

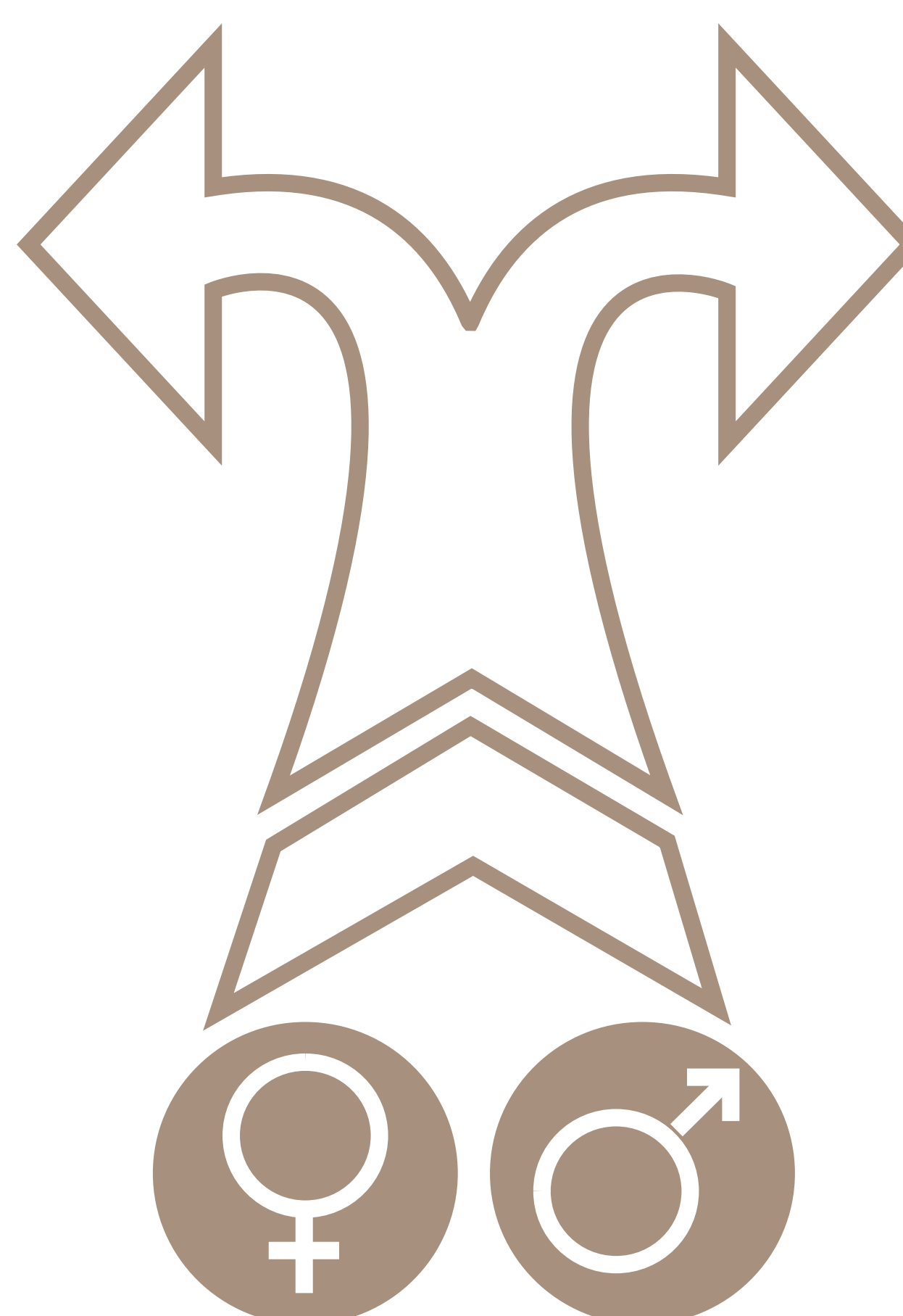
gender(a)typical career choices of young women and men: THE MOTIVES

Belinda Aeschlimann, Elena Makarova, Walter Herzog

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Background

Career choices in the fields of science, technology, engineering, and mathematics (STEM) are favoured by men and often avoided by women; on the other hand, women tend to choose fields such as the social sciences (cf. OECD, 2013). This not only leads to a shortage of employees in STEM professions, but also reinforces the prejudice that certain (personality) characteristics are "typically female" or "typically male".



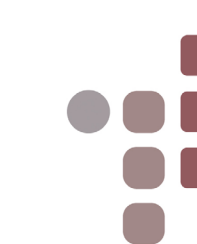
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**UNIVERSITÄT
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Faculty of Human Sciences
Institute of Educational Science
Department of Educational Psychology

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Theoretical Framework and Research Questions

A number of factors crucially influence youths' career choices, in particular their motives. Several theories have drawn a distinction between intrinsic and extrinsic motives in career choice (cf. Eccles and Wiegfield, 2002). Studies have consistently shown that women are likely to choose their profession on the basis of intrinsic motives, whereas men tend to choose a career based on extrinsic motives (e.g. BFS, 2009). However, with regard to career choice motives along academic disciplines, results are ambiguous. While some studies have shown gender differences in

the motives for a career choice in STEM fields - Science, Technology, Engineering, and Mathematics - (e.g. Lörz and Schindler, 2011), others have not found a systematic difference between men's and women's motives in STEM career choice (Acatech, 2009). Thus, our analyses aimed to gain deeper insights into the motives for career choice among pre-university youth, especially with respect to their career choices in STEM fields.

This poster presents our results on (intrinsic, extrinsic and social) motives for young people's choice of study domain in STEM fields.

Key questions:

1. Which study domains were chosen by young women and men?
2. What were women's and men's motives for choosing a STEM career?
3. How did motives differ between young people who preferred a study domain in STEM fields and those who did not?

Research Methods

Design

- Cross-sectional study
- German-speaking part of Switzerland
- Students one or two years before the Matura (university-entrance diploma)
- Standardised questionnaire

Student sample

$N = 1994$ (50.9 % male and 49.1 % female)
Aged between 16 and 25 years ($M = 18.83$, $SD = 1.08$)

Measures

Dependent variable: STEM-career choice

1 category = study domain is in the STEM fields *

2 category = study domain in other fields

* According to the proportion of females undertaking bachelor and master degrees in a particular study domain at Swiss universities, study in the STEM fields is a gender atypical career choice for women, because less than 30 % of female students graduate in the STEM fields in Switzerland (BFS, 2012a; BFS, 2012b).

Explanatory variables: Career orientation motives (cf. Renn and Pfenning, 2009) were measured as follows:

Extrinsic motives

4 items, Cronbach's $\alpha = .86$, $R^2 = 30.07$ %
(e. g. My study choice should provide me with a high income.)

Intrinsic motives

3 items, Cronbach's $\alpha = .60$, $R^2 = 58.73$ %
(e.g. My study choice should fit my abilities and talents.)

Social motives

4 items, Cronbach's $\alpha = .57$, $R^2 = 47.50$ %
(e.g. My study choice should enable me to help others.)

Results

1. Gender & study choice

women are significantly overrepresented	men are significantly overrepresented	no difference between women and men
Law*** Linguistics and Literature*** Medicine*** Social Sciences***	Business and Economics*** Engineering*** Maths/Statistics/ Informatics*** Natural Sciences** Sports**	Agronomy Arts and Musicology History Philosophy Theology/Religious Studies

Note: Chi-Square-Test (14/1831) = 245.83, ** $p < .01$, *** $p < .001$.

Chi-square tests provided evidence that in fields such as:

- medicine, law, linguistics and literature as well as social sciences, women were significantly ($p < .001$) overrepresented.
- business and economics, maths/statistics/informatics, natural sciences, engineering and sports, men were significantly overrepresented ($p < .01$; $p < .001$).

Moreover, the proportion of women in the STEM field (marked in red) was below 30 percent.

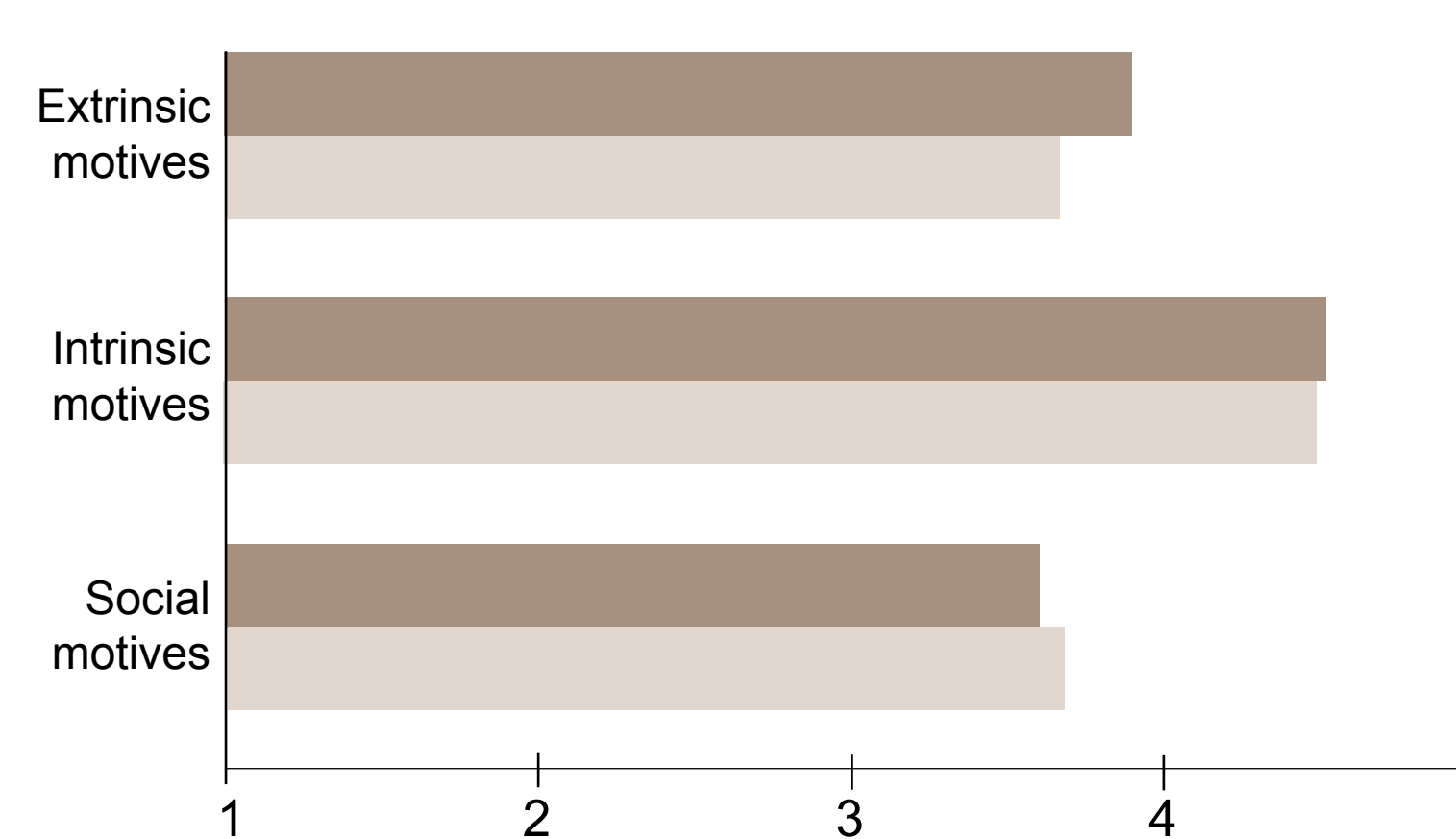
2. Gender and study motives in the field of STEM

Figure 1 shows that women's ($N = 149$) and men's ($N = 325$) choice of a STEM domain was primarily intrinsically motivated. Consequently, youths' interests and their talents and abilities were most crucial in choosing to study STEM, while extrinsic motives such as earning a high income were less important. Social reasons such as the reconciliation of work and family played a minor role.

T-tests illustrated gender differences:

Extrinsic motives were significantly more important for men than for women ($t = -2.94$, $p < .01$, Cohen's $d = .30$). No significant gender differences for intrinsic and social motivations were found.

Figure 1: Motives for a STEM career preference



Note: 5-point-rating scale (1 = very unimportant to 5 = very important)

3. Gender, study choice (STEM vs. other) and study motives

Generalized Linear Models (GzLM) estimated separately for female and for male participants in order to analyse the influence of motives for career choice on career preferences. The procedure modeled STEM – career choice as the response category, all other study fields as the reference category.

Explanatory variables: extrinsic, intrinsic and social career motives

Model for women: Likelihood Ratio $\chi^2(3, 974) = 9.74$, $p < .05$; Social motives: Wald $\chi^2(1, 974) = 7.85$, $p < .05$, $\text{Exp}(\beta) = .74$.

Model for men: Likelihood Ratio $\chi^2(3, 974) = 15.79$, $p < .01$; Social Motives: Wald $\chi^2(1, 974) = 4.11$, $p < .05$, $\text{Exp}(\beta) = .87$; Intrinsic motives: Wald $\chi^2(1, 974) = 12.30$, $p < .001$, $\text{Exp}(\beta) = 1.29$.

The tests of model effects indicated that women and men who chose their study domain based on social motives were unlikely to choose a STEM study domain. The effect sizes indicated that among youth with social motives the choice of a STEM career was reduced by a factor of .74 among female and by a factor of .87 among male students. In contrast, among male students intrinsic motives increased the likelihood of a STEM career choice by a factor of 1.29.

Key findings

Firstly, our results demonstrate that study domains are still highly gender-segregated. While women prefer social studies, STEM study fields are still dominated by men. **Secondly**, women and men choosing to study STEM were primarily intrinsically motivated. However, compared to women, the choice of a STEM career among men was significantly more often driven by extrinsic motives. At the same time, no significant differences between men and women were found regarding the prevalence of social or intrinsic motives for choosing a STEM career. **Thirdly**, among young

people who chose to study STEM our results indicated gender independent patterns of motives in career choice. Thus, among female as well as among male students social motives for career choice decreased the probability of choosing a STEM career. Moreover, our findings indicated some gender-specific patterns: While among women intrinsic or extrinsic motives for career choice were not related to their choice to study STEM, among male students their intrinsic motives for career choice increased the probability of choosing a STEM career.

Overall, our study provides empirical evidence that the type of motive referred in career choice is related to the probability of choosing to study STEM. However, our study also has some limitations. Firstly, it employed a cross-sectional design and therefore cannot ascertain the causality of the suggested relations between motives and career choice. A longitudinal study would be needed to confirm the causality of the reported findings. Secondly, the generalizability of the present results is limited to the context of the German part of Switzerland; more research on the meaning of career orientation motives for a career choice in the STEM field is needed in other countries.