DATA AND METHODOLOGICAL REPORT

Federal Institute for Vocational Education and Training
Research Data Centre

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Personality Traits and Employment

BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey

Version 1.0

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Data availability

Access to the research data described in this report is provided as a Scientific Use File (SUF).

Note on the counting method for version numbers

Changes compared to the previous version without major relevance to the content are documented by consecutive numbers after the item (second level). On the other hand, changes relevant to content lead to consecutive numbering at the first level.

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Contents

1 Introduction

Empirical studies show that various dimensions of personality such as extraversion or neuroticism[1], but also specific behaviour-related personality traits and preferences such as risk taking, self-efficacy and locus of control are related to characteristics of employment and career success (for an overview see e.g. Almlund et al. 2011, Storck 2014, Jackson 2006). Personality traits are not surveyed in the 2018 Employment Survey conducted by the Federal Institute for Vocational Education and Training (BIBB) and the Federal Institute for Occupational Safety and Health (BAuA) - ETB 2018 for short. The ETB 2018 offers a wide range of information on work and occupation in transition and on the acquisition and utilisation of vocational qualifications, but cannot (always) go into depth due to the diversity of topics. In a follow-up survey, 8,010 core employed persons who participated in the ETB 2018 were therefore asked about their personality traits and took part in a vocabulary test. The data linked from both interviews can be used to investigate various questions, such as the connection between personality traits and career success.

The data from the BIBB-follow-up survey "Personality Traits and Employment" can generally only be evaluated in conjunction with the Scientific Use File (SUF) from the 2018 BIBB/BAuA Employment Survey (doi: 10.7803/501.18.1.1.10). The data from both surveys can be combined for the core employed persons from the follow-up survey via the interview number (intnr).

This Data and Methodological Report contains a brief description of the data set "Personality Traits and Employment" (Chapter 2), a description of variables (Chapter 3), documentation of the data collection (Chapter 4), an explanation of data access (Chapter 5) as well as information on citation (Chapter 6) and bibliographic information (Chapter 7). Further information on the survey and publications with the data can be found on the project website.

1 Especially the 5-factor model of personality (Big Five) has become established across disciplines (cf. Almlund et al. 2011, p. 69). The 5-factor model consists of five broad personality dimensions: Openness to experience, conscientiousness, extraversion, agreeableness, neuroticism (cf. Rammstedt et al. 2013).

2 The follow-up survey at a glance

2.1 Brief description and structure of the data set

The data was collected as part of the project "Occupations in Germany: Social Perception and Personality Characteristics"[2] as a follow-up survey to the 2018 BIBB/BAuA Employment Survey. 8,010 core employed persons[3] in Germany were asked about their personality traits and took part in a vocabulary test. The follow-up survey was conducted only in German language as a Computer Assisted Telephone Interview (CATI) with a mobile phone share of about 30% (dual-frame). The fieldwork lasted from 17th October 2017 to 5th May 2018. The survey was conducted at the same time as the 2018 BIBB/BAuA Employment Survey so that the information of the 8,010 core employed persons from both surveys can be linked together.

2.2 Overview of central features of the data set

Survey title	**Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey**
DOI	doi:10.7803/501.18.2.1.10
Brief description	Representative survey of 8,010 employed persons in Germany on personality traits
Survey year	2017, 2018
Survey unit	Employed persons
Main topic	Personal traits
Data access options	Scientific Use File (SUF)
Number of variables	48 (SUF)
Population	Core employed persons in Germany aged 15 and over
Weighting/ Extrapolation	Based on the weighting factors in the 2018 BIBB/BAuA Employment Survey and the 2017 Microcensus
Number of cases	8,010
Survey procedure	CATI
Selection procedure	Random sample of participants who took part in the 2018 BIBB/BAuA Employment Survey and which were willing to take part in follow-up surveys.
Survey design	Cross-section design
Comment	The study is linked to the 2018 BIBB/BAuA Employment Survey

2 The project pursues two central objectives: on the one hand, the relationship between personality traits, occupational activities and career success (sub-project 2) and on the other hand, the attractiveness of occupations in Germany (sub-project 1). The information on the attractiveness of occupations collected in the follow-up survey will be published in the form of a separate long data set and in the form of prestige scales for the 3-digit or 2-digit plus 5th digit of the German Classification of Occupations 2010 (cf. Ebner/Rohrach-Schmidt 2019a).

3 Core employed persons are at least 15 years old and work at least 10 hours a week for pay.

Survey title	Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey
Links	BIBB-FDZ metadata portal: http://metadaten.bibb.de/metadaten/1 Project page: https://www.bibb.de/de/108200.php
Keywords	personality, locus of control, occupational self-efficacy, work addiction, Big Five, procrastination, risk taking, vocabulary test

2.3 Sampling characteristics

The sample contains 8,010 complete interviews of core employed persons in Germany (cf. Tab. 1). The interviewees are between 16 and 87 years old, the average age in the sample is 48 years. 3,876 of the respondents are female (48.4%) and 4,134 male (51.6%). 57.2 per cent have a higher education entrance qualification (Hochschulreife), an advanced technical college entrance quaification (Fachhochschulreife), an Abitur, vocational diploma or similar. 30.1 per cent have an intermediate school leaving certificate (Realschulabschluss/Mittlere Reife/et al.) and 12.6 per cent have at most a lower secondary school leaving certificate (Hauptschulabschluss). The employed persons have a weekly working time of at least ten hours; the average working time in the sample is 38.1 hours per week.

Table 1: Composition of the sample – selected characteristics

Number of cases		n=8,010
Age* (MW/SD)		48.0 (11.3)
Gender (% women)		48.4
Highest school leaving certificate	Max. Hauptschulabschluss (%) Realschulabschluss/Mittlere Reife/et al. (%) (Fach-)hochschulreife/(Fach-)abitur or similar (%)	12.6 30.1 57.2
Weekly working time (MW/SD)		38.1 (11.6)

MW=arithmetic mean, SD=standard deviation. *Age at the time of the interview of ETB 2018.

Source: Data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey" and the 2018 BIBB/BAuA Employment Survey

3 Variable description

3.1 Overview of variables[4]

In the follow-up survey, a total of six personality constructs were collected and a vocabulary test was carried out. The personality constructs include locus of control, occupational self-efficacy, work addiction, the Big Five, procrastination and willingness to take risks. Scales already validated and used in other surveys were used[5].

Questionnaire content	Constructions
f10_1 to f10_4	Internal and external locus of control
f11_1 to f11_6	Occupational self-efficacy
f12_1 to f12_10	Work Addiction
f13_1 to f13_15	Big Five
f13_16	Procrastination
f14 and f14b	Willingness to take risks (current and at the end of school)
f15in to f16	Vocabulary test (animal-naming task)

For all questions (except f15in to f16) a fully verbalised answer scale with the five response options (1) „trifft gar nicht zu“ (“does not apply at all”), (2) „trifft wenig zu“ (“applies little”), (3) „trifft etwas zu“ (“applies somewhat”), (4) „trifft ziemlich zu“ (“applies fairly”) and (5) „trifft voll und ganz zu“ (“applies completely”) was used. In the interviewer training it was pointed out that the answer categories may not have to be read out each time. Other categories are (8) „weiß nicht“ (“don’t know”) and (9) if no information was provided by the interviewee. On the one hand, the same scale was used everywhere in order not to have to switch between different answer formats in the interview and thus to keep the requirements for interviewees to answer in the telephone interview as low as possible. On the other hand, a verbalised 5-score scale was used in order to do more justice to possible limitations in information processing on the telephone than, for example, with 7-score scales.

4 The following information was also collected in questions f1-f9 and f17ff. not reported here: Occupational reputation, estimated income, physical and emotional strain, risk of unemployment, compatibility of work and family, required training for occupations, reputation of one’s own occupation, reputation of housewives, househusbands and unemployed persons, reputation of educational qualifications, socio-demographic variables for the non-working population, desired qualification for pupils, experiment in care occupations, willingness to link. These details are not part of the data set documented here, cf. footnote 2.

5 We therefore report the original questionnaire items as well as an English translation of the items. The English version is usually taken from the publications of the authors of the scales.

3.2 Collected personality traits

3.2.1 Internal and external locus of control

The psychological trait of the locus of control indicates how strongly an individual perceives situations and events either as a consequence of his or her own actions (internal) or as being externally determined (external). In the follow-up survey, the validated scale *Internale-Externale-Kontrollüberzeugung-4* (*IE-4*) by Kovaleva et al. (2014) was used, which can be used in different survey modes. It is based on two subscales with two items each (see Tab. 2) and a five-level response scale. The arithmetic mean for the internal locus of control in the follow-up survey is 4.11 (standard deviation: 0.76) and for the external locus of control 2.26 (standard deviation: 0.90). Kovaleva et al. (2014) report reliability coefficients (McDonald-Omega) for two samples of 0.71 and 0.70 for internal locus of control and 0.63 and 0.53 for external locus of control, which the authors assess as sufficiently good (ibid. p. 7). In the follow-up survey, the reliability according to McDonald-Omega[6], at 0.57 (internal) and 0.58 (external locus of control), is in part slightly below the values of the above-mentioned study.

Table 2: The items of the Internale-Externale-Kontrollüberzeugung-4 scale in the follow-up survey

Dimension	Items
Internal locus of control	(f10_1) Ich habe mein Leben selbst in der Hand. (I'm my own boss.)
	(f10_2) Wenn ich mich anstrenge, werde ich auch Erfolg haben. (If I work hard, I will succeed.)
External locus of control	(f10_3) Egal ob privat oder Beruf: Mein Leben wird zum großen Teil von anderen bestimmt. (Whether at work or in my private life: What I do is mainly determined by others.)
	(f10_4) Meine Pläne werden oft vom Schicksal durchkreuzt. (Fate often gets in the way of my plans.)

3.2.2 Occupational self-efficacy

Self-efficacy describes the assessment of persons to successfully complete tasks and goes back to Bandura (1977a, b). Occupational self-efficacy applies this concept to the occupational context, i.e. it is an area-specific measure of self-efficacy. It refers to the competence that an individual attributes to himself/herself to be able to deal successfully with occupational tasks and problems (Rigotti et al. 2008). In the follow-up survey the validated occupational self-efficacy scale by Abele, Stief & andrä (2000) was used. It consists of six items (cf. Tab. 3). The arithmetic mean of occupational self-efficacy in the follow-up survey is 4.25 (standard deviation: 0.55). A principal component analysis confirms the one-dimensional structure of the scale. In the follow-up survey, the factor has an eigenvalue of 2.85 and binds 47.4 per cent of the variance (for comparison at Abele et al. 2000: eigenvalue 2.9 and 48.2 per cent (sample 1) and 2.9 and 47.8 per cent (sample 2)). Checking the scale reliability using Cronbach's Alpha yields a value of 0.77 (at Abele et al. 2000: 0.78 and 0.77), thus indicating good internal consistency in the follow-up survey.

6 For the calculation in Stata, see Groskurth et al. (2020)

Table 3: The items of the occupational self-efficacy scale in the follow-up survey

Variable	Items
f11_1	Ich weiß genau, dass ich die an meinen Beruf gestellten Anforderungen erfüllen kann, wenn ich nur will. (I am confident that I could deal efficiently with the challenges of my occupation if I only wanted to.)
f11_2	Ich weiß, dass ich die für meinen Beruf erforderlichen Fähigkeiten habe. (I know that I have the necessary skills for my occupation.)
f11_3	Ich weiß, dass ich genügend Interesse für alle mit meinem Beruf verbundenen Anforderungen habe. (I know that I have enough interests for the demands of my occupation.)
f11_4	Schwierigkeiten im Beruf sehe ich gelassen entgegen, da ich meinen Fähigkeiten vertrauen kann. (I am optimistic about future occupational tasks because I can trust my skills.)
f11_5	Es bereitet mir keine Schwierigkeiten, meine beruflichen Absichten und Ziele zu verwirklichen. (I have no difficulties in achieving my occupational intentions and goals.)
f11_6	Ich glaube, dass ich für meinen Beruf so motiviert bin, um große Schwierigkeiten meistern zu können. (I believe that I am adequately motivated to master big occupational challenges.)

3.2.3 Work addiction (Workaholism)

To measure workaholism, the Dutch-Work-Addiction-Scale (DUWAS) was used in the follow-up survey, which operationalises workaholism through the joint occurrence of excessive and compulsive working (Schaufeli et al. 2009). DUWAS is an internationally widespread instrument in work addiction research and has already been validated several times (Balducci et al. 2017; Rantanen et al. 2015). The two dimensions are recorded by agreeing to[7] five statements each on compulsive and excessive work (see Tab. 4). The arithmetic mean for excessive working in the follow-up survey is 3.37 (standard deviation: 0.85) and in the case of compulsive working 2.51 (standard deviation: 0.84). In the follow-up survey, a principal component analysis shows the two-dimensional scale structure, which corresponds to the DUWAS of Schaufeli et al. Checking the scale reliability using Cronbach's Alpha yields a value of 0.63 for the dimension of excessive working and a value of 0.69 for the dimension of compulsive working. These values are thus slightly below the values determined by Schaufeli et al. (2009) for the Netherlands (0.78/0.78) and Japan (0.73/0.68). Overall, the values indicate an acceptable internal consistency of the scale in the follow-up survey.

7 Schaufeli et al. 2009 use a 4-level scale. In order not to switch between different answer formats in the survey, a 5-level scale was also used here.

Table 4: The items of the Dutch-Work-Addiction-Scale (DUWAS) in the follow-up survey

DUWAS dimension	Items
Working Excessively (WE)	(f12_1) Es kommt vor, dass ich in Eile bin und mich in einem Wettlauf mit der Zeit befinde. (I seem to be in a hurry and racing against the clock.)
	(f12_2) Es kommt vor, dass ich weiterarbeite nachdem meine Kollegen Feierabend gemacht haben. (I find myself continuing to work after my coworkers have called it quits.)
	(f12_4) Ich bin stets beschäftigt und habe mehrere Eisen im Feuer. (I stay busy and keep many irons in the fire.)
	(f12_6) Ich verbringe mehr Zeit mit der Arbeit als mit Freunden, Hobbies oder Freizeitaktivitäten. (I spend more time working than on socializing with friends, on hobbies, or on leisure activities.)
	(f12_8) Es kommt vor, dass ich zwei oder drei Dinge gleichzeitig tue, wie Essen, eine Notiz schreiben, Telefonieren. (I find myself doing two or three things at one time such as eating lunch and writing a memo, while taking on the telephone.)
Working Compulsively (WC)	(f12_3) Es ist wichtig für mich hart zu arbeiten, auch wenn mir das, was ich tue, keinen Spaß macht. (It is important to me to work hard even when I do not enjoy what I am doing.)
	(f12_5) Ich spüre, dass mich etwas in mir dazu antreibt hart zu arbeiten. (I feel that there is something inside me that drives me to work hard.)
	(f12_7) Ich fühle mich verpflichtet, hart zu arbeiten, auch wenn es keinen Spaß bringt. (I feel obliged to work hard, even when it is not enjoyable.)
	(f12_9) Ich habe ein schlechtes Gewissen, wenn ich mir frei nehme. (I feel guilty when I take time off work.)
	(f12_10) Es fällt mir schwer zu entspannen, wenn ich nicht arbeite. (It is hard for me to relax when I am not working.)

3.2.4 Big Five

The "Big Five", also known as the five-factor model, is a frequently used model within the personality psychology, which divides the personality into five main dimensions: Openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (low emotional stability)[8] (McCrae/Costa 2003). The Big Five Inventory Short Version (BFI-S), a short scale with 15 questions developed for the Socio-Economic Panel (SOEP), was used for the measurement in the BIBB follow-up survey (Gerlitz/Schupp 2005). The Big Five dimensions are measured by agreeing to statements along the lines of "I see myself as someone who..." on a five-point scale[9], with the sequence of items in each interview being randomised. Table 5 shows the items and their assignment to the five dimensions.

8 It is also called the OCEAN model (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism).

9 In the SOEP, a scale of 7 is used.

Table 5: The items of the Big Five Inventory Short Version (BFI-S) in the follow-up survey

Big Five Dimension	Items („I see myself as someone who...“)
Openness	(f13_4) originell ist, neue Ideen einbringt. (is original, comes up with new ideas.)
	(f13_14) eine lebhafte Phantasie, Vorstellungen hat. (has an active imagination.)
	(f13_10) künstlerische Erfahrungen schätzt. (values artistic, aesthetic experiences.)
Conscientiousness	(f13_1) gründlich arbeitet. (does a thorough job.)
	(f13_8) eher faul ist. (tends to be lazy.) (-)*
	(f13_12) Aufgaben wirksam und effizient erledigt. (does things effectively and efficiently.)
Extraversion	(f13_2) kommunikativ, gesprächig ist. (is communicative, talkative.)
	(f13_6) zurückhaltend ist. (is reserved.) (-)
	(f13_9) aus sich herausgehen kann, gesellig ist. (is outgoing, sociable.)
Agreeableness	(f13_3) manchmal etwas grob zu anderen ist. (is sometimes somewhat rude to others.) (-)
	(f13_13) rücksichtsvoll und freundlich mit anderen umgeht. (is considerate and kind to others.)
	(f13_7) verzeihen kann. (has a forgiving nature.)
Neuroticism	(f13_5) sich oft Sorgen macht. (worries a lot.)
	(f13_11) leicht nervös wird. (gets nervous easily.)
	(f13_15) entspannt ist, mit Stress gut umgehen kann. (is relaxed, handles stress well.) (-)

*negative polarity

A principal component analysis of the items in the follow-up survey confirms a five factor structure (the five factors bind about 58% of the variance). Checking the internal consistency of the five dimensions using Cronbach's Alpha yields similarly high values for the dimensions extraversion, agreeableness and neuroticism as the alpha coefficients determined by Richter et al. (2017) for the SOEP (adult sample), and somewhat lower values for openness and conscientiousness (cf. Tab. 6). The mean inter-item correlations (MIK, standardised items) and covariances (VIK, unstandardised items) are between 0.18 and 0.44 (cf. Tab. 6) and thus show a relatively strong correlation between the items. In view of the low number of items, the reliability can be classified as satisfactory overall.

Table 6: Arithmetic mean (MW), standard deviation (SD), mean inter-item correlations (MIK), mean inter-item covariances (VIK), Cronbach's Alpha (α) of the Big Five Inventory Short Version (BFI-S) in the follow-up survey and in the SOEP (last column)

	N	MW	SD	MIK	VIK	α	α SOEP 2005, 2009, 2013*
Openness	7,966	3.41	0.83	0.32	0.39	0.58	0.63, 0.67, 0.66
Conscientiousness	8,001	4.12	0.60	0.28	0.18	0.50	0.62, 0.59, 0.58
Extraversion	7,998	3.64	0.81	0.42	0.44	0.67	0.66, 0.66, 0.66

	N	MW	SD	MIK	VIK	α	α SOEP 2005, 2009, 2013*
Agreeableness	7,994	3.99	0.67	0.25	0.21	0.48	0.51, 0.50, 0.48
Neuroticism	7,997	2.63	0.80	0.33	0.38	0.59	0.60, 0.62, 0.62

*see RICHTER et al. 2017.

Source: Data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey"

3.2.5 Procrastination

Procrastination describes the tendency of people to postpone the start or completion of tasks. It is raised by agreeing to the item „Ich bin jemand, der dazu neigt, Dinge auf später zu verschieben, auch wenn es besser wäre, diese sofort zu erledigen." ("I see myself as someone who tends to put things off until later, even if it would be better to do them immediately.") (cf. Falk et al. 2016). The arithmetic mean on the five-point scale in the follow-up survey is 2.67 (standard deviation: 1.19).

3.2.6 Willigness to take risks

The willingness to take risks describes the tendency of a person to take or avoid risks (Beierlein et al. 2015: p. 1). In the follow-up survey the short scale for self-reported willigness to take risks of Beierlein et al. (2015) was used[10]. The question is: „Wie schätzen Sie sich persönlich ein: Wie risikobereit sind Sie im Allgemeinen?" ("How do you see yourself - how willing are you in general to take risks?"). Studies have shown that the self-reported willingness to take risks and the risk behaviour of people are related (cf. ibid., p. 3). Dohmen et al. (2011) have compared these with experimental measurements of risk willingness (e.g. lottery experiments) and show that differences in risk willingness can be measured well in surveys. The arithmetic mean of risk willingness in the follow-up survey is 3.0 (standard deviation: 0.86). The self-reported willingness to take risks in the follow-up survey is positively related to correlates of willingness to take risks known from the literature (e.g. with the dimension of extraversion of the Big Five, wages and gender).

3.2.7 Willingness to take risks at the end of school

Respondents who were younger than 50 years of age[11] at the time of the interview were also asked about their willigness to take risks at the end of school within the follow-up survey. They were asked the following question: „Wenn Sie an das Ende Ihrer Schulzeit denken, würden Sie sagen, Sie waren damals in etwa genauso risikobereit, viel risikobereiter oder viel weniger risikobereit?" ("If you think about the end of your schooling, would you say that you were about as willing to take risks, much more willing to take risks or much less willing to take risks"?) In each case about a third of those questioned said that they were just as willing to take risks (32.72%), much more willing to take risks (34.83%) and much less willing to take risks (32.13%).

3.3 Vocabulary test ("animal-naming task")

The animal-naming task is based on lexical tests to measure "fluency" (Lindenberger et al. 1993) and was adapted for implementation in computer-assisted surveys for the SOEP (see

10 In contrast to the 7-point scale tested by Beierlein et al. (2015), a 5-point fully verbalised rating scale was implemented.

11 The variable contains 54 cases with an age (*valter*) of 50 years due to a programming error at the beginning of the field phase.

Lang 2005; Lang et al. 2007). There, this form of vocabulary test was used in the CAPI survey mode in the 2006, 2012 and 2016 surveys. It captures the "intellectual pragmatics" dimension of cognitive performance (cf. LANG 2005). In this test, respondents are asked to name as many different animals as possible within a limited time. The number of animals named within the time available can be used as a (proxy) variable for respondents' cognitive abilities. The instructions in the interview are as follows (but in German): "At the end of the interview there is something else. We have prepared a small task. In this task, you should name as many different animals as possible. You have 60 seconds to do this."[12] The interviewer could choose between the options each time an animal was named in the CATI interface: (1) animal named, (2) animal repeated, (3) naming unclear, or (4) test aborted by the interviewee. 7,567 respondents took part in the test, 417 did not want to take part and 26 other persons aborted the test before or immediately after the start (cf. Tab. 7, see variables *f15in* and *tstart* in the data set). With a share of just over 5%, the refusal rate is low. On average, just under 28 animals were named, with a minimum of one animal and a maximum of 122 animals[13]. This corresponds roughly to the characteristic values in SOEP (2012: 21.5 animals in 60 seconds).

Table 7: Descriptive statistics on the number of animals mentioned (in one minute)

N		Arithmetic mean	Standard deviation	Minimum	Maximum
Participated	7,567	27.8	7.66	1	122
Abort before / immediately after start	26				
Participation denied	417				
Total	8,010				

Source: Data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey"

To check the reliability of the test, the test results were divided into two time intervals of 30 seconds each and Cronbach's alpha or the inter-item correlation was calculated for the two subtests (for a similar procedure see Lang et al. 2007). The internal consistency of the scale is in the middle range with Cronbach's Alpha of 0.57 and an inter-item correlation of 0.40 as in Lang et al. 2007. Prior to the survey, the validity of the test in terms of content was checked with the help of a cognitive pretest. The aim was to find out more about the extent to which the vocabulary test is a valid measuring instrument for assessing cognitive performance in a telephone interview. It was found that people with more mentions tended to be systematic in their search for animals, while people with fewer mentions tended to name animals randomly (Danullis 2017a). The implementation of the test in the telephone interview worked well according to the feedback of the interviewers, both with regard to the technical implementation and the interview situation. The external validity of the test as a measure of cognitive abilities is shown by the fact that there are significant correlations between the number of animals mentioned and various criterion variables, such as age (negative correlation), educational level, final grade and ISEI status of the current occupation (positive correlations in each case).

12 The remaining time was displayed to the interviewer by an automatic programme in CATI, so no manual time control by the interviewer was necessary. If the interviewee could not think of anything else in the course of the time available, the interviewer should give the following advice: "Please think again, you still have some time left".

13 The total number of animals mentioned (variable *ntier*) was calculated as the sum of the animals mentioned (code 1) up to the end of the test period or to the abortion of the test.

4 Data collection

4.1 Survey instrument and method

The survey instrument of the follow-up survey was designed as a Computer Assisted Telephone Interview (CATI) of 8,010 core employed persons and 1,001 non-core employed persons (the latter only questionnaire part 1, cf. footnote 2). For reasons of research economy, the survey was conducted as a follow-up to the 2017/18 BIBB/BAuA Employment Survey (ETB). This makes it possible to evaluate the numerous data from the ETB (such as on occupational activity or sociodemographics) together with the data from the follow-up survey without having to (re)collect this information.

Various measures were taken to ensure the quality of the survey instrument and design in advance. Firstly, an early version of the questionnaire was advised by GESIS - Leibniz Institute for the Social Sciences. The consultation also focused on the design of the response scales and the transferability of already validated scales from the Open Access Repository for Measurement Instruments to the CATI survey mode and the sampling system[14]. Results of the consultation led to some revisions of the questionnaire. The revised instrument was then tested by the Sozialwissenschaftliche Umfragezentrum (SUZ) in a CAPTIQ test (Computer Assisted Pretesting of Telephone Interview Questionnaires). The aim was to test the functionality of the instrument and to determine the average interview time (Danullis 2017b). Within the framework of a personal oral cognitive pretest, 10 subjects were also presented, among other things, the test to record cognitive performance (cf. Chapter 3.3).

The finished programming template was handed over to SUZ in July 2017 by the project management (Christian Ebner and Daniela Rohrbach-Schmidt). Before the start of the main survey SUZ carried out a field pretest. The fieldwork of the pretest took place from 29th August to 5th September 2017. 35 interviews were conducted with core employed persons from the ETB who were willing to take part in follow-up surveys (and 17 non-core employed persons from the screening of the ETB who were willing to be interviewed). In addition to determining the functionality of the final CATI instrument, the field pretest was mainly used to conduct the survey with persons from the ETB who were willing to take part in follow-up surveys.

4.2 Population and selection procedure

The follow-up survey consists of two sub-projects with different populations. The population of the sub-project on “Personality Traits and Employment” are employed persons aged 15 and over (excluding apprentices) in Germany according to the population of the 2018 Employment Survey. Employment is defined as an activity in which at least ten hours per week are regularly worked for pay (“core employed persons”). This includes (cf. Rohrbach-Schmidt/Hall 2020):

- Persons who had interrupted their activities for a short period, i.e. for a maximum of three months, were included. This could be maternity or parental leave or special leave for another reason.
- Also included were persons who were engaged in a remunerated work in addition to an apprenticeship or a course of study or as part of a legal clerkship or specialist training.

14 At this point we would like to thank Natalja Menold and Angelika Stiegler from the GESIS questionnaire design & evaluation team especially for their helpful comments.

- Family helpers were also interviewed. They count as employed although they are defined, among other things, as working in the business or firm of the other family member without fixed remuneration.
- Foreigners were included if they spoke sufficient German.

On the other hand, persons who volunteer their paid work were not interviewed. Also excluded were persons in an employment relationship which is a necessary part of training, as well as activities in the context of an internship. Also excluded were persons doing military or voluntary service and persons who were in a voluntary social or ecological year.

The sample of core employed persons in the follow-up survey was drawn at random from persons willing to participate in the follow-up survey who had given a complete interview in the BIBB/BAuA Employment Survey 2018 (ETB 2018) (see Chapter 3.3 in the Methodological Report of ETB 2018, Gensicke/Tschersich 2018). At the end of the main ETB interview the interviewees were asked for their agreement to possible follow-up interviews (F1620_ZP). 17,408 of the 20,012 respondents gave their consent, 2,604 refused to give their consent; the willingness to conduct follow-up surveys is 87 per cent in the ETB 2018 and thus ten percentage points above the willingness to conduct follow-up surveys in the ETB 2012 (cf. Rohrbach-schmidt/Hall 2013). A multivariate selection model (cf. Tab. 6 in Rohrbach-schmidt/Hall 2020) has little explanatory power and shows no significant or at best very small differences in the willingness to take part in follow-up surveys with regard to central characteristics. Against the background of the high willingness rate and the results of the selection model, no systematic distortions in the willingness to participate in a follow-up survey can be assumed.

4.3 Fieldwork and response rate

The field time of the main study of the follow-up survey covered the period between 17th October 2017 and 5th May 2018. Before the start of the field phase, the interviewers were familiarised with the survey content and the questionnaire in training sessions, of which one was attended by the client. Contact was established and the interviews conducted Monday to Friday between 4.30 pm and 9 pm and on Saturday between 12 pm and 6 pm. Over the entire field time, 63 interviewers were deployed. The realised average net interview duration for the follow-up survey as a whole was 17.7 minutes.

Details on the interviewer training sessions and further quality assurance measures can be found in the methodological report of the SUZ (Danullis 2018). The random sample was drawn by Kantar (Gensicke/Tschersich 2018) in the 2018 BIBB/BAuA Employment Survey. The addresses of persons willing to be interviewed were transmitted in 22 tranches from Kantar via BIBB to SUZ parallel to the ETB 2018 fieldwork. The aim was to conduct interviews with core employed persons as close as possible to the interviews in the Employment Survey. This was intended to rule out as far as possible any changes in important traits of the respondents between the two interviews (e.g. change of occupation). The majority of the interviews (around 80%) took place within a period of a few days to a maximum of 8 weeks after the ETB interview.

Over the entire field work, Kantar provided SUZ with 15,516 telephone numbers from the core employed persons sample, which was recruited via dual-frame, and from which SUZ realised 8,010 interviews. In the net interviews with core employed persons (n=8,010) the mobile phone share was 31.4 per cent. The response rate for the follow-up survey (core and non-core employed persons) is 53 per cent in relation to the adjusted gross 1 and 83 per cent in relation to the adjusted gross 2 (for the definition of gross 1 and 2 see field report of SUZ, Danullis

2018). There is a high degree of agreement between the net samples of ETB 2018 and the follow-up survey with regard to socio-demographic distribution structures. This means, among other things, that there were only minor systematic selection effects in the transition from the main survey to the follow-up survey (cf. also the chapter on weighting). Effects of contact and willingness to cooperate can be largely ruled out. The latter is already proven by the high response rate (cf. field report by SUZ, Danullis 2018).

4.4 Weighting

The weighting variables in the follow-up survey are based on the weighting factors for the 2018 BIBB/BAuA Employment Survey (*gew_2018* and *gew2018_hr17,* cf. Rohrbach-Schmidt/Hall 2020 and Gensicke/Tschersich 2018). The weighting factors contain a design and an adjustment component. A design weighting corrects the different selection chances. The adaptation weighting adjusts the sample structures to those of the population by means of weighting factors. In the case under consideration, the official data of the microcensus were used as reference statistics, which (by convention) are considered to represent the population.

A comparison between the reference and sample structure is shown in Table 8. In the follow-up survey, the same systematic deviations compared to the Microcensus 2017 as in the Employment Survey (Gensicke/Tschersich 2018) show up in central characteristics (German nationality (yes/no), highest school leaving certificate, occupational status and age): with the exception of age, the deviations are generally only slightly greater. Against this background, two alternative weighting variables were created in the project. A first variant uses the weighting variable from the ETB 2018 (gewv1) and multiplies the extrapolation variable by the reciprocal value of the selection probability in the follow-up survey (gewv1_hr17). A second variant adjusts to the marginal distributions of the characteristics highest school leaving certificate, occupational status, age and German nationality (gewv2, gewv2_hr17).

Table 8: Comparison between reference (Microcensus (MZ) 2017) and sample structure

Structural feature	MZ 2017	Follow-up survey		
		Unweighted	Weighted (Variant 1)	Weighted (Variant 2)
Gender				
Male	54.7	51.6	55.8	55.2
Female	45.3	48.4	44.2	44.8
Nationality				
Non-German	11.2	2.3	8.8	4.9
German	88.8	97.7	91.2	95.1
Age				
15–20	1.1	0.6	1.0	0.9
21–30	16.5	8.3	15.2	12.3
31–40	22.2	18.3	21.1	22.4
41–50	25.5	24.3	24.8	30.2

Structural feature	MZ 2017	Follow-up survey		
		Unweighted	Weighted (Variant 1)	Weighted (Variant 2)
51–64	32.7	45.8	35.5	32.4
65 and older	2.0	2.8	2.4	1.9
Missing information	1.0			
Occupational position				
Workers	18.4	9.8	17.0	18.0
Employees	65.7	69.1	66.1	66.0
Officials	5.2	9.9	6.0	5.2
Self-employed	10.4	10.9	10.6	10.3
Helping family members	0.3	0.2	0.2	0.3
Missing information	0.1	0.1	0.0	0.1
Highest school leaving certificate				
Max. Hauptschulabschluss	25.4	12.6	23.0	25.5
Realschulabschluss/ Mittlere Reife/et al.	34.8	30.1	33.5	34.7
(Fach-)hochschulreife/ (Fach-)abitur or similar	39.5	57.2	43.3	39.6
Missing information	0.3	0.1	0.2	0.1
N		8,010	8,010	8,010

Source: Data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey"

5 Data access, data protection regulations, data products and anonymisation

5.1 Data access

The data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey" is available as a Scientific Use File (SUF) for scientific evaluations. SUFs serve research interests and are made available to users via download. This requires an anonymising processing of the data. The use of this anonymised research data is subject to guidelines and requires a formal application to the BIBB-FDZ. The SUF is provided by GESIS - Leibniz Institute for the Social Sciences, department Data Archive for the Social Sciences. The study is archived in the ZA study catalogue under the number ZA7603 and can be ordered there. For this purpose, an application for use must be completed and sent by post or fax to the address below. Once the application has been approved by BIBB, GESIS will make the data available via ftp download.

BIBB - Federal Institute for Vocational Education and Training
Research Data Centre
P.O. Box 201264
53142 Bonn
Germany (German)
Fax: +49 - (0)228 - 107 - 2020

5.2 Data protection regulations

Access to the research data of the BIBB-FDZ "Personality Traits and Employment - BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey" is subject exclusively to the principle of data economy and compliance with applicable data protection regulations, in particular Article 89 of Regulation (EU) 2016/679 (Data Protection Basic Regulation DS-GVO) and Section 27 of the Federal Data Protection Act (BDSG 2018). Accordingly, research data may be passed on to independent scientific research for a limited period of time in order to carry out scientific projects if it is not possible to establish a reference to a survey unit ("anonymity"). In order to achieve this without exception, in the case of the SUF, special technical and organisational data security measures must be set up by the institute receiving the data or by the researchers to prevent unauthorised access to the data. It is recommended that researchers who are authorised to access and use the data are particularly obliged to comply with data protection regulations (cf. SUF Guidelines of Use of the BIBB-FDZ).

The staff of the BIBB-FDZ only inspect the researchers' research questions, methods and analyses for the purpose of providing advice, improving the BIBB-FDZ service and ensuring compliance with data protection regulations. BIBB employees who do not belong to the BIBB-FDZ are not given any insight into the activities of the researchers.

5.3 Data anonymisation

The Scientific Use File contains all cases contained in the original data (n=8,010). Some variables were deleted or anonymised for the SUF (cf. Tab. 9).

Table 9: Anonymisations/Deletions in the SUF

Group	Variable names	Variable content	Anonymisation
Screening var./sampling structure variables1	Teilstudie dispos_ et rec gebneu uzpnamei	NET fixed network ET/NET gender Employed yes/no Month/year of birth Name is present yes/no (from lot 1)	deleted valter
Internally generated variables	vedate respnum_ time_ t001-t150 tstop tsint01 ts001-tstp anz lrnber_1-f7_402	Day/date of the interview SUZ ID Interview duration Animal-naming task variables Lists of occupations	int_jahr2, int_mon2 deleted
Full texts	i_note	Full text comment on the interview	deleted
Questionnaire part 1 (Occupations)	f1r01-f09_10 f08_spl f09_spl	Perception of occupations, auxiliary variables, lists of occupations	deleted
Questions Willingness to link	erlaub erlname erlnameo	Questions on the willingness to link the survey data with BA data	deleted
Sociodemography of the non-core employed persons	f17s f17so f17a f18 f19 f27 f28 f21n f21sn f22n f22nn f23n f23_spl	Sociodemography non-core employed persons, additional questions on care	deleted
Design weighting variables for non-core employed persons	f20_2 f24nn f25nn f26nn f23nn f23	Number of mobile phone users, number of mobile phone numbers/landline numbers, telephone connection ISDN, number of persons in the household (HH), number of persons aged 15 and over in the HH	deleted
Additional questions for non-core employed persons in the fixed network sample	uenewt s2_ne7m s2_ne7j uanet15	Permission by ZP/KP, month of birth, year of birth, number of non-employed persons aged 15 and over in HH	deleted

[1] Exceptions: S1 (gender), S2 (month/year of birth).

6 Citation

Any work that uses or refers to a data record available in the BIBB-FDZ must contain a reference to this source in the form of a note on the title page/imprint of the publication and/or a bibliographical citation in the bibliography or footnote. In addition to citing the data itself, reference should be made to the corresponding BIBB-FDZ Data and Methodological Report.

Proposal for a reference to the title page/imprint of publications:

This paper uses the data set "Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey", doi:10.7803/501.18.2.1.10. The study was carried out by the Federal Institute for Vocational Education and Training.

Bibliographic citation:

Title of the data:	**Short form (German):**	**Short form (English):**
Persönlichkeitseigenschaften und Erwerbstätigkeit in Deutschland – BIBB-Zusatzbefragung zur BIBB/BAuA-Erwerbstätigenbefragung 2018	BIBB-Zusatzbefragung Persönlichkeitseigenschaften 2018	BIBB-Follow-up Survey on Personality Traits 2018
English title of the data: Personality Traits and Employment - BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey		
BIBB-FDZ Data and Methodological Report: Rohrbach-Schmidt, Daniela; Krüger, Sabine; Ebner, Christian (2020): Personality Traits and Employment – BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey, BIBB-FDZ Data and Methodological Reports No. 5/2020, Version 1.0. Bonn: BIBB. ISSN 2190-300X	DOI (for SUF): doi:10.7803/501.18.2.1.10	Study no. GESIS (SUF): ZA7603
Bibliographic citation of the data set (German): Rohrbach-Schmidt, Daniela; Ebner, Christian (2020): Persönlichkeitseigenschaften und Erwerbstätigkeit in Deutschland – BIBB-Zusatzbefragung zur BIBB/BAuA-Erwerbstätigenbefragung 2018. suf_1.0; Forschungsdatenzentrum im BIBB (Hrsg.); GESIS Köln (Datenzugang); Bonn: Bundesinstitut für Berufsbildung. doi:10.7803/501.18.2.1.10		
Bibliographic citation of the data set (English): Rohrbach-Schmidt, Daniela; Ebner, Christian (2020): Personality Traits and Employment - BIBB-Follow-up Survey to the 2018 BIBB/BAuA Employment Survey. suf_1.0; Research Data Center at BIBB (ed.); GESIS Cologne (data access); Bonn: Federal Institute for Vocational Education and Training. doi:10.7803/501.18.2.1.10		

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