

## Personality, work, and satisfaction: evidence from the German Socio-Economic Panel

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Previous studies in positive psychology have indicated that work satisfaction is an important determinant of individual well-being. Research has suggested that people are most satisfied with their work when they are doing what they are drawn to naturally. We provide further evidence on this issue from a large representative data set, the German Socio-Economic Panel (SOEP). The 2005 wave of the SOEP contains a battery of personality questions as well as detailed information on personal life and work life. We extract the Big Five personality factors and one character strength: vitality. The main results are based on regression analysis. The analysis supports the hypothesis that certain personality clusters are more predominant in some occupations than in others. Furthermore, an alignment between personal profile and occupational profile tends to be related positively to satisfaction. These results indicate that ignoring mental aspects of work has its price in terms of well-being. They also highlight the importance of studying the way we structure work and harness personality and individual strengths within positive psychology.

**Keywords:** positive psychology; satisfaction; occupation; matching; German Socio-Economic Panel

To find out what one is fitted to do and to secure an opportunity to do it is the key to happiness.

*John Dewey*

The fixed person for the fixed duties who in older societies was such a godsend, in the future will be a public danger.

*Alfred North Whitehead*

### Introduction

Positive psychology studies the preconditions and promoters of mental well-being and happiness (Seligman, 2002). This fledgling field is based on two main premises. First, it builds on Aristotle's insight of the essentiality of 'arete' for 'eudaimonia,' that is, the impossibility of being happy without virtue. Hence, there is a focus on character strengths and their effect on well being. As part of the project, measurement instruments for character strength have been developed and validated in numerous studies (Peterson & Seligman, 2004). There is plenty of evidence that character strengths have predicting power for well-being and its various components, including life satisfaction (Peterson, 2006a; Peterson, 2006b).

Second, an important contribution of positive psychology is its elaboration of the Aristotelian view that being 'happy' is a matter of *exercising* one's virtues and realizing one's strengths rather than merely possessing them (as is the case with, for instance, being 'intelligent'). Accordingly, a central concern of the

research program is to identify interventions that activate character strengths and thereby well-being (Huppert, 2004; Seligman, Steen, Park, & Peterson, 2005). Again, evidence on the effectiveness of certain interventions, such as writing journals and gratitude letters, is beginning to accumulate (Emmons & McCullough, 2003; Seligman et al., 2005).<sup>1</sup>

These developments are predated by a related substantial body of research on the relationship between personality and well-being. Typically, personality is measured by the Big Five factors of openness, conscientiousness, extraversion, agreeableness, and emotional stability (i.e., the positive pole of neuroticism). Based on that literature, personality is regarded as one of the strongest predictors of subjective well-being (for a recent review, see Diener & Lucas, 1999). Indeed, according to set point theory, there is little else that matters for life satisfaction, as it can only temporarily deviate from its largely genetically determined baseline. However, this view is increasingly

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challenged (e.g., Diener, Lucas, & Scollon, 2006; Headey, 2008; Huppert, 2005; Lucas, Clark, Georgellis, & Diener, 2003), not least because interventions have been shown to have lasting effects in the aforementioned literature.

Nevertheless, a potential conflict between the passive personality oriented view of well-being (where interventions might be impossible to the extent that personality is truly a stable trait) and the active character strength view remains. In depth research on the relationship between personality and character strength has been hampered so far by limited data availability, although Peterson and Seligman (2004, pp. 68–69) report sensible theoretical relationships between their inventory of character strengths and Big Five measures of personality. The present paper takes an alternative route to contribute to the well-being intervention literature and to positive psychology. The basic hypothesis is that even if personality was a fixed trait, personality based interventions may improve well-being under some circumstances, if the effect of personality on well-being depends on the environment. While it would be analytically convenient to treat the effects of personality, character, and environment on happiness as additive and separable, it is more likely that this is not the case, and that personality and environment reinforce each other in their relationship to well-being. Therefore, the issue of optimal ‘match’ between personality and environment arises. The environment considered in this study is a worker’s occupation. Potential interventions consist then of measures (such as providing information, counseling, but also more broadly the design of labor market institutions) that improve the chance of a worker to be well, rather than poorly, matched to an occupation.

Our hypothesis is related to an older literature on personality-environment fit (Kristof-Brown, Zimmerman, & Johnson, 2005), and specifically to a large literature on personality, work environment, and performance (Barrick & Mount, 1991; Salgado, 1997; Tett, Jackson, & Rothstein, 1991). There is a general agreement that among the five factors, conscientiousness is the most predictive factor of job performance, followed by emotional stability (Hurtz & Donovan, 2000). Job performance has been measured in direct and indirect ways, among them absenteeism (Judge, Martocchio, & Thoresen, 1997), deviant behavior (Colbert, Mount, Harter, Witt, & Barrick, 2004), occupational safety (Clarke & Robertson, 2005), and, sometimes, job satisfaction (Judge, Heller, & Mount, 2002). Evidence on the influence of the relationship between personality characteristics and specific work environments on performance is found in Hurtz and Donovan (2000). In addition, there appears to be a significant interaction between personality and work environment regarding the attraction, selection, and retention of workers. Behling (1998) and Robertson

and Smith (2001) study this process from the point of view of personnel managers, whereas Costa and McCrae (1992) and Holland (1985) assert that people select into vocations that match their personalities. Often, single occupations are studied (such as sales representatives, or managers; e.g., Barrick, Stewart, & Piotrowski, 2002) and the relevant environment variables are factors such as organizational structure, management style, team orientation, or the importance of social or leadership skills.

In contrast to that, this paper takes a broad occupation-based view, being concerned with the interplay between personality, occupation, and life satisfaction of workers. The novelty is the combination of a focus on life satisfaction, in addition to job satisfaction, the use of a recent large representative household survey for Germany, an occupational classification that includes (unpaid) homework next to more traditional occupations, as well as the methodology to measure fit. First, we establish typical personality profiles for each occupation.<sup>2</sup> Then, we investigate how the effect of personality on a worker’s life (or job) satisfaction is moderated by occupation, i.e., the professional environment.

The approach taken here is motivated by Dawis and Lofquist’s (1984) theory of work adjustment. According to that theory, vocational adjustment involves two major ‘matching’ dimensions: competence and fulfillment (or satisfaction). Whereas an individual might be perfectly competent in his job, the work could drain him or her rather than fulfill. Furthermore, the model helps individuals not only gain a better understanding of themselves but also make better personal choices. It complements Bouchard’s (1997) ideas that people seek out work environments mirroring their personal traits.

The evidence is based on measurements of personality and satisfaction from a representative household survey, the German Socio-Economic Panel (SOEP), for the year 2005. In that year, the Big Five Personality Indicators were included (in a short version, with three questions per item). In addition to the five personality factors, we are also interested in the effect of vitality on satisfaction. Vitality, one of the 24 character strengths catalogued in Peterson and Seligman (2004), is operationalized using a single item question on the extent and frequency at which the respondent feels ‘full of energy.’

As mentioned before, the SOEP survey is nationally representative, and the number of observations is large, an important advantage for an occupation-based analysis, as results keep a decent precision even when the analysis is broken down by sub-group.<sup>3</sup> Using these SOEP data, we address the following main questions: How do personality and vitality correlate with different aspects of well-being? How do personality traits correlate with occupations? Are different personality traits rewarded differently in different

occupations, and is there a specific reward to being closely aligned to the occupation specific personality profile? Do people self-select into occupations where their specific personality traits (including vitality) have the highest reward?

## Methods

### *SOEP survey*

The German Socio-Economic Panel (SOEP) is a representative yearly panel survey of the German population initiated in 1984 (SOEP Group, 2001). Data on life satisfaction have been collected from the beginning, making the SOEP the longest running survey of its kind. It has been used frequently in past research on the determinants of life satisfaction, at first mainly by economists (Frey & Stutzer, 2005; Frijters, Haisken-DeNew, & Shields, 2004; Van Praag & Ferrer-i-Carbonell, 2004; Winkelmann & Winkelmann, 1995, 1998). More recently, psychologists have become interested in these data as well, probably for two reasons. First, the long time span makes the SOEP well suited to study hypotheses on changes of satisfaction over the life cycle, most prominently the set-point hypothesis, a crucial proposition in psychologically oriented well-being research (Clark, Georgellis, Lucas, & Diener, 2004; Diener et al., 2006; Fujita & Diener, 2005; Lucas et al., 2003). Second, the number of psychological instruments and measures has increased over time, as new modules on personality, life goals, and orientations were added.

### *Sample*

Questionnaire items on personality were included so far only once in the survey, in 2005, and therefore only data for the year 2005 are analyzed.<sup>4</sup> In that year, 21,105 valid interviews were conducted with adult members (16 years or above) living in the sampled households. Data were collected between February and October 2005, using one of two methods, about half by personal interview and half by self-administered questionnaires. The questionnaire had a total of 154 items and took, on average, 87 minutes to complete. The occupation-based analysis of this study uses a subsample of about 6100 workers aged between 25 and 65 years old (of which 5767 have no missing values on any of the variables used in the study). These workers were, at the time of the interview, employed in one of six selected occupations as explained below.

## Measures

### *Life satisfaction and job satisfaction*

The outcome variable in all analyses is either general life satisfaction ('Finally, we would like to ask you

about your overall life satisfaction. Altogether, how satisfied are you currently with your life?') or job satisfaction. Both are measured on the same 0–10 ('completely dissatisfied' to 'completely satisfied') response scale. While such single item measures are not as reliable and valid as multi-item measures of subjective well being, they have the advantage of being widely available in large-scale international surveys. General life satisfaction is supposed to measure a reflected assessment of ones momentary life circumstances, i.e., the cognitive dimension of subjective well-being, not a balance of positive or negative affect. It is an ordered variable. We nevertheless follow common practice and treat the satisfaction responses as cardinal scaled. This makes the interpretation of the results more straightforward and has been found to lead to very similar results in practice (Van Praag & Ferrer-i-Carbonell, 2004).

### *Personality traits and vitality*

The SOEP contains in 2005 a short version (3 items per trait) of the Big Five Inventory. The Big Five factors consist of an individual's openness to experience (proactive seeking, toleration for and exploration of the unfamiliar), conscientiousness (thorough approach, hard-working, organized), extraversion (the need for stimulation, desire for activity levels with interpersonal interaction), agreeableness (cooperative nature, likeability), and emotional stability (calm and secure, low in anxiety). Big Five factors represent a widely accepted approach to conceptualizing personality, as meta-analyses consistently support the construct validity of this approach (Costa & McCrae, 1992; John, Donahue, & Kentle, 1991; Salgado, 1997). The factors extracted from the short scale have been shown, from pre-test data, to be satisfactorily correlated with factors based on the full inventory (Gerlitz & Schupp, 2005). In the present sample, factor analyses clearly replicate the Big Five factors, and these scaled scores are used in the analysis.

For lack of better information on strengths, we complement the personality question by a single strength: vitality. This information is added from the 2004 SOEP wave where respondents were asked to report the frequency 'at which they felt full of energy,' with possible answers always, frequently, sometimes, almost never, and never. The responses are normalized to a mean zero and unit variance score as well.

### *Occupation*

Six different occupations were considered in this study. The first five of them were derived from a four digit ISCO-88 Occupation Code classification. These are teachers, managers, service workers, crafts persons, and manufacturing blue-collar workers.

'Teachers' refers to educators at all levels from primary school to university. The category 'managers' is broadly defined as well, including position in all areas, including financial, marketing, operations, personnel, etc., and of course general management up to CEO level. Illustrative examples for ISCO-88 service worker occupations are travel attendant, housekeeper, cook, hairdresser, and shop salesperson. These occupations are thus defined broadly, in order to maintain a sufficient number of observations within each category.

The sixth occupation is somewhat unusual, since it refers to 'homeworker' (housewives or househusbands), a category not part of the traditional labor market. In our view, working in the household is an 'occupation' that, apart from the fact that no formal wages are paid, should be susceptible to the same kind of analysis as the other occupations within the traditional labor market. We classify a person (male or female) as being a homeworker if two criteria are met. First, the recorded labor force status is 'homeworker'; and second, the person spends at least 5 hours during a normal weekday on housework related activities such as cooking, cleaning, shopping, and supervising children.

## Results

Table 1 shows that observations for each occupation vary between a minimum of 681 for managers to a maximum of 1405 for service workers. For each occupation, Table 1 shows the average value for each of four socio-economic characteristics: sex, age, education measured as years of completed formal years of schooling (this variable is constructed from information on degrees obtained, and it varies between 7 and 18 years), and earnings (gross income from work in the previous month, in Euros).

There is a clear distinction between three 'female' occupations (homework, teacher, services) and three 'male' occupations (manager, crafts, blue collar). Teachers have the highest education levels, blue-collar

Table 1. The occupation structure of the sample.

Type	Obs	Male	Age	Education	Earnings
Homeworker	1405	0.101	46.8	11.6	n.a.
Teacher	721	0.322	47.3	15.9	2966.2
Manager	665	0.719	45.8	13.7	4502.1
Services	1354	0.240	43.4	11.1	1316.5
Craft	1291	0.909	42.3	11.3	2436.7
Blue collar	681	0.828	43.7	10.8	2230.6

Notes: Education measures the years of completed formal education. Earnings are last month's gross labor earnings in Euro. Obs = number of observations.

Source: German Socio-Economic Panel, 2005.

manufacturing workers the lowest. Earnings are highest for managers, as expected.

Table 2 shows the relative frequencies of the responses for life satisfaction and job satisfaction in the sample.<sup>5</sup> The marginal distributions are relatively similar, with a modal response of 'eight' in either case. The fraction of respondents above 'seven' is almost identical as well (46% for life satisfaction, and 45% for job satisfaction).

## Satisfaction and personality

The main purpose of the paper is to investigate the link between the Big Five personality traits and vitality on one side, satisfaction on the other, and how this link is moderated by the kind of occupation a person is employed in. One method to assess the importance of personality and vitality for satisfaction is regression analysis, where satisfaction (either life- or job-satisfaction) is the dependent variable and the factor scores are independent variables.<sup>6</sup> The regression coefficients are reported in Table 3.

Since the variables are standardized, the coefficients measure the effect of a one standard deviation increase in the associated trait score on satisfaction. For example, a one standard deviation increase in openness is associated with a 0.2 point increase in life satisfaction on the 0–10 scale, on average. Similarly, a one standard deviation increase in vitality is associated with a 0.3 point increase in life satisfaction. All the effects are significant, and they confirm findings from the previous literature where personality traits are always found to be significant predictors of satisfaction (DeNeve & Cooper, 1998), including job-satisfaction (Judge et al., 2002; Vitterso, 2001). In this literature, it is a common finding that within the five factor model of personality traits, emotional stability (i.e., the

Table 2. The distribution of life and job satisfaction.

Scale	Life satisfaction	Job satisfaction
0	0.28	0.60
1	0.38	0.60
2	1.18	2.07
3	2.57	3.29
4	3.45	4.70
5	12.38	12.60
6	10.90	11.48
7	22.41	18.89
8	31.60	26.51
9	11.10	11.75
10	3.76	7.49
	6117	5982

Source: German Socio-Economic Panel, Wave 2005.

absence of neuroticism) is the strongest predictor of both life and job satisfaction, followed in the case of job satisfaction by conscientiousness. The results here corroborate largely these relative magnitudes. Two exceptions are perhaps the effect of extraversion on satisfaction, which is often found to be larger in other studies, and the relatively large effect of agreeableness, which is often found to be smaller. Remarkably, vitality is always as important as emotional stability in both equations. This direct comparison provides an interesting result in itself. It confirms the important role of vitality as a marker of optimal human functioning. Part of the effect might be related to an association between vitality and health, as health is not controlled for in the regression models.

The biggest differences between life and job satisfaction are found for the traits of openness, which is more important for life satisfaction than for job satisfaction, and for conscientiousness, which plays a bigger role for job satisfaction. Overall, the reported effects are not small. For example, we know that a

doubling of earnings in this type of model typically increases well-being by between 0.2 and 0.3. Hence, most of these standard deviation increases are larger than, say, increasing income by 50%.

### *Personality and occupation*

In the next step, we study the relationship between Big Five personality traits, vitality and occupation. We do this for the six representative occupations introduced above. Clearly, the distribution of personality traits and vitality differs between occupations. An ANOVA analysis rejects the null hypothesis of independence between mean scores and occupation at any conventional significance level. If one uses Table 4 to assign to each occupation a main trait as the one with the highest value, we see that homeworkers score highest on agreeableness, teachers score highest on openness, managers score highest on vitality, and services, craft, and manufacturing blue-collar workers score highest on conscientiousness.

Thus, we can conclude that there is significant heterogeneity in personality by occupation. Next, we consider heterogeneity in well-being. Table 5 shows simple regression results from a regression of life satisfaction or job satisfaction on occupation. Blue-collar manufacturing workers are used as omitted baseline category. We find that teachers have the highest life and job satisfaction, followed by managers. Blue-collar manufacturing workers have the lowest life satisfaction and, together with homeworkers, the lowest job satisfaction (for homeworkers, this uses an explicit question on satisfaction with housework).

Of course, teachers, and managers in particular, might be more satisfied mainly because they are better paid. To test this hypothesis, we also show results from a regression with an earnings variable included. Naturally, this excludes homeworkers, since they do not receive an income for their work. Among the remaining occupations, the evidence goes in the expected direction: once controlling for earnings, the relative satisfaction goes up for low paid occupations (here: services) and moves down for highly paid

Table 3. Personality, vitality, and satisfaction (OLS results).

	Life satisfaction	Job satisfaction
Openness	0.214 (0.021)	0.148 (0.026)
Conscientiousness	0.098 (0.022)	0.284 (0.027)
Extraversion	0.142 (0.021)	0.131 (0.025)
Agreeableness	0.161 (0.021)	0.179 (0.025)
Emotional stability	0.376 (0.021)	0.310 (0.026)
Vitality	0.320 (0.023)	0.275 (0.027)
Constant	6.965 (0.021)	6.851 (0.025)
Observations	5889	5767
R-squared	0.141	0.092

Note: Robust standard errors in parentheses.

Source: German Socio-Economic Panel, Wave 2005.

Table 4. Character strength and occupation (mean factor scores).

Type	Openness	Conscientiousness	Extraversion	Agreeableness	Emotional stability	Vitality
Homeworker	-0.034	-0.106	-0.047	0.192	-0.259	-0.023
Teacher	0.361	-0.093	0.065	0.075	0.103	0.129
Manager	0.149	0.157	0.208	-0.260	0.230	0.247
Services	-0.090	0.216	0.101	0.109	-0.143	0.037
Craft	-0.074	0.283	-0.118	-0.327	0.175	0.151
Blue collar	-0.235	0.248	-0.072	-0.181	0.112	0.095
ANOVA <i>F</i> -stat	34.8	37.5	14.0	54.3	43.4	9.7

Note: Critical value:  $\text{invFtail}(5,6000,0.05) = 2.21$ .

Table 5. Satisfaction and occupation (OLS results).

Variable	Life satisfaction			Job satisfaction		
Homeworker	0.284 (0.081)	n.a.	n.a.	0.029 (0.095)	n.a.	n.a.
Teacher	0.718 (0.092)	0.635 (0.095)	0.511 (0.091)	0.732 (0.108)	0.678 (0.114)	0.634 (0.112)
Manager	0.603 (0.093)	0.437 (0.100)	0.294 (0.094)	0.480 (0.110)	0.303 (0.120)	0.210 (0.116)
Services	0.065 (0.081)	0.342 (0.087)	0.301 (0.082)	0.209 (0.095)	0.413 (0.105)	0.371 (0.101)
Craft	0.117 (0.082)	0.078 (0.083)	0.047 (0.078)	0.155 (0.096)	0.104 (0.100)	0.082 (0.096)
Blue collar (ommitted) ln(earnings)	–	0.328 (0.040)	0.264 (0.038)	–	0.297 (0.048)	0.235 (0.047)
Controls for personality	No	No	Yes	No	No	Yes
Observations	5759	3915	3915	5759	3915	3915
R-squared	0.020	0.043	0.160	0.013	0.024	0.110

Note: Robust standard errors in parentheses.

Source: German Socio-Economic Panel, 2005.

occupations (here: managers). For job satisfaction, the pecuniary aspect of work seems to matter much more for managers than for other occupations. However, teachers keep the highest life and job satisfaction regardless of this adjustment for earnings.

In a further adjustment (in columns 3 and 6 of Table 5), we also control for personality traits. It is conceivable that the reason for the high satisfaction levels of teachers is their favorable mix of personality traits, i.e., having high scores on those traits that have a large positive effect on satisfaction. The results show that differences in the personality ‘endowments’ can explain some of the occupation-related satisfaction differentials, but by no means all or even most of them. Depending on occupation, between one half and two thirds of the differentials remain unexplained. One possible explanation is that the ‘rewards’ to traits differ between occupations. This possibility is explored in the next step.

### *Interaction between personality and occupation*

So far, we have separately considered three relationships: (1) the relation between personality and satisfaction; (2) the relation between occupation and personality; and (3) the relation between occupation and satisfaction. We now come to the key question of our study: is there an interaction between personality and occupation in their effect on satisfaction, i.e., is the effect of personality and vitality on satisfaction moderated by occupation? Such an interaction could be a consequence of matching gains: some traits may increase satisfaction for workers in occupation A, but not so in occupation B. The optimal mix of traits may be different in different occupations. For example, the

satisfaction rewards to vitality (the effect of a standard deviation increase in vitality, i.e., the OLS regression coefficient) may be different for managers than for teachers.

To pursue this idea, we estimated job satisfaction models separately by occupation. Table 6 displays the results.<sup>7</sup> The results shown earlier in Table 3 were based on a homogeneity assumption (the absence of occupation as a moderator) whereas the results in Table 6 now allow for exactly such heterogeneity, or occupation specific coefficients. A formal *F*-test leads to a rejection of the homogeneity restriction. The statistical evidence therefore suggests that the effect of personality and vitality on well-being is indeed moderated by the occupation. The effect differences are substantial in many. For instance, the effect of vitality on job satisfaction is smallest for managers (0.162) and largest for blue-collar workers (0.420), an increase by almost a factor of two. To pick another example, conscientiousness has a relatively large effect on managers’ satisfaction (0.41), but a relatively small effect on teachers’ satisfaction (0.21).

A crude test of personality-based matching is to compare the ‘signature trait’ of each occupation with the occupation specific returns. For instance, managers have most vitality. Conversely, we saw that the job satisfaction gain stemming from vitality is estimated to be largest for blue-collar workers. Thus, there is no match. Openness, a signature trait for teachers, has the largest estimated reward on job satisfaction in the teacher equation. Thus, there is a match.

An alternative and more formal way to interpret the information in Table 6, and its implications for matching, is to predict for each occupation equation the satisfaction of all six worker types, were they to

Table 6. Dependent variable: job satisfaction (OLS results).

Variable	Occupation					
	Homeworker	Teacher	Manager	Services	Craft	Blue collar
Openness	0.095 (0.050)	0.228 (0.075)	0.101 (0.088)	0.118 (0.058)	0.112 (0.054)	0.090 (0.086)
Conscientiousness	0.330 (0.050)	0.209 (0.071)	0.411 (0.083)	0.225 (0.067)	0.372 (0.061)	0.229 (0.089)
Extraversion	0.035 (0.050)	0.177 (0.067)	0.216 (0.077)	0.149 (0.059)	0.151 (0.053)	0.045 (0.082)
Agreeableness	0.118 (0.053)	0.200 (0.074)	0.076 (0.074)	0.220 (0.059)	0.152 (0.051)	0.255 (0.079)
Emotional stability	0.246 (0.053)	0.250 (0.069)	0.537 (0.077)	0.218 (0.059)	0.309 (0.056)	0.458 (0.089)
Vitality	0.210 (0.053)	0.242 (0.075)	0.162 (0.084)	0.230 (0.063)	0.404 (0.056)	0.420 (0.088)
Constant	6.784 (0.053)	7.267 (0.070)	6.893 (0.084)	6.835 (0.060)	6.679 (0.060)	6.599 (0.088)
Observations	1283	680	647	1272	1229	656
R-squared	0.081	0.103	0.134	0.056	0.125	0.118

Note: Robust standard errors in parentheses.

Source: German Socio-Economic Panel, 2005.

Table 7. Predicted mean job satisfaction.

Actual occupation	Occupation for prediction					
	Homeworker	Teacher	Manager	Services	Craft	Blue collar
Homeworker	6.705	7.201	6.716	6.780	6.585	6.500
Teacher	6.851	7.409	6.985	6.930	6.794	6.731
Manager	6.930	7.430	7.156	6.963	6.917	6.790
Services	6.835	7.307	6.940	6.885	6.760	6.624
Craft	6.902	7.303	7.077	6.873	6.831	6.712
Blue collar	6.865	7.266	7.019	6.855	6.786	6.676
Average	6.836	7.304	6.958	6.870	6.761	6.652

be matched to that occupation. Taking the specific coefficients from Table 6 as given, the predictions differ, because each worker type has a different personality and vitality profile, as seen in Table 4. Take the teacher occupation as an example. With personality traits typical for a homeworker, predicted average job satisfaction as a teacher would be 7.2; managers with their traits would score higher, with a predicted average job satisfaction of 7.4. All 36 (six worker types in six occupations) are listed in Table 7. The aforementioned two examples are found in the second column of Table 7, where the predictions for the teacher occupation are listed. The diagonal elements of the table show the results for the types who are actually observed in that occupation; the off-diagonal elements are 'counterfactual,' i.e., based on hypothetical thought experiments allocating each worker type to alternative occupations.<sup>8</sup>

The key insight from Table 7 is that in five out of six cases (with homeworkers being the exception), workers in their actual occupation have a higher predicted job satisfaction than an average, randomly selected worker would have. In other words, the personality profile of actual workers in these occupations is such that it contributes to a greater job satisfaction relative to a randomly picked average worker. This holds for teachers, managers, service workers, crafts persons, and blue-collar manufacturing workers. In all of these cases, the diagonal elements exceed the average predictions listed in the last row of the table. Admittedly, the differences tend to be small and, although we did not calculate formal standard errors, likely within the margin of error. Still, the point estimates, based on less than perfect data, provide some support for the personality-environment fit hypothesis, here extended to include a character strength, vitality, in addition to the common Big Five personality indicators.

Thus, there is some, albeit weak, evidence for gains from matching.

### Conclusions and directions for future research

In general, results of the present study confirm the notion that personality is an important predictor of life and job satisfaction which is in line with previous studies (DeNeve & Cooper, 1998; Judge et al., 2002). Interestingly, the one included character strength item, vitality, was found to have a substantial effect on satisfaction as well. The effect was as large as that of emotional stability. Being able to establish such an effect in a regression analysis, keeping personality traits constant, confirms that the character strength of vitality describes a dimension of a person's psychological state that is, at least partially, unrelated to personality. Expanding the type of analysis performed in this paper to the full set of character strengths is therefore an important next step for future research.

There was some support for our three key hypotheses: first, that the typical mix of personality traits differs by occupation; second, that the effect of personality on satisfaction is not the same in each occupation, for example, having an above average score on the conscientiousness factor has a larger positive effect on job satisfaction among managers than among teachers; and third, because of these differential effects of personality across occupations, it matters for satisfaction in what occupation a person is employed in. In particular, we find some gains for workers from being employed in their actual occupation: their specific mix of personality traits is such that they have a higher life satisfaction than workers with the average mix of personality traits in the population would have. To put it differently, our results suggest that, in the case of a mismatch between a worker's personality profile and occupation, there is a price to pay in terms of reduced life satisfaction.

This paper also indicated that large representative household surveys, the SOEP being one prime example, may offer many new possibilities for research in positive psychology, in particular, as more psychological instruments are being included, including direct measures of character strengths.<sup>9</sup> Among the key advantages of such household surveys are the longitudinal dimension, i.e., repeated measurements for the same individual over time, and the social dimension, i.e., concurrent measurements on all family members including, recently in the SOEP, younger children. With such data, it becomes feasible for instance to model the effect of the entire history of past environmental influences on current psychological well-being, much as has been done in cohort studies, while at the

same time accounting for interactions at the household level. Such research can at the same time lead to better insights into questions related to causal directionality which have come to be considered central in much positive research (e.g., in positive organizational scholarship, see Cameron, Dutton, Quinn, & Wrzesniewski, 2003), and shift the emphasis on investigations of social effects of personality and character strengths, which according to Peterson and Park (2006) might be one of most fertile area of research on social institutions across the board.

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### Notes

1. In a related development, Headey (2008) finds that life goals and orientation (materialistic, family oriented, or altruistic) affects well-being.
2. While the data we use does not include comprehensive information on character strength, there is an operational measure of one of them, vitality, which we include next to the personality traits in the analysis.
3. Since the personality information in the SOEP is relatively recent, only few previous studies have used this information. To the best of our knowledge, there are two prior papers (Headey, 2008; Rammstedt, 2007), that have studied the connection between personality and satisfaction using the SOEP data. The focus of these two papers is different, though, and none of them pursues the occupational perspective proposed in this paper.
4. Including other years of data as well (as in Headey, 2008) would require us to assume that personality traits are stable over time. Although there is some controversy on this issue (e.g., Scollon & Diener, 2006) it is likely that measurement errors would be introduced that can be avoided by focusing on the 2005 year only.
5. In the case of homeworkers, there is naturally no direct information on 'job satisfaction'. However, since the job in this case is housework, and a separate question on 'satisfaction with housework' is available in the data, this information is substituted for the missing information on job satisfaction in those instances.
6. One might argue that satisfaction is measured on an ordinal scale, and that regression analysis is therefore inappropriate as it assumes a cardinal response scale. There is ample evidence that using ordered probit or logit models rather than linear regression makes little difference for the substantive conclusions, but the linear regression results are more straightforward to interpret and therefore shown here (Ferrer-i-Carbonell & Frijters, 2004).
7. Only the results for job satisfaction are shown here. Similar patterns are found for life satisfaction.
8. The validity of these predictions requires that the coefficients remain constant. If the job satisfaction of a



manager working in the management sector increases by 0.41 for each standard deviation increase in conscientiousness, then we must assume the same to be true for service workers in the management sector.

9. A SOEP pre-test of the Values-in-Action (VIA) Classification of Strengths (Peterson & Seligman, 2004) is being launched in 2008.

## References

- Aristotle. (n.d.). *The Nicomachean ethics* (J.A.K. Thomson, Trans.). London: Penguin Classics.
- Barrick, M.R., & Mount, M.K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44*, 1–26.
- Barrick, M.R., Stewart, G.L., & Piotrowski, M. (2002). Personality and job performance: Test of the mediating effects of motivation among sales representatives. *Journal of Applied Psychology, 87*, 43–51.
- Behling, O. (1998). Employee selection: Will intelligence and conscientiousness do the job? *Academy of Management Executive, 12*, 77–86.
- Bouchard, Jr, T.J. (1997). Genetic influence on mental abilities, personality, vocational interests, and work attitudes. *International Review of Industrial and Organizational Psychology, 12*, 373–395.
- Cameron, K.S., Dutton, J.E., Quinn, R.E., & Wrzesniewski, A. (2003). Developing a discipline of positive organizational scholarship. In K.S. Cameron, J.E. Dutton, & R.E. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline* (pp. 48–65). San Francisco: Berrett-Koehler.
- Clark, A.E., Georgellis, Y., Lucas, R.E., & Diener, E. (2004). Unemployment alters the set point for life satisfaction. *Psychological Science, 15*, 8–13.
- Clarke, S., & Robertson, I.T. (2005). A meta-analytic review of the Big Five personality factors and accident involvement in occupational and non-occupational settings. *Journal of Occupational and Organizational Psychology, 78*, 355–376.
- Colbert, A.E., Mount, M.K., Harter, J.K., Witt, L.A., & Barrick, M.R. (2004). Interactive effects of personality and perceptions of the work situation on workplace deviance. *Journal of Applied Psychology, 89*, 599–609.
- Costa, P.T., & McCrae, R.R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five Factor Inventory*. Professional Manual. Odessa, FL: Psychological Assessment Resources.
- Dawis, R.V., & Lofquist, L.H. (1984). *A psychological theory of work adjustment*. Minneapolis: University of Minnesota Press.
- DeNeve, K.M., & Cooper, H. (1998). The happy personality: A meta analysis of 137 personality traits and subjective well-being. *Psychological Bulletin, 124*, 197–229.
- Dewey, J. (1916 [2004]). *Democracy and education* (p. 296). New York: Macmillan [Dover].
- Diener, E., & Lucas, R.E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 213–229). New York: Russell Sage.
- Diener, E., Lucas, R.E., & Scollon, C. (2006). Beyond the hedonic treadmill: revising the adaptation theory of well-being. *Psychological Science, 61*, 305–314.
- Emmons, R.A., & McCullough, M.E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*, 377–389.
- Ferrer-i-Carbonell, A., & Frijters, P. (2004). How important is methodology for the estimates of the determinants of happiness? *Economic Journal, 114*, 641–659.
- Frey, B.S., & Stutzer, A. (2005). Testing theories of happiness. In L. Bruni, & P.L. Porta (Eds.), *Economics and happiness* (pp. 116–147). Oxford: Oxford University Press.
- Frijters, P., Haisken-DeNew, J.P., & Shields, M.A. (2004). Money does matter! Evidence from increasing real incomes and life satisfaction in East Germany following reunification. *American Economic Review, 94*, 730–740.
- Fujita, F., & Diener, E. (2005). Life satisfaction set point: Stability and change. *Journal of Personality and Social Psychology, 88*, 158–164.
- Gerlitz, J.-Y., & Schupp, J. (2005). Zur Erhebung der Big-Fivebasierten Persönlichkeitsmerkmale im SOEP. DIW Research Notes 2004–5. Berlin: DIW Berlin.
- Headey, B. (2008). Life goals matter to happiness: A revision of set-point theory. *Social Indicators Research, 86*, 213–231.
- Holland, J.L. (1985). *Making vocational choices: A theory of vocational choices and work environments* (2nd ed.) Englewood Cliffs, NJ: Prentice-Hall.
- Huppert, F.A. (2004). A population approach to positive psychology: The potential for population interventions to promote well-being and prevent disorder. In P.A. Linley, & S. Joseph (Eds.), *Positive psychology in practice* (pp. 693–709). New York: John Wiley & Sons, Inc.
- Huppert, F. (2005). Positive mental health in individuals and populations. In F. Huppert, N. Baylis, & B. Keverne (Eds.), *The science of well-being* (pp. 307–342). Oxford: Oxford University Press.
- Hurtz, G.M., & Donovan, J.J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology, 85*, 869–879.
- John, O., Donahue, E., & Kentle, R. (1991). *The 'Big Five' Inventory—Versions 4a and 4b*. Technical Report. Berkeley, CA: Institute of Personality Assessment and Research, University of California, Berkeley.
- Judge, T., Heller, D., & Mount, M. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology, 87*, 530–541.
- Judge, T.A., Martocchio, J.J., & Thoresen, C.J. (1997). Five-factor model of personality and employee absence. *Journal of Applied Psychology, 82*, 745–755.
- Kristof-Brown, A.L., Zimmerman, R.D., & Johnson, E.C. (2005). Consequences of individuals' fit at work: A meta-analysis person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology, 58*, 281–342.
- Lucas, R.E., Clark, A.E., Georgellis, Y., & Diener, E. (2003). Reexamining adaptation and the set point model of happiness: Reactions to change in marital status. *Journal of Personality and Social Psychology, 84*, 527–539.

- Park, N., Peterson, C., & Seligman, M.E.P. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology, 23*, 603–619.
- Peterson, C. (2006). *A primer in positive psychology*. Oxford: Oxford University Press.
- Peterson, C. (2006). Strengths of character and happiness: Introduction to special issue. *Journal of Happiness Studies, 7*, 289–291.
- Peterson, C., & Park, N. (2006). Character strengths in organizations. *Journal of Organizational Behavior, 27*, 1149–1154.
- Peterson, C., & Seligman, M.E.P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford: Oxford University Press.
- Rammstedt, B. (2007). Who worries and who is happy? Explaining individual differences in worries and satisfaction by personality. *Personality and Individual Differences, 43*, 1626–1634.
- Robertson, I.T., & Smith, M. (2001). The role of personality in personnel selection. *Journal of Occupational and Organizational Psychology, 74*, 441–472.
- Salgado, J.F. (1997). The Five Factor model of personality and job performance in the European Community. *Journal of Applied Psychology, 82*, 30–43.
- Scollon, C.N., & Diener, E. (2006). Love, work and changes in extraversion and neuroticism over time. *Journal of Personality and Social Psychology, 91*, 1152–1165.
- Seligman, M.E.P. (2002). *Authentic happiness*. New York: Free Press.
- Seligman, M.E.P., Steen, T., Park, N., & Peterson, C. (2005). Positive psychology progress: Empirical validation of interventions. *American Psychologist, 60*, 410–421.
- SOEP Group. (2001). The German Socio-Economic Panel (SOEP) after more than 15 years—Overview. *Vierteljahreshefte zur Wirtschaftsforschung, 70*, 7–14.
- Tett, R.P., Jackson, D.N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology, 44*, 703–742.
- Van Praag, B.M.S., & Ferrer-i-Carbonell, A. (2004). *Happiness quantified: A satisfaction calculus approach*. New York: Oxford University Press.
- Vitterso, J. (2001). Personality traits and subjective well-being. *Personality and Individual Differences, 31*, 903–914.
- Whitehead, A.J. (1925) *Science and the modern world* (p. 233) Cambridge: Cambridge University Press.
- Winkelmann, L., & Winkelmann, R. (1995). Happiness and unemployment: A panel data analysis for Germany. *Konjunkturpolitik, 41*, 293–307.
- Winkelmann, L., & Winkelmann, R. (1998). Why are the unemployed so unhappy? Evidence from panel data. *Economica, 65*, 1–16.

## Appendix

### The Big Five Short Scale used in the SOEP 2005

The question asked is: I see myself as someone who . . .

- does a thorough job
- is communicative, talkative
- is sometimes somewhat rude to others
- is original, comes up with new ideas
- worries a lot
- has a forgiving nature
- tends to be lazy
- is outgoing, sociable
- values artistic experiences
- gets nervous easily
- does things effectively and efficiently
- is reserved
- is considerate and kind to others
- has an active imagination
- is relaxed, handles stress well

The responses are coded on a 1–7 scale, where 1 stands for ‘not at all,’ and 7 stands for ‘perfectly.’