I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 12597

Personal Attitudes, Job Characteristics and Health

Lutz Bellmann
Olaf Hübler

SEPTEMBER 2019

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 12597

Personal Attitudes, Job Characteristics and Health

Lutz Bellmann
IAB, University of Erlangen-Nuremberg and IZA

Olaf Hübler
Leibniz University Hannover and IZA

SEPTEMBER 2019

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Personal Attitudes, Job Characteristics and Health*

Using a new German individual data set, we investigate the influence on health with respect to personal traits measured by the Big Five, collegiality, commitment and job characteristics. Among the Big Five conscientiousness, agreeableness and emotional stability correlate positively with good health. Job characteristics like activities combined with substantial decision authority, no physically demanding tasks, pleasant environmental conditions, little time pressure and no necessity of multitasking affect health in the same direction. If employees get help if needed from their colleagues and if they do not feel unfairly criticized by others in the firm, they usually have no health problems. For mental health, all Big Five items are influential whereas no statistical significance could be found for the number of days workers were absent due to sickness except in cases of neuroticism.

JEL Classification: I12, J53, J54

Keywords: health status, working conditions, commitment to a company, collegiality, personality traits

Corresponding author:
Olaf Hübler
Institut für Empirische Wirtschaftsforschung
Leibniz Universität Hannover
Königsworther Platz 1
30167 Hannover
Germany
E-mail: huebler@ewifo.uni-hannover.de

* We thank Silke Anger, Michael Beckmann, Knut Gerlach, Marie-Christine Laible, Malte Sandner and Daniel Schnitzlein for helpful comments as well as the participants of the annual meeting of the research group of Labour and Socio Economic Research (LASER) and the presentation in DiskAB.

1 Introduction

According to data from the World Bank and World Health Organization (WHO) and various national sources, mental disorders impose an enormous disease burden on societies throughout the world. This development has fueled interest in research geared towards understanding the determinants of different aspects of health. A wide field of health determinants is discussed from a theoretical perspective and empirically analyzed. Economic and sociological studies only focus on socio-demographic and employment factors like gender, age, schooling, working hours and income. Personal attitudes and detailed job characteristics are often neglected but important for the health status. This paper is related to that literature but conducts a more comprehensive approach in order to avoid that omitted variables bias the investigation of the role of single factors influencing individuals' health. Personality traits that can especially be summarized by the Big Five items develop early in life, due to a mixture of genetics and environmental conditions. These personality traits are persistent and determine an individual's behavior concerning economic decisions and have substantial effects in important areas of life. A priori, the direction of the effects is not always evident and varies across personality trait types. For example, we can expect that under unfavorable conditions emotional stability moderates negative effects on health. A positively thinking person is less concerned about critical situations. She believes that she can resolve the current issue or that the problem solves itself, so that her mental health is not impaired. Considerate people also have less mental health problems due to permanent disputes with colleagues. Physical health may also dependent on the personality, for example, thorough workers avoid accidents at work more frequently than others.

The working environment is also important for health. In this context, different dimensions have to be distinguished: physically demanding work, unpleasant environmental conditions, authority to decide, dependence from coworkers and colleagues, time pressure and commitment to the company. The most obvious influence on health is that of the first named features.

Improvements and permanent removal of problems in these fields tend to improve the health of the population. While less educated and low-wage workers in the manufacturing industry were affected by these problems in the past, recently, mental stress and disorders have increased for qualified workers with higher wages. We still know little about the importance of physical and psychological health problems due to our complex working life.

The joint consideration of personality traits and working conditions as determinants for health is relevant for employers and employees. More detailed knowledge may be helpful for social partners to improve the health status of the workforce. On the one hand, based on this information, management can employ workers with a specific personal profile in specific work places combined with an appropriate pattern of duties. On the other hand, if improved health follows, an increased productivity via higher satisfaction, less absence and later retirement may be the consequence. Workers with a specific personality should pay attention to base the choice of their jobs not only on income but also on job characteristics. For example, neurotic and extroverted workers distinguish in their health effects, also if they perform the same activities.

In this paper, using a new German individual data set, we empirically investigate the influence of personal traits and working conditions on health. We go beyond the existing literature and are able to present some interesting new results: First, we incorporate a wide range of personal traits, skills, employment properties and job characteristics as determinants. No other data sets concurrently contain information on working conditions, commitment and collegiality that allows a combination with personality traits. Second, the estimates show some features that are strongly linked with poor health and some that seem irrelevant. Third, we reveal the importance of interaction effects between different job conditions and between personal and job features on health. Fourth, the results are robust to alternative models, sub-samples and estimation methods.

2 Related literature

The literature presents effects on health from different perspectives. Health behaviors such as nutrition, sleep, alcohol, smoking, drugs, stress and body mass index are channels that are mainly analyzed in medicine and biology but are also of economic interest (Frankenberg/Thomas 2017, Giuantella/Mazzonna 2016, Bacolod et al. 2017, Chen et al. 2017, Papageorge et al. 2016, Cawley et al. 2017, Hübler 2017). Other important socioeconomic health determinants are parental background, education, employment, wages and satisfaction (Case/Paxson 2002, Barcellos et al. 2018, Gonsalves/Martins 2018, Fernandez-Val et al. 2013, Bachelet et al 2015) and the strategies available for coping with stress (Antonovsky 1979). Putting the insights from psychological research e.g. about targeting negative cognition and positive coping strategies into an economic setting, Wehner et al. (2016) use British longitudinal data to show that low emotional stability is typically negatively related to socioeconomic outcomes, while conscientiousness predicts desirable results. However, possible mechanisms behind these relations are far less often investigated. We address this research gap by analyzing the relation between low emotional stability and ill mental health, as well as the possible substitution effect of conscientiousness, both theoretically and empirically. Low emotional stability during adolescence predicts ill mental health as adults. More conscientiousness mitigates the negative relation between low emotional stability and mental health. Particularly both low emotionally stable and low conscientious individuals are more likely to experience bad mental health related to a reduced problem-solving ability.

From another perspective, Savelyev and Tan (2019) incorporate personal traits in their analyzes. In contrast to previous studies, their strategy to account for a comprehensive set of skills allows them to detect that among high-IQ subjects, education is linked to better health-related outcomes. The authors include lifestyle variables such as marriage, divorce and membership in organizations. They find a significant linkage between conscientiousness, openness, extraversion, and neuroticism on the one hand and various

health-related outcomes on the other hand across the life-cycle. They detect that health improves by improving an extreme lack of conscientiousness or emotional stability. However, relationships between agreeableness, extraversion, and health-related outcomes are mixed. Openness shows an adverse association with health. The authors detect different results for the health-related outcomes and doubt that agreeableness, extraversion and openness are potentially valuable health policy targets. Working conditions vary substantially across workers, play a significant role in job choice decisions, and are central components of the compensation received by workers. Preferences vary by demographic groups and throughout the wage distribution. Accounting for differences in preferences for working conditions often exacerbates wage differentials by race, age, and education (Maestas et al. 2018). These results may also be important for effects on health (Fletcher et al. 2011).

Negative health effects of air pollution, noise and heat are widely discussed (e.g. Kampa and Castanas 2008, Stansfield and Crombie 2011, Seltenrich 2015). Case studies and descriptive analyzes on effects on specific diseases dominate. Unfavorable working conditions are considered as determinants of burnout (e.g. Maslach et al., 2001). According to Demerouti et al. (2001), it makes sense to divide working conditions into factors that stress the job demands and factors that buffer adverse influences, especially job resources. An employee facing deadline pressure, a high workload, and frequent interruptions faces high job demands. This does not automatically lead to detrimental health consequences if she can use help from colleagues and has leeway of decision making e.g. regarding the timing of different tasks, her breaks, and working hours. When demands increase or resources decrease, the resulting imbalance favors the development of work-related mental health problems. In this model, education opens access to different jobs which come with different working environments. Higher educated employees for example have more leeway of decision making (job resource) but also bear more responsibility (job demand). Bakker et al. (2010) conduct a large-scale study to assess both the empirical relevance of the job demand

model and to account for the individual resources available. Rydstedt et al. (2007) as well as Häusser et al. (2010) review other studies with that focus.

From a theoretical view, the relationship between working conditions and health is discussed by Karasek (1997) focusing on job demands, job decision latitude, and mental strain. Extensions and critical analyzes determine further development of the theoretical model (de Jonge and Kompier 1997, Bruin and Taylor 2006, Fila 2016). The interaction of job demands and job decision latitude is the central topic. The combination of low decision latitude and heavy job demands is associated with mental strain. The major implication of this study is that redesigning work processes to allow increases in decision latitude for a broad range of workers could reduce mental strain, and do so without affecting the job demands that may plausibly be associated with organizational output levels. Occupational health research has stressed the importance of unhealthy working conditions as well as physical and mental workload affecting absence from work due to illness (Beemsterboer et al. 2009, Prümer and Schnabel 2019). Refinements of this theoretical approach are based on the job-demand-control-support model (Johnson and Hall 1988). This model predicts that the highest job strain is experienced in environments characterized by high job demands and low job control. However, this model differs in its hypotheses: The strain hypothesis predicts that job demands and job control have additive effects, whereas the buffer hypothesis predicts that job demands and job control have a multiplicative effect and that high job control can ameliorate the negative effects of high job demands. This model has also been widely criticized. Kain and Jex (2010) suggest that further research should examine different conceptualizations of demands and individual difference variables. Recommendations are suggested, including combinations of demands control and support, operationalizing these dimensions in several different ways in each study to increase findings of interactive effects, and designing industry- or role-specific measures of these dimensions to improve this consistency.

Working conditions are rarely taken into account when health is in the focus of empirical analyzes. A first field in this context is ergonomics (Westgaard and Winkel 1997). Firms aim to improve workplaces and environments to minimize risk of injury and to avoid serious harm to health. A second field is emotional strain. Pikos (2017) investigates the relationship between work-related mental health problems and multitasking, the number of tasks performed at work. She finds evidence for a causal effect of multitasking on emotional strain, emotional exhaustion and burnout. A third field is the influence of physically demanding work and unpleasant environmental conditions on health. In a review article Coenen et al. (2018) show that men with high level occupational physical activity had an increased risk of early mortality compared with those engaging in low level occupational physical activity. No such association was observed among women, for whom instead a tendency for an inverse association was found. This research seems to be of special relevance in the context of digitalization (Misra and Stokols 2012, Reinecke et al. 2017). Kelly (2008) discusses the relationship between commitment and health. The higher the level of commitment, the more likely the individual will adopt long-term behavior change. Since all these aspects are not analyzed in a comprehensive approach, their relative importance is unclear as is the question whether they interact.

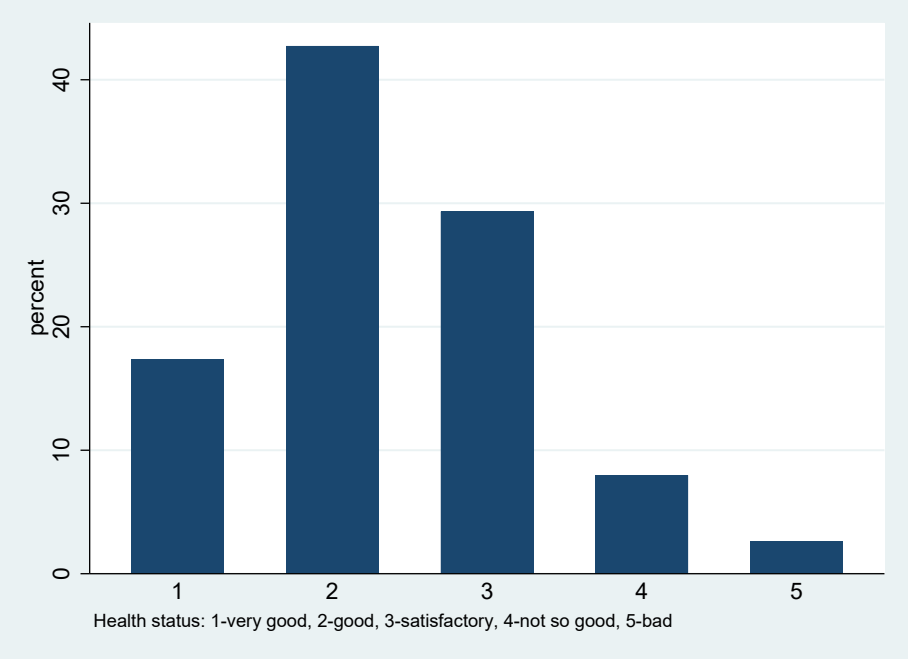
The short literature reveals that many health determinants such as health behavior and the Big Five variables, as well as working conditions, job demands and job resources seem to be of relevance depending on the socioeconomic variables. However, due to data limitations, the studies reviewed do not consider the effect of these variables used in a wider context. Thus, they neglect the problem of biased estimates due to the omission of relevant variables. Therefore, we conduct a comprehensive approach to investigate the influence of these determinants: First, we start with separate analyzes of the socioeconomic variables (employment status, occupation groups, working time, training and wages), personal characteristics (age, gender, schooling and Big Five variables) and working conditions. Our hypothesis is that only some of the variables considered show clear effects and these variables

exert different influences on different variables measuring health. Second, we estimate combined regression models to compare the stability of the results obtained with those from regressions with determinants belonging to the same group of variables. We expect that the Big Five variables are of importance for mental health and that socioeconomic variables are of relevance for the overall health status and the objective health variable. Third, following the arguments provided by the job demands resources model, e.g. unfavorable working conditions, a differentiation of the analysis with respect to the type of occupational activities, between low and high commitment to the firm, the degree of collegiality is required to clarify which context has an influence on health. Effects of particular working characteristics on health could be stronger or weaker in conjunction with other features. Two or more driving forces could interact. Fourth, an endogenous linkage exists between income, job characteristics and collegiality on the one hand and health on the other hand. Disregarding this endogeneity leads to biased estimates of effects on health. Fifth, the general relationship between personality, working characteristics and health holds for subgroups like regions, industries, firm characteristics, workforce structure and age groups.

3 Data, graphs and descriptive statistics

Our data set is the Linked Personnel Panel (LPP - Broszeit and Wolter, 2015; Broszeit et al., 2016). This new data set is representative of private sector establishments with at least 50 employees in manufacturing and services industries and provides information on the employee and on the employer level. We focus on the former part. The survey was started in 2013 (N=7,508). Information from the second wave, 2015 (N=7,282) and the third wave, 2017 (N=6,779) is also available. Not all information is provided in all three waves. The employee level of the LPP considers demographics, health, qualification, employment, personal and job characteristics. Figure 1 shows the distribution of workers' subjective evaluation on five HEALTH levels.

Figure 1: Distribution of HEALTH levels



Source: Linked Personnel Panel (LPP), wave 1 (2013), 2 (2015) and 3 (2017).

HEALTH incorporates idiosyncrasies making its measurement difficult (Baker et al. 2006). It is clear that HEALTH contains elements of both physical and mental health, which are regarded as interrelated in many cases (Hübler 2017). Our data set also offers some information of the latter category based on five statements:

- I am happy and in good mood.
- I feel easy and relaxed.
- I am active and have a lot of energy.
- I feel fresh and relaxed when I wake up.
- Many things and activities, in which I am interested myself, characterize my everyday life.

The respondents were asked whether they agree to these statements. The answers are measured by a rating scale (1-at any time, ..., 6-never). We summarize the outcome of all five items and call this variable MENTAL HEALTH (psychological well-being). The scale falls between 5 and 30. The lower the value, the higher is the total mental health.

A third health indicator in our survey is the number of working days in which the employees were absent due to illness (ABSENT_NoWD). This is an objective health measure but does not illustrate the complete spectrum of health items. Following Prümer and Schnabel (2019) we do not exclude those employees from our estimation sample who record very long absences from work, because such a restriction does not substantially affect our results.

In contrast to other data sets, many job characteristics, commitment information, items to collegiality and personal traits measured by Big Five are available in the LPP. Nine items on job characteristics are available, however we use only seven that are collected in all three waves (JC1 - JC7) - see Tables 1 and 2. Six commitment items are distinguished (COM1 - COM6, Tables 1 and 2). For the job characteristic and the commitment items, respondents have to evaluate whether they apply to themselves within the range from 1 to 5. A low value of item COM4, COM5 and COM6 means no commitment in contrast to the items COM1-COM3. Collegiality is measured by three questions (COL 1 - COL 3, Tables 1 and 2). Respondents have five answer options: ever, often, sometimes, rarely, never/nearly never. We transform this categorical attribute into the scale 1 to 5, where a low value of COL1 and COL2 means a high degree of collegiality. Low values of COL3 indicate low or no collegiality.

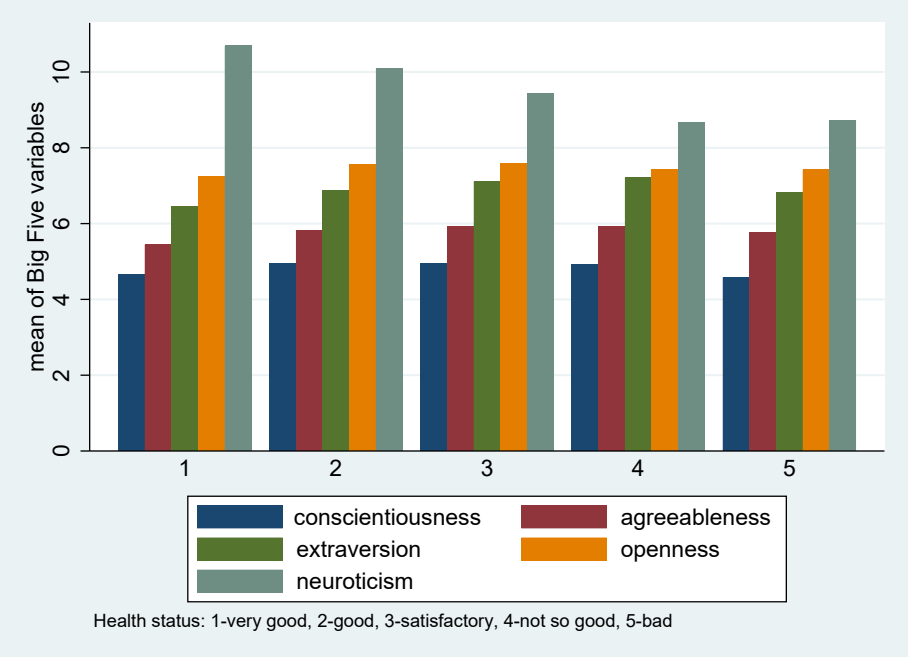
Using a short scale for assessing the Big Five dimensions of personality developed by the team of the German Socio-Economic Panel survey (SOEP) and based on the Big Five inventory of John et al. (1991), respondents answer questions relating to 16 areas of personality traits. Based on five categories (1: fully applies, 2: largely applies, 3: undecided, 4: does rather not

apply, 5: does not apply at all) the respondents give their subjective assessment of their individual personality. Again the categorical variable is transformed into the scale $1, \ldots, 5$. The Big Five factors - openness (OPEN), extraversion (EXTRA), conscientiousness (CONSC), agreeableness (AGREE) and neuroticism (NEURO) are determined as the sum of the scores generated from answers to three questions. This means the minimum score for each factor is equal to three and the maximum score is equal to 15. Openness characterizes people who are original, have new ideas, who have artistic and aesthetic experiences and are imaginative. Extraversion describes people who are communicative, talkative, outgoing and sociable and who are not reserved. Typical traits for people with conscientiousness are that they are thorough workers, that they are not lazy and that they are effective and efficient in completing tasks. The fourth characteristic, agreeableness, expresses that people are not rude to others, that they can forgive and that they are considerate and kind to others. Individuals who are easily worried, who are nervous in many situations and who are not easily relaxed and cannot deal with stress strongly exhibit the fifth property, neuroticism. The opposite of the latter is emotional stability.

Table 3 presents descriptive statistics of health for different items of job characteristics (JC1-JC7), commitment (COM1-COM6) and collegiality (COL1-COL3). On average, the subjective health status is best among the selected items for workers with a high degree of extraversion and worst for workers with a high degree of neuroticism.

A more detailed description of the HEALTH status distribution for the Big Five items can be seen in Figure 2. The mean of NEURO for all HEALTH categories is higher than for the other four Big Five categories and is decreasing from HEALTH=1 to HEALTH=4. Then a slight increase follows at HEALTH=5. The pattern of OPEN, EXTRA, AGREE and CONSC over the HEALTH categories shows first increasing and then decreasing values. The ranking of the Big Five means is the same within all five HEALTH categories.

Figure 2: Distribution of health levels, split by average of Big Five values



Source: Linked Personnel Panel (LPP), wave 1-3.

4 Methods and econometric results

4.1 Empirical strategy

The main regressand in our analysis is HEALTH. As this is an ordered variable with five categories, an ordered probit model is estimated and as a first approximation OLS estimates can be applied. We are especially interested in the influence of personal traits and job characteristics. Therefore, we start with three separate estimates. First, regressors are incorporated that are usually used in economic health studies. Second, Big Five variables and other personal characteristics are used as regressors. Third, the influence of job characteristics on health is investigated. In the next step, we combine all these determinants (Table 4, column 4). Based on the first three estimates those determinants are selected that have a significant influence on health.

Two alternative selection procedures are applied. The first is the Least Angle Regression (LARS) developed by Efron et al. (2004). Among a collection of m available covariates a parsimonious set for the efficient prediction of response variables is selected. Only m steps are required. Each step adds one covariate to the model so that after k steps just k coefficients are nonzero. The procedure is started with all coefficients equal to zero and finds the predictor most correlated with the response, say x_1. The largest step possible in the direction of this predictor is taken until another predictor, say x_2, has as much correlation with the current residual. LARS proceeds in a direction equiangular between the two predictors, x_1 and x_2, until a third predictor, x_3, earns its way into the "most correlated" set. LARS proceeds equiangularly between x_1, x_2 and x_3, that is, along the "least angle direction" until a fourth variable x_4 enters, and so on. The C_p criterion

$$C_p(\mu) = \frac{||y - \mu||^2}{\sigma^2} - N + 2df$$

is used as the stopping rule, where μ=Xβ and σ^2 is the residual variance; df=$\sum cov(\mu, y)/\sigma^2$ are the degrees of freedom. The procedure stops, no more regressors are incorporated, if C_p is smallest. C_p is an unbiased estimator of prediction error.

The second selection method is the Least Absolute Shrinkage and Selection Operator (LASSO) developed by Tibshirani (1996). The estimation is based on

$$\hat{\beta} = argmin \sum_{i=N}^{N} (y_i - \sum_{j=1}^{p} x_{ij})^2$$

subject to

$$\sum_{j=1}^{p} |\beta_j| <= t,$$

where $t >= 0$ is a tuning parameter. We follow Belloni et al. (2012, 2014). This robust LASSO approach allows an estimation under heteroscedastic

non-Gaussian and clustered disturbances (RLASSO)

$$\hat{\beta} = argmin \sum_{i=1}^{N} (y_i - \sum_{j=1}^{p} x_{ij} b_j)^2 + \lambda \sum_{j=1}^{p} |b_j| \gamma_j,$$

where $\lambda > 0$ is the "penalty level" and γ_j are the "penalty loadings". Results are presented in columns 5 and 6 of Table 4.

The goodness of the model is tested by the Breusch-Pagan test for heteroscedasticity and by Ramsey's (1969) RESET approach. It is proved whether multicollinearity is a problem by the variance inflation factors.

Furthermore, we investigate whether interaction effects among job characteristics and those with personal characteristics are influential. Interaction effects can be modeled by simple but also by triple difference-in-differences (DiD) of a dummy variable model. This means for a general triple DiD case, we determine

$$y = \gamma_0 + \gamma_1 w + \gamma_2 x + \gamma_3 z + \gamma_4 wx + \gamma_5 wz + \gamma_6 xz + \gamma_7 wxz + u,$$

where y is health, w, x and z are dummies and in our case observed health determinants, e. g. $JC5\_D$, $COM6\_D$ and $NEURO\_D$, the symbol $\_D$ signals that the variable is a dummy, u is the error term. The coefficient γ_7 corresponds to a triple DiD effect

$$\begin{gathered}
\text{(y|w=1, x=1, z=1) - (y|w=0, x=1, z=1) -} \\
\text{(y|w=1, x=0, z=1) - (y|w=0, x=0, z=1) -} \\
\text{(y|w=1, x=1, z=0) - (y|w=0, x=1, z=0) -} \\
\text{(y|w=1, x=0, z =0) - (y|w=0, x=0, z=0) =} \\
[\gamma_1 + \gamma_4 + \gamma_5 + \gamma 7] - [(\gamma_1 + \gamma_5] - [\gamma_1 + \gamma_4] - [\gamma_1] = \gamma_7.
\end{gathered}$$

A special case is the simple DiD model where the coefficient γ_4 is the simple DiD effect. This follows if z=0 is assumed

$$y = \gamma_0 + \gamma_1 w + \gamma_2 x + \gamma_4 wx + u.$$

The analysis of interaction effects is a wide field. A priori, many interactions could be relevant. We restrict our investigations on significant pure and interaction health determinants based on Table 4 and further preliminary inquiries. Results are presented in Table 7.

One important health factor of workers is wages. However, the causality is not obvious. On the one hand, increasing income can improve expenditures for health. On the other, good health contributes to better performance and in consequence to higher income. The null hypothesis that log(wages) is exogenous has to be rejected if the average establishment wage per employee is used as an instrument. As this is not an entirely convincing instrument, we follow Lewbel (2012) for endogenous treatment effects. His technique enables the identification of structural parameters in fully simultaneous linear models

$$Y_1 = x'\beta_1 + Y_2\gamma_1 + e_1$$

$$Y_2 = x'\beta_2 + Y_1\gamma_2 + e_2$$

under the assumptions that x and e are uncorrelated, that the error terms e are heteroskedastic and that the covariance between z and the product e_1e_2 is zero. In our case, Y_1 is the health variable and Y_2 is log wage variable. The vector z contains observed variables, can be discrete or continuous and can be a subset of x. In the latter case, no information outside the model specified above is required. If the covariance assumption is violated, then the parameters are still identified, when it is assumed that the correlation between z and e_1e_2 is smaller than the correlation between z and e_{22}. Identification comes from a heteroskedastic covariance restriction and is achieved by having regressors that are uncorrelated with the product of heteroskedastic errors. In the simplest version, instruments W can be generated by the product of the residuals from the reduced form ($\hat{e}_2$) and the mean centered values (X-$\bar{X}$) of an element of vector z as a subset of x

$$W = (X - \bar{X})'\hat{e}_2.$$

In one sense, this approach is a generalization of Altonji and Shakotko (1987), where time-demeaned centered variables are used as instruments. The advantage of Lewbel's method is that the weighting with $\hat{e}_2$ reduces the risk of a correlation between instruments and the error term of the above Y_1 equation. The parameters β_1 and γ_1 are identified by the ordinary linear two-stage least squares estimation of Y_1 on x and Y_2 using x and $(Z - E(Z))'\hat{e}_2$ as instruments. The assumption that Z is uncorrelated with $e_1 e_2$ means that $(Z - E(Z))'\hat{e}_2$ is a valid instrument for Y_2 in the main equation since it is uncorrelated with e_1, with the strength of the instrument (its correlation with Y_2 after controlling for the other instruments x) being proportional to the covariance of $(Z - E(Z))e_2$ with e_2, which corresponds to the degree of heteroskedasticity of e_2 with respect to Z. The greater the degree of scale heteroskedasticity in the error process, the higher will be the correlation of the generated instruments with the included endogenous variable, which is the regressand in the first-stage regression.

Besides the generated instruments W, external instruments can be considered. At first only generated instruments are used - see Table 8, column 2. The Cragg-Donald's (1993) test statistic is confronted with Stock-Yogo's (2005) critical value at $\alpha = 0.05$. Then, the approach is extended by the average establishment wage per employee as an external instrument - see column 3.

The causality between personality traits and health is not clear-cut. The discussion on this aspect is ongoing but the majority assumes that the Big Five are stable in adulthood (Cobb-Clark/Schurer 2012, Rantanen et al. 2007). Here, no endogeneity investigations are necessary. We argue that graduation and completion of training are important cutting points and therefore consider the age of 25 as a good break for Germany. We investigate whether empirical evidence confirms this. The literature also discusses important positive and negative life events that lead to changes of personality traits. Anger et al. (2017) find that involuntary job loss following a plant closure leads to an increase in openness for the average displaced worker and,

to some extent, to a change in emotional stability, whereas the other dimensions of the Big Five personality inventory remain unchanged. We cannot test this with our data, but assume that none of the respondents recently experienced an involuntary job loss as their average tenure is rather high.

A final question of endogeneity is that between working conditions and health. E.g., we can suppose that workers with bad health do not perform physically demanding activities and not only that physically demanding work has negative consequences for the health status. A reverse causality is also plausible between collegiality and health. Problems with colleagues negatively affects own health, but bad health in combination with a bad mood is also not good for the relation to colleagues. We test this for the relationship between JC5 and HEALTH (Table 8, column 4) on the one hand and between COL3 and HEALTH (Table 8, column 5) on the other hand.

Furthermore, we carry out panel estimates - see Table 9 -, in order to take into account the influence of unobserved time-invariant health determinants. Finally, sub-samples are used - see Tables 10 - 12. We want to show whether the effects on health are not robust for all subgroups but differ.

4.2 Estimation results

The first estimates in Table 4 show that many of our incorporated variables in columns 1 - 3 have a highly significant influence on HEALTH. As expected, personal characteristics, especially age, is negatively and good schooling is positively correlated with a good health status. We want to highlight that conscientiousness, agreeableness and emotional stability contribute to good health as well. Workers with no decision-making power, physically strenuous work, unpleasant environmental conditions, who suffer under time-pressure and multi-tasking, have more health problems than other workers. We find this also for employees, who need, but do not get help from their colleagues and who are often unfairly criticized by their colleagues and supervisors. Former empirical studies have not investigated these relationships. For em-

ployees with a permanent contract, a worse health status is observed, which may be related to their higher age and unobserved characteristics, e.g. unobserved abilities. It makes sense to combine these partial approaches in column 4. In this case, no possible multicollinearity is revealed - see Table 8, line VIF. The results confirm those of columns 1 - 3. We find the same sign and a similar significance level with the following exceptions: craftsmen do not have a worse health compared with masters. Effects of part time and working hours are also not significant. Working from home leads to worse health. The influence of basic variables on health declines if job characteristics, commitment and collegiality are incorporated - compare column 4 with column 1.

As alternatives to the approach of column 4, LARS and RLASSO estimations in columns 5 and 6 provide robustness checks for variable selection. The results are similar with respect to the sign and significance. RLASSO selects less regressors than the combined approach in column 4, but the combined approach is a leaner model than that of LARS. Thus, column 4 with only significant determinants of health seems a good compromise between LARS and RLASSO. Remarkably, however, among the Big Five items, RLASSO only reveals neuroticism as a relevant health determinant, while the other two selection procedures also find conscientiousness and agreeableness to determine health. Among the working conditions, all three selection procedures show the following: workers with decision-making power, no physically demanding work, pleasant environmental conditions and who get often help if needed from colleagues have on average a better health status than others. Those who are unfairly criticized by colleagues and supervisors describe their health as worse.

In the following we focus our discussion on the results of the combined approach as a compromise between the LARS and RLASSO approach. Table 5 shows the influence of personal and job characteristics on MENTAL HEALTH. In comparison with Table 4, we find, on the one hand, that the basic variables are less important, and on the other hand, that the impact of personal characteristics is more often significant. The importance of job characteristics is likewise essential for HEALTH and MENTAL HEALTH, however, the impact pattern differs. It is not surprising that physically demanding work has negative effects on (physical) health while the effect on mental health is only weakly significant. Commitment is crucial for the mental health indicator while for (physical) health the estimates only show a weak influence of COM3 (Table 4, column 4). Collegiality is positively correlated with good physical and mental health.

The measurement of HEALTH and MENTAL HEALTH is based on a subjective evaluation. With our data, we can use only one objective self-reported health variable as robustness test, namely the number of working days per year in which an employee was absent due to illness (ABSENT_NoWD). The correlation coefficients between the three health indicators are presented in the following Table:

	HEALTH	MENTAL HEALTH	ABSENT_NoWD
HEALTH	1.0000		
MENTAL HEALTH	0.4147***	1.0000	
ABSENT_NoWD	0.3180***	0.1349***	1.0000

Note LPP, wave 1-3, *** $\alpha \leq 0.001$

The same specifications as in Table 4 are estimated with ABSENT_NoWD as dependent variable. Table 6 shows the results. We compare column 4 in Table 4 with that in Table 5 and 6. In most cases the signs and significance are the same, especially for the JC variables. An exception is COL1. Those who often receive help if needed from their colleagues report signif-

icantly better health in a general sense in Table 4 but for absent days the effect is insignificant. The correlation between Big Five variables and ABSENT_NoWD is less clear than that with HEALTH and especially with MENTAL HEALTH. The signs differ in some cases. Thus, we prefer the measure of HEALTH in the following.

The next discussion of estimation results is devoted to interaction effects. Among the large number of possible interactions of dummy variables, e. g. JC1*JC7_D=JC1_D*JC7_D, where JC1_D=1 if (JC1>=1 ∩ JC1<=2) and JC1_D=0 if JC1>2 and analogously JC7_D, we find only few estimates that reveal a significant impact on HEALTH. The estimates of three two-way interaction models are represented in Table 7, columns 1, 2 and 3. The results are as follows:

(1) Workers with a strong decision-making authority (JC1_D=1) usually have a good health status while those who often have a high deadline pressure (JC7_D=1) have poorer health. The latter influence is moderated under JC1_D*JC7_D=1. This is in accordance with Karasek (1997) who has found that a combination of low freedom of decision and heavy job demands is associated with mental strain.

(2) Workers that often get help if needed from their colleagues (COL1_D=1) usually have a better state of health than the average employee. This relationship is weakened if they are neurotic (COL1*NEURO_D=1).

(3) Extroverted workers (EXTRA_D=1) have, on average, a better state of health than other employees. This link is weaker if they are often unfairly criticized by colleagues and supervisors (COL3*EXTRA_D=1).

Triple DiD effects are usually insignificant. Column 4 shows an exception. Explicitly modeling the combination between JC7_D, COM6_D and COL3_D seems helpful. The combination of unfair criticism by colleagues and supervisors, deadline pressure, having to multitask and no commitment

to the firm, contributes to weakening the negative health effects through main and simple interaction factors.

The influence of the triple interaction variable JC5_D*COM6_D*NEURO_D on HEALTH is positive if all three dummies are one - see column 5 (IA3_2) of Table 5. The effect is only weakly significant ($\alpha \leq 0.10$). A priori, we had no clear-cut expectation about the sign. We have to consider the complete interaction model. The main effects of JC5_D, COM6_D and NEURO_D on HEALTH are negative. E. g. a low emotional stability is connected with bad health. The two-way interaction between neuroticism and physically demanding work on the one hand and low commitment to the firm on the other hand on HEALTH exhibit the opposite sign. Finally, the sign of the three-way interaction JC5_D*COM6_D*NEURO_D is negative. This means, among others, that the negative two-way interaction effect between JC5 and NEURO_D is stronger if the employee has no commitment to the company.

The final triple DiD effect is presented in column 6 (IA3_3) of Table 5. Note, that an interpretation of the JC2_D*COL3_D*EXTRA_D effect, independent from the other results of the model, would be insufficient. The result indicates that the sum of main effects and that of a combination between a complex structure of working activities and critique from the staff contributes to worse health. The positive extroversion effect on health is overcompensated by an atmosphere with little praise and much criticism.

The test for correct specification corroborates/does not reject the null hypothesis - see Table 8, line RESET. However, we reject homoscedasticity - see line Breusch-Pagan - and exogeneity of wages - see line Hausman. Multicollinearity does not seem problematic - see line VIF. Lewbel's approach with generated instruments only - Table 8, column 2 - leads to similar estimates as column 1, especially that of the Big Five, commitment, collegiality variables and job characteristics. We should stress that the influence of wages is now insignificant. If the instrument "average establishment wage per employee"

is added - see column 3 - no remarkable changes have to be mentioned for significant regressors in comparison with column 2. In both cases we reject the null hypothesis of weak instruments - see line Cragg-Donald. The robustness of the coefficients estimates also follows if the Lewbel's approach is applied to the interaction models in Table 7. This outcome is not in the Tables.

In Section 4.1 we had formulated the hypothesis that the variables JC5 and COL3 indicate mutual dependencies with HEALTH, thereby leading to endogeneity. This is not, or only weakly, supported by our estimates and tests in columns 4 and 5 of Table 8. Wages are an endogenous regressor with respect to health. For the other two variables (JC5 and COL3), the test outcome is less clear-cut.

As further robustness checks we represent random effects ordered probit estimates. Table 9 presents the results. Here we can see again that the influence of the basic health variables declines if job characteristics, commitment and collegiality variables are included - compare column 1 and 2. This means, for example, that bad health for unskilled workers is in large part not attributable to low qualification but results from bad job conditions. We find also effects of unobserved variables. The likelihood ratio test RE ordered probit vs. simple ordered probit model rejects the latter - see Table 7, line LR.

Our final step is the presentation of sub-sample estimates - see Tables 10-12. We distinguish between employees of different age groups (Table 10), between employees that work in establishments of the manufacturing or service sector, or that live in eastern or western Germany (Table 11). We also distinguish between different firm size classes (Table 12).

The estimates in columns (2) to (4) of Table 10 show that the influence of the Big Five variables on HEALTH is very similar for employees older than 25 years or for prime age workers compared to the total sample, while the

results for younger workers have a different pattern. This supports the assumption that for adults personality traits are fixed. Further, the variability of personality traits in adolescence has no strong impact on their relationship with HEALTH in the full sample including the whole age range. During adolescence conscientiousness and agreeableness have no influence on HEALTH. Within all considered subgroups neuroticism is significantly disadvantageous for health, while conscientiousness has a positive influence for adults. Jobs with unpleasant environmental conditions are not favorable for health for older workers.

In the manufacturing sector and in eastern Germany in contrast to other subgroups, we do not find that time stress and multitasking have a significant negative influence on health. If workers have no emotional commitment to the establishment, their health status is worse than for those with emotional commitment, both in the total sample and in subgroups. However, the statistical effects are insignificant in most investigated cases. We are not surprised that workers who feel unfairly criticized by colleagues and supervisors have worse health than others. This results for the total sample as well as for all subgroups in Table 11.

Remarkable differences between small and large firms (1-9; $\geq$ 500 employees) should be highlighted for JC1, JC6, JC7, COL1 and COL3 - see Table 12. Among others, unpleasant working conditions in large firms have significant negative effects on workers' HEALTH. This is not confirmed for workers in small firms. We find the opposite result with respect to time pressure and multitasking. In small firms workers suffer under these job conditions with the consequence of worse health while in large firms no negative health effects are evident. Collegiality, measured by COL1, supports the workers' health status in large firms. In small and especially in middle-sized establishments we observe that health is negatively correlated with unfair criticism (COL3).

5 Summary and conclusions

Conventional health determinants are important and should be considered in empirical analyzes investigating their association with the individual's health. Our comprehensive study provides greater confidence in these established results. In addition, we also generate novel insights: Specific personality traits, as well as job characteristics, substantially supplement our knowledge on the individual health status. Our estimates correct the bias caused by the omission of relevant variables, so that the seemingly clear influence of unskilled workers, craftsmen and training variables is reduced. The impact of other variables, like age and fixed-term employment, does not change fundamentally. A priori, it was unclear which personal traits and job conditions are influential for physical health. We can now infer from our results that among the Big Five variables "openness" and "extraversion" are less important while the others have a strong impact. For mental health, all Big Five items are influential, while no statistical significance could be shown for the number of working days missed because of sickness except in cases of neuroticism and extraversion. In addition, not all recorded job characteristics are important. Thus, the variables used exert a differential impact on the three discussed health variables.

Whether the work of other colleagues depends directly on my work, and my own tasks depend on the work of other employees, seems irrelevant for the own health. Unpleasant environmental conditions at work and physically demanding activities have a negative influence. We find this also for time pressure and multitasking. No clear statement about commitment effects on health is possible with our estimates with exception on mental health. Those, who have a strong commitment to their firm, do usually not reveal mental problems, while those, who often perceived to be unfairly criticized by colleagues and supervisors, show typically a worse health status than others.

These major results are confirmed when alternative models are estimated and different econometric methods are applied, thus providing evidence in favor of robustness. Interaction effects between job characteristics on health are only detected in few cases. Instrumental variables estimates taking into account endogeneity of wages show that this is a relevant problem. However, the influence of personal attitudes and job characteristics on health is not affected. We refrain from a causal interpretation of our results.

Some peculiarities appear for subgroups. Young employees differ from prime age workers with respect to personality traits, working conditions and socio-economic health determinants. The importance of agreeableness for health is not the same in the manufacturing and service sector. Differences are observed in eastern and western Germany. Between these subgroups, we also find heterogeneities concerning time pressure or multiple tasking. Furthermore, this is also the case for small and large companies. Finally, we should mention that the negative correlation between physically demanding work and good health is larger and only significant in West but not in East Germany, in middle-sized and not in small and large firms.

Companies, their owners and managers are interested in their employee's health. They try to improve or safeguard health by offering sports courses, by improving job conditions and by taking into account the personality of their staff when planning labor inputs. So far, it is not always clear which conditions are most important and which attitudes can be neglected. Our investigations show that firms should avoid physically demanding work and unpleasant environmental conditions. Furthermore, time pressure and multitasking should be kept within a limit. Personality traits have a strong impact on individual health, especially on mental health, even if it is controlled for a large set of other variables. Thus, in future, the focus should be more on these aspects than in the past, particularly using alternative empirical sources. A more detailed breakdown into worker and company groups should follow. Analyzes taking account firm-level variables are recommended.

References

Abadie, A. and G. W. Imbens (2008). 'On the failure of the bootstrap for matching estimators'. Econometrica, 76: 1537-1557.

Anger, S., Camehl, G. and F. Peter (2017). 'Involuntary job loss and changes in personality traits'. Journal of Economic Psychology 60, 71-91.

Antonovsky, A. (1979). 'Health, Stress and Coping'. San Francisco: Jossey-Bass.

Bachelet, M., Becchetti, L. and F. Ricciardini (2015). 'Not feeling well ... (true or exaggerated?) health (un)satisfaction as a leading health indicator'. CEIS Tor Vergata, Research Paper Series, Vol. 13, Issue 2, No. 336

Bacolod, M., Cunha, J. M. and Y. C. Shen (2017). 'The impact of alcohol on mental health, physical fitness and job performance', NBER working paper 23542.

Baker, M., Stabile, M. and C. Deri (2004). 'What Do Self-Reported, Objective, Measures of Health Measure?' Journal of Human Resources 39, 1067-1093.

Bakker, A. B., van Veldhofen, M. and D. Xanthopoulou (2010). 'Beyond the Demand-Control Model: Thriving on High Job Demands and Resources.' Journal of Psychology 9(1), 3-16.

Barcellos, S. H., Carvalho, L. S. and P. Turley (2018). 'Distributional effects of education on health', USC Dornsife, CESR-Schaeffer DP 2018-002.

Beemsterboer, W., Steward, R., Goothoff, J. and F. Nijhuis (2009). 'A literature review on sick leave determinants (1984-2004)', International Journal of Occupational Medicine and Environmental Health, 22(2), 169-179.

Belloni, A., Chen, D., Chernozhukov, V. and C. Hansen. (2012). 'Sparse models and methods for optimal instruments with an application to eminent domain'.Econometrica 80(6), 2369-2429.

Belloni, A., Chernozhukov, V. and C. Hansen (2014). 'Inference on treatment effects after selection among high-dimensional controls', Review of Economic Studies 81, 608-650.

Berniell, I. and J. Bietenbeck (2017). 'The effect of working hours on health', IZA DP 10524.

Caroli, E. and L. Weber-Baghdiguian (2016). 'Self-Reported Health and Gender: The Role of Social Norms'. IZA DP No. 9670.

Case, A. and C. Paxson (2002). 'Parental behavior and child health'. Health Affairs 21, 164-178.

Cawley, J., D. de Walque and D. Daniel Grossman (2017). 'The effect of stress on later-life health: evidence from the Vietnam draft', NBER Working Paper 23334.

Chen, L.-S., Wang, P. and Y. Yao (2017). 'Smoking, health capital, and longevity: evaluation of personalized cessation treatments in a life-cycle model with heterogeneous agents'. NBER Working Paper No. 23820.

Cobb-Clark, D. and S. Schurer (2012). 'The stability of big five personality traits'. Economics Letters 115(1), 11-15.

Coenen, P., Huysmans, M. A., Holtermann, A., Krause, N., et al. (2018). 'Do highly physically active workers die early? - A systematic review with meta-analysis of data from 193 696 participants'. British Journal of Sports Medicine 52 (20), 1320-1326.

Cragg, J. G. and S. G. Donald (1993). 'Testing identifiability and specification in instrumental variable model'. Econometric Theory 9, 222-240.

Dahmann, S. C. and D. D. Schnitzlein (2017). 'The protective (?) effect of education on mental health', mimeo.

De Bruin, G. P. and N. Taylor (2006). 'The Job Demand-Control Model of Job Strain across Gender'. Journal of Industrial Psychology 32(1), 66-73.

De Jonge, J. and M. A. J. Kompier (1997). 'A Critical Examination of the Demand-Control-Support Model from a Work Psychological Perspective', International Journal of Stress Management 4(4), 235-258.

Demerouti, E., A. B. Bakker, F. Nachreiner and W. B. Schaufeli (2001). 'The job demands resources model of burnout', Journal of Applied Psychology 86 (3), 499.

Efron, B., Hastie, T., Johnstone, I. and R. Tibshirani (2004). 'Least angle regression', Annals of Statistics 32(2), 407-451.

Fernández-Val, I., Savchenko, Y. and F. Vella (2013). 'Evaluating the role of individual specific heterogeneity in the relationship between subjective health assessments and income'. IZA DP No. 7651.

Fila, M. J. (2016). 'The job demands, control, support model: Where are we now?' International Journal for Research in Management, 1(1), 15-44.

Fletcher, J. M., Sindelar, J. L. and S. Yamaguchi (2011). 'Cumulative Effects of Job Characteristics on Health'. Health Economics 20(5), 553-570.

Frankenberg, E. and D. Thomas (2017). 'Human capital and shocks: evidence on education, health and nutrition', NBER Working Paper 23347.

Giuntella, O. and F. Mazzonna (2016). 'If You Don't Snooze You Lose: Evidence on health and weight', IZA DP No. 9773.

Gonsalves and P. S. Martins (2018). 'The Effect of self-employment on health: evidence from longitudinal social security data', IZA DP 11305.

Hadi, A. S. (1992). 'Identifying multiple outliers in multivariate data', Journal of the Royal Statistical Society B 54, 761-771.

Häusser, J., Mojzisch, A., Niesel, M. and S. Schulz-Hardt (2010). 'Ten years on: A review of resent research on the Job Demand-Control (-Support) model and psychological well-being'. Work and Stress, 24(1), 1-35.

Hausman, J. A. (1978). 'Specification tests in econometrics', Econometrica 46, 1251-1271.

Hübler, O. (2017). 'Health and weight - gender-specific linkages under heterogeneity, interdependence and resilience factors', Economics and Human Biology 26, 96-111.

Johnson, J.V. and E.M. Hall (1988). 'Job strain, work place social support and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population'. American Journal of Public Health 78, 1336-1342.

John, O.P., E.M. Donahue and R.L. Kentle (1991). 'The Big Five Inventory' - versions 4a and 5. Berkeley CA: University of California, Berkeley, Institute of Personality and Social Research.

Jürges, H. (2008). 'Self-Assessed Health, Reference Levels and Mortality', Applied Economics 40, 569-582.

Kain, K. and S. Jex (2010). 'Karasek's (1979) Job demands-control model: A summary of current issues and recommendations for future research'. In P. L. Perrewe, & D. C. Ganster (Eds.), New developments in theoretical and conceptual approaches to job stress Bingley, UK: Emerald Group Publishing Limited, 237-268.

Kampa, M. and E. Castanas (2008). 'Human health effects of air pollution', Environmental Pollution 151, 362-367.

Karasek, R. A. (1979). 'Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign', Administrative Science Quarterly 24(2), 285-308.

Kelly, C. W. (2008). 'Commitment to health theory', Research and Theory for Nursing Practice 22(2), 148-60.

Lewbel, A. (2012). 'Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models', Journal of Business and Economic Statistics 30(1), 67-80.

Maslach, C., M. P. Leiter, and S. E. Jackson (2012). 'Making a significant difference with burnout interventions: Researcher and practitioner collaboration'. Journal of Organizational Behavior 33 (2), 296-300.

Maslach, C., W. B. Schaufeli and M. P. Leiter (2001). 'Job burnout', Annual Review of Psychology 52 (1), 397-422.

Maclean, J. C., Xu, H., French, M. T. and S. L. Ettner (2014). 'Personality disorders and body weight', Economics and Human Biology 12, 153-171.

Maestas, N., Mullen, K. J., Powell, D., von Wachter, T. and J. B. Wenger (2018). 'The Value of Working Conditions in the United States and Implications for the Structures of Wages', NBER Working Paper 25204.

Misra, S. and D. Stokols (2012). 'Psychological and Health Outcomes of Perceived Information Overload'. Environment and Behavior 44(6), 737-759.

Papageorge, N. W., Pauley, G. C., Cohen, M., Wilson, T. E. (2016). 'Health, human capital and domestic violence', NBER Working Paper 2288.

Pikos, A. K. (2017). 'The causal effect of multitasking on work-related mental health - the more you do, the worse you feel', Leibniz Universität Hannover, Discussion Paper 609.

Prümer, S. and C. Schnabel (2019). 'Questioning the Stereotype of the "Malingering Bureaucrat": Absence from Work in the Public and Private Sector in Germany', IZA Discussion Paper No. 12392.

Ramsey, J. B. (1969). 'Tests for specification error in classical linear least squares regression analysis', Journal of the Royal Statistical Society B31, 350-371.

Rantanen, J., Metsäpelto, R.-L., Feldt, T., Pulkkinen, L. and K. Kokko (2007). 'Long-term stability in the Big Five personality traits in adulthood'. Scandinavian Journal of Psychology 48, 511-518.

Reinecke, L., Aufenanger, S., Beutel, M. E., Dreier, M., Quiring, O., et al. (2017). 'Digital Stress over the Life Span: The Effects of Communication Load and Internet Multitasking on Perceived Stress and Psychological Health

Impairments in a German Probability Sample'. Media Psychology 20 (1), 90-115.

Rydstedt, L., Devereux, J. and M. Sverke (2007). 'Comparing and combining the demand-control-support model and the effort reward imbalance model to predict long-term mental strain'. European Journal of Work and Organizational Psychology 16 (3), 261-278.

Savelyev, P. and K. T. K. Tan (2017). 'Socioemotional skills, education, and health-related outcomes of high-ability individuals', IZA DP No. 11213.

Seltenrich, N. (2015). 'Between Extremes: Health Effects of Heat and Cold'. Environmental Health Perspectives 123(11), A275-A279 (doi: [10.1289/ehp.123-A275] PMCID: PMC4629728).

Stansfield, S. and R. Crombie (2011). 'Cardiovascular effects of environmental noise: Research in the United Kingdom'. Noise & Health 13: 229-233.

Stock, J. H. and M. Yogo (2005). 'Testing for weak instruments in linear IV regression'. In: Identification and inference for econometric models: Essays in honor of Thomas Rothenberg', ed. by D. W. K. Andrews and J. H. Stock, Cambridge: Cambridge University Press, 80-108.

Tibshirani, R. (1996). 'Regression Shrinkage and Selection via the Lasso', Journal of the Royal Statistical Society. B 58(1), 267-288.

Wehner, C., Schils, T. and L. Borghans (2016). 'Personality and mental health: The role and substitution effect of emotional stability and conscientiousness', IZA DP 10337.

Westgaard, R. H. and J. Winkel (1997). 'Review article ergonomic intervention research for improved musculoskeletal health: A critical review', International Journal of Industrial Ergonomics 20, 463-500.

Tables

Table 1: Definition and measurement of variables

VAR.	DEFINITION	MEASUREMENT
JC1	I can decide independently in many situations	1-yes, completely, 5-not at all
JC2	I have to do many different activities	1-yes, completely, 5-not at all
JC3	The work of other colleagues depends directly on whether my work is good or bad	1-yes, completely, 5-not at all
JC4	My tasks depend on the work of other employees	1-yes, completely, 5-not at all
JC5	My work is physically demanding	1-yes, completely, 5-not at all
JC6	Unpleasant environmental conditions are typical for my job	1-yes, completely, 5-not at all
JC7	I have often deadline pressure or I have to execute multiple tasks simultaneously	1-yes, completely, 5-not at all
COM1	I want to work the rest of my professional life in the current firm	1-yes, completely, 5-not at all
COM2	This firm has a great importance for me	1-yes, completely, 5-not at all
COM3	I consider the problems of the firm as my own problems	1-yes, completely, 5-not at all
COM4	I do not feel a strong affiliation to my firm	1-yes, completely, 5-not at all
COM5	I do not feel an emotional commitment to the firm	1-yes, completely, 5-not at all
COM6	I do not feel as a part of the family in this firm	1-yes, completely, 5-not at all
COL1	How often do you get help if needed from your colleagues?	1-ever, 5-never
COL2	How often colleagues offer you their support?	1-ever, 5-never
COL3	How often do you feel that you are unfairly criticized by colleagues and supervisors?	1-ever, 5-never

Source: LPP, wave 1-3.

Table 2: Descriptive statistics of Big Five, job characteristics, commitment and collegiality

VARIABLES	OBS.	MEAN	STD. DEV.	MIN	MAX
OPENNESS	13,843	7.495268	2.207232	3	15
EXTRAVERSION	13,930	6.89318	2.19802	3	15
CONSCIENTIOUSNESS	13,963	4.87603	1.455111	3	14
AGREEABLENESS	13,948	5.792658	1.742068	3	15
NEUROTICISM	13,959	9.854574	2.338382	3	15
JC1	21,038	2.023719	1.015663	1	5
JC2	21,032	1.782522	.9435409	1	5
JC3	21,001	2.234846	1.249414	1	5
JC4	21,013	2.666587	1.305659	1	5
JC5	21,028	3.668252	1.463945	1	5
JC6	21,036	3.240065	1.548943	1	5
JC7	21,030	2.422587	1.228427	1	5
COM1	20,913	2.168412	1.005647	1	5
COM2	20,921	2.413173	1.191841	1	5
COM3	20,976	2.183257	1.001252	1	5
COM4	20,962	2.416659	1.033684	1	5
COM5	20,997	2.239939	.9788969	1	5
COM6	20,862	2.206979	1.070459	1	5
COL1	20,972	1.701459	.8675544	1	5
COL2	20,958	1.768871	.7742951	1	5
COL3	20,935	4.353905	.8398262	1	5

Source: LPP, wave 1-3.

Table 3: HEALTH (=1 if very good, ..., =5 if bad) under specific characteristics

MEAN	STD. DEV.	MIN	MAX	CONDITION
2.335859	1.056529	1	5	openness<=4
2.214646	1.008247	1	5	extraversion<=4
2.327557	1.004218	1	5	conscientiousness<=4
2.278674	1.012811	1	5	agreeableness<=4
3.042453	1.07672	1	5	neuroticism<=4
2.265117	.9536229	1	5	JC1=1
2.32511	.9642273	1	5	JC2=1
2.37218	.9827525	1	5	JC3=1
2.423584	.9974522	1	5	JC4=1
2.676296	1.061482	1	5	JC5=1
2.60413	1.030541	1	5	JC6=1
2.450318	1.011794	1	5	JC7=1
2.299094	.977677	1	5	COM1=1
2.307451	.9772783	1	5	COM2=1
2.254858	.9666795	1	5	COM3=1
2.266433	.9771711	1	5	COM4=1
2.236328	.9609821	1	5	COM5=1
2.369207	1.001187	1	5	COM6=1
2.245941	.9359026	1	5	COL1=1
2.305734	.9656402	1	5	COL2=1
3.015385	1.304946	1	5	COL3=1

Source: LPP, wave 1-3.

Table 4: Ordered probit and regression estimates of HEALTH with respect to personal and job characteristics

	BASIC	PERS	JOB	COMB	LARS	RLASSO
PERMANENT CONTRACT	0.192***			0.159***	0.140**	
	(0.04)			(0.05)	(0.05)	
UNSKILLED	0.351***			0.121**	0.103**	0.064*
	(0.03)			(0.04)	(0.04)	(0.03)
CRAFTSMAN	0.208***			0.046	0.025	
	(0.03)			(0.03)	(0.03)	
FOREMAN	0.114*				-0.074	
	(0.05)				(0.06)	
MASTER	0.031				-0.056	
	(0.08)				(0.10)	
PART TIME	0.095**			0.020		
	(0.03)			(0.04)		
WORKING HOURS	0.003**			0.003	0.002	
	(0.00)			(0.00)	(0.00)	
TRAINING	-0.146***			-0.054*	-0.057*	-0.050**
	(0.02)			(0.02)	(0.02)	(0.02)
Log(WAGE)	-0.161***			-0.132***	-0.159***	-0.088***
	(0.02)			(0.03)	(0.03)	(0.02)
AGE		0.025***		0.027***	0.027***	0.020***
		(0.00)		(0.00)	(0.00)	(0.00)
MALE		-0.016			0.024	
		(0.02)			(0.03)	
SCHOOLING		-0.074***		-0.041***	-0.043***	-0.019***
		(0.01)		(0.01)	(0.01)	(0.01)
GERMAN		-0.014				
		(0.05)				
OPENNESS		0.009			0.006	
		(0.02)			(0.01)	
EXTRAVERSION		0.009*				
		(0.00)				
CONSCIENTIOUSNESS		0.023**		0.038***	0.036***	
		(0.01)		(0.01)	(0.01)	
AGREEABLENESS		0.027***		0.017*	0.018**	
		(0.01)		(0.01)	(0.01)	
NEUROTICISM		-0.114***		-0.099***	-0.100***	-0.079***
		(0.01)		(0.01)	(0.01)	(0.00)

Table 4: continuation

HOME WORKING			-0.019		0.085**	
			(0.02)		(0.03)	
JC1			0.080***	0.054***	0.055***	0.049***
			(0.01)	(0.01)	(0.01)	(0.01)
JC2			0.027**	0.008	0.010	
			(0.01)	(0.01)	(0.01)	
JC3			0.013		0.009	
			(0.01)		(0.01)	
JC4			0.002		0.008	
			(0.01)		(0.01)	
JC5			-0.066***	-0.030**	-0.032***	-0.025**
			(0.01)	(0.01)	(0.01)	(0.01)
JC6			-0.052***	-0.041***	-0.045***	-0.041***
			(0.01)	(0.01)	(0.01)	(0.01)
JC7			-0.040***	-0.037***	-0.039***	
			(0.01)	(0.01)	(0.01)	
COM1			-0.049***	0.020		
			(0.01)	(0.01)		
COM2			0.000		0.009	
			(0.01)		(0.01)	
COM3			-0.031***	0.023*	0.026**	
			(0.01)	(0.01)	(0.01)	
COM4			-0.043***	-0.011	-0.015	
			(0.01)	(0.01)	(0.01)	
COM5			0.015		0.006	-0.021**
			(0.01)		(0.01)	(0.01)
COM6			-0.054***	-0.019	-0.020	
			(0.01)	(0.01)	(0.01)	
COL1			0.099***	0.048***	0.063***	0.051***
			(0.01)	(0.01)	(0.02)	(0.01)
COL2			0.001		-0.039*	
			(0.02)		(0.02)	
COL3			-0.122***	-0.075***	-0.079***	-0.077***
			(0.01)	(0.01)	(0.01)	(0.01)
N	16,972	13,694	20,470	10,773	10,665	9,471
(Pseudo-)R^2	(0.0141)	(0.0546)	(0.0289)	(0.0735)	(0.0741)	0.1632

Notes: Source LPP, wave 1-3, *** $\alpha<=0.001$; ** $\alpha<=0.01$; $\alpha<=0.05$. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number in columns (1)-(5) or the establishment identification number in column (6); robust lasso offers a rigorous, theory-driven approach to penalization and allows for non-normal, heteroskedastic and clustered disturbances - see Belloni et al. (2012). Feasible algorithms are used to estimate the optimal penalty level.

Table 5: Ordered probit and regression estimates of MENTAL HEALTH with respect to personal and job characteristics

	BASIC	PERS	JOB	COMB
PERMANENT CONTRACT	0.032			
	(0.04)			
UNSKILLED	0.028			
	(0.03)			
CRAFTSMAN	-0.010			
	(0.02)			
FOREMAN	-0.150**			-0.008
	(0.05)			(0.05)
MASTER	-0.213**			-0.172*
	(0.07)			
PART TIME	0.022			
	(0.03)			
WORKING HOURS	0.001			
	(0.00)			
TRAINING	-0.108***			-0.075***
	(0.02)			(0.02)
Log(WAGE)	-0.131***			-0.019
	(0.02)			(0.02)
AGE		-0.005***		-0.002
		(0.00)		(0.00)
MALE		-0.120***		-0.105***
		(0.02)		(0.02)
SCHOOLING		0.021***		0.036***
		(0.01)		(0.01)
GERMAN		0.007		
		(0.04)		
OPENNESS		0.052***		0.053***
		(0.00)		(0.01)
EXTRAVERSION		0.039***		0.032***
		(0.00)		(0.00)
CONSCIENTIOUSNESS		0.046***		0.047
		(0.01)		(0.01)
AGREEABLENESS		0.040***		0.023***
		(0.01)		(0.01)
NEUROTICISM		-0.121***		-0.107***
		(0.00)		(0.00)

Table 5: continuation

HOME WORKING			0.023	
			(0.02)	
JC1			0.097***	0.053***
			(0.01)	(0.01)
JC2			0.051***	0.018
			(0.01)	(0.01)
JC3			0.011	
			(0.01)	
JC4			-0.012	
			(0.01)	
JC5			0.017*	
			(0.01)	
JC6			-0.038***	-0.040***
			(0.01)	(0.01)
JC7			-0.073***	-0.059***
			(0.01)	(0.01)
COM1			0.076***	0.056***
			(0.01)	(0.01)
COM2			0.079***	0.079***
			(0.01)	(0.01)
COM3			0.027***	0.032***
			(0.01)	(0.01)
COM4			0.006	
			(0.01)	
COM5			0.002	
			(0.01)	
COM6			-0.026**	0.004
			(0.01)	(0.01)
COL1			0.070***	0.060***
			(0.01)	(0.01)
COL2			0.061***	0.017
			(0.01)	(0.01)
COL3			-0.127***	-0.076***
			(0.01)	(0.01)
N	16,876	13,597	11,223	11,252
(Pseudo-)R^2	0.0018	0.040	0.0240	0.0361

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number.

Table 6: OLS estimates of working days missed in the last year due to illness

	BASIC	PERSONAL	JOB	COMBINED
PERMANENT CONTRACT	3.230***			2.561**
	(0.81)			(0.88)
UNSKILLED	5.736***			2.357**
	(0.85)			(0.94)
CRAFTSMAN	3.810***			0.819
	(0.57)			(0.65)
FOREMAN	1.870*			
	(0.93)			
MASTER	2.948			
	(1.89)			
PART TIME	-1.141			
	(0.75)			
WORKING HOURS	0.032			
	(0.02)			
TRAINING	-2.628***			-1.824***
	(0.34)			(0.39)
Log(WAGE)	-4.908***			-2.659***
	(0.47)			(0.61)
AGE		0.117***		0.134***
		(0.02)		(0.02)
MALE		-2.112***		-0.442
		(0.51)		(0.59)
SCHOOLING		-1.794***		-0.742***
		(0.12)		(0.14)
GERMAN		-1.609		
		(1.20)		
OPENNESS		-0.173		
		(0.12)		
EXTRAVERSION		-0.417***		-0.602***
		(0.11)		(0.10)
CONSCIENTIOUSNESS		0.162		
		(0.17)		
AGREEABLENESS		-0.278*		
		(0.14)		
NEUROTICISM		-0.974***		-0.610***
		(0.10)		(0.10)

Table 6: continuation

HOME WORKING			-2.120***	0.217
			(0.36)	(0.49)
JC1			0.797***	0.950***
			(0.23)	(0.28)
JC2			-0.129	
			(0.22)	
JC3			-0.017	
			(0.16)	
JC4			-0.089	
			(0.16)	
JC5			-1.460***	-0.636**
			(0.17)	(0.20)
JC6			-1.177***	-0.779***
			(0.15)	(0.17)
JC7			0.227	
			(0.18)	
COM1			-0.199	
			(0.22)	
COM2			-0.144	
			(0.25)	
COM3			0.242	
			(0.18)	
COM4			-0.159	
			(0.24)	
COM5			-0.342	
			(0.24)	
COM6			-0.628**	-0.681**
			(0.23)	(0.21)
COL1			0.147	
			(0.26)	
COL2			-0.276	
			(0.28)	
COL3			-1.161***	-0.910***
			(0.26)	(0.30)
_cons	46.822***	42.852***	29.827***	52.269***
	(3.82)	(2.43)	(1.99)	(4.91)
N	16,833	13,491	20,212	11,327
R^2	0.0326	0.0312	0.0373	0.0581

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number.

Table 7: Ordered probit estimates of HEALTH with respect to personal and job characteristics and with interaction variables - simple and triple difference-in-differences

	IA2_1	IA2_2	IA2_3	IA3_1	IA3_2	IA3_3
JC1_D	-0.226***					
	(0.03)					
JC7_D	0.186***					
	(0.04)					
JC1*JC7_D	-0.116**					
	(0.04)					
COL1_D		-0.336***				
		(0.03)				
NEURO_D		0.435***				
		(0.03)				
COL1*NEURO_D		0.185*				
		(0.08)				
COL3_D			0.443***			
			(0.07)			
EXTRA_D			-0.203***			
			(0.02)			
COL3*EXTRA_D			0.184*			
			(0.10)			
JC7_D				0.055**		
				(0.02)		
COM6_D				0.223***		
				(0.04)		
COL3_D				0.340		
				(0.14)		
JC7*COM6_D				0.036		
				(0.05)		
JC7*COL3_D				0.241		
				(0.15)		
COM6*COL3_D				0.289		
				(0.20))		
JC7*COM6*COL3_D				-0.465*		
				(0.22)		

Table 7: continuation

JC5_D					0.338***	
					(0.02)	
COM6_D					0.220***	
					(0.03)	
NEURO_D					0.598***	
					(0.04)	
JC5*COM6_D					-0.027	
					(0.08)	
JC5*NEURO_D					-0.113	
					(0.08)	
COM6*NEURO_D					0.189	
					(0.10)	
JC5*COM6*NEURO_D					-0.275	
					(0.16)	
JC2_D						-0.127***
						(0.03)
COL3_D						0.542**
						(0.17)
EXTRA_D						-0.215***
						(0.05)
JC2*COL3_D						-0.118
						(0.19)
JC2*EXTRA_D						0.022
						(0.06)
COL3*EXTRA_D						-0.219
						(0.26)
JC2*COL3*EXTRA_D						0.474
						(0.29)
N	20,012	13,901	13,848	20,797	13,852	13,837
Pseudo-R^2	0.0051	0.0135	0.0068	0.0071	0.0195	0.0074

Table 8: OLS and Lewbel's instrumental variables estimates

Endogenous regressor	OLS	LEWBEL (gen IV) log(WAGE)	LEWBEL (gen+ext IV) log(WAGE)	LEWBEL (gen+ext IV) JC5	LEWBEL (gen+ext IV) COL3
PERM. CONTRACT	0.125***	0.127***	0.108**	0.124***	0.125***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
UNSKILLED	0.105***	0.102**	0.125***	0.139***	0.106***
	(0.03)	(0.03)	(0.03)	(0.103)	(0.03)
CRAFTSMAN	0.042	0.041	0.049*	0.061*	0.042
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
PART TIME	0.018	0.012	0.071	0.016	0.018
	(0.03)	(0.06)	(0.04)	(0.03)	(0.03)
WORKING HOURS	0.002*	0.002*	0.002	0.002*	0.002*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
TRAINING	-0.044*	-0.045*	-0.052**	-0.44*	-0.044*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Log(WAGE)	-0.108***	-0.119	-0.012	-0.124***	-0.108***
	(0.02)	(0.09)	(0.05)	(0.02)	(0.02)
AGE	0.021***	0.021***	0.021***	0.021***	0.021***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SCHOOLING	-0.032***	-0.032***	-0.036***	-0.134***	-0.032***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
CONSCIENTIOUNESS	0.027***	0.027***	0.025***	0.026***	0.027***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
AGREEABLENESS	0.011*	0.011*	0.009	0.011*	0.011*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
NEUROTICISM	-0.078***	-0.078***	-0.079***	-0.078***	-0.077
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 8: continuation

JC1	0.045***	0.045***	0.047***	0.046***	0.044
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
JC2	0.004	0.004	0.005	0.003	0.004
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
JC5	-0.024**	-0.023*	-0.030***	-0.005	-0.023**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
JC6	-0.031***	-0.031***	-0.032***	-0.040***	-0.030***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
JC7	-0.030***	-0.030***	-0.026***	-0.030***	-0.029***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COM1	0.019*	0.018*	0.023**	0.019*	0.018*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COM3	0.018*	0.018*	0.019**	0.017*	0.019*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COM4	-0.009	-0.009	-0.010	-0.010	-0.009
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COM6	-0.016	-0.016	-0.017*	-0.016	-0.015
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COL1	0.038***	0.038***	0.039***	0.039***	0.036***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
COL3	-0.061***	-0.061***	-0.061***	-0.062***	-0.075***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
_cons	3.286***	3.362***	2.658***	3.372***	3.342***
	(0.20)	(0.58)	(0.34)	(0.19)	(0.20)
N	10,764	10,764	10,764	10,764	10,763
R^2 (centered)	0.174	(0.174)	(0.172)	(0.173)	(0.173)
Breusch-Pagan HET $\chi^2(1)$	96.21***				
Ramsey's RESET F(3;10739)	1.22				
VIF(log(wages))	1.88 (max.)				
VIF(not fixed-term)	1.04 (min.)				
VIF (multicollinearity)	1.36 (mean)				
Hausman (exogeneity)		12.63***	11.13***	3.78*	0.56
Cragg-Donald (weak IV)		31.91***	134.24***	66.62***	135.46***
Stock-Yogo (crit. value at 5%)		21.38	21.38	21.38	21.38

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; * α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number. JC6_D=1 if (JC6==1| JC6==2) and JC6_D=0 otherwise. All other regressors with _D are also dummies and determined analogously as JC6_D.

Table 9: Random effects ordered probit estimates of HEALTH

PERMANENT CONTRACT	0.206***	0.199***
	(0.06)	(0.06)
UNSKILLED	0.346***	0.185***
	(0.05)	(0.05)
CRAFTSMAN	0.232***	0.099**
	(0.04)	(0.04)
PART TIME	-0.033	0.010
	(0.05)	(0.05)
WORKING HOURS	0.004**	0.002
	(0.00)	(0.00)
TRAINING	-0.150***	-0.109***
	(0.03)	(0.03)
Log(WAGE)	-0.409***	-0.294***
	(0.04)	(0.04)
AGE	0.038***	0.038***
	(0.00)	(0.00)
HOME WORKING		0.063
		(0.04)
JC1		0.105***
		(0.01)
JC5		-0.062***
		(0.01)
JC6		-0.064***
		(0.01)
JC7		-0.062***
		(0.01)
COM5		0.097***
		(0.01)
COM6		-0.000
		(0.01)
COL1		0.091***
		(0.02)
COL3		-0.159***
		(0.02)
N	16,737	16,737
LR	1,684.27***	1,484.37***

Notes: Source LPP, wave 1-3, *** $\alpha<=0.001$; ** $\alpha<=0.01$; * $\alpha<=0.05$. In parentheses are cluster robust standard errors. The cluster variable is the personal identification number.

Table 10: Ordered probit estimates of HEALTH for age groups

	ALL	AGE>=25	>=25;<=55	<25
PERMANENT CONTRACT	0.159***	0.176***	0.190***	0.044
	(0.05)	(0.05)	(0.06)	(0.15)
UNSKILLED	0.121**	0.127***	0.124**	0.209
	(0.04)	(0.04)	(0.04)	(0.22)
CRAFTSMAN	0.053	0.059	0.041	-0.016
	(0.03)	(0.03)	(0.03)	(0.12)
PART TIME	0.020	0.008	-0.012	0.526*
	(0.04)	(0.04)	(0.05)	(0.27)
WORKING HOURS	0.003	0.003	0.003	0.001
	(0.00)	(0.00)	(0.00)	(0.01)
TRAINING	-0.054*	-0.055*	-0.047*	0.008
	(0.02)	(0.02)	(0.03)	(0.10)
Log(WAGE)	-0.132***	-0.135***	-0.148***	-0.167
	(0.03)	(0.03)	(0.03)	(0.15)
AGE	0.027***	0.027***	0.028***	-0.014
	(0.00)	(0.00)	(0.00)	(0.03)
SCHOOLING	-0.041***	-0.043***	-0.042***	0.003
	(0.01)	(0.01)	(0.01)	(0.04)
CONSCIENTIOUSNESS	0.038***	0.041***	0.041***	-0.007
	(0.01)	(0.01)	(0.01)	(0.04)
AGREEABLENESS	0.017*	0.017*	0.019*	0.017
	(0.01)	(0.01)	(0.01)	(0.03)
NEUROTICISM	-0.099***	-0.100***	-0.103***	-0.077***
	(0.01)	(0.01)	(0.01)	(0.02)

Table 10: continuation

JC1	0.054***	0.047***	0.048***	0.167**
	(0.01)	(0.02)	(0.02)	(0.06)
JC2	0.008	0.008	0.014	0.013
	(0.01)	(0.01)	(0.01)	(0.06)
JC5	-0.030**	-0.025*	-0.019	-0.137**
	(0.01)	(0.01)	(0.01)	(0.04)
JC6	-0.041***	-0.042***	-0.043***	-0.004
	(0.01)	(0.01)	(0.01)	(0.04)
JC7	-0.037***	-0.032**	-0.036**	-0.017
	(0.01)	(0.01)	(0.01)	(0.04)
COM1	0.020	0.021	0.019	0.017
	(0.01)	(0.01)	(0.01)	(0.05)
COM3	0.023*	0.027**	0.023*	-0.072
	(0.01)	(0.01)	(0.01)	(0.04)
COM4	-0.011	-0.008	-0.009	-0.048
	(0.01)	(0.01)	(0.01)	(0.05)
COM6	-0.019	-0.021	-0.026*	0.059
	(0.01)	(0.01)	(0.01)	(0.05)
COL1	0.048***	0.048***	0.056***	0.040
	(0.01)	(0.01)	(0.02)	(0.07)
COL3	-0.075***	-0.077***	-0.072***	-0.072
	(0.01)	(0.01)	(0.02)	(0.07)
N	10,773	10,245	8,559	528
Pseudo R^2	0.0735	0.0709	0.0689	0.0607

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; * α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number.

Table 11: Ordered probit estimates of HEALTH for sectors and regions

	MANUFACT.	SERVICE	EAST	WEST
PERMANENT CONTRACT	0.152	0.160*	0.097	0.207***
	(0.09)	(0.08)	(0.08)	(0.06)
UNSKILLED	0.176*	0.127*	0.125*	0.121*
	(0.07)	(0.06)	(0.06)	(0.05)
CRAFTSMAN	0.022	0.068	-0.010	0.091*
	(0.06)	(0.05)	(0.05)	(0.04)
PART TIME	-0.016	0.186**	-0.064	0.071
	(0.08)	(0.07)	(0.07)	(0.06)
WORKING HOURS	0.001	0.005**	0.002	0.003
	(0.00)	(0.00)	(0.00)	(0.00)
TRAINING	-0.056	-0.052	-0.042	-0.062*
	(0.04)	(0.04)	(0.04)	(0.03)
Log(WAGE)	-0.159**	-0.084	-0.144**	-0.127***
	(0.06)	(0.05)	(0.05)	(0.04)
AGE	0.031***	0.026***	0.029***	0.026***
	(0.00)	(0.00)	(0.00)	(0.00)
SCHOOLING	-0.023	-0.057***	-0.032**	-0.047***
	(0.01)	(0.01)	(0.01)	(0.01)
CONSCIENTIOUSNESS	0.059***	0.042***	0.047***	0.034***
	(0.02)	(0.01)	(0.01)	(0.01)
AGREEABLENESS	0.007	0.023*	0.011	0.020*
	(0.01)	(0.01)	(0.01)	(0.01)
NEUROTICISM	-0.110***	-0.086***	-0.097***	-0.100***
	(0.01)	(0.01)	(0.01)	(0.01)

Table 11: continuation

JC1	0.007	0.099***	0.040*	0.063***
	(0.02)	(0.02)	(0.02)	(0.02)
JC2	0.004	0.004	-0.014	0.020
	(0.02)	(0.02)	(0.02)	(0.02)
JC5	-0.039*	-0.033*	-0.021	-0.033**
	(0.01)	(0.02)	(0.02)	(0.01)
JC6	-0.034*	-0.055***	-0.056***	-0.032**
	(0.02)	(0.01)	(0.01)	(0.01)
JC7	-0.014	-0.044**	-0.027	-0.043***
	(0.02)	(0.02)	(0.02)	(0.01)
COM1	0.049*	0.003	0.025	0.018
	(0.02)	(0.02)	(0.02)	(0.01)
COM3	0.042*	0.025	0.038**	0.015
	(0.02)	(0.01)	(0.01)	(0.01)
COM4	-0.031	0.004	0.006	-0.020
	(0.02)	(0.02)	(0.02)	(0.01)
COM6	-0.008	-0.012	-0.043*	-0.005
	(0.02)	(0.02)	(0.02)	(0.01)
COL1	0.043	0.027	0.026	0.0260***
	(0.03)	(0.02)	(0.02)	(0.02)
COL3	-0.094**	-0.067**	-0.081***	-0.072***
	(0.03)	(0.02)	(0.02)	(0.02)
N	2,779	4,382	4,175	6,598
Pseudo R^2	0.0815	0.0725	0.0730	0.0751

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; * α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number.

Table 12: Ordered probit estimates of HEALTH for establishments with different number of employees

	1 - 9	10-49	50-499	>=500
PERMANENT CONTRACT	0.139	0.250**	0.070	0.196
	(0.08)	(0.09)	(0.10)	(0.13)
UNSKILLED	0.211**	0.043	0.128	0.133
	(0.07)	(0.06)	(0.08)	(0.11)
CRAFTSMAN	0.104*	-0.008	0.095	-0.017
	(0.05)	(0.05)	(0.06)	(0.09)
PART TIME	-0.050	0.071	0.173*	-0.305*
	(0.07)	(0.07)	(0.09)	(0.14)
WORKING HOURS	0.004	0.000	0.005	-0.001
	(0.00)	(0.00)	(0.00)	(0.00)
TRAINING	-0.035	-0.078*	-0.065	-0.008
	(0.04)	(0.04)	(0.05)	(0.07)
Log(WAGE)	-0.127*	-0.116*	-0.148*	-0.216*
	(0.05)	(0.05)	(0.06)	(0.09)
AGE	0.025***	0.031***	0.027***	0.029***
	(0.00)	(0.00)	(0.00)	(0.00)
SCHOOLING	-0.041***	-0.045***	-0.040**	-0.034
	(0.01)	(0.01)	(0.01)	(0.02)
CONSCIENTIOUSNESS	0.035**	0.046***	0.043**	0.017
	(0.01)	(0.01)	(0.02)	(0.02)
AGREEABLENESS	0.023*	0.017	-0.001	0.038
	(0.01)	(0.01)	(0.01)	(0.02)
NEUROTICISM	-0.100***	-0.098***	-0.089***	-0.121***
	(0.01)	(0.01)	(0.01)	(0.02)

Table 12: continuation

JC1	0.057**	0.087***	0.035	-0.050
	(0.02)	(0.02)	(0.03)	(0.04)
JC2	0.005	-0.006	0.018	0.051
	(0.02)	(0.02)	(0.03)	(0.04)
JC5	-0.019	-0.063***	-0.000	-0.015
	(0.02)	(0.02)	(0.02)	(0.03)
JC6	-0.035*	-0.018	-0.069***	-0.073**
	(0.02)	(0.01)	(0.02)	(0.02)
JC7	-0.043*	-0.054**	-0.027	0.004
	(0.02)	(0.02)	(0.02)	(0.03)
COM1	0.029	0.033	0.006	-0.010
	(0.02)	(0.02)	(0.02)	(0.04)
COM3	0.019	0.038*	0.024	-0.013
	(0.02)	(0.02)	(0.02)	(0.03)
COM4	-0.016	0.008	-0.023	-0.038
	(0.02)	(0.02)	(0.02)	(0.03)
COM6	0.005	-0.025	-0.032	-0.045
	(0.02)	(0.02)	(0.02)	(0.03)
COl1	0.043	0.049*	0.045	0.091*
	(0.02)	(0.02)	(0.03)	(0.04)
COL3	-0.065**	-0.052*	-0.128***	-0.082
	(0.02)	(0.03)	(0.03)	(0.04)
N	3,592	3,546	2,393	1,242
Pseudo R^2	0.0940	0.0794	0.0760	0.0894

Notes: Source LPP, wave 1-3, *** α<=0.001; ** α<=0.01; * α<=0.05. In parentheses are cluster robust standard errors, where the cluster variable is the personal identification number.