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DOCUMENTATION OF SCALES IMPLEMENTED FROM PANEL WAVE 1 ONWARDS

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Abstract

This paper documents the questionnaire-based scales and item composites administered in the first two waves of the second TREE cohort (TREE2) in 2017 and 2018. At the centre of this working paper is a technical appendix, which provides, for each scale, a detailed tabular report of selected statistics and quality measures. The focus is on the scales' reliability, dimensionality and measurement invariance.

The scaling and calculation of factor scores rely essentially on the same factor-analytical models and methods as in the TREE2 baseline survey. These are described in detail in section 3 of the respective documentation of the scales used in that survey (see Sacchi & Krebs-Oesch, 2021). The documentation also describes the selection, calculation and interpretation of the figures and quality measures reported in the tabular appendix (ibid., section 4). Against this backdrop, the explanatory notes in the introduction of the present documentation are restricted to a description of the database for both waves and of some modifications in the applied methods. In addition, we also describe a series of newly introduced statistics of longitudinal measurement invariance for scales with repeated measures.

Some Practical Guidelines for Using the Scales

Explanations of the wave-specific (i.e., cross-sectional) statistics and quality measures provided in the technical appendix of this documentation can be found in the documentation of the baseline survey (section 4 in Sacchi & Krebs-Oesch, 2021). The newly introduced measures of longitudinal measurement invariance are explained below (section 3.4 and 4.2). They are intended to help data users decide whether a given scale shows the measurement properties required for their analysis.

The reported scale-specific measures focus primarily on reliability (in the sense of internal consistency) and measurement invariance across survey modes, languages and waves. We do not address scale validity, as TREE mostly uses well-established scales and the database offers many opportunities to conduct external validations tailored to specific analytical needs.

For some scales in the TREE2 scientific use file, there are several scale versions that partially draw on one and the same items. Obviously, these scale versions should not be used simultaneously within the same multivariate model. The respective scales are indicated in the overview of available scales in section 2 (cf. the column "Multiple scale versions" in Table 2).

The names and labels of all items, factor scores and composite variables in the technical appendix are the same as in the data release for the second TREE cohort — except that the prefixes indicating the panel wave have been omitted.

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Tables and Figures

Introduction

This documentation provides an overview of the scales and item-based composites implemented in the first two panel waves administered after the baseline survey of the second TREE cohort (TREE2). The field work took place in spring 2017 and 2018, respectively. For each scale, we have compiled a tabular appendix consisting of scale-specific statistics and quality measures so that data users can easily gain an overview of important scale properties.

In the following sections, we first outline some relevant aspects of the survey design of the TREE2 panel waves (1). We then give an overview of the range of scales and composites employed in the surveys (2). Finally, we address some methodological modifications (3) and additional elements in the scale reporting (4) that pertain specifically to longitudinal measurement invariance in scales with repeated measurements. The latter is a new aspect that had not yet played a role in the cross-sectional analyses of the baseline survey.

1 Survey Design and Database

The TREE2 panel waves rely primarily on a CATI interview, which has been designed to collect detailed episodic data on educational and employment careers in particular, along with a complementary self-administered questionnaire. Apart from gathering in-depth information on respondents' current main activities, the information collected with the questionnaire also spans a variety of psychometric measures including the scales and composites addressed in this documentation.

The complementary survey involves two self-administered survey modes, which are implemented sequentially: first, an online survey and then, in cases in which this is unsuccessful, a paper-and-pencil questionnaire (for details, see Hupka-Brunner et al., 2021: Section 3.4.1).[1] The research literature on mode effects suggests that both modes are suitable for the sometimes sensitive questions (e.g., self-assessments) and that usually no significant mode effects are to be expected (see, e.g., Carini et al., 2003; Herrero & Meneses, 2006; Hox et al., 2015). The panel wave surveys are all carried out outside of the school setting so that — unlike the TREE2 baseline survey — we must not reckon with any systematic variation in the survey settings.[2] Table 1 shows how the database available for scaling for wave 1 and 2 are distributed across the three survey languages and modes.[3] As not all CATI

[1] Note that for panel wave 1, the available database for some scales also includes respondents who have completed the paper version of the base questionnaire instead of the complementary questionnaire (see also Table 1). This version is used sequentially in cases where no CATI c0uld be realised (cf. Hupka-Brunner et al., 2021: Figure 5)

[2] Whereas the TREE2 surveys are usually conducted in an individualised setting, the baseline survey was largely administered in a classroom setting (except for the AES extension survey) under the direction of trained test administrators.

[3] This also includes respondents who did not fully complete the complementary questionnaire if it contained at least one scale that could be analysed.

participants complete the complementary questionnaire as well, the available samples are considerably smaller than the wave samples documented in the scientific use file (see Hupka-Brunner et al., 2021: Section 5). We further need to bear in mind that the samples available for specific scales will usually be smaller than indicated in Table 1, sometimes because the surveys are deliberately limited to specific subpopulations (e.g., those in employment), and partly because the imputation of missing item values is restricted to respondents with at least one non-missing item per scale.

Table 1 *Available sample by wave, survey language and survey mode*

Sample size and column per cent (%)		Wave 1 (2017) [1]		Wave 2 (2018)	
Survey Language:					
	German	4,203	(69%)	3,646	(67%)
	French	1,581	(26%)	1,461	(27%)
	Italian	349	(6%)	321	(6%)
Survey Mode:					
	Web	4,650	(69%)	5,077	(94%)
	Paper & Pencil	1,483	(26%) [1]	351	(6%)
Total		6,133	(100%) [1]	5,428	(100%)

1) In wave 1, selected scales have also been implemented in the pencil-and-paper version of the base questionnaire, which accounts for 402 respondents or 6.7% of the sample available for scaling.

2 Overview of Available Scales and Item Composites

The complementary questionnaire implemented in the first two panel waves covers a wide range of the 75 scales and item composites overall. Table 2 contains an overview of all instruments, structured by topic, and indicates in which of the released waves they were used. It also shows which instruments have been administered in the TREE2 baseline survey. Note that the baseline survey comprises numerous other scales and composites that were specifically tailored to the situation at the end of lower-secondary education; for a detailed description, the reader may consult the respective documentation for the scales of the baseline survey (Sacchi & Krebs-Oesch, 2021).

The outer left column in Table 2 lists the names of the scales and the composites, respectively (they correspond with the labels of the variables of the respective individual scale values published in the data release). The next column to the right gives the main source from which the [respective] instrument was adopted or on the basis of which it was developed. These sources are documented in detail in the appendix. The next column contains the names of the variables provided in the TREE2 data release, omitting, however, the wave-specific prefixes (e.g., t_1 for a scale value from wave 1). Both in the release and in table 2,

Table 2: *Overview of item-based scales and composites administered in waves 1 and 2*

Survey topic *Detailed survey topic* Scale / composite	Sources [1]	Variable names	Multiple scale versions	Number of items	TREE2 panel waves T0 [2]	T1	T2
Educational situation (general, school & training firm)							
Absenteeism / intention to change education							
Intention to quit [educ.]	TREE2 based on TREE1	edquit_comp		2		x	x
Truancy [educ.]	TREE2 based on PISA2000; PISA2012	edtruancy_comp		2		x	x
Resources & strains (education)							
Variety of tasks [educ.]	TREE1 based on Prümper et al., 1995	scvar_fs		3		x	x
Scope of action [educ.]	TREE1 based on Prümper et al., 1995	scsca_fs		3		x	x
Strain [educ.]	TREE1 based on Prümper et al., 1995	scove_fs	m1	4		x	x
Strain: Time pressure [educ.]	TREE1 based on Prümper et al., 1995	scovpr_comp	s1	2		x	x
Strain: Excessive demands [educ.]	TREE1 based on Prümper et al., 1995	scovex_comp	s1	2		x	x
Social support [educ.]	TREE1 based on Prümper et al., 1995	scsoc_comp		2		x	x
Teaching skills of teachers [educ.]	TREE2 based on TREE1; Neuenschwander et al., 1998	scqua_fs		3		x	
Variety of tasks [training firm]	TREE1 based on Prümper et al., 1995	fivar_fs		3		x	x
Scope of action [training firm]	TREE1 based on Prümper et al., 1995	fisca_fs		3		x	x
Strain [training firm]	TREE1 based on Prümper et al., 1995	fiove_fs	m2	4		x	x
Strain: Time pressure [training firm]	TREE1 based on Prümper et al., 1995	fiovpr_comp	s2	2		x	x
Strain: Excessive demands [training firm]	TREE1 based on Prümper et al., 1995	fiovex_comp	s2	2		x	x
Strain: Work environment [training firm]	TREE1 based on Prümper et al., 1995; BIBB 2012	fisur_fs		3		x	x
Social support [training firm]	TREE1 based on Prümper et al., 1995	fisoc_fs		3		x	x
Teaching skills of VET trainer [training firm]	TREE1	fiqua_fs		3		x	x
Career prospects [training firm]	TREE1 based on Prümper et al., 1995	ficaco_comp		2		x	x
Employment situation / internship							
Resources & strains (employment)							
Variety of tasks [job]	TREE1 based on Prümper et al., 1995	jvar_fs		3		x	x
Scope of action [job]	TREE1 based on Prümper et al., 1995	jsca_fs		3		x	x
Strain [job]	TREE1 based on Prümper et al., 1995	jove_fs	m3	4		x	x
Strain: Time pressure [job]	TREE1 based on Prümper et al., 1995	jovpr_comp	s3	2		x	x
Strain: Excessive demands [job]	TREE1 based on Prümper et al., 1995	jovex_comp	s3	2		x	x
Strain: Work environment [job]	TREE1 based on Prümper et al., 1995	jsur_fs		3		x	x
Social support [job]	TREE1 based on Prümper et al., 1995	jsoc_fs		3		x	x
Teaching skills of supervisor [job]	TREE2 based on TREE1	jqua_fs		3		x	x
Career prospects [job]	TREE1 based on Prümper et al., 1995	jcaco_comp		2		x	x

1) See appendix for a detailed list of sources. 2) TREE2 baseline survey (2016).

Table 2 *Overview of item-based scales and composites (continued)*

Survey topic *Detailed survey topic* Scale / composite	Sources [1]	Variable names	Multiple scale versions	Number of items	TREE2 panel waves T0 [2]	T1	T2
Job tasks, requirements and job–skills mismatch							
Job requirements: Social skills	TREE1 (wave 9; 2014)	jskilla_comp		2		x	x
Job requirements: Literacy	TREE1 (wave 9; 2014)	jskillb_comp		2		x	x
Job requirements: Manual skills	TREE1 (wave 9; 2014)	jskillc_comp		2		x	x
Job requirements: Problem solving	TREE1 (wave 9; 2014)	jskilld_comp		2		x	x
Job requirements: Numeracy	TREE1 (wave 9; 2014)	jskille_comp		2		x	x
Absenteeism / intention to change job							
Truancy [job]	TREE2 based on PISA2000, PISA2012	jtruancy_comp		2		x	x
Self-assessment of education & employment pathways							
Assessment of current education & training							
Complementarity of dual VET [training firm]	TREE2	filis_comp		2		x	x
Perceived fit & commitment: Main activities							
Perceived fit of education	TREE2 based on Neuenschwander et al., 2013	edfit_fs		4		x	x
Perceived fit of job	TREE2 based on Neuenschwander et al., 2013	jfit_fs		4		x	x
Occupational commitment [training firm]	Meyer et al., 1993	fiafcomp_comp		2		x	x
Occupational commitment [job]	Meyer et al., 1993	jafcomp_fs		4		x	x
Family background							
Family climate							
Parental appreciation	Böhm-Kasper et al., 2004	apprpar_fs		6		x	
Emotional closeness to parents	TREE1 based on Szydlik, 2008	closep_comp		2	x	x	
Household chores	ISSP 2012 (complemented TREE2)	domwrk_fs		7		x	x
Social, cultural & economic resources							
Social capital (respondent)							
Perceived social network support	Hupka-Brunner et al., 2015 (BHPS, ISSP 2003)	closupp_fs		5	x	x	x
Generalised trust	ESS 2012, World & European Value Survey	gtrust_comp		2		x	
Cultural capital (respondent)							
Embodied cultural capital	TREE2, Hupka-Brunner et al., 2015	inccap_fs	m4	6	x		x
Embodied cultural capital: Manners	TREE2, Hupka-Brunner et al., 2015	manners_fs	s4	3	x		x
Embodied cultural capital: Verbal skills	TREE2, Hupka-Brunner et al., 2015	verbskill_fs	s4	3	x		x

1) See appendix for a detailed list of sources. 2) Baseline survey (2016).

Table 2 *Overview of item-based scales and composites (continued)*

Survey topic *Detailed survey topic* Scale / composite	Sources [1]	Variable names	Multiple scale versions	Number of items	TREE2 panel waves T0 [2]	T1	T2
Social and cultural participation							
Politics							
External political efficacy	Stadelmann-Steffen & Koller, 2013	polefficacy_comp		2			x
Political activities	MOSAiCH 2015 adapt. TREE2	polakt_fs		5			x
Health							
Physical complaints	Grob et al., 1991	heal_fs		8			x
Non-cognitive factors							
Motivational concepts							
Intrinsic achievement motivation	IGLU 2001	achmoti_fs		3	x	x	
Extrinsic achievement motivation	IGLU 2001	achmote_fs		3	x	x	
Performance-approach goals	TREE2 based on SELLMO 2012	apprxgls_comp		2		x	
Instrumental learning motivation [PISA2000]	PISA 2000	insmot_fs		3	x	x	
Self-perception							
Global self-esteem [a]	Rosenberg, 1979 (translated TREE1)	sel_fs [a]	m5	7	(x) [a]	x [a]	
Positive global self-esteem	Rosenberg, 1979 (translated TREE1)	sele_fs	s5	4	x	x	x
Negative global self-esteem [a]	Rosenberg, 1979 (translated TREE1)	seld_fs [a]	s5	3	(x) [a]	x [a]	
General perceived self-efficacy & persistence	TREE1 (wave 9) based on GSES; Grob & Maag Merki, 2001	persseef_fs	m6	8		x	
General perceived self-efficacy scale (GSES)	TREE1 (wave 9) based on GSES	seef_fs	s6	4	x	x	x
Crafting & technical self-concept	Schwanzer et al., 2005	techself_fs		3		x	(x) [b]
Mathematical self-concept	Schwanzer et al., 2005	matself_fs		3		x	(x) [b]
Verbal self-concept	Schwanzer et al., 2005	langself_fs		3		x	(x) [b]
Artistic self-concept	Schwanzer et al., 2005	artself_fs		3		x	
Cognitive self-concept	Schwanzer et al., 2005	intelself_fs		3		x	
Volitional strategies							
Persistence	TREE1 (wave 9) based on Grob et al., 2001	pers_fs	s6	4		x	
Effort [educ.]	TREE1 based on Moser et al., 1997	edeff_fs		3		x	x
Effort [job]	TREE1 based on Moser et al., 1997	jeff_fs		3		x	x

1) See appendix for a detailed list of sources. 2) TREE2 baseline survey (2016).

a) Baseline-survey scale modified (shortened) for wave 1. Note that in the current data release, the variable names and labels of the modified versions have mistakenly not been changed.

b) Administered only if respondent's post-compulsory programme is scheduled to end about one year after wave 2 (scaling planned after completion of transition-dependent data collection).

Table 2 *Overview of item-based scales and composites (continued)*

Survey topic *Detailed survey topic* Scale / composite	Sources [1)]	Variable names	Multiple scale versions	Number of items	TREE2 panel waves T0 [2)]	 T1	 T2
Personality characteristics							
Internal locus of control	GESIS (short version)	loci_comp		2	x	x	
External locus of control	GESIS (short version)	loce_comp		2	x	x	
Values & attitudes							
Work-related intrinsic value	TREE1; based on Watermann, 2000	vawi_fs		3	x	x	x
Work-related extrinsic value	TREE1; based on Watermann, 2000	vawe_fs	m7	3	x	x	x
Work-related extrinsic value (extended)	TREE1; based on Watermann, 2000	vawe_m_fs	ex7	4		x	x
Family value	TREE1; based on Watermann, 2000	vafa_comp		2	x	x	x
Growth need strength value	TREE1; based on Hackman & Oldham, 1980	grow_comp		2		x	
Leisure-related value	TREE1; based on Watermann, 2000	vafu_comp		2		x	
Positive attitude towards life	TREE1, Grob et al., 1991	posl_fs		5	x [c)]	x	x

1) See appendix for a detailed list of sources. 2) TREE2 baseline survey (2016).

c) Administered only in the T0 extension survey (see Hupka et al., 2021: section 3.2).

the variable names include the suffix *_fs* if the variable is a factor score and the suffix *_comp* if it is an item composite.

The column labelled "Multiple scale versions" shows markers for instruments for which there is more than one scale version available in the database. In most cases, this pertains to *scales with several sub-dimensions* (see also Sacchi & Krebs-Oesch, 2021: 12f.), which are marked *sx*, whereas the main dimension is indicated by *mx* (*x* is an index for instruments with several versions in the database). Depending on their specific analytical needs, data users can thus choose between sub- or main dimensions. In a few cases, there are also several versions of a scale if an instrument has been adjusted across survey panels. This may have involved adding or dropping items (for methodological reasons) or a combination of the two. The type of adjustment is indicated in the variable label of the scales in question (*extended*, *shortened* or *adapted* for a combination of both).

The outer right-hand column shows how many questionnaire items each instrument draws on, and in which waves it has been administered.

Note that the names along with the labels of the variables of two scales that were modified for wave 1 have erroneously not been adapted yet in the current data release. This pertains to the scales of *global self-esteem* and *negative global self-esteem*, which were shortened by one item in wave 1. In the 2021 data release, the scores pertaining to these scales are erroneously listed under the variable names and labels of the full scale version administered in the baseline survey (*sel_fs* or *seld_fs*). This will be corrected in future releases.

With regard to the scales measuring self-concepts, it is further worth mentioning that these have partly been administered with a *transition-dependent timing*. Specifically, from wave 2 onward, they have only been administered to respondents who were, at the time of the survey, about one year away from completing their first post-compulsory certificate. Hence, measurements are taken shortly before the end of post-compulsory education and the crucial transitions, i.e., into the labour market or continued education. The transition-dependent measurements will be continued across waves until the entire cohort has reached the mentioned critical point in the educational pathway. This implies that from wave 2 onward, the self-concept scales have been exclusively administered to respondents who were about to finish their post-compulsory education within approximately one year. As the respective subsamples are highly selective, we abstain from calculating any factor scores from the resulting wave-specific measurements. However, once the whole cohort will have reached the end of post-compulsory education, we will be able to calculate factor scores for selected self-concepts captured shortly before this crucial transition (to be compiled from all relevant panel waves). Note that while the data release does not contain self-concept scales for wave 2, it includes a variety of such measures for wave 1 (i. e., the first year after leaving compulsory education).

3 Changes in Modelling and Invariance Tests

As mentioned in the introduction, the cross-sectional part of the scaling and scale reporting largely draw on the same analytical strategies, CFA models, multi-group analyses and invariance tests that had already been applied in the TREE2 baseline survey (see Sacchi & Krebs-Oesch, 2021). In the following, we therefore limit ourselves to briefly describing some modifications and new elements, respectively:

3.1 Missing item values: Adjustment of the number of imputations

The TREE2 baseline survey, administered as part of an official survey and largely in the school setting, featured only very few missing item values. Accordingly, an invariant number of just five imputed datasets was sufficient to estimate the scaling models (for details, see Sacchi & Krebs-Oesch, 2021). The subsequent panel waves have larger shares of missing item values, and these shares also vary to a larger extent across scales. For this reason, we define the number of imputations separately for each scale so that — according to White et al.'s (2011: 388) rule of thumb — they correspond with the share of respondents for which there are missing item values. Otherwise, we use the same imputation procedures — chained equations with ordinal logit links — as for the baseline survey.[4]

3.2 Obsolete setting effects

As explained in section 1, the TREE2 panel surveys are conducted exclusively in individualised settings outside of school. In contrast to the baseline survey, we must therefore no longer reckon with setting effects. The cross-sectional multi-group analyses and invariance tests in this documentation are thus limited accordingly to differences between the three survey languages and the two survey modes (cf. Table 1).

3.3 Invariance tests only for scales with sufficient sample size

The TREE2 panel waves survey some of the individual scales only for certain, sometimes small subpopulations. In the first two TREE2 waves, this applied specifically to those in employment, as this group, on account of the young age of the cohort, currently constitutes only a very small share of the population. This results in small subsamples for the respective scales — also because the overall sample size of the wave-specific samples is considerably smaller than it was for the baseline survey. Despite the lower accuracy of the statistical estimates, this does not pose a fundamental problem for the majority of the involved scales. However, with regard to the multi-group analyses used to check invariance assumptions

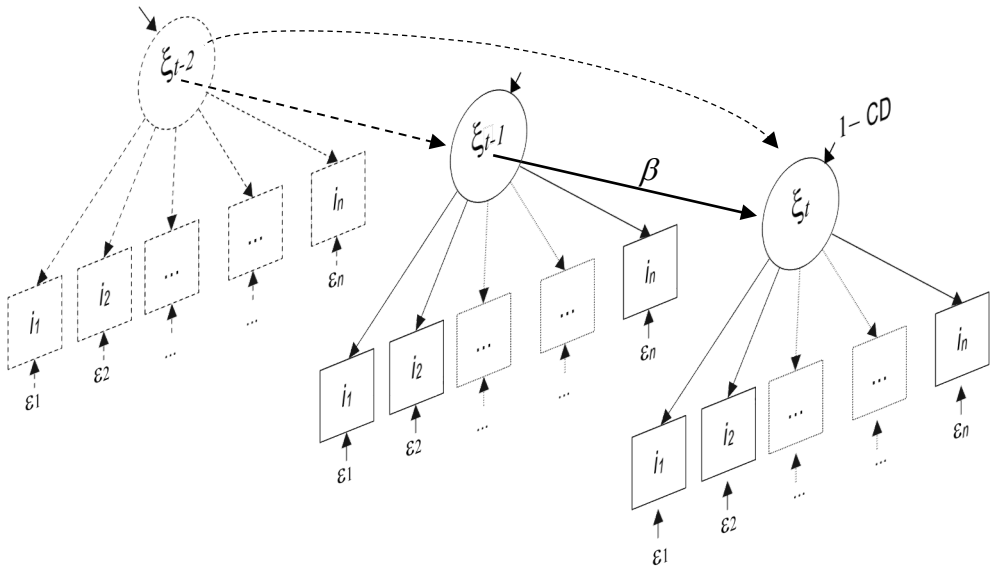
[4] Only in the case of the *positive attitude towards life scale*, which rests on items with 'long', 7-point response scales, do we continue to employ a pmm procedure (with ten nearest neighbours) instead of ordinal-logit links (as in the baseline survey).

across survey modes or survey languages (for details, see Sacchi & Krebs-Oesch, 2021, section 4), the small samples inevitably result in convergence problems and inaccurate statistical estimates. For this reason, we abstain from all invariance tests when the available sample for a given scale does not comprise *at least 500 individuals*.

3.4 Longitudinal measurement invariance for scales with repeated measures

The most important new elements in the scale reporting from panel wave 1 onwards are several tests and results for scales with repeated measures. The focus is on longitudinal measurement invariance and the intra-individual stability of the latent dimensions. To this end, we first introduced a multi-wave CFA model (see Figure 1). Second, we compared variants of this model by implementing increasingly restrictive constraints on classes of wave-specific model parameters to test for different degrees of longitudinal invariance.

Figure 1 *One-dimensional multi-wave CFA model*



The *measurement model* is built on a number of identical models for each wave. Each of these models corresponds to the simple cross-sectional measurement model that we also rely on otherwise (according to Figure 1 in Sacchi & Krebs-Oesch, 2021). Each wave model is based on n ordinal indicators or items (i_1, i_2, …, i_n, each with an item-level measurement error of ε_n) that all measure the same latent dimension (ξ). This dimension has been measured in panel wave t and at least one previous wave $t–1$ on the basis of the exact same item set.[5] If more measurements from previous waves are available, they will all be included in the model. By way of example, the graph depicts a longer series of repeated measures by

[5] For the sake of simplicity, we have omitted at the item level the subscripts indicating the panel waves.

showing a possible penultimate measurement of ξ with the subscript *t–2* (wave model depicted by dotted lines). According to the *structural part of the model*, each measurement of a latent dimension can influence all later measurements. The model thus allows for direct effects that are not mediated by other measurements in between.[6]

On the basis of this model, the invariance tests are calculated by constraining the relevant parameter classes (factor loadings, item intercepts, item-measurement errors) in the same manner as in the cross-sectional multi-group analyses (for details, see Sacchi & Krebs-Oesch, 2021). Like all the other invariance tests described in the appendix, the tests for measurement invariance across survey waves largely rely on two-step estimation based on polychoric correlations (cf. Sacchi & Krebs-Oesch, 2021: 16f.).[7] Missing item values are imputed prior to calculating polychoric correlations, as described in section 3.1.[8] In so doing, we include all cases with *at least one valid item response from at least half of the panel waves containing the scale in question*. The longitudinal invariance tests across waves thus generally draw on a different sample base than the wave-specific cross-sectional analyses.[9] For models with two panel waves, the sample for the longitudinal models will usually be somewhat smaller than each of the wave-specific samples. For models with three and more waves, however, missing values due to wave non-participation are also imputed, which may result in a substantially larger sample serving longitudinal purposes.

4 Longitudinal Scale Reporting

4.1 Contents and Design

This documentation's technical appendix is divided into separate sections for each of the panel waves published in the current TREE2 data release. For every scale administered in one of these waves, a standardised tabular report of relevant scale-specific statistics and quality measures is included. Each section begins with a list of contents for all scales and composites, organised by subject, that were employed in the panel wave (analogous to Table 2). To help users navigate the scale appendix, we have mutually interlinked the scale names in the list of contents and the scale-specific reporting. To the extent that repeated measurements are available, we have additionally linked each scale report with the corresponding report for the immediately preceding and/or immediately succeeding measurement for the same scale (cf. Figure 2). Using these links (exemplified below in Figure 2), users can easily

[6] However, we assume non-correlated measurement errors between items and across waves.

[7] For this purpose, a survey weight is designed for each scale that is compiled, and then newly truncated, from the TREE2 survey weights for the last available panel wave with at least one valid item.

[8] To avoid problems of estimation rooted in sparse tables in the case of multi-wave models, our imputations rely on predictive mean matching (with ten nearest neighbours) instead of (ordinal) logistic regressions.

[9] The more comprehensive data base for the estimation of those multi-wave models, which do include a measurement from the baseline survey, has only partly been published in the TREE2 data release. For reasons of data protection, a replication or alternative specification of such models requires that the work is done at a safe workspace at the University of Bern (see Sacchi & Krebs-Oesch, 2021, section 1).

switch back and forth between the lists of contents and the scale reports on the one hand and between the various repeated measurements or panel waves on the other. For this purpose, the technical appendix also comprises a section of its own on the various scales from the baseline survey that were used again in later panel waves (see Table 2). The respective tabular reports are taken from the scale documentation for the baseline survey (Sacchi & Krebs-Oesch, 2021).

As for the baseline survey, the scale-reporting is mostly cross-sectional and draws on analyses that have been conducted separately for each wave. Details on the calculation and interpretation of the cross-sectional results are given in the scale documentation for the baseline survey (Sacchi & Krebs-Oesch, 2021, section 4).[10] In the following, we will thus only address the newly added statistics for scales with repeated measurements that draw on the longitudinal models described above (see section 3.4 and Figure 1).

4.2 Additional statistics for scales with repeated measurements

In the following, we take the 'self-efficacy' scale as an example to explain the newly added scale-specific statistics and quality measures. Figure 2 below shows the second results page of the scale report for this scale for the first TREE2 panel wave (adopted from the appendix of the present documentation). Both the first page of the report (not shown) and the parts of page 2 outside of the red-bordered box include wave-specific cross-sectional results (see Sacchi & Krebs-Oesch, 2021, section 4). Note that the — otherwise unchanged — results for cross-sectional measurement invariance across survey modes have been moved to the centre of the page (in place of the now obsolete results indicators for the survey settings) to make room for the new statistics on longitudinal measurement invariance across the panel waves (presented in a red-bordered box in Figure 2) In the appendix, this space frequently is empty since repeated measurements are not available for all scales and all waves.

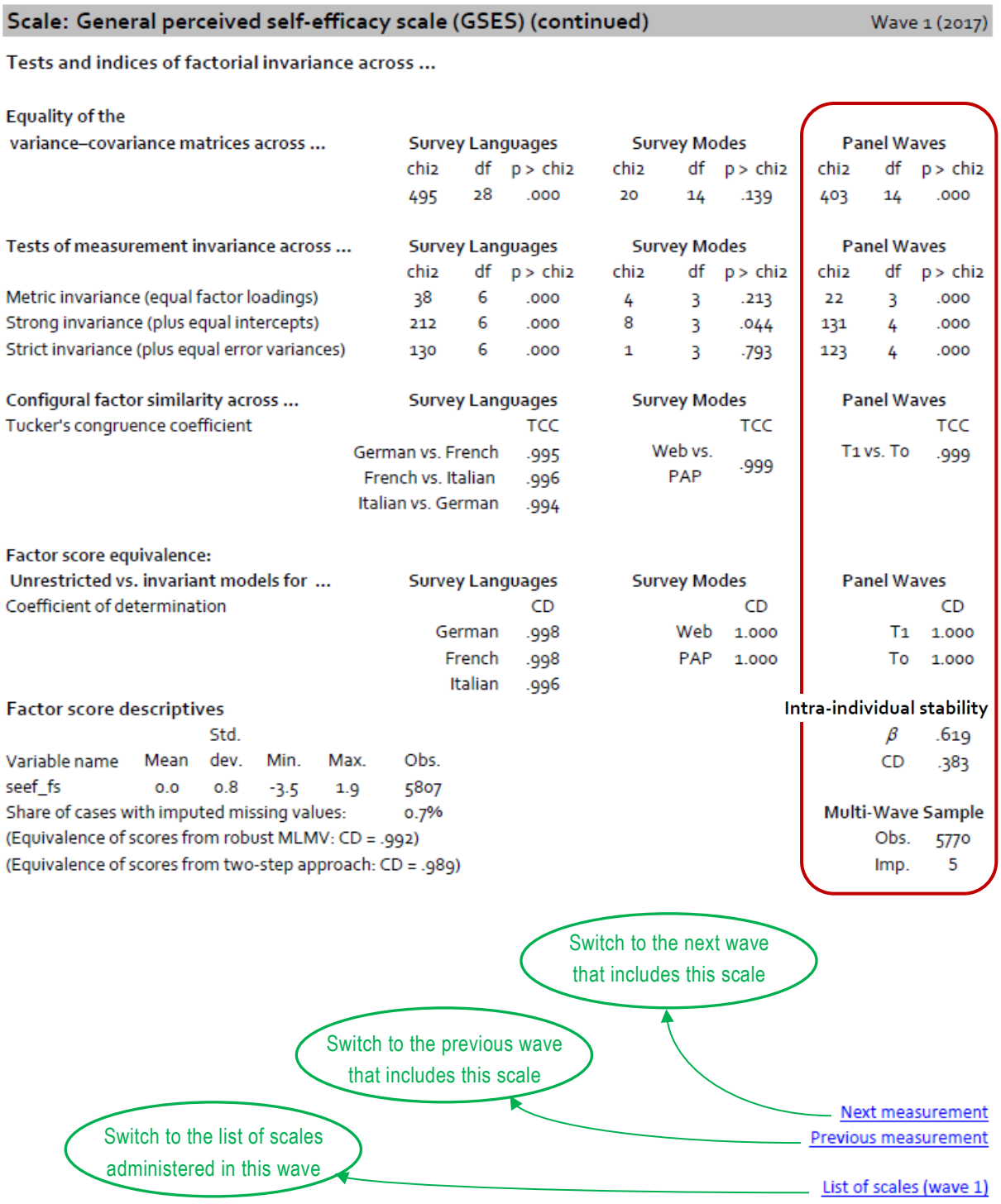
The upper right-hand corner of each page of a report (cf. Figure 2) shows the panel wave to which the illustrated statistics apply. The red-bordered statistics in Figure 2 on longitudinal invariance across waves are exclusively based on repeated measurements up to that specific wave. In the event that additional repeated measurements are available from later waves, this is indicated by a hyperlink [to the] next measurement in the lower right-hand corner of each page of the report. This link leads the user to the analogous statistics for the expanded multi-wave model (according to Figure 1) that also includes the next wave in which that item was measured.[11] If no such link is displayed, the longitudinal segment of the report

[10] Note that the calculation of the factor scores for wave 2 in the current data release was affected by a minor error. As the impact of the error is negligible (the minimal correlation between corrected and uncorrected scores amounts to 0.997), we will correct it only in future data releases. The error does not affect the results in the scale appendix of this documentation, so that the reported factor score distributions may slightly deviate from those in the release.

[11] The link to "previous measurement" takes the user to the statistics reported for the multi-wave model with one repeated measurement less.

shows the statistics for the model with the maximum number of repeated measurements for the most current data release.

Figure 2 *Example of reported scale-specific results (second results page)*



Scale: General perceived self-efficacy scale (GSES) (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...

	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	495	28	.000	20	14	.139	403	14	.000

Tests of measurement invariance across ...

	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	38	6	.000	4	3	.213	22	3	.000
Strong invariance (plus equal intercepts)	212	6	.000	8	3	.044	131	4	.000
Strict invariance (plus equal error variances)	130	6	.000	1	3	.793	123	4	.000

Configural factor similarity across ...

	Survey Languages		Survey Modes		Panel Waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.995	Web vs. PAP	.999	T1 vs. To	.999
	French vs. Italian	.996				
	Italian vs. German	.994				

Factor score equivalence:

Unrestricted vs. invariant models for ...

	Survey Languages		Survey Modes		Panel Waves	
Coefficient of determination		CD		CD		CD
	German	.998	Web	1.000	T1	1.000
	French	.998	PAP	1.000	To	1.000
	Italian	.996				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seef_fs	0.0	0.8	-3.5	1.9	5807

Share of cases with imputed missing values: 0.7%

(Equivalence of scores from robust MLMV: CD = .992)

(Equivalence of scores from two-step approach: CD = .989)

Intra-individual stability

β	.619
CD	.383

Multi-Wave Sample

Obs.	5770
Imp.	5

In the upper part of the red-bordered box, we present various *chi-square-based tests and indices of measurement invariance across survey waves*, all of which rely on the two-step models that are based on polychoric correlations (section 3.4 above). The first test assesses the hypothesis of equal variance–covariance matrices across survey waves. If the hypothesis is not rejected, this is a strong indication of comprehensive measurement invariance. The three subsequent tests inform us whether the longitudinal measurements satisfy the conditions of metric measurement invariance (equal factor loadings), strong measurement invariance (intercepts are also equal) or even strict invariance (error variances are equal as well). The tests can be interpreted in the same way as in the cross-sectional multi-group analyses for the estimation of the invariance across survey languages or survey modes (see Sacchi & Krebs-Oesch, 2021, section 4). Note that the tests draw on nested models, so that strong invariance, for example, is only given when both the hypothesis of equal loadings (in the row "metric invariance") and the hypothesis of identical intercepts (in the row "strong invariance") cannot be rejected on account of the related *p*-values. When interpreting the results, we must take into consideration that in larger samples, even mild forms of measurement invariance will rarely find support when performing chi-square-based tests — even if the underlying differences are far from substantial and of little practical relevance to research (in more detail, see Sacchi & Krebs-Oesch, 2021). As in the cross-sectional invariance tests, we therefore report additional measures of the invariance across panel waves, which may better serve the practical needs of many researchers.

First, we calculate *Tucker's congruence coefficient* (*TCC*), a measure of *configural factor invariance* (according to formula 1 in Lorenzo-Seva & ten Berge, 2006). Basically, it is a pattern-similarity measure that approaches 1 when the loading patterns observed in two waves are identical. For practical purposes, measurements from two different waves may be considered as approximately equal if TCC exceeds .95 (ibid.: 61). This involves comparing loading patterns of the current wave pairwise on the basis of TCC with those of all previous waves in which the scale was employed.

Second, as in the cross-sectional multi-group analyses, we also report the degree of *micro-level factor equivalence at the level of factor scores* . As in the cross-sectional analysis, the degree of micro-level equivalence is indicated by the coefficient of determination (CDs in the rubric "Panel Waves"), which is provided separately for all previous waves that have applied the scale. When interpreting this, the user should bear in mind that the cross-sectional factor scores used in these calculations are *not* identical with those published in the data release. For several reasons, the latter may be discernibly lower in some cases.[12] Hence, if the results do support a high degree of longitudinal measurement invariance *at the level*

[12] This owes itself mainly to the fact that longitudinal modelling relies on a different sample basis (see section 3.4) as well as on slight differences in the model specification (the factor scores published in the release rely on models with mode-specific erroneous terms, which are not included in the longitudinal models). Moreover, in the cross-sectional analyses of some scales, it was necessary to constrain an error term to achieve convergence (as noted in the scale appendix, where appropriate).

of the scale in question, this does not automatically imply a high degree of comparability between the previously published cross-sectional factor scores across waves.

To assess *micro-level factor equivalence*, we estimate the longitudinal model, as described in section 3.4, with invariant factor loadings and item intercepts and calculate the factor scores for each wave. Then, we proceed to calculate wave-specific factor scores for the same model but without invariance constraints (i.e., with wave-specific loadings and intercepts). Finally, we compute the reported coefficient of determination (or R^2) for each of the wave-specific regressions.

If the two scores' shared variance approaches 100% (CD close to 1), this implies that the variations of the measurement model over time — even in those cases in which the invariance tests may be statistically significant — have only a negligible impact on the individual scale values and that there is thus a high degree of longitudinal measurement invariance. What value the coefficient of determination must reach to allow us to draw such a conclusion is of course somewhat arbitrary. If one-to-one comparability of factor scores over time is not really crucial for an analysis, a shared variance of at least 90% (i.e., CD ≥ .90) could be considered sufficient. Otherwise, the threshold would more likely be set at 95%. For further details on the interpretation of coefficients of determination and the role of sample size in this respect in particular, we refer to the documentation of scales for the baseline survey (Sacchi & Krebs-Oesch, 2021, section 4).

Below the wave-specific CDs in Figure 2, the reader will find two measures of the *intra-individual stability* of the latent dimension. The first one, β, corresponds with the standardised regression coefficient in Figure 1, which shows the strength of the relationship between the last available measurement of the latent dimension (ξ_{t-1}) and its measurement in the current wave (ξ_t).[13] The coefficient has been corrected for attenuation, that is, the correlation has been adjusted for random errors in the measurement of the indicators. We also provide an additional coefficient of determination that captures the proportion to which differences in the current measurement can be traced *in total* to all previous measurements of the latent dimension. Hence, this measure of intra-individual stability includes direct effects of previous measurements, which are not mediated through measurement(s) in between.[14] When interpreting the results on intra-individual stability, we must bear in mind that the underlying model assumes measurement invariance across panel waves.[15] Their interpretability thus depends on this assumption being approximately met. Also note that the statistics on intra-individual stability tell us nothing about the quality of a scale per se. What they allow us to do is rather to estimate the degree to which the data supports theoretical premises concerning the stability of the dimension to be measured. One would expect

[13] The corresponding estimate for previous measurements can be found in the reports for the respective waves.

[14] In the case of only two measurements, this is the same as β^2.

[15] Two-step estimation with constrained loadings and intercepts.

an either high, low or a complete absence of intra-individual stability depending on whether a scale has been designed to capture a largely stable individual characteristic or a mainly situational aspect or one that depends on context (e.g., a perceived educational or job attribute).

Finally, at the bottom of the newly added rubric, the reader will find information on the sample size (Obs.) and number of imputed datasets (Imp.) on which the models and key figures for longitudinal invariance are based (see section 3.4).

5 Concluding Remarks

With some reservations regarding a few scales, we can hold that the statistics compiled in the appendix attest to a generally high quality of scales across all previous waves and suggest that the measurements are well-suited for cross-sectional and longitudinal comparative analyses. Specifically, this applies to the internal consistency of the scales and the measurement invariance across survey modes, survey languages and panel waves.

The remarkable level of measurement invariance among the scales is probably less surprising with respect to the survey modes (Carini et al., 2003; Colasante et al., 2019; Revilla, 2012) than in regard to the survey languages and panel waves. According to the pertinent literature, it is rarely possible to show empirically that the level of measurement invariance is sufficient for intercultural and longitudinal group comparisons (Cunningham, 1991; van de Schoot et al., 2015; van de Vijver et al., 2019; Dong & Dumas, 2020). The findings in this report suggest that chi-square tests used in the context of confirmatory factor analyses — the presumably most common method to test invariance assumptions — are perhaps unnecessarily restrictive from a practical research perspective. Violations of invariance assumptions demonstrated by this means are rarely substantial and, as the case may be, can be neglected without further ado at least when it comes to the calculation of factor scores for individual scales. The overall impressive level of measurement invariance for the second TREE cohort certainly owes itself partly to the in some respects fairly homogeneous population and the still short period of observation.

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SCALE APPENDIX

Baseline survey scales with repeated measurements in wave 1 or 2

(Scale names linked with first page of scale-specific reporting)

Survey topics

2-Item-Composit: Emotional closeness to parents

Baseline survey

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
closep_comp	4.2	0.8	1	5	15664
Share of cases with imputed missing values:	3.5%				

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
closef	4.1	1.1	1	5	15223
closem	4.4	0.9	1	5	15558

Next measurement

List of baseline-scales

Scale: Perceived social network support

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	2147	5	.000
	Baseline vs. saturated	58182	10	.000

2)	**Root mean squared error (RMSEA)**	.169
	90% Confidence interval: lower bound	.163
	90% Confidence interval: upper bound	.175
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	233311
	Bayesian information criterion (BIC)	233425
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.963
	Tucker–Lewis index (TLI)	.926
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.035
	Coefficient of determination (CD)	.939

Reliability and dimensionality

Ordinal Cronbach's alpha	.920
(Cronbach's alpha = .896)	
McDonald's omega	.920

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	3.45
factor 2	.09
	.00
factor 4	-.06
factor 5	-.12

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
closupp1	0.81	0.00	0.80	0.81
closupp2	0.93	0.00	0.93	0.93
closupp3	0.88	0.00	0.88	0.88
closupp4	0.68	0.00	0.67	0.69
closupp5	0.86	0.00	0.86	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
closupp1	5.4	1.6	1	7	14695
closupp2	5.6	1.6	1	7	14756
closupp3	5.7	1.6	1	7	14760
closupp4	5.1	1.7	1	7	14086
closupp5	5.5	1.8	1	7	14430

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	635	40	.000	802	20	.000	105	20	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	33	8	.000	87	4	.000	8	4	.075
Strong invariance (plus equal intercepts)	205	8	.000	219	4	.000	13	4	.014
Strict invariance (plus equal error variances)	291	8	.000	17	4	.002	26	4	.000

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Classroom vs. unproctored	1.000	Web vs. PAP	1.000
	French vs. Italian	.999				
	Italian vs. German	.999				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	1.000	Unproctored	.999	PAP	1.000
	Italian	1.000				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
closupp_fs	0.0	1.2	-3.9	1.2	15034

Share of cases with imputed missing values: 10.4%
(Equivalence of scores from robust MLMV: CD = .999)

Next measurement

List of baseline-scales

Scale: Embodied cultural capital

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	1455	9	.000
	Baseline vs. saturated	42913	15	.000

2)	**Root mean squared error (RMSEA)**	.101
	90% Confidence interval: lower bound	.096
	90% Confidence interval: upper bound	.105
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	166162
	Bayesian information criterion (BIC)	166300
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.966
	Tucker–Lewis index (TLI)	.944
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.033
	Coefficient of determination (CD)	.883

Reliability and dimensionality

Ordinal Cronbach's alpha	.870
(Cronbach's alpha = .822)	
McDonald's omega	.872

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	3.13
factor 2	.11
	-.04
factor 4	-.05
factor 5	-.12
factor 6	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
manners1	0.53	0.01	0.52	0.55
manners2	0.80	0.00	0.80	0.81
manners3	0.74	0.00	0.73	0.75
verbskill1	0.75	0.00	0.74	0.76
verbskill2	0.78	0.00	0.78	0.79
verbskill3	0.75	0.00	0.74	0.75

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
manners1	3.0	0.8	1	4	15819
manners2	3.1	0.7	1	4	15805
manners3	3.1	0.7	1	4	15807
verbskill1	3.0	0.7	1	4	15827
verbskill2	3.0	0.8	1	4	15817
verbskill3	2.9	0.7	1	4	15776

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
manners1	1.21	-3.68	-1.95	1.19
manners2	2.57	-6.65	-2.90	1.98
manners3	2.10	-6.12	-2.90	1.50
verbskill1	2.13	-5.28	-2.04	1.80
verbskill2	2.39	-5.71	-2.08	1.73
verbskill3	2.13	-5.33	-1.79	2.15

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	765	54	.000	221	27	.000	63	27	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	21	10	.018	36	5	.000	14	5	.018
Strong invariance (plus equal intercepts)	70	10	.000	24	5	.000	10	5	.085
Strict invariance (plus equal error variances)	197	10	.000	57	5	.000	15	5	.011

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Classroom vs. unproctored	1.000	Web vs. PAP	1.000
	French vs. Italian	.999				
	Italian vs. German	.999				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	1.000	Unproctored	.999	PAP	.998
	Italian	.999				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
inccap_fs	0.0	0.9	-3.2	1.8	15846

Share of cases with imputed missing values: 0.9%
(Equivalence of scores from robust MLMV: CD = .999)
(Equivalence of scores from two-step approach: CD = .989)

Next measurement

List of baseline-scales

Scale: Embodied cultural capital: Manners

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	12618	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	88215
	Bayesian information criterion (BIC)	88284
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.798

Reliability and dimensionality

Ordinal Cronbach's alpha	.763
(Cronbach's alpha = .684)	
McDonald's omega	.769

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	1.41
factor 2	-.10
	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
manners1	0.60	0.01	0.58	0.61
manners2	0.74	0.01	0.73	0.76
manners3	0.83	0.01	0.81	0.84

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
manners1	3.0	0.8	1	4	15819
manners2	3.1	0.7	1	4	15805
manners3	3.1	0.7	1	4	15807

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
manners1	1.41	-3.87	-2.07	1.28
manners2	2.10	-5.87	-2.59	1.77
manners3	2.85	-7.40	-3.62	1.88

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	470	18	.000	138	9	.000	15	9	.082

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	7	4	.160	1	2	.751	3	2	.231
Strong invariance (plus equal intercepts)	28	4	.000	16	2	.000	3	2	.280
Strict invariance (plus equal error variances)	40	4	.000	14	2	.001	4	2	.119

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Classroom vs. unproctored	.999	Web vs. PAP	.999
	French vs. Italian	.999				
	Italian vs. German	.999				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.998	Unproctored	1.000	PAP	.998
	Italian	.997				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
manners_fs	0.0	0.8	-2.8	1.5	15843

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .998)
(Equivalence of scores from two-step approach: CD = .988)

Next measurement

List of baseline-scales

Scale: Embodied cultural capital: Verbal skills

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	16621	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	90127
	Bayesian information criterion (BIC)	90196
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.821

Reliability and dimensionality

Ordinal Cronbach's alpha	.818
(Cronbach's alpha = .759)	
McDonald's omega	.819

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	1.64
factor 2	-.14
	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
verbskill1	0.74	0.00	0.73	0.75
verbskill2	0.80	0.00	0.79	0.81
verbskill3	0.79	0.00	0.78	0.80

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
verbskill1	3.0	0.7	1	4	15827
verbskill2	3.0	0.8	1	4	15817
verbskill3	2.9	0.7	1	4	15776

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
verbskill1	2.03	-5.16	-2.00	1.78
verbskill2	2.49	-5.91	-2.15	1.82
verbskill3	2.43	-5.80	-1.96	2.36

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	209	18	.000	24	9	.005	34	9	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	6	4	.227	4	2	.137	12	2	.003
Strong invariance (plus equal intercepts)	36	4	.000	2	2	.425	4	2	.106
Strict invariance (plus equal error variances)	89	4	.000	13	2	.002	8	2	.023

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Classroom vs. unproctored	1.000	Web vs. PAP	1.000
	French vs. Italian	.998				
	Italian vs. German	.999				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	1.000	Unproctored	1.000	PAP	.993
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
verbskill_fs	0.0	0.9	-2.7	1.6	15841

Share of cases with imputed missing values: 0.6%
(Equivalence of scores from robust MLMV: CD = .999)
(Equivalence of scores from two-step approach: CD = .992)

Next measurement

List of baseline-scales

Scale: Intrinsic achievement motivation

Baseline survey (full AES)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	12995	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	152039
	Bayesian information criterion (BIC)	152111
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.795

Reliability and dimensionality

Ordinal Cronbach's alpha	.703
(Cronbach's alpha = .652)	
McDonald's omega	.718

Test of (one-)dimensionality (parallel analysis)

Criterion: retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
Factor 1	1.19
Factor 2	-.08
	-.22

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
achmot2	0.54	.006	0.52	0.55
achmot4	0.62	.006	0.60	0.63
achmot6	0.86	.007	0.85	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
achmot2	3.0	0.8	1	4	22249
achmot4	2.8	0.8	1	4	22242
achmot6	2.6	0.9	1	4	22239

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
achmot2	1.16	-3.58	-1.45	1.12
achmot4	1.47	-3.30	-0.89	2.11
achmot6	2.88	-4.12	-0.77	3.70

Next measurement

List of baseline-scales

Tests and Indices of Factorial Invariance across Survey Languages

Equality of variance–covariance matrices	chi2	df	p > chi2
variance–covariance matrices across ...	1286	18	.000

Tests of measurement invariance	chi2	df	p > chi2
Metric invariance (equal factor loadings)	14	4	.007
Strong invariance (plus equal intercepts)	956	4	.000
Strict invariance (plus equal error variances)	141	4	.000

Configural factor similarity

Tucker's congruence coefficient	TCC
German vs. French language version	.999
French vs. Italian language version	.993
Italian vs. German language version	.996

Factor score equivalence: group specific vs. invariant models

Coefficient of determination	CD
Language: German	.999
Language: French	.999
Language: Italian	.990

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
achmoti_fs	0.0	0.9	-2.2	1.8	22262

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .994)
(Equivalence of scores from two-step approach: CD = .982)

Next measurement

List of baseline-scales

Scale: Extrinsic achievement motivation

Baseline survey (full AES)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	12774	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	148710
	Bayesian information criterion (BIC)	148782
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.792

Reliability and dimensionality

Ordinal Cronbach's alpha	.648
(Cronbach's alpha = .589)	
McDonald's omega	.690

Test of (one-)dimensionality (parallel analysis)

Criterion: retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
Factor 1	1.14
Factor 2	-.04
	-.22

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
achmot1	0.33	.007	0.32	0.34
achmot3	0.73	.009	0.72	0.75
achmot5	0.85	.009	0.83	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
achmot1	3.2	0.7	1	4	22263
achmot3	1.8	0.8	1	4	22239
achmot5	1.9	0.9	1	4	22235

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
achmot1	0.58	-3.66	-2.13	0.51
achmot3	2.18	-0.50	2.38	5.22
achmot5	2.49	-0.62	2.16	5.11

Next measurement

List of baseline-scales

Tests and Indices of Factorial Invariance across Survey Languages

Equality of variance–covariance matrices	chi2	df	p > chi2
variance–covariance matrices across …	1767	18	.000

Tests of measurement invariance	chi2	df	p > chi2
Metric invariance (equal factor loadings)	36	4	.000
Strong invariance (plus equal intercepts)	954	4	.000
Strict invariance (plus equal error variances)	211	4	.000

Configural factor similarity

Tucker's congruence coefficient	TCC
German vs. French language version	.982
French vs. Italian language version	.995
Italian vs. German language version	.996

Factor score equivalence: group specific vs. invariant models

Coefficient of determination	CD
Language: German	.979
Language: French	.961
Language: Italian	.993

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
achmote_fs	0.0	0.8	-1.3	2.3	22266

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .990)
(Equivalence of scores from two-step approach: CD = .981)

Next measurement

List of baseline-scales

Scale: Instrumental learning motivation (PISA 2000)

Baseline survey (full AES)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	28969	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	144091
	Bayesian information criterion (BIC)	144163
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.865

Reliability and dimensionality

Ordinal Cronbach's alpha	.848
(Cronbach's alpha = .796)	
McDonald's omega	.850

Test of (one-)dimensionality (parallel analysis)

Criterion: retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
Factor 1	1.81
Factor 2	-.10
	-.14

Standardized factor loadings

Indicators *	Coef.	(SE)	[95% Conf.	interval]
insmot1	0.75	0.00	0.74	0.76
insmot2	0.79	0.00	0.78	0.80
insmot3	0.88	0.00	0.88	0.89

*** Note:** Replication of 'Insmot'-Scale from TREE1 / PISA2000

Item descriptives

Indicators *	Mean	Std. dev.	Min.	Max.	Valid Obs.
insmot1	2.8	0.9	1	4	22246
insmot2	2.9	0.9	1	4	22220
insmot3	3.1	0.9	1	4	22220

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
insmot1	2.05	-3.82	-0.83	2.13
insmot2	2.35	-3.90	-1.28	1.70
insmot3	3.48	-6.32	-3.28	0.89

Next measurement

List of baseline-scales

Tests and Indices of Factorial Invariance across Survey Languages

Equality of variance–covariance matrices	chi2	df	p > chi2
variance–covariance matrices across ...	347	18	.000

Tests of measurement invariance	chi2	df	p > chi2
Metric invariance (equal factor loadings)	29	4	.000
Strong invariance (plus equal intercepts)	136	4	.000
Strict invariance (plus equal error variances)	55	4	.000

Configural factor similarity

Tucker's congruence coefficient	TCC
German vs. French language version	1.000
French vs. Italian language version	.997
Italian vs. German language version	.994

Factor score equivalence: group specific vs. invariant models

Coefficient of determination	CD
Language: German	1.000
Language: French	1.000
Language: Italian	.982

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
insmot_fs	0.0	0.9	-2.2	1.4	22265

Share of cases with imputed missing values: 0.4%
(Equivalence of scores from robust MLMV: CD = .996)
(Equivalence of scores from two-step approach: CD = .978)

Next measurement

List of baseline-scales

Scale: Global self-esteem * Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	20015	20	.000
	Baseline vs. saturated	64288	28	.000

2)	**Root mean squared error (RMSEA)**	.250
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	329588
	Bayesian information criterion (BIC)	329772
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.689
	Tucker–Lewis index (TLI)	.564
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.147
	Coefficient of determination (CD)	.887

Reliability and dimensionality

Ordinal Cronbach's alpha	.859
(Cronbach's alpha = .820)	
McDonald's omega	.852

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	3.56
factor 2	1.12
	.07
factor 4	-.05
factor 5	-.09
factor 6	-.10
factor 7	-.12
factor 8	-.13

*** Note:** One item (seld4) excluded after the baseline survey (see notes in the introduction for more information).

Standardized factor loadings

Indicators **	Coef.	(SE)	[95% Conf.	interval]
sele1	0.63	0.01	0.62	0.64
sele2	0.51	0.01	0.49	0.52
sele3	0.44	0.01	0.43	0.46
sele4	0.49	0.01	0.48	0.51
seld1	0.85	0.00	0.84	0.85
seld3	0.75	0.00	0.74	0.75
seld4	0.65	0.01	0.64	0.66
seld5	0.80	0.00	0.79	0.81

**** Note:** Reversed categories for all 'Seld' items

Item descriptives

Indicators **	Mean	Std. dev.	Min.	Max.	Valid Obs.
sele1	4.0	0.9	1	5	15991
sele2	4.1	0.8	1	5	15961
sele3	3.9	0.8	1	5	15957
sele4	3.8	1.0	1	5	15946
seld1	3.8	1.2	1	5	15972
seld3	3.2	1.2	1	5	15953
seld4	3.2	1.3	1	5	15902
seld5	4.0	1.2	1	5	15943

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	5550	88	.000	693	44	.000	136	44	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	85	14	.000	27	7	.000	38	7	.000
Strong invariance (plus equal intercepts)	3216	14	.000	618	7	.000	42	7	.000
Strict invariance (plus equal error variances)	415	14	.000	205	7	.000	25	7	.001

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Classroom vs. unproctored	.999	Web vs. PAP	.999
	French vs. Italian	.998				
	Italian vs. German	.996				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.994	Unproctored	.998	PAP	.985
	Italian	.989				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
sel_fs	0.0	0.5	-1.8	0.8	16003

Share of cases with imputed missing values: 1.2%

(Equivalence of scores from Robust MLMV: CD = .997)

Next measurement

List of baseline-scales

Scale: Positive global self-esteem

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	329	2	.000
	Baseline vs. saturated	26567	6	.000

2)	**Root mean squared error (RMSEA)**	.101
	90% Confidence interval: lower bound	.092
	90% Confidence interval: upper bound	.110
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	140371
	Bayesian information criterion (BIC)	140463
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.988
	Tucker–Lewis index (TLI)	.963
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.018
	Coefficient of determination (CD)	.856

Reliability and dimensionality

Ordinal Cronbach's alpha	.848
(Cronbach's alpha = .801)	
McDonald's omega	.849

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	2.21
factor 2	-.06
	-.07
factor 4	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
sele1	0.72	0.00	0.71	0.73
sele2	0.83	0.00	0.82	0.83
sele3	0.78	0.00	0.78	0.79
sele4	0.72	0.00	0.71	0.73

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
sele1	4.0	0.9	1	5	15991
sele2	4.1	0.8	1	5	15961
sele3	3.9	0.8	1	5	15957
sele4	3.8	1.0	1	5	15946

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	1803	28	.000	346	14	.000	35	14	.002

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	21	6	.002	11	3	.013	1	3	.769
Strong invariance (plus equal intercepts)	1214	6	.000	140	3	.000	8	3	.052
Strict invariance (plus equal error variances)	216	6	.000	123	3	.000	10	3	.017

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Classroom vs. unproctored	1.000	Web vs. PAP	1.000
	French vs. Italian	.998				
	Italian vs. German	.997				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.998	Unproctored	1.000	PAP	1.000
	Italian	.992				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
sele_fs	0.0	0.6	-2.5	0.9	15997

Share of cases with imputed missing values: 0.6%
(Equivalence of scores from robust MLMV: CD = .996)

Next measurement

List of baseline-scales

Scale: Negative global self-esteem * Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	712	2	.000
	Baseline vs. saturated	31810	6	.000

2)	**Root mean squared error (RMSEA)**	.149
	90% Confidence interval: lower bound	.140
	90% Confidence interval: upper bound	.158
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	175983
	Bayesian information criterion (BIC)	176075
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.978
	Tucker–Lewis index (TLI)	.933
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.028
	Coefficient of determination (CD)	.887

Reliability and dimensionality

Ordinal Cronbach's alpha	.866
(Cronbach's alpha = .824)	
McDonald's omega	.868

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	2.39
factor 2	.02
	-.13
factor 4	-.12

*** Note:** One item (seld4) excluded after the baseline survey (see notes in the introduction for more information).

Standardized factor loadings

Indicators **	Coef.	(SE)	[95% Conf.	interval]
seld1	0.88	0.00	0.88	0.89
seld3	0.79	0.00	0.78	0.80
seld4	0.67	0.01	0.66	0.68
seld5	0.80	0.00	0.80	0.81

**** Note:** Reversed categories

Item descriptives

Indicators **	Mean	Std. dev.	Min.	Max.	Valid Obs.
seld1	3.8	1.2	1	5	15972
seld3	3.2	1.2	1	5	15953
seld4	3.2	1.3	1	5	15902
seld5	4.0	1.2	1	5	15943

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	4554	28	.000	140	14	.000	59	14	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	107	6	.000	4	3	.235	7	3	.064
Strong invariance (plus equal intercepts)	2496	6	.000	86	3	.000	27	3	.000
Strict invariance (plus equal error variances)	355	6	.000	1	3	.707	7	3	.089

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Classroom vs. unproctored	.997	Web vs. PAP	.997
	French vs. Italian	1.000				
	Italian vs. German	.998				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.990	Unproctored	1.000	PAP	.999
	Italian	.980				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seld_fs	0.0	1.0	-2.6	1.3	15995

Share of cases with imputed missing values: 0.9%
(Equivalence of scores from robust MLMV: CD = .993)

Next measurement

List of baseline-scales

Scale: General perceived self-efficacy scale (GSES) Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	63	2	.000
	Baseline vs. saturated	23581	6	.000

2)	**Root mean squared error (RMSEA)**	.044
	90% Confidence interval: lower bound	.035
	90% Confidence interval: upper bound	.053
	Probability RMSEA <= 0.05	.847
3)	**Akaike's information criterion (AIC)**	104477
	Bayesian information criterion (BIC)	104569
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.997
	Tucker–Lewis index (TLI)	.992
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.009
	Coefficient of determination (CD)	.836

Reliability and dimensionality

Ordinal Cronbach's alpha	.835
(Cronbach's alpha = .772)	
McDonald's omega	.835

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	2.10
factor 2	-.08
	-.12
factor 4	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
seef1	0.73	0.00	0.72	0.74
seef2	0.77	0.00	0.76	0.78
seef3	0.76	0.00	0.75	0.77
seef4	0.73	0.00	0.72	0.74

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
seef1	3.1	0.6	1	4	15941
seef2	3.1	0.7	1	4	15928
seef3	2.8	0.7	1	4	15916
seef4	3.0	0.7	1	4	15923

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
seef1	2.04	-6.05	-3.17	2.22
seef2	2.28	-6.20	-2.91	1.82
seef3	2.14	-5.09	-1.43	2.66
seef4	2.03	-5.56	-2.00	2.27

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	1049	28	.000	104	14	.000	24	14	.044

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	47	6	.000	1	3	.763	4	3	.252
Strong invariance (plus equal intercepts)	448	6	.000	10	3	.018	2	3	.652
Strict invariance (plus equal error variances)	230	6	.000	12	3	.008	4	3	.303

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Classroom vs. unproctored	.998	Web vs. PAP	.998
	French vs. Italian	.995				
	Italian vs. German	.996				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.997	Unproctored	1.000	PAP	.999
	Italian	.993				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seef_fs	0.0	0.9	-3.0	1.8	15951

Share of cases with imputed missing values: 0.4%
(Equivalence of scores from robust MLMV: CD = .996)
(Equivalence of scores from two-step approach: CD = .989)

Next measurement

List of baseline-scales

2-Item-Composits: Locus of control

Composit descriptives Variable name	Mean	Std. dev.	Min.	Max.	Obs.
Internal locus of control loci_comp	4.0	0.7	1	5	15833
External locus of control loce_comp	2.5	0.9	1	5	15833

Share of cases with imputed missing values: 0.6%

Item descriptives Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
Internal locus of control					
loci1	3.9	0.9	1	5	15811
loci2	4.2	0.8	1	5	15812
External locus of control					
loce1	2.3	1.1	1	5	15793
loce2	2.6	1.1	1	5	15777

Next measurement

List of baseline-scales

Scale: Work-related extrinsic value

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	6673	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	96617
	Bayesian information criterion (BIC)	96686
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.668

Reliability and dimensionality

Ordinal Cronbach's alpha	.655
(Cronbach's alpha = .560)	
McDonald's omega	.658

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue *
factor 1	.96
factor 2	-.14
	-.20

* No component with an adjusted eigenvalue ≥ 1

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawe1	0.70	0.01	0.68	0.71
vawe2	0.62	0.01	0.60	0.63
vawe4	0.56	0.01	0.54	0.58

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
vawe1	3.2	0.7	1	4	16066
vawe2	3.7	0.6	1	4	16064
vawe4	2.9	0.9	1	4	16065

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawe1	1.80	-5.36	-2.46	1.06
vawe2	1.42	-5.41	-3.92	-1.02
vawe4	1.19	-3.30	-0.98	1.39

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	273	18	.000	237	9	.000	19	9	.026

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.016	7	2	.033	1	2	.629
Strong invariance (plus equal intercepts)	86	4	.000	21	2	.000	0	2	.815
Strict invariance (plus equal error variances)	90	4	.000	6	2	.050	6	2	.043

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Classroom vs. unproctored	.997	Web vs. PAP	.997
	French vs. Italian	.988				
	Italian vs. German	.997				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	1.000
	French	.994	Unproctored	.995	PAP	.988
	Italian	.977				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawe_fs	0.0	0.7	-2.8	1.2	16084

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .996)
(Equivalence of scores from two-step approach: CD = .975)

Next measurement

List of baseline-scales

Scale: Work-related intrinsic value

Baseline survey

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	14560	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: lower bound	.000
	90% Confidence interval: upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	80533
	Bayesian information criterion (BIC)	80602
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker–Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.818

Reliability and dimensionality

Ordinal Cronbach's alpha	.789
(Cronbach's alpha = .705)	
McDonald's omega	.793

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	1.52
factor 2	-.11
	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawi1	0.72	0.01	0.71	0.73
vawi2	0.85	0.01	0.84	0.86
vawi5	0.67	0.01	0.66	0.68

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
vawi1	3.2	0.7	1	4	16078
vawi2	3.5	0.6	1	4	16071
vawi5	3.5	0.6	1	4	16065

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawi1	1.83	-5.30	-2.78	0.95
vawi2	3.18	-8.88	-6.16	-0.70
vawi5	1.64	-5.46	-3.70	-0.35

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	376	18	.000	413	9	.000	32	9	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	2	4	.727	5	2	.075	24	2	.000
Strong invariance (plus equal intercepts)	179	4	.000	109	2	.000	1	2	.760
Strict invariance (plus equal error variances)	81	4	.000	3	2	.236	5	2	.070

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Classroom vs. unproctored	1.000	Web vs. PAP	1.000
	French vs. Italian	1.000				
	Italian vs. German	1.000				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	1.000	Web	.999
	French	1.000	Unproctored	.999	PAP	.962
	Italian	1.000				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawi_fs	0.0	0.8	-3.0	1.1	16086

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .993)
(Equivalence of scores from two-step approach: CD = .964)

Next measurement

List of baseline-scales

2-Item-Composit: Family value

Baseline survey

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vafa_comp	3.1	0.8	1	4	16075
Share of cases with imputed missing values:	0.2%				

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vafa1	3.3	0.8	1	4	16064
vafa2	3.0	0.9	1	4	16051

Next measurement

List of baseline-scales

Scale: Positive attitude towards life

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood-ratio tests**			
	Model vs. saturated	1110	5	.000
	Baseline vs. saturated	13955	10	.000

2)	**Root mean squared error (RMSEA)**	.208
	90% Confidence interval: lower bound	.198
	90% Confidence interval: upper bound	.218
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	57850
	Bayesian information criterion (BIC)	57948
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.921
	Tucker–Lewis index (TLI)	.841
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.050
	Coefficient of determination (CD)	.893

Reliability and dimensionality

Ordinal Cronbach's alpha	.880
(Cronbach's alpha = .844)	
McDonald's omega	.881

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalue > 0

	Adjusted eigenvalue
factor 1	2.91
factor 2	.18
	-.03
factor 4	-.13
factor 5	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
posl1	0.72	0.01	0.70	0.74
posl2	0.84	0.01	0.83	0.85
posl3	0.78	0.01	0.76	0.79
posl5	0.67	0.01	0.65	0.69
posl6	0.85	0.01	0.84	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
posl1	5.0	0.9	1	6	5106
posl2	5.4	0.9	1	6	5107
posl3	4.8	1.0	1	6	5106
posl5	4.6	1.1	1	6	5108
posl6	5.0	1.1	1	6	5103

Next measurement

List of baseline-scales

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	933	40	.000	/		/	146	20	.000

Tests of measurement invariance across …	**Survey languages**			**Survey settings**			**Survey modes**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	9	8	.385	/		/	17	4	.002
Strong invariance (plus equal intercepts)	311	8	.000	/		/	7	4	.113
Strict invariance (plus equal error variances)	282	8	.000	/		/	20	4	.001

Configural factor similarity across …	**Survey languages**		**Survey settings**		**Survey modes**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Classroom vs. unproctored	/	Web vs. PAP	.999
	French vs. Italian	.998				
	Italian vs. German	1.000				

Factor score equivalence: group specific vs. invariant models for …	**Survey languages**		**Survey settings**		**Survey modes**	
Coefficient of determination		CD		CD		CD
	German	1.000	Classroom	/	Web	1.000
	French	1.000	Unproctored		PAP	.999
	Italian	.999				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
posl_fs	0.0	0.6	-3.0	0.7	5114

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of baseline-scales

SCALE APPENDIX

Scales administered in follow-up wave 1 (TREE2)

(Scale names linked with first page of scale-specific reporting)

Survey topics

Survey topics (continued)

Survey topics (continued)

2-Item-Composit: Intention to quit [educ.] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edquit_comp	1.6	0.9	1	5	5445

Share of cases with imputed missing values: 0.2%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edquit1	1.8	1.0	1	5	5443
edquit2	1.4	0.9	1	5	5437

Next measurement

List of scales (wave 1)

2-Item-Composit: Truancy [educ.] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edtruancy_comp	1.3	0.5	1	4	5131

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edtruancy2	1.2	0.5	1	4	5130
edtruancy3	1.4	0.6	1	4	5131

Next measurement

List of scales (wave 1)

Scale: Variety of tasks [educ.] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	5365	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	32243
	Bayesian information criterion (BIC)	32302
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.847

Reliability and dimensionality

Ordinal Cronbach's alpha	.807
(Cronbach's alpha = .755)	
McDonald's omega	.812

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.59
factor 2	-.09
factor 3	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scvar1	0.73	0.01	0.71	0.74
scvar2	0.69	0.01	0.67	0.71
scvar4	0.88	0.01	0.87	0.90

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
scvar1	4.0	0.7	1	5	5244
scvar2	3.5	0.9	1	5	5223
scvar4	3.7	0.8	1	5	5199

Next measurement

List of scales (wave 1)

Scale: Variety of tasks [educ.] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	191	18	.000	27	9	.001

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	45	4	.000	6	2	.061
Strong invariance (plus equal intercepts)	23	4	.000	5	2	.105
Strict invariance (plus equal error variances)	143	4	.000	7	2	.028

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.992	Web vs. PAP	.998
	French vs. Italian	.998		
	Italian vs. German	.991		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.992	PAP	.995
	Italian	.995		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scvar_fs	0.0	0.5	-1.9	0.9	5250

Share of cases with imputed missing values: 1.2%
(Equivalence of scores from robust MLMV: CD = .994)

Next measurement

List of scales (wave 1)

Scale: Scope of action [educ.] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3435	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	43451
	Bayesian information criterion (BIC)	43510
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.785

Reliability and dimensionality

Ordinal Cronbach's alpha	.730
(Cronbach's alpha = .695)	
McDonald's omega	.739

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.25
factor 2	-.09
factor 3	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scsca1	0.62	0.01	0.60	0.64
scsca2	0.84	0.01	0.82	0.86
scsca3	0.62	0.01	0.59	0.64

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
scsca1	2.7	1.1	1	5	5234
scsca2	3.1	1.1	1	5	5239
scsca3	3.2	1.1	1	5	5227

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	673	18	.000	20	9	.016

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	21	4	.000	13	2	.001
Strong invariance (plus equal intercepts)	21	4	.000	1	2	.770
Strict invariance (plus equal error variances)	26	4	.000	4	2	.132

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.995	Web vs. PAP	.994
	French vs. Italian	.984		
	Italian vs. German	.961		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.999	Web	.999
	French	.997	PAP	.985
	Italian	.997		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scsca_fs	0.0	0.6	-1.4	1.3	5245

Share of cases with imputed missing values: 0.6%
(Equivalence of scores from robust MLMV: CD = .994)

Next measurement

List of scales (wave 1)

Scale: Strain [educ.] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**	chi2	df	p > chi2
	Model vs. saturated	192	2	.000
	Baseline vs. saturated	5696	6	.000

2)	**Root mean squared error (RMSEA)**		.135
	90% Confidence interval:	Lower bound	.119
	90% Confidence interval:	Upper bound	.151
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	52564
	Bayesian information criterion (BIC)	52643

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.967
	Tucker-Lewis index (TLI)	.900

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.032
	Coefficient of determination (CD)	.785

Reliability and dimensionality

Ordinal Cronbach's alpha	.783
(Cronbach's alpha = .746)	
McDonald's omega	.783

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.76
factor 2	-.01
factor 3	-.11
factor 4	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scove1	0.70	0.01	0.68	0.72
scove3	0.65	0.01	0.62	0.67
scove4	0.72	0.01	0.70	0.74
scove8	0.69	0.01	0.67	0.71

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
scove1	2.9	1.0	1	5	5192
scove3	3.1	1.0	1	5	5242
scove4	2.1	0.9	1	5	5223
scove8	2.6	0.9	1	5	5198

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	487	28	.000	48	14	.000

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	7	6	.345	7	3	.063
Strong invariance (plus equal intercepts)	271	6	.000	18	3	.000
Strict invariance (plus equal error variances)	104	6	.000	12	3	.009

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.999	Web vs. PAP	.998
	French vs. Italian	.996		
	Italian vs. German	.995		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.998	PAP	.999
	Italian	.992		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scove_fs	0.0	0.6	-1.4	2.1	5249

Share of cases with imputed missing values: 1.4%
(Equivalence of scores from robust MLMV: CD = .994)

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Time pressure [educ.] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scovpr_comp	3.0	0.9	1	5	5249

Share of cases with imputed missing values: 1.2%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scove1	2.9	1.0	1	5	5192
scove3	3.1	1.0	1	5	5242

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Excessive demands [educ.] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scovex_comp	2.4	0.8	1	5	5237

Share of cases with imputed missing values: 1.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scove4	2.1	0.9	1	5	5223
scove8	2.6	0.9	1	5	5198

Next measurement

List of scales (wave 1)

2-Item-Composit: Social support [educ.] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scsoc_comp	3.8	0.8	1	5	5201

Share of cases with imputed missing values: 0.2%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scsoc2	3.8	1.0	1	5	5196
scsoc3	3.7	1.0	1	5	5197

Next measurement

List of scales (wave 1)

Scale: Teaching skills of teachers [educ.] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	4694	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	26102
	Bayesian information criterion (BIC)	26161
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.896

Reliability and dimensionality

Ordinal Cronbach's alpha	.759
(Cronbach's alpha = .662)	
McDonald's omega	.782

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.42
factor 2	-.04
factor 3	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scqua1	0.94	0.01	0.91	0.96
scqua2	0.74	0.01	0.72	0.76
scqua3	0.51	0.01	0.48	0.53

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
scqua1	3.0	0.6	1	4	5162
scqua2	3.0	0.6	1	4	5164
scqua3	2.9	0.8	1	4	5173

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
scqua1	5.66	-12.08	-5.63	5.48
scqua2	2.08	-6.28	-2.91	2.60
scqua3	1.01	-3.53	-1.16	1.61

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	378	18	.000	105	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	17	4	.002	7	2	.035
Strong invariance (plus equal intercepts)	25	4	.000	4	2	.122
Strict invariance (plus equal error variances)	141	4	.000	18	2	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.996	Web vs. PAP	.998
	French vs. Italian	.995		
	Italian vs. German	.998		

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	.997	Web	.999
	French	.983	PAP	.992
	Italian	.965		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scqua_fs	0.0	0.9	-2.8	1.7	5177

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .982)
(Equivalence of scores from two-step approach: CD = .972)

List of scales (wave 1)

Scale: Variety of tasks [training firm] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2376	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		13713
	Bayesian information criterion (BIC)		13764
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.839

Reliability and dimensionality

Ordinal Cronbach's alpha	.819
(Cronbach's alpha = .759)	
McDonald's omega	.822

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.64
factor 2	-.12
factor 3	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fivar1	0.86	0.01	0.83	0.88
fivar2	0.77	0.01	0.74	0.79
fivar3	0.71	0.01	0.68	0.73

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fivar1	4.3	0.7	1	5	2194
fivar2	4.1	0.9	1	5	2193
fivar3	4.0	0.9	1	5	2190

Next measurement

List of scales (wave 1)

Scale: Variety of tasks [training firm] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	46	18	.000	18	9	.040

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	8	4	.102	6	2	.046
Strong invariance (plus equal intercepts)	8	4	.089	1	2	.570
Strict invariance (plus equal error variances)	10	4	.039	2	2	.396

Configural factor similarity across …	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.998	Web vs. PAP	.997
	French vs. Italian	.994		
	Italian vs. German	.984		

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	1.000	Web	.999
	French	.996	PAP	.987
	Italian	.906		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fivar_fs	0.0	0.6	-2.7	0.7	2194

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of scales (wave 1)

Scale: Scope of action [training firm] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	1715	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	17691
	Bayesian information criterion (BIC)	17742
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.781

Reliability and dimensionality

Ordinal Cronbach's alpha	.766
(Cronbach's alpha = .730)	
McDonald's omega	.769

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.38
factor 2	-.14
factor 3	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisca1	0.64	0.02	0.61	0.68
fisca2	0.79	0.02	0.76	0.82
fisca3	0.74	0.02	0.70	0.77

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fisca1	3.1	1.1	1	5	2190
fisca2	3.4	1.0	1	5	2189
fisca3	3.5	1.1	1	5	2190

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	124	18	.000	33	9	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	3	4	.485	6	2	.056
Strong invariance (plus equal intercepts)	12	4	.020	6	2	.056
Strict invariance (plus equal error variances)	15	4	.005	20	2	.000

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	1.000	Web vs. PAP	.996
	French vs. Italian	.967		
	Italian vs. German	.965		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.999	PAP	.994
	Italian	.872		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisca_fs	0.0	0.6	-1.7	1.2	2194

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of scales (wave 1)

Scale: Strain [training firm]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	242	2	.000
	Baseline vs. saturated	2013	6	.000

2)	**Root mean squared error (RMSEA)**		.234
	90% Confidence interval:	Lower bound	.210
	90% Confidence interval:	Upper bound	.259
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	21818
	Bayesian information criterion (BIC)	21887

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.880
	Tucker-Lewis index (TLI)	.641

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.079
	Coefficient of determination (CD)	.807

Reliability and dimensionality

Ordinal Cronbach's alpha	.717
(Cronbach's alpha = .671)	
McDonald's omega	.719

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.47
factor 2	.21
factor 3	-.15
factor 4	-.21

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fiove1	0.46	0.02	0.42	0.50
fiove3	0.43	0.02	0.39	0.47
fiove4	0.85	0.02	0.82	0.88
fiove5	0.71	0.02	0.68	0.74

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fiove1	3.0	1.0	1	5	2186
fiove3	3.0	1.0	1	5	2191
fiove4	2.0	0.8	1	5	2188
fiove5	2.0	0.8	1	5	2191

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	286	28	.000	29	14	.011

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	49	6	.000	3	3	.387
Strong invariance (plus equal intercepts)	100	6	.000	3	3	.393
Strict invariance (plus equal error variances)	43	6	.000	8	3	.050

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.915	Web vs. PAP	.997
	French vs. Italian	.960		
	Italian vs. German	.974		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.999	Web	1.000
	French	.694	PAP	.999
	Italian	.902		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiove_fs	0.0	0.4	-0.7	1.8	2194

Share of cases with imputed missing values: 0.6%
(Equivalence of scores from robust MLMV: CD = .98)

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Time pressure [training firm] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiovpr_comp	3.0	0.9	1	5	2194

Share of cases with imputed missing values: 0.5%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiove1	3.0	1.0	1	5	2186
fiove3	3.0	1.0	1	5	2191

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Excessive demands [training firm] Wave 1 (2017)

Composit descriptives		Std.			
Variable name	Mean	dev.	Min.	Max.	Obs.
fiovex_comp	2.0	0.7	1	5	2192

Share of cases with imputed missing values: 0.2%

Item descriptives		Std.			Valid
Indicators	Mean	dev.	Min.	Max.	obs.
fiove4	2.0	0.8	1	5	2188
fiove5	2.0	0.8	1	5	2191

Next measurement

List of scales (wave 1)

Scale: Strain: Work environment [training firm] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2361	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		20037
	Bayesian information criterion (BIC)		20088
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.846

Reliability and dimensionality

Ordinal Cronbach's alpha	.809
(Cronbach's alpha = .765)	
McDonald's omega	.816

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.60
factor 2	-.09
factor 3	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisur1	0.62	0.02	0.59	0.65
fisur3	0.85	0.01	0.82	0.87
fisur4	0.83	0.01	0.81	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fisur1	2.4	1.2	1	5	2182
fisur3	3.0	1.5	1	5	2181
fisur4	2.4	1.3	1	5	2182

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	55	18	.000	36	9	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	8	4	.077	9	2	.009
Strong invariance (plus equal intercepts)	4	4	.372	9	2	.010
Strict invariance (plus equal error variances)	5	4	.319	9	2	.013

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.996	Web vs. PAP	.997
	French vs. Italian	.993		
	Italian vs. German	.986		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.999	Web	.999
	French	.974	PAP	.999
	Italian	.911		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisur_fs	0.0	0.7	-1.0	1.4	2183

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of scales (wave 1)

Scale: Social support [training firm]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2765	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	13992
	Bayesian information criterion (BIC)	14043
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.905

Reliability and dimensionality

Ordinal Cronbach's alpha	.834
(Cronbach's alpha = .757)	
McDonald's omega	.842

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.77
factor 2	-.06
factor 3	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisoc2	0.94	0.01	0.92	0.96
fisoc3	0.68	0.01	0.65	0.70
fisoc4	0.77	0.01	0.75	0.79

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fisoc2	4.3	0.9	1	5	2175
fisoc3	4.3	0.9	1	5	2177
fisoc4	4.4	0.8	1	5	2177

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	137	18	.000	58	9	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	11	4	.022	3	2	.187
Strong invariance (plus equal intercepts)	39	4	.000	3	2	.226
Strict invariance (plus equal error variances)	54	4	.000	14	2	.001

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.975	Web vs. PAP	.998
	French vs. Italian	.967		
	Italian vs. German	.998		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.909	PAP	.987
	Italian	.986		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisoc_fs	0.0	0.7	-3.2	0.7	2180

Share of cases with imputed missing values: 0.4%
(Equivalence of scores from robust MLMV: CD = .989)

Next measurement

List of scales (wave 1)

Scale: Teaching skills of VET trainer [training firm] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2967	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	10490
	Bayesian information criterion (BIC)	10541
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.905

Reliability and dimensionality

Ordinal Cronbach's alpha	.841
(Cronbach's alpha = .761)	
McDonald's omega	.850

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.82
factor 2	-.06
factor 3	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fiqua1	0.93	0.01	0.91	0.95
fiqua2	0.83	0.01	0.81	0.85
fiqua3	0.65	0.01	0.62	0.68

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
fiqua1	3.4	0.7	1	4	2150
fiqua2	3.5	0.6	1	4	2153
fiqua3	3.3	0.7	1	4	2154

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
fiqua1	4.38	-10.32	-6.31	-0.28
fiqua2	2.77	-7.96	-5.38	0.13
fiqua3	1.51	-4.94	-2.78	0.17

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …

	Survey Languages *			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	66	9	.000	42	9	.000

Tests of measurement invariance across …

	Survey Languages *			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	4	2	.135	1	2	.625
Strong invariance (plus equal intercepts)	1	2	.722	2	2	.427
Strict invariance (plus equal error variances)	3	2	.280	3	2	.178

Configural factor similarity across …

	Survey Languages *		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French & Italian	.998	Web vs. PAP	1.000

Factor score equivalence: Unrestricted vs. invariant models for …

	Survey Languages *		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French & Italian	.994	PAP	.999

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiqua_fs	0.0	0.9	-2.9	1.0	2155

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .992)
(Equivalence of scores from two-step approach: CD = .956)

*** Note:** French and Italian pooled for estimation. The error variances of fiqua2 are constrained to be equal when testing for metric invariance.

Next measurement

List of scales (wave 1)

2-Item-Composit: Career prospects [training firm] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
ficaco_comp	3.8	1.0	1	5	2136

Share of cases with imputed missing values: 0.6%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
ficaco1	4.0	1.1	1	5	2135
ficaco2	3.7	1.1	1	5	2124

Next measurement

List of scales (wave 1)

Scale: Variety of tasks [job]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	363	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		1829
	Bayesian information criterion (BIC)		1860
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.900

Reliability and dimensionality

Ordinal Cronbach's alpha	.870
(Cronbach's alpha = .832)	
McDonald's omega	.873

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.85
factor 2	-.04
factor 3	-.08

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jvar1	0.92	0.03	0.87	0.97
jvar2	0.80	0.03	0.74	0.86
jvar3	0.77	0.03	0.71	0.84

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jvar1	4.0	1.1	1	5	235
jvar2	3.8	1.2	1	5	233
jvar3	3.7	1.2	1	5	234

Next measurement

List of scales (wave 1)

Scale: Variety of tasks [job] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jvar_fs	0.0	0.9	-2.6	1.0	235

Share of cases with imputed missing values: 0.9%
(Equivalence of scores from robust MLMV: CD = .998)

Next measurement

List of scales (wave 1)

Scale: Scope of action [job] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	97	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	2143
	Bayesian information criterion (BIC)	2174
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.703

Reliability and dimensionality

Ordinal Cronbach's alpha	.647
(Cronbach's alpha = .612)	
McDonald's omega	.658

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Unadjusted Eigenvalues *
factor 1	.99
factor 2	-.10
factor 3	-.22

* No componennt with an adjusted eigenvalue ≥ 1

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsca1	0.56	0.07	0.42	0.69
jsca2	0.78	0.08	0.62	0.93
jsca3	0.53	0.07	0.39	0.67

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jsca1	3.2	1.2	1	5	233
jsca2	3.1	1.1	1	5	233
jsca3	3.1	1.2	1	5	234

Next measurement

List of scales (wave 1)

Scale: Scope of action [job] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsca_fs	0.0	0.6	-1.3	1.2	235

Share of cases with imputed missing values: 1.3%

(Equivalence of scores from robust MLMV: CD = .994)

Next measurement

List of scales (wave 1)

Scale: Strain [job]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	17	2	.000
	Baseline vs. saturated	203	6	.000

2)	**Root mean squared error (RMSEA)**	.181
	90% Confidence interval: Lower bound	.108
	90% Confidence interval: Upper bound	.263
	Probability RMSEA <= 0.05	.002
3)	**Akaike's information criterion (AIC)**	2363
	Bayesian information criterion (BIC)	2404
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.923
	Tucker-Lewis index (TLI)	.768
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.053
	Coefficient of determination (CD)	.743

Reliability and dimensionality

Ordinal Cronbach's alpha	.735
(Cronbach's alpha = .674)	
McDonald's omega	.736

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.46
factor 2	.08
factor 3	-.16
factor 4	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jove1	0.64	0.06	0.52	0.75
jove3	0.71	0.06	0.61	0.82
jove4	0.63	0.06	0.51	0.75
jove5	0.58	0.06	0.46	0.70

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jove1	2.8	1.1	1	5	233
jove3	2.9	1.1	1	5	234
jove4	1.8	0.9	1	5	232
jove5	1.6	0.7	1	4	231

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jove_fs	0.0	0.6	-1.1	1.6	234

Share of cases with imputed missing values: 1.3%
(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Time pressure [job] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jovpr_comp	2.9	1.0	1	5	234

Share of cases with imputed missing values: 0.4%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jove1	2.8	1.1	1	5	233
jove3	2.9	1.1	1	5	234

Next measurement

List of scales (wave 1)

2-Item-Composit: Strain: Excessive demands [job]

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jovex_comp	1.7	0.7	1	4	232

Share of cases with imputed missing values: 0.4%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jove4	1.8	0.9	1	5	232
jove5	1.6	0.7	1	4	231

Next measurement

List of scales (wave 1)

Scale: Strain: Work environment [job] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	153	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	2081
	Bayesian information criterion (BIC)	2112
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.760

Reliability and dimensionality

Ordinal Cronbach's alpha	.736
(Cronbach's alpha = .680)	
McDonald's omega	.740

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.25
factor 2	-.13
factor 3	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsur1	0.68	0.06	0.57	0.78
jsur3	0.79	0.05	0.69	0.90
jsur4	0.62	0.06	0.51	0.73

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jsur1	2.1	1.2	1	5	232
jsur3	3.2	1.3	1	5	232
jsur4	1.8	1.1	1	5	232

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsur_fs	0.0	0.6	-1.0	1.7	232

Share of cases with imputed missing values: 0.0%
(Equivalence of scores from robust MLMV: CD = 1)

Next measurement

List of scales (wave 1)

Scale: Social support [job]

Wave 1 (2017)

Model and fit statistics *

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	6	1	.016
	Baseline vs. saturated	416	3	.000

2)	**Root mean squared error (RMSEA)**		.145
	90% Confidence interval:	Lower bound	.050
	90% Confidence interval:	Upper bound	.268
	Probability RMSEA <= 0.05		.050
3)	**Akaike's information criterion (AIC)**		1517
	Bayesian information criterion (BIC)		1545
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.988
	Tucker-Lewis index (TLI)		.965
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.020
	Coefficient of determination (CD)		.926

Reliability and dimensionality

Ordinal Cronbach's alpha	.881
(Cronbach's alpha = .816)	
McDonald's omega	.887

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.87
factor 2	-.02
factor 3	.02

*** Note:** Error variance of jsoc2 has to be constrained to achieve convergence (10% of observed item variance)

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsoc2	0.95	0.00	0.94	0.96
jsoc3	0.80	0.03	0.75	0.85
jsoc4	0.80	0.03	0.75	0.85

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jsoc2	4.2	1.0	1	5	231
jsoc3	4.3	1.0	1	5	231
jsoc4	4.4	0.9	1	5	230

Next measurement

List of scales (wave 1)

Scale: Social support [job] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsoc_fs	0.0	0.9	-2.8	0.7	231

Share of cases with imputed missing values: 0.4%
(Equivalence of scores from robust MLMV: CD = .986)

Next measurement

List of scales (wave 1)

Scale: Teaching skills of supervisor [job]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	293	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		1257
	Bayesian information criterion (BIC)		1288
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.934

Reliability and dimensionality

Ordinal Cronbach's alpha	.843
(Cronbach's alpha = .780)	
McDonald's omega	.851

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.72
factor 2	-.04
factor 3	-.08

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jqua1	0.96	0.03	0.90	1.02
jqua2	0.72	0.04	0.64	0.80
jqua3	0.74	0.04	0.66	0.82

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jqua1	3.4	0.8	1	4	216
jqua2	3.4	0.7	1	4	217
jqua3	3.3	0.8	1	4	217

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
jqua1	7.07	-12.83	-8.55	-1.24
jqua2	2.00	-5.48	-3.44	0.49
jqua3	1.95	-4.72	-2.32	0.10

Next measurement

List of scales (wave 1)

Scale: Teaching skills of supervisor [job] (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jqua_fs	0.0	0.9	-2.6	1.0	217

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .988)
(Equivalence of scores from two-step approach: CD = .93)

Next measurement

List of scales (wave 1)

2-Item-Composit: Career prospects [job]

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jcaco_comp	3.1	1.3	1	5	217

Share of cases with imputed missing values: 1.4%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jcaco1	3.2	1.4	1	5	216
jcaco2	3.1	1.3	1	5	215

Next measurement

List of scales (wave 1)

2-Item-Composit: Job requirements: Social skills

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskilla_comp	3.4	0.7	1	4	221

Share of cases with imputed missing values: 0.5%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill1	3.5	0.8	1	4	221
jskill6	3.2	0.9	1	4	220

Next measurement

List of scales (wave 1)

2-Item-Composit: Job requirements: Literacy

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskillb_comp	2.7	0.8	1	4	221

Share of cases with imputed missing values: 0.5%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill3	2.9	0.9	1	4	220
jskill8	2.5	1.0	1	4	221

Next measurement

List of scales (wave 1)

2-Item-Composit: Job requirements: Manual skills

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskillc_comp	2.1	0.8	1	4	221

Share of cases with imputed missing values: 0.9%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill5	2.4	1.0	1	4	221
jskill10	1.8	0.8	1	4	219

Next measurement

List of scales (wave 1)

2-Item-Composit: Job requirements: Problem solving

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskilld_comp	2.7	0.9	1	4	221

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill2	2.7	1.0	1	4	221
jskill7	2.7	1.0	1	4	221

Next measurement

List of scales (wave 1)

2-Item-Composit: Job requirements: Numeracy

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskille_comp	2.7	0.8	1	4	221

Share of cases with imputed missing values: 1.4%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill4	3.0	0.9	1	4	220
jskill9	2.5	0.9	1	4	219

Next measurement

List of scales (wave 1)

2-Item-Composit: Truancy [job]

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jtruancy_comp	1.2	0.3	1	4	218

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jtruancy2	1.1	0.4	1	4	218
jtruancy3	1.2	0.5	1	4	218

Next measurement

List of scales (wave 1)

2-Item-Composit: Complementarity of dual VET [training firm] Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
filis_comp	3.5	1.0	1	5	2162

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
filis1	3.5	1.0	1	5	2161
filis3	3.5	1.1	1	5	2162

Next measurement

List of scales (wave 1)

Scale: Perceived fit of education

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	63	2	.000
	Baseline vs. saturated	15051	6	.000

2)	**Root mean squared error (RMSEA)**		.074
	90% Confidence interval:	Lower bound	.059
	90% Confidence interval:	Upper bound	.090
	Probability RMSEA <= 0.05		.005
3)	**Akaike's information criterion (AIC)**		41495
	Bayesian information criterion (BIC)		41575
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.996
	Tucker-Lewis index (TLI)		.988
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.014
	Coefficient of determination (CD)		.946

Reliability and dimensionality

Ordinal Cronbach's alpha	.900
(Cronbach's alpha = .858)	
McDonald's omega	.902

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.70
factor 2	-.01
factor 3	-.06
factor 4	-.08

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
edfit1	0.76	0.01	0.75	0.77
edfit3	0.74	0.01	0.73	0.76
edfit4	0.86	0.00	0.85	0.87
edfit5	0.96	0.00	0.96	0.97

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
edfit1	4.5	0.8	1	5	5613
edfit3	4.3	0.8	1	5	5607
edfit4	4.2	0.9	1	5	5608
edfit5	4.2	0.9	1	5	5606

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	380	28	.000	105	14	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	93	6	.000	40	3	.000
Strong invariance (plus equal intercepts)	81	6	.000	2	3	.491
Strict invariance (plus equal error variances)	140	6	.000	26	3	.000

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.997	Web vs. PAP	.998
	French vs. Italian	.992		
	Italian vs. German	.993		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	1.000	PAP	.998
	Italian	.987		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edfit_fs	0.0	0.6	-2.6	0.6	5617

Share of cases with imputed missing values: 0.3%

(Equivalence of scores from robust MLMV: CD = .995)

Next measurement

List of scales (wave 1)

Scale: Perceived fit of job

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	46	2	.000
	Baseline vs. saturated	760	6	.000

2)	**Root mean squared error (RMSEA)**		.310
	90% Confidence interval:	Lower bound	.236
	90% Confidence interval:	Upper bound	.392
	Probability RMSEA <= 0.05		.000
3)	**Akaike's information criterion (AIC)**		2066
	Bayesian information criterion (BIC)		2107
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.942
	Tucker-Lewis index (TLI)		.827
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.045
	Coefficient of determination (CD)		.953

Reliability and dimensionality

Ordinal Cronbach's alpha	.898
(Cronbach's alpha = .866)	
McDonald's omega	.904

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.74
factor 2	.12
factor 3	-.03
factor 4	-.02

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jfit1	0.56	0.05	0.46	0.65
jfit3	0.86	0.02	0.82	0.90
jfit4	0.95	0.01	0.93	0.97
jfit5	0.94	0.01	0.92	0.96

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jfit1	4.2	1.0	1	5	226
jfit3	4.2	1.0	1	5	227
jfit4	4.0	1.2	1	5	227
jfit5	4.0	1.1	1	5	227

Next measurement

List of scales (wave 1)

Scale: Perceived fit of job (continued)

Wave 1 (2017)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jfit_fs	0.0	0.6	-1.6	0.5	227

Share of cases with imputed missing values: 0.4%

(Equivalence of scores from robust MLMV: CD = .999)

Next measurement

List of scales (wave 1)

2-Item-Composit: Occupational commitment [training firm] Wave 1 (2017)

Composit descriptives		Std.			
Variable name	Mean	dev.	Min.	Max.	Obs.
fiafcomp_comp	4.5	0.7	1	5	2196

Share of cases with imputed missing values: 0.0%

Item descriptives		Std.			Valid
Indicators	Mean	dev.	Min.	Max.	obs.
fiafcomp6	4.3	0.8	1	5	2195
fiafcomp4 *	4.6	0.8	1	5	2196

*** Note:** Reversed categories

Next measurement

List of scales (wave 1)

Scale: Occupational commitment [job] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	42	2	.000
	Baseline vs. saturated	719	6	.000

2)	**Root mean squared error (RMSEA)**	.303
	90% Confidence interval: Lower bound	.228
	90% Confidence interval: Upper bound	.386
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	1901
	Bayesian information criterion (BIC)	1941
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.944
	Tucker-Lewis index (TLI)	.831
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.040
	Coefficient of determination (CD)	.942

Reliability and dimensionality

Ordinal Cronbach's alpha	.916
(Cronbach's alpha = .849)	
McDonald's omega	.918

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.67
factor 2	.02
factor 3	-.04
factor 4	.09

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jafcomp2 *	0.73	0.03	0.66	0.79
jafcomp3	0.86	0.02	0.82	0.90
jafcomp4 *	0.95	0.01	0.92	0.97
jafcomp6	0.89	0.02	0.86	0.92

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jafcomp2	4.5	0.9	1	5	220
jafcomp3	4.2	1.0	1	5	220
jafcomp4	4.3	1.1	1	5	220
jafcomp6	4.0	1.1	1	5	220

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jafcomp_fs	0.0	0.6	-2.2	0.5	220

Share of cases with imputed missing values: 0.0%
(Equivalence of scores from robust MLMV: CD = .996)

Next measurement

List of scales (wave 1)

Scale: Parental appreciation

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	2161	9	.000
	Baseline vs. saturated	24873	15	.000

2)	**Root mean squared error (RMSEA)**		.211
	90% Confidence interval:	Lower bound	.204
	90% Confidence interval:	Upper bound	.219
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	65273
	Bayesian information criterion (BIC)	65392

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.913
	Tucker-Lewis index (TLI)	.856

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.044
	Coefficient of determination (CD)	.928

Reliability and dimensionality

Ordinal Cronbach's alpha	.927
(Cronbach's alpha = .901)	
McDonald's omega	.927

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	4.03
factor 2	.22
factor 3	.00
factor 4	-.07
factor 5	-.07
factor 6	-.08

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
apprpar1	0.83	0.01	0.82	0.84
apprpar2	0.85	0.00	0.84	0.86
apprpar3	0.81	0.01	0.80	0.82
apprpar4	0.80	0.01	0.78	0.81
apprpar5	0.85	0.00	0.84	0.86
apprpar6	0.81	0.01	0.80	0.82

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
apprpar1	4.3	0.8	1	5	5366
apprpar2	4.3	0.9	1	5	5365
apprpar3	3.8	1.0	1	5	5360
apprpar4	4.2	0.9	1	5	5360
apprpar5	4.1	1.0	1	5	5359
apprpar6	4.0	1.0	1	5	5356

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	660	54	.000	149	27	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	30	10	.001	19	5	.002
Strong invariance (plus equal intercepts)	203	10	.000	14	5	.014
Strict invariance (plus equal error variances)	220	10	.000	7	5	.244

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	1.000	Web vs. PAP	.999
	French vs. Italian	.997		
	Italian vs. German	.998		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	1.000	PAP	1.000
	Italian	.999		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
apprpar_fs	0.0	0.6	-2.6	0.7	5369

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .999)

List of scales (wave 1)

2-Item-Composit: Emotional closeness to parents

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
closep_comp	4.2	0.8	1	5	5350

Share of cases with imputed missing values: 3.8%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
closef	4.0	1.1	1	5	5178
closem	4.4	0.8	1	5	5319

Previous measurement

List of scales (wave 1)

Scale: Household chores

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	337	14	.000
	Baseline vs. saturated	5958	21	.000

2)	**Root mean squared error (RMSEA)**		.066
	90% Confidence interval:	Lower bound	.060
	90% Confidence interval:	Upper bound	.072
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	102535
	Bayesian information criterion (BIC)	102673

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.946
	Tucker-Lewis index (TLI)	.918

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.033
	Coefficient of determination (CD)	.756

Reliability and dimensionality

Ordinal Cronbach's alpha	.722
(Cronbach's alpha = .671)	
McDonald's omega	.727

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.86
factor 2	.03
factor 3	.02
factor 4	.00
factor 5	-.09
factor 6	-.12
factor 7	-.17

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
domwrk1	0.59	0.01	0.57	0.61
domwrk2	0.63	0.01	0.61	0.65
domwrk3	0.38	0.01	0.35	0.41
domwrk4	0.38	0.01	0.35	0.40
domwrk5	0.56	0.01	0.53	0.58
domwrk6	0.69	0.01	0.67	0.71
domwrk7	0.43	0.01	0.41	0.46

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
domwrk1	1.7	1.0	0	4	5362
domwrk2	1.0	1.0	0	4	5358
domwrk3	1.1	0.9	0	4	5353
domwrk4	1.6	1.3	0	4	5337
domwrk5	1.4	0.9	0	4	5355
domwrk6	1.7	0.9	0	4	5357
domwrk7	3.1	1.0	0	4	5362

Next measurement

List of scales (wave 1)

Scale: Household chores (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	560	70	.000	156	35	.000

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	63	12	.000	17	6	.010
Strong invariance (plus equal intercepts)	199	12	.000	25	6	.000
Strict invariance (plus equal error variances)	114	12	.000	9	6	.203

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.983	Web vs. PAP	.994
	French vs. Italian	.975		
	Italian vs. German	.989		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	.999	Web	1.000
	French	.994	PAP	.998
	Italian	.992		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
domwrk_fs	0.0	0.5	-1.4	1.9	5366

Share of cases with imputed missing values: 1.1%

(Equivalence of scores from robust MLMV: CD = .997)

Next measurement

List of scales (wave 1)

Scale: Perceived social network support

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	817	5	.000
	Baseline vs. saturated	16896	10	.000

2)	**Root mean squared error (RMSEA)**	.175
	90% Confidence interval: Lower bound	.165
	90% Confidence interval: Upper bound	.185
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	81826
	Bayesian information criterion (BIC)	81925
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.952
	Tucker-Lewis index (TLI)	.904
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.043
	Coefficient of determination (CD)	.918

Reliability and dimensionality

Ordinal Cronbach's alpha	.898
(Cronbach's alpha = .876)	
McDonald's omega	.899

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.15
factor 2	.14
factor 3	-.06
factor 4	-.08
factor 5	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
closupp1	0.78	0.01	0.77	0.79
closupp2	0.90	0.00	0.89	0.91
closupp3	0.81	0.01	0.80	0.83
closupp4	0.63	0.01	0.62	0.65
closupp5	0.86	0.00	0.85	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
closupp1	5.7	1.4	1	7	5051
closupp2	5.9	1.5	1	7	5186
closupp3	6.0	1.4	1	7	5122
closupp4	5.1	1.7	1	7	4552
closupp5	5.7	1.6	1	7	4910

Next measurement
Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	702	40	.000	74	20	.000	225	20	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	27	8	.001	11	4	.028	15	4	.005
Strong invariance (plus equal intercepts)	138	8	.000	11	4	.030	51	5	.000
Strict invariance (plus equal error variances)	312	8	.000	3	4	.558	80	5	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Web vs. PAP	.999	T1 vs. To	1.000
	French vs. Italian	.990				
	Italian vs. German	.989				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T1	1.000
	French	1.000	PAP	1.000	To	1.000
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
closupp_fs	0.0	1.0	-3.9	1.0	5319

Share of cases with imputed missing values: 21.9%

(Equivalence of scores from robust MLMV: CD = .998)

Intra-Individual Stability

β	.489
CD	.239

Multi-Wave Sample

Obs.	5135
Imp.	29

Next measurement
Previous measurement

List of scales (wave 1)

2-Item-Composit: Generalized Trust

Wave 1 (2017)

Composit descriptives		Std.			
Variable name	Mean	dev.	Min.	Max.	Obs.
gtrust_comp	5.5	2.1		10	5419

Share of cases with imputed missing values: 0.4%

Item descriptives		Std.			Valid
Indicators	Mean	dev.	Min.	Max.	obs.
trust	5.4	2.4		10	5406
fair	5.7	2.2		10	5411

List of scales (wave 1)

Scale: Intrinsic achievement motivation

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3564	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	29735
	Bayesian information criterion (BIC)	29794
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.791

Reliability and dimensionality

Ordinal Cronbach's alpha	.739
(Cronbach's alpha = .668)	
McDonald's omega	.747

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.28
factor 2	-.09
factor 3	-.19

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
achmot2	0.65	0.01	0.63	0.67
achmot4	0.61	0.01	0.58	0.63
achmot6	0.84	0.01	0.82	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
achmot2	3.2	0.7	1	4	5181
achmot4	3.0	0.7	1	4	5180
achmot6	3.0	0.7	1	4	5159

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
achmot2	1.58	-5.24	-2.39	1.33
achmot4	1.40	-4.14	-1.43	1.77
achmot6	2.85	-6.16	-2.38	3.24

Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	273	18	.000	11	9	.279	972	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.016	1	2	.711	60	2	.000
Strong invariance (plus equal intercepts)	149	4	.000	1	2	.493	431	3	.000
Strict invariance (plus equal error variances)	21	4	.000	2	2	.327	342	3	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	1.000	T1 vs. To	.991
	French vs. Italian	.999				
	Italian vs. German	.996				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Coefficient of determination		CD		CD		CD
	German	.998	Web	1.000	T1	.998
	French	1.000	PAP	.999	To	.994
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
achmoti_fs	0.1	0.8	-2.7	1.7	5184

Share of cases with imputed missing values: 0.6%

(Equivalence of scores from robust MLMV: CD = .99)

(Equivalence of scores from two-step approach: CD = .981)

Intra-Individual Stability

β	.542
CD	.294

Multi-Wave Sample

Obs.	5175
Imp.	5

Previous measurement

List of scales (wave 1)

Scale: Extrinsic achievement motivation

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3138	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	33098
	Bayesian information criterion (BIC)	33157
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.778

Reliability and dimensionality

Ordinal Cronbach's alpha	.669
(Cronbach's alpha = .610)	
McDonald's omega	.702

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.16
factor 2	-.05
factor 3	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
achmot1	0.37	0.01	0.34	0.40
achmot3	0.78	0.02	0.75	0.81
achmot5	0.80	0.02	0.77	0.83

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
achmot1	3.3	0.7	1	4	5181
achmot3	1.8	0.8	1	4	5176
achmot5	1.9	0.9	1	4	5162

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
achmot1	0.66	-4.25	-2.22	0.55
achmot3	2.36	-0.76	2.73	5.55
achmot5	2.35	-1.02	2.09	5.06

Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	300	18	.000	23	9	.006	93	9	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	20	4	.001	1	2	.732	0	2	.787
Strong invariance (plus equal intercepts)	246	4	.000	3	2	.234	69	3	.000
Strict invariance (plus equal error variances)	16	4	.003	15	2	.000	4	3	.226

Configural factor similarity across …	Survey Languages		Survey Modes		Panel Waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.971	Web vs. PAP	.999	T1 vs. To	1.000
	French vs. Italian	.979				
	Italian vs. German	.997				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes		Panel Waves	
Coefficient of determination		CD		CD		CD
	German	.989	Web	1.000	T1	1.000
	French	.835	PAP	.998	To	1.000
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
achmote_fs	0.0	0.8	-1.4	2.3	5184

Share of cases with imputed missing values: 0.6%

(Equivalence of scores from robust MLMV: CD = .997)

(Equivalence of scores from two-step approach: CD = .986)

Intra-Individual Stability

β	.636
CD	.405

Multi-Wave Sample

Obs.	5177
Imp.	5

Previous measurement

List of scales (wave 1)

2-Item-Composit: Performance-approach goals

Wave 1 (2017)

Composit descriptives		Std.			
Variable name	Mean	dev.	Min.	Max.	Obs.
apprxgls_comp	2.5	0.7	1	4	5164

Share of cases with imputed missing values: 0.2%

Item descriptives		Std.			Valid
Indicators	Mean	dev.	Min.	Max.	obs.
apprxgls1	2.8	0.8	1	4	5155
apprxgls2	2.1	1.0	1	4	5162

List of scales (wave 1)

Scale: Instrumental learning motivation [PISA2000] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	9519	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	26856
	Bayesian information criterion (BIC)	26915
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.923

Reliability and dimensionality

Ordinal Cronbach's alpha	.894
(Cronbach's alpha = .839)	
McDonald's omega	.896

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.10
factor 2	-.06
factor 3	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
insmot1	0.82	0.01	0.80	0.83
insmot2	0.82	0.01	0.81	0.83
insmot3	0.94	0.00	0.93	0.95

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
insmot1	3.3	0.8	1	4	5153
insmot2	3.2	0.8	1	4	5152
insmot3	3.4	0.8	1	4	5153

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
insmot1	2.66	-6.17	-3.09	0.61
insmot2	2.69	-5.46	-2.77	0.75
insmot3	5.98	-11.95	-7.07	-0.05

Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	241	18	.000	34	9	.000	1877	9	.000

Tests of measurement invariance across ...	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	14	4	.008	5	2	.064	2	2	.352
Strong invariance (plus equal intercepts)	54	4	.000	2	2	.319	1044	3	.000
Strict invariance (plus equal error variances)	68	4	.000	19	2	.000	629	3	.000

Configural factor similarity across ...	Survey Languages		Survey Modes		Panel Waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Web vs. PAP	.999	T1 vs. To	1.000
	French vs. Italian	1.000				
	Italian vs. German	.999				

Factor score equivalence: Unrestricted vs. invariant models for ...	Survey Languages		Survey Modes		Panel Waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T1	1.000
	French	.999	PAP	1.000	To	1.000
	Italian	.985				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
insmot_fs	0.0	0.9	-2.5	1.1	5156

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .993)
(Equivalence of scores from two-step approach: CD = .957)

Intra-Individual Stability

β	.431
CD	.185

Multi-Wave Sample

Obs.	5145
Imp.	5

Previous measurement

List of scales (wave 1)

Scale: Global self-esteem

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	2861	14	.000
	Baseline vs. saturated	17125	21	.000

2)	**Root mean squared error (RMSEA)**		.194
	90% Confidence interval:	Lower bound	.188
	90% Confidence interval:	Upper bound	.200
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	88415
	Bayesian information criterion (BIC)	88553

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.834
	Tucker-Lewis index (TLI)	.750

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.090
	Coefficient of determination (CD)	.882

Reliability and dimensionality

Ordinal Cronbach's alpha	.862
(Cronbach's alpha = .825)	
McDonald's omega	.859

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.27
factor 2	.54
factor 3	.00
factor 4	-.09
factor 5	-.08
factor 6	-.10
factor 7	-.11

Standardized factor loadings

Indicators *	Coef.	(SE)	[95% Conf.	interval]
sele1	0.70	0.01	0.68	0.72
sele2	0.57	0.01	0.55	0.59
sele3	0.51	0.01	0.49	0.53
sele4	0.61	0.01	0.59	0.63
seld1	0.84	0.01	0.83	0.85
seld3	0.75	0.01	0.73	0.76
seld5	0.77	0.01	0.76	0.79

*** Note:** Reversed categories for all 'Seld' items

Item descriptives

Indicators *	Mean	Std. dev.	Min.	Max.	Valid Obs.
sele1	3.9	0.8	1	5	5417
sele2	4.1	0.7	1	5	5413
sele3	4.0	0.8	1	5	5413
sele4	3.9	0.9	1	5	5403
seld1	3.7	1.1	1	5	5412
seld3	3.2	1.2	1	5	5406
seld5	4.1	1.1	1	5	5403

Previous measurement

List of scales (wave 1)

Scale: Global self-esteem (continued)

Wave 1 (2017)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves ***		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	2946	70	.000	148	35	.000	465	35	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves ***		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	39	12	.000	10	6	.130	55	6	.000
Strong invariance (plus equal intercepts)	1535	12	.000	36	6	.000	118	7	.000
Strict invariance (plus equal error variances)	190	12	.000	22	6	.001	121	7	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves ***	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Web vs. PAP	.999	T1 vs. To	.998
	French vs. Italian	.998				
	Italian vs. German	.998				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves ***	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T1	1.000
	French	.993	PAP	.999	To	.999
	Italian	.976				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
sel_fs	0.0	0.5	-2.1	0.9	5419

Share of cases with imputed missing values: 0.8%

(Equivalence of scores from robust MLMV: CD = .996)

Intra-Individual Stability	
β	.745
CD	.556

Multi-Wave Sample	
Obs.	5393
Imp.	5

*** Note:** Item seld4 was administered only in the baseline survey and is excluded.

Previous measurement

List of scales (wave 1)

Scale: Positive global self-esteem

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	37	2	.000
	Baseline vs. saturated	6503	6	.000

2)	**Root mean squared error (RMSEA)**		.057
	90% Confidence interval:	Lower bound	.042
	90% Confidence interval:	Upper bound	.074
	Probability RMSEA <= 0.05		.203

3)	**Akaike's information criterion (AIC)**	46378
	Bayesian information criterion (BIC)	46457

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.995
	Tucker-Lewis index (TLI)	.984

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.013
	Coefficient of determination (CD)	.808

Reliability and dimensionality

Ordinal Cronbach's alpha	.802
(Cronbach's alpha = .749)	
McDonald's omega	.803

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.88
factor 2	-.08
factor 3	-.10
factor 4	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
sele1	0.67	0.01	0.65	0.68
sele2	0.78	0.01	0.76	0.79
sele3	0.71	0.01	0.69	0.72
sele4	0.69	0.01	0.67	0.71

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
sele1	3.9	0.8	1	5	5417
sele2	4.1	0.7	1	5	5413
sele3	4.0	0.8	1	5	5413
sele4	3.9	0.9	1	5	5403

Next measurement
Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	971	28	.000	32	14	.004	274	14	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	30	6	.000	6	3	.111	4	3	.274
Strong invariance (plus equal intercepts)	654	6	.000	12	3	.006	108	4	.000
Strict invariance (plus equal error variances)	105	6	.000	7	3	.077	30	4	.000

Configural factor similarity across …	Survey Languages		Survey Modes		Panel Waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.996	Web vs. PAP	.999	T1 vs. To	1.000
	French vs. Italian	.999				
	Italian vs. German	.995				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes		Panel Waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T1	1.000
	French	.992	PAP	.999	To	1.000
	Italian	.996				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
sele_fs	0.0	0.5	-2.5	0.8	5419

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .994)

Intra-Individual Stability

β	.726
CD	.526

Multi-Wave Sample

Obs.	5393
Imp.	5

Next measurement
Previous measurement

List of scales (wave 1)

Scale: Negative global self-esteem

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	7558	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	42259
	Bayesian information criterion (BIC)	42318
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.876

Reliability and dimensionality

Ordinal Cronbach's alpha	.858
(Cronbach's alpha = .812)	
McDonald's omega	.860

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.86
factor 2	-.09
factor 3	-.13

Standardized factor loadings

Indicators *	Coef.	(SE)	[95% Conf.	interval]
seld1	0.89	0.01	0.88	0.90
seld3	0.79	0.01	0.78	0.81
seld5	0.77	0.01	0.76	0.78

*** Note:** Reversed categories

Item descriptives

Indicators *	Mean	Std. dev.	Min.	Max.	Valid Obs.
seld1	3.7	1.1	1	5	5412
seld3	3.2	1.2	1	5	5406
seld5	4.1	1.1	1	5	5403

Previous measurement

List of scales (wave 1)

Scale: Negative global self-esteem (continued) Wave 1 (2017)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves ***		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	1673	18	.000	48	9	.000	104	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves ***		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	52	4	.000	4	2	.129	6	2	.046
Strong invariance (plus equal intercepts)	516	4	.000	24	2	.000	24	3	.000
Strict invariance (plus equal error variances)	32	4	.000	5	2	.081	47	3	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves ***	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.995	Web vs. PAP	.999	T1 vs. To	1.000
	French vs. Italian	.999				
	Italian vs. German	.998				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves ***	
Coefficient of determination		CD		CD		CD
	German	.996	Web	1.000	T1	1.000
	French	.988	PAP	.999	To	1.000
	Italian	.971				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seld_fs	0.0	0.9	-2.7	1.3	5417

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .996)

Intra-Individual Stability	
β	.680
CD	.463

Multi-Wave Sample	
Obs.	5391
Imp.	5

*** Note:** Item seld4 was administered only in the baseline survey and is excluded.

Previous measurement

List of scales (wave 1)

Scale: General perceived self-efficacy & persistence

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	2498	20	.000
	Baseline vs. saturated	17734	28	.000

2)	**Root mean squared error (RMSEA)**	.146
	90% Confidence interval: Lower bound	.141
	90% Confidence interval: Upper bound	.151
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	73043
	Bayesian information criterion (BIC)	73203
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.860
	Tucker-Lewis index (TLI)	.804
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.066
	Coefficient of determination (CD)	.867

Reliability and dimensionality

Ordinal Cronbach's alpha	.857
(Cronbach's alpha = .804)	
McDonald's omega	.858

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.41
factor 2	.40
factor 3	.14
factor 4	-.01
factor 5	-.08
factor 6	-.12
factor 7	-.14
factor 8	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
seef1	0.65	0.01	0.63	0.66
seef2	0.54	0.01	0.52	0.56
seef3	0.65	0.01	0.63	0.67
seef4	0.62	0.01	0.60	0.64
pers2	0.62	0.01	0.61	0.64
pers3	0.65	0.01	0.63	0.66
pers4	0.78	0.01	0.77	0.80
pers5	0.72	0.01	0.71	0.74

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
seef1	3.1	0.5	1	4	5798
seef2	3.2	0.6	1	4	5795
seef3	2.8	0.7	1	4	5789
seef4	3.0	0.6	1	4	5786
pers2	3.1	0.6	1	4	5798
pers3	3.2	0.7	1	4	5795
pers4	3.1	0.6	1	4	5787
pers5	3.0	0.7	1	4	5782

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
seef1	1.63	-6.49	-2.81	2.32
seef2	1.18	-5.44	-2.46	1.03
seef3	1.56	-4.97	-1.18	2.33
seef4	1.50	-5.56	-1.87	2.15
pers2	1.47	-6.03	-2.41	1.91
pers3	1.51	-5.81	-2.41	1.32
pers4	2.40	-7.56	-3.25	2.16
pers5	1.93	-6.07	-1.92	2.07

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	1044	88	.000	132	44	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	107	14	.000	12	7	.111
Strong invariance (plus equal intercepts)	375	14	.000	21	7	.003
Strict invariance (plus equal error variances)	147	14	.000	37	7	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.994	Web vs. PAP	.999
	French vs. Italian	.991		
	Italian vs. German	.988		

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	.999	Web	1.000
	French	.996	PAP	.999
	Italian	.993		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
persseef_fs	0.0	0.9	-4.2	2.3	5808

Share of cases with imputed missing values: 1.3%
(Equivalence of scores from robust MLMV: CD = .998)
(Equivalence of scores from two-step approach: CD = .994)

List of scales (wave 1)

Scale: General perceived self-efficacy scale (GSES) Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	58	2	.000
	Baseline vs. saturated	6015	6	.000

2)	**Root mean squared error (RMSEA)**	.069
	90% Confidence interval: Lower bound	.055
	90% Confidence interval: Upper bound	.085
	Probability RMSEA <= 0.05	.016
3)	**Akaike's information criterion (AIC)**	38074
	Bayesian information criterion (BIC)	38154
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.991
	Tucker-Lewis index (TLI)	.972
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.017
	Coefficient of determination (CD)	.785

Reliability and dimensionality

Ordinal Cronbach's alpha	.777
(Cronbach's alpha = .698)	
McDonald's omega	.778

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.73
factor 2	-.08
factor 3	-.11
factor 4	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
seef1	0.67	0.01	0.65	0.68
seef2	0.61	0.01	0.59	0.63
seef3	0.72	0.01	0.70	0.73
seef4	0.74	0.01	0.72	0.76

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
seef1	3.1	0.5	1	4	5798
seef2	3.2	0.6	1	4	5795
seef3	2.8	0.7	1	4	5789
seef4	3.0	0.6	1	4	5786

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
seef1	1.70	-6.64	-2.90	2.37
seef2	1.42	-5.78	-2.66	1.11
seef3	1.86	-5.42	-1.30	2.55
seef4	2.03	-6.47	-2.21	2.51

Next measurement
Previous measurement
List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	495	28	.000	20	14	.139	403	14	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes			Panel Waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	38	6	.000	4	3	.213	22	3	.000
Strong invariance (plus equal intercepts)	212	6	.000	8	3	.044	131	4	.000
Strict invariance (plus equal error variances)	130	6	.000	1	3	.793	123	4	.000

Configural factor similarity across …	Survey Languages		Survey Modes		Panel Waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.995	Web vs. PAP	.999	T1 vs. To	.999
	French vs. Italian	.996				
	Italian vs. German	.994				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes		Panel Waves	
Coefficient of determination		CD		CD		CD
	German	.998	Web	1.000	T1	1.000
	French	.998	PAP	1.000	To	1.000
	Italian	.996				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seef_fs	0.0	0.8	-3.5	1.9	5807

Share of cases with imputed missing values: 0.7%

(Equivalence of scores from robust MLMV: CD = .992)

(Equivalence of scores from two-step approach: CD = .989)

Intra-Individual Stability

β	.619
CD	.383

Multi-Wave Sample

Obs.	5770
Imp.	5

Next measurement
Previous measurement

List of scales (wave 1)

Scale: Crafting & technical self-concept

Wave 1 (2017)

Model and fit statistics *

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	22	1	.000
	Baseline vs. saturated	4380	3	.000

2)	**Root mean squared error (RMSEA)**		.060
	90% Confidence interval:	Lower bound	.040
	90% Confidence interval:	Upper bound	.084
	Probability RMSEA <= 0.05		.183
3)	**Akaike's information criterion (AIC)**		39574
	Bayesian information criterion (BIC)		39627
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.995
	Tucker-Lewis index (TLI)		.985
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.016
	Coefficient of determination (CD)		.910

Reliability and dimensionality

Ordinal Cronbach's alpha	.705
(Cronbach's alpha = .654)	
McDonald's omega	.749

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.30
factor 2	.02
factor 3	-.22

*** Note:** Error variance of techself2 has to be constrained to achieve convergence (10% of observed item variance)

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
techself1	0.43	0.01	0.41	0.45
techself2	0.95	0.00	0.95	0.95
techself4 *	0.69	0.01	0.68	0.71

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
techself1	2.7	0.9	1	4	5777
techself2	2.6	0.9	1	4	5762
techself4	2.8	0.8	1	4	5746

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
techself1	0.85	-2.52	-0.54	1.65
techself2	6.47	-8.00	-0.85	7.83
techself4	1.82	-3.78	-1.06	2.11

List of scales (wave 1)

Scale: Crafting & technical self-concept (continued) Wave 1 (2017)

Tests and indices of factorial invariance across ... *

Equality of the variance–covariance matrices across ...

	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	200	18	.000	46	9	.000

Tests of measurement invariance across ...

	Survey Languages *			Survey Modes *		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	57	4	.000	5	2	.088
Strong invariance (plus equal intercepts)	43	4	.000	21	2	.000
Strict invariance (plus equal error variances)	7	2	.025	8	1	.004

Configural factor similarity across ...

	Survey Languages *		Survey Modes *	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.992	Web vs. PAP	.999
	French vs. Italian	.972		
	Italian vs. German	.975		

Factor score equivalence: Unrestricted vs. invariant models for ...

	Survey Languages *		Survey Modes *	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	1.000	PAP	1.000
	Italian	.999		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
techself_fs	0.0	0.9	-2.1	1.8	5790

Share of cases with imputed missing values: 1.3%
(Equivalence of scores from robust MLMV: CD = .997)
(Equivalence of scores from two-step approach: CD = .991)

*** Note:**
In order to achieve convergence, the error variances of item techself2 are constrained to be equal across groups when testing for invariance.

List of scales (wave 1)

Scale: Mathematical self-concept

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	10213	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	35443
	Bayesian information criterion (BIC)	35503
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.903

Reliability and dimensionality

Ordinal Cronbach's alpha	.891
(Cronbach's alpha = .851)	
McDonald's omega	.892

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.08
factor 2	-.08
factor 3	-.12

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
matself1	0.83	0.01	0.82	0.84
matself2 *	0.83	0.01	0.82	0.84
matself4 *	0.91	0.00	0.90	0.92

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
matself1	2.7	0.9	1	4	5775
matself2	2.9	0.9	1	4	5768
matself4	2.9	0.9	1	4	5764

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
matself1	2.85	-3.74	-0.91	2.77
matself2	2.89	-4.86	-1.77	1.92
matself4	4.53	-6.76	-2.45	2.80

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	183	18	.000	78	9	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	75	4	.000	10	2	.008
Strong invariance (plus equal intercepts)	17	4	.002	3	2	.239
Strict invariance (plus equal error variances)	66	4	.000	44	2	.000

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.995	Web vs. PAP	.999
	French vs. Italian	.997		
	Italian vs. German	1.000		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.998	Web	1.000
	French	.992	PAP	.998
	Italian	1.000		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
matself_fs	0.0	0.9	-2.1	1.5	5789

Share of cases with imputed missing values: 0.9%
(Equivalence of scores from robust MLMV: CD = .994)
(Equivalence of scores from two-step approach: CD = .98)

List of scales (wave 1)

Scale: Verbal self-concept

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3716	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	38650
	Bayesian information criterion (BIC)	38710
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.743

Reliability and dimensionality

Ordinal Cronbach's alpha	.733
(Cronbach's alpha = .667)	
McDonald's omega	.735

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.26
factor 2	-.14
factor 3	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
langself1 *	0.62	0.01	0.60	0.64
langself2 *	0.72	0.01	0.70	0.74
langself3	0.74	0.01	0.72	0.76

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
langself1	2.9	0.9	1	4	5781
langself2	3.0	0.8	1	4	5772
langself3	3.0	0.8	1	4	5770

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
langself1	1.44	-3.53	-1.24	1.23
langself2	1.88	-4.15	-1.63	1.32
langself3	2.12	-5.30	-2.19	1.58

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	274	18	.000	22	9	.008

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	33	4	.000	3	2	.227
Strong invariance (plus equal intercepts)	44	4	.000	5	2	.089
Strict invariance (plus equal error variances)	183	4	.000	10	2	.008

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.998	Web vs. PAP	.999
	French vs. Italian	.971		
	Italian vs. German	.954		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.998	PAP	.998
	Italian	.927		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
langself_fs	0.0	0.8	-2.5	1.5	5789

Share of cases with imputed missing values: 0.7%
(Equivalence of scores from robust MLMV: CD = .987)
(Equivalence of scores from two-step approach: CD = .976)

List of scales (wave 1)

Scale: Artistic self-concept

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	11796	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	37654
	Bayesian information criterion (BIC)	37714
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.963

Reliability and dimensionality

Ordinal Cronbach's alpha	.893
(Cronbach's alpha = .855)	
McDonald's omega	.899

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.15
factor 2	-.02
factor 3	-.10

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
artself2	0.88	0.00	0.87	0.88
artself3	0.98	0.00	0.97	0.99
artself4	0.73	0.01	0.72	0.74

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
artself2	2.5	1.0	1	4	5776
artself3	2.4	1.0	1	4	5765
artself4	2.6	1.0	1	4	5753

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
artself2	3.38	-3.18	-0.14	3.39
artself3	8.13	-5.02	1.47	8.38
artself4	2.01	-2.44	-0.31	2.43

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	294	18	.000	113	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	71	4	.000	30	2	.000
Strong invariance (plus equal intercepts)	8	4	.079	19	2	.000
Strict invariance (plus equal error variances)	145	4	.000	34	2	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.996	Web vs. PAP	.998
	French vs. Italian	1.000		
	Italian vs. German	.998		

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	.998	Web	.999
	French	.997	PAP	.996
	Italian	.999		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
artself_fs	0.0	0.9	-1.6	1.7	5790

Share of cases with imputed missing values: 1.1%
(Equivalence of scores from robust MLMV: CD = .993)
(Equivalence of scores from two-step approach: CD = .974)

List of scales (wave 1)

Scale: Cognitive self-concept

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	7495	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	35548
	Bayesian information criterion (BIC)	35608
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.854

Reliability and dimensionality

Ordinal Cronbach's alpha	.850
(Cronbach's alpha = .798)	
McDonald's omega	.851

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.80
factor 2	-.12
factor 3	-.12

Standardized factor loadings

Indicators *	Coef.	(SE)	[95% Conf.	interval]
intelself2	0.81	0.01	0.79	0.82
intelself3	0.84	0.01	0.83	0.86
intelself4	0.78	0.01	0.76	0.79

*** Note:** Reversed categories

Item descriptives

Indicators *	Mean	Std. dev.	Min.	Max.	Valid Obs.
intelself2	2.9	0.9	1	4	5760
intelself3	2.9	0.9	1	4	5756
intelself4	3.0	0.7	1	4	5738

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
intelself2	2.53	-4.24	-1.51	1.74
intelself3	2.98	-5.39	-1.76	2.01
intelself4	2.34	-5.43	-2.36	1.79

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	199	18	.000	27	9	.002

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	3	4	.517	2	2	.311
Strong invariance (plus equal intercepts)	8	4	.095	12	2	.002
Strict invariance (plus equal error variances)	12	4	.016	8	2	.020

Configural factor similarity across …	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	1.000	Web vs. PAP	1.000
	French vs. Italian	1.000		
	Italian vs. German	1.000		

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	1.000	Web	1.000
	French	.999	PAP	1.000
	Italian	.999		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
intelself_fs	0.0	0.9	-2.4	1.5	5783

Share of cases with imputed missing values: 1.3%
(Equivalence of scores from robust MLMV: CD = .996)
(Equivalence of scores from two-step approach: CD = .985)

List of scales (wave 1)

Scale: Persistence

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	646	2	.000
	Baseline vs. saturated	8437	6	.000

2)	**Root mean squared error (RMSEA)**	.236
	90% Confidence interval: Lower bound	.220
	90% Confidence interval: Upper bound	.251
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	36425
	Bayesian information criterion (BIC)	36505
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.924
	Tucker-Lewis index (TLI)	.771
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.058
	Coefficient of determination (CD)	.836

Reliability and dimensionality

Ordinal Cronbach's alpha	.816
(Cronbach's alpha = .745)	
McDonald's omega	.816

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.02
factor 2	.11
factor 3	-.14
factor 4	-.17

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
pers2	0.61	0.01	0.59	0.63
pers3	0.67	0.01	0.65	0.69
pers4	0.80	0.01	0.79	0.82
pers5	0.81	0.01	0.79	0.82

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
pers2	3.1	0.6	1	4	5798
pers3	3.2	0.7	1	4	5795
pers4	3.1	0.6	1	4	5787
pers5	3.0	0.7	1	4	5782

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
pers2	1.45	-6.02	-2.41	1.91
pers3	1.64	-5.99	-2.52	1.38
pers4	2.47	-7.74	-3.34	2.24
pers5	2.51	-7.19	-2.27	2.48

List of scales (wave 1)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	324	28	.000	69	14	.000

Tests of measurement invariance across ...	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	89	6	.000	7	3	.072
Strong invariance (plus equal intercepts)	84	6	.000	6	3	.136
Strict invariance (plus equal error variances)	23	6	.001	6	3	.104

Configural factor similarity across ...	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.987	Web vs. PAP	.999
	French vs. Italian	.990		
	Italian vs. German	.998		

Factor score equivalence: Unrestricted vs. invariant models for ...	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.998	Web	1.000
	French	.984	PAP	.999
	Italian	.999		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
pers_fs	0.1	0.9	-3.5	1.8	5807

Share of cases with imputed missing values: 0.9%
(Equivalence of scores from robust MLMV: CD = .997)
(Equivalence of scores from two-step approach: CD = .994)

List of scales (wave 1)

Scale: Effort [educ.] Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2717	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	38697
	Bayesian information criterion (BIC)	38756
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.937

Reliability and dimensionality

Ordinal Cronbach's alpha	.643
(Cronbach's alpha = .574)	
McDonald's omega	.698

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.07
factor 2	-.02
factor 3	-.22

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
edeff1	0.97	0.02	0.92	1.02
edeff3	0.60	0.02	0.56	0.63
edeff4 *	0.35	0.02	0.32	0.38

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
edeff1	3.9	0.9	1	5	5141
edeff3	3.9	0.8	1	5	5139
edeff4	3.0	1.1	1	5	5140

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey Languages ***			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
	483	9	.000	42	9	.000

Tests of measurement invariance across ...	**Survey Languages ***			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	112	2	.000	18	2	.000
Strong invariance (plus equal intercepts)	298	2	.000	4	2	.160
Strict invariance (plus equal error variances)	14	2	.001	1	2	.520

Configural factor similarity across ...	**Survey Languages ***		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French & Italian	.938	Web vs. PAP	.990

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages ***		**Survey Modes**	
Coefficient of determination		CD		CD
	German	.967	Web	.999
	French & Italian	.998	PAP	1.000

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edeff_fs	0.0	0.8	-2.8	1.1	5144

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .986)

*** Note:** French and Italian pooled for estimation. The error variances of edeff1 are constrained to be equal across groups when testing for metric invariance.

Next measurement

List of scales (wave 1)

Scale: Effort [job]

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	151	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	1537
	Bayesian information criterion (BIC)	1568
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.799

Reliability and dimensionality

Ordinal Cronbach's alpha	.689
(Cronbach's alpha = .541)	
McDonald's omega	.722

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	.98
factor 2	-.04
factor 3	-.04

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jeff1	0.81	0.07	0.66	0.95
jeff3	0.81	0.07	0.67	0.96
jeff4 *	0.38	0.07	0.25	0.51

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
jeff1	4.2	0.8	1	5	220
jeff3	4.5	0.7	2	5	221
jeff4	3.6	1.1	1	5	221

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
			/			/

Tests of measurement invariance across ...	**Survey Languages**			**Survey Modes**		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/
Strong invariance (plus equal intercepts)			/			/
Strict invariance (plus equal error variances)			/			/

Configural factor similarity across ...	**Survey Languages**		**Survey Modes**	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	/	Web vs. PAP	/
	French vs. Italian	/		
	Italian vs. German	/		

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey Languages**		**Survey Modes**	
Coefficient of determination		CD		CD
	German	/	Web	/
	French	/	PAP	/
	Italian	/		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jeff_fs	0.0	0.6	-2.2	0.6	221

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .979)

Next measurement

List of scales (wave 1)

2-Item-Composit: Internal locus of control

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
loci_comp	4.1	0.6	1	5	5397

Share of cases with imputed missing values: 0.1%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
loci1	4.0	0.8	1	5	5394
loci2	4.3	0.7	1	5	5393

Previous measurement

List of scales (wave 1)

2-Item-Composit: External locus of control

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
loce_comp	2.4	0.8	1	5	5394

Share of cases with imputed missing values: 0.3%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
loce1	2.2	1.0	1	5	5390
loce2	2.5	1.0	1	5	5382

Previous measurement

List of scales (wave 1)

Scale: Work-related intrinsic value

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3407	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	27634
	Bayesian information criterion (BIC)	27694
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.750

Reliability and dimensionality

Ordinal Cronbach's alpha	.708
(Cronbach's alpha = .594)	
McDonald's omega	.716

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.17
factor 2	-.11
factor 3	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawi1	0.68	0.01	0.65	0.70
vawi2	0.80	0.01	0.77	0.82
vawi5	0.54	0.01	0.52	0.57

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
vawi1	3.2	0.6	1	4	5847
vawi2	3.6	0.6	1	4	5847
vawi5	3.6	0.6	1	4	5830

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawi1	1.60	-6.05	-2.83	1.12
vawi2	2.54	-8.71	-6.10	-0.61
vawi5	1.15	-6.08	-3.84	-0.71

Next measurement
Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	187	18	.000	10	9	.313	190	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	16	4	.003	5	2	.068	28	2	.000
Strong invariance (plus equal intercepts)	77	4	.000	3	2	.248	103	3	.000
Strict invariance (plus equal error variances)	6	4	.193	0	2	.954	19	3	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Web vs. PAP	.998	T1 vs. To	.997
	French vs. Italian	.984				
	Italian vs. German	.975				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Coefficient of determination		CD		CD		CD
	German	.998	Web	.999	T1	.998
	French	.997	PAP	.994	To	.999
	Italian	.930				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawi_fs	0.0	0.8	-3.4	1.0	5851

Share of cases with imputed missing values: 0.4%
(Equivalence of scores from robust MLMV: CD = .994)
(Equivalence of scores from two-step approach: CD = .98)

Intra-Individual Stability

β	.583
CD	.340

Multi-Wave Sample

Obs.	5824
Imp.	5

Next measurement
Previous measurement

List of scales (wave 1)

Scale: Work-related extrinsic value

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	1832	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	36211
	Bayesian information criterion (BIC)	36271
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.630

Reliability and dimensionality

Ordinal Cronbach's alpha	.601
(Cronbach's alpha = .501)	
McDonald's omega	.607

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Unadjusted Eigenvalues *
factor 1	.85
factor 2	-.12
factor 3	-.21

* No componennt with an adjusted eigenvalue ≥ 1

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawe1	0.69	0.02	0.66	0.73
vawe2	0.56	0.02	0.53	0.59
vawe4	0.49	0.02	0.46	0.52

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
vawe1	3.1	0.7	1	4	5843
vawe2	3.6	0.6	1	4	5847
vawe4	2.7	0.9	1	4	5832

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawe1	1.79	-5.60	-2.32	1.24
vawe2	1.18	-5.92	-3.71	-0.93
vawe4	0.99	-2.81	-0.52	1.63

Next measurement
Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	117	18	.000	59	9	.000	196	9	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	1	4	.842	8	2	.016	5	2	.102
Strong invariance (plus equal intercepts)	38	4	.000	30	2	.000	99	3	.000
Strict invariance (plus equal error variances)	23	4	.000	2	2	.419	41	3	.000

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Web vs. PAP	.988	T1 vs. To	.999
	French vs. Italian	.998				
	Italian vs. German	.999				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	.998	T1	1.000
	French	.998	PAP	.964	To	1.000
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawe_fs	0.0	0.7	-2.7	1.3	5850

Share of cases with imputed missing values: 0.4%

(Equivalence of scores from robust MLMV: CD = .992)

(Equivalence of scores from two-step approach: CD = .977)

Intra-Individual Stability

β	.840
CD	.705

Multi-Wave Sample

Obs.	5822
Imp.	5

Next measurement
Previous measurement

List of scales (wave 1)

Scale: Work-related extrinsic value (extended) Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	21	2	.000
	Baseline vs. saturated	4227	6	.000

2)	**Root mean squared error (RMSEA)**	.040
	90% Confidence interval: Lower bound	.026
	90% Confidence interval: Upper bound	.056
	Probability RMSEA <= 0.05	.830
3)	**Akaike's information criterion (AIC)**	47043
	Bayesian information criterion (BIC)	47123
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.996
	Tucker-Lewis index (TLI)	.987
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.012
	Coefficient of determination (CD)	.737

Reliability and dimensionality

Ordinal Cronbach's alpha	.712
(Cronbach's alpha = .631)	
McDonald's omega	.717

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.40
factor 2	-.06
factor 3	-.13
factor 4	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawe1	0.66	0.01	0.64	0.69
vawe2	0.55	0.01	0.52	0.57
vawe3	0.74	0.01	0.72	0.76
vawe4	0.53	0.01	0.51	0.56

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
vawe1	3.1	0.7	1	4	5843
vawe2	3.6	0.6	1	4	5847
vawe3	3.1	0.7	1	4	5828
vawe4	2.7	0.9	1	4	5832

Parameters of Generalized Structural Equation Model (Ordinal Logit Link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawe1	1.60	-5.34	-2.19	1.17
vawe2	1.16	-5.91	-3.69	-0.93
vawe3	1.99	-5.64	-2.25	1.15
vawe4	1.14	-2.91	-0.56	1.69

Next measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
	332	28	.000	103	14	.000

Tests of measurement invariance across …	Survey Languages			Survey Modes		
	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	21	6	.002	34	3	.000
Strong invariance (plus equal intercepts)	149	6	.000	35	3	.000
Strict invariance (plus equal error variances)	20	6	.003	3	3	.348

Configural factor similarity across …	Survey Languages		Survey Modes	
Tucker's congruence coefficient		TCC		TCC
	German vs. French	.998	Web vs. PAP	.983
	French vs. Italian	.973		
	Italian vs. German	.983		

Factor score equivalence: Unrestricted vs. invariant models for …	Survey Languages		Survey Modes	
Coefficient of determination		CD		CD
	German	.999	Web	.997
	French	.996	PAP	.972
	Italian	.983		

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawe_m_fs	0.0	0.8	-3.1	1.5	5851

Share of cases with imputed missing values: 0.7%
(Equivalence of scores from robust MLMV: CD = .996)
(Equivalence of scores from two-step approach: CD = .982)

Next measurement

List of scales (wave 1)

2-Item-Composit: Family value

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vafa_comp	3.0	0.8	1	4	5838

Share of cases with imputed missing values: 0.5%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vafa1	3.2	0.8	1	4	5837
vafa2	2.9	1.0	1	4	5810

Next measurement
Previous measurement

List of scales (wave 1)

2-Item-Composit: Leisure-related value

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vafu_comp	2.9	0.6	1	4	5835

Share of cases with imputed missing values: 0.5%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vafu1	2.8	0.7	1	4	5818
vafu3	3.0	0.7	1	4	5825

List of scales (wave 1)

2-Item-Composit: Growth need strength value

Wave 1 (2017)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
grow_comp	3.2	0.5	1	4	5842

Share of cases with imputed missing values: 0.7%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
grow1	3.2	0.7	1	4	5831
grow4	3.2	0.6	1	4	5813

List of scales (wave 1)

Scale: Positive attitude towards life

Wave 1 (2017)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	701	5	.000
	Baseline vs. saturated	15654	10	.000

2)	**Root mean squared error (RMSEA)**		.155
	90% Confidence interval:	Lower bound	.145
	90% Confidence interval:	Upper bound	.164
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	65976
	Bayesian information criterion (BIC)	66076

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.956
	Tucker-Lewis index (TLI)	.911

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.038
	Coefficient of determination (CD)	.898

Reliability and dimensionality

Ordinal Cronbach's alpha	.881
(Cronbach's alpha = .845)	
McDonald's omega	.883

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.94
factor 2	.10
factor 3	-.06
factor 4	-.09
factor 5	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
posl1	0.70	0.01	0.68	0.71
posl2	0.85	0.00	0.84	0.86
posl3	0.78	0.01	0.77	0.80
posl5	0.67	0.01	0.66	0.69
posl6	0.86	0.00	0.85	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid Obs.
posl1	4.7	0.8	1	6	5816
posl2	5.2	0.9	1	6	5812
posl3	4.6	1.0	1	6	5813
posl5	4.4	1.1	1	6	5818
posl6	4.8	1.1	1	6	5810

Next measurement
Previous measurement

List of scales (wave 1)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	660	40	.000	156	20	.000	341	20	.000

Tests of measurement invariance across …	**Survey Languages**			**Survey Modes**			**Panel Waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	14	8	.074	47	4	.000	9	4	.053
Strong invariance (plus equal intercepts)	296	8	.000	25	4	.000	240	5	.000
Strict invariance (plus equal error variances)	163	8	.000	24	4	.000	13	5	.025

Configural factor similarity across …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Web vs. PAP	.997	T1 vs. To	1.000
	French vs. Italian	.998				
	Italian vs. German	.999				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey Languages**		**Survey Modes**		**Panel Waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T1	1.000
	French	1.000	PAP	.998	To	1.000
	Italian	.999				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
posl_fs	0.0	0.5	-2.5	0.8	5822

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .999)

Intra-Individual Stability

β	.678
CD	.459

Multi-Wave Sample *

Obs.	3134
Imp.	5

*** Note**

First measurement limited to AES extension survey

Next measurement
Previous measurement

List of scales (wave 1)

SCALE APPENDIX

Scales administered in follow-up wave 2 (TREE2)

(Scale names linked with first page of scale-specific reporting)

Survey topics

Survey topics (continued)

Survey topics (continued)

2-Item-Composit: Intention to quit [educ.]

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edquit_comp	1.6	0.8	1	5	5052

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edquit1	1.8	1.0	1	5	5051
edquit2	1.4	0.8	1	5	5051

Previous measurement

List of scales (wave 2)

2-Item-Composit: Truancy [educ.]

Wave 2 (2018)

Composit descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edtruancy_comp	1.3	0.5	1	4	5048

Share of cases with imputed missing values: 0.0%

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edtruancy2	1.2	0.5	1	4	5046
edtruancy3	1.4	0.7	1	4	5048

Previous measurement

List of scales (wave 2)

Scale: Variety of tasks [educ.] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	1697	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	37409
	Bayesian information criterion (BIC)	37468
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.724

Reliability and dimensionality

Ordinal Cronbach's alpha	.569
(Cronbach's alpha = .500)	
McDonald's omega	.608

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Unadjusted Eigenvalues *
factor 1	.85
factor 2	-.04
factor 3	-.24

* No componennt with an adjusted eigenvalue ≥ 1

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scvar1	0.59	0.02	0.54	0.63
scvar2	0.82	0.03	0.76	0.87
scvar4	0.31	0.02	0.28	0.35

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scvar1	4.0	0.7	1	5	5102
scvar2	3.4	0.9	1	5	5081
scvar4	3.1	1.1	1	5	5086

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	135	18	.000	9	9	.420	2210	9	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	5	4	.340	3	2	.265	238	2	.000
Strong invariance (plus equal intercepts)	16	4	.003	3	2	.225	1266	3	.000
Strict invariance (plus equal error variances)	84	4	.000	2	2	.357	1025	3	.000

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	.992	T2 vs. T1	.946
	French vs. Italian	.978				
	Italian vs. German	.982				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	.995
	French	.988	PAP	.967	T1	.995
	Italian	.984				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scvar_fs	0.0	0.4	-1.3	0.8	5104

Share of cases with imputed missing values: 0.5%
(Equivalence of scores from robust MLMV: CD = .981)

Intra-individual stability

β	.659
CD	.434

Multi-wave sample

Obs.	3907
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Scope of action [educ.] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3690	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	41601
	Bayesian information criterion (BIC)	41660
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.834

Reliability and dimensionality

Ordinal Cronbach's alpha	.743
(Cronbach's alpha = .708)	
McDonald's omega	.755

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.31
factor 2	-.06
factor 3	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scsca1	0.60	0.01	0.58	0.63
scsca2	0.89	0.01	0.87	0.91
scsca3	0.63	0.01	0.60	0.65

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scsca1	2.7	1.1	1	5	5101
scsca2	3.0	1.1	1	5	5098
scsca3	3.0	1.1	1	5	5082

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...

	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	866	18	.000	21	9	.011	134	9	.000

Tests of measurement invariance across ...

	Survey languages *			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.015	18	2	.000	5	2	.087
Strong invariance (plus equal intercepts)	55	4	.000	0	2	.815	69	3	.000
Strict invariance (plus equal error variances)	128	4	.000	6	2	.062	44	3	.000

Configural factor similarity across ...

Survey languages *		Survey modes		Panel waves	
Tucker's congruence coefficient	TCC		TCC		TCC
German vs. French	.999	Web vs. PAP	.987	T2 vs. T1	.999
French vs. Italian	.988				
Italian vs. German	.984				

Factor score equivalence: Unrestricted vs. invariant models for ...

Survey languages *		Survey modes		Panel waves	
Coefficient of determination	CD		CD		CD
German	1.000	Web	1.000	T2	1.000
French	.998	PAP	.967	T1	1.000
Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scsca_fs	0.0	0.6	-1.3	1.4	5101

Share of cases with imputed missing values: 0.4%

(Equivalence of scores from robust MLMV: CD = .995)

Intra-individual stability

β	.573
CD	.329

Multi-wave sample

Obs.	3901
Imp.	5

*** Note:** For italian, the error variances of scsca2 has to be constrained (10% of observed item variance), except when testing for strong invariance.

Previous measurement

List of scales (wave 2)

Scale: Strain [educ.] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	362	2	.000
	Baseline vs. saturated	6034	6	.000

2)	**Root mean squared error (RMSEA)**	.188
	90% Confidence interval: Lower bound	.172
	90% Confidence interval: Upper bound	.205
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	50886
	Bayesian information criterion (BIC)	50964
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.940
	Tucker-Lewis index (TLI)	.821
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.045
	Coefficient of determination (CD)	.794

Reliability and dimensionality

Ordinal Cronbach's alpha	.792
(Cronbach's alpha = .755)	
McDonald's omega	.792

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.83
factor 2	.06
factor 3	-.14
factor 4	-.19

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
scove1	0.69	0.01	0.67	0.72
scove3	0.66	0.01	0.64	0.68
scove4	0.72	0.01	0.70	0.74
scove8	0.72	0.01	0.70	0.74

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scove1	3.0	1.1	1	5	5053
scove3	3.2	1.0	1	5	5100
scove4	2.1	0.9	1	5	5084
scove8	2.6	0.9	1	5	5053

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	469	28	.000	87	14	.000	113	14	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	30	6	.000	57	3	.000	5	3	.167
Strong invariance (plus equal intercepts)	241	6	.000	5	3	.184	43	4	.000
Strict invariance (plus equal error variances)	120	6	.000	23	3	.000	7	4	.145

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.994	Web vs. PAP	.968	T2 vs. T1	1.000
	French vs. Italian	.970				
	Italian vs. German	.990				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	1.000
	French	.991	PAP	.958	T1	1.000
	Italian	.975				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scove_fs	0.0	0.6	-1.4	2.1	5103

Share of cases with imputed missing values: 1.1%
(Equivalence of scores from robust MLMV: CD = .992)

Intra-individual stability

β	.691
CD	.478

Multi-wave sample

Obs.	3906
Imp.	5

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Time pressure [educ.] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scovpr_comp	3.1	0.9	1	5	5103

Share of cases with imputed missing values: 1.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scove1	3.0	1.1	1	5	5053
scove3	3.2	1.0	1	5	5100

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Excessive demands [educ.] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scovex_comp	2.4	0.8	1	5	5086

Share of cases with imputed missing values: 0.7%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scove4	2.1	0.9	1	5	5084
scove8	2.6	0.9	1	5	5053

Previous measurement

List of scales (wave 2)

2-Item-Composit: Social support [educ.] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
scsoc_comp	3.7	0.8	1	5	5053

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
scsoc2	3.8	1.0	1	5	5053
scsoc3	3.7	1.0	1	5	5053

Previous measurement

List of scales (wave 2)

Scale: Variety of tasks [training firm] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2694	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	16312
	Bayesian information criterion (BIC)	16365
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.831

Reliability and dimensionality

Ordinal Cronbach's alpha	.818
(Cronbach's alpha = .765)	
McDonald's omega	.820

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.63
factor 2	-.13
factor 3	-.14

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fivar1	0.84	0.01	0.82	0.87
fivar2	0.73	0.01	0.70	0.75
fivar3	0.75	0.01	0.73	0.78

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fivar1	4.2	0.8	1	5	2534
fivar2	4.0	0.9	1	5	2533
fivar3	4.0	0.9	1	5	2532

Previous measurement

List of scales (wave 2)

Scale: Variety of tasks [training firm] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	189	18	.000	48	9	.000	102	9	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.018	4	2	.170	5	2	.093
Strong invariance (plus equal intercepts)	9	4	.052	2	2	.323	67	3	.000
Strict invariance (plus equal error variances)	22	4	.000	10	2	.008	20	3	.000

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.999	Web vs. PAP	.998	T2 vs. T1	.999
	French vs. Italian	.991				
	Italian vs. German	.989				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	.999
	French	.987	PAP	.987	T1	1.000
	Italian	.977				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fivar_fs	0.0	0.6	-2.3	0.9	2534

Share of cases with imputed missing values: 0.1%

(Equivalence of scores from robust MLMV: CD = .994)

Intra-individual stability

β	.600
CD	.360

Multi-wave sample

Obs.	1516
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Scope of action [training firm] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	1935	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	20047
	Bayesian information criterion (BIC)	20100
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.781

Reliability and dimensionality

Ordinal Cronbach's alpha	.760
(Cronbach's alpha = .723)	
McDonald's omega	.764

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.37
factor 2	-.13
factor 3	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisca1	0.62	0.02	0.59	0.65
fisca2	0.80	0.01	0.77	0.83
fisca3	0.74	0.02	0.71	0.77

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fisca1	3.2	1.1	1	5	2534
fisca2	3.4	1.0	1	5	2525
fisca3	3.5	1.0	1	5	2520

Previous measurement

List of scales (wave 2)

Scale: Scope of action [training firm] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	126	18	.000	18	9	.038	23	9	.005

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.016	9	2	.011	5	2	.076
Strong invariance (plus equal intercepts)	3	4	.606	1	2	.658	5	3	.201
Strict invariance (plus equal error variances)	21	4	.000	10	2	.008	9	3	.025

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.983	Web vs. PAP	.982	T2 vs. T1	.998
	French vs. Italian	.972				
	Italian vs. German	.975				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	.999
	French	.974	PAP	.969	T1	.999
	Italian	.753				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisca_fs	0.0	0.6	-1.7	1.2	2534

Share of cases with imputed missing values: 0.6%

(Equivalence of scores from robust MLMV: CD = .995)

Intra-individual stability

β	.637
CD	.406

Multi-wave sample

Obs.	1516
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Strain [training firm] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	376	2	.000
	Baseline vs. saturated	2676	6	.000

2)	**Root mean squared error (RMSEA)**	.272
	90% Confidence interval: Lower bound	.249
	90% Confidence interval: Upper bound	.295
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	24576
	Bayesian information criterion (BIC)	24646
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.860
	Tucker-Lewis index (TLI)	.580
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.091
	Coefficient of determination (CD)	.836

Reliability and dimensionality

Ordinal Cronbach's alpha	.737
(Cronbach's alpha = .693)	
McDonald's omega	.738

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.61
factor 2	.25
factor 3	-.19
factor 4	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fiove1	0.44	0.02	0.40	0.48
fiove3	0.49	0.02	0.45	0.52
fiove4	0.88	0.01	0.85	0.91
fiove5	0.72	0.01	0.70	0.75

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiove1	3.1	1.0	1	5	2534
fiove3	3.1	1.0	1	5	2523
fiove4	2.1	0.8	1	5	2525
fiove5	2.0	0.8	1	5	2524

Previous measurement

List of scales (wave 2)

Scale: Strain [training firm] (continued)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	409	28	.000	31	14	.006	91	14	.000

Tests of measurement invariance across ...	**Survey languages ***			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	20	6	.003	4	3	.229	2	3	.659
Strong invariance (plus equal intercepts)	149	6	.000	8	3	.038	27	4	.000
Strict invariance (plus equal error variances)	48	6	.000	7	3	.073	24	4	.000

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.990	Web vs. PAP	.987	T2 vs. T1	.999
	French vs. Italian	-.715				
	Italian vs. German	-.767				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	1.000
	French	.968	PAP	.997	T1	1.000
	Italian	.935				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiove_fs	0.0	0.4	-0.7	1.6	2534

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .975)

Intra-individual stability

β	.582
CD	.339

Multi-wave sample

Obs.	1516
Imp.	5

*** Note:** For italian, the error variance of fiove4 has to be constrained (10% of observed item variance) when testing for metric invariance.

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Time pressure [training firm] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiovpr_comp	3.1	0.9	1	5	2534

Share of cases with imputed missing values: 0.4%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiove1	3.1	1.0	1	5	2534
fiove3	3.1	1.0	1	5	2523

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Excessive demands [training firm] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiovex_comp	2.0	0.7	1	5	2525

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiove4	2.1	0.8	1	5	2525
fiove5	2.0	0.8	1	5	2524

Previous measurement

List of scales (wave 2)

Scale: Strain: Work environment [training firm] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	2907	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		23306
	Bayesian information criterion (BIC)		23358
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.855

Reliability and dimensionality

Ordinal Cronbach's alpha	.825
(Cronbach's alpha = .780)	
McDonald's omega	.830

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.71
factor 2	-.10
factor 3	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisur1	0.68	0.01	0.65	0.70
fisur3	0.87	0.01	0.85	0.89
fisur4	0.80	0.01	0.78	0.83

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fisur1	2.4	1.2	1	5	2506
fisur3	3.1	1.5	1	5	2510
fisur4	2.4	1.4	1	5	2510

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	134	18	.000	7	9	.600	73	9	.000

Tests of measurement invariance across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	26	4	.000	2	2	.451	7	2	.031
Strong invariance (plus equal intercepts)	1	4	.913	1	2	.685	25	3	.000
Strict invariance (plus equal error variances)	24	4	.000	1	2	.594	16	3	.001

Configural factor similarity across …	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.996	Web vs. PAP	.998	T2 vs. T1	.999
	French vs. Italian	.975				
	Italian vs. German	.988				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.994	PAP	.996	T1	1.000
	Italian	.880				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisur_fs	0.0	0.8	-1.3	1.4	2510

Share of cases with imputed missing values: 0.2%

(Equivalence of scores from robust MLMV: CD = .994)

Intra-individual stability

β	.947
CD	.898

Multi-wave sample

Obs.	1504
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Social support [training firm]

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3425	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	16448
	Bayesian information criterion (BIC)	16501
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.907

Reliability and dimensionality

Ordinal Cronbach's alpha	.849
(Cronbach's alpha = .788)	
McDonald's omega	.854

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.81
factor 2	-.06
factor 3	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fisoc2	0.94	0.01	0.92	0.95
fisoc3	0.75	0.01	0.72	0.77
fisoc4	0.75	0.01	0.73	0.77

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fisoc2	4.2	0.9	1	5	2512
fisoc3	4.2	1.0	1	5	2511
fisoc4	4.3	0.8	1	5	2511

Previous measurement

List of scales (wave 2)

Scale: Social support [training firm] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	118	18	.000	18	9	.034	26	9	.002

Tests of measurement invariance across ...	**Survey languages ***			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	15	4	.004	5	2	.087	1	2	.715
Strong invariance (plus equal intercepts)	41	4	.000	0	2	.961	12	3	.006
Strict invariance (plus equal error variances)	28	4	.000	4	2	.149	9	3	.024

Configural factor similarity across ...	**Survey languages ***		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.996	Web vs. PAP	.996	T2 vs. T1	1.000
	French vs. Italian	.985				
	Italian vs. German	.996				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages ***		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.992	PAP	.985	T1	1.000
	Italian	.998				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fisoc_fs	0.0	0.8	-3.1	0.7	2512

Share of cases with imputed missing values: 0.1%

(Equivalence of scores from robust MLMV: CD = .999)

Intra-individual stability

β	.537
CD	.288

Multi-wave sample

Obs.	1504
Imp.	5

*** Note:**
For italian, the error variance of fisoc2 has to be constrained (10% of observed item variance).

Previous measurement

List of scales (wave 2)

Scale: Teaching skills of VET trainer [training firm] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3553	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	13016
	Bayesian information criterion (BIC)	13068
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.905

Reliability and dimensionality

Ordinal Cronbach's alpha	.842
(Cronbach's alpha = .768)	
McDonald's omega	.852

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.83
factor 2	-.06
factor 3	-.13

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
fiqua1	0.93	0.01	0.91	0.95
fiqua2	0.85	0.01	0.83	0.86
fiqua3	0.64	0.01	0.61	0.67

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiqua1	3.4	0.7	1	4	2501
fiqua2	3.4	0.7	1	4	2504
fiqua3	3.3	0.8	1	4	2503

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
fiqua1	5.02	-10.95	-6.82	0.13
fiqua2	2.78	-7.16	-4.44	0.38
fiqua3	1.49	-4.21	-2.22	0.36

Previous measurement

List of scales (wave 2)

Scale: Teaching skills of VET trainer [training firm] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	105	18	.000	11	9	.297	49	9	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	9	4	.058	0	2	.802	20	2	.000
Strong invariance (plus equal intercepts)	19	4	.001	1	2	.599	31	3	.000
Strict invariance (plus equal error variances)	37	4	.000	4	2	.124	1	3	.821

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Web vs. PAP	1.000	T2 vs. T1	.996
	French vs. Italian	.987				
	Italian vs. German	.996				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	.996
	French	.994	PAP	.998	T1	.991
	Italian	.960				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiqua_fs	0.0	0.9	-2.7	1.1	2504

Share of cases with imputed missing values: 0.1%
(Equivalence of scores from robust MLMV: CD = .994)
(Equivalence of scores from two-step approach: CD = .966)

Intra-individual stability

β	.507
CD	.257

Multi-wave sample

Obs.	1490
Imp.	5

Previous measurement

List of scales (wave 2)

2-Item-Composit: Career prospects [training firm] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
ficaco_comp	3.6	1.1	1	5	2495

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
ficaco1	3.8	1.1	1	5	2495
ficaco2	3.5	1.2	1	5	2494

Previous measurement

List of scales (wave 2)

Scale: Variety of tasks [job]

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	262	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	1516
	Bayesian information criterion (BIC)	1545
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.878

Reliability and dimensionality

Ordinal Cronbach's alpha	.856
(Cronbach's alpha = .840)	
McDonald's omega	.859

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.75
factor 2	-.05
factor 3	-.09

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jvar1	0.90	0.03	0.84	0.96
jvar2	0.77	0.04	0.69	0.84
jvar3	0.79	0.04	0.71	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jvar1	3.8	1.1	1	5	189
jvar2	3.6	1.1	1	5	189
jvar3	3.5	1.2	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Variety of tasks [job] (continued)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jvar_fs	0.0	0.9	-2.5	1.2	189

Share of cases with imputed missing values: 0.0%

(Equivalence of scores from robust MLMV: CD = .996)

Intra-individual stability

β /

CD /

Multi-wave sample

Obs. /

Imp. /

Previous measurement

List of scales (wave 2)

Scale: Scope of action [job] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	215	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		1640
	Bayesian information criterion (BIC)		1670
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.837

Reliability and dimensionality

Ordinal Cronbach's alpha	.830
(Cronbach's alpha = .796)	
McDonald's omega	.831

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.59
factor 2	-.08
factor 3	-.10

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsca1	0.84	0.04	0.76	0.91
jsca2	0.76	0.04	0.67	0.84
jsca3	0.77	0.04	0.69	0.85

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jsca1	3.0	1.2	1	5	189
jsca2	3.2	1.2	1	5	189
jsca3	3.1	1.3	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Scope of action [job] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsca_fs	0.0	0.9	-1.8	1.7	189
Share of cases with imputed missing values:					0.0%
(Equivalence of scores from robust MLMV: CD = 1)					

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

Scale: Strain [job]

Wave 2 (2018)

Model and fit statistics *

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	17	3	.001
	Baseline vs. saturated	260	6	.000

2)	**Root mean squared error (RMSEA)**	.155
	90% Confidence interval: Lower bound	.088
	90% Confidence interval: Upper bound	.232
	Probability RMSEA <= 0.05	.007
3)	**Akaike's information criterion (AIC)**	1932
	Bayesian information criterion (BIC)	1967
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.947
	Tucker-Lewis index (TLI)	.893
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.061
	Coefficient of determination (CD)	.917

Reliability and dimensionality

Ordinal Cronbach's alpha	.766
(Cronbach's alpha = .726)	
McDonald's omega	.783

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.58
factor 2	.09
factor 3	-.07
factor 4	.01

*** Note:** Error variance of jove4 has to be constrained to achieve convergence (10% of observed item variance)

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jove1	0.47	0.06	0.35	0.59
jove3	0.51	0.06	0.39	0.62
jove4	0.95	0.01	0.94	0.96
jove5	0.77	0.03	0.71	0.84

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jove1	2.9	1.1	1	5	186
jove3	2.9	1.1	1	5	189
jove4	1.9	0.9	1	5	189
jove5	1.7	0.9	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Strain [job] (continued)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jove_fs	0.0	0.5	-0.6	1.8	189

Share of cases with imputed missing values: 1.6%

(Equivalence of scores from robust MLMV: CD = .998)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Time pressure [job]

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jovpr_comp	2.9	0.9	1	5	189

Share of cases with imputed missing values: 1.6%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jove1	2.9	1.1	1	5	186
jove3	2.9	1.1	1	5	189

Previous measurement

List of scales (wave 2)

2-Item-Composit: Strain: Excessive demands [job]

Wave 2 (2018)

Composit descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jovex_comp	1.8	0.8	1	5	189

Share of cases with imputed missing values: 0.0%

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jove4	1.9	0.9	1	5	189
jove5	1.7	0.9	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Strain: Work environment [job] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	114	3	.000

2)	**Root mean squared error (RMSEA)**		.000
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.000
	Probability RMSEA <= 0.05		1.000
3)	**Akaike's information criterion (AIC)**		1648
	Bayesian information criterion (BIC)		1677
4)	**Baseline comparison**		
	Comparative fit index (CFI)		1.000
	Tucker-Lewis index (TLI)		1.000
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.000
	Coefficient of determination (CD)		.792

Reliability and dimensionality

Ordinal Cronbach's alpha	.707
(Cronbach's alpha = .632)	
McDonald's omega	.722

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.09
factor 2	-.04
factor 3	-.16

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsur1	0.65	0.07	0.51	0.78
jsur3	0.52	0.07	0.39	0.66
jsur4	0.86	0.07	0.71	1.00

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jsur1	2.1	1.1	1	5	188
jsur3	3.2	1.3	1	5	189
jsur4	1.7	1.0	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Strain: Work environment [job] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsur_fs	0.0	0.6	-0.7	2.1	189

Share of cases with imputed missing values: 0.5%

(Equivalence of scores from robust MLMV: CD = .986)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

Scale: Social support [job] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	265	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	1364
	Bayesian information criterion (BIC)	1393
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.881

Reliability and dimensionality

Ordinal Cronbach's alpha	.856
(Cronbach's alpha = .800)	
McDonald's omega	.859

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.76
factor 2	-.05
factor 3	-.09

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jsoc2	0.90	0.03	0.83	0.96
jsoc3	0.73	0.04	0.65	0.81
jsoc4	0.83	0.03	0.76	0.89

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jsoc2	4.2	1.0	1	5	189
jsoc3	4.1	1.1	1	5	189
jsoc4	4.4	0.9	1	5	189

Previous measurement

List of scales (wave 2)

Scale: Social support [job] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jsoc_fs	0.0	0.8	-3.1	0.7	189
Share of cases with imputed missing values:					0.0%
(Equivalence of scores from robust MLMV: CD = 1)					

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

Scale: Teaching skills of supervisor [job] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	200	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	1074
	Bayesian information criterion (BIC)	1102
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.834

Reliability and dimensionality

Ordinal Cronbach's alpha	.831
(Cronbach's alpha = .751)	
McDonald's omega	.831

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.66
factor 2	-.14
factor 3	-.10

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jqua1	0.76	0.04	0.68	0.85
jqua2	0.78	0.04	0.69	0.86
jqua3	0.82	0.04	0.74	0.90

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jqua1	3.3	0.8	1	4	175
jqua2	3.3	0.7	1	4	175
jqua3	3.2	0.9	1	4	176

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
jqua1	2.22	-6.20	-3.77	0.15
jqua2	2.24	-7.22	-4.06	0.37
jqua3	2.67	-5.33	-3.08	-0.06

Previous measurement

List of scales (wave 2)

Scale: Teaching skills of supervisor [job] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jqua_fs	-0.1	0.9	-2.9	1.1	176

Share of cases with imputed missing values: 0.6%

(Equivalence of scores from robust MLMV: CD = .999)

(Equivalence of scores from two-step approach: CD = .975)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

2-Item-Composit: Career prospects [job]

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jcaco_comp	3.2	1.3	1	5	175

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jcaco1	3.2	1.4	1	5	175
jcaco2	3.1	1.4	1	5	175

Previous measurement

List of scales (wave 2)

2-Item-Composit: Job requirements: Social skills

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskilla_comp	3.4	0.6	1	4	178

Share of cases with imputed missing values: 0.6%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill1	3.5	0.8	1	4	178
jskill6	3.3	0.8	1	4	177

Previous measurement

List of scales (wave 2)

2-Item-Composit: Job requirements: Literacy

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskillb_comp	2.7	0.8	1	4	178

Share of cases with imputed missing values: 0.6%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill3	2.8	0.9	1	4	178
jskill8	2.5	1.0	1	4	177

Previous measurement

List of scales (wave 2)

2-Item-Composit: Job requirements: Manual skills

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskillc_comp	2.4	0.9	1	4	178

Share of cases with imputed missing values: 0.6%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill5	2.6	1.0	1	4	178
jskill10	2.1	0.9	1	4	177

Previous measurement

List of scales (wave 2)

2-Item-Composit: Job requirements: Problem solving

Wave 2 (2018)

Composit descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskilld_comp	2.6	0.9	1	4	178

Share of cases with imputed missing values: 0.6%

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill2	2.7	1.0	1	4	178
jskill7	2.6	1.0	1	4	177

Previous measurement

List of scales (wave 2)

2-Item-Composit: Job requirements: Numeracy

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jskille_comp	2.7	0.8	1	4	178

Share of cases with imputed missing values: 1.1%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jskill4	2.9	0.9	1	4	178
jskill9	2.5	0.9	1	4	176

Previous measurement

List of scales (wave 2)

2-Item-Composit: Truancy [job]

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jtruancy_comp	1.2	0.4	1	4	176

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jtruancy2	1.1	0.3	1	4	176
jtruancy3	1.3	0.6	1	4	176

Previous measurement

List of scales (wave 2)

2-Item-Composit: Complementarity of dual VET [training firm] Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
filis_comp	3.5	0.9	1	5	2510

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
filis1	3.5	1.0	1	5	2510
filis3	3.5	1.0	1	5	2510

Previous measurement

List of scales (wave 2)

Scale: Perceived fit of education

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	191	2	.000
	Baseline vs. saturated	15013	6	.000

2)	**Root mean squared error (RMSEA)**		.135
	90% Confidence interval:	Lower bound	.119
	90% Confidence interval:	Upper bound	.152
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	35426
	Bayesian information criterion (BIC)	35505

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.987
	Tucker-Lewis index (TLI)	.962

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.025
	Coefficient of determination (CD)	.956

Reliability and dimensionality

Ordinal Cronbach's alpha	.906
(Cronbach's alpha = .860)	
McDonald's omega	.908

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.78
factor 2	.03
factor 3	-.07
factor 4	-.07

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
edfit1	0.77	0.01	0.76	0.78
edfit3	0.73	0.01	0.72	0.75
edfit4	0.88	0.00	0.87	0.89
edfit5	0.97	0.00	0.96	0.97

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edfit1	4.5	0.8	1	5	5168
edfit3	4.3	0.8	1	5	5163
edfit4	4.2	0.9	1	5	5162
edfit5	4.2	0.8	1	5	5162

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	354	28	.000	30	14	.007	164	14	.000

Tests of measurement invariance across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	149	6	.000	1	3	.887	7	3	.065
Strong invariance (plus equal intercepts)	92	6	.000	2	3	.550	28	4	.000
Strict invariance (plus equal error variances)	84	6	.000	8	3	.038	87	4	.000

Configural factor similarity across …	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.991	Web vs. PAP	1.000	T2 vs. T1	1.000
	French vs. Italian	.997				
	Italian vs. German	.997				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.998	PAP	1.000	T1	1.000
	Italian	1.000				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edfit_fs	0.0	0.6	-2.5	0.6	5169

Share of cases with imputed missing values: 0.2%

(Equivalence of scores from robust MLMV: CD = .994)

Intra-individual stability

β	.574
CD	.329

Multi-wave sample

Obs.	4127
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Perceived fit of job

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	13	2	.002
	Baseline vs. saturated	424	6	.000

2)	**Root mean squared error (RMSEA)**	.173
	90% Confidence interval: Lower bound	.091
	90% Confidence interval: Upper bound	.269
	Probability RMSEA <= 0.05	.009
3)	**Akaike's information criterion (AIC)**	1762
	Bayesian information criterion (BIC)	1800
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.974
	Tucker-Lewis index (TLI)	.923
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.045
	Coefficient of determination (CD)	.949

Reliability and dimensionality

Ordinal Cronbach's alpha	.855
(Cronbach's alpha = .807)	
McDonald's omega	.863

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.33
factor 2	.10
factor 3	-.06
factor 4	-.06

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jfit1	0.49	0.06	0.38	0.61
jfit3	0.74	0.04	0.67	0.81
jfit4	0.88	0.02	0.84	0.92
jfit5	0.97	0.02	0.93	1.00

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jfit1	4.3	1.0	1	5	181
jfit3	4.1	1.1	1	5	181
jfit4	3.8	1.2	1	5	181
jfit5	4.0	1.0	1	5	181

Previous measurement

List of scales (wave 2)

Scale: Perceived fit of job (continued)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jfit_fs	0.0	0.5	-1.4	0.5	181

Share of cases with imputed missing values: 0.0%

(Equivalence of scores from robust MLMV: CD = .998)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

2-Item-Composit: Occupational commitment [training firm] Wave 2 (2018)

Composit Descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
fiafcomp_comp	4.3	0.8	1	5	2540

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
fiafcomp6	4.2	0.9	1	5	2540
fiafcomp4 *	4.5	0.9	1	5	2540

*** Note:** Reversed categories

Previous measurement

List of scales (wave 2)

Scale: Occupational commitment [job] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	67	2	.000
	Baseline vs. saturated	628	6	.000

2)	**Root mean squared error (RMSEA)**	.430
	90% Confidence interval: Lower bound	.345
	90% Confidence interval: Upper bound	.521
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	1490
	Bayesian information criterion (BIC)	1528
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.896
	Tucker-Lewis index (TLI)	.688
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.053
	Coefficient of determination (CD)	.944

Reliability and dimensionality

Ordinal Cronbach's alpha	.909
(Cronbach's alpha = .853)	
McDonald's omega	.917

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.74
factor 2	.18
factor 3	.03
factor 4	.01

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jafcomp2 *	0.67	0.05	0.58	0.76
jafcomp3	0.91	0.02	0.87	0.95
jafcomp4 *	0.94	0.02	0.90	0.97
jafcomp6	0.89	0.02	0.85	0.93

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jafcomp2	4.5	0.8	1	5	175
jafcomp3	4.1	1.1	1	5	175
jafcomp4	4.2	1.1	1	5	176
jafcomp6	3.9	1.2	1	5	176

Previous measurement

List of scales (wave 2)

Scale: Occupational commitment [job] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jafcomp_fs	0.0	0.5	-1.5	0.5	176

Share of cases with imputed missing values: 0.6%

(Equivalence of scores from robust MLMV: CD = .99)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

Scale: Household chores

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	296	14	.000
	Baseline vs. saturated	5663	21	.000

2)	**Root mean squared error (RMSEA)**	.062
	90% Confidence interval: Lower bound	.056
	90% Confidence interval: Upper bound	.069
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	99726
	Bayesian information criterion (BIC)	99864
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.950
	Tucker-Lewis index (TLI)	.925
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.032
	Coefficient of determination (CD)	.756

Reliability and dimensionality

Ordinal Cronbach's alpha	.717
(Cronbach's alpha = .668)	
McDonald's omega	.722

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.85
factor 2	.07
factor 3	.00
factor 4	-.04
factor 5	-.08
factor 6	-.12
factor 7	-.17

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
domwrk1	0.62	0.01	0.60	0.64
domwrk2	0.63	0.01	0.61	0.66
domwrk3	0.37	0.01	0.34	0.40
domwrk4	0.34	0.01	0.31	0.37
domwrk5	0.55	0.01	0.52	0.57
domwrk6	0.68	0.01	0.66	0.70
domwrk7	0.42	0.01	0.40	0.45

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
domwrk1	1.8	1.1	0	4	5185
domwrk2	1.1	1.0	0	4	5186
domwrk3	1.1	0.9	0	4	5184
domwrk4	1.6	1.3	0	4	5182
domwrk5	1.4	0.9	0	4	5184
domwrk6	1.7	0.9	0	4	5183
domwrk7	3.1	1.0	0	4	5182

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	568	70	.000	241	35	.000	321	35	.000

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	84	12	.000	34	6	.000	2	6	.878
Strong invariance (plus equal intercepts)	239	12	.000	15	6	.021	92	7	.000
Strict invariance (plus equal error variances)	124	12	.000	11	6	.103	24	7	.001

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.984	Web vs. PAP	.973	T2 vs. T1	1.000
	French vs. Italian	.974				
	Italian vs. German	.986				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	1.000
	French	.992	PAP	.996	T1	1.000
	Italian	.994				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
domwrk_fs	0.0	0.5	-1.5	2.0	5187

Share of cases with imputed missing values: 0.3%

(Equivalence of scores from robust MLMV: CD = .999)

Intra-individual stability

β	.955
CD	.912

Multi-wave sample

Obs.	4115
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Perceived social network support

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	674	5	.000
	Baseline vs. saturated	17598	10	.000

2)	**Root mean squared error (RMSEA)**	.161
	90% Confidence interval: Lower bound	.151
	90% Confidence interval: Upper bound	.171
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	75537
	Bayesian information criterion (BIC)	75635
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.962
	Tucker-Lewis index (TLI)	.924
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.036
	Coefficient of determination (CD)	.926

Reliability and dimensionality

Ordinal Cronbach's alpha	.907
(Cronbach's alpha = .886)	
McDonald's omega	.908

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.26
factor 2	.08
factor 3	-.03
factor 4	-.06
factor 5	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
closupp1	0.81	0.01	0.80	0.82
closupp2	0.91	0.00	0.91	0.92
closupp3	0.83	0.01	0.82	0.84
closupp4	0.65	0.01	0.63	0.67
closupp5	0.85	0.00	0.85	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
closupp1	5.8	1.4	1	7	4967
closupp2	5.9	1.4	1	7	5052
closupp3	6.1	1.3	1	7	5001
closupp4	5.2	1.7	1	7	4420
closupp5	5.8	1.5	1	7	4814

Previous measurement

List of scales (wave 2)

Scale: Perceived social network support (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	817	40	.000	81	20	.000	599	30	.000

Tests of measurement invariance across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	32	8	.000	8	4	.092	62	8	.000
Strong invariance (plus equal intercepts)	167	8	.000	3	4	.631	225	10	.000
Strict invariance (plus equal error variances)	452	8	.000	7	4	.161	315	10	.000

Configural factor similarity across …	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.998	Web vs. PAP	.999	T2 vs. T1	1.000
	French vs. Italian	.996			T2 vs. T0	.999
	Italian vs. German	.996				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	1.000	PAP	1.000	T1	1.000
	Italian	.997			T0	1.000

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
closupp_fs	0.0	1.0	-4.2	1.0	5161

Share of cases with imputed missing values: 20.2%
(Equivalence of scores from robust MLMV: CD = .998)

Intra-individual stability

β	.536
CD	.375

Multi-wave sample

Obs.	6313
Imp.	61

Previous measurement

List of scales (wave 2)

Scale: Embodied cultural capital

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	554	9	.000
	Baseline vs. saturated	13226	15	.000

2)	**Root mean squared error (RMSEA)**		.108
	90% Confidence interval:	Lower bound	.101
	90% Confidence interval:	Upper bound	.116
	Probability RMSEA <= 0.05		.000
3)	**Akaike's information criterion (AIC)**		53643
	Bayesian information criterion (BIC)		53761
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.959
	Tucker-Lewis index (TLI)		.931
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.037
	Coefficient of determination (CD)		.875

Reliability and dimensionality

Ordinal Cronbach's alpha	.862
(Cronbach's alpha = .810)	
McDonald's omega	.865

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.00
factor 2	.12
factor 3	-.04
factor 4	-.05
factor 5	-.13
factor 6	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
manners1	0.54	0.01	0.51	0.56
manners2	0.79	0.01	0.78	0.80
manners3	0.74	0.01	0.72	0.75
verbskill1	0.72	0.01	0.71	0.74
verbskill2	0.75	0.01	0.74	0.77
verbskill3	0.75	0.01	0.74	0.77

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
manners1	3.2	0.7	1	4	5188
manners2	3.2	0.7	1	4	5189
manners3	3.2	0.6	1	4	5183
verbskill1	3.1	0.7	1	4	5184
verbskill2	3.0	0.8	1	4	5185
verbskill3	3.0	0.7	1	4	5180

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
manners1	1.21	-4.47	-2.58	0.72
manners2	2.43	-6.87	-3.42	1.09
manners3	2.04	-6.93	-3.50	1.06
verbskill1	1.93	-5.37	-2.25	1.28
verbskill2	2.13	-5.72	-2.24	1.42
verbskill3	2.10	-5.61	-1.99	1.75

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...

	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	480	54	.000	247	27	.000	401	27	.000

Tests of measurement invariance across ...

	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	42	10	.000	15	5	.008	18	5	.003
Strong invariance (plus equal intercepts)	53	10	.000	14	5	.013	260	6	.000
Strict invariance (plus equal error variances)	62	10	.000	75	5	.000	33	6	.000

Configural factor similarity across ...

	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	.994	T2 vs. To	.999
	French vs. Italian	.996				
	Italian vs. German	.997				

Factor score equivalence:

Unrestricted vs. invariant models for ...

	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.999	PAP	.998	To	1.000
	Italian	.999				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
inccap_fs	0.0	0.9	-3.5	1.7	5190

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .998)
(Equivalence of scores from two-step approach: CD = .988)

Intra-individual stability

β	.577
CD	.333

Multi-wave sample

Obs.	5127
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Embodied cultural capital: Manners

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3970	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	27325
	Bayesian information criterion (BIC)	27384
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.783

Reliability and dimensionality

Ordinal Cronbach's alpha	.759
(Cronbach's alpha = .670)	
McDonald's omega	.764

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.38
factor 2	-.12
factor 3	-.17

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
manners1	0.61	0.01	0.59	0.63
manners2	0.74	0.01	0.72	0.77
manners3	0.80	0.01	0.78	0.82

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
manners1	3.2	0.7	1	4	5188
manners2	3.2	0.7	1	4	5189
manners3	3.2	0.6	1	4	5183

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
manners1	1.46	-4.74	-2.78	0.79
manners2	2.06	-6.24	-3.10	1.01
manners3	2.51	-7.78	-4.01	1.23

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	185	18	.000	96	9	.000	263	9	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	8	4	.093	12	2	.002	16	2	.000
Strong invariance (plus equal intercepts)	50	4	.000	10	2	.008	220	3	.000
Strict invariance (plus equal error variances)	2	4	.766	37	2	.000	11	3	.014

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Web vs. PAP	.980	T2 vs. To	.999
	French vs. Italian	.985				
	Italian vs. German	.985				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	.998
	French	1.000	PAP	.996	To	.999
	Italian	.976				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
manners_fs	0.0	0.8	-3.1	1.3	5189

Share of cases with imputed missing values: 0.1%
(Equivalence of scores from robust MLMV: CD = .998)
(Equivalence of scores from two-step approach: CD = .987)

Intra-individual stability

β	.517
CD	.267

Multi-wave sample

Obs.	5124
Imp.	5

Previous measurement

List of scales (wave 2)

Scale: Embodied cultural capital: Verbal skills

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	4977	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	30029
	Bayesian information criterion (BIC)	30088
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.811

Reliability and dimensionality

Ordinal Cronbach's alpha	.802
(Cronbach's alpha = .738)	
McDonald's omega	.803

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.56
factor 2	-.13
factor 3	-.15

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
verbskill1	0.69	0.01	0.68	0.71
verbskill2	0.77	0.01	0.75	0.79
verbskill3	0.81	0.01	0.79	0.83

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
verbskill1	3.1	0.7	1	4	5184
verbskill2	3.0	0.8	1	4	5185
verbskill3	3.0	0.7	1	4	5180

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
verbskill1	1.75	-5.15	-2.15	1.23
verbskill2	2.23	-5.93	-2.32	1.48
verbskill3	2.52	-6.30	-2.24	1.99

Previous measurement

List of scales (wave 2)

Scale: Embodied cultural capital: Verbal skills (continued) Wave 2 (2018)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	67	18	.000	18	9	.034	116	9	.000

Tests of measurement invariance across ...	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	32	4	.000	2	2	.365	13	2	.001
Strong invariance (plus equal intercepts)	5	4	.331	11	2	.005	76	3	.000
Strict invariance (plus equal error variances)	25	4	.000	0	2	.948	13	3	.005

Configural factor similarity across ...	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.995	Web vs. PAP	.998	T2 vs. To	.999
	French vs. Italian	.996				
	Italian vs. German	.992				

Factor score equivalence: Unrestricted vs. invariant models for ...	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.998	Web	1.000	T2	1.000
	French	.993	PAP	.998	To	1.000
	Italian	.984				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
verbskill_fs	0.0	0.9	-2.8	1.5	5190

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .998)
(Equivalence of scores from two-step approach: CD = .992)

Intra-individual stability	
β	.681
CD	.464

Multi-wave sample	
Obs.	5127
Imp.	5

Previous measurement

List of scales (wave 2)

2-Item-Composit: External political efficacy

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
polefficacy_comp	3.0	0.9	1	5	2651

Share of cases with imputed missing values: 0.0%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
polefficacy1	3.1	1.0	1	5	2651
polefficacy2	3.0	1.1	1	5	2650

List of scales (wave 2)

Scale: Political activities

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	277	5	.000
	Baseline vs. saturated	2889	10	.000

2)	**Root mean squared error (RMSEA)**	.143
	90% Confidence interval: Lower bound	.129
	90% Confidence interval: Upper bound	.158
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	6461
	Bayesian information criterion (BIC)	6549
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.906
	Tucker-Lewis index (TLI)	.811
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.054
	Coefficient of determination (CD)	.758

Reliability and dimensionality

Ordinal Cronbach's alpha	.749
(Cronbach's alpha = .483)	
McDonald's omega	.751

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.73
factor 2	.16
factor 3	-.10
factor 4	-.11
factor 5	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
polakt1	0.65	0.02	0.62	0.69
polakt2	0.57	0.02	0.54	0.61
polakt3	0.53	0.02	0.49	0.56
polakt4	0.68	0.02	0.65	0.71
polakt5	0.63	0.02	0.60	0.66

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
polakt1	0.7	0.5	0	1	2650
polakt2	0.1	0.3	0	1	2647
polakt3	0.1	0.3	0	1	2649
polakt4	0.2	0.4	0	1	2648
polakt5	0.1	0.2	0	1	2648

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
polakt1	1.64	-1.34		
polakt2	1.21	2.45		
polakt3	1.21	2.54		
polakt4	1.63	1.97		
polakt5	1.63	3.77		

List of scales (wave 2)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**
	chi2	df	p > chi2	(not administered
	1399	40	.000	in PAP survey)

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**
	chi2	df	p > chi2	(not administered
Metric invariance (equal factor loadings)	31	8	.000	in PAP survey)
Strong invariance (plus equal intercepts)	85	8	.000	
Strict invariance (plus equal error variances)	206	8	.000	

Configural factor similarity across ...	**Survey languages**		**Survey modes**
Tucker's congruence coefficient		TCC	(not administered
	German vs. French	.986	in PAP survey)
	French vs. Italian	.845	
	Italian vs. German	.903	

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**
Coefficient of determination		CD	(not administered
	German	.999	in PAP survey)
	French	.985	
	Italian	.753	

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
polakt_fs	0.0	0.7	-0.9	2.3	2650

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .945)
(Equivalence of scores from two-step approach: CD = .907)

List of scales (wave 2)

Scale: Physical complaints

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	617	20	.000
	Baseline vs. saturated	6941	28	.000

2)	**Root mean squared error (RMSEA)**		.117
	90% Confidence interval:	Lower bound	.109
	90% Confidence interval:	Upper bound	.125
	Probability RMSEA <= 0.05		.000

3)	**Akaike's information criterion (AIC)**	43091
	Bayesian information criterion (BIC)	43227

4)	**Baseline comparison**	
	Comparative fit index (CFI)	.914
	Tucker-Lewis index (TLI)	.879

5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.050
	Coefficient of determination (CD)	.874

Reliability and dimensionality

Ordinal Cronbach's alpha	.872
(Cronbach's alpha = .839)	
McDonald's omega	.872

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	3.57
factor 2	.22
factor 3	.09
factor 4	.00
factor 5	-.07
factor 6	-.09
factor 7	-.11
factor 8	-.10

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
heal1	0.66	0.01	0.63	0.69
heal2	0.62	0.02	0.59	0.65
heal3	0.72	0.01	0.70	0.75
heal5	0.65	0.01	0.63	0.68
heal6	0.68	0.01	0.65	0.70
heal7	0.70	0.01	0.68	0.73
heal8	0.73	0.01	0.70	0.75
heal9	0.67	0.01	0.64	0.70

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
heal1	1.8	0.8	1	5	2177
heal2	1.6	0.9	1	5	2176
heal3	2.2	1.1	1	5	2176
heal5	1.7	0.9	1	5	2177
heal6	2.2	1.1	1	5	2177
heal7	2.1	1.1	1	5	2177
heal8	2.3	1.2	1	5	2177
heal9	1.8	1.0	1	5	2176

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey modes**
	chi2	df	p > chi2	(not administered
	637	88	.000	in PAP survey)

Tests of measurement invariance across …	**Survey languages**			**Survey modes**
	chi2	df	p > chi2	(not administered
Metric invariance (equal factor loadings)	80	14	.000	in PAP survey)
Strong invariance (plus equal intercepts)	296	14	.000	
Strict invariance (plus equal error variances)	71	14	.000	

Configural factor similarity across …	**Survey languages**		**Survey modes**
Tucker's congruence coefficient		TCC	(not administered
	German vs. French	.988	in PAP survey)
	French vs. Italian	.974	
	Italian vs. German	.977	

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey languages**		**Survey modes**
Coefficient of determination		CD	(not administered
	German	.999	in PAP survey)
	French	.999	
	Italian	.977	

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
heal_fs	0.0	0.5	-0.7	2.1	2177

Share of cases with imputed missing values: 0.1%
(Equivalence of scores from robust MLMV: CD = .998)

List of scales (wave 2)

Scale: Positive global self-esteem

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	182	2	.000
	Baseline vs. saturated	10915	6	.000

2)	**Root mean squared error (RMSEA)**		.131
	90% Confidence interval:	Lower bound	.116
	90% Confidence interval:	Upper bound	.148
	Probability RMSEA <= 0.05		.000
3)	**Akaike's information criterion (AIC)**		39660
	Bayesian information criterion (BIC)		39738
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.983
	Tucker-Lewis index (TLI)		.950
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.022
	Coefficient of determination (CD)		.886

Reliability and dimensionality

Ordinal Cronbach's alpha	.878
(Cronbach's alpha = .833)	
McDonald's omega	.879

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.45
factor 2	-.01
factor 3	-.09
factor 4	-.11

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
sele1	0.74	0.01	0.72	0.75
sele2	0.82	0.01	0.81	0.83
sele3	0.79	0.01	0.77	0.80
sele4	0.86	0.01	0.85	0.87

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
sele1	3.8	0.8	1	5	5222
sele2	4.2	0.7	1	5	5222
sele3	4.0	0.8	1	5	5223
sele4	4.1	0.9	1	5	5222

Previous measurement

List of scales (wave 2)

Scale: Positive global self-esteem (continued)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	733	28	.000	78	14	.000	1473	22	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	51	6	.000	0	3	.925	15	6	.021
Strong invariance (plus equal intercepts)	530	6	.000	12	3	.006	981	8	.000
Strict invariance (plus equal error variances)	113	6	.000	30	3	.000	909	8	.000

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	1.000	T2 vs. T1	1.000
	French vs. Italian	.998			T2 vs. T0	1.000
	Italian vs. German	.995				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.992	PAP	1.000	T1	1.000
	Italian	.984			T0	1.000

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
sele_fs	0.0	0.5	-2.5	0.8	5223

Share of cases with imputed missing values: 0.1%

(Equivalence of scores from robust MLMV: CD = .996)

Intra-individual stability

β	.685
CD	.590

Multi-wave sample

Obs.	6468
Imp.	37

Previous measurement

List of scales (wave 2)

Scale: General perceived self-efficacy scale (GSES) Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	71	2	.000
	Baseline vs. saturated	8652	6	.000

2)	**Root mean squared error (RMSEA)**		.081
	90% Confidence interval:	Lower bound	.066
	90% Confidence interval:	Upper bound	.098
	Probability RMSEA <= 0.05		.001
3)	**Akaike's information criterion (AIC)**		30611
	Bayesian information criterion (BIC)		30690
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.992
	Tucker-Lewis index (TLI)		.976
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.015
	Coefficient of determination (CD)		.852

Reliability and dimensionality

Ordinal Cronbach's alpha	.851
(Cronbach's alpha = .776)	
McDonald's omega	.851

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.21
factor 2	-.06
factor 3	-.10
factor 4	-.12

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
seef1	0.74	0.01	0.73	0.76
seef2	0.79	0.01	0.78	0.80
seef3	0.78	0.01	0.76	0.79
seef4	0.76	0.01	0.74	0.77

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
seef1	3.2	0.5	1	4	5216
seef2	3.2	0.6	1	4	5216
seef3	2.9	0.7	1	4	5213
seef4	3.0	0.6	1	4	5214

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
seef1	2.05	-6.86	-3.79	1.91
seef2	2.36	-7.57	-3.65	1.25
seef3	2.27	-5.75	-2.00	2.58
seef4	2.16	-6.64	-2.87	2.28

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	396	28	.000	122	14	.000	758	22	.000

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	26	6	.000	22	3	.000	32	6	.000
Strong invariance (plus equal intercepts)	162	6	.000	4	3	.269	377	8	.000
Strict invariance (plus equal error variances)	94	6	.000	12	3	.006	501	8	.000

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	.988	T2 vs. T1	.999
	French vs. Italian	.998			T2 vs. T0	1.000
	Italian vs. German	.997				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	.996	PAP	.974	T1	1.000
	Italian	.996			T0	1.000

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
seef_fs	0.0	0.9	-3.3	1.7	5218

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .991)
(Equivalence of scores from two-step approach: CD = .987)

Intra-individual stability

β	.585
CD	.508

Multi-wave sample

Obs.	6675
Imp.	36

Previous measurement

List of scales (wave 2)

Scale: Effort [educ.] Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3715	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	37474
	Bayesian information criterion (BIC)	37532
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.824

Reliability and dimensionality

Ordinal Cronbach's alpha	.733
(Cronbach's alpha = .669)	
McDonald's omega	.751

Test of (one-)dimensionality (parallel analysis)
Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.33
factor 2	-.07
factor 3	-.20

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
edeff1	0.88	0.01	0.85	0.90
edeff3	0.71	0.01	0.69	0.74
edeff4 *	0.51	0.01	0.48	0.53

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
edeff1	3.9	0.9	1	5	5069
edeff3	3.9	0.9	1	5	5068
edeff4	3.0	1.1	1	5	5070

Previous measurement

List of scales (wave 2)

Scale: Effort [educ.] (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	625	18	.000	52	9	.000	108	9	.000

Tests of measurement invariance across …	Survey languages *			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	151	4	.000	4	2	.110	21	2	.000
Strong invariance (plus equal intercepts)	360	4	.000	4	2	.144	1	3	.829
Strict invariance (plus equal error variances)	28	4	.000	0	2	.956	42	3	.000

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.967	Web vs. PAP	.996	T2 vs. T1	.996
	French vs. Italian	.969				
	Italian vs. German	.889				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.994	Web	1.000	T2	1.000
	French	.978	PAP	1.000	T1	1.000
	Italian	.764				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
edeff_fs	0.0	0.7	-2.6	1.1	5070
Share of cases with imputed missing values:					0.1%
(Equivalence of scores from robust MLMV: CD = .988)					

Intra-individual stability

β	.814
CD	.663

Multi-wave sample

Obs.	3857
Imp.	5

*** Note:**
For italian, the error variance of edeff3 has to be constrained (10% of observed item variance) when testing for metric invariance.

Previous measurement

List of scales (wave 2)

Scale: Effort [job]

Wave 2 (2018)

Model and fit statistics *

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	1	1	.229
	Baseline vs. saturated	71	3	.000

2)	**Root mean squared error (RMSEA)**		.051
	90% Confidence interval:	Lower bound	.000
	90% Confidence interval:	Upper bound	.215
	Probability RMSEA <= 0.05		.325
3)	**Akaike's information criterion (AIC)**		1315
	Bayesian information criterion (BIC)		1340
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.993
	Tucker-Lewis index (TLI)		.980
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.029
	Coefficient of determination (CD)		.905

Reliability and dimensionality

Ordinal Cronbach's alpha	.486
(Cronbach's alpha = .321)	
McDonald's omega	.620

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Unadjusted Eigenvalues *
factor 1	.89
factor 2	.04
factor 3	-.27

* No component with an adjusted eigenvalue ≥ 1

*** Note:** Error variance of jeff1 has to be constrained to achieve convergence (10% of observed item variance)

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
jeff1	0.95	0.01	0.94	0.96
jeff3	0.59	0.05	0.48	0.69
jeff4 *	0.15	0.08	0.00	0.30

*** Note:** Reversed categories

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
jeff1	4.2	0.8	1	5	177
jeff3	4.5	0.7	1	5	177
jeff4	3.6	1.2	1	5	177

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across ... **(Small sample - no invariance tests)**

Equality of the variance–covariance matrices across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
			/			/			/

Tests of measurement invariance across ...	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)			/			/			/
Strong invariance (plus equal intercepts)			/			/			/
Strict invariance (plus equal error variances)			/			/			/

Configural factor similarity across ...	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	/	Web vs. PAP	/		/
	French vs. Italian	/				
	Italian vs. German	/				

Factor score equivalence: Unrestricted vs. invariant models for ...	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	/	Web	/		/
	French	/	PAP	/		
	Italian	/				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
jeff_fs	0.0	0.8	-3.0	0.8	177

Share of cases with imputed missing values: 0.0%

(Equivalence of scores from robust MLMV: CD = 1)

Intra-individual stability

β	/
CD	/

Multi-wave sample

Obs.	/
Imp.	/

Previous measurement

List of scales (wave 2)

Scale: Work-related intrinsic value

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	3205	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	24477
	Bayesian information criterion (BIC)	24536
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.757

Reliability and dimensionality

Ordinal Cronbach's alpha	.720
(Cronbach's alpha = .604)	
McDonald's omega	.726

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.22
factor 2	-.12
factor 3	-.18

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawi1	0.66	0.01	0.63	0.68
vawi2	0.81	0.01	0.78	0.83
vawi5	0.59	0.01	0.56	0.61

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vawi1	3.3	0.6	1	4	5238
vawi2	3.6	0.5	1	4	5234
vawi5	3.6	0.6	1	4	5237

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawi1	1.58	-6.17	-3.04	0.99
vawi2	2.55	-8.60	-6.16	-0.64
vawi5	1.28	-6.57	-3.70	-0.60

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	222	18	.000	18	9	.032	248	15	.000

Tests of measurement invariance across …	**Survey languages**			**Survey modes**			**Panel waves**		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	7	4	.158	2	2	.407	30	4	.000
Strong invariance (plus equal intercepts)	46	4	.000	2	2	.457	119	6	.000
Strict invariance (plus equal error variances)	100	4	.000	3	2	.228	41	6	.000

Configural factor similarity across …	**Survey languages**		**Survey modes**		**Panel waves**	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.997	Web vs. PAP	.999	T2 vs. T1	.999
	French vs. Italian	.993			T2 vs. T0	.999
	Italian vs. German	.998				

Factor score equivalence: Unrestricted vs. invariant models for …	**Survey languages**		**Survey modes**		**Panel waves**	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	.999
	French	.992	PAP	.998	T1	1.000
	Italian	.972			T0	.999

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawi_fs	0.0	0.8	-3.4	1.0	5241

Share of cases with imputed missing values: 0.2%
(Equivalence of scores from robust MLMV: CD = .984)
(Equivalence of scores from two-step approach: CD = .966)

Intra-individual stability	
β	.617
CD	.525

Multi-wave sample	
Obs.	6719
Imp.	36

Previous measurement

List of scales (wave 2)

Scale: Work-related extrinsic value

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	0	0	
	Baseline vs. saturated	1543	3	.000

2)	**Root mean squared error (RMSEA)**	.000
	90% Confidence interval: Lower bound	.000
	90% Confidence interval: Upper bound	.000
	Probability RMSEA <= 0.05	1.000
3)	**Akaike's information criterion (AIC)**	32270
	Bayesian information criterion (BIC)	32329
4)	**Baseline comparison**	
	Comparative fit index (CFI)	1.000
	Tucker-Lewis index (TLI)	1.000
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.000
	Coefficient of determination (CD)	.648

Reliability and dimensionality

Ordinal Cronbach's alpha	.585
(Cronbach's alpha = .486)	
McDonald's omega	.598

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Unadjusted Eigenvalues *
factor 1	.81
factor 2	-.09
factor 3	-.22

* No component with an adjusted eigenvalue ≥ 1

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawe1	0.74	0.02	0.70	0.78
vawe2	0.50	0.02	0.47	0.53
vawe4	0.47	0.02	0.44	0.51

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vawe1	3.1	0.7	1	4	5235
vawe2	3.6	0.6	1	4	5238
vawe4	2.7	0.9	1	4	5233

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawe1	1.94	-5.96	-2.46	1.52
vawe2	1.03	-5.71	-3.40	-0.79
vawe4	0.96	-2.83	-0.53	1.57

Previous measurement

List of scales (wave 2)

Scale: Work-related extrinsic value (continued)

Tests and indices of factorial invariance across ...

Equality of the variance–covariance matrices across ...

	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	172	18	.000	21	9	.014	367	15	.000

Tests of measurement invariance across ...

	Survey languages			Survey modes *			Panel waves **		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	12	4	.019	6	2	.039	10	4	.039
Strong invariance (plus equal intercepts)	54	4	.000	6	2	.041	187	6	.000
Strict invariance (plus equal error variances)	66	4	.000	1	2	.714	75	6	.000

Configural factor similarity across ...

	Survey languages		Survey modes		Panel waves **	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.992	Web vs. PAP	.990	T2 vs. T1	1.000
	French vs. Italian	.991			T2 vs. T0	1.000
	Italian vs. German	.998				

Factor score equivalence:

Unrestricted vs. invariant models for ...

	Survey languages		Survey modes		Panel waves **	
Coefficient of determination		CD		CD		CD
	German	.998	Web	1.000	T2	1.000
	French	.990	PAP	.986	T1	1.000
	Italian	.999			T0	.999

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawe_fs	0.0	0.7	-2.7	1.3	5241

Share of cases with imputed missing values: 0.3%

(Equivalence of scores from robust MLMV: CD = .994)

(Equivalence of scores from two-step approach: CD = .981)

*** Note:** The error variances of vawe1 are constrained to be equal for both modes when testing for metric invariance.

Intra-individual stability **

β	.890
CD	.793

Multi-wave sample

Obs.	6719
Imp.	36

**** Note:** Direct path T0 -> T2 constrained to zero.

Previous measurement

List of scales (wave 2)

Scale: Work-related extrinsic value (extended) Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	65	2	.000
	Baseline vs. saturated	3697	6	.000

2)	**Root mean squared error (RMSEA)**		.078
	90% Confidence interval:	Lower bound	.062
	90% Confidence interval:	Upper bound	.095
	Probability RMSEA <= 0.05		.002
3)	**Akaike's information criterion (AIC)**		42046
	Bayesian information criterion (BIC)		42124
4)	**Baseline comparison**		
	Comparative fit index (CFI)		.983
	Tucker-Lewis index (TLI)		.948
5)	**Size of residuals**		
	Stand. root mean squared residual (SRMR)		.023
	Coefficient of determination (CD)		.734

Reliability and dimensionality

Ordinal Cronbach's alpha	.704
(Cronbach's alpha = .626)	
McDonald's omega	.710

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	1.37
factor 2	-.04
factor 3	-.15
factor 4	-.14

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
vawe1	0.64	0.01	0.62	0.66
vawe2	0.50	0.01	0.48	0.53
vawe3	0.75	0.01	0.72	0.77
vawe4	0.56	0.01	0.54	0.59

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vawe1	3.1	0.7	1	4	5235
vawe2	3.6	0.6	1	4	5238
vawe3	3.1	0.8	1	4	5233
vawe4	2.7	0.9	1	4	5233

Parameters of generalized structural equation model (ordinal logit link)

Indicators	Coef.	Cut1	Cut2	Cut3
vawe1	1.50	-5.33	-2.15	1.33
vawe2	1.04	-5.72	-3.39	-0.79
vawe3	2.02	-5.53	-2.01	1.39
vawe4	1.23	-3.03	-0.59	1.68

Previous measurement

List of scales (wave 2)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	309	28	.000	42	14	.000	88	14	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	25	6	.000	7	3	.086	5	3	.172
Strong invariance (plus equal intercepts)	110	6	.000	11	3	.010	39	4	.000
Strict invariance (plus equal error variances)	68	6	.000	7	3	.064	14	4	.008

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	.996	Web vs. PAP	.992	T2 vs. T1	1.000
	French vs. Italian	.980				
	Italian vs. German	.979				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	.999	Web	1.000	T2	1.000
	French	.998	PAP	.981	T1	1.000
	Italian	.981				

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vawe_m_fs	0.0	0.8	-3.1	1.5	5241

Share of cases with imputed missing values: 0.3%
(Equivalence of scores from robust MLMV: CD = .995)
(Equivalence of scores from two-step approach: CD = .985)

Intra-individual stability

β	.966
CD	.932

Multi-wave sample

Obs.	4355
Imp.	5

Previous measurement

List of scales (wave 2)

2-Item-Composit: Family value

Wave 2 (2018)

Composit descriptives					
Variable name	Mean	Std. dev.	Min.	Max.	Obs.
vafa_comp	3.1	0.8	1	4	5239

Share of cases with imputed missing values: 0.3%

Item descriptives					
Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
vafa1	3.2	0.8	1	4	5233
vafa2	2.9	0.9	1	4	5229

Previous measurement

List of scales (wave 2)

Scale: Positive attitude towards life

Wave 2 (2018)

Model and fit statistics

		chi2	df	p > chi2
1)	**Likelihood ratio tests**			
	Model vs. saturated	531	5	.000
	Baseline vs. saturated	14423	10	.000

2)	**Root mean squared error (RMSEA)**	.142
	90% Confidence interval: Lower bound	.132
	90% Confidence interval: Upper bound	.152
	Probability RMSEA <= 0.05	.000
3)	**Akaike's information criterion (AIC)**	59171
	Bayesian information criterion (BIC)	59270
4)	**Baseline comparison**	
	Comparative fit index (CFI)	.963
	Tucker-Lewis index (TLI)	.927
5)	**Size of residuals**	
	Stand. root mean squared residual (SRMR)	.035
	Coefficient of determination (CD)	.903

Reliability and dimensionality

Ordinal Cronbach's alpha	.883
(Cronbach's alpha = .850)	
McDonald's omega	.886

Test of (one-)dimensionality (parallel analysis)

Criterion: Retain factors with adj. eigenvalues > 0

	Adjusted eigenvalue
factor 1	2.96
factor 2	.09
factor 3	-.07
factor 4	-.10
factor 5	-.10

Standardized factor loadings

Indicators	Coef.	(SE)	[95% Conf.	interval]
posl1	0.70	0.01	0.68	0.71
posl2	0.87	0.00	0.86	0.88
posl3	0.80	0.01	0.79	0.81
posl5	0.66	0.01	0.65	0.68
posl6	0.85	0.00	0.84	0.86

Item descriptives

Indicators	Mean	Std. dev.	Min.	Max.	Valid obs.
posl1	4.6	0.8	1	6	5226
posl2	5.1	1.0	1	6	5231
posl3	4.5	1.0	1	6	5229
posl5	4.4	1.1	1	6	5233
posl6	4.7	1.1	1	6	5230

Previous measurement

List of scales (wave 2)

Scale: Positive attitude towards life (continued) Wave 2 (2018)

Tests and indices of factorial invariance across …

Equality of the variance–covariance matrices across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
	687	40	.000	97	20	.000	1230	30	.000

Tests of measurement invariance across …	Survey languages			Survey modes			Panel waves		
	chi2	df	p > chi2	chi2	df	p > chi2	chi2	df	p > chi2
Metric invariance (equal factor loadings)	8	8	.460	28	4	.000	80	8	.000
Strong invariance (plus equal intercepts)	270	8	.000	21	4	.000	976	10	.000
Strict invariance (plus equal error variances)	203	8	.000	15	4	.005	53	10	.000

Configural factor similarity across …	Survey languages		Survey modes		Panel waves	
Tucker's congruence coefficient		TCC		TCC		TCC
	German vs. French	1.000	Web vs. PAP	.996	T2 vs. T1	.999
	French vs. Italian	.998			T2 vs. T0	.998
	Italian vs. German	.999				

Factor score equivalence: Unrestricted vs. invariant models for …	Survey languages		Survey modes		Panel waves	
Coefficient of determination		CD		CD		CD
	German	1.000	Web	1.000	T2	1.000
	French	1.000	PAP	.997	T1	1.000
	Italian	.998			T0	.999

Factor score descriptives

Variable name	Mean	Std. dev.	Min.	Max.	Obs.
posl_fs	0.0	0.5	-2.5	0.8	5233

Share of cases with imputed missing values: 0.2%

(Equivalence of scores from robust MLMV: CD = .999)

Intra-individual stability

β	.676
CD	.595

Multi-wave sample

Obs.	5467
Imp.	56

Previous measurement

List of scales (wave 2)

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