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Continuous Training, Job Satisfaction and Gender – An Empirical Analysis Using German Panel Data

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Claudia Burgard and Katja Görlitz[1]

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Abstract

Using data from the German Socio-Economic Panel (GSOEP), this paper analyzes the relationship between training and job satisfaction focusing in particular on gender differences. Controlling for a variety of socio-demographic, job and firm characteristics, we find a difference between males and females in the correlation of training with job satisfaction which is positive for males but insignificant for females. This difference becomes even more pronounced when applying individual fixed effects. To gain insights into the reasons for this difference, we further investigate training characteristics by gender. We find that financial support and career-orientation of courses only seems to matter for the job satisfaction of men but not of women.

JEL Classification: I29, J24, J28, M53

Keywords: Training; job satisfaction; gender differences; fixed effects

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1 Introduction

As employees' working lives are nowadays characterized by rapidly changing skill requirements because of accelerating technological progress and as there is a rising demand for skilled personnel, the role of worker training becomes increasingly important. Training participation is crucial to workers in order to adapt continuously to needs on their job and to remain attractive for the labor market. Training participation is a human capital investment that is determined by both training costs and monetary or non-monetary returns. As to ensure an increase in lifelong learning which is a prevalent policy aim, knowledge about costs and benefits from training is essential. While there is a broad literature on estimating wage returns to training[1], a smaller number of studies investigate non-monetary returns.

This lack of further research on non-monetary returns comes as a surprise as there is some evidence showing that they are likely to play an important role in human capital investments. Oreopoulos and Salvanes (2009) show that non-pecuniary returns to schooling are at least as large as pecuniary ones. Non-monetary returns can, amongst other things, also include a consumption value which captures several benefits from learning. For example, these can be personal gains or enrichments for learners like self-fulfillment, personal development or broadening horizons. Theoretical foundations of the existence of a consumption motive being involved in human capital investment decisions are provided by e.g. Schultz (1963) and Schaafsma (1976). Empirically, for instance the findings by Alstadsæter (2009) and Alstadsæter and Sievertsen (2009) suggest consumption benefits to play a role in higher education decisions.

With regard to further training, non-monetary returns might be of great importance since they could explain why employees attend training, even if there are small or no wage returns as some studies suggest (Pischke, 2001; Jürges and Schneider, 2006; Leuven and Oosterbeek, 2008; Görlitz, 2011). Even though employers are the main sponsor of training in Europe (Bassanini et al., 2007) and, therefore, reap much of the benefits (Ballot et al., 2006; Dearden et al., 2006; Konings and Vanormelingen, 2009), employees' contribution to training costs by bearing monetary expenses or by spending their free time is not negligible (see e.g. Moraal (2005)). In order to be willing to bear these costs, there has to be some reasoning for individuals in terms of expected benefits. The small number of studies investigating non-monetary returns find them to be positively related to training. In particular, among the considered returns are workers' promotion prospects and job security (Pergamit and Veum, 1999; Büchel and Pannenberg, 2004; Melero, 2010).

Investigating the relationship between continuous training and job satisfaction, this paper extends the existing literature in several ways. We use job satisfaction as an outcome of training

[1] See e.g. Blundell et al. (1999); Pischke (2001); Büchel and Pannenberg (2004); Gerfin (2004); Schøne (2004); Frazis and Loewenstein (2005); Leuven and Oosterbeek (2008); Görlitz (2011).

instead of focusing only on monetary returns or looking at a single proxy for one single non-pecuniary return, arguing that job satisfaction is a comprehensive measure of all aspects of the training decision covering monetary and non-monetary aspects.[2] In addition, we point out gender differences and examine the heterogeneity of training courses by gender. This seems to be important since job satisfaction processes differ to a large extent by gender (Clark, 1997) and since it is well-known that training participation also differs by gender (see e.g. Bassanini et al. (2007); Jones et al. (2008)). The analysis takes time-invariant unobserved heterogeneity into account which is likely to matter for the results.

Using data from the German Socio-Economic Panel (GSOEP), job satisfaction is not only analyzed as a function of a binary training indicator but also as a function of more detailed training dimensions (e.g. training duration or cost sharing between employers and employees). The estimation method used is the Probit-adapted OLS (POLS) model suggested by van Praag and Ferrer-i-Carbonell (2004). This method allows us to take unobserved heterogeneity into account by applying individual fixed effects in a framework of ordered dependent variables.

The paper is organized as follows. Section 2 presents the theoretical background and previous literature. Section 3 introduces the data and describes the empirical strategy. Section 4 reports estimation results. Finally, section 5 concludes the paper and discusses possible topics for future research.

2 Theory and Literature

According to standard human capital theory (Becker, 1964), training is a financial investment that will be undertaken if the net present value of wage returns exceeds training costs. A large literature is concerned with estimating wage returns to training (see e.g. Lynch (1992); Parent (1999); Arulampalam and Booth (2001); Pischke (2001); Schøne (2004); Frazis and Loewenstein (2005); Kuckulenz and Maier (2006); Leuven and Oosterbeek (2008); Görlitz (2011)). While earlier studies find that wages are strongly correlated with training, more recent papers find no or only small wage returns as a consequence of training participation (Leuven and Oosterbeek, 2008; Görlitz, 2011).

This raises the question to which extent non-monetary returns could influence the participation decision. Schaafsma (1976) introduces a theoretical model of the demand for education in which both non-monetary and monetary benefits are incorporated directly. In one of his later studies, also Becker (1976) emphasizes the potential role of non-pecuniary or cultural returns with regard

[2] According to Argyle (1989), job satisfaction is one of the most important avenues of well-being which is a fundamental ambition in people's life.

to continuous training. However, non-monetary returns to training are less often examined in the empirical literature. Such returns could e.g. arise from a positive relationship between training and the probability of promotion (Pergamit and Veum, 1999; Melero, 2010) or between training and employment stability (Büchel and Pannenberg, 2004). While these returns could involve monetary benefits as they are likely to be accompanied by higher wages or income stability, they may also contain pure non-monetary aspects such as self-fulfillment, acknowledgement and job security. These aspects could have a positive impact on workers' satisfaction, even if there was no impact on wages.

Additionally, there might result a consumption value from attending training courses which has not yet been explored in the training literature. For instance, training could improve the working atmosphere (especially if it is provided inside the firm) or it could encourage networking by exchange and interaction with other participants. Some people might enjoy learning as such because they discover or experience something new and get new ideas. Training might also contribute to satisfaction by getting away from the daily routine and putting variety into the workaday life, even though this effect might only be temporary.

Workers' satisfaction is, for the above-mentioned reasons, likely to be affected by further training. The underlying theoretical concept that we consider is the utility function from working introduced by Clark and Oswald (1996). We extend this model by including training participation besides other firm and job characteristics:[3]

$$u = u(e, h, i, j, tr),$$

where e is income, h are working hours, i contains individual characteristics, j comprises job characteristics and tr is individuals' training participation. We assume that utility from working can be measured in terms of workers' satisfaction with their job. Since utility is hard to observe directly, the subjective measure job satisfaction is used as a proxy variable for utility. Frey and Stutzer (2004b,a) state that measures of reported subjective well-being can represent proxies for utility of individuals. Di Tella and MacCulloch (2006) find that satisfaction measures from surveys encompass meaningful information about true utility. Even Kimball and Willis (2006) who criticize equalizing happiness and utility argue that although happiness is not the same concept as utility they are systematically related.

[3]One could ask why we are considering work utility instead of overall utility. We think that, if training attendance influenced life satisfaction, the main channel is through job satisfaction. This is confirmed by checking the corresponding estimation results: When running the main regressions using life satisfaction as outcome while additionally controlling for job satisfaction, the coefficient for training participation becomes statistically insignificant (results are available from the authors on request). Therefore, we conclude training returns to be more directly related to the working life.

As job satisfaction will be regarded as a comprehensive measure of all aspects of training participation in this paper, it could also mirror the cost component of training participation besides reflecting training benefits. These costs could be of pecuniary (e.g. fees, foregone earnings) or non-pecuniary nature (e.g. mental effort, learning stress, fear of failure). In principle, we expect further training to influence job satisfaction in a positive way. When assuming that, on average, it is not the only aim of training attendance to seek higher earnings, we would otherwise not expect to observe employees participating in training frequently as they often do (e.g. Pischke (2001); Pfeifer (2007)). However, under certain circumstances, it could even be negatively related to job satisfaction. For example, if the training decision is not made by employees but rather completely initiated and fully paid by firms and the returns are fully captured by employers, workers would still have to bear the non-monetary costs. Some training courses are also forced by law in some occupations, for example in the German health sector. It could also be the case that individuals simply overestimate the expected returns or underestimate costs because of incomplete information.

Only a small number of studies investigate the link between training and job satisfaction. Analyzing determinants of job satisfaction, Siebern-Thomas (2005) includes training information in terms of skills acquired through training into his model. This variable turns out to have a strong positive correlation with job satisfaction. The findings are based on the European Community Household Panel (ECHP) from 1995-2000. Using cross-sectional data from 1997, Gazioglu and Tansel (2006) also find a significantly positive relation of having received training during the past year and several aspects of job satisfaction in Britain. Jones et al. (2008) analyze British data from the Workplace Employment Relations Survey (WERS) for the year 2004. They investigate the association between employer-provided training during the previous 12 months and different aspects of job satisfaction, e.g. satisfaction with achievement, pay, job security or work itself. Interaction of training incidence and gender as well as separate regressions by gender indicate a positive relationship between training and certain aspects of job satisfaction that is stronger for males than for females. According to Georgellis and Lange (2007), the correlation between training and job satisfaction is significantly negative for males and the correlation of firm-sponsored training and job satisfaction is significantly positive. The analogous estimates for women are insignificant in both cases. Their estimations are based on three waves of the GSOEP.

In these studies, the estimation framework is the ordered Probit model that does not allow taking time invariant unobserved factors into account. However, they might matter in a crucial way since they are likely to influence the training decision as well as job satisfaction. One exception in the literature is a study for Denmark by D'Addio et al. (2007). Estimating an ordered Logit fixed effects model when analyzing the correlation between job satisfaction and training, the coefficient of their training variable is significantly positive for men and insignificant for women. They stress

that the inclusion of individual fixed effects is influential since it leads to changes in the point estimates and in statistical significance. However, it is not clear whether these results for Denmark persist for other countries as well. The previous literature also points at large gender differences in the relationship between training and job satisfaction. Unfortunately, it is not yet well known, why these differences exist.[4]

3 Data and Empirical Strategy

For the empirical analysis, data from the GSOEP are used which are provided by the DIW Berlin (German Institute of Economic Research).[5] The GSOEP is a representative longitudinal dataset which started in 1984 and conducts annual surveys. The most recent wave, 2010, comprises more than 19,000 persons living in about 11,000 households. The data contains information about socioeconomic and job characteristics including job satisfaction and training activities of the respondents. Job satisfaction is contained every year and is reported on a scale ranging from 0 (low) to 10 (high). Information on training is collected only in some years and the questionnaire has been modified frequently over time. This is why we only use three waves of the GSOEP that contain comparable training information, i.e. 2000, 2004 and 2008.

Training is defined as participation in formal training that is organized in courses, seminars or lectures. The reference period for the training questions covers the last three years. Besides asking for the number of all attended courses, there is detailed information on the last three courses. In particular, the number of courses and their duration is available as well as course objectives and financing of the training courses. Respondents are asked whether expenditures were incurred and whether financial support from their employer was received. It was also asked whether the course was held partly or completely during working hours. Information on firm-specific or general-type training is given by asking about the transferability of training after a job change on a scale from 1 (not at all transferable) to 4 (completely transferable). Course aims are classified in one of the following categories: Occupational retraining, introduction to a new job, qualification for professional advancement, adjustment to new demands on the current job or other aims.

[4] Clark (1997) concludes that the reason why job satisfaction processes differ between men and women can be attributed to differences in preferences. However, he does not include training as a determinant of job satisfaction as we do.

[5] The data used in this paper were extracted using the Add-On package PanelWhiz v3.0 (Nov 2010) for Stata. PanelWhiz was written by Dr. John P. Haisken-DeNew (john@panelwhiz.eu). The following authors supplied PanelWhiz SOEP Plugins used to ensure longitudinal consistency, Markus Hahn and John P. Haisken-DeNew (37). The PanelWhiz generated DO file to retrieve the SOEP data used here and any PanelWhiz Plugins are available upon request. Any data or computational errors in this paper are our own. Haisken-DeNew and Hahn (2006) describe PanelWhiz in detail.

The estimation sample consists of full- and part-time employed persons aged between 18 and 64 years. Marginally employed persons, apprentices, public servants and self-employed persons are excluded. The original sample size of 93,742 then reduces to 26,480 observations.

According to the GSOEP, mean training participation referring to the last three years is 31.3% in Germany. It is slightly lower among men than among women (30.7% vs. 31.9%) while a weighted t-test shows that this difference is statistically insignificant. Table 1 presents average values of job satisfaction separately by training participation and gender. Participants exhibit higher values of average job satisfaction than non-participants (7.04 versus 6.92) where the difference is statistically significant at the 1% level according to a weighted t-test. The same holds at the 5% level for men (7.06 versus 6.92) but does not persist for women (7.01 versus 6.92). Among the training participants, males are on average more satisfied with their job than females (7.06 versus 7.01). This is not the case when considering the group of non-participants (6.92 for both males and females).

Table 1: Gender differences in weighted mean values of job satisfaction

	Participants	**Non-Participants**	**Difference**	**p-value of t-test**
Males	7.06	6.92	0.15**	0.011
Females	7.01	6.92	0.09	0.163
Total	7.04	6.92	0.12***	0.005

Note: No. of training participants: 4,149 males, 3,705 females.
No. of non-participants: 9,316 males, 7,727 females.
Significance levels: ** $p < 0.05$, *** $p < 0.01$.

To investigate the relationship between training and job satisfaction in a multivariate setting, we estimate the following regression model which has been derived from the utility function from working according to Clark and Oswald (1996) (see section 2):

$$S_{it} = \beta_0 + T_{it}\beta_1 + X_{it}\gamma + female_i \times T_{it}\beta_2 + female_i \times X_{it}\delta + \alpha_i + \epsilon_{it}, \quad (1)$$

where the subscripts i and t denote individuals and years, respectively. Job satisfaction S is a function of a binary training dummy T indicating whether a person has participated in training or not in the last three years and some further control variables X. The controls incorporate socio-demographic characteristics (marital status, children), job characteristics (part time, tenure, job change, overtime hours) and year dummies. The training variables and the control variables are also interacted with female. We compare results with including and excluding gross hourly wages (in logs) as a control variable among the vector X. The specification including wages attempts to control for monetary training benefits while the specification excluding wages rather measures an overall correlation with job satisfaction covering both monetary and non-monetary aspects.[6] α_i

[6]However, this comparison can only be interpreted as suggestive evidence because we can neither interpret

represents the individual fixed effect that might be correlated with training and job satisfaction. This could be time-invariant factors like ability or motivation. If these factors are correlated with both the training decision and job satisfaction, non-consideration will lead to an omitted variable bias in the results. In the baseline model that does not contain this fixed effect, additional control variables with no or very low variation over time are included which cannot be considered in the fixed effects model. In detail, these variables are gender, nationality, West German, age, years of education, occupation and firm characteristics (firm size, industry).[7] All regressors in the model are also interacted with female in order to reveal gender differences. Finally, ϵ_{it} represents an idiosyncratic error term.

Since the training variable is introduced with a lag in the regression analysis as it is measured before job satisfaction was reported, potential problems with reverse causality are avoided. Thus, some sources of bias (i.e. time-invariant omitted variable bias and reverse causality bias) are taken into account in our estimation framework. A further source of bias could be the influence of time-varying variables like certain firm characteristics. For instance, the introduction and state of computer technology or machinery at the firm level might affect job satisfaction directly as well as continuous training. As we did not find a proper instrument for training, this cannot be adequately taken into account in this paper and we, therefore, refrain from interpreting our estimation results causally.

We use the Probit-adapted OLS estimator suggested by van Praag and Ferrer-i-Carbonell (2004) that allows applying fixed effects. This approach uses the implicit cardinalization of the ordered Probit model and is implemented by standardization of the ordered dependent variable (while remaining the original number of categories). This standardized variable C is calculated according to the following formula:

$$C_s = E(Z|Z_{S-1} < Z < Z_S) = [\phi(Z_{S-1}) - \phi(Z_S)]/[\Phi(Z_S) - \Phi(Z_{S-1})] \quad \forall\, S = 0, ..., 10$$

with Z being a standard normal random variable, Z_S being the Z-value of the standard normal distribution corresponding to the cumulative frequencies of category S of the original ordinal variable (with $Z_{-1} = -\infty$, $Z_{10} = \infty$), ϕ being the standard normal probability density function and Φ the standard normal cumulative density function. In our analysis, the standardized values for the job satisfaction variable C range from -2.86 to 1.85 and are listed in Table A.2 in the Appendix. The standardized variable can be applied within the OLS regression framework since the values of the cardinalized outcome are not bounded between 0 and 10 anymore.[8]

the training coefficient as a causal effect (for reasons see discussion below) nor the wage estimate since wages are endogenous which we cannot account for in this paper.

[7] For a full list of control variables, their definition and sample means see Table A.1 in the Appendix.

[8] Note that S_{it} is exchanged for C_{it} in equation (1) for the estimation.

4 Results

The results without controlling for individual fixed effects (baseline model) are reported in the first two columns of Table 2. To check the validity of the results from the Probit-adapted OLS model, an ordered Probit model is estimated as benchmark (column 1). Since the estimates of both models yield very similar results in terms of signs and significance, the following discussion focuses on the Probit-adapted OLS regressions. The first result worth noting is that the estimated training coefficient is significantly positive for males (0.042) while the interaction term between training and female is significantly negative (-0.071) meaning that for females, the correlation between training and job satisfaction is significantly lower. The coefficient for females is -0.029 which is statistically insignificant.

By contrast, regarding the other control variables, gender differences are not as pronounced as they are in the training coefficients. For both sexes, the correlation of each West German and job change with job satisfaction is significant positive while there are negative estimated coefficients of years of education and overtime hours. The negative associations of overtime hours and educational level with satisfaction are consistent with previous studies, compare e.g. Bender et al. (2005); Clark (1997); Clark and Oswald (1996). Regarding age, we find a statistically significant U-shaped relationship with job satisfaction for both sexes which is a quite established finding in the literature (e.g. Clark et al. (1996)). A higher hourly wage comes along with higher average job satisfaction for males and females alike, even though the wage coefficient for females is only half the size of males' coefficient. This was also found by several studies, see e.g. Siebern-Thomas (2005); Gazioglu and Tansel (2006). The only gender differences in the coefficients of the control variables that appear are with respect to family characteristics, i.e. being married and having children, and with respect to working part time. The interaction terms of those variables with female are each significantly positive. The gender difference with respect to marital status is in line with findings by Clark (1997).

When accounting for time-invariant unobserved heterogeneity by applying fixed effects (see column 3 of Table 2), the estimate of the training coefficient increases by a factor of almost three (from 0.042 to 0.115) for males and remains highly significant. The coefficient of the interaction term between training and female becomes larger as well and is still significant. The training coefficient for females also increases, however, to a smaller degree and is now almost zero with -0.005 (-0.029 before). It remains statistically insignificant. These findings suggest that the training coefficients were biased downwards and understated the gender difference regarding training participation and job satisfaction.

Column 4 of Table 2 shows that excluding log wage from the set of control variables does hardly alter the estimated training coefficient. This could hint at a greater importance of non-

monetary benefits compared to monetary ones, though the endogeneity of wages in our framework should be kept in mind.

The reason why training does hardly increase job satisfaction of females in contrast to males' satisfaction is not clear. A possible explanation might be that training activities between men and women differ in terms of financing, the duration of training or other training attributes. If different types of training affect job satisfaction differently and are allocated differently to males and females, this may explain the gender difference in the relationship between satisfaction and training. Descriptive evidence on training characteristics of participants by gender is provided in Table 3. The following dimensions of training are differentiated: the number of courses (as continuous variable and as dummies), course length (as continuous variable expressed in hours and as dummies), the cost sharing between employers and employees (differentiating monetary and non-monetary costs), specific versus general human capital acquisition and the objective of the courses in terms of career-orientation. To test whether males and females participate in training with different characteristics, (weighted) t-tests are applied.

There are no pronounced gender differences when looking at the number of courses. Concerning training duration, females participate more often in courses of shorter duration (1 day to 1 week) and less often in courses of medium duration (>1 week to 1 month). With respect to the financing of training, gender differences can be observed as well. Among those who did not receive any employer support in any of the courses they attended (i.e. they had to bear all of the direct training costs and, at the same time, had to spent their free time for participation), the share of females is significantly higher than that of males (28% woman versus 16% man). Females are a bit more likely to participate in at least one course that is financed completely by the employer but is held completely or partly during free time (11% woman versus 9% man). There are no gender differences when looking at participants at courses that are held completely during working time but where some of the monetary costs have to be covered by employees. The share of males that receive at least once full support from their employer is higher than the corresponding share of females, i.e. 62% participate in at least one course that is completely financed by employers and completely held during working time. The corresponding share of female participants is only 48%. There are no differences with regard to specific versus general human capital acquisition. Last, males participate more often in at least one course that is career-oriented with 35% (versus 32% for females).

In Table 4, job satisfaction is regressed on different training characteristics. The estimations are conducted by using the Probit-adapted OLS method with individual fixed effects. As in the previous regressions, non-participants form the control group, however, our purpose now is to reveal differences within the group of participants. To this end, we conduct F-Tests and thereby compare several coefficients pairwise. The estimation results in column (1) of Table 4 show differences be-

Table 2: Determinants of job satisfaction

	no fixed effects		fixed effects	
Training	0.045**	0.042**	0.115***	0.117***
	(0.022)	(0.020)	(0.028)	(0.028)
Female	-0.203	-0.189	-	-
	(0.268)	(0.251)	-	-
German	0.039	0.037	-	-
	(0.037)	(0.035)	-	-
West Germany	0.083***	0.079***	-	-
	(0.027)	(0.026)	-	-
Age	-0.046***	-0.043***	-	-
	(0.008)	(0.008)	-	-
$\text{Age}^2/100$	0.043***	0.040***	-	-
	(0.010)	(0.009)	-	-
Married	0.013	0.012	0.018	0.030
	(0.027)	(0.026)	(0.049)	(0.049)
Children	0.019	0.018	-0.032	-0.027
	(0.024)	(0.023)	(0.034)	(0.034)
Years of education	-0.022***	-0.021***	-	-
	(0.006)	(0.005)	-	-
Part time	-0.156**	-0.147**	-0.261**	-0.269**
	(0.068)	(0.064)	(0.123)	(0.124)
Overtime hours/week	-0.007***	-0.007***	0.004	0.006*
	(0.003)	(0.002)	(0.003)	(0.003)
Tenure	-0.006	-0.006	-0.034***	-0.032***
	(0.004)	(0.004)	(0.006)	(0.006)
$\text{Tenure}^2/100$	0.019*	0.018*	0.019	0.014
	(0.010)	(0.010)	(0.017)	(0.017)
Job change	0.077**	0.071**	0.072*	0.058
	(0.032)	(0.030)	(0.042)	(0.042)
ln(Wage)	0.206***	0.193***	0.206***	-
	(0.030)	(0.028)	(0.057)	-
Female*Training	-0.075**	-0.071**	-0.123***	-0.122***
	(0.033)	(0.031)	(0.043)	(0.043)
Female*German	-0.017	-0.017	-	-
	(0.060)	(0.057)	-	-
Female*West	0.022	0.020	-	-
	(0.039)	(0.037)	-	-
Female*Age	0.020	0.019	-	-
	(0.013)	(0.012)	-	-
Female*$\text{Age}^2/100$	-0.014	-0.013	-	-
	(0.015)	(0.014)	-	-
Female*Married	0.102***	0.096***	-0.107	-0.119*
	(0.038)	(0.036)	(0.072)	(0.072)
Female*Children	0.088**	0.082**	0.132**	0.124**
	(0.036)	(0.034)	(0.051)	(0.051)
Female*Years of education	-0.006	-0.006	-	-
	(0.008)	(0.008)	-	-
Female*Part time	0.132*	0.124*	0.232*	0.245*
	(0.073)	(0.069)	(0.131)	(0.132)
Female*Overtime	-0.007	-0.007	-0.006	-0.006
	(0.005)	(0.004)	(0.006)	(0.006)
Female*Tenure	-0.006	-0.006	-0.003	-0.003
	(0.006)	(0.005)	(0.009)	(0.009)
Female*$\text{Tenure}^2/100$	0.007	0.007	0.018	0.018
	(0.016)	(0.015)	(0.026)	(0.026)
Female*Job change	-0.034	-0.031	0.023	0.029
	(0.046)	(0.044)	(0.063)	(0.063)
Female*ln(Wage)	-0.120***	-0.112***	-0.077	-
	(0.042)	(0.040)	(0.080)	-
Occ./firm size/industry	Yes		No	
Year effects	Yes		Yes	
Pseudo-R^2/R^2	0.009	0.034	0.036	0.034
Obs.	23,373	23,373	23,373	23,373

Note: Clustered standard errors (at individual level) in parentheses. Col. 1: Ord. Probit, Col. 2–4: Probit-adapted OLS. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Gender differences of training characteristics conditional on training participants

	Males	**Females**	**Difference**	**p-value**[1]	**Obs.**
Number of courses	3.58	3.44	0.14	0.179	8,087
Training: 1 course	0.26	0.26	-0.00	0.903	8,136
Training: 2 courses	0.21	0.21	-0.00	0.988	8,136
Training: 3 courses	0.19	0.21	-0.02	0.175	8,136
Training: 4-10 courses	0.30	0.28	0.02	0.177	8,136
Training: >10 courses	0.04	0.04	-0.00	0.872	8,136
Training duration (hours)	163	173	-10	0.561	7,823
Training (1 day)	0.04	0.06	-0.02**	0.027	7,821
Training (> 1 day - 1 week)	0.39	0.47	-0.07***	0.000	7,821
Training (> 1 week - 1 month)	0.43	0.33	0.10***	0.000	7,821
Training (> 1 month)	0.13	0.14	-0.00	0.694	7,821
Course(s) neither empl.-fin. nor during working time	0.16	0.28	-0.11***	0.000	8,094
At least 1 course empl.-fin. but not during working time	0.09	0.11	-0.03**	0.005	8,094
At least 1 course during working time but not empl.-fin.	0.12	0.13	-0.01	0.385	8,094
At least 1 course empl.-fin. and during working time	0.62	0.48	0.15***	0.000	8,094
Course(s) mostly specific	0.34	0.33	0.01	0.623	8,100
At least 1 course career-oriented	0.35	0.32	0.04**	0.025	8,103

Note: Weighted means based on weights provided by the GSOEP.

No. of training participants: 4,344 males, 3,843 females.

Significance levels: ** $p < 0.05$, *** $p < 0.01$.

[1] p-value of weighted t-test.

tween the sexes with regard to training duration. For men, the size of the coefficients gets larger and gains significance with a longer duration. Although this seems as if course duration was positively correlated with job satisfaction, this cannot be confirmed by F-Tests. In particular, the estimated coefficients of attending longer courses are not statistically different from that of attending training lasting only one day. For females, the coefficients of course duration are neither significantly different from zero, nor are any of them different from each other in terms of F-tests.

Concerning financing (column (2) of Table 4), among males, training participants without any employer support have the lowest point estimate (0.022). Participating in courses that are employer-financed but not during working time is associated with a larger point estimate (0.193) than participating in courses that either take place during working time without monetary support (0.137) or that are fully employer-supported (0.123). F-tests show that the coefficients with respect to receiving financial employer support (0.193 and 0.123) are statistically different from the coefficient regarding not receiving any employer support (0.022). This means that men who attend training

Table 4: Determinants of job satisfaction, heterogeneous effects

	(1)	(2)	(3)
Course duration			
Training (1 day)	0.097	-	-
	(0.102)	-	-
Training (> 1 day - 1 week)	0.076**	-	-
	(0.036)	-	-
Training (> 1 week - 1 month)	0.141***	-	-
	(0.035)	-	-
Training (> 1 month)	0.184***	-	-
	(0.062)	-	-
Female*Training (1 day)	-0.087	-	-
	(0.137)	-	-
Female*Training (> 1 day - 1 week)	-0.060	-	-
	(0.055)	-	-
Female*Training (> 1 week - 1 month)	-0.166***	-	-
	(0.058)	-	-
Female*Training (> 1 month)	-0.208**	-	-
	(0.091)	-	-
Financing			
Course neither empl.-fin.	-	0.022	-
nor during working time	-	(0.057)	-
At least 1 course empl.-fin.	-	0.193***	-
but not during working time	-	(0.064)	-
At least 1 course during	-	0.137**	-
working time but not empl.-fin.	-	(0.057)	-
At least 1 course empl.-fin.	-	0.123***	-
and during working time	-	(0.031)	-
Female*Course neither empl.-fin.	-	-0.069	-
nor during working time	-	(0.076)	-
Female*At least 1 course empl.-fin.	-	-0.253***	-
but not during working time	-	(0.092)	-
Female*At least 1 course during	-	-0.173**	-
working time but not empl.-fin.	-	(0.084)	-
Female*At least 1 course empl.-fin.	-	-0.092*	-
and during working time	-	(0.050)	-
Course aim			
At least 1 course career-	-	-	0.185***
oriented	-	-	(0.039)
Other course aim	-	-	0.086***
	-	-	(0.030)
Female*At least 1 course	-	-	-0.157**
career-oriented	-	-	(0.065)
Female*Other course aim	-	-	-0.107**
	-	-	(0.046)
R^2	0.036	0.037	0.037
Obs.	23,068	23,306	23,311

Note: See Table 2. Control variables are included.

courses that are financially supported by their employers, report a higher average job satisfaction compared to those who have to completely bear the costs themselves. The interaction terms of the finance variables with female are significantly negative except the one concerning no employer support. For females, the estimated coefficients (-0.047, -0.060, -0.036 and -0.031)[9] are neither statistically different from zero, nor are they statistically different from each other as suggested by F-tests. Turning to the regressions considering the aim of the courses (column (3) of Table 4), once more gender differences occur. The results indicate that for males, participation in at least one career-oriented course is stronger positively correlated with job satisfaction than attending training having other aims (0.185 and 0.086, respectively). According to a F-test, this difference is statistically significant. In contrast, this is not the case for females although the point estimate for attending career-oriented courses (0.185 + (-0.157) = 0.028) is also higher than that for attending courses with other aims (0.086 + (-0.107) = -0.021).

According to the results reported in Table 4, differences in the correlation between training characteristics and job satisfaction within the group of training participants only appear for males. This indicates that the gender difference in the ralationship between training and job satisfaction cannot be explained by gender differences in training characteristics. It rather hints at gender differences in the processes determining job satisfaction.

5 Conclusion and discussion

Using data from the GSOEP, this paper investigates the association between training and job satisfaction focusing on gender differences. The main results are as follows. First, the regressions show a gender difference in the relationship between training and job satisfaction. In contrast to females, attending training courses is significantly positively correlated with job satisfaction for males. Second, when taking time invariant unobserved heterogeneity into account, this gender difference becomes larger which hints at a difference that is much more pronounced than previously assumed in the literature. Third, there are also gender differences with respect to certain course characteristics, in particular, it can be shown that males participate more often in training with longer duration, in completely employer-supported and in career-oriented courses than females. However, while for males job satisfaction is correlated with particular training characteristics (e.g. financing and career-orientation of courses), this cannot be observed for females. This is interpreted as evidence that different course characteristics by gender cannot explain why there is a positive correlation between training and job satisfaction only for males.

A consequent explanation for the gender difference might be that males and females value aspects of training differently which is supported by our results. The reason for the gender difference could partly lie in differences of males' and females' preferences. Like it was also observed for

[9] 0.022 + (-0.069) = -0.047; 0.193 + (-0.253) = -0.060 etc.

example by Clark (1997), who investigated gender differences in job satisfaction (without focusing on training), different expectations of men and women might also play a role. Different preferences and expectations of the sexes might generate different processes regarding the link between training and job satisfaction.

For future research it would be interesting to estimate the causal effect of training attendance on job satisfaction. Another central topic closely related to the former would be to separately measure monetary and non-monetary returns and to compare which of the two is more important for individuals' participation decision. This could help to explain the recent finding in the literature of no or only small wage returns to training.

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Appendix - Tables

Table A.1: Definition of control variables and unweighted summary statistics by gender

		Males		Females	
Variable	**Description**	**Mean**	**SD**	**Mean**	**SD**
Training (d)[1]	1 if respondent participated in training course(s) during the last three years	0.31	0.46	0.33	0.47
Demographics					
German (d)	1 if nationality is German	0.91	0.29	0.93	0.25
West (d)	1 if respondent living in West Germany; 0 for East Germany	0.77	0.42	0.74	0.44
Age	Age in years	41.71	10.29	41.64	10.33
Married (d)	1 if married	0.67	0.47	0.61	0.49
Children (d)	1 if children living in respondent's household	0.44	0.50	0.37	0.48
Education/Employment					
Years of education	Years of education	12.28	2.61	12.25	2.40
Part time (d)	1 if respondent works part time; 0 if respondent works full time	0.02	0.16	0.42	0.49
Blue collar (d)	1 if respondent is a blue collar worker; 0 if respondent is a white collar worker	0.49	0.50	0.20	0.40
Tenure	Firm tenure in years	11.15	9.81	9.74	8.90
Job change (d)	1 if respondent changed his job during the last year	0.15	0.36	0.18	0.38
Wage	Gross hourly wage (monthly current gross labor income plus additional payments in Euro divided by contractual working hours)	19.97	12.51	14.34	7.28
Overtime hours	Overtime hours per week	3.02	4.24	1.74	2.95
Untrained Worker (d)	1 if respondent is an untrained worker	0.03	0.16	0.04	0.20
Semi-tr. Worker (d)	1 if respondent is a semi-trained worker	0.14	0.35	0.10	0.31
Tr. Worker/Foreman (d)	1 if respondent is a trained worker or foreman	0.34	0.47	0.06	0.23
Untraied Empl. (d)	1 if respondent is an untrained employee	0.02	0.13	0.07	0.25
Trained Empl. (d)	1 if respondent is a trained employee	0.04	0.20	0.16	0.36
Qual. Professional (d)	1 if respondent is a qualified professional	0.18	0.38	0.45	0.50
H. Qual. Professional (d)	1 if respondent is a high qualified professional	0.22	0.42	0.12	0.32
Managerial (d)	1 if respondent is a managerial	0.04	0.19	0.01	0.10
Firm characteristics					
Firm size <20 (d)	1 if firm size is smaller than 20	0.20	0.40	0.28	0.45
Firm size 20-199 (d)	1 if firm size is between 20 and 199	0.31	0.46	0.30	0.46
Firm size 200-1,999 (d)	1 if firm size is between 200 and 1,999	0.25	0.43	0.22	0.42
Firm size >2,000 (d)	1 if firm size is larger than 2,000	0.24	0.43	0.19	0.40
Agricul., energy, mining (d)	1 if firm is operating in agriculture, energy, mining	0.04	0.20	0.01	0.12
Manufacturing (d)	1 if firm is operating in manufacturing sector	0.29	0.45	0.14	0.35
Construction (d)	1 if firm is operating in construction sector	0.23	0.42	0.05	0.22
Trade (d)	1 if firm is operating in trade sector	0.11	0.31	0.20	0.40
Transport (d)	1 if firm is operating in transport sector	0.07	0.26	0.04	0.19
Bank, insurance (d)	1 if firm is operating in bank/insurance sector	0.04	0.21	0.05	0.22
Services (d)	1 if firm is operating in service sector	0.21	0.41	0.51	0.50

[1]: (d) indicates dummy variables (0/1-variables).

Table A.2: Standardized job satisfaction variable C

S	C_s
0	-2.86
1	-2.39
2	-2.05
3	-1.69
4	-1.39
5	-1.01
6	-0.62
7	-0.21
8	0.40
9	1.07
10	1.85