

Unemployment Duration and Noncognitive Skills

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Abstract

This paper focuses on the role of noncognitive skills play in determining the success of unemployed workers finding and keeping a job. We argue that a worker's job search intensity not only relies on the conventional determinants discussed in the job search literature but is also decisively driven by her noncognitive skills, reflected in her propensity to motivate and control herself while searching for a job. Moreover, personality traits, in as far as they can be signaled to a potential employer, may also enhance the probability of receiving and accepting a job offer.

For our econometric duration analysis we use the well-accepted taxonomy “*Big Five*” for classifying personality traits. Based on individual unemployment data taken from the German Socio-Economic Panel (GSOEP) our empirical findings reveal that the personality traits *Conscientiousness* and *Neuroticism* have a strong positive impact on the probability of finding a job and on the duration of the subsequent employment. We do not find any significant effects of the personality traits *Extraversion* and *Agreeableness* on the duration of unemployment. The personality trait *Openness* eases finding a job only for unemployed workers with migration background, but it does not affect the duration of the following employment.

JEL classification: J64, C41

Keywords: Unemployment Duration, Noncognitive Skills, Duration Analysis

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1 Introduction

The role played by personality traits in an individual's success on the labor market has drawn considerable attention in labor economics. The literature has mostly concentrated on the effect of noncognitive skills on earnings differentials. Recent empirical findings, for example Carneiro and Heckman (2002), Heckman, Stixrud, and Urzua (2006), Mueller and Plug (2006) for the US, Green and Riddell (2002) for Canada, Zetterberg (2005) for Sweden, Nyhus and Pons (2005) for the Netherlands and Flossmann, Piatek, and Wichert (2006) for Germany all show significant effects of noncognitive skills on earnings differentials. Wichert and Pohlmeier (2009) show that noncognitive skills also play an important role in a female's decision to participate in the labor force.

This paper takes a closer look at different dimensions of personality for individual labor market success by focusing the relationship between personality traits and the success of an unemployed person finding a job as well as the duration of subsequent employment spells. Traditionally, economists focus in their analysis of the individual transition out of unemployment on incentive schemes, the role of labor market institutions and educational attainment. Apart from the usual socio-economic control variables individual heterogeneity is regarded as being important, particularly from an econometric point of view, but is usually considered as being unobservable. The relation between unemployment and psychological well-being has been examined in psychology as well as economics (see Feather (1990), Darity and Goldsmith (1996), Winkelmann and Winkelmann (1998) and Clark, Georgellis, and Sanfey (2001) for detailed information). Comparatively little is known, however, about how personality traits effect the success of finding a job.

We argue that a worker's job search intensity is not solely driven by economic incentives but also by the worker's propensity to motivate and control herself while searching for a job. Moreover, personality traits, in as far as they can be signaled to a potential employer, may also enhance the probability of receiving and accepting a job offer. On the other hand, we argue that personality traits affect employment duration through their contribution to the job performance and through the individual's incentive to change their job. In particular, we try to work out the extent to which different dimensions of personality traits have an effect on transitions out of unemployment and on the duration of this subsequent employment. Furthermore,

we check for the robustness of our findings by considering different subpopulations of the labor market (male and female workers, immigrants and natives). We also explore the importance of personality traits on unemployment and employment duration for various occupational groups and sectors.

The outline of the paper is as follows. Section 2 describes the “*Big Five*” taxonomy. Section 3 focuses on the sample and some descriptive evidence. Section 4 shortly describes the econometric methods used and elaborates on the empirical results. Finally, Section 5 summarizes the main results and concludes the paper.

2 Personality Traits

Our empirical analysis is based on the well-accepted taxonomy known as the “*Big Five*” of Norman (1963) for classifying personality traits (see Barrick and Mount (1991) and the references given therein for the evaluation of the *Big Five* personality traits). McCrae and Costa (1987) show that these dimensions are relatively independent measures of noncognitive ability. In the following we use the term personality traits rather than noncognitive skills. Personality traits relate to fundamental individual characteristics, while noncognitive skills is a somewhat fuzzy, not precisely defined concept. Economists often refer to noncognitive skills as the collection of personal traits which are not cognitive. Moreover, the term skills define individual characteristics which are in principle trainable, while personality traits are more or less fixed but possibly context related. Thus it is likely that the effects of personality traits on the length of individual employment spells differ from the effects on the length of individual unemployment spells.

Norman (1963) was the first to label the five personality traits as “*Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Culture*”. After more than four decades, his taxonomy is still the most accepted one, not only in personality and social psychology but also in other fields such as industrial- and organizational psychology and personal economics.

The first dimension “*Extraversion*” is about being social, gregarious, assertive, talkative, and active. More extraverted people are more likely to get in touch with other people and thereby to receive more information about potential positions. Moreover, they might be more successful in convincing an employer of their skills

during an interview than more introverted individuals. Thus, we expect that for an extraverted individual finding a job should be easier and, therefore, that she spends less time in unemployment.

Adjectives associated with the second trait “*Agreeableness*” include being courteous, flexible, trusting, cooperative, and tolerant. Agreeable persons may accept inferior wage offers and working conditions more quickly than individuals scoring low with respect to this trait. Studies on the relationship between personality traits and individual earnings argue that agreeableness effects reservation wages negatively, so that we expect that the probability of accepting a job offer is higher for the more agreeable unemployed.

It is needless to stress that the *Big Five* traits do not have the same value for each occupation. Note that “*Extraversion*” and “*Agreeableness*” describe interpersonal characteristics. They might be particularly useful for job search, but not necessarily as useful for succeeding in the job. Barrick and Mount (1991) show that *Extraversion* and *Agreeableness* are more important for a job where there is more interaction or cooperation with others than for a job which is more technical. However, “*Extraversion*” may cause a higher incentive to change the job, because the extraverted individuals are more social and active. Agreeable workers may face less conflicts with the employer or with colleagues. They may also be able to tolerate inferior working conditions. Thus more agreeable persons are likely to have longer employment spells.

The third dimension is called “*Culture*” or “*Openness to Experience*”. Individual characteristics associated with this dimension can be summarized as being imaginative, cultured, curious, original, broad-minded, and artistically sensitive. Therefore one could argue that this trait is positively related to the chances of receiving and accepting a job offer. “*Openness*” may be a useful trait in some specific occupations, but for the employed being more open might lead to frequent changes of the job and may be characterized by higher mobility rates and lower job tenure.

The fourth trait “*Conscientiousness*” is closely related to the self-regulatory skills of a person. Conscientious individuals are careful, responsible, organized, achievement-oriented and hardworking. “*Conscientiousness*” is, like all the other *Big Five* traits, unobservable to a potential employer. But it can be signaled by the work history of the unemployed through tenure, by a low degree of absenteeism and characteristics

of previous jobs, i.e., jobs which require a high degree of conscientiousness. Since these characteristics are more or less necessary for almost any job, we expect that this trait has a positive effect on the probability of receiving a job offer provided there is an open position the unemployed has applied for. Moreover, more conscientious unemployed may be better job searchers, since they are by definition more careful, better organized and achievement-oriented while searching for a job, i.e., like *Extraversion*, *Conscientiousness* may simply lead to a larger range of potential job offers in the sense of a higher job offer arrival rate. According to Barrick and Mount (1991), *Conscientiousness* is a desirable trait for all jobs and an obvious predictor of job performance.

Finally, the fifth trait “*Emotional Stability*” or “*Neuroticism*” is the only one among the *Big Five* traits which has negative association. Neurotic individuals are characterized to be anxious, depressed, angry, emotional, worried, and insecure. Individuals with higher *Neuroticism* are expected to have lower probability of entering employment. They are also expected to have shorter employment spells due to their lower performance.

3 Data

Our empirical study is based on data from the German Socio-Economic Panel (GSOEP). The GSOEP contains information about individuals’ employment history, individual characteristics, and qualitative answers to self-assessment questions, which can be used to construct measures of *Big Five* personality traits. Each wave of the panel contains retrospective monthly information about the individual employment history of the previous calendar year. Although the GSOEP distinguishes between several categories of employment status, in order to identify the unemployment spells which end with employment, we aggregate this information into three distinct categories: unemployed, employed and out of labor force. Employment status refers to any kind of working activity: full time, part time or short working hours. Out of labor force, on the other hand, includes retirement, parental leave, school, vocational training and military service. We exclude individuals who were younger than 20 and older than 55 at the time of their entry into unemployment.

Our sample only consists of unemployment spells and subsequent employment spells.

Transition from unemployment to employment defined as in Uhlendorff and Zimmermann (2006) is a situation in which the employment begins at the latest two months after the unemployment spell ends. Only individuals entering unemployment between 1983 and 2006 are included in the analysis. Individuals who are unemployed several times in this time period are in our sample with multiple spells of unemployment. We also exclude individuals from the sample for whom we did not have information concerning their *Big Five* personality traits. This leaves us with a sample of 4466 individual unemployment spells of 2735 individuals and 4191 employment spells of 2605 individuals. The difference in the number of individuals occurs due to the missing explanatory variables used in the analysis for the employment duration. Due to recurring unemployment, 35 % of the observed unemployment and employment spells are multiple spells, which we treat for the sake of simplicity as independent observations. Relegating multiple spells from the sample did not change our empirical findings qualitatively.

In order to measure personality traits, fifteen self-assessments on the *Big Five* are included in the 2005 wave of GSOEP. The respondents are asked to assess fifteen statements which are related to the *Big Five* personality traits. The respondent has to choose the degree of her appropriateness to each statement on a 7-tier Likert-Scale, 1 refers to “strongly disagree” and 7 refers to “strongly agree”. For each trait there are three statements. Depending on the statement, being strongly agreed with the statement means either that the respondent possesses the corresponding trait heavily (+) or does not possess this trait (−). First we construct single indexes for each personality trait simply by adding the numeric values of the answers. Thus, each trait ranges between three and twenty-one. As in Wichert and Pohlmeier (2009), we also construct a one dimensional *Big Five*-Index as the sum of the five traits, where the trait *Neuroticism* enters in the sum with a negative sign. All the other variables are listed in Table A1 in Appendix A.

Unemployment Spells

Table A2 of Appendix A contains the summary statistics for the overall sample and summary statistics separated by nationality and gender. Individual unemployment duration is longer for foreign workers than for Germans. There is also a significant difference in unemployment duration between male and female workers.

The self-assessment of male and female workers with respect to all *Big Five* dimensions differs significantly and also for the overall *Big Five* index. Similarly, we find significant differences between German and foreign unemployed workers for *Extraversion*, *Agreeableness* and *Openness*. Therefore we run separate regressions for these subpopulations and use normalized indices for the *Big Five* traits and the overall index accordingly. Thus one unit change in one of the *Big Five* variables represents a change of one standard deviation of the same variable in levels.

Table A4 provides information about the distribution of the covariates by occupation status in the preceding job. Except for *Conscientiousness* we find for all other traits significant differences between blue-collar and white-collar workers. Traits associated with better job performance are more pronounced for white collar workers, while *Neuroticism* is more pronounced for blue collar workers. Similarly, there are also differences in personality traits across sectors, showing that job choice is also determined by personality (see Table A5). As expected unemployed previously working in the service sector reveal more *Extraversion*, *Neuroticism*, *Openness* and *Agreeableness* compared to workers from the construction or the manufacturing sector. This explorative finding makes clear that individual differences in unemployment duration due to differences in personality traits may be “direct” through differences in individual search intensities but also “indirect” through sectoral choice depending on personality traits.

Employment Spells

In a second step of our empirical study we also analyze the effect of personality traits on employment duration of the formerly unemployed to explore to what extent the same personality traits contribute to employment stability. The sample of employment spells consists of 4191 observations, from which 31% percent are right censored. The summary statistics of the covariates of this sample are given in Table A6. More detailed information on the distribution of the employment duration is given in Table A7. We see that almost 40% of the unemployment spells end within 3 months. 80% of the unemployment spells are shorter than one year and only 3% of the unemployment spells last longer than 3 years.

Table A8 and Table A5 provide information about the distribution of the covariates

by occupation status and sectors in the current job. In fact, the comparison of averages for the covariates for the employed sample gives similar figures to that for the unemployed sample. This result is not really surprising, given that individuals occupational position and the sector in which they are working do not change often.

4 Empirical Results

For the empirical study, we use the approach proposed by Han and Hausman (1990) for the analysis of grouped durations. This model is based on a semiparametric proportional hazard rate of the form

$$\lambda_i(\tau) = \lim_{\Delta \rightarrow 0^+} \frac{Pr[\tau < t_i < \tau + \Delta | t_i > \tau]}{\Delta} = \lambda_0(\tau) \exp(-X_i' \beta), \quad (4.1)$$

where t_i is the unemployment duration (failure time), $\lambda_0(\cdot)$ the base line hazard and X_i a vector of covariates. Integration and taking logs on both sides gives the log integrated baseline hazard:

$$\Lambda_0(t) = \ln \int_0^t \lambda_0(\tau) d\tau = X_i' \beta + \varepsilon_i, \quad (4.2)$$

where $\varepsilon_i = \ln \int_0^t \lambda_i(\tau) d\tau$ is extreme value distributed. Durations are grouped into T subperiods. The subperiod t refers to the time interval between consecutive time points $t - 1$ and t . Thus, the probability of worker i leaving the unemployment pool in this subperiod is:

$$\begin{aligned} \Pr[\text{leaving unemployment in subperiod } t | X_i] &= \int_{\Lambda_0(t-1) - X_i' \beta}^{\Lambda_0(t) - X_i' \beta} f(\varepsilon) d\varepsilon \\ &= F_\varepsilon(\Lambda_0(t) - X_i' \beta) - F_\varepsilon(\Lambda_0(t-1) - X_i' \beta), \end{aligned} \quad (4.3)$$

where $F_\varepsilon(\cdot)$ denotes the cdf of the extreme value distribution. Let the indicator variable Y_{it} be

$$Y_{it} = \begin{cases} 1, & \text{if } i \text{ exits unemployment in subperiod } t, \\ 0, & \text{otherwise,} \end{cases}$$

With the use of this indicator variable we can write the likelihood function of N observations:

$$L(\beta, \Lambda_0(1), \dots, \Lambda_0(T)) \tag{4.4}$$

$$= \prod_{i=1}^N \prod_{t=1}^T \{F_\varepsilon(\Lambda_0(t) - X_i' \beta) - F_\varepsilon(\Lambda_0(t-1) - X_i' \beta)\}^{D_i Y_{it}} \{1 - F_\varepsilon(\Lambda_0(t) - X_i' \beta)\}^{1-D_i},$$

where D_i is the censoring indicator taking on the value 1, if duration t_i has elapsed and 0 if there is right censoring. The likelihood takes on the form of an ordered response model with censoring. We follow the argumentation of Han and Hausman and use the logit distribution to approximate the outcome probabilities of the extreme value distribution. The threshold parameters $\Lambda_0(1), \dots, \Lambda_0(T)$ which are jointly estimated with the coefficients on the explanatory variables serve as grid point estimates for the (continuous) log integrated hazard rate.

For our application, the Han-Hausman approach has several advantages. First, it is a well-suited model for monthly measured unemployment duration. Since we cannot assume that monthly measured unemployment duration is a continuous variable, we use a model for grouped duration. Second, this method has more flexibility than standard parametric proportional hazard specifications. In particular, its flexibility arises from the fact that we do not need to specify any functional form for the baseline hazard function.

The estimates for the determinants of unemployment duration based on the Han-Hausman estimator are given in Table 1. For each of the subsamples discussed above we run two regressions: one with the *Big Five* index in order to test for a general effect of personality traits on unemployment duration, and another with the five traits as separate explanatory variables. First, we use the entire sample for our first set of regressions. Then, we divide our sample twice in two subsamples by gender and by nationality in order to test the robustness of the results for the subpopulations of interest. The observed unemployment spells are grouped in three monthly unemployment durations of 18 months, and the last threshold is set in the 24th month, so that we obtain seven estimation points (thresholds) for the log integrated rate. Longer durations are captured in a remaining group.

The corresponding plot of hazard rates at the mean of the explanatory variables for the first regression is given in Figure 1.

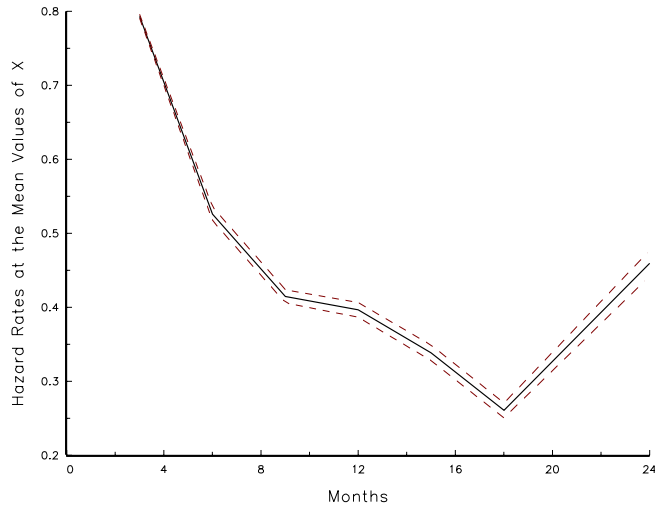


Figure 1: Hazard rate with 95 percent confidence band.

Estimates are based on specification given in Table 1, col. 1

As defined by Equation (4.1), a positive coefficient indicates a negative effect of the corresponding covariate on the hazard rate and thus a positive effect on unemployment duration. For all our regressions we find a stable negative effect of the overall *Big Five* index on unemployment durations, i.e., unemployed workers with higher noncognitive skills as indicated by the *Big Five* personality traits are more likely to find a job than those unemployed with a lower overall score. This effect is significant at the 5 percent level at least with the exception of foreign workers, where the p-value only reaches 8 percent.

Looking at the effects of the *Big Five* traits on unemployment duration separately we find a different picture. We do not find any significant impact of *Extraversion* and *Agreeableness* on unemployment duration for the overall sample as well as for the subsamples. Note, however, that our estimates are conditional on the previous sector and occupation. Since sectoral and occupational choice is also determined by personality traits (e.g., more agreeable workers find themselves in the service sector) our results simply indicate that no additional direct effect can be identified from the data. In particular, we find no evidence that more agreeable individuals accept lower wage offers.

Table 1: Estimates of Unemployment Durations

	Entire Sample		Female		Male		German		Foreign	
	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five
AGE	0.026 (0.00)	0.026 (0.00)	0.029 (0.00)	0.029 (0.00)	0.021 (0.00)	0.021 (0.00)	0.032 (0.00)	0.032 (0.00)	-0.002 (0.83)	-0.001 (0.93)
SEX	0.303 (0.00)	0.275 (0.00)					0.307 (0.00)	0.280 (0.00)	0.453 (0.01)	0.524 (0.00)
GERMAN	-0.263 (0.00)	-0.258 (0.00)	-0.461 (0.00)	-0.466 (0.00)	-0.177 (0.10)	-0.162 (0.14)			0.000	0.000
LOW_VOC	0.576 (0.00)	0.552 (0.00)	0.231 (0.22)	0.193 (0.30)	0.830 (0.00)	0.826 (0.00)	0.588 (0.00)	0.581 (0.00)	0.436 (0.17)	0.255 (0.43)
MID_VOC	0.172 (0.06)	0.154 (0.09)	0.007 (0.96)	-0.039 (0.76)	0.341 (0.01)	0.346 (0.01)	0.204 (0.03)	0.199 (0.04)	0.008 (0.98)	-0.162 (0.59)
HIGH_VOC	-0.002 (0.99)	-0.030 (0.84)	-0.207 (0.34)	-0.262 (0.23)	0.196 (0.35)	0.168 (0.42)	-0.028 (0.86)	-0.045 (0.78)	0.617 (0.24)	0.470 (0.37)
MARB	-0.130 (0.07)	-0.129 (0.07)	-0.003 (0.98)	0.001 (0.99)	-0.178 (0.07)	-0.172 (0.08)	-0.164 (0.03)	-0.164 (0.03)	0.054 (0.80)	0.073 (0.73)
ONEKID	-0.022 (0.78)	-0.023 (0.78)	0.342 (0.01)	0.320 (0.01)	-0.268 (0.01)	-0.263 (0.01)	-0.054 (0.53)	-0.051 (0.55)	0.122 (0.62)	0.147 (0.56)
TWOKID	0.008 (0.92)	0.008 (0.93)	0.218 (0.11)	0.189 (0.17)	-0.163 (0.16)	-0.153 (0.18)	-0.061 (0.50)	-0.055 (0.55)	0.309 (0.17)	0.284 (0.21)
THREEKID	0.246 (0.02)	0.239 (0.03)	0.224 (0.19)	0.180 (0.30)	0.318 (0.04)	0.314 (0.04)	0.241 (0.06)	0.238 (0.06)	0.346 (0.15)	0.231 (0.34)
AGRI	-0.374 (0.01)	-0.373 (0.01)	-0.003 (0.99)	-0.010 (0.97)	-0.624 (0.00)	-0.630 (0.00)	-0.441 (0.00)	-0.439 (0.00)	0.187 (0.72)	0.268 (0.61)
MANU	-0.015 (0.85)	-0.017 (0.83)	-0.057 (0.63)	-0.070 (0.56)	-0.090 (0.43)	-0.084 (0.46)	0.035 (0.69)	0.039 (0.66)	-0.199 (0.34)	-0.254 (0.23)
TRANS	-0.247 (0.07)	-0.247 (0.08)	-0.240 (0.32)	-0.302 (0.22)	-0.362 (0.04)	-0.349 (0.05)	-0.204 (0.18)	-0.200 (0.19)	-0.549 (0.10)	-0.572 (0.09)
CONSTRUC	-0.416 (0.00)	-0.409 (0.00)	0.478 (0.04)	0.495 (0.04)	-0.542 (0.00)	-0.538 (0.00)	-0.402 (0.00)	-0.396 (0.00)	-0.583 (0.03)	-0.554 (0.05)
TRADE	0.021 (0.81)	0.020 (0.82)	0.092 (0.42)	0.081 (0.48)	-0.119 (0.39)	-0.116 (0.41)	0.042 (0.65)	0.043 (0.64)	-0.183 (0.54)	-0.201 (0.50)
APPREN	0.353 (0.00)	0.352 (0.00)	0.573 (0.00)	0.586 (0.00)	0.090 (0.59)	0.085 (0.61)	0.401 (0.00)	0.399 (0.00)	0.127 (0.77)	0.153 (0.73)
SELF_EMP	0.340 (0.03)	0.334 (0.03)	0.017 (0.95)	0.031 (0.90)	0.437 (0.03)	0.419 (0.04)	0.302 (0.07)	0.294 (0.08)	0.751 (0.15)	0.603 (0.24)
BLUE	0.120 (0.10)	0.119 (0.11)	0.387 (0.00)	0.378 (0.00)	-0.040 (0.72)	-0.032 (0.78)	0.145 (0.06)	0.147 (0.06)	-0.016 (0.95)	-0.055 (0.82)
CIVIL	-0.732 (0.04)	-0.741 (0.04)	-1.044 (0.05)	-1.046 (0.05)	-0.726 (0.12)	-0.766 (0.10)	-0.759 (0.04)	-0.764 (0.04)	0.568 (0.70)	0.467 (0.75)
AGRI_WORKER	0.690 (0.16)	0.704 (0.16)	1.599 (0.04)	1.544 (0.05)	-0.349 (0.63)	-0.328 (0.65)	0.654 (0.20)	0.662 (0.20)	11.043 (0.96)	14.139 (0.99)
ANYHELP	0.843 (0.00)	0.840 (0.00)	1.081 (0.00)	1.084 (0.00)	0.626 (0.00)	0.624 (0.00)	0.861 (0.00)	0.859 (0.00)	0.791 (0.00)	0.809 (0.00)
CONSCST		-0.060 (0.05)		0.020 (0.68)		-0.113 (0.01)		-0.061 (0.07)		-0.056 (0.52)
EXTST		0.012 (0.69)		0.009 (0.85)		0.010 (0.80)		-0.002 (0.95)		0.122 (0.14)
AGRST		0.017 (0.59)		-0.010 (0.83)		0.025 (0.55)		0.002 (0.95)		0.105 (0.23)
OPEST		-0.066 (0.04)		-0.137 (0.00)		-0.024 (0.57)		-0.031 (0.36)		-0.327 (0.00)
NEUST		0.081 (0.00)		0.060 (0.17)		0.107 (0.01)		0.076 (0.01)		0.082 (0.30)
BFST	-0.104 (0.00)		-0.102 (0.02)		-0.118 (0.00)		-0.098 (0.00)		-0.139 (0.08)	
# of obs.	4466	4466	1886	1886	2580	2580	3853	3853	613	613

p-values are in parenthesis. The suffix “st” represents the standardized values of the variable

The signs of the effects of the three other personality traits are consistent across subsamples, if they are significant. Not surprisingly, due to the large sample size the three traits *Conscientiousness*, *Openness* and *Neuroticism* are significant for the estimates based on the overall sample and reveal the expected sign. More conscien-

tious and more open workers are more likely to find a new job, while *Neuroticism* is a trait that is likely to harm job opportunities. The effect of *Openness* on unemployment duration is particularly pronounced for foreign workers. An increase of the *Openness* score by one standard deviation leads to a reduction of the hazard rate by almost 33 percent.

Our results confirm indirectly previous findings by Wichert and Pohlmeier (2009) who show in the context of female labor force participation that personality traits measured in one cross-section have stable explanatory power. Here we use the same 2005 cross-section information on the *Big Five*; this information is useful in explaining unemployment duration in particular in years before the personality traits were measured. Additional evidence against a reverse causality in the sense that the self-assessments are driven by the employment status is provided in Table 2 below. Here we simply test the responses with respect to the *Big Five* question in the survey year 2005 for the unemployed and the employed in this particular year. Only for *Neuroticism* we find differences in response behavior according to employment status. For all other traits there is clear evidence that employment and response behavior are uncorrelated.

Table 2: Summary Statistics for the Big Five by Employment Status in 2005

	Employed		Unemployed		p-value
	Mean	Std. Dev.	Mean	Std. Dev.	
<i>Conscientiousness</i>	18.09	2.52	17.99	2.53	0.55
<i>Extraversion</i>	14.58	3.41	14.73	3.33	0.53
<i>Agreeableness</i>	16.22	2.88	16.27	2.87	0.82
<i>Openness</i>	13.45	3.51	13.35	3.43	0.66
<i>Neuroticism</i>	11.67	3.57	12.17	3.51	0.04
<i>Big Five Index</i>	50.68	9.11	50.16	9.15	0.41
No. of obs.	1001		270		

The effects of the other explanatory variables which are not related to personality traits reveal the expected sign. Schooling helps as an insurance against unemployment. Married persons have shorter unemployment spells. Unemployment benefits (*ANYHELP*) increases the unemployment duration by reducing the search intensity.

The existence of children creates a negative incentive effect for women, while the effect is positive for males.

Since noncognitive skills are always context related we analyze the effect of the *Big Five* separately by the occupational status in the previous job. For this we create corresponding subsamples for blue collar and white collar workers as well as for the largest sectors manufacturing, construction and service. The results for blue collar and white collar workers are presented in Table A10 of Appendix A. Interestingly, the effects of personality traits measured by the *Big Five* are more pronounced for blue collar workers. Here *Conscientiousness*, *Openness* and *Neuroticism* affect the success of finding a job. For white collar workers, only *Neuroticism* turns out to be a handicap for a successful job search.

Our sector specific analysis (see Table A11) clearly confirms that the relevance of certain personality traits is sector specific. *Openness* turns out to be a useful trait for those unemployed who had their previous job in the manufacturing or in the service sector. *Neuroticism* is a handicap for former employees of the service sector. This interpersonal trait seems to be particularly relevant in jobs where interpersonal relationships are crucial. Interestingly, only for the construction sector do we find a significant negative effect of *Conscientiousness* on the duration of unemployment. At the same time, none of the educational dummies are significant for the construction sector.

Our finding that personality traits are strongly context related is confirmed when looking at the employment spells of the formerly unemployed. The employment spells are also grouped in three monthly employment durations lasting 18 months. The corresponding plot of hazard rates at the mean of the explanatory variables for the employment duration regression is given Figure 2. Here the hazard rate of employment is low, but increases over time indicating a positive duration dependence.

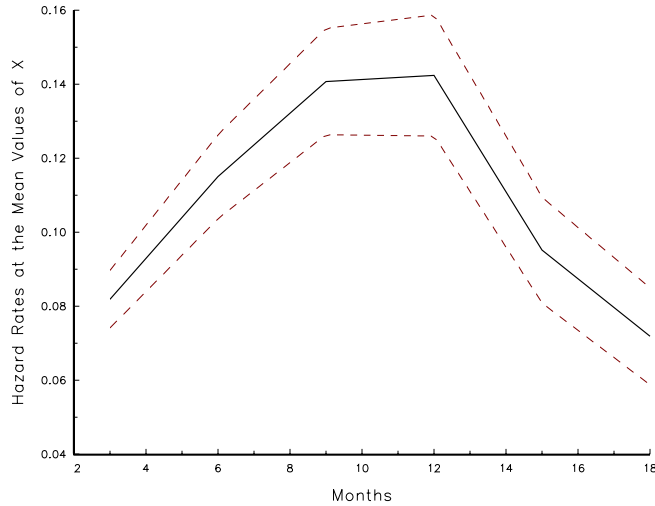


Figure 2: Hazard rate with 95 percent confidence band.

Estimates are based on specification given in Table 3, col. 1

The estimation results for the employment durations are reported in Table 3. Looking at the overall sample first (columns (1) and (2)) we see that, in principle, the signs of the coefficients simply change, i.e., traits useful for finding a job are the same as those useful for keeping the job. This holds in particular for *Neuroticism* for which we also find significant coefficients in three of the four subsamples (except for female workers). For foreign workers the relative importance of the traits switches. While *Openness* seems to be a decisive trait in finding a job, *Conscientiousness* is the one that guarantees job stability.

All in all, the power of the *Big Five* traits to explain employment duration is not as large as it is for unemployment durations. The results are confirmed when looking at the employment durations by job status or sectors separately (see Table A12 and A13). The effect of *Conscientiousness* on employment duration is positive for blue collar workers. *Neuroticism* is the only significant personality trait for white-collar workers. One standard deviation increase in *Neuroticism* results in an approximately 10% increase in unemployment hazard. For the employed in the manufacturing sector *Agreeableness* has a negative effect on employment duration, whereas *Openness* has a positive effect. For those who are employed in the construction sector, the personality traits do not play a role. *Neuroticism* is the only significant personality trait for employment in the service sector.

Table 3: Estimates of Employment Durations

	Entire Sample		Female		Male		German		Foreign	
	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five
AGE	-0.001 (0.88)	-0.001 (0.85)	0.005 (0.41)	0.006 (0.32)	-0.009 (0.10)	-0.009 (0.09)	0.001 (0.73)	0.002 (0.65)	-0.013 (0.20)	-0.013 (0.20)
SEX	-0.098 (0.21)	-0.063 (0.44)					-0.113 (0.18)	-0.074 (0.40)	0.204 (0.40)	0.137 (0.58)
GERMAN	-0.153 (0.14)	-0.142 (0.17)	-0.321 (0.08)	-0.306 (0.09)	-0.060 (0.64)	-0.049 (0.70)				
LOW_VOC	-0.269 (0.06)	-0.280 (0.05)	-0.230 (0.27)	-0.247 (0.24)	-0.488 (0.02)	-0.473 (0.03)	-0.211 (0.20)	-0.230 (0.16)	-0.848 (0.04)	-0.752 (0.08)
MID_VOC	-0.114 (0.30)	-0.123 (0.27)	0.083 (0.58)	0.059 (0.69)	-0.428 (0.01)	-0.416 (0.02)	-0.068 (0.56)	-0.075 (0.52)	-0.630 (0.12)	-0.547 (0.18)
HIGH_VOC	-0.042 (0.81)	-0.029 (0.87)	0.372 (0.13)	0.350 (0.16)	-0.520 (0.04)	-0.478 (0.06)	-0.006 (0.97)	-0.002 (0.99)	-0.297 (0.67)	-0.237 (0.74)
FULL	0.777 (0.00)	0.768 (0.00)	0.540 (0.00)	0.530 (0.00)	1.612 (0.00)	1.593 (0.00)	0.777 (0.00)	0.771 (0.00)	0.826 (0.00)	0.840 (0.00)
MARB	0.103 (0.20)	0.104 (0.20)	-0.065 (0.57)	-0.074 (0.52)	0.303 (0.01)	0.306 (0.01)	0.087 (0.31)	0.093 (0.28)	0.263 (0.30)	0.255 (0.31)
ONEKID	0.132 (0.15)	0.122 (0.19)	0.212 (0.14)	0.191 (0.19)	-0.001 (1.00)	-0.007 (0.95)	0.140 (0.15)	0.122 (0.21)	0.050 (0.87)	0.054 (0.86)
TWOKID	0.089 (0.35)	0.076 (0.43)	0.271 (0.08)	0.252 (0.11)	-0.156 (0.23)	-0.158 (0.22)	0.063 (0.55)	0.043 (0.68)	0.175 (0.52)	0.212 (0.44)
THREEKID	-0.080 (0.52)	-0.097 (0.43)	0.009 (0.96)	-0.032 (0.87)	-0.273 (0.12)	-0.277 (0.12)	-0.079 (0.58)	-0.091 (0.52)	-0.208 (0.46)	-0.191 (0.50)
AGRI	-0.339 (0.03)	-0.341 (0.03)	-0.331 (0.27)	-0.344 (0.26)	-0.425 (0.03)	-0.430 (0.03)	-0.335 (0.04)	-0.336 (0.04)	-0.317 (0.58)	-0.260 (0.66)
MANU	0.221 (0.02)	0.214 (0.02)	0.233 (0.10)	0.226 (0.11)	0.157 (0.25)	0.154 (0.26)	0.313 (0.00)	0.298 (0.00)	-0.253 (0.33)	-0.285 (0.28)
TRANS	0.105 (0.51)	0.088 (0.58)	-0.040 (0.88)	-0.084 (0.75)	0.169 (0.42)	0.167 (0.42)	0.004 (0.98)	-0.025 (0.89)	0.556 (0.22)	0.552 (0.23)
CONSTRUC	-0.326 (0.00)	-0.330 (0.00)	0.055 (0.84)	-0.009 (0.97)	-0.442 (0.00)	-0.431 (0.00)	-0.282 (0.01)	-0.282 (0.01)	-0.636 (0.04)	-0.602 (0.06)
TRADE	0.126 (0.21)	0.120 (0.24)	0.137 (0.29)	0.122 (0.35)	0.033 (0.84)	0.040 (0.81)	0.159 (0.14)	0.151 (0.16)	-0.068 (0.83)	-0.039 (0.90)
APPREN	-2.287 (0.00)	-2.275 (0.00)	-2.116 (0.00)	-2.087 (0.00)	-2.451 (0.00)	-2.461 (0.00)	-2.224 (0.00)	-2.212 (0.00)	-3.335 (0.00)	-3.395 (0.00)
SELF_EMP	0.225 (0.13)	0.247 (0.10)	-0.005 (0.98)	0.011 (0.96)	0.482 (0.02)	0.503 (0.02)	0.178 (0.24)	0.198 (0.20)	0.886 (0.15)	0.921 (0.13)
BLUE	-0.464 (0.00)	-0.475 (0.00)	-0.451 (0.00)	-0.459 (0.00)	-0.409 (0.00)	-0.424 (0.00)	-0.510 (0.00)	-0.518 (0.00)	0.143 (0.63)	0.115 (0.70)
CIVIL	0.094 (0.79)	0.109 (0.76)	0.853 (0.13)	0.811 (0.15)	-0.439 (0.35)	-0.376 (0.43)	0.049 (0.89)	0.064 (0.86)	10.249 (0.95)	10.433 (0.96)
LNW_IMP	0.155 (0.00)	0.159 (0.00)	0.152 (0.06)	0.153 (0.06)	0.136 (0.06)	0.144 (0.05)	0.190 (0.00)	0.187 (0.00)	-0.041 (0.78)	-0.013 (0.93)
CONSCST		0.087 (0.01)		0.096 (0.07)		0.074 (0.11)		0.057 (0.13)		0.285 (0.00)
EXTST		-0.011 (0.76)		0.030 (0.58)		-0.027 (0.57)		0.013 (0.74)		-0.121 (0.22)
AGRST		-0.015 (0.67)		-0.093 (0.08)		0.032 (0.50)		0.007 (0.85)		-0.142 (0.17)
OPEST		-0.051 (0.15)		-0.085 (0.12)		-0.019 (0.69)		-0.071 (0.07)		0.084 (0.40)
NEUST		-0.086 (0.01)		-0.053 (0.29)		-0.093 (0.04)		-0.105 (0.00)		0.035 (0.72)
BFST	0.051 (0.11)		0.010 (0.84)		0.083 (0.05)		0.059 (0.08)		0.063 (0.49)	
# of obs.	4191		1793		2398		3628		563	

p-values are in parenthesis. The suffix “st” represents the standardized values of the variable

5 Conclusion

Our goal in this paper has been to examine the role of noncognitive skills, defined here as the *Big Five* personality traits, in determining the success of unemployed workers seeking a job and their success in sustaining the subsequent job. This is done by estimating a reduced form unemployment duration model with the semi-parametric proportional hazard rate method by Han and Hausman (1990). We can show that personality traits are major determinants of job search behavior. Not all five dimensions of the *Big Five* contribute, however, to explaining observed individual unemployment durations in the same way. Therefore, using a simple aggregate index, despite being statistically significant, may be misleading. In fact, the traits *Extraversion* and *Agreeableness* reveal no explanatory power, while the relevance of the other three traits vary across subsamples.

We find strong evidence that the role of the *Big Five* traits is context related. The traits do seem to matter more if a person is unemployed. For keeping a position and not losing it again, only low scores for *Neuroticism* and for foreigners a high score for *Conscientiousness* matters. The role of personality traits also differs across occupations and sectors.

We provide some explorative evidence that the problem of reverse causality is primarily theoretical in nature. Nevertheless a more elaborate duration analysis should tackle the endogeneity problem in taking greater care of this detail. A factor analytic approach could deal with the soft nature of the self-assessed personality traits.

Our results contribute to the ever lasting discussion on individual heterogeneity in duration models by showing that observable differences in noncognitive skills are able to explain parts of individual differences in job search behavior. This indicates that appropriate screening of the unemployed by assessing their noncognitive skills and eventually offering appropriate interventions (e.g., training of self-regulatory skills) may improve their success in the labor market.

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A Tables

Table A1: Definition of Variables

Variable	Definition
DUR_UNEMP	Unemployment duration in months
DUR_EMP	Employment duration in months
LOW_VOC	Dummy, 1 if no degree or less than or equal to 10 years of schooling
MID_VOC	Dummy, 1 if high school degree (12 or 13 years of schooling) or professional degree
HIGH_VOC	Dummy, 1 if high school degree and vocational training
HIGH_EDU	Dummy, 1 if highest degree is university degree
FEMALE	Dummy, 1 if female
GERMAN	Dummy, 1 if German
AGE	Age in years at the beginning of the unemployment spell
MARB	Dummy, 1 if married at the beginning of the unemployment spell
NOKID	Dummy, 1 if individual does not have children
ONEKID	Dummy, 1 if women has one child
TWOKID	Dummy, 1 if women has two children
THREEKID	Dummy, 1 if women has three or more children
ANYHELP	Dummy, 1 if worker received unemployment benefit or relief during unemployment spell
LNW_IMP	Log of average hourly wages during employment spell
<i>Industry Dummy Variables</i>	
AGRI	= 1 if in mining or agriculture
MANU	= 1 if in manufacturing
TRANS	= 1 if in transportation or public utilities
CONST	= 1 if in transportation or public utilities
TRADE	= 1 if in retail trade or wholesale
SERVICE	= 1 if in services
<i>Occupation Dummy Variables</i>	
APPREN	= 1 if apprentice, trainee or intern
SELF_EMP	= 1 if self employed
WORKER	= 1 if worker
EMPLOYEE	= 1 if employee
CIVIL	= 1 if civil servant
AGRI_WORKER	= 1 if agricultural worker
<i>Noncognitive Skills</i>	
EXT	Score for <i>Extraversion</i> (from 3 to 21 (very pronounced))
AGR	Score for <i>Agreeableness</i> (from 3 to 21 (very pronounced))
CON	Score for <i>Consciousness</i> (from 3 to 21 (very pronounced))
NEU	Score for <i>Neuroticism</i> (from 3 to 21 (very pronounced))
OPE	Score for <i>Openness to Experience</i> (from 3 to 21 (very pronounced))
BIGFIVE	Score of the Big Five-Index ($CONSC + AGREE + OPEN + EXT - NEU$) (from -9 (low noncognitive skills) to 81 (high noncognitive skills))

Source: SOEP, own definitions

Table A2: Summary Statistics of Unemployment Spells

	Entire Sample	By Gender			By Nationality		
		Female	Male	p-values	German	Foreign	p-values
DUR_UNEMP	7.81 (9.36)	8.30 (9.23)	7.45 (9.44)	0.00	7.52 (8.95)	9.66 (11.43)	0.00
AGE	35.61 (9.82)	35.60 (9.93)	35.61 (9.74)	0.97	35.52 (9.87)	36.17 (9.51)	0.13
SEX	0.42 (0.49)				0.44 (0.50)	0.32 (0.47)	0.00
GERMAN	0.86 (0.34)	0.90 (0.30)	0.84 (0.37)	0.00			
LOW_VOC	0.12 (0.32)	0.11 (0.31)	0.12 (0.33)	0.29	0.08 (0.27)	0.35 (0.48)	0.00
MID_VOC	0.70 (0.46)	0.68 (0.47)	0.72 (0.45)	0.00	0.73 (0.44)	0.53 (0.50)	0.00
HIGH_VOC	0.05 (0.21)	0.05 (0.22)	0.04 (0.20)	0.11	0.05 (0.22)	0.02 (0.15)	0.00
HIGH_EDU	0.13 (0.34)	0.16 (0.37)	0.11 (0.32)	0.00	0.14 (0.35)	0.10 (0.30)	0.00
MARB	0.58 (0.49)	0.58 (0.49)	0.57 (0.49)	0.86	0.55 (0.50)	0.76 (0.43)	0.00
NOKID	0.46 (0.50)	0.38 (0.49)	0.52 (0.50)	0.00	0.49 (0.50)	0.31 (0.46)	0.00
ONEKID	0.21 (0.41)	0.22 (0.41)	0.20 (0.40)	0.35	0.21 (0.41)	0.18 (0.39)	0.11
TWOKID	0.23 (0.42)	0.29 (0.45)	0.19 (0.40)	0.00	0.23 (0.42)	0.27 (0.45)	0.01
THREEKID	0.10 (0.29)	0.12 (0.32)	0.08 (0.27)	0.00	0.07 (0.26)	0.23 (0.42)	0.00
AGRI	0.05 (0.21)	0.03 (0.17)	0.06 (0.24)	0.00	0.05 (0.22)	0.03 (0.16)	0.01
MANU	0.24 (0.43)	0.19 (0.39)	0.27 (0.45)	0.00	0.21 (0.41)	0.42 (0.49)	0.00
TRANS	0.05 (0.21)	0.03 (0.18)	0.06 (0.23)	0.00	0.04 (0.20)	0.07 (0.25)	0.02
CONSTRUC	0.18 (0.39)	0.03 (0.18)	0.29 (0.46)	0.00	0.19 (0.39)	0.15 (0.36)	0.04
TRADE	0.14 (0.35)	0.19 (0.39)	0.10 (0.31)	0.00	0.15 (0.36)	0.08 (0.28)	0.00
SERVICE	0.34 (0.48)	0.53 (0.50)	0.21 (0.41)	0.00	0.36 (0.48)	0.25 (0.43)	0.00
APPREN	0.09 (0.28)	0.11 (0.31)	0.07 (0.26)	0.00	0.09 (0.29)	0.04 (0.20)	0.00
SELF_EMP	0.03 (0.18)	0.03 (0.17)	0.04 (0.19)	0.39	0.04 (0.19)	0.02 (0.14)	0.03
BLUE	0.52 (0.50)	0.33 (0.47)	0.66 (0.47)	0.00	0.48 (0.50)	0.76 (0.43)	0.00
WHITE	0.35 (0.48)	0.53 (0.50)	0.22 (0.41)	0.00	0.37 (0.48)	0.18 (0.38)	0.00
CIVIL	0.01 (0.09)	0.01 (0.09)	0.01 (0.09)	0.97	0.01 (0.10)	0.00 (0.04)	0.04
AGRI_WORKER	0.003 (0.05)	0.003 (0.06)	0.003 (0.05)	0.77	0.003 (0.06)	0.002 (0.04)	0.53
ANYHELP	0.86 (0.35)	0.84 (0.37)	0.87 (0.34)	0.01	0.86 (0.35)	0.84 (0.37)	0.24
CONS	18.00 (2.65)	18.20 (2.52)	17.86 (2.74)	0.00	18.00 (2.63)	17.99 (2.78)	0.93
EXT	14.58 (3.37)	15.07 (3.32)	14.22 (3.36)	0.00	14.65 (3.34)	14.13 (3.52)	0.00
AGR	16.16 (2.92)	16.74 (2.82)	15.73 (2.92)	0.00	16.12 (2.92)	16.37 (2.96)	0.05
OPE	13.41 (3.54)	13.87 (3.48)	13.07 (3.55)	0.00	13.56 (3.49)	12.43 (3.68)	0.00
NEU	12.21 (3.57)	12.70 (3.59)	11.85 (3.52)	0.00	12.19 (3.56)	12.35 (3.62)	0.32
BIG FIVE	49.93 (9.51)	51.17 (9.31)	49.03 (9.56)	0.00	50.15 (9.48)	48.58 (9.63)	0.00
# of obs.	4466	1886	2580		3853	613	

Standard errors are given in parentheses. p-values are for t-test of mean differences.

Table A3: Frequencies of Grouped Unemployment Spells

Duration of unemployment spells	Freq.	Percent	Cum.
less than 3 months	1856	41.56	41.56
3-6	908	20.33	61.89
7-9	530	11.87	73.76
10-12	382	8.55	82.31
13-15	232	5.19	87.51
16-18	130	2.91	90.42
19-21	98	2.19	92.61
22-24	86	1.93	94.54
more than 2 years	244	5.46	100
Total	4466	100	

Table A4: Summary Statistics by Occupational Position

	Blue-Collar Worker		White-Collar Worker		p-value
DUR_UNEMP	8.24	(10.17)	7.36	(8.53)	0.01
AGE	36.42	(9.69)	36.79	(9.38)	0.24
SEX	0.26	(0.44)	0.64	(0.48)	0.00
GERMAN	0.80	(0.40)	0.93	(0.26)	0.00
LOW_VOC	0.18	(0.38)	0.04	(0.19)	0.00
MID_VOC	0.78	(0.42)	0.62	(0.48)	0.00
HIGH_VOC	0.02	(0.13)	0.07	(0.26)	0.00
HIGH_EDU	0.03	(0.16)	0.26	(0.44)	0.00
MARB	0.63	(0.48)	0.58	(0.49)	0.00
NOKID	0.41	(0.49)	0.46	(0.50)	0.01
ONEKID	0.23	(0.42)	0.20	(0.40)	0.04
TWOKID	0.24	(0.43)	0.26	(0.44)	0.18
THREEKID	0.12	(0.32)	0.08	(0.27)	0.00
AGRI	0.07	(0.25)	0.01	(0.12)	0.00
MANU	0.31	(0.46)	0.16	(0.37)	0.00
TRANS	0.05	(0.22)	0.04	(0.19)	0.02
CONSTRUC	0.29	(0.45)	0.06	(0.24)	0.00
TRADE	0.10	(0.29)	0.20	(0.40)	0.00
SERVICE	0.18	(0.39)	0.52	(0.50)	0.00
ANYHELP	0.89	(0.32)	0.85	(0.36)	0.00
CONS	18.11	(2.71)	18.00	(2.49)	0.20
EXT	14.24	(3.39)	15.00	(3.22)	0.00
AGR	15.94	(3.02)	16.41	(2.80)	0.00
OPE	12.76	(3.55)	14.14	(3.36)	0.00
NEU	12.37	(3.53)	12.04	(3.63)	0.01
BIG FIVE	48.69	(9.62)	51.50	(9.06)	0.00
# of obs.	2323		1549		

Sample: Unemployed Workers

Table A5: Summary Statistics by Sector

	Manufacturing		Construction		Service	
DUR.UNMEP	8.64	(10.56)	6.72	(8.78)	7.92	(8.92)
AGE	35.75	(9.68)	36.11	(9.86)	35.52	(9.83)
SEX	0.34	(0.47)	0.08	(0.26)	0.65	(0.48)
GERMAN	0.76	(0.43)	0.89	(0.32)	0.90	(0.30)
LOW_VOC	0.17	(0.38)	0.11	(0.32)	0.10	(0.30)
MID_VOC	0.70	(0.46)	0.83	(0.38)	0.60	(0.49)
HIGH_VOC	0.03	(0.16)	0.01	(0.10)	0.07	(0.25)
HIGH_EDU	0.10	(0.30)	0.05	(0.21)	0.23	(0.42)
MARB	0.63	(0.48)	0.59	(0.49)	0.53	(0.50)
NOKID	0.44	(0.50)	0.45	(0.50)	0.47	(0.50)
ONEKID	0.23	(0.42)	0.21	(0.41)	0.20	(0.40)
TWOKID	0.24	(0.43)	0.25	(0.43)	0.23	(0.42)
THREEKID	0.09	(0.28)	0.08	(0.27)	0.10	(0.30)
ANYHELP	0.88	(0.33)	0.91	(0.28)	0.81	(0.39)
CONS	18.10	(2.76)	17.94	(2.76)	17.91	(2.58)
EXT	14.33	(3.44)	14.21	(3.19)	14.80	(3.46)
AGR	16.34	(2.93)	15.45	(3.00)	16.38	(2.88)
OPE	12.88	(3.60)	13.06	(3.56)	13.96	(3.54)
NEU	12.12	(3.47)	12.10	(3.36)	12.37	(3.69)
BIG FIVE	49.52	(9.59)	48.56	(9.65)	50.69	(9.75)
# of obs.	1065		820		1536	

Sample: Unemployed

Table A6: Summary Statistics of Employment Spells

	Entire Sample	By Gender			By Nationality		
		Female	Male	p-values	German	Foreign	p-values
DUR_EMP	33.36 (44.43)	29.77 (39.12)	36.04 (47.85)	0.00	32.57 (43.34)	38.41 (50.62)	0.00
AGE	35.77 (9.70)	35.76 (9.86)	35.79 (9.58)	0.91	35.63 (9.73)	36.72 (9.51)	0.01
SEX	0.43 (0.49)	-	-		0.45 (0.50)	0.31 (0.46)	0.00
GERMAN	0.87 (0.34)	0.90 (0.30)	0.84 (0.37)	0.00	-	-	
LOW_VOC	0.11 (0.32)	0.11 (0.31)	0.12 (0.33)	0.11	0.08 (0.27)	0.35 (0.48)	0.00
MID_VOC	0.70 (0.46)	0.67 (0.47)	0.72 (0.45)	0.00	0.72 (0.45)	0.53 (0.50)	0.00
HIGH_VOC	0.05 (0.22)	0.06 (0.23)	0.04 (0.21)	0.06	0.05 (0.23)	0.03 (0.16)	0.01
HIGH_EDU	0.14 (0.35)	0.17 (0.37)	0.12 (0.32)	0.00	0.14 (0.35)	0.10 (0.30)	0.01
FULL	0.83 (0.37)	0.68 (0.47)	0.95 (0.23)	0.00	0.83 (0.38)	0.87 (0.33)	0.01
MARB	0.57 (0.49)	0.57 (0.49)	0.57 (0.49)	0.95	0.54 (0.50)	0.76 (0.43)	0.00
NOKID	0.46 (0.50)	0.39 (0.49)	0.51 (0.50)	0.00	0.48 (0.50)	0.32 (0.47)	0.00
ONEKID	0.21 (0.41)	0.21 (0.41)	0.21 (0.41)	0.68	0.22 (0.41)	0.17 (0.37)	0.00
TWOKID	0.23 (0.42)	0.28 (0.45)	0.20 (0.40)	0.00	0.23 (0.42)	0.28 (0.45)	0.01
THREEKID	0.10 (0.29)	0.12 (0.32)	0.08 (0.27)	0.00	0.07 (0.26)	0.24 (0.43)	0.00
AGRI	0.04 (0.19)	0.02 (0.14)	0.05 (0.22)	0.00	0.04 (0.20)	0.02 (0.15)	0.05
MANU	0.23 (0.42)	0.17 (0.38)	0.27 (0.44)	0.00	0.20 (0.40)	0.40 (0.49)	0.00
TRANS	0.05 (0.22)	0.03 (0.18)	0.06 (0.24)	0.00	0.05 (0.21)	0.07 (0.25)	0.03
CONSTRUC	0.17 (0.38)	0.03 (0.17)	0.27 (0.45)	0.00	0.18 (0.38)	0.13 (0.34)	0.01
TRADE	0.15 (0.35)	0.20 (0.40)	0.11 (0.31)	0.00	0.15 (0.36)	0.12 (0.33)	0.08
SERVICE	0.37 (0.48)	0.55 (0.50)	0.24 (0.42)	0.00	0.39 (0.49)	0.26 (0.44)	0.00
APPREN	0.03 (0.17)	0.04 (0.19)	0.02 (0.15)	0.00	0.03 (0.18)	0.01 (0.10)	0.00
SELF_EMP	0.07 (0.26)	0.06 (0.24)	0.08 (0.27)	0.02	0.08 (0.26)	0.04 (0.20)	0.00
BLUE	0.52 (0.50)	0.32 (0.47)	0.67 (0.47)	0.00	0.48 (0.50)	0.75 (0.43)	0.00
WHITE	0.37 (0.48)	0.57 (0.50)	0.22 (0.41)	0.00	0.40 (0.49)	0.20 (0.40)	0.00
CIVIL	0.01 (0.10)	0.01 (0.11)	0.01 (0.10)	0.33	0.01 (0.11)	0.00 (0.06)	0.08
LNW_IMP	-0.29 (0.64)	-0.40 (0.65)	-0.20 (0.62)	0.00	-0.31 (0.64)	-0.13 (0.61)	0.00
CONSC	18.00 (2.65)	18.22 (2.50)	17.84 (2.75)	0.00	18.00 (2.63)	18.01 (2.79)	0.92
EXT	14.60 (3.39)	15.10 (3.33)	14.23 (3.38)	0.00	14.68 (3.36)	14.10 (3.54)	0.00
AGR	16.17 (2.92)	16.77 (2.80)	15.72 (2.93)	0.00	16.14 (2.91)	16.35 (2.99)	0.12
OPE	13.43 (3.54)	13.93 (3.48)	13.06 (3.53)	0.00	13.60 (3.48)	12.39 (3.71)	0.00
NEU	12.18 (3.58)	12.68 (3.62)	11.79 (3.50)	0.00	12.16 (3.57)	12.30 (3.65)	0.37
BIG FIVE	50.03 (9.54)	51.34 (9.32)	49.06 (9.58)	0.00	50.26 (9.49)	48.55 (9.70)	0.00
CEN	0.69 (0.46)	0.74 (0.44)	0.65 (0.48)	0.00	0.69 (0.46)	0.68 (0.47)	0.49
‡ of obs.	4191	1793	2398		3628	563	

Standard errors are given in parentheses. p-values are for t-test of mean differences.

Table A7: Frequencies of Grouped Employment Spells

Duration of employment spells	Freq.	Percent	Cum.
less than 3 months	487	11.62	11.62
3-6	537	12.81	24.43
7-9	534	12.74	37.17
10-12	433	10.33	47.51
13-15	232	5.54	53.04
16-18	176	4.2	57.24
19-21	145	3.46	60.7
22-24	115	2.74	63.45
more than 2 years	1532	36.55	100
Total	4191	100	

Table A8: Summary Statistics by Occupational Position

	Blue-Collar Workers		White-Collar Workers		p-value
DUR_EMP	30.60	(42.69)	37.89	(46.29)	0.00
AGE	36.18	(9.75)	35.85	(9.63)	0.31
SEX	0.26	(0.44)	0.66	(0.47)	0.00
GERMAN	0.81	(0.40)	0.93	(0.26)	0.00
LOW_VOC	0.17	(0.37)	0.05	(0.21)	0.00
MID_VOC	0.79	(0.41)	0.62	(0.48)	0.00
HIGH_VOC	0.02	(0.14)	0.08	(0.27)	0.00
HIGH_EDU	0.03	(0.16)	0.25	(0.43)	0.00
FULL	0.88	(0.33)	0.77	(0.42)	0.00
MARB	0.61	(0.49)	0.56	(0.50)	0.01
NOKID	0.43	(0.50)	0.48	(0.50)	0.00
ONEKID	0.22	(0.41)	0.21	(0.41)	0.46
TWOKID	0.23	(0.42)	0.24	(0.43)	0.50
THREEKID	0.12	(0.32)	0.07	(0.25)	0.00
AGRI	0.06	(0.24)	0.01	(0.10)	0.00
MANU	0.31	(0.46)	0.14	(0.35)	0.00
TRANS	0.06	(0.23)	0.04	(0.20)	0.04
CONSTRUC	0.27	(0.44)	0.05	(0.22)	0.00
TRADE	0.10	(0.30)	0.20	(0.40)	0.00
SERVICE	0.20	(0.40)	0.55	(0.50)	0.00
LNW_IMP	-0.31	(0.61)	-0.20	(0.61)	0.00
CONS	18.08	(2.73)	18.00	(2.50)	0.35
EXT	14.24	(3.38)	14.92	(3.30)	0.00
AGR	15.91	(3.03)	16.52	(2.77)	0.00
OPE	12.75	(3.48)	14.04	(3.37)	0.00
NEU	12.40	(3.49)	12.02	(3.67)	0.00
BIG FIVE	48.58	(9.54)	51.46	(9.14)	0.00
CEN	0.73	(0.45)	0.67	(0.47)	0.00
# of obs.	2179		1547		

Sample: Employed Workers

Table A9: Summary Statistics by Sector

	Manufacturing	Construction	Service
DRU_EMP	42.22 (52.50)	25.04 (34.68)	31.56 (42.35)
AGE	34.79 (9.24)	34.79 (9.24)	36.27 (9.82)
SEX	0.32 (0.47)	0.32 (0.47)	0.63 (0.48)
GERMAN	0.77 (0.42)	0.77 (0.42)	0.91 (0.29)
LOW_VOC	0.16 (0.37)	0.16 (0.37)	0.09 (0.29)
MID_VOC	0.70 (0.46)	0.70 (0.46)	0.60 (0.49)
HIGH_VOC	0.03 (0.18)	0.03 (0.18)	0.07 (0.26)
HIGH_EDU	0.10 (0.30)	0.05 (0.21)	0.24 (0.43)
FULL	0.88 (0.32)	0.88 (0.32)	0.76 (0.43)
MARB	0.61 (0.49)	0.61 (0.49)	0.54 (0.50)
NOKID	0.45 (0.50)	0.45 (0.50)	0.46 (0.50)
ONEKID	0.23 (0.42)	0.23 (0.42)	0.20 (0.40)
TWOKID	0.23 (0.42)	0.23 (0.42)	0.24 (0.43)
THREEKID	0.09 (0.28)	0.09 (0.28)	0.10 (0.30)
LNW_IMP	-0.17 (0.65)	-0.17 (0.65)	-0.31 (0.66)
CONSCST	18.06 (2.74)	17.94 (2.79)	17.93 (2.59)
EXTST	14.35 (3.50)	14.17 (3.09)	14.88 (3.44)
AGRST	16.23 (2.96)	15.38 (3.00)	16.47 (2.86)
OPEST	12.97 (3.55)	13.02 (3.55)	13.96 (3.49)
NEUST	12.04 (3.54)	12.10 (3.31)	12.20 (3.62)
BFST	49.57 (9.56)	48.41 (9.73)	51.04 (9.57)
# of obs.	956	715	1543

Sample: Employed Workers

Table A10: Estimates of Unemployment Durations by Occupational Status

	Blue-Collar Worker		White-Collar Worker	
	Big Five Index	Big Five	Big Five Index	Big Five
AGE	0.016 (0.00)	0.016 (0.00)	0.040 (0.00)	0.040 (0.00)
SEX	0.437 (0.00)	0.398 (0.00)	0.209 (0.05)	0.163 (0.14)
GERMAN	-0.127 (0.23)	-0.111 (0.30)	-0.585 (0.00)	-0.575 (0.00)
LOW_VOC	0.767 (0.00)	0.731 (0.00)	-0.075 (0.78)	-0.073 (0.79)
MID_VOC	0.307 (0.20)	0.281 (0.24)	0.124 (0.28)	0.104 (0.37)
HIGH_VOC	0.429 (0.24)	0.399 (0.28)	-0.059 (0.76)	-0.076 (0.70)
MARB	-0.117 (0.23)	-0.111 (0.26)	-0.132 (0.25)	-0.135 (0.24)
ONEKID	-0.054 (0.62)	-0.052 (0.64)	-0.041 (0.77)	-0.041 (0.77)
TWOKID	-0.042 (0.72)	-0.041 (0.73)	-0.009 (0.95)	-0.003 (0.98)
THREEKID	0.250 (0.08)	0.241 (0.09)	0.075 (0.70)	0.082 (0.68)
AGRI	-0.534 (0.00)	-0.527 (0.00)	-0.105 (0.79)	-0.132 (0.74)
MANU	-0.134 (0.25)	-0.136 (0.25)	-0.027 (0.84)	-0.030 (0.82)
TRANS	-0.285 (0.13)	-0.274 (0.15)	-0.261 (0.31)	-0.253 (0.33)
CONSTRUC	-0.574 (0.00)	-0.566 (0.00)	0.140 (0.49)	0.167 (0.41)
TRADE	-0.109 (0.47)	-0.109 (0.47)	0.047 (0.71)	0.050 (0.69)
ANYHELP	0.708 (0.00)	0.699 (0.00)	0.970 (0.00)	0.975 (0.00)
CONSCST		-0.093 (0.03)		-0.027 (0.61)
EXTST		0.044 (0.30)		-0.020 (0.70)
AGRST		0.055 (0.20)		0.009 (0.86)
OPEST		-0.084 (0.05)		-0.011 (0.83)
NEUST		0.093 (0.02)		0.119 (0.02)
BFST	-0.102 (0.01)		-0.090 (0.05)	
# of obs.	2323	2323	1549	1549

p-values in parenthesis

Table A11: Estimates of Unemployment Durations by Sector

	Manufacturing		Construction		Service	
	Big Five Index	Big Five	Big Five Index	Big Five	Big Five Index	Big Five
AGE	0.03 (0.00)	0.03 (0.00)	0.010 (0.22)	0.011 (0.19)	0.030 (0.00)	0.030 (0.00)
SEX	0.32 (0.01)	0.30 (0.02)	1.095 (0.00)	1.063 (0.00)	0.053 (0.61)	0.007 (0.95)
GERMAN	-0.14 (0.35)	-0.10 (0.48)	-0.112 (0.62)	-0.102 (0.65)	-0.435 (0.01)	-0.447 (0.01)
LOW_VOC	0.69 (0.00)	0.68 (0.00)	0.088 (0.81)	0.116 (0.75)	0.659 (0.00)	0.587 (0.00)
MID_VOC	0.04 (0.85)	0.04 (0.85)	-0.116 (0.69)	-0.064 (0.83)	0.341 (0.00)	0.278 (0.02)
HIGH_VOC	-0.13 (0.74)	-0.13 (0.75)	0.100 (0.88)	0.162 (0.81)	-0.084 (0.69)	-0.149 (0.48)
MARB	-0.13 (0.38)	-0.13 (0.39)	-0.213 (0.25)	-0.195 (0.29)	0.017 (0.88)	0.000 (1.00)
ONEKID	-0.34 (0.03)	-0.34 (0.04)	0.074 (0.71)	0.082 (0.68)	0.122 (0.37)	0.110 (0.42)
TWOKID	-0.30 (0.07)	-0.30 (0.07)	-0.014 (0.95)	-0.001 (0.99)	0.105 (0.47)	0.078 (0.59)
THREEKID	-0.08 (0.73)	-0.13 (0.59)	0.773 (0.01)	0.752 (0.01)	0.278 (0.13)	0.253 (0.17)
ANYHELP	0.93 (0.00)	0.92 (0.00)	0.475 (0.06)	0.482 (0.05)	0.752 (0.00)	0.763 (0.00)
CONSCST		-0.10 (0.11)		-0.165 (0.03)		0.001 (0.98)
EXTST		-0.03 (0.68)		-0.022 (0.75)		0.056 (0.30)
AGRST		0.06 (0.33)		0.038 (0.62)		0.005 (0.93)
OPEST		-0.18 (0.01)		0.053 (0.48)		-0.151 (0.01)
NEUST		0.05 (0.36)		0.054 (0.44)		0.150 (0.00)
BFST	-0.19 (0.00)		-0.086 (0.19)		-0.141 (0.00)	
# of obs.	1065	1065	820	820	1536	1536

p-values in parenthesis

Table A12: Estimates of Employment Durations by Job Status

	Blue-Collar Worker		White-Collar Worker	
AGE	0.000	-0.001	-0.006	-0.006
	(0.93)	(0.84)	(0.39)	(0.40)
SEX	-0.115	-0.094	-0.150	-0.109
	(0.32)	(0.43)	(0.25)	(0.41)
GERMAN	-0.243	-0.245	0.002	0.036
	(0.05)	(0.05)	(0.99)	(0.87)
LOW_VOC	0.051	0.013	-0.492	-0.500
	(0.86)	(0.96)	(0.08)	(0.07)
MID_VOC	0.302	0.270	-0.272	-0.268
	(0.25)	(0.31)	(0.06)	(0.06)
HIGH_VOC	0.614	0.589	-0.388	-0.359
	(0.14)	(0.16)	(0.09)	(0.11)
FULL	0.832	0.821	0.539	0.534
	(0.00)	(0.00)	(0.00)	(0.00)
MARB	0.081	0.079	0.085	0.077
	(0.46)	(0.47)	(0.53)	(0.57)
ONEKID	0.106	0.091	0.140	0.140
	(0.39)	(0.46)	(0.38)	(0.38)
TWOKID	0.014	-0.003	0.167	0.139
	(0.91)	(0.98)	(0.32)	(0.41)
THREEKID	-0.142	-0.164	-0.078	-0.085
	(0.37)	(0.30)	(0.74)	(0.72)
AGRI	-0.414	-0.415	-0.124	-0.080
	(0.02)	(0.02)	(0.79)	(0.86)
MANU	0.189	0.188	0.201	0.193
	(0.14)	(0.15)	(0.24)	(0.26)
TRANS	0.079	0.066	0.287	0.282
	(0.71)	(0.76)	(0.31)	(0.33)
CONSTRUC	-0.467	-0.462	0.043	0.021
	(0.00)	(0.00)	(0.86)	(0.93)
TRADE	0.219	0.204	0.144	0.150
	(0.19)	(0.22)	(0.31)	(0.29)
LNW_IMP	0.081	0.084	0.204	0.206
	(0.26)	(0.24)	(0.03)	(0.03)
CONSCST		0.102		0.084
		(0.03)		(0.15)
EXTST		0.033		-0.071
		(0.48)		(0.24)
AGRST		-0.011		-0.005
		(0.83)		(0.94)
OPEST		-0.038		-0.074
		(0.42)		(0.21)
NEUST		-0.045		-0.096
		(0.31)		(0.09)
BFST	0.077		0.007	
	(0.07)		(0.90)	
# of obs.	2179		1547	

p-values in parenthesis

Table A13: Estimates of Employment Durations by Sector

	Manufacturing		Construction		Service	
AGE	0.005 (0.58)	0.007 (0.40)	-0.008 (0.37)	-0.009 (0.33)	0.006 (0.33)	0.005 (0.47)
SEX	0.045 (0.78)	0.085 (0.60)	0.733 (0.02)	0.748 (0.02)	-0.076 (0.52)	-0.015 (0.90)
GERMAN	0.117 (0.51)	0.042 (0.82)	-0.010 (0.97)	-0.010 (0.97)	-0.351 (0.08)	-0.274 (0.18)
LOW_VOC	-0.349 (0.25)	-0.315 (0.30)	-0.661 (0.13)	-0.679 (0.13)	-0.591 (0.01)	-0.625 (0.00)
MID_VOC	0.005 (0.98)	0.021 (0.94)	-0.396 (0.31)	-0.418 (0.29)	-0.344 (0.01)	-0.366 (0.01)
HIGH_VOC	-0.281 (0.51)	-0.359 (0.41)	1.599 (0.16)	1.624 (0.16)	-0.070 (0.77)	-0.126 (0.60)
FULL	0.819 (0.00)	0.823 (0.00)	1.298 (0.00)	1.308 (0.00)	0.834 (0.00)	0.843 (0.00)
MARB	0.080 (0.67)	0.065 (0.73)	0.518 (0.01)	0.540 (0.01)	0.163 (0.20)	0.185 (0.14)
ONEKID	0.016 (0.94)	0.033 (0.87)	0.076 (0.71)	0.071 (0.73)	0.196 (0.20)	0.203 (0.18)
TWOKID	-0.038 (0.86)	-0.041 (0.85)	-0.322 (0.12)	-0.362 (0.09)	0.211 (0.19)	0.203 (0.20)
THREEKID	-0.232 (0.42)	-0.159 (0.58)	0.118 (0.73)	0.113 (0.74)	-0.064 (0.75)	-0.071 (0.73)
LNW_IMP	0.275 (0.02)	0.248 (0.03)	0.123 (0.28)	0.134 (0.25)	0.363 (0.00)	0.365 (0.00)
CONSCST		0.029 (0.72)		0.085 (0.31)		0.045 (0.43)
EXTST		-0.008 (0.91)		-0.040 (0.61)		-0.036 (0.54)
AGRST		-0.263 (0.00)		0.090 (0.28)		0.071 (0.22)
OPEST		0.149 (0.05)		-0.034 (0.68)		-0.113 (0.06)
NEUST		-0.037 (0.60)		-0.061 (0.45)		-0.165 (0.00)
BFST	-0.012 (0.86)		0.104 (0.15)		0.058 (0.27)	
# of obs.	956		715		1543	

p-values in parenthesis