Gender-Atypical Learning Experiences for Men Reduce Occupational Sex Segregation: Causal Evidence from the Suspension of the Civilian Service in Germany

Maik Hamjediers*

Humboldt-Universität zu Berlin, Department of Social Sciences

Abstract

Occupational sex segregation persists in part because men seldom enter female-dominated occupations. Programs fostering women’s gender-atypical learning experiences aim to increase their representation in male-dominated domains. Yet, similar programs for men are rare, although gender-atypical learning experiences for men could enhance their skills for female-dominated occupations and dismantle occupational stereotypes. This paper investigates whether men’s gender-atypical learning experiences affect their likelihood of entering female-dominated occupations by utilizing Germany’s civilian service. It was a social sector alternative to a compulsory military service and its suspension in 2011 induced exogenous variation in men’s gender-atypical learning experiences. Combining register data from Germany’s social security system with the German Microcensus show that men’s likelihood of entering female-dominated occupations as first jobs declines when the civilian service was suspended. Scaling by uptake of the civilian service indicates that having completed the civilian service increased men’s likelihood to enter female-dominated occupations as first jobs by about 11 percentage points. Supplementary descriptive evidence signifies that this is mostly driven by learned skills and less by changes in gendered perceptions of occupations. This indicates that programs exposing men to gender-atypical learning experiences facilitate occupational integration and could “uninstall” the gender revolution.

Keywords: Gender, occupational segregation, female-dominated occupations, civilian service, Germany

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Email address: maik.hamjediers@hu-berlin.de (Maik Hamjediers)

1. Introduction

Occupational sex segregation is one of the primary mechanisms for gender inequalities in labor market outcomes (England, 1992; Busch, 2013a). Some occupations have been desegregated since the 1960's due to women's entrances into the labor force and into better paid male-dominated. Yet, occupational integration has been asymmetrical and men still seldom enter female-dominated occupations, such as the health, early education or domestic sector (England, 2010; Busch, 2013b; Blau et al., 2013). This male reluctance becomes increasingly important because industrial restructuring shrinks employment opportunities in traditionally male-dominated blue-collar occupations and increases the demand in female-dominated social service sectors (Esping-Andersen, 2009; Bundestag, 2017). So, why do men seldom pursue female-dominated occupations?

Several explanations have been proposed to explain occupational sex segregation in general and the lack of men in female-dominated occupations specifically. Social role theory (Eagly, 1987) and a circumscription and compromise model (Gottfredson, 1981) emphasize congruity between one's gender identity and essentialist notions of gendered skills on the one side and occupational stereotypes about skills needed in various occupations on the other side. Perceived incongruence of male identities and female-typed occupations predicts men to seldom enter female-dominated occupations. Values of self-expression even enhance this mechanism by rendering gender-typical occupational choices as expressions of self-conceptions (Cech, 2013). However, notions on gender essentialism alone are limited in their explanatory power for deviations from these stereotypes in form of entrances into gender-atypical occupations. England (2010) attributes the asymmetry of women entering male-dominated occupations more often than men entering female-dominated occupations to the persisting cultural devaluation of feminized tasks. While (highly educated) women have an incentive to enter prestigious and higher-paying male-dominated occupations, the economic devaluation of feminized tasks remains a barrier for men to transgress occupational gender-boundaries.

To counteract occupational sex segregation, some have proposed to foster gender-atypical learning experiences. Gendered socialization processes predominantly provide boys and girls with gender-typed learning experiences, which in return affect occupational aspirations (Williams and Subich, 2006; Schaub and Tokar, 2005). Consequently, gender segregated learning experiences also underly occupational sex segregation, supplementary to the above mentioned explanations. However, the importance of gendered learning experiences simultaneously points to a mechanism for occupational desegregation. A deliberate exposure of individuals to gender-atypical learning experiences counteracts gendered learning and occupational stereotypes and can spark interest in gender-atypical occupations (Betz and Schifano, 2000). This reasoning underlies several initiatives, with prominent examples being “SciGirls Connect” (www.scigirlsconnect.org) and various STEM Summer Schools in the United States (Kitchen et al., 2018) or the “Girls’ Day” in Germany (Wentzel, 2011). These programs encourage female high school students to make experiences in male-dominated occupations — for instance in science, technology, engineering or math (STEM) — providing them an opportunity see that their gender does not contradict working in respective occupations, aiming to increase their confidence in STEM fields, and eventually leading them to pursue careers in STEM. Some correlational evidence back up the effectiveness of such programs (Funk and Wentzel, 2014; Kitchen et al., 2018; Betz and Schifano, 2000), with exposure to job-like environments being most persuasive (Baker, 2013; Funk and Wentzel, 2014).

In contrast, programs that expose men to learning-experiences in female-typed tasks are rare. For instance, a “Boys’ Day” has only been introduced in Germany ten years after the first “Girls’ Day” (Wentzel, 2011). Block et al. (2019) highlight that less support for tackling gender imbalance in female-dominated occupations is another an expression of the devaluation of female-dominated occupations, with views of their lower in status rendering them “less deserving of attention and social action towards change than occupations where women are underrepresented” (p. 127). While employers are hesitant to hire women and men for gender-atypical occupations (Yavorsky, 2019), men’s expe-

riences when being employed in female-dominated occupations differ compared to women’s experiences of discriminatory practices diverting them from male-dominated occupations (cf. [Manzi, 2019](#)): Whereas men are advantaged in comparison to women by general status beliefs of male primacy in the labor market ([Ridgeway, 2009](#)), they are also socially punished more harshly than women for transgressing gender-boundaries ([Vandello and Bosson, 2013](#)). Additionally, men have been shown to be more rigid in their adherence to gender stereotypes in comparison to women ([Barth et al., 2015](#)) and their occupational choices are more strongly constrained by sex roles in the first place ([Heppner, 2013](#); [DiDonato and Strough, 2013](#)). Especially mentioning an occupation’s title triggers occupational stereotypes and deters men from entering female-dominated occupations ([Forsman and Barth, 2017](#); [Ulrich et al., 2006](#)), thus, “programs wishing to recruit more men should not draw attention to issues of gender” ([Williams, 2015](#), 391). However, because such programs are rare, it is an open question whether gender-atypical learning experiences for men would increase their entrances into female-dominated.

To assess the causal effect of gender-atypical learning experiences on men’s occupational choices, this study draws on the suspension of the German civilian service in 2011. In 1953, a compulsory military service (*Grundwehrdienst*) was introduced in Germany and by constitutional obligation an alternative of a civilian service was supplemented in the 1960s for those who had moral objections to serving in the military. Both services were mandatory for German men aged 18 to 23. Neither women nor foreigners were drafted and they also could not opt-in. The majority of men who completed a civilian service served in elderly care centers, hospitals, day care centers or in social welfare organizations. Its suspension provides a quasi-natural experiment as it was largely unanticipated, and thus, it induced exogenous variation in men’s exposure to gender-atypical learning experiences. Moreover, the civilian service is of great relevance as it affected a large number of individuals (around a fifth of German men completed the civilian service) and was set it in the crucial life stage between graduation from high school and entering the labor market.

My analyses provide evidence that gender-atypical learning experiences increase men’s likelihood to enter female-dominated occupations. Combining register data from Germany’s social security system with the German Microcensus show that men’s likelihood of entering female-dominated occupations as first jobs decreases when the civilian service was suspended. Reversely, having completed the civilian service while it was still in place increased men’s likelihood to subsequently enter a female-dominated occupation by 11.2 percentage points. This treatment effect is flanked with descriptive evidence from a 2009 survey of men age 18 to 32 that allows to assess the underlying mechanisms.

Thereby this study contributes novel evidence on fostering occupational desegregation. Previous research has focused on gendered occupational stereotypes and income barriers as causes of men’s lack in female-dominated occupations, with some evidence highlighting income barriers as most relevant ([Delfino, 2021](#)). Others have pointed to masculinity norms as a cultural force that deters men from social and caring roles ([Friedman, 2015](#)). Less attention has been devoted to men’s lack of gender-atypical learning experiences and while the civilian service is an extreme case of programs that foster such, it highlights that these underlie occupational segregation as well. Thus, programs that enhance gender-atypical learning experiences should not be limited to women, but they can be indeed effective for men as well to reduce occupational segregation. Moreover, the compulsory civilian service speaks to policy discussions on mandatory community services, which have been proposed for instance in the US ([Brooks, 2020](#)) or France ([France 24, 2019](#)) to increase civic engagement. While the effectiveness of such programs remains contested ([Henderson et al., 2012, 2019](#)), the example of the German compulsory civilian service indicates that community services may have the unintended consequences of increasing openness to gender-atypical occupations.

2. The Effects of Gender-Atypical Learning Experiences for Men

How do gender-atypical learning experiences affect subsequent occupations? One evident mechanism is learned skills. If learning experiences are made in job-like environments and contain tasks of actual occupations, the learned skills represent human capital endowments, which can be best utilized by subsequently working in occupations requiring respective skills (Becker, 1993). Thus, gender-atypical learning experiences can transmit skills for gender-atypical occupations and familiarize with the work environment, which smooths the transition into respective occupations. In contrast, the gained human capital would be lost by entering other, gender-typical occupations.

Aside from actually acquired skills, learning experiences raise self-confidence and self-efficacy beliefs. Even if women and men have similar skills, they might perceive their abilities differently based on gendered stereotypes (Correll, 2004). While a lower confidence in male-typed tasks has been invoked to explain girls' inhibited interest in male-dominated occupations, men might be less likely to discount their abilities in female-typed tasks as they can profit from widely shared status beliefs of men's greater status and competence (Ridgeway, 2009). Nevertheless, learning experiences of female-typed tasks could still boost men's self-efficacy beliefs as indicated by qualitative interviews of men in female-dominated occupations. Therein, men report that such status beliefs increase the likelihood that employers assign them to positions with greater responsibility in comparison to their female co-workers (Simpson, 2009). Hirschi (2012) shows for Germany that the communal aspect of care work in female-dominated occupations provides also a meaningfulness of the encompassed tasks, which enhances self-efficacy beliefs for respective tasks. Increased self-confidence and self-efficacy beliefs then accumulate into men's greater interest in female-dominated occupations.

Experiences in gender-atypical domains can also change perceptions about the congruity of one's gender identity and occupational role (Cech et al., 2011). Before the first transition into the labor market, information on occupations

is rather low and men’s perception of occupations is strongly based on occupational stereotypes (Forsman and Barth, 2017 for the US; Ulrich et al., 2006 for Germany). Without further information, men’s aversion for female-typed occupations is shaped by fear of social disapproval (Vandello and Bosson, 2013; Williams, 1995), a lack of belonging (Tellhed et al., 2017), or anticipated discrimination (Campero and Fernandez, 2019; Yavorsky et al., 2021). This is underlined by qualitative evidence from men in female-dominated occupations, who report experiences of role strain. They are frequently reminded by family members, customers, patients, or their colleagues that they are different from a stereotypical man, at times going as far as questioning their sexuality (Evans and Blye, 2003; Simpson, 2005; Williams, 1995).¹ If such experiences are made also within a program-based exposure to gender-atypical occupations, these might likely induce negative outcome expectations, deter men from entering female-dominated occupations, or even increase the likelihood of (premature) exits (Torre, 2018; see also Jusri, 2019 for exits from gender-atypical majors at German universities).

However, research on men in female-dominated occupations indicates that some men in female-dominated occupations have positive experience which could neutralize anticipations of role incompatibility (cf. Lupton, 2006; Shen-Miller and Smiler, 2015). Corresponding to the status beliefs of men’s greater status and competence (Ridgeway, 2009), qualitative interviews with Australian employees, clients and customers highlight that men are welcomed in female-dominated occupations for bringing presumed traits (physical strength or authority) to the workplace, for diversifying the work environment, and for raising the occupational status (Moskos, 2019). This is picked up by men in female-dominated occupations themselves, as some report to be overtly appreciated by bosses and clients (Williams, 1995 for the US; Simpson, 2009 for UK).² Such experienced acknowledgment and recognition might compensate for role strain and can increase the perceived congruity of one’s identity and the identity features of a profession. The result is a higher likelihood of subsequently pursuing respective work environments (see Cech et al., 2011 for women in engineering

in the US).

Drawing on research on men in female-dominated occupations suggests that especially the mechanism of experiences affecting perceptions of role congruity depends on the selection into gender-atypical learning experiences. Williams and Villemez (1993) highlight two divergent entry-dynamics: seekers and finders. Seekers actively seek non-traditional occupations because they provide more opportunities than male-typed occupations to engage with their personal abilities and goals (Chusmir, 1990; Dodson and Borders, 2006). For instance, men who reject masculine ideals are more likely to enter female-dominated jobs as they exert less masculine pressure on them (Barber, 2008) and men subscribing to social work values are more likely to aspire female-dominated jobs as they perceive them as more meaningful (Bagilhole and Cross, 2006 for UK; Busch-Heizmann, 2015 for Germany). The seekers’ openness for non-traditional occupations likely mitigates potential role conflicts in gender-atypical learning experiences. In contrast, some men “find” female-dominated occupations not by active choices, but rather as a response to constraints, such as involuntary unemployment (Yavorsky and Dill, 2020) or limited employment opportunities for racial minorities or men of working class background (Bagilhole and Cross, 2006; Seehuus, 2019 for UK; Yavorsky et al., 2016 for the US). Yet, a lack of endorsement of the gender-atypical occupational role renders the “finders” also more vulnerable to role strain and anxiety of stigmatization (Lupton, 2006 for UK; Sobiraj et al., 2015 for Germany). Thus, experiences in gender-atypical domains depend on the selection processes into them (Simpson, 2005). To tackle this selection problem, I turn to the compulsory civilian service since its suspension provides exogenous variation in men’s gender-atypical learning experiences.

3. The Civilian Service as a Treatment

In 1953, a compulsory military service (*Grundwehrdienst*) was introduced in Germany and by constitutional obligation an alternative of a civilian service was supplemented in the 1960s for those who had moral objections to serving

in the military. Serving was mandatory for men between the ages of 18 to 23, who had to serve for 9 months³ and received financial compensation (in 2010 servants in the military and civilian service were paid about 10 Euros per day). Although women and foreigners could also entry the military, procedures of the military service and civilian service applied to men with German citizenship only and others could not opt-in. While the mandatory military service's purpose was to educate and train servants for potential future military careers or levies in case of emergence, the civilian service was intended to enhance public well-being without affecting the labor market. Hence, the latter was set in the welfare sector. Due to a declining demand for armed forces after the Cold War and an increased demand for (cheap) labor in the social service sector, the requirements for a refusal of military service were reduced over time ([Puhani and Sterrenberg, 2021](#)) and an expansion of the civilian service rendered it increasingly indispensable ([Bartjes, 1996](#)).

Qualitative interviews highlight that experiences made within the civilian service were comparable to those of men working in female-dominated occupations. The majority in the civilian service served by doing caring tasks in elderly or child care institutions or in hospitals; only a minority served by doing gender-neutral or male-typed tasks as ambulance drivers, janitors or by doing administrative tasks ([Becker et al., 2011](#), 45-50). Research on gender segregated learning experiences finds that prior to the civilian service men were seldom exposed to the predominant female-typed tasks of the civilian service ([Williams and Subich, 2006](#); [Schaub and Tokar, 2005](#)). Thus, men who served in the civilian service had to relate their experiences to their male identity ([Tremel and Cornelißen, 2008](#)). Although participation in the civilian service might have been perceived by others as a rejection of military service and less as a gender norm violation ([Bartjes, 1996](#)), studies indicate that most men still experienced role conflicts during their civilian service. Their sexuality was questioned, and they managed their identity by for instance emphasizing male-typed activities within their service ([Bartjes, 1996](#); [Becker et al., 2011](#)). Yet, their special status of being obliged to serve and having no prior experiences mitigated the role

strain, as employers and clients hold them to lower standards and allowed greater flexibility in their work in comparison to regular employees in the same institutions (Bartjes, 1996). Men in the civilian service reported that they were highly regarded by customers, patients, and their predominantly female co-workers and overall, the civilian service was overwhelmingly positively evaluated by its participants (Bartjes, 1996; Becker et al., 2011; Blank, 2003).

Yet, evidence on potential effects of completing the civilian service is scarce. Qualitative research highlights that at the end of their service some indicated a change towards more egalitarian gender role beliefs, an increased acknowledgment of caring services, and improved competencies in cooperative or autonomous work (Becker et al., 2011; Blank, 2003). These positive effects were attributed to the individual experiences in daily job-like situations and in interactions with the care-recipients (Becker et al., 2011).⁴ Despite the esteemed meaningfulness of social work, only few stated that the civilian service affected their occupational aspirations (Becker et al., 2011; Blank, 2003). Moreover, whereas the majority of those who served and recently graduated from high school welcomed the civilian service as an orientation phase before entering vocational training or college, a considerable share also graduated with lower or medium secondary degrees around age 16, started already vocational training or employment, and experienced the service as a waste of time (Bartjes, 1996; Becker et al., 2011). This is backed up by Collischon et al. (2018) quantitative study of how the suspension of compulsory military and civilian service led to an increase in life satisfaction among men, especially for those who were already in vocational training or employment as the suspension eliminated a considerable career interruption for them. Yet, no study has quantitatively examined the causal effect of participating in the civilian service on entered occupations.

Though serving was mandatory, only a (self-selected) group of young German men turning 18 completed a civilian service. First, men without German citizenship, married men, fathers, and men with two siblings who had already provided military service were exempted. Second, the remaining draftees had to undergo medical examinations by the German armed forces, with some being

classified as unfit to serve. Men were also allowed to postpone their service to finish current vocational training, diminishing the likelihood of being drafted for men who graduated from high school before age 18 (Schneider, 2003). Third, once drafted, one had to file a motion against the military service on moral grounds to enter the civilian service. This self-selection resembles to some degree selection into female-dominated occupations (Hardie, 2015). For instance, higher educational attainment was positively associated with filing a motion (Becker et al., 2011, 41-43) and aside from moral grounds, a rejection of authoritative hierarchies and ideals of masculinity in the military guided some in the decision to file a motion (Bartjes, 1996). The selection was also specific to the civilian service, with practical reasons, such as the distance to the workplace⁵ and an interest in new experiences, being significant reasons for selecting a civilian service (Schülken and Bierhoff, 2003; Becker et al., 2011). Finally, wanting to try out the actual tasks one would do within the civilian service was less important to those who filed a motion against the military service (Becker et al., 2011, 70).

The fact that only about half of the 1980s birth cohorts were drafted into both mandatory services amplified debates about the services' justification (Schneider and Trabold, 2004). A commission to reform the armed forces proposed in June 2010 the abolition of compulsory military service. This was rapidly adopted and led to the suspension of compulsory military and civilian services in March 2011.⁶ Whereas a suspension had been debated for years, its actual suspension was not anticipated by prospective draftees: Similar to the years before, about a quarter of men were in the civilian service in 2010 and this number dropped sharply to zero in the following year (Figure 1).

- - - Figure 1 - - -

The theoretical discussion indicates that gender-atypical learning experiences within the civilian service could increase the likelihood to subsequently work in female-dominated occupations via learned skills and increased self-efficacy beliefs. Recognition for working in a gender-atypical field could also have

dismantled occupational stereotypes and increased men’s openness for female-dominated occupations, yet, experiences of role strain and stigmatization within gender-atypical settings might have counteracted its impact. The resulting hypothesis states that the gender-atypical learning experiences of men who participated in the civilian service increased their likelihood of subsequently working in female-dominated occupations. As selection into gender-atypical learning experiences can affect how these are perceived, it is important to note that also participation in the civilian service was selective, especially based on who filled a motion against the military service. Nevertheless, the timing of the suspension was not anticipated (Supplementary Materials, Figure S.1), thus, the suspension of the civilian service induced exogenous variation in gender-typical learning experiences and provides an unique opportunity to obtain causal evidence for the hypothesis. An identified effect reveals that a potential association between having completed the civilian service and working in female-dominated occupations is not based on selection itself, but rather an effect of the gender-atypical learning experiences within the civilian service.

4. Empirical Approach

4.1. Analytic Strategy

To assess the causal effect of the suspension of the civilian service on the likelihood of working in a female-dominated occupation, I first compare both phenomena across men’s birth half-years. I calculate birth half-year specific likelihoods for men to complete the civilian service and for men to enter a female-dominated occupation as one’s first job. To preclude potential period effects of divergent labor market conditions at job entry, I employ women as a comparison group. Women were not eligible for the civilian service and hence, their likelihood of holding female-dominated occupations as first jobs should not be affected by the suspension of the civilian service.⁷

Second, I employ linear probability models to estimate the change in men’s likelihood of entering female-dominated occupations induced by the suspension

of the civilian service. This provides an intention-to-treat effect, which applies to birth half-years of men, irrespectively of whether they actually served in the civilian service. Scaling this estimate by the birth half-year specific participation rates in the civilian service provides then the treatment effect on the treated (Angrist and Krueger, 1992; Pacini and Windmeijer, 2016). This captures the effect of gender-atypical learning experiences within the civilian service on gendered occupational choices for men who participated in the civilian service.

4.2. Data and Measurements

I leverage two data sets for my main analyses. First, I draw on register data of the Sample of Integrated Labour Market Biographies (SIAB; Frodermann et al., 2021) for occupations in first jobs. It is a two percent random sample of all employed individuals subject to the German social security system (excluding civil servants, self-employed individuals, individuals in compulsory service, and individuals in marginal part-time jobs), of whom it contains all employment spells between 1975 to 2019. I omit spells of vocational training, student traineeships, internships and voluntary services and limit the analysis to first regular employment spells after turning 18. As only men with a German citizenship were eligible for the military and civilian service, I drop foreigners from the analyses. Additionally, I restrict the sample to individuals born in the eleven year period of 1985 to 1995, who had their job entries between 2003 and 2019, thus, before and after the suspension of the civilian service in 2011. Birth years are partitioned into half-years to rule out that observed patterns are not based on distinct changes between years. I subset this sample to men who were mandated to serve (66,853 observations) and employ women as the comparison group (62,528 observations).

The dependent variable is working in a female-dominated occupation in the first job after turning 18. The share of female employees in an occupation is calculated for all birth years across 144 unique 3-digit codes of the German Classification of Occupations (KlddB2010) based on employment spells of all individuals aged 18 to 65 in the time-frame 2003 to 2019.⁸ I avoid using year-

specific shares of women across occupations to keep the classification of female-dominated occupations consistent across the analytical period. The occupation-specific shares of female employees are merged to the 3-digit KldB2010-codes of first jobs in the analytical sample and dichotomized at the 75 percent cut-off to mark female-dominated occupations.⁹

Second, as participation in the civilian service is not observed in the SIAB register data, I supplement it with data from the German Microcensus (1996 to 2017).¹⁰ It is an annual household survey with mandatory participation of one percent of the population living in Germany. Respondents indicate whether they were in civilian service at the time of the interview and I calculate birth half-year specific probabilities of having served for the same population of the SIAB sample (men with German citizenship, age 18 to 25 for birth-years from 1985 to 1995; see Supplementary Material, Section [Sec.1](#)). The shares of civilian service participation are merged to the SIAB register data by birth half-years.

Since educational attainment affect both – participation in the civilian service and working in female-dominated occupations –, I adjust for educational attainment (lower and middle secondary degrees typically obtained around age 16 vs. upper secondary degrees that qualify for university entrance typically obtained around age 18) as observed in the SIAB data. Additionally, adjusting for respondents’ age at labor market entries in the SIAB data accounts for potential age and period effects on entering female-dominated occupations. Descriptive statistics of the sample are provided in Table [A.1](#) in the Appendix.

5. Findings

5.1. Civilian Service’s Effect on Working in Female-Dominated Occupations

Figure [2](#) provides for each birth half-year the share of men that works in a female-dominated occupation (left y-axis) and that served in the a civilian service (right y-axis). Across birth half-years, the share of men doing the civilian service decreases gradually. While this contrasts the sharp drop across calendar years after the suspension in Figure [1](#), the divergence can be explained by

the fact that men served in the ages 18 to 23, with most serving at the age of 19 (43.6 percent) and 20 (32.3 percent; Supplementary Materials, Figure S.4). While across calendar years the rate of doing a civilian service drops sharply, 9.8 percent of men born in the first half of 1991 served before turning 20 in 2011, when the service was suspended (see also Figure A.1 in the Appendix). Nevertheless, the probability of entering the labor market in female-dominated occupations decreases along the suspension of the civilian service. While for men born between 1985 to 1990 the share of entries in female-dominated occupations slightly increases from around 11 percent to nearly 13 percent, this trend flips when less men entered the civilian service. No men born in the first half of 1993 served in the civilian service and only 9.3 percent of that birth half-year started to work in a female-dominated occupation. This share is rather constant after the suspension of the civilian service. The overall alignment of both trends strongly suggests that the civilian service had a causal effect on men’s occupational choices.

- - - Figure 2 - - -

To rule out that the alignment of the civilian service and men entering female-dominated occupations is driven by period effects in the labor market, I employ women as a comparison group. Figure 3 shows that women’s probability to enter a female-dominated occupation is around three times of that of men. Similar to men’s probability to enter female-dominated occupations, the probability for women slightly increases across birth years from 1985 to 1990 (from around 30 to 32 percent). Yet, this trend continues for subsequent female birth years, indicating that neither period effects in the labor market changed women’s likelihood to enter female-dominated occupations, nor did the suspension of the civilian service. By contrast, only among men, the trend to enter female-dominated occupations is disrupted across those birth half-years that were directly affected by the suspension of the civilian service.

- - - Figure 3 - - -

Table 1 puts the effect of the suspension of the civilian service for men into numbers. As the participation rates in the civilian service across men’s birth years decreased gradually, a clear cut-off point does not exist to distinguish those who had to serve and those who did not. Yet, for an intuitive estimate, I dichotomized the suspension via the cut-off of individuals born after June 1992 and compare the average probability of working in a female-dominated occupation before and after this cut-off. The resulting coefficient shows a drop of 1.8 percentage points in the share of men in female-dominated occupations after the suspension (Model 1). This estimate marginally increases to 2.2 percentage points when adjusting for age and high school degree (Model 2) or omitting the birth years of 1989 to 1992, for which participation in the civilian service gradually decreased (Model 3). While this effect seems small in size, relative to around 12 percent of men entering female-dominated occupations when the civilian service was still in place, the suspension decreased the share of men entering female-dominated occupations substantially by $(0.022/0.12 =)$ 18.3 percent. Considering that each birth year encompasses around 400,000 men (cf. Figure 1), the effect amounts to 8,800 men per birth year missing in female-dominated occupations due to the suspension of civilian service.

- - - Table 1 - - -

The previous comparison informs about the decrease in men’s likelihood to work in female-dominated occupations for whole birth half-years. To estimate the effect of the civilian service on those who actually completed it, I regress working in a female-dominated occupation on the birth half-year specific shares of civilian service depicted in Figure 2. Thereby, the change in men’s likelihood to enter female-dominated occupations across birth half-years is scaled by the rate of compliance in the civilian service. This yields a treatment effect on the treated (Model 4).¹¹ Those who actually participated in the civilian service were 11.2 percentage points more likely to enter a female-dominated occupation as their first job in comparison to those who did not. This supports the hypothesis that gender-atypical learning experiences within the civilian service increased

men’s propensity to subsequently start to work in such occupations.

5.2. *An Assessment of the Underlying Mechanisms*

To assess the underlying mechanism, I supplement the main analysis with descriptive evidence from the representative household survey of 2009 called “German Growing Up in Germany: Everyday Life’s World” (AID:A; [Deutsches Jugendinstitut, 2012](#)). Among the subsample of men with German citizenship in the age-group of 18 to 32 year olds (born between 1976 and 1991), 613 respondents indicated how the civilian service affected them. 76.0 percent state that it increased their knowledge and skills in caring and housekeeping (Figure 4). In line with the human capital argument, men who completed the civilian service thus learned valuable skills for female-dominated occupations and thereby had an incentive to enter respective occupations to utilize such skills. Additionally, the civilian service increased an understanding for socially disadvantaged people for 84.7 percent and the awareness of social problems for 56.1 percent. This suggests that self-efficacy beliefs may also underlay subsequent entrances into female-dominated occupations, as their caring and communal aspects likely raise perceptions of their societal importance and meaningfulness. By contrast, only 10.3 percent state that it changed their views on female- or male-dominated occupations, despite the fact that 45.5 percent report that their work-environment was dominated by female co-workers and 67.7 percent had a female supervisor during their civilian service. Thus, the treatment effect of the civilian service seems to be less driven by female-dominated work environments dismantling gendered occupational stereotypes and rather due to learned skills and increased self-efficacy beliefs.

- - - Figure 4 - - -

Finally, replicating the main analysis of Table 1 separately for each female-dominated occupation yields some of the strongest reductions after the suspension of the civilian service for occupations that are most closely related

to activities within the civilian service (occupations in cleaning services, education, social work, and geriatric care; Supplementary Materials, Figure S.2). As entrances into other female-dominated occupations are less affected by the suspension of the civilian service, this supplements the descriptive evidence of gender-atypical learning experiences affecting men’s occupations not via raising a general openness for female-dominated occupations, but rather via learned skills and enhanced entrances in occupations that utilize skills learned within the civilian service.

5.3. Robustness Checks

I checked the robustness of the finding that gender-atypical learning experiences within the civilian service increase men’s likelihood to enter female-dominated occupations via four additional analyses. *First*, regressing working in a female-dominated occupation at the age of the interview on having completed the civilian service among respondents of the AID:A survey yields a similar estimate on the individual-level (Supplementary Materials, Table S.5). This indicates that the civilian service did not increase the likelihood of all men of a birth year (which would be the case if the wide-spread acceptance of the civilian service increases acceptance to enter female-dominated occupations for all men); instead, the treatment effect is driven by actual participation in the civilian service. *Second*, the civilian service was suspended simultaneously with the military service, so that changes in occupational choices across birth half-years could also be driven by a decrease in military conscripts. However, a lack of an association of the military service and working in female-dominated occupations in the AID:A data does not support this alternative explanation (Supplementary Materials, Table S.5, Model 4). *Third*, in the aftermath of the economic crisis 2008 men could have turned to higher paying occupations and as a result avoided female-dominated occupations. Yet, men did not enter occupations with higher wages after the suspension of the civilian service than before (Supplementary Material, Table S.4, Model 1). *Fourth*, I test to what extent the effect of the suspension of the civilian service is moderated by ob-

tained high school degrees. As men with middle or lower secondary degrees that do not qualify for university entrances graduated already before turning 18, they might have started vocational training or employment before being drafted and thus likely perceived the civilian service as an interruption (Supplementary Materials, Figure S.5). Simultaneously, they might also have been less open to gender-atypical experiences. Accordingly, the suspension less strongly affected the likelihood of entering a female-dominated occupation for men without upper secondary degrees (Supplementary Materials, Table S.4, Model 2). By contrast, the identified effect is more pronounced among those with upper secondary degrees that are obtained around age 18 and qualify for university entrance.

6. Discussion

The goal of this study was to assess whether gender-atypical learning experiences can increase men’s likelihood of entering female-dominated occupations. Previous research has focused on congruity between gender identities and occupational stereotypes as well as income barriers as causes of men’s lack in female-dominated occupations. Less attention has been devoted to men’s lack of gender-atypical learning experiences as a complementary cause. While some programs aim at counteracting occupational segregation via fostering women’s gender-atypical learning experiences, programs for men are rare. Thus, its effectiveness is an open question. In response, I exploit the suspension of the compulsory civilian service for German men, which provides exogenous variation in gender-atypical learning experiences for men. While women’s likelihood to enter female-dominated occupations is relatively stable across birth years, men entering the labor market in female-dominated occupations decreases by a fifth when birth half-years were affected by the suspension of the civilian service. Scaling the change after the suspension by civilian service participation rates reveals that having completed it increased the likelihood to enter female-dominated occupations by 11.2 percentage points.

An assessment of the underlying mechanisms highlights learned skills, increased awareness and related self-efficacy beliefs as most relevant, whereas a mechanisms of dismantling general occupational sex stereotypes seems to be less important. Research has shown that mentioning an occupation’s title triggers occupational stereotypes and deters men from entering female-dominated occupations (Forsman and Barth, 2017; Ulrich et al., 2006), hence, “programs wishing to recruit more men should not draw attention to issues of gender” (Williams, 2015, 391). This was the case for civilian service and entrance into it was mostly perceived as a rejection of the military service and to a lesser degree as a gender norm violation (Bartjes, 1996). While this allows men to utilize their gender-atypical learning experiences without triggering gendered notions, this could also be the reason, why few reported that the civilian service affected their view of male- and female-dominated occupations. Moreover, the estimated 11.2 percentage points higher likelihood of working in female-dominated occupations implies that a considerable share of men did not enter female-dominated occupations after their civilian service. Thus, for a large share, serving in the civilian service had also great opportunity costs when the skills learned in the civilian service were not utilized in their subsequent job. Participants of in the civilian service attribute the limited impact of the civilian service on their occupational choices also to the relatively low earnings in female-dominated occupations remaining as an entry-barrier (Becker et al., 2011, 99). Thus, the provided evidence that programs fostering men’s gender-atypical learning experiences reduce occupational segregation only complements the stalled gender revolution explanation of female-dominated occupations being underpaid (England, 2010) and wage increases for female-dominated occupations are an important pathway for occupational integration as well.

Nevertheless, the result comes with some limitations. First, the SIAB register data covers only employment spells subject to the social security system, omitting self-employment and civil servants. Whereas a potential effect on respective female-dominated occupations, such as teachers in some federal states or self-employed doctors, could not be tested, the underlying population of the

analytic sample still covers 80 percent of the working population in Germany.

Second, the sample is restricted to labor market entrances in the age range of 18 to 25. While the estimates do not change substantially when this restriction is relaxed, later entrances cannot be observed for all individuals after the suspension of the civilian service as they would have occurred after 2019. This restriction and the focus on first jobs does not allow to assess potential long-term adjustments, for instance if men exit female-dominated occupations at higher rates (Jacobs, 1989; Torre, 2018). Similarly, the field of vocational and college education is not observed and while the civilian service might have prompted some men to enter education in female-dominated fields, they also might have switched their major before entering the labor market (Riegle-Crumb et al., 2016). Thus, the estimated effect would be an underestimate for the impact of gender-atypical learning experiences on gendered entrances into vocational training or tertiary fields. Nevertheless, the analyzed transitions to first occupations are highly consequential for the entire work life as occupational mobility is comparatively low in Germany (Breen, 2004).

Third, the obtained treatment effect on the treated only applies to those, who participated in the civilian service and thus, is partly shaped by selection into the civilian service. For instance, more highly educated men were more likely to participate in the civilian service (Becker et al., 2011, 41-43; Supplementary Materials, Figure S.6) and simultaneously, I observed a stronger effect for them. This might be due to high school graduates with upper secondary degrees have not entered employment before being drafted and welcomed the civilian service as a glance at prospective occupations. Alternatively or complementary, greater openness to gender-atypical learning experiences is also associated with educational attainment (Hardie, 2015) and less role strain within female-dominated environments (Lupton, 2006). Thus, future research should investigate how selection into gender-atypical learning experiences prompt effect heterogeneity.

The gender revolution highlights the lack of economic incentives for men to enter culturally devalued, lower-paying female-dominated occupations (England, 2010), whilst others emphasize masculinity norms that act as a barrier to

men’s change ([Friedman, 2015](#)). By contrast, my analyses points to a complementary mechanism of men’s lack of gender-atypical learning experiences maintaining occupational sex segregation as well. Counteracting programs provide a pathway to bring men into female-dominated occupations, similar to those that have already been established for women (e.g., STEM Summer Schools in the United States [[Kitchen et al., 2018](#)] or the “Girls’ Day” in Germany [[Wentzel, 2011](#)]). While the analysis provides only evidence for the effectiveness of gender-atypical learning experiences on occupations for those, who participated in the civilian service, even after the suspension of the civilian service, those who would have gone into it, likely still exist and would be affected from treatments that reestablish gender-atypical learning experiences. Hence, similar programs could decrease occupational sex segregation as well as address shortages in social and caring occupations caused by the industrial restructuring ([Esping-Andersen, 2009](#); [Bundestag, 2017](#)), which became particularly evident during the Covid pandemic in Germany ([Fischer et al., 2020](#)).

Moreover, the evidence also speaks to discussions on mandatory community services, which have been proposed for instance in the US ([Brooks, 2020](#)) or France ([France 24, 2019](#)) to increase civic engagement. While the effectiveness of such programs is an open question ([Henderson et al., 2012, 2019](#)), the example of the German compulsory civilian service indicates that such services may have the unintended consequences of counteracting occupational gender segregation, even if they might fall short of their intended goal of fostering civic engagement. Thereby, such policies could even circumvent the fact that tackling men’s lack in female-dominated occupations receives less social support in face of the devaluation of female-dominated occupations ([Block et al., 2019](#)).

Notes

¹To account for the role strain of working in a female-typed occupation, men reveal in qualitative interviews that some divert attention from the femininity ascribed to their occupation by re-titling their job or by stressing ostensibly masculine components of their jobs (such as heavy lifting or rational thinking; [Simpson, 2005, 2009](#)).

²This does not equally apply to all men, as for minority men, such as Blacks and migrants, as well as for men from lower social classes role strain and negative effects of their token status often overrule such positive experiences ([Smith, 2012](#); [Williams, 2013](#); [Dill et al., 2016](#)).

³The duration varied due to several reforms from 18 months in 1960s, to 9 months from 2004 on, before it was reduced to 6 months half a year before the suspension.

⁴While workshops and seminars accompanied the civilian service, they were of short duration and reported to be less relevant by those who served ([Becker et al., 2011](#); [Blank, 2003](#)).

⁵As one could choose an institution for the civilian service but not the location of a military service.

⁶In response, a new voluntary service (*Bundesfreiwilligendienst*) was established as a compensation for the lack of civilian service conscripts in the social sector. While the number of participants in voluntary services rose over time, this should not interfere with my empirical design for two reasons: First, all voluntary social services are open to men and women alike (some also are also open to all age groups) and simultaneously they are less restricted in the kind of activities. Second, a small increase of participants in voluntary services would have to be more strongly driven by men than women and would even then just result in a slightly underestimated effect of the civilian service.

⁷Only to the extent that women might respond to men’s divergence from female-dominated occupation by filling in resulting vacancies.

⁸ Spells of vocational training, student traineeships, internships and voluntary services are excluded. Moreover, as KldB2010 was only introduced in 2012, I use a cross-walk based on KldB88-codes of 2010 and adjust for the uncertainty in the cross-walk with 25 imputations of the KldB2010-codes for all years before 2012.

⁹The results are robust to using a 66.7 percent or 80 percent cut-off value as well as to employing occupation-industry-cells (Supplementary Materials, Figure S.3). A detailed list of the occupations with at least 66.7 percent female employees can be found in Table S.3 in the Supplementary Materials.

¹⁰doi: [10.21242/12211.1996.00.00.3.1.0](https://doi.org/10.21242/12211.1996.00.00.3.1.0) to [10.21242/12211.2017.00.00.1.1.0](https://doi.org/10.21242/12211.2017.00.00.1.1.0)

¹¹This interpretation is valid under the usual assumptions of instrumental variable regressions. The fact that women’s likelihood of entering female-dominated occupations is rather constant across birth half-years (Figure 3) supports the exclusion restriction of no direct effect of birth half-years on the outcome.

References

- Angrist, J.D., Krueger, A.B., 1992. The Effect of Age at School Entry on Educational Attainment: An Application of Instrumental Variables with Moments from Two Samples. *Journal of the American Statistical Association* 87, 328–336. doi:[10.1080/01621459.1992.10475212](https://doi.org/10.1080/01621459.1992.10475212).
- Bagilhole, B., Cross, S., 2006. ‘It Never Struck Me as Female’: Investigating Men’s Entry into Female-dominated Occupations. *Journal of Gender Studies* 15, 35–48. doi:[10.1080/09589230500486900](https://doi.org/10.1080/09589230500486900).
- Baker, D., 2013. What Works: Using Curriculum and Pedagogy to Increase Girls’ Interest and Participation in Science. *Theory Into Practice* 52, 14–20. doi:[10.1080/07351690.2013.743760](https://doi.org/10.1080/07351690.2013.743760).
- Barber, K., 2008. The Well-Coiffed Man. *Gender & Society* 22, 455–476. doi:[10.1177/0891243208321168](https://doi.org/10.1177/0891243208321168).
- Barth, J.M., Guadagno, R.E., Rice, L., Eno, C.A., Minney, J.A., 2015. Untangling Life Goals and Occupational Stereotypes in Men’s and Women’s Career Interest. *Sex Roles* 73, 502–518. doi:[10.1007/s11199-015-0537-2](https://doi.org/10.1007/s11199-015-0537-2).
- Bartjes, H., 1996. Der Zivildienst als Sozialisationsinstanz: Theoretische und empirische Annäherungen. Edition soziale Arbeit, Juventa-Verl., Weinheim.
- Becker, C., Bleikertz, T., Gehrke, J., Böhnisch, L., Lempp, T., Wedel, A., Fritz, K., Köckeritz, M., 2011. Abschlussbericht des Forschungsprojektes “Zivildienst als Sozialisationsinstanz für junge Männer”.
- Becker, G.S., 1993. Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education. Third edition ed., University of Chicago Press, Chicago and London.
- Betz, N.E., Schifano, R.S., 2000. Evaluation of an Intervention to Increase Realistic Self-Efficacy and Interests in College Women. *Journal of Vocational Behavior* 56, 35–52. doi:[10.1006/jvbe.1999.1690](https://doi.org/10.1006/jvbe.1999.1690).
- Blank, S., 2003. Lernfeld Zivildienst. Subjektive Wirkungen sozialen Engagements.
- Blau, F.D., Brummund, P., Liu, A.Y.H., 2013. Trends in Occupational Segregation by Gender 1970-2009: Adjusting for the Impact of Changes in the Occupational Coding System. *Demography* 50, 471–492. doi:[10.1007/s13524-012-0151-7](https://doi.org/10.1007/s13524-012-0151-7).
- Block, K., Croft, A., de Souza, L., Schmader, T., 2019. Do people care if men don’t care about caring? The asymmetry in support for changing gender roles. *Journal of Experimental Social Psychology* 83, 112–131. doi:[10.1016/j.jesp.2019.03.013](https://doi.org/10.1016/j.jesp.2019.03.013).

- Breen, R. (Ed.), 2004. Social Mobility in Europe. Oxford Univ. Press, Oxford. URL: <http://www.loc.gov/catdir/enhancements/fy0627/2005297266-d.html>.
- Brooks, D., 2020. We Need National Service. Now. The formative moment for a new generation. New York Times 08.05.2020, 30. URL: <https://www.nytimes.com/2020/05/07/opinion/national-service-america-coronavirus.html>.
- Bundestag, 2017. Zweiter Gleichstellungsbericht der Bundesregierung.
- Busch, A., 2013a. Der Einfluss der beruflichen Geschlechtersegregation auf den Gender Pay Gap. KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie 65, 301–338. doi:[10.1007/s11577-013-0201-1](https://doi.org/10.1007/s11577-013-0201-1).
- Busch, A., 2013b. Die berufliche Geschlechtersegregation in Deutschland: Ursachen, Reproduktion, Folgen. Springer VS, Wiesbaden.
- Busch-Heizmann, A., 2015. Supply-Side Explanations for Occupational Gender Segregation: Adolescents' Work Values and Gender-(A)Typical Occupational Aspirations. European Sociological Review 31, 48–64. doi:[10.1093/esr/jcu081](https://doi.org/10.1093/esr/jcu081).
- Campero, S., Fernandez, R.M., 2019. Gender Composition of Labor Queues and Gender Disparities in Hiring. Social Forces 97, 1487–1516. doi:[10.1093/sf/soy097](https://doi.org/10.1093/sf/soy097).
- Cech, E., Rubineau, B., Silbey, S., Seron, C., 2011. Professional Role Confidence and Gendered Persistence in Engineering. American Sociological Review 76, 641–666. doi:[10.1177/0003122411420815](https://doi.org/10.1177/0003122411420815).
- Cech, E.A., 2013. The Self-Expressive Edge of Occupational Sex Segregation. American Journal of Sociology 119, 747–789. doi:[10.1086/673969](https://doi.org/10.1086/673969).
- Chusmir, L.H., 1990. Men Who Make Nontraditional Career Choices. Journal of Counseling & Development 69, 11–16. doi:[10.1002/j.1556-6676.1990.tb01446.x](https://doi.org/10.1002/j.1556-6676.1990.tb01446.x).
- Collischon, M., Eberl, A., Jahn Kerstin, 2018. The Effect of Compulsory Service on Life Satisfaction and its Channels.
- Correll, S.J., 2004. Constraints into Preferences: Gender, Status, and Emerging Career Aspirations. American Sociological Review 69, 93–113. doi:[10.1177/000312240406900106](https://doi.org/10.1177/000312240406900106).
- Delfino, A., 2021. Breaking Gender Barriers: Experimental Evidence on Men in Pink-Collar Jobs. URL: https://www.dropbox.com/s/xyd6815ro4qg52z/BreakingGenderBarriers_Delfino_JMP.pdf?dl=0.
- Deutsches Jugendinstitut, 2012. Growing Up in Germany: Everyday Life's World (AID:A). doi:[10.4232/1.11358](https://doi.org/10.4232/1.11358).

- DiDonato, L., Strough, J., 2013. Do College Students' Gender-typed Attitudes About Occupations Predict Their Real-World Decisions? *Sex Roles* 68, 536–549. doi:[10.1007/s11199-013-0275-2](https://doi.org/10.1007/s11199-013-0275-2).
- Dill, J.S., Price-Glynn, K., Rakovski, C., 2016. Does the “Glass Escalator” Compensate for the Devaluation of Care Work Occupations? *Gender & Society* 30, 334–360. doi:[10.1177/0891243215624656](https://doi.org/10.1177/0891243215624656).
- Dodson, T.A., Borders, L.D., 2006. Men in Traditional and Nontraditional Careers: Gender Role Attitudes, Gender Role Conflict, and Job Satisfaction. *The Career Development Quarterly* 54, 283–296. doi:[10.1002/j.2161-0045.2006.tb00194.x](https://doi.org/10.1002/j.2161-0045.2006.tb00194.x).
- Eagly, A.H., 1987. Sex Differences in Social Behavior: A Social-role interpretation. Distinguished Lecture Series, Taylor and Francis, Hoboken. URL: <http://gbv.eblib.com/patron/FullRecord.aspx?p=1195806>.
- England, P., 1992. *Comparable Worth: Theories and Evidence*. Social institutions and social change. 1st ed. ed., Taylor and Francis, Somerset. URL: <https://ebookcentral.proquest.com/lib/gbv/detail.action?docID=4906378>.
- England, P., 2010. The Gender Revolution: Uneven and Stalled. *Gender & Society* 24, 149–166. doi:[10.1177/0891243210361475](https://doi.org/10.1177/0891243210361475).
- Esping-Andersen, G., 2009. *The incomplete revolution: Adapting to women's new roles*. Polity, Cambridge, UK and Malden, MA.
- Evans, J., Blye, F., 2003. Contradictions and Tensions: Exploring Relations of Masculinities in the Numerically Female-Dominated Nursing Profession. *The Journal of Men's Studies* 11, 277–292. doi:[10.3149/jms.1103.277](https://doi.org/10.3149/jms.1103.277).
- Fischer, F., Raiber, L., Boscher, C., Winter, M.H.J., 2020. Systemrelevanz der Pflegeberufe in Zeiten von Corona – und darüber hinaus. *Das Gesundheitswesen* 82, 373. doi:[10.1055/a-1150-7155](https://doi.org/10.1055/a-1150-7155).
- Forsman, J.A., Barth, J.M., 2017. The Effect of Occupational Gender Stereotypes on Men's Interest in Female-Dominated Occupations. *Sex Roles* 76, 460–472. doi:[10.1007/s11199-016-0673-3](https://doi.org/10.1007/s11199-016-0673-3).
- France 24, 2019. France begins trial of compulsory civic service for teens. URL: <https://www.france24.com/en/20190616-france-trial-macron-new-compulsory-national-service-teen-military>.
- Friedman, S., 2015. Still a “Stalled Revolution”? Work/Family Experiences, Hegemonic Masculinity, and Moving Toward Gender Equality. *Sociology Compass* 9, 140–155. doi:[10.1111/soc4.12238](https://doi.org/10.1111/soc4.12238).
- Frodermann, C., Schmucker, A., Seth, S., vom Berge, P., 2021. Sample of Integrated Labour Market. URL: https://fdz.iab.de/de/FDZ_Individual_Data/integrated_labour_market_biographies/IAB_SIAB7519.aspx.

- Funk, L., Wentzel, W., 2014. Mädchen auf dem Weg ins Erwerbsleben: Wünsche, Werte, Berufsbilder: Forschungsergebnisse zum Girls' Day - Mädchen-Zukunftstag 2013. Budrich UniPress Ltd, Opladen and Berlin and Toronto. URL: https://content-select.com/portal/media/cover_image/53833bba-9a5c-4582-a358-62ca2efc1343/500.
- Gottfredson, L.S., 1981. Circumscription and Compromise: A Developmental Theory of Occupational Aspirations: *Journal of Counseling Psychology*, 28(6), 545-579. *Journal of Counseling Psychology* 28, 545-579. doi:[10.1037/0022-0167.28.6.545](https://doi.org/10.1037/0022-0167.28.6.545).
- Hardie, J.H., 2015. Women's Work? Predictors of Young Men's Aspirations for Entering Traditionally Female-dominated Occupations. *Sex Roles* 72, 349-362. doi:[10.1007/s11199-015-0449-1](https://doi.org/10.1007/s11199-015-0449-1).
- Henderson, A., Brown, S.D., Pancer, S.M., 2012. Political and Social Dimensions of Civic Engagement: The Impact of Compulsory Community Service. *Politics & Policy* 40, 93-130. doi:[10.1111/j.1747-1346.2011.00341.x](https://doi.org/10.1111/j.1747-1346.2011.00341.x).
- Henderson, A., Brown, S.D., Pancer, S.M., 2019. Curriculum requirements and subsequent civic engagement: is there a difference between 'forced' and 'free' community service? *The British Journal of Sociology* 70, 1297-1322. doi:[10.1111/1468-4446.12627](https://doi.org/10.1111/1468-4446.12627).
- Heppner, M.J., 2013. Women, Men, and Work: The Long Road to Gender Equity, in: Brown, S.D., Lent, R.W. (Eds.), *Career Development and Counseling*. Wiley, Hoboken, NJ, pp. 187-214.
- Hirschi, A., 2012. Callings and work engagement: moderated mediation model of work meaningfulness, occupational identity, and occupational self-efficacy. *Journal of Counseling Psychology* 59, 479-485. doi:[10.1037/a0028949](https://doi.org/10.1037/a0028949).
- Jacobs, J.A., 1989. *Revolving Doors: Sex Segregation and Women's Careers*. Stanford University Press, Stanford, Calif.
- Jusri, R., 2019. Student attrition in gender atypical fields of study. A matter of lacking social integration or pressure from significant others? doi:[10.31235/osf.io/73rjn](https://doi.org/10.31235/osf.io/73rjn).
- Kitchen, J.A., Sonnert, G., Sadler, P.M., 2018. The impact of college- and university-run high school summer programs on students' end of high school STEM career aspirations. *Science Education* 102, 529-547. doi:[10.1002/sce.21332](https://doi.org/10.1002/sce.21332).
- Lupton, B., 2006. Explaining Men's Entry into Female-Concentrated Occupations: Issues of Masculinity and Social Class. *Gender, Work & Organization* 13, 103-218. doi:[10.1111/j.1468-0432.2006.00299.x](https://doi.org/10.1111/j.1468-0432.2006.00299.x).

- Manzi, F., 2019. Are the Processes Underlying Discrimination the Same for Women and Men? A Critical Review of Congruity Models of Gender Discrimination. *Frontiers in psychology* 10, 469. doi:[10.3389/fpsyg.2019.00469](https://doi.org/10.3389/fpsyg.2019.00469).
- Moskos, M., 2019. Why is the gender revolution uneven and stalled? Gender essentialism and men's movement into 'women's work'. *Gender, Work & Organization* 31, 33. doi:[10.1111/gwao.12406](https://doi.org/10.1111/gwao.12406).
- Pacini, D., Windmeijer, F., 2016. Robust inference for the Two-Sample 2SLS estimator. *Economics Letters* 146, 50–54. doi:[10.1016/j.econlet.2016.06.033](https://doi.org/10.1016/j.econlet.2016.06.033).
- Puhani, P.A., Sterrenberg, M.K., 2021. Effects of Mandatory Military Service on Wages and Other Socioeconomic Outcomes.
- Ridgeway, C.L., 2009. Framed Before We Know It: How Gender Shapes Social Relations. *Gender & Society* 23, 145–160. doi:[10.1177/0891243208330313](https://doi.org/10.1177/0891243208330313).
- Riegle-Crumb, C., King, B., Moore, C., 2016. Do They Stay or Do They Go? The Switching Decisions of Individuals Who Enter Gender Atypical College Majors. *Sex Roles* 74, 436–449. doi:[10.1007/s11199-016-0583-4](https://doi.org/10.1007/s11199-016-0583-4).
- Schaub, M., Tokar, D.M., 2005. The role of personality and learning experiences in social cognitive career theory. *Journal of Vocational Behavior* 66, 304–325. doi:[10.1016/j.jvb.2004.09.005](https://doi.org/10.1016/j.jvb.2004.09.005).
- Schneider, T., 2003. Wehr- und Zivildienst in Deutschland: Wer dient, wer nicht? Basic Military and Alternative Service in Germany: Who Serves, Who Doesn't? *Jahrbücher für Nationalökonomie und Statistik* 223, 603–622. doi:[10.1515/jbnst-2003-0507](https://doi.org/10.1515/jbnst-2003-0507).
- Schneider, T., Trabold, H., 2004. Berufsarmee statt Wehrpflicht: Eine ökonomisch sinnvolle Lösung. *DIW Wochenbericht* 71, 53–57.
- Schülken, T., Bierhoff, H.W., 2003. Gründe, sich für den Zivildienst zu entscheiden, als Funktion von Werten. *Zeitschrift für Politische Psychologie* 11, 401–410.
- Seehuus, S., 2019. Social class background and gender-(a)typical choices of fields of study in higher education. *The British Journal of Sociology* 70, 1349–1373. doi:[10.1111/1468-4446.12668](https://doi.org/10.1111/1468-4446.12668).
- Shen-Miller, D., Smiler, A.P., 2015. Men in Female-Dominated Vocations: a Rationale for Academic Study and Introduction to the Special Issue. *Sex Roles* 72, 269–276. doi:[10.1007/s11199-015-0471-3](https://doi.org/10.1007/s11199-015-0471-3).
- Simpson, R., 2005. Men in Non-Traditional Occupations: Career Entry, Career Orientation and Experience of Role Strain. *Gender, Work & Organization* 12, 363–380. doi:[10.1111/j.1468-0432.2005.00278.x](https://doi.org/10.1111/j.1468-0432.2005.00278.x).

- Simpson, R., 2009. Men in caring occupations: Doing gender differently. Palgrave Macmillan, Basingstoke England and New York. URL: <http://site.ebrary.com/lib/alltitles/docDetail.action?docID=10343340>, doi:10.1057/9780230594333.
- Smith, R.A., 2012. Money, Benefits, and Power. The ANNALS of the American Academy of Political and Social Science 639, 149–172. doi:10.1177/0002716211422038.
- Sobiraj, S., Rigotti, T., Weseler, D., Mohr, G., 2015. Masculinity ideology and psychological strain: Considering men’s social stressors in female-dominated occupations. Psychology of Men & Masculinity 16, 54–66. doi:10.1037/a0035706.
- Tellhed, U., Bäckström, M., Björklund, F., 2017. Will I Fit in and Do Well? The Importance of Social Belongingness and Self-Efficacy for Explaining Gender Differences in Interest in STEM and HEED Majors. Sex Roles 77, 86–96. doi:10.1007/s11199-016-0694-y.
- Torre, M., 2018. Stopgappers? The Occupational Trajectories of Men in Female-Dominated Occupations. Work and Occupations 45, 283–312. doi:10.1177/0730888418780433.
- Tremel, I., Cornelißen, W., 2008. Mann werden im Zivildienst - ein vernachlässigter Aspekt in der Debatte um den Zivildienst. Zeitschrift für Frauenforschung und Geschlechterstudien 26, 30–43.
- Ulrich, J., Krewerth, A., Eberhard, V., 2006. Berufsbezeichnungen und ihr Einfluss auf die Berufswahl von Jugendlichen.
- Vandello, J.A., Bosson, J.K., 2013. Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. Psychology of Men & Masculinity 14, 101–113. doi:10.1037/a0029826.
- Wentzel, W., 2011. Girls’Day – Mädchen-Zukunftstag: Entwicklungen, Diskussion und Wirkungen, in: Wentzel, W. (Ed.), Generation Girls’Day. Budrich UniPress, Opladen, pp. 19–76.
- Williams, C.L., 1995. Still a man’s world: Men who do “women’s work”. volume 1 of *Men and masculinity*. Univ. of California Press, Berkeley. URL: <http://www.loc.gov/catdir/description/ucal041/94029009.html>.
- Williams, C.L., 2013. The Glass Escalator, Revisited. Gender & Society 27, 609–629. doi:10.1177/0891243213490232.
- Williams, C.L., 2015. Crossing Over: Interdisciplinary Research on “Men who do Women’s Work”. Sex Roles 72, 390–395. doi:10.1007/s11199-015-0477-x.

- Williams, C.M., Subich, L.M., 2006. The gendered nature of career related learning experiences: A social cognitive career theory perspective. *Journal of Vocational Behavior* 69, 262–275. doi:[10.1016/j.jvb.2006.02.007](https://doi.org/10.1016/j.jvb.2006.02.007).
- Williams, L.S., Villemez, W.J., 1993. Seekers and Finders: Male Entry and Exit in Female-Dominated Jobs, in: Williams, C.L. (Ed.), *Doing “Women’s Work”: Men in Nontraditional Occupations*. Sage Publ, Newbury Park, Calif.. Research on men and masculinities series, pp. 64–90.
- Yavorsky, J.E., 2019. Uneven Patterns of Inequality: An Audit Analysis of Hiring-Related Practices by Gendered and Classed Contexts. *Social Forces* 98, 461–492. doi:[10.1093/sf/soy123](https://doi.org/10.1093/sf/soy123).
- Yavorsky, J.E., Cohen, P.N., Qian, Y., 2016. Man Up, Man Down: Race–Ethnicity and the Hierarchy of Men in Female-Dominated Work. *The Sociological Quarterly* 57, 733–758. doi:[10.1111/tsq.12152](https://doi.org/10.1111/tsq.12152).
- Yavorsky, J.E., Dill, J., 2020. Unemployment and men’s entrance into female-dominated jobs. *Social Science Research* 85, 102373. doi:[10.1016/j.ssresearch.2019.102373](https://doi.org/10.1016/j.ssresearch.2019.102373).
- Yavorsky, J.E., Ruggs, E., Dill, J., 2021. Gendered Skills and Unemployed Men’s Resistance to “Women’s Work”. *Gender, Work & Organization* doi:[10.1111/gwao.12694](https://doi.org/10.1111/gwao.12694).

7. Tables

Table 1: Linear Probability Models of Working in Female-Dominated Occupation by Birth Half-Years and Civilian Service

	All Birth Years		Omitting 1989-92	ATT
	(1)	(2)	(3)	(4)
After suspension (<i>Birth > 1992h1</i>)	-0.018** (0.003)	-0.022** (0.003)	-0.023** (0.003)	
Completed Civilian Service? (<i>1 = Yes</i>)				0.112** (0.016)
Age (cubic)		Yes	Yes	Yes
High school degree		Yes	Yes	Yes
<i>F</i> -Statistic	43.06	163.12	101.85	
<i>R</i> ²	0.001	0.016	0.017	
Observations	66,853	66,853	42,572	66,853

Source: *SIAB7519.v1*; first jobs of men, with German citizenship, age 18-25; birth half-year specific predictions of completing civilian service taken from *Microcensus 1996 to 2017* (55,369 observations, *F*-Statistic 507.59); own estimation.

Note: Levels of significance for two-tailed tests: * $p < 0.05$, ** $p < 0.01$. Robust standard errors shown in parentheses. Female-dominated occupations are dichotomized at 75 percent female employees across 3-digit *KldB2010* occupations.

8. Figures

Source: Bundesamt für Familie und zivilgesellschaftliche Aufgaben; Destatis

Note: Shaded area denotes time of discussion and abolition of compulsory services (see also Supplementary Materials, Figure S.1).

Figure 2: Probability of Men's First Job in Female-Dominated Occupation and of Doing Civilian Service by Birth Half-Years

Source: SIAB7519.v1 and Microcensus 1996-2017, men with German citizenship, age 18-25; own estimation

Note: 95 percent confidence intervals included. Female-dominated occupations are dichotomized at 75 percent female employees across 3-digit KldB2010 occupations.

Figure 3: Probability of Men's and Women's First Job in Female-Dominated Occupation by Birth Half-Years

Source: SIAB7519.v1, men and women with German citizenship, age 18-25; own estimation
 Note: 95 percent confidence intervals included. Female-dominated occupations are dichotomized at 75 percent female employees across 3-digit KldB2010 occupations (see Supplementary Materials, Figure S.3 for other cut-off values).

Figure 4: Reported Effects of Civilian Service

Source: AID:A 2009, only respondents who finished/are doing a civilian service ($N = 613$).
 Note: Own translation.

Appendix

Table A.1: Descriptive Statistics for SIAB Register Data Sample by Sex

	Men			Women		
	Mean	Min	Max	Mean	Min	Max
In fem.-dom. occ. (75% cut-off)	0.111	0	1	0.406	0	1
Birth half-years	1989.9 (3.11)	1985h1	1995h2	1989.9 (3.10)	1985h1	1995h2
Suspension indicator	0.276	0	1	0.264	0	1
Age at first job	21.2 (1.86)	18	25	21.4 (1.93)	18	25
Secondary degree:						
Middle or lower	0.639	0	1	0.518	0	1
Upper	0.361	0	1	0.472	0	1
Year at first job	2010.9 (3.59)	2003	2019	2011.1 (3.66)	2003	2019
Observations	66,853			62,528		

Source: SIAB7519.v1; first regular jobs of men with German citizenship, age 18-15; own estimation

Note: Standard deviations for continuous measures shown in parentheses; female-dominated occupations are defined based on 3-digit KldB2010 occupations' shares of female employees for regular employment spells of individuals age 18 to 65 across 1990 to 2017; descriptives for female-dominated occupations are shown for one single imputation of KldB2010-codes for years before 2012.

Figure A.1: Schematic Depiction of How Suspension Affects Each Birth Half-Year

Note: Scattered numbers show age of each birth half-year by calendar year, with gray numbers depicting observations after the suspension of the civilian service. As men could serve between the ages 18 to 23, the suspension cuts through several birth half-years, with 1989 to 1991 being most affected.

Supplementary Material for:

“Gender-Atypical Learning Experiences for Men Reduce Occupational Sex Segregation: Causal Evidence from the Suspension of the Civilian Service in Germany”

Figure S.1: Google Search Trends for Topics and Milestones of the Suspension of Compulsory Services

Source: Google Trend (accessed 19.05.2021); Milestones from [Collischon et al. \(2018, 11\)](#).

Sec.1. Obtaining Shares of Having Completed a Civilian Service for Half-year Birth Cohorts

As the Microcensus is an annual survey, a given birth cohort is observed within multiple waves. For instance, somebody born in the first half of 1980 who served in the civilian service at age 20 could be observed as serving in the Microcensus 2000, but could also be observed as not serving in all other waves between 1998 and 2005. Thus, this would attenuate birth cohort specific relative frequencies of civilian service by a factor of about 8.

To adjust for this, I obtain half yearly cohort-specific shares of having completed a civilian service by accumulating age-cohort-specific risks across survey years to calculate a cohort-specific weighting scheme. This procedure is exemplified in Table S.1. Take for instance an exemplary birth cohort of the first half of 1985. This cohort is observed between 2003 and 2010 at different ages. From this, I calculate the relative frequencies of civilian services for each birth-cohort-age combination. However, these likely underestimate the relative share

by a factor of about 8 due the fact that this cohort is observed 8 times but a civilian service would only last for 9 months. Thus, I cumulate the risk of serving across ages to obtain half-year birth cohort shares rather than cohort-age-specific shares. As can be seen, the cumulated share of civilian service for the whole age-range is about 8 times the raw relative frequency.

Table S.1: Exemplary Data for Respondents Born in the First Half of 1985 to Obtain Half-Year Birth Cohort-Specific Shares of Having Completed a Civilian Service

Survey year	Age	N(other)	N(civilian service)	% civilian service	cumulated % civ.
2003	18	660	6	0.90	0.90
2004	19	505	18	3.44	4.34
2005	20	807	70	7.98	12.32
2006	21	784	30	3.69	16.01
2007	22	805	14	1.71	17.72
2008	23	834	6	0.71	18.43
2009	24	811	1	0.21	18.55
2010	25	837	0	0.00	18.55
Pooled sample	18-25	6,043	145	2.34	

The cumulative shares are finally used to calculate weights. As observations of the same half-year birth cohort that at a specific survey do not serve partly encompass individuals who have served in previous years or will do so in future surveys, these are down-weighted in order to obtain half-year birth cohort specific shares of having completed a civilian service in the pooled sample. Thus, in the example of Table S.1, the 6,043 observations not in the civilian service get a weight of

$$w_c = \frac{145}{0.1855} \cdot \frac{1 - 0.1855}{6043} = 0.1053.$$

Observations in the civilian service are weighted with $w_c = 1$. To assess the validity, I employ the weighting scheme to calculate year-specific shares of civilian service (in contrast to the main analyses, which are based on half yearly birth-year specific shares). The close resemblances to official data provided by the *Bundesamt für Zivildienst* supports this approach (Table S.2).

Table S.2: Comparison of Shares of Civilian Service by Year

Year	Weighted Microcensus	Population data
2006	20.42	18.39
2007	19.35	18.29
2008	21.28	19.06
2009	22.34	19.95
2010	19.86	19.12
2011	10.94	2.12
2012	0.00	0.00
2013	0.00	0.00
2014	0.00	0.00
2015	0.00	0.00
2016	0.00	0.00
2017	0.00	0.00

Source: Microcensus 1996-2017, men with German citizenship age 18 to 25; Bundesamt für Familie und zivilgesellschaftliche Aufgaben; Destatis

Note: Population is based on the number of civilian servants in relation to the number of men age 19 (Figure 1).

Sec.2. Supplementary Analyses for SIAB register data

Table S.3: Female-Dominated Occupations Across 3-Digit KldB2010-Codes With at Least 66.7 Percent Female Employees

KldB2010 Code	Occupation	% female employees	N(men)	N(women)
	Occupations with at least 66.7 percent female employees			
282	Occupations in the production of clothing and other textile products	66.7	88	94
715	Occupations in human resources management and personnel service	67.0	152	421
731	Occupations in legal services and jurisdiction	67.5	143	487
816	Occupations in psychology and non-medical psychotherapy	68.6	21	74
733	Occupations in media, documentation and information services	71.0	39	102
621	Sales occupations in retail trade	71.7	2520	4790
723	Occupations in tax consultancy	72.1	236	543
732	Occupations in public administration	72.2	754	1781
625	Occupations selling books, art, antiques, equipment for music	72.3	12	53
841	Teachers in schools of general education	73.2	64	337
911	Occupations in philology	73.7	1	3
822	Occupations providing nutritional advice or health counselling, and occupations in wellness	74.0	12	46
631	Occupations in tourism and the sports industry	74.6	126	349
632	Occupations in hotels	74.7	260	768
	Occupations with at least 75 percent female employees			
714	Office clerks and secretaries	75.1	2609	5092
541	Occupations in cleaning services	75.3	782	794
817	Occupations in non-medical therapy and alternative medicine	79.8	238	1116
	Occupations with at least 80 percent female employees			
623	Occupations selling foodstuffs	81.3	437	1402
813	Occupations in nursing, emergency medical services and obstetrics	81.5	965	3240
818	Occupations in pharmacy	82.3	70	432
821	Occupations in geriatric care	82.5	639	1773
831	Occupations in education and social work, and pedagogic specialists in social care work	83.6	1209	5352
624	Occupations selling drugstore products, pharmaceuticals, and medical supplies	87.2	85	494
812	Laboratory occupations in medicine	88.1	52	317
122	Occupations in floristry	90.3	23	199
823	Occupations in body care	90.8	108	1393
832	Occupations in housekeeping and consumer counselling	90.8	131	394
811	Doctors' receptionists and assistants	97.7	85	3368
	Total		11861	35214

Source: SIAB7519.v1; own estimation

Note: Share of female employees is based on all regular employment spells of individuals age 18 to 65 across 1990 to 2019; frequencies refer to first regular employment spells of individuals age 18 to 25; all statistics are only shown for one single imputation of KldB2010-codes for years before 2012.

Table S.4: Robustness Checks of Occupational Median Daily Wages and Moderation by High School Degree (Linear Probability Models)

Dependent variable:	Median Wage	Fem.-Dom. Occ.
	(1)	(2)
After suspension	-0.039	-0.013**
<i>(Birth > 1992h1)</i>	(0.184)	(0.003)
Upper secondary degree?	9.095**	0.081**
<i>(1 = Yes)</i>	(0.200)	(0.004)
Secondary degree $\times$ Suspension		-0.023**
		(0.006)
Age (cubic)	Yes	Yes
<i>F</i> -Statistic	853.07	137.79
<i>R</i> ²	0.085	0.016
Observations	66,835	66,853

Source: SIAB7519.v1; first regular jobs of men with German citizenship, age 18-15; own estimation

Note: Levels of significance for two-tailed tests: * $p < 0.05$, ** $p < 0.01$. Robust standard errors shown in parentheses. 3-digit KldB2010 occupations and their respective share of female employees and median wages are based on cross-walked 25 imputations.

Figure S.2: Effect of Suspension of Civilian Service Across KdlB2010-Occupations With at Least 75 Percent Female Employees

Source: SIAB7519.v1, only men with German citizenship, age 18 to 25; own estimation

Note: Linear probability model estimates of working in respective occupation vs. all not female-dominated occupation; 95 percent confidence intervals shown. 3-digit KdlB2010 occupations and their respective share of female employees are based on cross-walked 25 imputations.

Figure S.3: Probability of First Job in Female-Dominated Occupation by Half-Yearly Birth Cohorts, Gender, and Cut-Off Values for Defining Female-Dominated Occupations

Source: SIAB7519.v1, only men and women with German citizenship, age 18 to 25; own estimation

Note: 95 percent confidence intervals shown. Occupation-industry-cells are based on 3-digit KldB2010- and 2-digit WZ08-codes.

Sec.3. Supplementary Analyses for AID:A Survey Data

Figure S.4: Respondent's Age of Those Doing a Civilian Service

Source: AID:A 2009, only respondents who are doing a civilian service ($N = 62$).

Figure S.5: Activity Before Having Started a Civilian Service by High School Degree

Source: AID:A 2009, only respondents who finished/are doing a civilian service ($N = 613$)

Figure S.6: Standardized Mean Differences Between Men Who Completed the Civilian Service, Men Who Completed the Military Service, and Men Who Did Not Serve in Either

Source: AID:A 2009; only men with German citizenship.

Note: Std. Differences with 95 percent confidence intervals. Positive differences indicate higher values on respective variables for the respondents who completed a civilian service. This cross-sectional information indicates post-treatment differences and does not clearly distinguish between selection into the service and potential effects of the civilian service.

Table S.5: Linear Probability Models of Working in Female-Dominated Occupation (75% cut-off) at the Time of Interview by Having Completed the Civilian Service

	(1)	(2)	(3)	(4)
Completed civilian serv.	0.088** (0.020)	0.091** (0.021)	0.081** (0.020)	0.068** (0.025)
Compl. Military serv.=1				-0.029 (0.026)
Age fixed effects		Yes	Yes	Yes
High school degree		Yes	Yes	Yes
Parental education		Yes	Yes	Yes
Occ. and behav. values ^a		Yes	Yes	Yes
Inverse prop. weighting			Yes	Yes
R^2	0.014	0.093	0.14	0.141
N	1720	1720	1720	1720

Source: AID:A 2009, only men with German citizenship, who are not currently doing a civilian service

Note: Levels of significance for two-tailed tests: * $p < 0.05$, ** $p < 0.01$. Robust standard errors shown in parentheses. Inverse propability weighting to recover average treatment effect on the treated. Female-dominated occupations based on share of female employees across 3-digit ISCO88 occupations taken from the German Microcensus 2009 (employed individuals, age 18 to 65).

^aIndicators as shown in Figure S.6.