'Now I Want To Do Something Interesting, Something Fun'. A Mixed-methods Study Into The Determinants Of Horizontal Gender Segregation At A Belgian University*

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Abstract

This study examines by means of quantitative and qualitative data analyses which factors determine the choice for more masculine or more feminine fields of study by male and female bachelor students. The quantitative analyses are based on data of 4758 bachelor students, of which 1808 males and 2950 females, taken from STUBARO 2011-2012, a yearly online survey of students of Ghent University. The qualitative data are data of 15 female and 8 male students in gender-atypical fields, gathered by means of in-depth interviews and focus groups. Family background only slightly explained the gendered choices. More important were the students' occupational values, as more feminine values decreased the likelihood of being in more masculine fields of study, and vice versa. Previous educational careers appeared to be most important, namely mathematics, which determined the enrolment in masculine fields somewhat more for men than for women.

Keywords: educational choice, masculine fields, feminine fields, mixed methods, horizontal gender segregation.

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1. Introduction.

Since the 1960s the educational deprivation of girls and women has been reduced tremendously in the western world (Jacobs 1996; Buchmann, DiPrete and McDaniel 2008). From the 1990s on, in primary and especially in secondary education it is the underachievement of boys in comparison to girls that offers reasons to worry (Epstein et al. 1998; Frosh, Phoenix and Pattman 2002; Author 2004). As for higher education, today more women than men are enrolled in colleges and universities, and women are more likely than men to obtain their final degree (Buchmann et al. 2008; Gerber and Cheung 2008; Alon and Gelbgiser 2011). Despite this, a large gender inequality persists in western higher education with respect to the fields of study male and female students are enrolled in (Ntiri 2001; Ayalon 2003; Gerber and Cheung 2008), and this gender specific educational choice shows to be highly stable in time and space (Gerber and Cheung 2008; Charles and Bradley 2009; Barone 2011). Most of concern is the underrepresentation of female students in the so-called exact sciences, as these fields of study are most lucrative in terms of occupational status and remuneration later on. Less of concern, but in fact the other side of the same coin, is the underrepresentation of boys in the so-called soft sciences (Jacobs 1996; Gerber and Cheung 2008).

A consequence of this gender specific educational choice, is the existence of horizontal gender segregation in higher education. That is, a distinction can be made between ‘masculine’ fields of study, enrolling a majority of male students, and ‘feminine’ fields of study, enrolling a majority of female students (Støren and Arnesen 2007). The masculine fields of study are often referred to as the STEM-fields, namely Science, Technology, Engineering and Mathematics. Typical feminine fields of study are educational studies and pedagogy, language and arts, and a number of health related and bio sciences (Jacobs 1996; Gerber and Cheung 2008).

This study aims to explain the gender-typical and -atypical educational choices of male and female students in the transition from secondary to tertiary education, by evaluating at the same time a broad range of possible determinants, based on a variety of distinct theoretical frameworks. Rather than investigating why women are not opting for the STEM-fields by studying their gender-typical choices—characteristic research regarding this topic—this study focuses on the educational choice of both male and female students. Moreover, this study is going beyond the distinction between exact sciences and humane sciences, by considering the gender composition of fields of study and distinguishing between masculine and feminine

fields based on the proportion of men enrolled in the field. The study is commissioned by and carried out at Ghent University, a university in Flanders—the northern, Dutch-speaking part of Belgium—offering academic bachelors and masters in all fields of study and representative for Flemish universities (see Context). Use is made of quantitative as well as qualitative data to get an insight into the determinants of educational choice of male and female bachelor students at Ghent University.

Before reporting the results of the research, we describe briefly the existing literature on determinants of gender specific educational choices in tertiary education.

1.1 Determinants of gender specific educational choices

Relevant when studying gendered educational choices at the transition from secondary to tertiary education, are family and other background characteristics, the student's educational career, personal values and aspirations, and personality. After all, horizontal gender segregation follows from the aggregation of individual choices, in which processes of socialization are at work. Men and women are influenced by the characteristics of the families they grow up in. They adapt certain values and beliefs, also with respect to gender. This might shape their ambitions and, as such, the choices they make. Other significant others, such as teachers and friends, might be important as well in these socialization processes.

With respect to family characteristics a first important factor is the educational level and socioeconomic status (SES) of the parents. Students with highly educated parents, and a subsequent high SES, not only have a higher chance to enroll in higher or university education, but are also more likely to make gender-atypical choices. This is explained by the fact that these highly educated parents have more egalitarian views which they pass on to their children (Buchmann et al. 2008; Bergren 2008; Gerber and Cheung 2011). Furthermore, it has been shown that in the final years of secondary education students tend to follow the gender-neutral, or otherwise gender-specific, educational career of their parents (Dryler 1998). Especially, male students seem to imitate their fathers in this matter (Van de Werfhorst 2001). Parents, and especially the fathers, are shown to be very important, if not to say the most important, role models for their children regarding educational choices (Brolin Låftman 2008). It might be expected that the gender-typical nature of the family a student is raised in, might affect his or her gendered educational choice, making things as housekeeping and occupational arrangements (working full-time or part-time) important indicators of prevailing gender attitudes.

The most cited predictors of educational choice in tertiary education are previous education and educational career. In secondary education students are sorted into various tracks, and tertiary education is usually a continuation of this sorting. Namely the number of hours of mathematics a student had in secondary education will determine whether or not a student opts for math and science oriented fields in tertiary education. Of course, achievement and cognitive competences are strong predictors as well (Gerber and Cheung 2008; Buchmann et al. 2009). In secondary education girls are less likely than boys to enroll in highly mathematical and/or scientific programs, making them less likely to opt for exact sciences and mathematics in tertiary education. Moreover, it is shown that even if they are enrolled in mathematical or scientific programs in secondary education, girls are still less inclined in tertiary education to choose sciences or other gender-atypical fields (Ayalon 2003; Xie and Schauman 2003).

It is conceivable that teachers or other agents in secondary education might encourage, or otherwise discourage, gender-atypical fields of study (Ayalon 2003), but there is hardly any large-scale research into the influence of teachers or peers in the choice of gender-typical or -atypical fields of study (Gerber and Cheung 2008). However, parents as well as teachers have gender-specific expectations and beliefs regarding mathematics and sciences. These kind of courses are considered to be masculine and rather irrelevant for women's future as they lead to professions which hamper the combination of work and family (Eccles, Jacobs and Harold 1990; Correl 2001). Girls then develop low self-concepts regarding mathematics and sciences and are not eager to choose those fields, unless they are really very committed (Ayalon 2003; Mastekaasa and Smeby 2008).

Educational and professional ambitions are undoubtedly important determining factors in the transition from secondary to tertiary education. Regarding professional ambitions, it has been demonstrated that boys are more materialistic and instrumental than girls are. On average, boys highly value wealth, status and prestige, whereas girls care more for the social aspects and altruistic side of future occupations (Boudarbat and Montmarquette 2007; Gerber and Cheung 2008; Lörz, Schindler and Walter 2011). Female students would also anticipate more on a future family life with children, and, as such, they would opt for disciplines that are likely to facilitate the work-family combination later on (Blakemore and Low 1984), while the presence of a desire to have children might be an important determinant as well. It is not clear, though, why these differences between boys and girls arise, and this even at a fairly young age (Gerber and Cheung 2008). Anyhow, boys and girls seem to differ as well with respect to interest in sciences, although in terms of achievement there is hardly any difference (Chiu 2010). As such, they do not help in explaining gender specific educational choices. However,

such theories do instigate the question whether, irrespective of one's biological sex, having a more male or female identity, or more male or female values, attitudes and ambitions, might be associated with a choice for a rather masculine or feminine field of study.

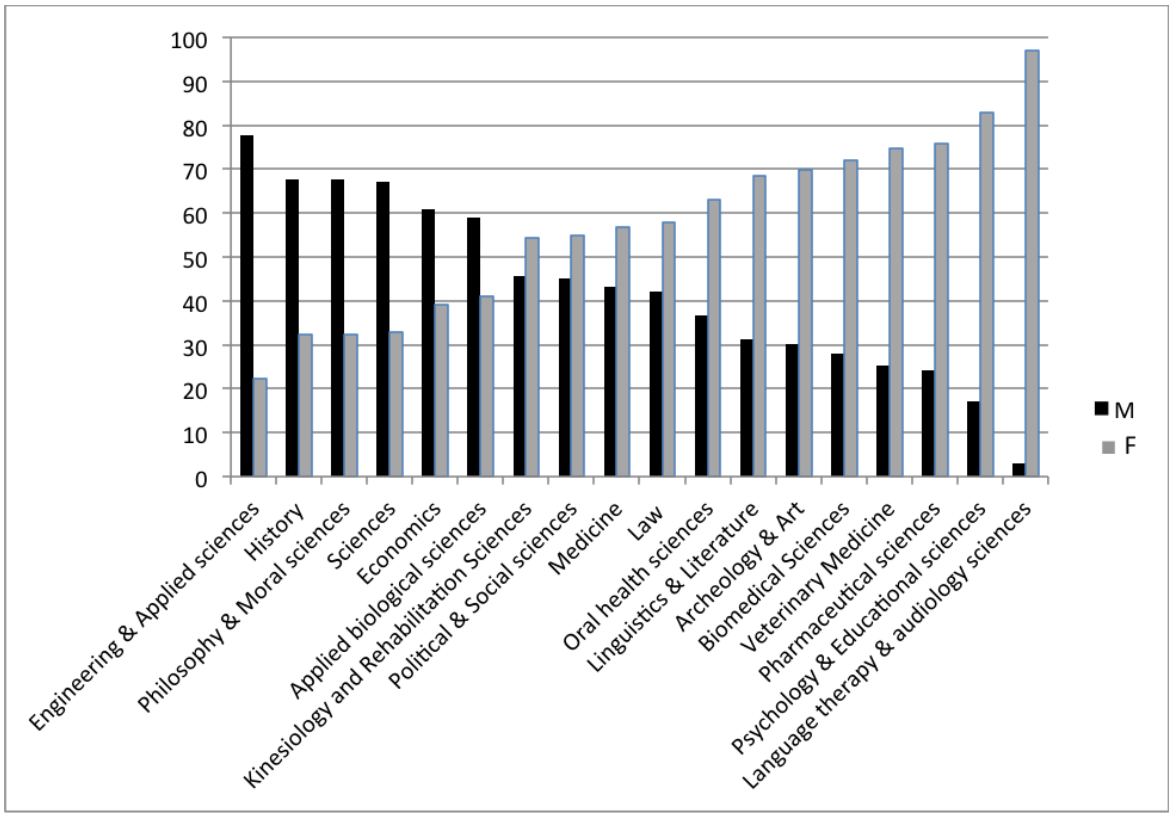
Lastly, it might be questioned whether the gender composition of fields of study in itself is encouraging or discouraging the enrolment of men and women (Steele and Aronson 1997; Ayalon 2003; Bergren 2008). It might be the case that women pass by the masculine fields because the choice for such a field would place them in a minority position, accompanied by threats of sexual intimidation (Steel and Aronson 1997). This reasoning implies that female students are aware of the gender composition of specific fields of study, which is not demonstrated in previous research. Furthermore, it is unclear whether male students would avoid some feminine fields of study for the same reason (Bergren 2008).

1.2 Context.

Compulsory education in Flanders starts when children turn six, when primary school begins. Primary education lasts six years, after which pupils, at age twelve, make the transition to secondary education, which usually also lasts six years. These six years are divided into three so-called grades, each lasting two years. Subsequent grades are characterized by an increasing differentiation in terms of educational tracks and fields of study within tracks. At the beginning of second grade, pupils have to make a choice between academic, technical, artistic and vocational secondary education and progressively between fields of study within these tracks (Department of Education 2008). In the third and the fifth grade, the students need to refine their branch of studies. Secondary education is compulsory until the age of eighteen. After six years of academic, technical, or artistic education, or seven years (six years plus an extra year) of vocational education, the student receives a diploma of secondary education granting unlimited access to each form of higher education. In tertiary education a common distinction is made between schools for higher education, offering professional bachelors, and universities, offering academic bachelors and masters. Any student with a diploma of secondary education may start at university, and fees are relatively low. There are five Flemish universities, all offering alpha, beta, and gamma fields of study. In Flanders we do not distinguish elite-universities such as the "Ivy League" in the US. Ghent University has 11 faculties and 130 departments and is with more than 38.000 students and 7.100 staff members one of the largest universities in Flanders and the Netherlands. Since 1999-2000 female students are the majority in the bachelor years. In 2010-2011 and 2011-2012 the proportion of female students was respectively 55% and 56%. This evolution follows the

international trend (Gerber and Cheung 2008). Male and female students are not equally divided in the various fields of study, though (see Figure 1). The most feminine field of study—that is with the highest proportion of women enrolled—is 'language therapy and audiology' (97% female students), followed by 'psychology and pedagogical sciences' (79%), whereas on the other end of the continuum 'engineering' (85% male students) is the most masculine field.

Figure 1: Percentage of men and women in various fields of study in bachelor-years at Ghent University (2011-2012)



The main question in this study is which factors determine the choice for more masculine or more feminine fields of study by male and female bachelor students at Ghent University.

2. Method.

2.1 Design.

Given the central objective of the present study, namely determining the factors that are associated with the gender composition of the field of study chosen in the transition from secondary to tertiary education, a quantitative design was needed which allowed the inclusion of as many variables derived from the literature as possible. For reasons of parsimoniousness, not all relevant variables could be considered at the same time, though. Following the literature, several blocks of variables were considered, namely representing family background and family's gender attitudes, representing the school career of the student, and representing personal ambitions and values of the student (see Variables). Final aim of the analysis was to reduce these independent variables to a set of significant predictors of enrolment in masculine or feminine fields of study. Therefore we started with blockwise multiple regression analyses (OLS)—each time taking into account the student's age and migrant background—to determine which variables in each block were significantly associated with a more masculine or feminine field of study (see Appendix). Next, we carried out a stepwise regression analysis with forward deletion (OLS), in which all variables that showed to be significant for either men or women in the blockwise multiple regressions were entered one by one, starting with those variables that increased the model fit the most. As such, in the final model only variables related significantly ($p<0.05$) to the gender composition of the field of study were retained. Analyses were done separately for male and female students.

To get more insight in how students make their choices, qualitative data were gathered by means of in-depth interviews and focus groups with so-called 'outliers', that is female students in highly masculine fields of study and male students in highly feminine fields. It was the objective to get insight in what made them decide to enroll in these highly atypical fields. Focus groups and interviews followed a topic list, based on a profound research of the literature. Conversations took place in the building of the department of sociology and lasted between one and two hours. All conversations were registered with a digital recorder and transcribed afterwards. These transcribed data were coded and analyzed using NVIVO7.

2.2 Data.

The quantitative analyses are based on data taken from STUBARO 2011-2012, a yearly online survey of students of Ghent University. All students were invited to participate by means of a personalized email to their university mail-account, the third week of November 2011. Two

reminders were sent in December 2011. The sample in this study consists of 4758 bachelor students, of which 1808 males (38%) and 2950 females (62%), resp. 23% and 30% of the population at Ghent University. This underrepresentation of men is an often noted phenomenon, as well in online web surveys as in written surveys (Stoop 2005; Underwood, Kim and Matier 2000). The response of bachelor students in Stubaro 2011-2012 amounts to 27%, which corresponds with the response in previous Stubaro-surveys (Author 2009). Online surveys commonly report a lower response rate than traditional paper-and-pencil questionnaires, and a response of about 30% is not unusual (Fan and Zheng Yan 2010).

As for the qualitative research, two focus groups were organized in November 2011, one group with seven female students and one group with five male students. These male and female students were first-year students enrolled in fields of study with resp. less than 35% male and female students, and are, as such, students who made a gender-atypical educational choice. In the summer of 2012 the qualitative data gathering continued with interviews of couples or little groups of students. These students were males and females attending fields of study with resp. less than 25% male and female students. There were four interviews with resp. two, two, one and three female interviewees (giving a total of eight), and two interviews with resp. two and one male interviewees (giving a total of three). Summing up, we gathered information of 15 female and 8 male students.

2.3 Variables.

The dependent variable measured the masculinity and femininity of the field of study a student was enrolled in by means of the proportion male students in that field of study in 2011-2012 at Ghent University. The value of this variable varied between 0 and 1. Male and female students in fields of study with a higher proportion of male students got a higher value, whereas male and female students in fields of study with a higher proportion of female students got a lower value—obviously these values were purely statistical and did not entail any judgment. Consequently, a positive association of a predictor with this dependent variable meant in the case of female students that this predictor heightened their chance of being enrolled in a masculine field, that is, heightened their chance of a gender-atypical educational choice. As for male students, positive associations indicated a higher likelihood of a gender-typical educational choice. In this dataset only 9.5% of the female students were enrolled in a masculine field of study—a field with less than 25% women—whereas 23.3% of the male students were enrolled in a feminine field—a field with less than 25% men.

All independent variables are listed with their descriptives in the Appendix. To start with we took into account the student's age and migrant background. On average the students in this sample were 19.83 years old (SD=2.98). As common in Flemish and Dutch research, the student's maternal grandmother's birth place determined the migrant background of the student and we distinguished between 'western' (0) and 'non-western' (1) (De Graaf et al. 2010). Almost all respondents (97%) had a western background. As for the first block of family variables, the socio-economic status of father and mother was based on their occupation as reported by the students (Erikson, Goldthorpe and Portocarero 1983). For parental employment working full-time (0) was opposed against not or part-time working (1). Students were also asked whether their father and mother had an executive function (1) or not (0). A second block of family variables covered parental education. For educational level a distinction was made between fathers and mothers without higher education (0), with higher education but no university (1) and with a university degree (2). As for the field of study of father and mother, we took into account the masculinity/femininity based on the gender composition of the field today. A third block of family variables encompassed how traditional fathers and mothers were when taking up housekeeping tasks. As single parents often had no choice, the relational status of parents had to be taken into account. In a fourth block the importance of significant others when making educational decisions was considered. Students could indicate on a scale from one to five how important each group was, 1 meaning 'not important at all', 5 meaning 'very important'. As for teachers it was asked whether (1) or not (0) one or more teachers influenced the decision.

Regarding the educational career, we assessed how many hours of mathematics the student's program counted in the final grade of secondary education. Additionally, we assessed the students' GPA for mathematics and their total GPA in the last grade. These scores might have a value between 0 en 20, and each unit corresponded with a 5%-interval. A score of 1 represented a GPA between 0% and 5%, and a score of 20 represented a GPA between 95% and 100%. The comparative GPA for mathematics represented the share of mathematics in the total GPA.

A next block contained a number of gender diagnosticity (GD) indicators. Gender diagnosticity refers to the Bayesian probability that an individual is predicted to be male or female based on some set of gender-related diagnostic indicators, e.g. attitudes, interests or personality-related constructs on which males and females tend to differ (Lippa and Connely 1990). Lippa and Connely (1990) have argued that gender diagnostic probabilities are reliable and valid measures of gender-related individual differences both within and across the sexes. This kind of indicators state empirically, based on discriminant analysis, how masculine or feminine

certain traits are. In this study these traits were personality—the Ten-Item Personality Inventory (Hofmans, Kuppens and Allik 2008); occupational values—such as possibility for initiative, promotion, salary, holiday arrangements; motivations for educational choice—interest, competencies, reputation of the field of study; and gender ideology or attitudes regarding societal roles, rights and responsibilities of men and women. This study assessed whether students with more feminine patterns of personality, occupational values, educational motivations and gender ideology, opted less for more masculine fields of study or not. Additionally, students were asked whether they desired to have children in the future, and what they gathered to be their ideal age to have children—expressed as how many years from now they want to have children. In a next block the students' gender identity—whether they felt being masculine or feminine—and the saliency of this identity was taken into account. Lastly, the study took into account the sexual orientation of the students, measured by means of the Kinsey-instrument (Kinsey, Pomeroy and Martin 1948), as we know that occupational preference items that distinguished men from women also tend to distinguish heterosexual from homosexual individuals (Lippa 2002).

3. Results.

The significant predictors of being enrolled in a more masculine field of study are presented in Table 1, with the most powerful variables—that is with the strongest association—on top.

TABLE 1: Predictors of being enrolled in masculine field of study for males. Results stepwise regression analysis (OLS) with forward deletion.

Male students		**Female students**	
Hours of math last grade	0.301**	Hours of math last grade	0.236***
Occupational values (GD)	-0.208**	Occupational values (GD)	-0.200***
GPA math last grade	0.140**	Motivation ed. Choice (GD)	-0.182***
Mother part-time or not	0.101**	Hours of math* GPA math comp	0.100***
Teacher	-0.094*	Teacher	-0.098***
Motivation ed. Choice (GD)	-0.085**	GPA math last grade	0.082***
Hours of math* GPA math comp	0.084**	Father university	0.052**
GPA last grade	0.081**	Ideal age having children	0.041*
Adj R^2	**0.224**	**Adj R^2**	**0.185**

Remarkably, the results were quite similar for male and female students, with the top two being the same. Most important predictor for both men and women were the hours of mathematics in the program in the last grade of secondary education. Male and female students with programs with more hours of mathematics in secondary education were more often enrolled in more masculine fields of study in tertiary education, an association which was somewhat stronger for men than for women. Moreover, for males, the third important predictor appeared their GPA for mathematics in the last grade of secondary education: male students with higher grades for mathematics were more often enrolled in more masculine fields of study. As for women, the fourth place of the interaction term 'hours of mathematics*GPA for mathematics' indicated that their grades for mathematics were important too, but conditionally on the hours of mathematics: females with higher grades for mathematics were more likely to enroll in more masculine fields when they were enrolled in programs with more hours of mathematics. So, for women, following a mathematical track and even obtaining high grades for mathematics in secondary education did not warrant the enrolment in exact—more masculine—fields of study in tertiary education. In the interviews the females in highly gender-atypical fields even indicated that they chose this field of study rather in spite of their grades for mathematics, but because of their interest in the study subject.

The second important predictor for both men and women were the occupational values held. The more feminine the students' values, the less often they will be enrolled in more masculine fields of study. A typical feminine occupational value is the opportunity of working with people, rather than working with objects. The males in feminine fields of study made it very clear in the interviews that the possibility of caring for and helping people in their future occupation was an important reason for choosing their specific field. Typical quotes were:

> S.(male): *I would like to perform a social, a socially engaged occupation…*
>
> C.(male): I *want to have the feeling to do something … euh … real, that I make a difference, that I help people or something like that. Otherwise, I could not do anything, I would not be able to keep going.*
>
> E.(male): *Something social… so you can chatter with people… and not even chattering… just having the feeling that you are busy socially…*

Another typical feminine occupational value was the combination of work and family. In the interviews with men this combination was not an issue. But unlike the males, the females spontaneously mentioned their desire for a family with children and discussed the ability to combine work and family.

L.(female): *Erm, well, I certainly aim for a career…, I have… I want to accomplish a lot. I certainly have a lot of ambition, but I certainly also want to have a family.*

L.(female): *Yes, I wouldn't, it is not that I would stay at home or something like that for my children. You might, well, I know for sure that nowadays, you might… A lot of people are combining it, many mothers do… […] I would certainly try to combine it, but yes, well, when you are an engineer, you will… You will make good money, but you will also have to work hard for it, well, you will not just get the money. Anyhow, you will need to work hard. And certainly when you're young, I am positive you are able to make the combi…that you can combine it. It will not always be easy, but….*

The desire for having children was not significantly related to the masculinity of the field of study, but for females the ideal age to have children was, be it a very weak association (β=0.041): the lower this ideal age, the less likely women were to opt for a more masculine field. In the same vein, the more masculine the students' occupational values, the more often they would be enrolled in masculine fields. The female students in engineering indeed mentioned the financial aspect of the future job, but this did not seem to be decisive. Occupational security, for example, seemed more important.

C.(female): … *people may say that money isn't everything but you just know that, come on, with engineering, you just know that you will make good money. For the male students in the feminine fields of study, money did not seem important at all.*

I.: *Is the financial aspect important as well?*

S.(male): *It is not that I would be prepared to work for free. If you have been studying for so long, a compensation is in its place, but (the financial aspect) has no priority, no.*

At the third place, we found for female students specific motivations for educational choice such as interest, competencies and reputation and quality of the field of study. The more feminine these motives were, the less often females opted for more masculine fields of study, and vice versa. A typical masculine motive was, for example, the reputation of the field of study, while personal interest was a more feminine motive. This predictor proved to be significant for the male students as well, but here the association was very weak to negligible (β=0.085).

Family background did not show to be a very determining factor, although having a part-time or not working mother—so, more traditional—went together with more masculine fields of study for males—so, more gender-typical (fourth predictor). For females having a father with a university degree was associated with the enrolment in masculine fields, although this association was very weak (β=0.052, seventh predictor). In the interviews, fathers appeared very influential for female students in masculine fields. Some females literally stated that they were pushed by their father to do engineering.

> S. (female): *My father has always pushed me in a certain direction and I just did what he suggested. .. He said: 'you can do it', so I tried.*

This parental influence did not appear from the regression analysis. But the influence of a teacher was significantly and negatively associated with the masculinity of the field of study—fifth predictor for both men and women. From the interviews it was clear that teachers needed to be enthusiastic in order to convince students to enroll in exact fields of study, but, according to what the female interviewees said, very often teachers were rather apathic or discouraging the students by being negative.

> L.(female): […] *You may ask questions, if you want, but it is not that they (teachers) will advice you something or will say "wouldn't you do that or that"? They say: "Yes, we prefer to give you a free choice, we will give you all information, so you know what you need to know and then you may make your own choice".*
>
> C.(female): […] I *remember that I was really pissed at my teacher physics (laughs) because she said that I wasn't able to do it. While I had good marks for physics, but she just didn't see me do it. Yet, she couldn't really explain it, no reason.*

The significant predictors in the stepwise regression analyses, were able to explain only 22.4% of the variance for male students, and 18.5% of the variance for female students. Most associations appeared very small to negligible. A topic in the interviews, but not in the quantitative analyses, was the question whether students took into account the gender composition of fields of study when deciding what to do. Not all students appeared aware of the specific gender composition of their chosen field beforehand.

> C.(female): […] *No, I did not know that beforehand. Euhm… but, yes, finally this does not matter either, I think. And … euhm… yes, it really does not matter. And anyway, euhm… I think it is kind of interesting to, well, actually I was always like that. In secondary school as well, (I) was mainly part of boys friends groups, sometimes that c*

ould be more smooth.

But most women were clearly aware of that and for most of them it did not matter at all to end up in a group of men. Even more, most women indicated to feel really good in this masculine environment, while for the men it appeared less evident to be surrounded by women. The male students knew very well that they would be a minority in a group of mainly women, and they made fun of this among each other. Surely it did not keep them from choosing these fields of study.

> E.(male): *Like my mates… as they, in the beginning, when I was starting doing psychology, yes "there will be plenty of foxy ladies in your field" (laughs). Well, or it goes in the direction of… well that "it will be plenty of gays" (laughs).*
>
> S.(male): *That did not really influence my choice, although at home they sometimes laugh with it…*

4. Discussion.

Based on quantitative and qualitative analyses, this study shows that family background is not the best explanation why in tertiary education women are still less likely to opt for exact fields of study—therefore 'masculine' fields—while men are less likely to enroll in so-called soft sciences—or feminine fields. Growing up in a more or less traditional family in terms of division of tasks, does not seem to make a difference for women, but males with more traditional mothers—that is, mothers who are not or only part-time employed—are more likely to opt for a masculine, and as such, more gender-typical field of study. Women in gender-atypical (masculine) fields of study, are hereto often encouraged by their fathers, especially when these fathers have a university degree. More important are the students' occupational values, that is whether they value a high income or status, or find it important to work with people rather than with objects, or the importance of the possibility to combine work with family. For both males and females it is found that more feminine occupational values decrease the likelihood of being enrolled in more masculine fields of study, and vice versa. This means that an important reason why women are not opting for exact fields of study is that they believe that the subsequent occupation will not allow them to work with people or to combine their work with a family. And men do not opt for soft fields of study, because they are afraid that the subsequent occupations will not give them status and/or a high income. Policy makers who want to attract women to the exact sciences—and eventually men to the soft sciences—could deal with the perception of these fields and subsequent occupations. Women need to be convinced that also exact sciences and engineering jobs are at the service of

people, whereas men need to learn that soft fields of study might give entrance to jobs with status, such as management functions. And it would also help if occupations in the soft sectors got appreciated more in terms of remuneration and prestige in order to attract men, and if jobs like engineering were made more family-friendly, for example in terms of flexibility in working hours.

The students' previous educational careers appear to be most important, and more specifically the role of mathematics herein, which determines the enrolment in masculine fields for males and females, but somewhat more for men. So, the fact that girls are less likely to opt for mathematical tracks in secondary education explains why they do not opt for the more exact fields of study in tertiary education. But even if they follow a mathematical track, and even obtain good grades for mathematics, this will not guarantee that they will opt for more exact fields in tertiary education. This corresponds with the fact that females with a mathematical background in 'soft' fields of study often indicate that 'now they want to do something interesting, or something fun'. So in order to overcome the horizontal gender segregation, girls could be encouraged to opt for mathematical tracks in secondary education, but policy makers need to take into account that women, more than men, tend to follow their personal interests. This study shows that the more feminine their motives for educational choice are, the less women will be enrolled in more masculine fields of study.

Factors that finally do not prove to be of importance to explain gendered educational choices, are students' gender identity, sexual orientation and gender ideology. This does not mean that future research should not take these into account. This study was based on data of academic bachelors in only one university. An important limitation of this research is as such that professional bachelors are not considered, meaning that a great number of possible fields of study, which are probably even more gendered due to their practical nature, are not taken into account. Future research should try to grasp the whole range of possible fields of study in higher education and as many explaining factors as possible, since it is clear that our models do not succeed to explain fully the gendered choices at university.

For now, we may conclude that the horizontal gender segregation at university clearly starts at the secondary educational level and cannot be seen detached from men's and women's interests, motives and values.

5. Appendix.

	Men			Women		
	% or mean	SD	OLS Beta	% or mean	SD	OLS Beta
Block: family 1 – occupation						
SES father	5.55	2.05	0.035	5.36	2.10	0.060**
SES mother	5.24	1.74	0.065*	5.18	1.73	0.020
Father part-time	3.9		0.017	3.6		0.011
Mother part-time	42.1		0.075**	40.5		0.003
Father executive	64.5		0.033	64.6		0.046*
Mother executive	28.4		-0.060*	31.6		0.019
Adj. R^2			0.019			0.007
Block: family 2 – education						
Father higher ed.	31.4		0.087**	33.7		0.002
Mother higher ed.	47.3		0.036	46.7		0.050*
Father university	32.7		0.099**	26.9		0.066**
Mother university	21.4		0.024	19.1		0.047
Father masculine field	22.8		0.050	26.4		0.052*
Father feminine field	14.3		-0.087***	12.8		0.004
Mother masculine field	3.2		0.039	4.1		0.042*
Mother feminine field	39.1		-0.026	38.1		0.025
Adj. R^2			0.027			0.011
Block: family 3 – housekeeping						
Father traditional	6.70	0.94	0.026	6.74	0.93	-0.029
Mother traditional	6.61	0.77	0.008	6.50	0.74	-0.045
Parents not divorced	82.8		-0.009	80.6		-0.039
Adj. R^2			0.009			0.002
Block: family 4 – significant others in educational choice						
Mother	3.13	1.21	-0.178**	3.60	1.16	-0.112**
Father	3.11	1.25	0.165**	3.35	1.22	0.093*
Sister(s)	2.15	1.11	-0.050	2.49	1.17	-0.046

Brother(s)	2.11	1.09	0.093	2.25	1.07	0.058
Counseling	1.65	0.94	-0.030	1.73	0.95	-0.047
Education fair	2.68	1.32	0.085	2.91	1.30	0.033
Open school	3.00	1.36	-0.003	3.35	1.30	-0.022
Teacher	37.2		-0.122***	29.9		-0.095***
Adj. R^2			0.033			0.011
Block: educational career						
Hours of math last grade SE	6.51	1.87	0.316***	5.86	1.77	0.247***
GPA math last grade SE	15.06	2.31	0.167***	15.13	2.16	0.078***
GPA last grade SE	15.20	1.41	0.059*	15.48	1.39	0.014
GPA math comparative	0.99	1.22		0.98	1.12	
Hours of math*GPA math comp			0.128***			0.099***
Adj. R^2			0.162			0.081
Block: personal 1 – gender diagnosticity						
Personality GD	0.62	1.01	0.001	-0.37	0.99	0.013
Occupational values GD	-0.38	1.04	-0.248***	0.23	0.97	-0.202***
Motivation ed. choice GD	-0.22	0.96	-0.117***	0.13	1.02	-0.180***
Genderideologie GD	0.55	1.05	-0.013	-0.33	0.97	-0.029
Adj. R^2			0.076			0.084
Block: personal 2 – gender identity						
Feminine	3.71	1.32	-0.114**	13.58	1.40	-0.075***
Masculine	13.58	1.51	0.043	3.99	1.44	-0.032
Saliency femininity	6.42	1.96	0.065	2.58	1.10	-0.022
Saliency masculinity	2.40	0.99	-0.086	6.71	1.54	0.028
Saliency*femininity			0.033			-0.030
Saliency*masculinity			-0.002			0.012
Adj. R^2			0.001			0.003
Block: personal 3 – sexual orientation						
LGB	11.0		-0.072**	9.2		-0.017
Adj. R^2			0.140			- 0.001

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