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## Gender-Atypical Vocational Training: The Pioneers are Dropping Out

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### Abstract

**Context:** Gender segregation in vocational education and training (VET) persists within the labour market, perpetuating inequalities, as female-dominated occupations typically have lower income levels, reduced occupational prestige, and limited career opportunities. Gender-atypical educational choices could help counteract this issue but often result in higher occupational attrition.

**Approach:** We use a mixed-methods approach that incorporates NEPS data along with qualitative interviews. The interviews centre on men in care and women in STEM and trade occupations. The theoretical framework encompasses institutional, social, and personal factors in analysing career entry, development, and exit.

**Findings:** Men with gender-atypical VET are more likely to pursue further training and transition into new occupations. In care occupations, unfavourable working conditions, limited career opportunities, and low prestige are the primary reasons men leave the field. Women with gender-atypical VET are at a greater risk of being in precarious employment compared to men in the same sector. However, unlike men, they do not transition to new occupations as frequently. In STEM and trade occupations, women often face structural barriers regarding work arrangements as well as discrimination.

**Conclusions:** Our findings reveal gender-specific patterns in labour market entry and career development for people with gender-atypical VET, highlighting ongoing structural challenges that sustain gender inequality. While our results indicate a lack of initiative on the part of employers, they also point to some connections with the persistence of the traditional division of labour between men and women.

### Keywords

occupational and educational gender segregation, labour market integration, employment trajectories, occupational dropouts

## 1 Introduction

In Germany, as in many other countries, educational choices and the labour market are highly segregated by gender (Achatz, 2018; Busch-Heizmann, 2015; Hamjediers & Peters,

2023; Kroll, 2021). This reproduces inequality, as occupations that are traditionally female dominated are usually characterised by lower income levels, reduced professional prestige and limited career development opportunities (Boll et al., 2016; Egge, 2009; Hünefeld & Dötsch, 2023; Patrick et al., 2024; Schwiter et al., 2014). Consequently, occupational gender segregation contributes to income differences, unequal employment prospects and career opportunities between men and women (Eige, 2018; Estévez-Abe, 2011; Heininger & Imdorf, 2018; Patrick et al., 2024).

A gender-atypical educational choice has the potential to reduce gender-specific inequalities. However, this only applies if the educational choice leads to a career in that field. Existing research show that people formally trained in professions where their gender is numerically underrepresented, tend to have a worse experience in the labour market, including more difficulty finding a related job, lower retention rates and fewer career development opportunities (Hamjediers & Peters, 2023; Jacobs, 1989; Madsen et al., 2023; Smyth, 2005).

To gain insights into why gender-atypical educational choices are often followed by difficult transitions into the labour market, our study examines the further employment trajectories of men and women with a gender-atypical vocational education and training (VET). Our focus is on the career entry phase of people with gender-atypical VET and the reasons why men and women leave their occupations during their careers.

## 2 Research Question and Theory

Our study deals with the “leaky pipeline” (Solga & Pfahl, 2009) or “revolving door” (Jacobs, 1989) phenomenon, which indicates that “segregation is not only a consequence of gendered inflows but [is] also maintained by disproportionate gendered outflows out of gender atypical positions” (Hamjediers & Peters, 2023, p. 2). Breaking down gendered occupational structures by influencing gendered educational choices is therefore not enough (Busch-Heizmann, 2015; Kroll, 2021; Rohrbach-Schmidt & Uhly 2015). Though, there are only a few studies on the career entry and further employment history of people with a gender-atypical education. Furthermore, the few studies that do exist focus on academic careers, while there is little research on the employment trajectories of people with atypical training (Ihsen et al., 2017; Imdorf et al., 2015; Jeanrenaud, 2020). Our two main research questions are:

- How does the labour market entry of men and women with gender-atypical vocational training compare with the labour market entry of people with gender-typical or gender-neutral vocational training?
- What are the reasons for men and women leaving their gender-atypical occupation in the course of their employment trajectory?

While the first research question focuses on the entry phase of a career, a sensitive, intensive and influential period, the second question examines the longer employment history, reflecting career choice as an ongoing, multifaceted process that increasingly leads to non-linear training and employment trajectories (Ohlemann et al., 2019; Savickas, 2012). Our particular focus is on gender, examining how a person's gender and the gender-specific characteristics of an occupation influence career entry and the reasons for career change. As we see training and employment trajectories not only as a personal decision, but also as a complex outcome shaped by an array of personal, social and institutional factors, we lean on three different theoretical strands when analysing the career entry phase and the causes of a career change.

The first theoretical approach is based on an institutional argument and describes structural barriers, that have developed along the traditional gendered division of labour and are still prevalent in disparities in working and employment conditions (e.g. in terms of part-time, flexible

and remote working opportunities, income levels, job security and career development opportunities) in female- and male-dominated occupations (Betzelt & Bothfeld, 2021; Busch, 2013). The different working and employment conditions of an occupation create barriers (either real or assumed by decision-makers) to career entry and development for the gender not typically represented in that occupation.

Another theoretical strand we lean on is the “doing gender” (West & Zimmermann, 1987) approach. This interactional approach deals with biased competence and performance expectations towards occupational majorities or minorities, which are based on the prejudices of superiors, colleagues or clients, but also on the differentiation and self-preservation strategies of the dominant gender. These gender stereotypes lead to exclusion and discrimination of the minority gender in the workplace (e.g. exclusion from decision-making, discrimination in the allocation of tasks and career development opportunities, difficulties in customer service, lack of recognition and reward). We also include sexist comments and offensive behaviour that create a hostile work environment for the minority gender in this approach.

Existing institutional barriers and gender stereotypes may be reasons for turning away from an originally learned occupation. However, these decisions are not exclusively determined by external factors but should also be understood as a process in which individuals can make decisions about the circumstances they face in line with their ideas about their professional future. We therefore include as a third theoretical strand the “cooling-out” approach (Matthies, 2021; Matthies & Rehbein, 2020), which considers the fit between prevailing occupational conditions and the individuals' own values and aspirations (Hardering, 2015) at specific points in their personal and professional lives. Using this approach, turning away from an originally learned gender-atypical occupation can be understood as a form of individual (crisis) intervention, in which a person recognises and processes a mismatch between their own professional orientations and the conditions of the occupation (Matthies, 2021).

### 3 Method

To answer our two research questions, we use a mixed-method approach, combining quantitative and qualitative data analysis. While we use the National Educational Panel Study (NEPS) for the quantitative data analysis focusing on the first research question, we collect data ourselves from biographical-narrative interviews and interviews with various experts to answer the second research question. The combination of quantitative and qualitative research methods opens up the analytical view of the research topic and is less concerned with the validation of the respective findings (Johnson et al., 2007). However, the analyses are carried out in parallel, so that the results of each analysis are also used to inform the other analysis and to compare and check them. Our current data and analysis is limited to a binary concept of gender.

#### 3.1 Quantitative Analysis

The aim of the quantitative analysis is to identify differences in the utilisation of vocational training for people with gender-atypical, gender-typical or gender-neutral VET. Using the National Education Panel (NEPS) dataset, we track the educational and occupational history of 4,000 respondents, currently around 25 years old, who completed their vocational training some years ago. Of these, around 300 graduates complete a gender-atypical VET programme. We look at their integration into the labour market and their likelihood of occupational change. We compare outcomes across VET programmes with different gender distributions (gender-atypical, gender-typical and gender-neutral). When analysing gender-atypical occupations, it is essential to examine both women in male-dominated fields and men in female-dominated fields in order to fully understand the implications of the occupational minority status of one gender.

Operationalising gender segregated occupations requires a careful choice of threshold, as the literature suggests different cut-offs: From 60% (Murphy & Oesch, 2015) to 80% (Granato & Dorau, 2004), with policy-oriented definitions typically using over 70% (Federal Anti-Discrimination Agency). In our analysis, we use a threshold of 75% as it optimally balances statistical power (while maintaining a sufficiently large number of cases) with conceptual clarity about occupational segregation. This intermediate threshold proves particularly valuable in capturing the gradient nature of gender penalties in moderately segregated sectors, as confirmed by our sensitivity analyses to alternative cut-offs. All models allow for occupational clustering and explicitly document sufficiently large subgroup sizes to ensure comprehensible interpretation of these methodological choices.

### 3.2 Qualitative Analysis

The qualitative analysis (07/24 - ongoing), which explores the reasons why men and women leave their gender-atypical occupation over the course of their careers, is based on 13 biographical-narrative interviews with female career changers from predominantly male-dominated STEM and trade occupations, eight biographical-narrative interviews with male career changers from female-dominated care occupations, and 16 interviews with experts on the gender-specific characteristics of occupations and the possible causes and consequences of career change. Due to difficulties in recruiting women who had completed vocational training in a male-dominated STEM or trade occupation, but left that occupation during their career, our sample includes female career changers who do not fit this description exactly. This means that in addition to seven women who fit the criteria, we also interviewed four women with an academic degree in a STEM subject and two female career changers who initially trained in a trade occupation that is not defined as male-dominated, but where men were over-represented in the particular workforce and in the relevant sector. The inclusion of female career changers with an academic background in STEM in the sample allows us to compare the experiences of vocationally and academically qualified women in a male-dominated field, and to develop ideas about the differences and similarities between them. Our sample of female career changers includes women in their mid-30s to late 50s, nine of whom have at least one child. Our sample of male career changers includes men in their early 20s to mid-50s, four of whom have at least one child. With the exception of one woman, all respondents had achieved the highest level of schooling that would have given them access to higher education.

## 4 Preliminary Results

As we have not yet completed our research, we present preliminary results from both, the quantitative and the qualitative analysis.

### 4.1 Analysis of the National Education Panel

The analysis of the NEPS data addresses the first research question and examines the labour market entry of men and women with gender-atypical VET. It compares women in male-dominated occupations with men in the same fields, and men in female-dominated occupations with women in the same fields. The initial results show significant gender patterns: According to the data, women in male-dominated occupations (e.g. mechanical and plant engineering, logistics and food production) are less integrated into the labour market, which is reflected in their lower earning potential compared to their male counterparts. As a result, they are more likely to be in precarious employment (low paid or, to a much lesser extent, temporary). On the other hand, men in female-dominated occupations (e.g. education and care) show no significant differences in labour market integration compared to women in these fields. However, men with gender-atypical VET are more likely than women to undertake further academic or

vocational training and also more likely to move to a new job in an occupation that no longer corresponds to their initial training. Women are less likely to make such transitions, even though they face greater challenges in securing stable employment within their occupation. Further analysis is needed to clarify whether women in male-dominated fields have lower earnings than men in the same specific occupations (e.g. mechanical engineering, logistics) or whether they are more likely to be employed in lower-paid occupations within male-dominated fields (e.g. food production vs. plant engineering). In general, our initial findings suggest that gender-atypical VET leads to different outcomes for men and women.

With regard to the different thresholds discussed above, the NEPS data show that the effects of different thresholds are not consistent across genders. While the number of women in male-dominated occupations remains relatively stable across thresholds, the number of men in female-dominated occupations increases considerably when the female share threshold is lowered from 80% to 70%. This asymmetry in the quantitative distribution of men and women in atypical occupations and the different patterns of integration underline the importance of gender analysis in research on occupational segregation.

#### **4.2 Analysis of the Biographical-Narrative and Expert Interviews**

In relation to the second research question, preliminary analysis of the interview data from male career changers suggests that men's decision to leave the care sector is largely a result of feeling alienated from their occupation, due to unfavourable working conditions (mainly understaffing and related problems as well as shift work) in the sector, coupled with few opportunities for professional development and low professional prestige. The decision to change careers can therefore be understood as a form of individual intervention or, in terms of the theoretical approach considered in this study, as a “cooling out” from the learned occupation, in which the men recognise the mismatch between their own professional orientations, personal goals and values, and the conditions of the care sector. The experts also mention the lack of opportunities for professional development and the low occupational prestige as reasons why men feel alienated or “cooled off” by their occupation. In line with their external perspective, they discuss these occupational characteristics mainly from an institutional point of view. They argue that these characteristics of the care profession are largely due to the fact that care work has historically been a female occupation. It has traditionally been seen as a transition or complement to women's private caring responsibilities, rather than as a long-term career. This has resulted in employment characteristics that men (and increasingly women) now find unattractive and incompatible with their career aspirations. Like the men, experts also highlight unfavourable working conditions in the care sector, particularly staff shortages, as the primary reason influencing men's decision to leave the occupation. While unfavourable working conditions affect women in the care sector in a similar way, some experts believe that the sector's tradition as a female occupation makes it easier for women to reconcile their work with their private family commitments, and that they weigh this against the unfavourable working conditions, not least because they are often not working full-time. Both the men and the experts interviewed point out that salaries in the care sector have developed well in recent years and that income levels are not a relevant reason for men to leave their occupation. The same can be said for stereotyping and discrimination in the work context, as male respondents only reported these situations when specifically asked. They did not raise the issue in the past and mostly do not do so now. In addition, men report incidents of stereotyping as isolated incidents, many of which they remember positively, for example when they were seen to bring calm to a team of female carers, when they were looked after by their female colleagues, or when patients were pleased to have a male carer. The experts also believe that stereotyping or discrimination against men in caring roles is not common. They suggest that the more isolated incidents occur mainly in the carer-patient relationship, while they also believe that a more gender-diverse care team is

generally viewed positively by patients. Except for one man, all male respondents moved into higher prestige occupations after leaving care work, following an additional episode of academic education. This is related to the fact that the men interviewed felt alienated from their trained occupation due to the limited opportunities for professional development and the low prestige of the occupation.

In contrast to men, women's exit from an originally learned (gender-atypical) occupation seems to be influenced more by external factors rather than by a feeling of alienation from the occupation. In particular, the structural conditions of male-dominated occupations (limited part-time, flexible and remote working opportunities – especially in the manufacturing and craft sectors) often make it difficult for women to reconcile work and private caring responsibilities, preventing them from continuing in the occupation or developing their careers after becoming mothers. In line with the women's experiences, the experts see these institutionalised settings of male-dominated occupations as a major cause of women leaving these occupations. According to the experts, the consequences of institutionalised male-dominated occupational structures are also reflected in the fact that there is often a lack of work clothes, toilets and changing rooms for women, not to mention procedures for returning to work after parental leave. Most of the women in our sample reported situations in which they experienced (degrading) stereotyping and discrimination at work (e.g. doubts about their professional competence and motivation, assumed desire to have children, sexist comments and assumption of a different professional role). However, most of them did not reflect on these situations until some time after they had left the occupation, so that these experiences played a lesser role in their (conscious) decision to leave the occupation. Whereas in the past they may have accepted situations of stereotyping and discrimination, seeing them as normal in the particular work environment and that women simply have to adapt and perhaps toughen up, most women now see these situations as problematic and expect themselves to react differently. The experts in our sample believe that situations of stereotyping and discrimination (similar to those described by the women) are very common for women in male-dominated occupations and that this situation leads many women to leave these occupations at some point. The experts also point to closed career paths for women and to unjustified pay gaps between women and men in the same occupation, which they attribute to the exclusion of women from informal networks and to workplace prejudices against women and mothers. However, blocked career paths and unfair pay only play a role for respondents with an academic education in our sample. These women are also more negatively affected by a career change than female respondents with vocational training, as they tend to move into lower-paid jobs as somewhat unskilled workers. For the women with vocational training, the career change tends to be one of occupational upgrading, following an additional episode of vocational or tertiary academic education. Other differences between the women interviewed are that the academically trained women reported struggling with the meaning of their actual work, questioning the incompatibility of occupational structures with more flexible working arrangements, and criticising the competitive working atmosphere in male-dominated contexts. Consequently, these women seem to have experienced a “cool out” from their learned occupation. On the other hand, the women with vocational training continue to describe their learned, male-dominated occupation and the prevailing working atmosphere as predominantly positive and often see the incompatibility of occupational structures with private responsibilities as a consequence of occupational requirements that are difficult to change.

## 5 Conclusion and Outlook

Our study provides valuable insights into the challenges faced by individuals with gender-atypical VET, particularly during their labour market entry and subsequent employment trajectories. Initial findings reveal gender-specific patterns: The qualitative analysis shows that for

men, unfavourable working conditions in the care sector, coupled with few opportunities for professional development and low professional prestige, are the main reasons for leaving the occupation. As a result, they are more likely to move into more prestigious occupations after additional academic training. The quantitative analysis shows that men with gender-atypical VET are more likely to undertake further academic and vocational training than both women in similar fields and men in gender-typical and gender-neutral occupations. In addition, men are more likely to move into new occupations that do not correspond to their initial training. Based on the interviews, we see that women experience more structural barriers as well as stereotyping and discrimination. The outcome of the career change seems to be different for the women interviewed, leading more often to an occupational upgrading for those with a vocational education, but to a downgrading for those with an academic education. The quantitative analysis shows that women with gender-atypical VET have greater difficulties in securing stable employment and are more likely to be in precarious employment than men. However, unlike men, they do not seem to leave their occupation more often.

These gender patterns point to some persistent structural challenges that perpetuate gender inequality in the labour market (e.g. worse working and employment conditions in female occupations, discrimination against women in the context of work and limited (time-)flexible working arrangements in male-dominated occupations). While these initial findings indicate a lack of movement on the part of employers, they also suggest some links with the persistence of traditional gender roles, with men in the role of family breadwinner and women more in the role of private carer. This persistence of gender roles in society is, as some of the experts pointed out, at least partly perpetuated by the social system, which does not provide enough care facilities for children or the elderly, while financially supporting a family model in which one partner does not work full time. Regarding discrimination against women in the workplace, some experts referred to existing legislation (e.g. the General Equal Treatment Act or the obligation for employers to set up complaint bodies) aimed at improving (inter alia) women's working and employment conditions. However, they also point out that these rules are often not a lived reality in companies and that there are challenges in the implementation of some of these rules. Further qualitative analysis of the workplace cultures described in the interviews and contextualisation of the institutional barriers identified, particularly in relation to the development of the occupations concerned, the social system and the development of labour market participation of men and women, is needed to explore these influences.

In future quantitative analyses we aim to clarify whether the gender pay gap in male-dominated fields is sector-specific or due to occupational effects. Further analysis will also look at income levels and occupational integration, examining whether outcomes differ depending on whether women and men remain in their gender-atypical training occupations or move into gender-typical or gender-neutral occupations. This will provide deeper insights into the long-term economic and occupational consequences of remaining in or leaving gender-atypical occupations and help to identify strategies to improve the retention and career development of individuals in these fields. While our models account for educational stratification by school leaving qualifications and occupational characteristics, we plan to extend our analysis to include parental socio-economic status and migrant background (where available) to capture a more intersectional perspective.

Our study aims to identify gender-specific challenges, while recognising its limitation to a binary gender concept, and provide insights that can inform policy development and sector and company specific initiatives to support the transition, career development and retention of individuals in gender-atypical occupations. Based on our initial findings, to support the retention of women in male-dominated sectors, more efforts are needed to increase part-time, flexible and remote working opportunities, as well as work cultures where (in)direct discrimination against women is not accepted. Men, on the other hand, could be motivated to stay in the care

sector by improving working conditions and providing clear pathways for further professional training and associated career development opportunities. Although formulated from a gender perspective, it goes without saying that each of these improvements would benefit all workers, regardless of gender.

While this study focuses on Germany, the findings have broader relevance for other countries facing similar challenges of occupational gender segregation. Gender segregation in VET and the labour market is a global issue, and many countries are grappling with how to break down occupational gender barriers and promote equality in traditionally male- or female-dominated fields. By examining the German context, this study contributes to a broader understanding of the mechanisms driving persistent gender segregation and offers insights that can inform policy and practice in other countries.

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