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A New Approach to Measuring Work-Related Well-Being

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The main aim of this study was to develop a short questionnaire to assess work-related well-being from the organizational behaviour perspective. The short well-being questionnaire enables measuring longitudinal work-related well-being. Work-related well-being was assessed with a 147-item questionnaire covering both organizational and intrinsic factors of work-related well-being. The questionnaire consisted of 27 categories. The respondents were 114 women (65%) and 62 men (35%), mean age 39.2 years, in various occupations. From the extensive questionnaire a shorter questionnaire with 33 items was developed by principal component analysis. The Kaiser–Meyer–Olkin measure to test the sampling adequacy of 27 factor solutions varied from .62 to .91 and Cronbach's α was .74–.94. Most κ values of the shorter questionnaire were .50–.94 (p < .001). The reliability of the short version was comparable to that of the original questionnaire. The short one could also be suitable for Internet and mobile questionnaire applications.

work-related well-being organizational climate intrinsic factors

1. INTRODUCTION

Good work from the organizational behaviour perspective is nowadays an ample research area. Work-related well-being has been studied since the 1930s [1]. Although a relationship between good work and work-related well-being has long been recognized [2], employees in similar environments react differently [3]. There are ample definitions of work-related well-being depending on the discipline [4]. The phenomenon of work-related well-being is depicted in various concepts as well-being at work, work engagement and job satisfaction [5]. Work engagement is, e.g., a positive, motivational reaction towards the job that is characterized by vigour, dedication and absorption [6].

At workplaces considerations are often restricted to only one dimension of work-related well-being, such as job satisfaction, which is an important

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dimension of employee well-being [7]. For example, in economics work-related well-being is equated with job satisfaction, but in health sciences work job satisfaction is only one dimension of work-related well-being. Work-related well-being is typically studied from the perspectives of work stress seeing the workplace as a static, not as a changing place [8]. Both organizational factors such as organizational climate and intrinsic factors like work ability, experiences of work flow, and personality, including optimism and self-confidence affect work-related well-being. Organizational climate is closely related to work-related well-being [9]. Recent studies have demonstrated that personal resources such as optimism are related to work engagement [10]. Work engagement is an emerging psychological concept [12].

The relation between personal and job resources is reciprocal [10]. Organizations which find their personnel a valuable resource are interested in the good health and well-being of the employees in addition to their work performance [13]. Crucial concepts of organizational factors like organizational climate include autonomy, clarity of organizational goals, efficiency, effort, formalization, innovation and flexibility, integration, outward focus, participation, performance feedback, pressure to produce, quality, reflexivity, supervisory support, tradition, training and welfare [14, 15]. Work ability, which consists of work demands and individual resources, is a key concept of employee well-being [16]. Individual factors of work-related well-being include mainly health [17], work ability [18], perceived stress [19], mental well-being [20], job satisfaction [21], work flow [22], personality [23], self-esteem [24] and optimism [25]. According to Bakker and Schaufeli, employees who experience work engagement are mentally and physically healthier [26].

Employee well-being can be approached from both positive and negative perspectives. Work-related well-being is commonly discussed negatively in terms of symptoms, not preventively, which is a key principle developing work-related well-being [27]. Recently work-related well-being has largely been defined through negative emotions [29] like burnout, dissatisfaction and anxiety instead of positive emotions like work engagement. Burnout is a traditional, negative approach to well-being, while work engagement represents positive psychology [29]. Work-related well-being research [30] is more and more based on positive psychology studying employee well-being positively, e.g., with the Job Demands–Resources model (JD–R) [31].

JD–R, in which work characteristics are divided into demands and resources, is one of the most common models for measuring work engagement [32]. Job resources refer to organizational, physical, psychological and social aspects of the job that are functional in achieving work-related goals, reducing demands, stimulating personal growth and development [12]. In addition, job resources affect job performance, decrease the negative consequences of work demands and promote learning at the workplace [12, 32]. In Manka's study personal growth motivation was shown to consist of the organization, group work, work and the individual [33]. The climate for personal growth at the organization was based on supervisory support, development opportunities and dignity of the work, communality and team spirit [33]. Job demands are psychological, physical, social or organizational characteristics of work requiring physical and mental effort from the employee.

Other measures in a positive approach are happiness [34], personality [34], optimism [35] and eustress [36]. The positive work stress approach should also be studied more [37]. In general, work-related well-being is a subjective experience of an employee, which is influenced by work, an individual's life and life history [38]. In short, employee work-related well-being can be understood as emotional, psychological and physical well-being and health behaviour [39].

Individuals react differently to stressors during organizational changes [40]. The outcomes of organizational and individual well-being are connected: a good organizational climate offers good prospects for work flow like absorption,

work enjoyment, intrinsic motivation and life-long learning. Supervisory support, clarity of organizational goals, innovation and flexibility, and performance feedback are also necessary [15]. Empirical studies have shown that good work offers the opportunity to derive motivation from the work itself. Job resources are autonomy, social support, performance feedback and opportunities to learn. These resources are also significant because of their motivational qualities [41].

Moreover, individuals interpret the workplace in light of their own individual experiences. Subjective well-being consists of coping with work, growth motivation and competence [42]. Older employees report better work-related well-being than younger employees [4]. Younger employees suffer from stress more than older employees [43]. On the other hand, there are no significant differences between young and old employees nor between men and women [44]. This refers to the impact of organizational climate and intrinsic factors like work ability, work flow and personality on the understanding of work-related well-being.

Safety and health at work are a basis for work-related well-being. Changes in organizational structures and work habits emphasize the need to research work-related well-being. The Finnish Occupational Safety Act (738/2002) stresses the obligation of an employee regarding recognising risk identification and assessment at work [45]. The main ways of measuring are questionnaires, interviews and psychophysiological measurements [4, 14, 15]. Research in the field of work-related well-being is typically focused on narrow items rather than overviews of work-related well-being [2] as a subjective, work-based experience. According to Mäkitalo, most previous studies focused only on a few resources measuring work-related well-being [46]. Because of this, work-related well-being studies should preferably investigate how various types of job and personal resources relate to work engagement [10]. Mobile web-based questionnaires make it easier to perform reliable field test concerning work well-being [11].

Objectives

The main aim of this study was to develop a short version the work-related well-being questionnaire based on earlier studies according to a literature review to assess in a positive way work-related well-being among volunteers. A limitation of much of the existing research on perceived work-related well-being is that studies have tended to focus on only a few variables of work-related well-being, such as work satisfaction. The subjects answered the questionnaire and repeated the questionnaire again in 3 weeks to test the repeatability of the questionnaire.

2. MATERIAL AND METHODS

To identify pertinent studies for the comprehensive questionnaire we focused on key dimensions of work-related well-being: organizational climate and individual factors. We searched in MEDLINE and CINAHL[1] for relevant articles published in English in 1982–2008. Used keywords were psychological well-being and wellness at work, well-being at work, work-related well-being and occupational health. We also reviewed reference lists in relevant published articles and books.

The work-related well-being questionnaire consisted of two parts. The subjects reported work-related well-being including both organizational climate and individual factors in the 147-item questionnaire. The organizational climate measure [14, 15] consisted of 82 items in 17 categories. The categories of organizational climate items were autonomy (5 items), clarity of organizational goals (5 items), efficiency (4 items), effort (5 items), formalization (5 items), innovation and flexibility (6 items), integration (5 items), outward focus (5 items), participation (6 items), performance feedback (5 items), pressure to produce (5 items), quality (4 items), reflexivity (5 items), supervisory support (5 items), tradition (4 items), training (4 items) and welfare (4 items). Organizational

[1] http://www.ebscohost.com/cinahl/

climate was measured on a scale from 1 (*definitely false*) to 4 (*definitely true*).

The intrinsic work-related well-being items consisted of 65 items in 10 categories. Health was measured with three items on a scale from 0 (*poor*) to 10 (*excellent*) [17]. Stress was measured with a question by Elo [13]. The scale was from 0 (*no stress at all*) to 10 (*lots of stress*). Mental and physical work ability was measured with a short version of the work ability index with 2 items [18]. The scale was from 0 (*poor*) to 10 (*excellent*). Mental well-being was measured with 12 items from the general health questionnaire [20]. The scale was from 0 (*better than usual*) to 3 (*much more than usual*). Work satisfaction was measured with a 2-item, 5-point scale based on Hackman's Work Diagnostic Survey [21]. The items measured general work satisfaction on a scale from 0 (*very unsatisfied*) to 10 (*very satisfied*). Flow at work was assessed with the WOrk-reLated (WOLF) Flow scale [22]. The WOLF includes 14 items measuring absorption (4 items), work enjoyment (4 items) and intrinsic work motivation (6 items). The participants were asked to indicate how often they had each of the experiences during the preceding week (0—*never*, 7—*always*). Personality was measured with Ojanen's questionnaire with 9 items [23]. The scale was from 0 (*very little*) to 10 (*exceedingly*). Self-confidence was measured with the self-image questionnaire by Rosenberg with 10 items using a scale from 1 (*totally disagree*) to 5 (*totally agree*) [24]. Optimism was measured with Scheier's questionnaire with 12 items [25]. The scale was from 0 (*strongly disagree*) to 4 (*strongly disagree*).

In the present study, 176 volunteer employees (62 males and 114 females) responded to a comprehensive work-related well-being questionnaire. The response rate was 55% (176/320). Participants were employees from the public and private sector in Tampere region. Participants were informed about the purpose of the study and asked to participate voluntarily. The questionnaire and instructions were provided to each employee individually. The subjects had the option to respond on paper or electronically to the web-based questionnaire. The participants worked as managers, researchers, teachers, registered nurses, academic assistants and engineers. Their mean age was 39.2 years (*SD* 11.6, range 21–65, interquartile range 28–48). Most (72.4%) had higher academic education and were employed as higher white-collar workers. Most (67.7%) were employed by the state. Most employees (84.1%) were not supervisors and were on fixed-term contracts (56.6%). In addition, repeatability of the new questionnaire was measured among 19 volunteers from the sample.

Tables 1–27 show the exact questions of each item. Due to the skewed distributions, values of continuous variables were expressed as medians and interquartile ranges. The shorter questionnaire was constructed by Cronbach's α and principal component analysis, in which the interpretation of the factors was based on loadings over .4. Factors with eigenvalues greater than 1.0 were extracted for inclusion in the analysis. The number of those factors formed the number of the questions for the new questionnaire. Statistical analyses were elicited with SPSS for Windows version 15.0. In addition the agreement of two repeated work-related well-being questionnaires (n = 19) was tested with the weighted κ with 95% confidence intervals and analysed with StatXact-4 version 4.0.1.

TABLE 1. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Autonomy

Autonomy		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.813	
a1	Management lets people make their own decisions much of the time.	3	3–3	.828	.686
a2	Management trusts people to take work-related decisions without getting permission first.	3	3–3	.775	.600
a3	People at the top tightly control the work of those below them.	2	1–2	.741	.548
a4	Management keep too tight a rein on the way things are done around them.	2	1–2	.845	.713
a5	It's important to check things first with the boss before taking a decision.	3	2–3	.515	.265

TABLE 2. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Organizational Goals

Clarity of Organizational Goals		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.879	
c6	People have a good understanding of what the organization is trying to do.	3	3–4	.792	.628
c7	The future direction of the company is clearly communicated to everyone.	3	2–3	.726	.528
c8	People are not clear about the aims of the company.	2	2–2.75	.727	.529
c9	Everyone who works here is well aware of the long term plans and direction of this company.	3	2–3	.783	.614
c10	There is a strong sense of where the company is going.	3	2–3	.762	.581

TABLE 3. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Efficiency

Efficiency		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.701	
e11	Time and money could be saved if work were better organised.	3	2–3	.867	.752
e12	Things could be done much more efficiently if people stopped to think.	3	2–3	.765	.586
e13	Poor scheduling and planning often result in targets not being met.	2	2–3	.793	.630
e14	Productivity could be improved if jobs were organised and planned better.	3	2–3	.857	.734

TABLE 4. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Effort

Effort		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.674	
e15	People have always wanted to perform to the best of their ability.	3	3–3	.693	.480
e16	People are enthusiastic about their work.	3	3–3	.754	.568
e17	People here get by with doing as little as possible.	1	1–2	.660	.435
e18	People are prepared to make a special effort to do a good job.	3	3–3	.842	.709
e19	People here do not put more effort into their work than they have to.	2	1–2	.694	.481

TABLE 5. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Formalization

Formalization		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.823	
f20	It is considered extremely important here to follow the rules.	3	2–3	.772	.595
f21	People can ignore formal procedures and rules if it helps get the job done.	2.5	2–3	.775	.601
f22	Everything has to be done by the rules.	2	2–3	.792	.627
f23	It's not necessary to follow procedures to the letter around here.	3	2–3	.762	.580
f24	Nobody gets too upset if people break the rules around here.	2	1–2	.648	.419

TABLE 6. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Innovation and Flexibility

Innovation and Flexibility		*Mdn*	IQR	Factor	Communality
	eigenvalue			3.647	
i25	New ideas are readily accepted here.	3	2–3	.773	.597
i26	The organization is quick to respond when changes need to be made.	2	2–3	.826	.682
i27	Management here are quick to spot the need to do things differently.	2	2–3	.693	.481
i28	This organization is very flexible; it can quickly change procedures to meet new conditions and solve problems as they arise.	3	2–3	.818	.669
i29	Assistance in developing new ideas is readily available.	3	2–3	.791	.625
i30	People in this organization are always searching for new ways of looking at problems.	3	2–3	.770	.594

TABLE 7. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Integration

Integration		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.822	
i31	People are suspicious of other departments.	2	2–3	.755	.569
i32	There is very little conflict between departments here.	3	2–3	.742	.551
i33	People are prepared to share information with each other.	3	2–3	.781	.609
i34	Collaboration between departments is very effective.	2	2–3	.703	.495
i35	There is very little respect between some of the departments here.	2	2–3	.773	.598

TABLE 8. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Outward Focus

Outward Focus		*Mdn*	IQR	Factor	Communality
	eigenvalue			3.034	
o36	This organization is quite inward looking; it does not concern itself with what is happening in the marketplace.	2	1–2	.775	.600
o37	Ways of improving service to the customer are not given much thought.	2	1–3	.831	.691
o38	Customer needs are not considered top priority here.	2	1–2	.794	.631
o39	This company is slow to respond to the needs of the customer.	2	2–3	.824	.679
o40	This organization is continually looking for new opportunities in the market place.	3	2–3	.658	.433

TABLE 9. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Participation

Participation	*Mdn*	IQR	Factor	Communality
eigenvalue			3.435	
p41 Management involve people when decisions are made that affect them.	3	2–3	.748	.559
p42 Changes are made without talking to the people involved them.	2	2–3	.798	.636
p43 People do not have any say in decisions which affect their work.	2	2–3	.824	.679
p44 People feel decisions are frequently made over their heads.	3	2–3	.848	.718
p45 Information is widely shared.	3	2–3	.657	.431
p46 There are often breakdowns in communication here.	2	2–3	.641	.411

TABLE 10. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Performance Feedback

Performance Feedback	*Mdn*	IQR	Factor	Communality
eigenvalue			2.497	
p47 People usually receive feedback on the quality of work they have done.	3	2–3	.732	.535
p48 People do not have any idea how well they are doing their job.	2	2–3	.809	.655
p49 In general, it is hard for someone to measure the quality of their performance.	2	2–3	.775	.600
p50 People's performance is measured on a regular basis.	3	2–3	.548	.301
p51 The way people do their jobs is rarely assessed.	3	2–3	.637	.406

TABLE 11. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Pressure to Produce

Pressure to Produce	*Mdn*	IQR	Factor	Communality
eigenvalue			3.099	
p52 People are expected to do too much in a day.	2	2–3	.814	.663
p53 In general, people's workloads are not particularly demanding.	2	1–3	.767	.589
p54 Management require people to work extremely hard.	3	2–3	.776	.602
p55 People here are under pressure to meet targets.	3	2–3	.762	.581
p56 The pace of work here is quite relaxed.	2	2–3	.815	.664

TABLE 12. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Quality

Quality	*Mdn*	IQR	Factor	Communality
eigenvalue			2.365	
q57 This company is always looking to achieve the highest standards of quality.	3	3–4	.872	.760
q58 Quality is taken very seriously.	3	3–4	.895	.801
q59 People believe the company's success depends on high quality.	3	3–4	.808	.653
q60 This company does not have much of a reputation for top quality products.	2	1–2	.389	.152

TABLE 13. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) for Reflexivity

Reflexivity		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.811	
r61	In this organization, the way people work together is readily changed in order to improve performance.	2	2–3	.779	.607
r62	The methods used by the organization to get the job done are often discussed.	2	2–3	.847	.718
r63	There are regular discussions as to whether people in the organization are working effectively together.	2	2–3	.761	.579
r64	In this organization, objectives are modified in light of changing circumstances.	3	2–3	.696	.485
r65	In this organization, time is taken to review organizational objectives.	3	2–3	.649	.422

TABLE 14. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) for Supervisory Support

Supervisory Support		*Mdn*	IQR	Factor	Communality
	eigenvalue			3.210	
s66	Supervisors here are really good at understanding people's problems.	3	2–3	.829	.688
s67	Supervisors show that they have confidence in those they manage.	3	3–3	.785	.616
s68	Supervisors here are friendly and easy to approach.	3	3–4	.800	.640
s69	Supervisors can be relied upon to give good guidance to people.	3	2–3	.722	.521
s70	Supervisors show an understanding of the people who work for them.	3	2–3	.863	.745

TABLE 15. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Tradition

Tradition		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.853	
t71	Senior management like to keep to established, traditional ways of doing things.	2	2–3	.822	.676
t72	The way this organization does things has never changed very much.	2	2–3	.867	.751
t73	Management are not interested in trying out new ideas.	2	2–2	.833	.695
t74	Changes in the way things are done here happen very slowly.	3	2–3	.855	.731

TABLE 16. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of training

Training		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.299	
t75	People are not properly trained when there is a new machine or piece of equipment.	2	2–3	.812	.659
t76	People receive enough training when it comes to using new equipment.	3	2–3	.783	.613
t77	The company only gives people the minimum amount of training they need to do their job.	2	2–3	.831	.690
t78	People are strongly encouraged to develop their skills.	3	2–4	.581	.337

TABLE 17. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Welfare

Welfare		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.548	
w79	The company pays little attention to the interests of employees.	2	2–3	.725	.526
w80	This company tries to look after its employees.	3	2–3	.874	.763
w81	This company cares about its employees.	3	2–3	.926	.857
w82	This company tries to be fair in its actions towards employees.	3	3–3	.633	.401

TABLE 18. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Health

Health		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.002	
wa83	How do you evaluate your health compared to that of people of the same age?	8	7–9	.885	.783
wa84	How do you evaluate your physical condition at the moment compared with people of the same age?	8	7–8	.873	.762
wa85	At its best your work ability has been 10. How do you evaluate your work ability now?	8	7–9	.676	.457

TABLE 19. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Mental and Physical Work Ability

Mental and Physical Work Ability		*Mdn*	IQR	Factor	Communality
	eigenvalue			1.290	
wa86	How do you estimate your current work ability regarding the physical demands of your work?	5	4–5	.803	.645
wa87	How do you estimate your current work ability regarding the mental demands of your work?	4	4–4	.803	.645

TABLE 20. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Mental Well-Being

Mental Well-Being		*Mdn*	IQR	Factor 1	Factor 2	Factor 3	Communality
	eigenvalues			2.901	2.823	2.417	
smw89	Have you recently: been able to concentrate on what you're doing?	2	2–3	.522	.036	.624	.664
smw90	lost much sleep due to worry?	2	1–3	.725	.347	.002	.646
smw91	felt that you are playing a useful part in things?	2	2–2	.052	.468	.716	.735
smw92	felt capable of making decisions about things?	2	2–2	.150	.314	.810	.777
smw93	felt constantly under strain?	2	2–3	.776	.285	.207	.726
smw94	felt you couldn't overcome your difficulties?	2	1–2	.436	.639	.195	.637
smw95	been able to enjoy your normal day to day activities?	2	2–3	.734	.183	.384	.719
smw96	been able to face up to your problems?	2	2–2	.465	.160	.618	.624
smw97	been feeling unhappy or depressed?	2	1–2	.496	.705	.172	.772
smw98	been losing confidence in yourself?	2	1–2	.239	.783	.351	.794
smw99	been thinking of yourself as a worthless person?	1	1–2	.199	.821	.224	.764
smw100	been feeling reasonably happy, all things considered?	2	2–2	.434	.225	.211	.284

TABLE 21. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Job Satisfaction

Job Satisfaction		*Mdn*	IQR	Factor	Communality
	eigenvalue			1.687	
js101	Generally speaking, I am very satisfied with this job.	8	7–9	.918	.844
js102	I am generally satisfied with the kind of work I do in this job.	8	7–9	.918	.844

TABLE 22. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Work Absorption

Work Absorption		*Mdn*	IQR	Factor	Communality
	eigenvalue			2.905	
wf103	When I am working, I think about nothing else.	5	4–6	.713	.509
wf104	I get carried away by my work.	5	4–6	.895	.800
wf105	When I am working, I forget everything else around me.	5	3–5	.902	.814
wf106	I am totally immersed in my work.	5	4–6	.884	.782

TABLE 23. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Work Enjoyment

Work Enjoyment		*Mdn*	IQR	Factor	Communality
	eigenvalue			3.419	
we107	When I am working very intensely, I feel happy.	5	4–6	.894	.799
we108	I do my work with a lot of enjoyment.	5	4–5.5	.947	.897
we109	I feel happy during my work.	5	4–6	.921	.849
we110	I feel cheerful when I am working.	5	4–6	.935	.874

TABLE 24. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Intrinsic Work Motivation

Intrinsic Work Motivation		*Mdn*	IQR	Factor	Communality
	eigenvalue			3.423	
iwm111	I do my work simply for the pleasure that it brings me.	3.5	2–5	.840	.705
iwm112	I find that I also want to work in my free time.	3	2–5	.647	.418
iwm113	I work because I enjoy.	4	3–5	.819	.670
iwm114	When I am working on something, I am do it for myself.	4	2–5	.693	.480
iwm115	I would still do this work, even if I received less pay.	3	1–5	.736	.541
iwm116	I get my motivation from the work itself, and not from the rewards it brings.	4	3–5	.780	.609

TABLE 25. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Personality

				Loadings of Rotated Factors			
Personality		*Mdn*	IQR	Factor 1	Factor 2	Factor 3	Communality
	eigenvalue			2.751	1.593	1.136	
p117	Self-confidence describes a belief in one's own prospects and confidence about managing demanding tasks.	8	7–9	.696	.330	.092	.601
p118	Social courage describes daring and will to air one's opinion in company and speak out.	8	6–9	.840	.138	−.020	.725
p119	Dominance describes how to take the initiative, wade into things or manage.	7	6–8	.864	.080	−.155	.776
p120	Are you a person, who thinks of anyone but yourself.	4	3–6	.249	.437	−.598	.611

TABLE 25. (*continued*)

				Loadings of Rotated Factors			
Personality		***Mdn***	**IQR**	**Factor 1**	**Factor 2**	**Factor 3**	**Communality**
p121	How hardheaded and strong are you?	8	7–9	.614	–.101	.380	.532
p122	Do you feel easy and relaxed about things?	5.5	4–7	.043	.815	–.028	.667
p123	How much do you want to get through new and different things? How much changes do you want?	7	6–8	.171	.671	.126	.495
p124	How effective and energetic you are?	8	7–9	.556	.239	.360	.496
p125	How do you feel that you can affect in your life while you are not depended of the fate?	8	6–9	.190	.294	.675	.578

TABLE 26. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Self-Esteem

				Loadings of Rotated Factors		
Self-Esteem		***Mdn***	**IQR**	**Factor 1**	**Factor 2**	**Communality**
	eigenvalue			2.818	2.680	
s126	On the whole, I am satisfied with myself.	4	4–4.75	.666	.376	.584
s127	At times I think I am no good at all.	2	2–3	.177	.750	.593
s128	I feel that I have a number of good qualities.	4	4–5	.661	.072	.442
s129	I am able to do things as well as most other people.	4	4–5	.832	.195	.731
s130	I feel I do not have much to be proud of.	1	1–2	.332	.420	.286
s131	I certainly feel useless at times.	2	1–3	.134	.761	.596
s132	I feel that I am a person of worth, at least on an equal plane with others.	5	4–5	.734	.105	.550
s133	I wish I could have more respect for myself.	3	2–4	.041	.703	.495
s134	All in all, I am inclined to feel that I am a failure.	1	1–2	.482	.596	.587
s135	I take a positive attitude toward myself.	4	3–5	.559	.565	.632

TABLE 27. Median (*Mdn*) and Interquartile Range (IQR) of Items and Their Loadings and Communality in Principal Component Analysis One-Factor Solution (*n* = 176) of Optimism

				Loadings of Rotated Factors			
Optimism		***Mdn***	**IQR**	**Factor 1**	**Factor 2**	**Factor 3**	**Communality**
	eigenvalue			2.852	2.348	1.219	
O136	In uncertain times, I usually expect the best.	3	2–3	.680	–.268	–.062	.538
O137	It's easy for me to relax.	3	2–3	.537	–.395	–.385	.593
O138	If something can go wrong for me, it will.	1	1–2	.421	.541	–.302	.561
O139	I always look on the bright side of things.	2	2–3	.764	–.263	–.046	.656
O140	I'm always optimistic about my future.	3	2–4	.685	–.018	–.107	.480
O141	I enjoy my friends a lot.	3	3–4	.460	–.422	–.052	.393
O142	It's important for me to keep busy.	3	2–3.25	.148	–.374	.773	.760
O143	I hardly ever expect things to go my way.	1	1–1	.503	.554	.250	.622
O144	Things never work out the way I want them to.	1	0–1	.465	.580	.010	.553
O145	I don't get upset too easily.	2	1–3	.509	–.207	–.101	.313
O146	I'm a believer in the idea that "every cloud has a silver lining."	3	2–3	.507	–.113	.313	.368
O147	I rarely count on good things happening to me.	1	1–2	.567	.431	.275	.583

3. RESULTS

Tables 1–28 show the results of the principal component analyses concerning the 147 items. Items a1–a5 elicited autonomy (α = .794), in which the Kaiser–Meyer–Olkin (KMO) measure was .776 and Bartlett's test of sphericity 294 ($df = 10$, $p < .001$) indicated that the samples met the criteria for factor analysis. The one-factor solution explained 56% of the total variance (Table 1). Items a1 and a4 had the highest loadings on this factor (factor loadings .828 and .845). Inter-item correlations varied from .20 to .64; they were lowest between questions a3 and a5 and highest between questions a3 and a4. The lowest correlations (<.4) were associated with question a5. This one-factor solution created item 1 "Management trusts on people and lets them make their own decisions".

Items c6–c10 elicited clarity of organizational goals (α = .815), in which the KMO measure was .830 and Bartlett's test of sphericity 264 ($df = 10$, $p < .001$). Table 2 shows the results of the one-factor solution, which explained 58% of the total variance. All inter-item correlations between questions c6–c10 were over .40; they were highest ($r = .55$) between questions c9 and c10. This one-factor solution created item 2 "People have a good understanding of what the organization is doing".

Table 3 shows one-factor solution of items e11–e14, on efficiency, explaining 68% of the total variance. Cronbach's α was .839, the KMO measure was .780 and Bartlett's test of sphericity value 282 ($df = 6$, $p < .001$). Inter-item correlations between questions e11–e14 varied from .49 (between questions e12 and e13) to .71 (between questions e11 and e14). This one-factor solution created item 3 "Time and money could be saved if work were better planned and organised".

Items e15–e19 elicited effort (α = .775), in which the KMO measure was .747 and Bartlett's test of sphericity 253 ($df = 10$, $p < .001$). Table 4 shows the results of the one-factor solution. Inter-item correlations were lowest ($r = .21$) between questions e15 and e19 and highest ($r = .56$) between questions e16 and e18. The first factor explained 54% of the total variance. Question e18 had the highest loading on this factor (communality .709). This one-factor solution created item 4 "People are prepared to make their best to do a good job".

Items f20–f24 elicited a formalization (α = .807), in which the KMO measure was .827 and Bartlett's test of sphericity 252 ($df = 10$, $p < .001$). Table 5 shows the results of the one-factor solution, which explain 57% of the total variance. Inter-item correlations varied from .35 between questions f20 and f24 to .58 between questions f22 and f24. This one-factor solution created item 5 "It is necessary to follow rules to get the work done".

Items i25–i30 elicited innovation and flexibility (α = .871). The KMO measure of the one-factor solution, which explained 61% of the total variance, was .879 and Bartlett's test of sphericity 452 ($df = 15$, $p < .001$) (Table 6). Question i26 had highest loading on this factor (communality .682). The lowest inter-item correlation ($r = .41$) was found between questions i25 and i27. Most correlation coefficients varied between .53 and .57. This one-factor solution created item 6 "The organization is quick to respond when changes need to be made".

Items i31–i35 elicited integration (α = .805), in which the KMO measure was .737 and Bartlett's test of sphericity 296 ($df = 10$, $p < .001$). Inter-item correlations varied from .27 (questions i31 and i34) to .66 (questions i31 and i35). The results of the one-factor solution explained 56% of the total variance (Table 7). Question i33 had highest loading on this factor (communality .609). This one-factor solution created item 7 "People are prepared to share information with each other".

The KMO measure was .822 and Bartlett's test of sphericity 323 ($df = 10$, $p < .001$) of items o36–o40, which elicited outward focus (α = .837). The results of the one-factor solution explained 61% of the total variance (Table 8). Inter-item correlations between questions varied from .38 to .68. This one-factor solution created item 8 "The customer service is being continuously improved".

Items p41–46 elicited participation (α = .850), in which the KMO measure was .838 and Bartlett's test of sphericity 424 (*df* = 15, *p* < .001). The lowest inter-item correlation (*r* = .33) was found between questions p42 and p43 and the highest (*r* = .70) between questions p43 and p44. The one-factor solution explained 57% of the total variance (Table 9). This one-factor solution created item 9 "People feel decisions are frequently made without talking to the people involved".

Items p47–p51 elicited performance feedback (α = .735), in which the KMO measure was .775 and Bartlett's test of sphericity 196 (*df* = 10, *p* < .001). Questions p50 and p51 did not correlate well between other questions; correlation coefficients varied from .24 to .39. Other correlations varied from .45 to .58. The results of the one-factor solution explained 50% of the total variance (Table 10). This one-factor solution created item 10 "People receive feedback on the quality of their work".

Items p52–p56 elicited pressure to produce with α = .845, the KMO measure .859 and Bartlett's test of sphericity 323 (*df* = 10, *p* < .001). All inter-item correlations were between .47 and .57. The one-factor solution explained 62% of the total variance (Table 11). This one-factor solution created item 11 "The pace of work here is quite relaxed".

Items q57–q60 elicited quality (α = .732), in which the KMO measure was .700 and Bartlett's test of sphericity 237 (*df* = 6, *p* < .001). Low inter-item correlations were found between questions q57 and q60, between q58 and q60, and between q59 and q60 (.15, .24 and .23, respectively). Other correlations were quite high, from .56 to .76 between questions q57 and q58. Question q58 had the highest loading on this factor (communality .801), but question q60 loaded quite poorly (.389) to factor with communality (.152). The one-factor solution explained 59% of the total variance (Table 12). This one-factor solution created item 12 "Quality is taken very seriously".

The one-factor solution of items r61–r65 elicited reflexivity. Cronbach's α was .802, the KMO measure .772 and Bartlett's test of sphericity 277 (*df* = 10, *p* < .001). Inter-item correlations varied from .33 to .64 between questions r61–r65. The factor explained 56% of the total variance (Table 13). Question r62 had the highest loading on this factor (communality .847). This one-factor solution created item 13 "The methods used by the organization to get the job done are often discussed".

Items s66–s70 elicited supervisory support (α = .858), in which the KMO measure was .859 and Bartlett's test of sphericity 371 (*df* = 10, *p* < .001). Inter-item correlations were moderate, between .41 and .66. The results of the one-factor solution explained 64% of the total variance (Table 14). Question s70 had the highest loading on this factor (communality .745). This one-factor solution created item 14 "Supervisors show good understanding and guidance to the people who work for them".

Items t71–t74 elicited tradition (α = .865), in which the KMO measure was .807 and Bartlett's test of sphericity 323 (*df* = 6, *p* < .001). Inter-item correlations were homogenous between .57 and .66. This one-factor solution explained 71% of the total variance (Table 15). This one-factor solution created item 15 "The way this organization does things changes slowly".

Items t75–t78 elicited training (α = .747), in which the KMO measure was .738 and Bartlett's test of sphericity 168 (*df* = 6, *p* < .001) Inter-item correlations of question t78 were low (under .39) between other questions. Other correlations were between .50 and .57. This one-factor explained 58% of the total variance (Table 16). This one-factor solution created one-factor item 16 "The company gives people training they need to do their job".

Items w79–w82 elicited welfare (α = .780), in which the KMO measure was .697 and Bartlett's test of sphericity 293 (*df* = 6, *p* < .001). Inter-item correlation between questions w79 and w82 was low (*r* = .18). Other correlation coefficients varied from .40 to .56. The results of the one-factor solution explained 64% of the total variance. Question w81 had the highest loading on this factor (communality .857) (Table 17). This one-factor solution created item 17 "Our company cares about its employees".

Items wa83–wa85 elicited health (α = .749), in which the KMO measure was .618 and Bartlett's test of sphericity 149 (*df* = 3, *p* < .001). Inter-item correlation was quite low between questions wa83 and wa85 (*r* = .40) and between questions wa84 and wa85 (*r* = .37), but quite high between questions wa83 and wa84 (*r* = .71). This factor explained 67% of the total variance (Table 18). This one-factor solution created item 18 "How do you evaluate your health compared to that of people of the same age?".

Items wa86–wa87 elicited mental and physical work ability (α = .449), in which the KMO measure was .500 and Bartlett's test of sphericity 15 (*df* = 1, *p* < .001). The inter-item correlation between questions was low (*r* = .29). The factor explained 65% of the total variance. This one-factor solution shown in Table 19 created item 19 "How do you estimate your current work ability?"

Question wa88 (*Mdn* 6; interquartile range from 3 to 7) alone constructed item 20 "Do you nowadays feel stress like a person who feels strain, nervousness, distress or loses much sleep due to worry?"

Items smw89–smw100 elicited mental well-being (α = .901), in which the KMO measure was .910 and Bartlett's test of sphericity 1084 (*df* = 66, *p* < .001). Inter-item correlations between questions varied from .24 (questions smw91 and smw100) to .71 (questions smw98 and smw99). Table 20 shows the results of the varimax rotation of the three-factor solution. The first rotated factor explained 24%, the second factor 24% and the third factor explained 20% of the total variance. Question smw100 had only a weak association with the first factor. This three-factor solution created items 21–23: factor 1 "Have you been able to enjoy your normal day to day activities without strain?" as item 21, factor 2 "Have you been thinking of yourself as a worthless person?" as item 23 and factor 3 "Have you recently felt capable of making decisions about things?" as item 22.

Items js101–js102 elicited work satisfaction (α = .812, inter-item correlation .69), in which the KMO measure was .500 and Bartlett's test of sphericity 110 (*df* = 1, *p* < .001). The factor explained 84% of the total variance (Table 21). This one-factor solution created item 24 "Generally I am very satisfied with my job".

Items wf103–wf106 elicited work absorption (α = .869), in which the KMO measure was .813 and Bartlett's test of sphericity 377 (*df* = 6, *p* < .001). Inter-item correlations between questions varied from .48 to .77. The results of the one-factor solution explained 73% of the total variance (Table 22). This solution created item 25 "When I am working, I forget everything else around me".

Items we107–we110 elicited work enjoyment in work (α = .943), in which the KMO measure was .864 and Bartlett's test of sphericity 645 (*df* = 6, *p* < .001). Inter-item correlations between questions were quite high, from .74 to .86. The results of the one-factor solution explained 86% of the total variance (Table 23). It created item 26 "I do my work with a lot of enjoyment".

Items iwm111–iwm116 elicited intrinsic work motivation (α = .841), in which the KMO measure was .832 and Bartlett's test of sphericity 421 (*df* = 15, *p* < .001). Inter-item correlations between questions were moderate, from .33 to .69. The results of the one-factor solution explained 57% of the total variance (Table 24). This factor solution created item 27 "I do my work for the pleasure that it brings me".

Items p117–p125 elicited personality (α = .735), in which the KMO measure was .773 and Bartlett's test of sphericity 370 (*df* = 36, *p* < .001). Inter-item correlations varied from .02 to .42 between questions p120 and p125. Correlations between questions p117, p118 and p119 were between .53 and .70. Table 25 show the results of varimax rotation of the three-factor solution. The first rotated factor explained 31% of the total variance, the second factor 18% and the third factor 13% of the total variance. This three-factor solution created item 28 "I am confident that I can manage even demanding tasks" as factor 1, item 30 "I feel easy and relaxed about things" as factor 2 and item 29 "I control my own life and I am not driven by random chance" as factor 3.

Items s126–s135 elicited self-confidence (α = .837), in which the KMO measure was .866 and Bartlett's test of sphericity 559 (*df* = 45,

$p < .001$). Inter-item correlations varied from .15 (between s128 and s133) to .63 (between questions s126 and s135). Table 26 shows the results of the varimax rotation of the two-factor solution. The first factor explained 28% and the second factor 27% of the total variance. Question s130 had only weak loading on both two factors. The first factor created item 31 "I feel positive about myself" and second factor created item 32 "Every now and then I feel useless".

Items o136–o147 elicited optimism ($\alpha = .761$), in which the KMO measure was .786 and Bartlett's test of sphericity 468 ($df = 66$, $p < .001$) Table 27 shows the results of varimax rotation of the three-factor solution. The first factor explained 24%, the second factor 20% and the third factor explained 10% of the total variance. This three-factor solution created item 33 "I always look on the bright side of things". The questions' inter-item correlations were loaded to the first factor. These factors varied between .29 and .55. Results of factors 2 and 3 were not included in the shorter questionnaire, because factor 2 was opposite to factor 1 and the results of factor 3 were not important for good work-related well-being.

On the basis of the 147-item questionnaire, a 33-item questionnaire was developed with principal component analysis (Table 28). The repeatability of the shorter questionnaire was good and most κ values were .50–.94 ($n = 19$, $p < .001$, $\alpha = .91$).

TABLE 28. 33-Item Questionnaire

Item	Question
1	Management trusts on people and lets them make their own decisions.
2	People have a good understanding of what the organization is doing.
3	Time and money could be saved if work were better planned and organised.
4	People are prepared to make their best to do a good job.
5	It is necessary to follow rules to get the work done.
6	The organization is quick to respond when changes need to be made.
7	People are prepared to share information with each other.
8	The customer service is being continuously improved.
9	People feel decisions are frequently made without talking to the people involved.
10	People receive feedback on the quality of their work.
11	The pace of work here is quite relaxed.
12	Quality is taken very seriously.
13	The methods used by the organization to get the job done are often discussed.
14	Supervisors show good understanding and guidance to the people who work for them.
15	The way this organization does things changes slowly.
16	The company gives people training they need to do their job.
17	Our company cares about its employees.
18	How do you evaluate your health compared to that of people of the same age?
19	How do you estimate your current work ability?
20	Do you nowadays feel stress like a person who feels strain, nervousness, distress or loses much sleep due to worry?
21	Have you been able to enjoy your normal day to day activities without strain?
22	Have you recently felt capable of making decisions about things?
23	Have you been thinking of yourself as a worthless person?
24	Generally I am very satisfied with my job.
25	When I am working, I forget everything else around me.
26	I do my work with a lot of enjoyment.
27	I do my work for the pleasure that it brings me.
28	I am confident that I can manage even demanding tasks.
29	I control my own life and I am not driven by random chance.
30	I feel easy and relaxed about things.
31	I feel positive about myself.
32	Every now and then I feel useless.
33	I always look on the bright side of things.

4. DISCUSSION

A short and reliable work-related well-being questionnaire was the main result of the study. The shorter version was developed for the mobile and Internet questionnaires. From the extensive questionnaire the shorter questionnaire with 33 items was developed by principal component analysis. In the current study, the phenomenon of work-related well-being was investigated among volunteers in a heterogeneous study population representing different occupations. The questionnaire is suitable for the Internet and mobile questionnaire applications.

There are some limitations to the present study. One central part of work-related well-being, namely the work environment, was not researched. Because of the extensive questionnaire in this study we focused only on organizational and intrinsic factors. Due to the small sample size occupations could not be classified. The generalizability of this study may be limited to some extent by the nature of the size of the sample. In addition, most participants were women.

Despite some limitations, there are significant strengths in this study. We developed a compact instrument that would be sufficient for measuring work-related well-being. Peto, Jenkinson, Fitzpatrick, et al. reported a closely related study but the main difference is that they generated questionnaire items from interviews [48]. On the other hand, Hayes, Perander, Smecko, et al. developed a 50-item instrument for assessing work safety based on a literature review as in this study [49]. The long questionnaire makes it possible to identify work-related well-being concerning intrinsic and organizational factors. The data for this study were gathered in combination with multiple variables to quantify work-related well-being. The original items were based on reported questionnaires. The items described organizational and intrinsic factors of work-related well-being.

In addition, further studies should also include promotion of work-related well-being [50] and items on the work environment. The latter should cover occupational climate [51, 52], indoor climate [53, 54], working conditions and work postures [55].

It is obvious that employees do not want to answer long questionnaires. Therefore, a shorter questionnaire may increase the response rate and the results may represent the target population better. It is also easier to research work-related well-being at workplaces and inform organizations and employees about the levels of work-related well-being using more competent questionnaires. In addition, short well-being questionnaires enable administering questionnaires via mobile phones and the Internet. A short well-being questionnaire also enables measuring longitudinal well-being [56].

In conclusion, from our results we were able to determine that the shorter, 33-item version of the original 147-item questionnaire well estimates the perspectives on work-related well-being. The applications of our results, like mobile work-related well-being questionnaires, may encourage organizations to evaluate work-related well-being at workplaces. In addition, items should be researched in a larger population. Measuring changes over time, e.g., with weekly mobile questionnaires, may be more helpful in identifying the complex phenomenon of work-related well-being.

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