a score between 60 and 84; 'good' between 85 and 94; 'very good' between 95 and 99 and 'excellent' is 100. In France 'poor' is 'passable ou pas de mention'; 'good' is 'assez

bien'; 'very good' is 'bien' and 'excellent' is 'très bien'. Unfortunately, information on performance at the end of upper secondary school is not provided in the German survey.

[6] Information on race/ethnicity is not included in the surveys.

[7] Below are given information on the number of observations excluded from the final samples because of missing values on one or more independent variables: (a) Italy: 234 (2004 wave), 0 (2007 wave), 356 (2011 wave) and 877 (2015 wave); (b) France: 517 (2000 wave), 581 (2003 wave), 538 (2006 wave), 122 (2010 wave) and 282 (2013 wave); (c) Germany 226 (2000 wave), 218 (2003 wave), 202 (2006 wave), 67 (2009 wave) and 62 (2012 wave). The majority of missing values refer to parental education.

[8] Survey weights included in each survey are applied throughout the analyses in order to produce nationally representative estimates.

[9] Fairlie extends the Blinder-Oaxaca decomposition technique to binary-dependent variables. His approach is similar to that of Blinder-Oaxaca, but tackles the nonlinearities inherent in extensions of the linear model.

[10] This term can be further decomposed into the separate contributions from group differences in specific variables.

[11] Probit results (available from the author upon request) are similar to the logit estimates reported in Tables 2-4.

[12] With the exception of the 2009 cohort.

[13] Mok et al. (2021) provide some evidence about the detrimental impact of COVID-19 on international student mobility.

REFERENCES

Bandyopadhyay, S., & Bandyopadhyay, K. (2015). Factors influencing student participation in college study abroad programs. *Journal of International Education Research*, *11*, 87–94. https://doi.org/10.19030/jier.v11i2.9189

Bloomfield, S. B. (2004). One man at a time. NAFSA underrepresentation. *Education Abroad Newsletter*, *1*, 3–4.

Böttcher, L., Araújo, N. A. M., Nagler, J., Mendes, J. F. F., Helbing, D., & Herrmann, H. J. (2016). Gender gap in the ERASMUS mobility program. *PLoS ONE*, *11*, 1–8. https://doi.org/10.1371/journal.pone.0149514

Braquet-Dorel, J. (1985, November 27–29). *Report of the Discussions and Conclusions of the Working Group on Employment After Joint Study Programs*, *2nd Plenary Conference on Joint Study Programs*, Brussels.

Daly, A. (2011). Determinants of participating in Australian university student exchange programs. *Journal of Research in International Education*, *10*, 58–70. https://doi.org/10.1177/1475240910394979

Department for Education. (2019). *National curriculum assessments at key stage 2 in England*, *2019*. Press Office Department for Education.

Di Pietro, G., & Page, L. (2008). Who studies abroad? Evidence from France and Italy. *European Journal of Education*, *43*, 389–398. https://doi.org/10.1111/j.1465-3435.2008.00355.x

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

European Commission. (2015). *Erasmus facts, figures & trends. The European Union support for student and staff exchanges and university cooperation in 2013–2014*, Brussels.

European Commission. (2018). *2019 Annual work programme for the implementation of "Erasmus+": The Union programme for education, training, youth and sport*. C(2018) 6572 of 11 October 2018, Brussels.

Fairlie, R. (2005). An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *Journal of Economic and Social Measurement*, *30*, 305–316. https://doi.org/10.3233/jem-2005-0259

Fernández, C., & Martínez-Turégano, D. (2018). Labour market participation rate in the euro area: Performance and outlook, a long-term view, Bank of Spain, Analytical Articles. *Economic Bulletin* 1/2018. https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/InformesBoletinesRevistas/ArticulosAnaliticos/2018/T1/Files/beaa1801-art1e.pdf

Flausch, M. (2017). Erasmus+ could do more to promote gender equality. *Euractiv*. https://www.euractiv.com/section/economy-jobs/news/erasmus-could-do-more-to-promote-gender-equality/

Goldstein, S. B., & Kim, R. I. (2006). Predictors of US college students' participation in study abroad programs: A longitudinal study. *International Journal of Intercultural Relations*, *30*, 507–521. https://doi.org/10.1016/j.ijintrel.2005.10.001

Hurst, A. L. (2019). Class and gender as predictors of study abroad participation among US liberal arts college students. *Studies in Higher Education*, *44*, 1241–1255. https://doi.org/10.1080/03075079.2018.1428948

Institute of International Education. (2015). *Profile of U.S. study abroad students*, *2003/04–2013/14*. Open Doors Report on International Educational Exchange.

Jürges, H., & Schneider, K. (2011). Why young boys stumble: Early tracking, age and gender bias in the German school system. *German Economic Review*, *12*, 371–394. https://doi.org/10.1111/j.1468-0475.2011.00533.x

Lingo, M. D. (2019). Stratification in study abroad participation after accounting for student intent. *Research in Higher Education*, *60*, 1142–1170. https://doi.org/10.1007/s11162-019-09545-z

Lörz, M., Netz, N., & Quast, H. (2016). Why do students from underprivileged families less often intend to study abroad? *Higher Education*, *72*, 153–174. https://doi.org/10.1007/s10734-015-9943-1

Maiworm, F. (2001). ERASMUS: A continuity and change in the 1990s. *European Journal of Education*, *36*, 459–472. https://doi.org/10.1111/1467-3435.00082

Messer, D., & Wolter, S. C. (2007). Are student exchange programs worth it? *Higher Education*, *54*, 647–663. https://doi.org/10.1007/s10734-006-9016-6

Mok, K. H., Xiong, W., Ke, G., & Cheung, J. O. W. (2021). Impact of COVID-19 pandemic on international higher education and student mobility: Student perspectives from mainland China and Hong Kong. *International Journal of Educational Research*, *105*, 101718. https://doi.org/10.1016/j.ijer.2020.101718

Munk, M. D. (2009). Transnational investments in informational capital. *Acta Sociologica*, *52*, 5–23. https://doi.org/10.1177/0001699308100631

Netz, N., Barker, M., Entrich, S., & Klasik, D. (2020). Socio-demographics: A global overview of inequalities in education abroad participation. In A. Ogden, B. Streitwieser, & C. Van Mol (Eds.), *Education abroad. Bridging scholarship and practice* (pp. 28–42). Routledge.

Paige, R. M., Fry, G., Stallman, E. M., Josic, J., & Jon, J. (2009). Study abroad for global engagement: The long term impact of mobility experiences. *Intercultural Education*, *20*, S29–S44. https://doi.org/10.1080/14675980903370847

Petzold, K. (in press). Heterogeneous effects of graduates' international mobility on employers' hiring intentions—experimental evidence from Germany. *Higher Education*.

Rodgers, J., & Boyer, T. (2006). Gender and racial differences in vocational education: An international perspective. *International Journal of Manpower*, *27*, 308–320. https://doi.org/10.1108/03068291011025282

Salisbury, M. H., Paulsen, M. B., & Pascarella, E. T. (2010). To see the world or stay at home: Applying an integrated student choice model to explore the gender gap in the intent to study abroad. *Research in Higher Education*, *51*, 615–640. https://doi.org/10.1007/s11162-010-9171-6

Schnepf, S. V., & Colagrossi, M. (2020). Is unequal uptake of Erasmus mobility really only due to students' choices? The role of selection into universities and fields of study. *Journal of European Social Policy*, *30*, 436–451. https://doi.org/10.1177/0958928719899339

Selingo, J. (2019, February 28). Why are so few male students studying abroad? *The Atlantic*. https://www.theatlantic.com/education/archive/2019/02/male-students-studying-abroad/583828/

Shirley, S. W. (2006). *The gender gap in post-secondary study abroad: Understanding and marketing to male students* (PhD). The University of North Dakota.

Teichler, U., & Janson, K. (2007). The professional value of temporary study in another European country: Employment and work of former Erasmus students. *Journal of Studies in International Education*, *11*, 486–495. https://doi.org/10.1177/1028315307303230

Thirolf, K. Q. (2014). Male college student perceptions of intercultural and study abroad programs. *Journal of Student Affairs Research and Practice*, *51*, 246–258. https://doi.org/10.1515/jsarp-2014-0026

Tompkins, A., Cook, T., Miller, E., & LePeau, L. A. (2017). Gender Influences on students' study abroad participation and intercultural competence. *Journal of Student Affairs Research and Practice*, *54*, 204–216. https://doi.org/10.1080/19496591.2017.1284671

Van Broekhuizen, H., & Spaull, N. (2017). *The 'Martha Effect': The compounding female advantage in South African higher education*, WP14/2017, Stellenbosch Economic Working Papers.

Van Hek, M., Buchmann, C., & Kraaykamp, G. (2019). Educational systems and gender differences in reading: A comparative multilevel analysis. *European Sociological Review*, *35*, 169–186. https://doi.org/10.1093/esr/jcy054

Van Mol, C. (2017). Do employers value international study and internship? A comparative analysis of 31 countries. *Geoforum*, *78*, 52–60. https://doi.org/10.1016/j.geoforum.2016.11.014

Van Mol, C. (in press). Exploring explanations for the gender gap in study abroad: A case study of the Netherlands. *Higher Education*. https://doi.org/10.1007/s10734-020-00671-7

Van Mol, C., Caarls, K., & Souto-Otero, M. (in press). International student mobility and labour market outcomes: An investigation of the role of level of study, type of mobility, and international prestige hierarchies. *Higher Education*.

Zimmermann, J., & Neyer, F. J. (2013). Do we become a different person when hitting the road? Personality and development of sojourners. *Journal of Personality and Social Psychology*, *105*, 515–530. https://doi.org/10.1037/a0033019

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APPENDIX 1

DESCRIPTIVE STATISTICS—ITALY

	Cohort							
	2004		2007		2011		2015	
	Males (*N* = 3257)	Females (*N* = 5103)	Males (*N* = 4473)	Females (*N* = 7831)	Males (*N* = 4380)	Females (*N* = 7423)	Males (*N* = 3685)	Females (*N* = 6841)
At least one parent with a higher education degree	0.285	0.222	0.278	0.211	0.298	0.233	0.350	0.279
	(0.011)	(0.008)	(0.009)	(0.007)	(0.010)	(0.008)	(0.012)	(0.009)
Vocational school	0.466	0.458	0.500	0.484	0.455	0.441	0.338	0.322
	(0.011)	(0.010)	(0.010)	(0.009)	(0.010)	(0.008)	(0.011)	(0.007)
Age at upper secondary school completion								
<=18	0.077	0.119	0.087	0.080	0.079	0.083	0.057	0.060
	(0.007)	(0.007)	(0.006)	(0.005)	(0.007)	(0.006)	(0.007)	(0.005)
19	0.751	0.778	0.751	0.816	0.801	0.835	0.803	0.860
	(0.010)	(0.008)	(0.009)	(0.008)	(0.009)	(0.007)	(0.010)	(0.006)
=>20	0.172	0.103	0.162	0.104	0.120	0.081	0.140	0.081
	(0.008)	(0.005)	(0.008)	(0.006)	(0.006)	(0.004)	(0.007)	(0.004)
Performance at the end of upper secondary school								
Poor	0.234	0.170	0.232	0.129	0.252	0.152	0.228	0.159
	(0.010)	(0.007)	(0.009)	(0.006)	(0.009)	(0.006)	(0.010)	(0.007)
Good	0.276	0.235	0.254	0.218	0.267	0.243	0.304	0.264
	(0.010)	(0.008)	(0.009)	(0.008)	(0.009)	(0.008)	(0.011)	(0.008)
Very good	0.220	0.231	0.202	0.226	0.210	0.238	0.233	0.289
	(0.010)	(0.008)	(0.008)	(0.007)	(0.009)	(0.007)	(0.010)	(0.008)
Excellent	0.270	0.365	0.312	0.426	0.271	0.367	0.235	0.288
	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)	(0.008)	(0.011)	(0.008)
Subject studied at university								
Humanities, Economics and Law	0.490	0.706	0.507	0.674	0.479	0.650	0.451	0.626
	(0.012)	(0.009)	(0.010)	(0.008)	(0.011)	(0.008)	(0.012)	(0.009)
Engineering	0.307	0.086	0.283	0.087	0.270	0.100	0.259	0.091
	(0.011)	(0.006)	(0.009)	(0.004)	(0.009)	(0.006)	(0.010)	(0.005)
Science	0.134	0.100	0.112	0.110	0.130	0.116	0.124	0.115
	(0.008)	(0.006)	(0.006)	(0.005)	(0.007)	(0.006)	(0.008)	(0.006)
Medicine	0.045	0.099	0.071	0.121	0.096	0.123	0.146	0.160
	(0.005)	(0.006)	(0.005)	(0.007)	(0.006)	(0.006)	(0.009)	(0.007)
Sport	0.024	0.010	0.027	0.008	0.024	0.012	0.020	0.008
	(0.004)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.004)	(0.001)

Note. Standard deviations are in parentheses.

APPENDIX 2

DESCRIPTIVE STATISTICS—FRANCE

	Cohort									
	2000		2003		2006		2010		2013	
	Males (*N* = 1350)	Females (*N* = 2505)	Males (*N* = 1176)	Females (*N* = 2315)	Males (*N* = 1275)	Females (*N* = 2891)	Males (*N* = 1056)	Females (*N* = 2557)	Males (*N* = 996)	Females (*N* = 2355)
At least one parent with a higher education degree	0.345	0.338	0.352	0.335	0.366	0.356	0.399	0.375	0.381	0.435
	(0.014)	(0.011)	(0.016)	(0.011)	(0.016)	(0.011)	(0.016)	(0.011)	(0.020)	(0.013)
Vocational school	0.205	0.130	0.269	0.196	0.303	0.237	0.161	0.117	0.292	0.250
	(0.013)	(0.009)	(0.016)	(0.012)	(0.017)	(0.013)	(0.014)	(0.009)	(0.025)	(0.016)
Age at upper secondary school completion										
<=18	0.546	0.649	0.531	0.658	0.598	0.668	0.687	0.763	0.624	0.732
	(0.015)	(0.011)	(0.016)	(0.012)	(0.016)	(0.012)	(0.016)	(0.010)	(0.022)	(0.014)
19	0.263	0.219	0.267	0.221	0.220	0.208	0.209	0.154	0.214	0.171
	(0.013)	(0.010)	(0.015)	(0.010)	(0.013)	(0.010)	(0.014)	(0.008)	(0.017)	(0.011)
=>20	0.190	0.142	0.202	0.121	0.182	0.125	0.102	0.082	0.162	0.097
	(0.013)	(0.009)	(0.015)	(0.010)	(0.015)	(0.010)	(0.012)	(0.008)	(0.021)	(0.012)
Performance at the end of upper secondary school										
Poor	0.638	0.616	0.553	0.570	0.561	0.500	0.477	0.446	0.400	0.343
	(0.014)	(0.011)	(0.016)	(0.012)	(0.016)	(0.012)	(0.017)	(0.011)	(0.020)	(0.013)
Good	0.253	0.259	0.306	0.269	0.268	0.298	0.318	0.323	0.300	0.292
	(0.012)	(0.009)	(0.015)	(0.010)	(0.014)	(0.011)	(0.015)	(0.010)	(0.019)	(0.012)
Very good	0.089	0.101	0.116	0.115	0.131	0.135	0.149	0.176	0.218	0.223
	(0.008)	(0.007)	(0.011)	(0.008)	(0.011)	(0.008)	(0.012)	(0.008)	(0.018)	(0.012)
Excellent	0.020	0.023	0.024	0.046	0.040	0.067	0.055	0.056	0.081	0.142
	(0.004)	(0.004)	(0.006)	(0.006)	(0.008)	(0.008)	(0.008)	(0.005)	(0.013)	(0.011)

	Cohort									
	2000		2003		2006		2010		2013	
	Males (*N* = 1350)	Females (*N* = 2505)	Males (*N* = 1176)	Females (*N* = 2315)	Males (*N* = 1275)	Females (*N* = 2891)	Males (*N* = 1056)	Females (*N* = 2557)	Males (*N* = 996)	Females (*N* = 2355)
Subject studied at university										
Humanities, Economics and Law	0.448	0.723	0.447	0.727	0.437	0.698	0.527	0.733	0.596	0.788
	(0.015)	(0.010)	(0.016)	(0.011)	(0.016)	(0.010)	(0.017)	(0.010)	(0.020)	(0.010)
Engineering	0.302	0.114	0.313	0.098	0.285	0.085	0.173	0.031	0.172	0.037
	(0.013)	(0.007)	(0.016)	(0.008)	(0.015)	(0.006)	(0.012)	(0.004)	(0.014)	(0.004)
Science	0.137	0.087	0.132	0.096	0.137	0.103	0.189	0.119	0.118	0.052
	(0.010)	(0.006)	(0.011)	(0.007)	(0.011)	(0.006)	(0.013)	(0.007)	(0.013)	(0.005)
Medicine	0.051	0.055	0.050	0.059	0.078	0.090	0.111	0.117	0.109	0.122
	(0.006)	(0.005)	(0.007)	(0.005)	(0.008)	(0.006)	(0.011)	(0.008)	(0.012)	(0.008)
Sport	0.063	0.021	0.057	0.020	0.062	0.023	0.032	0.012	0.006	0.001
	(0.007)	(0.003)	(0.007)	(0.003)	(0.007)	(0.003)	(0.006)	(0.002)	(0.002)	(0.001)

Note. Standard deviations are in parentheses.

APPENDIX 3

DESCRIPTIVE STATISTICS—GERMANY

	Cohort									
	2000		2003		2006		2009		2012	
	Males (*N* = 959)	Females (*N* = 1105)	Males (*N* = 1312)	Females (*N* = 1695)	Males (*N* = 1072)	Females (*N* = 1517)	Males (*N* = 797)	Females (*N* = 1215)	Males (*N* = 482)	Females (*N* = 706)
At least one parent with a higher education degree	0.432	0.498	0.447	0.476	0.489	0.499	0.535	0.515	0.437	0.449
	(0.018)	(0.017)	(0.014)	(0.013)	(0.017)	(0.014)	(0.019)	(0.015)	(0.024)	(0.020)
Vocational school	0.160	0.080	0.192	0.079	0.223	0.116	0.183	0.092	0.267	0.141
	(0.013)	(0.009)	(0.012)	(0.007)	(0.014)	(0.009)	(0.015)	(0.009)	(0.023)	(0.015)
Age at upper secondary school completion										
<=18	0.020	0.137	0.022	0.139	0.041	0.098	0.044	0.106	0.055	0.117
	(0.005)	(0.012)	(0.005)	(0.009)	(0.006)	(0.008)	(0.007)	(0.009)	(0.011)	(0.013)
19	0.148	0.423	0.164	0.398	0.190	0.427	0.225	0.365	0.199	0.300
	(0.013)	(0.016)	(0.011)	(0.012)	(0.013)	(0.014)	(0.016)	(0.015)	(0.019)	(0.018)
=>20	0.832	0.440	0.814	0.463	0.769	0.475	0.732	0.529	0.746	0.583
	(0.013)	(0.016)	(0.011)	(0.013)	(0.014)	(0.014)	(0.017)	(0.015)	(0.021)	(0.020)
Subject studied at university										
Humanities, Economics and Law	0.454	0.678	0.381	0.656	0.335	0.627	0.417	0.646	0.370	0.647
	(0.018)	(0.015)	(0.014)	(0.012)	(0.015)	(0.013)	(0.019)	(0.015)	(0.024)	(0.019)
Engineering	0.305	0.085	0.458	0.155	0.447	0.102	0.275	0.080	0.397	0.098
	(0.017)	(0.009)	(0.015)	(0.010)	(0.016)	(0.008)	(0.017)	(0.008)	(0.024)	(0.013)
Science	0.170	0.108	0.102	0.099	0.143	0.144	0.218	0.139	0.155	0.144
	(0.013)	(0.010)	(0.009)	(0.008)	(0.012)	(0.010)	(0.016)	(0.011)	(0.017)	(0.014)
Medicine	0.062	0.110	0.044	0.074	0.052	0.113	0.068	0.121	0.066	0.107
	(0.008)	(0.010)	(0.005)	(0.006)	(0.008)	(0.009)	(0.010)	(0.010)	(0.010)	(0.011)
Sport	0.008	0.020	0.016	0.016	0.022	0.014	0.023	0.015	0.012	0.004
	(0.003)	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)	(0.006)	(0.004)	(0.005)	(0.002)

Note. Standard deviations in parentheses.