HED ▸ Hradec Economic Days

Targeted Application of the Work Design Questionnaire Using Self-Determination Theory to Generation Z

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Abstract: Questionnaire surveys measuring job satisfaction at the workplace are relatively very popular and widely used methods in most organizations. Experienced methods that are still used for the current working generations may not be so effective for the upcoming Generation Z. This generation is impatient, distracted, easily lose focus and patience, and dependent on digital technologies. The main goal of the article is therefore to identify the possibility of shortening the Work Design Questionnaire (WDQ), based on the use of sub-areas of self-determination theory (SDT) for the needs of generation Z. Furthermore, a comparison of whether filling in both versions of the questionnaire (standard and shortened according to the SDT) will have the same indicative value. The research is based on a quantitative questionnaire survey (n=395) and a statistical evaluation of the data. The quality of the questionnaires was verified by Cronbach's α and Confirmatory factor analysis. Both versions of the questionnaires were then compared at the level of sub-parts (autonomy, competence, relatedness) by comparing the average values of the recorded answers by Wilcoxon rank. The results indicate that the WDQ can be shortened in the areas of autonomy and competence, while in area relatedness this possibility has not been proven.

Keywords: Work Design Questionnaire; Self-determination theory; generation Z; job satisfaction, motivation

JEL Classification: M12; M54

1. Introduction

One of the most important tools for the comprehensive measurement of job satisfaction in the last few decades is the Work Design Questionnaire (WDQ). Morgeson and Humphrey (2006) summarized all the shortcomings of existing questionnaires (their over-generality or, conversely, their over-specificity) and created a new, compact, comprehensive questionnaire called WDQ. This tool has been validated in different contexts and countries, such as Germany (Stegmann et al., 2010), Brazil (Borges-Andrade et al., 2019), France (Bertolino et al., 2011), the Netherlands (Gorgievski-Duijvesteijn et al., 2016) and the Czech Republic (Procházka et al., 2020). The questionnaire aims to learn from the mistakes of previous questionnaires and to be a relevant method for measuring job characteristics and job satisfaction. The questionnaire identification resulted in 21 constructs, which were also

identified as factors of the WDQ method (Morgeson & Humphrey, 2006; Bayona et al., 2015; Fernández et al., 2017). However, this questionnaire is often criticized for its length (Marcus et al., 2007; Liu & Wronski, 2018). For completing the WDQ requires a significant time. This time span is estimated at 15 minutes and contains 77 items divided into 21 factors (Morgeson & Humphrey, 2006). Completing such a long questionnaire can easily lead to problems with measuring the quality of responses (Podsakoff et al., 2003). In practice, these effects can manifest as fatigue, which respondents may feel towards the end of completing the questionnaire, leading to consistent responses regardless of what the questions are about (Krosnick, 1999; MacKenzie & Podsakoff, 2012). As a result, conducting lengthy questionnaires against such a background may have an adverse effect on the quality and quantity of responses provided (Baumgartner & Steenkamp, 2001). And precisely its length can become a problem when applying it within the framework of testing Generation Z. These are people who were born between 1995 and 2009 (Berkup, 2014) and are therefore descendants of Generation X (Husák's children). Their perception of life is completely different from the perception of their parent's life perspective. Between these generations, there is a noticeable difference in the understanding of life satisfaction, as well as work satisfaction. Generation Z, unlike the previous generation and their parent's generation, places greater value on personal life, which they do not intend to sacrifice at the expense of work (Parment, 2013; Chillakuri, 2020). This generation is currently beginning to become economically active people. From the point of view of the employment relationship, they create most of those entering the labor market (Bennett et al., 2012). Concurrently their part in the labor market will increase yearly (ČSÚ, 2020). Kubátová (2016) lists the three most important work aspects of Generation Z, which are: opportunities for career growth, the need for more money and meaningful work. Their frequent requests are flexible working hours, part-time work, and the possibility to work from home or remotely online. Compared to previous generations, they have greater demands on employers, the work environment and the collective, especially a sense of personal fulfillment and motivation, which people previously did not place emphasized at all (Lissitsa & Kol, 2016). Generation Z has already been born into the digital world, they have no memory of life without access to the Internet (Reinikainen et al., 2020). For this reason, they take technology for granted, and all their activities or actions must correspond to the speed of the Internet. Therefore, all must be easy and fast (Van der Goot et al., 2016). Because they are versatile and broadly oriented, one of their main features is a reduced ability to pay constant attention, both in everyday life, at work, and on a concrete task or assignment (Ding et al., 2017; Poláková & Klímová, 2019). They are also impatient and prefer to get information quickly (Cruz, 2016).

The tool for solving the questionnaire length can be the Self-Determination Theory (SDT). Cross-sectionally, SDT coincides with this complex tool. The theory is represented by a set of several smaller theories where the main objective is to motivate people through the fulfillment of basic needs. (Buttitta et al., 2017; Chen et al., 2019; Deci & Ryan, 2000; Gyllison et al., 2008). Based on substantial research, autonomy, competence, and relatedness are considered universal, not dependent on age, origin, culture or gender (Chen et al., 2015). According to Deci and Ryan (2000), these are autonomy, competence, and relatedness, which

fully correspond with the core features of the WDQ questions (Humphrey et al., 2007). Criticism directed at the theory is most often in the form of focusing only on internal motivation, not on general motivation, as is the case with most authors (Gagné et al., 2015).

Developing a shorter instrument that is easier to administer and quicker to answer will contribute to improving the construct validity of the questionnaire. Also, improve the adequacy of the obtained data for subsequent analysis and interpretation. In this regard, it would seem appropriate to shorten the WDQ to facilitate its future use (Marcus et al., 2007; Liu & Wronski, 2018). Therefore, a shortening of the questionnaire based on SDT is proposed, by the main three pillars of human motivation are autonomy, competence, and relatedness (Ryan & Deci, 2006).

The aim of the study is to identify the possibility of shortening the WDQ, based on the use of sub-areas of SDT for the needs of generation Z. The study will use 8 factors for the truncated version of the questionnaire, which contains 31 items, instead of the original ones in the original wording of the questionnaire 21 factors and 77 items. These are especially those factors/items that describe the SDT and its essence, so these are items that deal with the areas of autonomy, competence and relatedness.

2. Methodology

The research described in this study was based on a questionnaire survey. Data collection was carried out in a selective manner. The method used was the WDQ questionnaire measuring job satisfaction, which is standardized and translated into the Czech language (Procházka et al., 2020). The WDQ questionnaire measures job satisfaction on a 5-point standardized scale in the form of "strongly disagree", "disagree", "don't know", "agree", and "strongly agree". Two versions of the WDQ questionnaire were compared in order to verify the mutually equal indicative value of the responses of the results. The classic long (standard version) and the shortened version, which is based on SDT theory. Each respondent completed the full (standard) version of the questionnaire. Answers for the short version of the questionnaire were extracted from the standard long version, based on the agreement of the list of required factors with SDT theory. These questions focus on issues related to autonomy, competence, and relatedness. For the abbreviated version of the autonomy research (Section A), only three factors (F1, F2, F3) were used instead of the original seven factors. These three selected factors contain 9 items (WDQ_1, WDQ_2, WDQ_3, WDQ_4, WDQ_5, WDQ_6, WDQ_7, WDQ_8, WDQ_9) which clearly relate to the area of autonomy. The selection of questions from the field of competence (section B) took place according to Kane (1992), in problem solving, the composition of the diversity of skills and specialization. This area is represented by three factors (F10, F11, F12), instead of the original five factors. They contain 12 items (WDQ_{33}, WDQ_{34}, WDQ_{35}, WDQ_{36}, WDQ_{37}, WDQ_{38}, WDQ_{39}, WDQ_{40}, WDQ_{41}, WDQ_{42}, WDQ_{43}, WDQ_{44}). The relatedness factor (section C) was selected from the WDQ questionnaire based on the social factor according to Granzier et al. (2021) in the form of two factors (F13, F16) from the original five factors. These are social support and cooperation outside the organization and are represented by 10 items (WDQ_{45}, WDQ_{46}, WDQ_{47}, WDQ_{48}, WDQ_{49}, WDQ_{50}, WDQ_{57}, WDQ_{58}, WDQ_{59}, WDQ_{60}). Out of a total 21 factors that are included in the

standard scope of the questionnaire, the above-mentioned eight factors were selected, which have 31 items. The selection of factors, and thus also the items of the WDQ questionnaire, is based on satisfactory researched areas that significantly coincide with the elements of the SDT theory and at the same time with a targeted shortening of the questionnaire (Marcus et al., 2007; Liu & Wronski, 2018).

The research population consisted of 395 respondents from Generation Z, active students or graduates of the Czech University of Life Sciences Prague. Addressing the graduates was conditional on their date of graduation, in order to the respondent belong completely into generation Z. Their belonging to Generation Z was verified in the second phase, where all respondents were asked about their year of birth as part of a questionnaire survey.The data for this study were collected from employees working in various sectors, regardless of their length of employment in the given organization or the scope of their employment. The employees were contacted by e-mail, where they were initially informed about the purpose of the survey, including the form of the questionnaire and a brief introduction to the issue. The LimeSurvey online application (LimeSurvey, 2020) was chosen for the survey. Data were collected between March 2020 and May 2020. IBM SPSS Statistics (IBM, 2022) and Jamovi (Jamovi, 2020) software were used to test the predicted outcome.

Cronbach's α statistical method was used to initially determine whether the entire WDQ questionnaire and its shortened version have a sufficient degree of internal consistency and reliability. Conformational factor analysis verified the validity of the questionnaires, and whether the questionnaires were used correctly. The aim of the study is to find out whether the long and short versions of the questionnaires work the same. Based on the findings, the long version of the questionnaire can be replaced by a short version, from which the following hypothesis, which are intended for each section separately follows:

- H_{0A}: The average values of the answers in the section A of the questionnaire do not differ between the short and long versions.
- H_{1A}: The average values of the answers in the section A of the questionnaire differ between the short and long versions.
- H_{0B}: The average values of the answers in the section B of the questionnaire do not differ between the short and long versions.
- H_{1B}: The average values of the answers in the section B of the questionnaire differ between the short and long versions.
- H_{0C}: The average values of the answers in the section C of the questionnaire do not differ between the short and long versions.
- H_{1C}: The average values of the answers in the section C of the questionnaire differ between the short and long versions.

The hypothesis was evaluated at 5% significance. The normal distribution of the data was tested using the normality test (Shapiro-Wilk test). Based on the results of normality Wilcoxon rank was subsequently used for testing differences.

3. Results

3.1. Section A

Based on the Crombach α test, an adequate degree of internal consistency and reliability was demonstrated for both questionnaires. For the short version the scale was 0.847, and for the long version 0.836. As evident from Table 1, the confirmatory factor analysis confirms the factors with an adequate degree of internal consistency and reliability (p–value = <0.001). At the same time, the RMSEA value (0.0384) indicates a very good quality of the long version of the questionnaire. The questionnaire is therefore in order from the point of reliability and psychometric properties.

Table 1. Confirmatory Factor Analysis for section A

Factor	Indicator	Estimate	SE	Z	p
Factor 1	WDQ $_1$	0.693	0.0492	14.08	< .001
	WDQ $_2$	0.798	0.0513	15.56	< .001
	WDQ $_3$	0.748	0.0498	15.02	< .001
Factor 2	WDQ $_4$	0.663	0.0491	13.51	< .001
	WDQ $_5$	0.734	0.0489	15.01	< .001
	WDQ $_6$	0.752	0.0477	15.78	< .001
Factor 3	WDQ $_7$	0.692	0.0560	12.34	< .001
	WDQ $_8$	0.844	0.0524	16.09	< .001
	WDQ $_9$	0.774	0.0508	15.23	< .001
Factor 4	WDQ $_{10}$	0.823	0.0486	16.93	< .001
	WDQ $_{11}$	0.881	0.0457	19.29	< .001
	WDQ $_{12}$	0.963	0.0471	20.44	< .001
	WDQ $_{13}$	0.898	0.0441	20.35	< .001
Factor 5	WDQ $_{14}$	0.844	0.0615	13.72	< .001
	WDQ $_{15}$	0.879	0.0489	17.97	< .001
	WDQ $_{16}$	0.798	0.0491	16.24	< .001
	WDQ $_{17}$	0.711	0.0574	12.40	< .001
Factor 6	WDQ $_{18}$	0.440	0.0593	7.42	< .001
	WDQ $_{19}$	0.712	0.0512	13.90	< .001
	WDQ $_{20}$	0.851	0.0466	18.28	< .001
	WDQ $_{21}$	0.782	0.0435	17.95	< .001
Factor 7	WDQ $_{22}$	0.648	0.0492	13.16	< .001
	WDQ $_{23}$	0.802	0.0484	16.58	< .001
	WDQ $_{24}$	0.804	0.0463	17.35	< .001

The established hypotheses (H0A and H1A) were verified based on the process of partial following steps, see Table 2. A normality test (Shapiro-Wilk) revealed that the data did not have a normal distribution (p-value = <0.001). Therefore, the Wilcoxon rank was subsequently used, which, based on the resulting value, confirmed that the averages of both versions of the questionnaire are the same (p-value = 0.166), therefore H0A at the 5% level of significance is accepted.

Table 2. Descriptive statistics and Paired Samples T-Test for section A

	Short version (A)	Long version (A)
Mean	3.61	3.59
Median	3.67	3.58
Standard deviation	0.695	0.485
Shapiro-Wilk W	0.984	0.984
Shapiro-Wilk p	< .001	< .001
Wilcoxon W	0.166	

3.2. Section B

Both, the short and long versions of the questionnaires have an adequate degree of internal consistency and reliability. Crombach's α for the short version is 0.885 and for the long version is 0.804. Table 3 below shows, the confirmatory factor analysis confirms this statement (p-value = <0.001). The very good quality of the long version of the questionnaire is supported by the RMSEA value of 0.0807. The questionnaire is therefore in order from the point of reliability and psychometric properties.

Table 3. Confirmatory Factor Analysis for section B

Factor	Indicator	Estimate	SE	Z	p
Factor 1	WDQ 25	0.250	0.0638	3.92	< .001
	WDQ 26	1.056	0.0481	21.97	< .001
	WDQ 27	1.053	0.0485	21.70	< .001
	WDQ 28	0.926	0.0513	18.05	< .001
Factor 2	WDQ 29	0.788	0.0506	15.56	< .001
	WDQ 30	0.790	0.0505	15.63	< .001
	WDQ 31	0.507	0.0481	10.53	< .001
	WDQ 32	0.923	0.0525	17.59	< .001
Factor 3	WDQ 33	0.592	0.0613	9.66	< .001
	WDQ 34	0.964	0.0578	16.67	< .001
	WDQ 35	0.589	0.0546	10.77	< .001
	WDQ 36	1.035	0.0539	19.20	< .001
Factor 4	WDQ 37	0.695	0.0487	14.28	< .001
	WDQ 38	0.843	0.0483	17.45	< .001
	WDQ 39	0.887	0.0556	15.96	< .001
	WDQ 40	0.995	0.0478	20.82	< .001
Factor 5	WDQ 41	0.956	0.0517	18.48	< .001
	WDQ 42	0.926	0.0514	18.01	< .001
	WDQ 43	1.084	0.0484	22.40	< .001
	WDQ 44	1.001	0.0532	18.80	< .001

The established hypotheses (H0B and H1B) were verified based on the process of partial following steps, see Table 4. The normality test (Shapiro-Wilk) indicates that the data of the short version of the questionnaire does not have a normal distribution (p-value = 0.028). The long version of the questionnaire has a normal data distribution. Because the result for the short version indicates that the data do not have a normal distribution, the Wilcoxon rank was subsequently used. The test result indicates that the averages of both questionnaires are the same (p-value = 0.840), therefore H0B at the 5% level of significance is accepted.

Table 4. Descriptive statistics and Paired Samples T-Test for section B

	Short version (B)	Long version (B)
Mean	3.23	3.24
Median	3.25	3.25
Standard deviation	0.777	0.531
Shapiro-Wilk W	0.992	0.994
Shapiro-Wilk p	0.028	0.117
Wilcoxon W	*0.840*	

3.3. Section C

The short version of the questionnaire gives a value of Crombach's α of 0.764, and the long version of 0.777. Both versions have an adequate degree of internal consistency and reliability, which was confirmed by Confirmatory Factor Analysis (p-value = <0.001), as can be seen from Table 5 below. The very good quality of the questionnaire is indicated by the RMSEA value of 0.0897. The questionnaire is therefore in order from the point of reliability and psychometric properties.

Table 5. Confirmatory Factor Analysis for section C

Factor	Indicator	Estimate	SE	Z	p
Factor 1	WDQ $_{45}$	0.617	0.0493	12.52	< .001
	WDQ $_{46}$	0.471	0.0543	8.67	< .001
	WDQ $_{47}$	0.519	0.0581	8.94	< .001
	WDQ $_{48}$	0.666	0.0569	11.71	< .001
	WDQ $_{49}$	0.716	0.0463	15.47	< .001
	WDQ $_{50}$	0.609	0.0426	14.29	< .001
Factor 2	WDQ $_{51}$	0.727	0.0502	14.49	< .001
	WDQ $_{52}$	0.942	0.0580	16.23	< .001
	WDQ $_{53}$	1.029	0.0553	18.60	< .001
Factor 3	WDQ $_{54}$	0.721	0.0545	13.21	< .001
	WDQ $_{55}$	0.927	0.0558	16.62	< .001
	WDQ $_{56}$	0.898	0.0592	15.16	< .001
Factor 4	WDQ $_{57}$	0.618	0.0621	9.95	< .001
	WDQ $_{58}$	0.967	0.0597	16.19	< .001
	WDQ $_{59}$	1.053	0.0556	18.92	< .001
	WDQ $_{60}$	1.133	0.0556	20.38	< .001
Factor 5	WDQ $_{61}$	0.881	0.0496	17.78	< .001
	WDQ $_{62}$	0.893	0.0487	18.34	< .001
	WDQ $_{63}$	0.852	0.0460	18.54	< .001

The established hypotheses (H0C and H1C) were verified based on the process of partial following steps, see Table 6. The normality test (Shapiro-Wilk) indicates that the data of the short version of the questionnaire does not have a normal distribution (p-value = 0.001). The long version of the questionnaire has a normal data distribution. Based on the non-normal distribution of the data in the short version, the Wilcoxon rank was used. The result indicates that the averages of both questionnaires are not the same (p-value = <0.001), therefore H0C at the 5% level of significance is rejected.

Table 6. Descriptive statistics and Paired Samples T-Test for section C

	Short version (C)	Long version (C)
Mean	3.64	3.36
Median	3.70	3.37
Standard deviation	0.624	0.499
Shapiro-Wilk W	0.987	0.996
Shapiro-Wilk p	0.001	0.324
Wilcoxon W	$< .001$	

4. Discussion

The standard length of the WDQ questionnaire is set at 21 factors, which include 77 items (Morgeson & Humphrey, 2006). The length of time to complete it is estimated at 15 minutes (Morgeson & Humphrey, 2006), which, assuming it is aimed at the Baby Boomers, X or Y would seem to be perfectly fine (Bayona et al., 2015), not with Generation Z. Marcus et al. (2007) add that the aforementioned scope of the WDQ questionnaire is nowadays and completely inappropriate in relation to younger generations, and they recommend shortening it to the most important aspects related to job satisfaction. Research by Liu and Wronski (2018) showed that the unnecessary length of questionnaire surveys could have a negative effect on younger generations of the adequacy of data sample collection. One of the main features of members of Generation Z is a reduced ability to pay constant attention (Ding et al., 2017; Poláková & Klímová, 2019). This generation wants to have everything fast and now (Reinikainen et al., 2020). At the same time, they are also impatient and prefer quick information acquisition (Cruz, 2016). The SDT theory focuses on a person's internal motivation, which is greatly intertwined with work motivation. Based on SDT theory, this study tested the possibility of truncation by area of autonomy, competence, and relatedness (Legault et al., 2017; Greguras et al., 2014; Gatling et al., 2016). The formulation of SDT theory is rooted in the second half of the 20th century (Ryan & Deci, 2017; 2020). The research shows that even though this generation was not yet born at the time of the formulation of this theory, the reach and influence of the relatively old theory persists even today in various areas as. Artificial Intelligence (Xia et al., 2022), Education (Hosseini et al., 2022; Liu & Oga-Baldwin, 2022; Banerjee & Halder, 2021), Entrepreneurship (Bilal et al., 2021; Nazir et al., 2021), medicine (Duprez et al., 2021; Grønnegaard et al., 2020), travel-tourism (Buzinde, 2020) and many others. The proof is also the results of this research, applied to the WDQ questionnaire in sections A and B. By shortening the standard version of the questionnaire to a short version, it was possible to reveal that the questions included in the short version of the questionnaire carry the most important information. According to the aforementioned results, the questions that were purposefully omitted based on the possible shortening of the questionnaire are insignificant in the context of the targeted use of the questionnaire on generation Z. Specific questions that were not selected for the shortened version according to the SDT theory, do not even fit into the needs of generation Z according by Kubátová (2016), who claims that the priority for Generation Z is career growth, the need for money and meaningful work. The results obtained in the area of section C do not allow the questionnaire to be shortened according to the SDT theory. On the basis of the conducted tests, the central

importance of all the questions found in the long questionnaire in the field of social factors was proven. For generation Z, in the field of social characteristics, all sub-aspects are important, which are friends at the workplace, support in them, the interdependence of work with other colleagues, contact with them, and their interests. They also include cooperation outside the organization and feedback from colleagues. These results from specific areas such as making friends, contact with coworkers, and common interests with coworkers, provide some clarification compared to the inconsistent findings of previous research (Campione, 2015; Ng et al., 2010; Twenge, 2010).

Section C of the WDQ presents an opportunity for further possible research. The effort to shorten section C according to the SDT was unsuccessful because it was proven that all questions located in area C carry key information. The direction of future research could be towards a different theory, for example, Vroom's expectancy theory (Vroom, 1964; Marriner-Tomey, 2004), McClelland's theory (Harrell & Stahl, 1984), ERG theory (Aldefer, 1969). Or a theory that specifically deals only with social characteristics, according to which there could be an attempt to shorten section C. Another direction could be to find out whether, even for generations X and Y, it could come up with a proposal to shorten the questionnaire, and thereby support the theory that these generations are very different, or, on the contrary, disprove the theory.

A limitation of the research can be found in the size of the sample. Although the sample of 395 respondents can be considered representative, larger participation, and even more respondents would offer a greater informative value of the research. Limitations can also be found in possible inappropriate filling in of the questionnaire by some respondents. Assuming that the respondent was for example under stress, or for some other reason unable to adequately fill out the questionnaire. Although the survey was conducted in 2020, the results can still be considered current. At the time of publication of the results, no study was found that addressed the shortening of the WDQ questionnaire.

5. Conclusions

The study dealt with the identification of the possibility of shortening the WDQ questionnaire, based on the use of sub-areas of the SDT for the needs of generation Z. 395 respondents, residents of the Czech Republic born after 1995, were subjected to participation in the questionnaire survey. Respondents filled out the WDQ questionnaire with a standard range of 77 items, from which a second variant with a range of 31 items was extracted.

The results indicate that the WDQ questionnaire can be recommended for shortening in the area of autonomy (H_{0A}) and competence (H_{0B}). A relatedness section (H_{1C}) is not recommended for shortening. The Wilcoxon rank clearly confirms the different averages of the two questionnaires. All the questions included in section C are important and carry significant information.

The advantages of applying the shorter version of the questionnaire clearly outweigh any minimal risks. The most significant advantage of using a shorter version of the questionnaire survey is obtaining high-quality answers from respondents that will not be influenced or distorted by their fatigue or distraction.

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