

POLISH ADAPTATION OF THE OCCUPATIONAL HARDINESS QUESTIONNAIRE (OHQ)

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Occupational hardiness is a pattern of attitudes and strategies that stimulates an individual to perceive stressful work situations as controllable, worth dealing with, and contributing to professional development. One of the popular tools in the world to measure this construct is the Occupational Hardiness Questionnaire (OHQ) developed by Moreno-Jiménez et al. It has a three-factor structure, proven construct validity, and good internal consistency. The overarching aim of the study was to prepare a Polish adaptation of the OHQ based on a sample of Polish employees working in health care, education and science, and customer service. The questionnaire-based research was conducted in two stages, with two independent samples. The first study was cross-sectional. Their results were used to estimate the factorial validity, construct validity, and internal consistency of the adapted tool. Participants in the first study were 1,212 employees (originally 1,315) of health care ($n = 400$), education and science ($n = 410$), and customer service ($n = 400$) sectors. The second study, which was longitudinal in nature, included two measurements and was used to estimate test–retest reliability. Of the 400 participants (employees of customer service), 205 completed the questionnaire in two measurements. The Polish version of the OHQ has a three-factor structure, confirmed construct validity and good internal consistency. The Polish version of the OHQ is ideal for scientific research, but can also be used in practice: in career counseling, recruitment, selection, or screening.

Keywords: occupational hardiness; Polish adaptation; social and service professions; confirmatory factor analysis; construct validity; reliability.

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In 1979, Suzanne C. Kobasa, inspired by results of research on individual differences in response to stress (Selye, 1956), the theory of cognitive appraisal in stressful situations (Lazarus, 1966), propiarte striving stage in personality development (Allport, 1955), the ideas of existential psychologists (e.g., Maddi, 1975), and the results of her own research (Kobasa, 1979), introduced the construct of *hardiness* (*hardy personality*) to psychological literature. This concept met with great interest of researchers, among others because it fit well with the ongoing discussion on the regulatory role of personality variables in the stress-health relationship (Cieślak & Łuszczzyńska, 2002).

The term “hardiness” can be defined as the generalized ability to use internal (cognitive, emotional, and behavioral) and external (environmental) resources to function optimally, even despite adversity and obstacles, and maintain good health (Hobfoll, 1989; Kobasa & Puccetti, 1983; Sheard & Golby, 2010). In other words, it is “a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events” (Kobasa et al., 1982, p. 169). Simply put, it is the existential courage to grow personally despite unfavorable circumstances (Maddi, 2013). Hardiness is “a multifaceted personality construct” (Carver, 1989) that, according to Kobasa (1979), consists of three dimensions: challenge, control, and commitment. The first of these, challenge, stands for a kind of life energy that makes one perceive obstacles as opportunities for personal growth rather than threats to life and health. Control stands for a sense of autonomy and the ability to effectively influence one’s own life. Commitment, on the other hand, is a sense of meaning, dedication to and involvement in activities pursued in significant areas of one’s life encompassing religion/spirituality, family, policy and also work.

Although researchers initially used a generalized concept of hardiness (Kobasa, 1979, 1982), over time, it has come to be noticed that, as with other types of personal resources, hardiness is not just a general personality variable, but can take specific forms in specific areas of human behavior. The tools for measurement of specific forms of hardiness have been developed for different sectors such as health (Pollock, 1986), academic hardiness (Benishek & Lopez, 2001), cognitive hardiness (Nowack, 1990), military hardiness (Adler & Dolan, 2006), sport psychology (Jaenes Sanchez et al., 2008) and also work (Moreno-Jiménez et al., 2014). In the presented article, we attempted to validate the Polish version of the popular tool for measuring occupational hardiness, originally developed by Spanish researchers (Moreno-Jiménez et al., 2014).

In research conducted in the field of work and organizational psychology, the term *occupational hardiness* is used (Moreno-Jiménez et al., 2014), which can be defined as a pattern of attitudes and strategies that stimulates an individual to per-

ceive stressful work situations as controllable, worth dealing with, contributing to professional development and the formation of mental toughness (Luceño-Moreno et al., 2020). The beneficial role of occupational hardiness has been confirmed in numerous studies, both in relations to well-being of workers and benefits for organizations. As for employee well-being, the research results show that hardiness, on the one hand, mitigate the negative effects of occupational stress on health (Corso-de-Zúñiga et al., 2020), buffer the negative impact of emotional demands on feelings of emotional exhaustion (Mazzetti et al., 2020), reduce the likelihood of having any sickness absence and the number of absences (Hystad et al., 2011); on the other hand, hardiness turns out to be a significant predictor of job satisfaction (Khosravi & Kasaeiyan, 2019), self-efficacy, high self-esteem, and high quality of life (Asadi Sadeghi Azar et al., 2006). Hardiness is also associated with profits for the entire organization in the form of a wealth of job resources, work engagement (Guglielmi et al., 2019), job performance (Tahmasebzadeh Sheikhlari et al., 2019), and organizational commitment (Hwang et al., 2013).

Description of the Original Instrument—The Occupational Hardiness Questionnaire

The Occupational Hardiness Questionnaire (OHQ) was developed by a team of Spanish researchers led by Moreno-Jiménez (Moreno-Jiménez et al., 2014). The OHQ has 15 items and measures three dimensions of hardiness: commitment, control, and challenge in the occupational work domain (specifically). Responses are given on a 4-point Likert scale, where 1 means *strongly disagree* and 4 means *strongly agree*. A high score obtained in the questionnaire indicates a high level of occupational hardiness. The OHQ items were developed based on Kobasa's theory (Kobasa, 1979, 1982) and a review of the hardiness measurement tools of the time, such as the Personal Views Survey III-R (Maddi et al., 2006) or the Dispositional Resilience Scale-15 (DRS-15; Bartone, 2007). The authors of the OHQ noted that previous research on hardiness had been criticized for, among other things, the unsatisfactory psychometric parameters of the tools designed to measure it, methodological errors in the research procedure, and controversies related to the selection method and sample size.

The authors maintain that in the research on the construction and validation of the OHQ, the relevant methodological requirements were met, and the questionnaire itself is characterized by satisfactory psychometric parameters: confirmed (based on CFA results) factorial validity, construct validity and satisfactory reliability—internal

consistency (Cronbach's $\alpha = .85-.86$) and temporal stability. Moreno-Jimenez et al. showed that occupational hardiness correlates positively with: self-esteem, subjective well-being, work engagement and negatively with psychosomatic symptoms. They recommend the use of this tool in areas such as research in occupational health psychology or positive psychology, or for practical activities.

To our best knowledge, questionnaires measuring the level of occupational hardiness are rare. In addition to the OHQ by Moreno-Jiménez et al. (2014), there is also the Professional Hardiness Questionnaire (PHQ; Kokun, 2021). This tool has 24 items and includes seven scales of occupational hardiness (commitment, control, challenge; and four components: emotional, motivational, social, professional). Although the PHQ has good internal consistency ($\alpha = .76-.90$) and confirmed construct validity, it requires further validation studies due to its untested factor validity and the relatively small study sample on which this tool was validated ($N = 425$).

Besides, a review of 33 tools measuring hardy personality by a scientific team led by Sharif Nia (2022) concluded that the OHQ questionnaire is the best (in terms of psychometric properties) tool for measuring hardiness among employees. This questionnaire has been used by Spanish (Luceño-Moreno et al., 2020), Italian (Mazzetti et al., 2016), Azeri (Tahmasebzadeh Sheikhlari et al., 2019), Iranian (Akbari Balotabegan et al., 2015), and Nigerian (Uwannah et al., 2021) researchers, among others. So far, it has not yet been adapted and validated in Poland.

This Study

The aim of the study was to assess the psychometric properties of the Polish version of the Occupational Hardiness Questionnaire (Moreno-Jiménez et al., 2014): (1) factorial validity, construct validity and internal consistency in a sample of employees in health care, education and science, and customer service (cross-sectional study); (2) test-retest reliability in an independent sample of customer service employees (longitudinal study).

Based on previous studies (Crosson, 2015; Loebel, 2020; Logan, 2016; Mazzetti et al., 2020; Moreno-Jiménez et al., 2014; Talavera-Velasco et al., 2018; Teo et al., 2021), to establish construct validity, the relationship of occupational hardiness with the following variables was examined: meaning of work, job satisfaction, generalized self-efficacy, psychological stress, somatic stress, and burnout.

Overview of the Adaptation Process

After the translation process of the Occupational Hardiness Questionnaire, the study was conducted in two stages, with two independent samples. The first study (Study 1) was conducted in a cross-sectional paradigm. Its results were used to estimate the factorial validity, construct validity, and internal consistency of the adapted tool. The second study (Study 2), which was prospective in nature, included two measurements (with an 8-month interval between them) and was used to estimate factorial validity and test–retest reliability. Both studies were conducted according to the guidelines of the Declaration of Helsinki. They also obtained the ethics committee’s approval.

Translation Process

After contacting the authors of the Occupational Hardiness Questionnaire (Moreno-Jiménez et al., 2014) by e-mail, a permission was obtained to adapt this instrument to Polish conditions. First, the scale was translated via an online translation agency from Spanish (the original language) into Polish. Then, the translated tool was checked for linguistic correctness by a Polish language specialist. The next step was a back-translation (into Spanish) done by a translation agency. The retranslated version was sent to the authors (Moreno-Jiménez et al., 2014) for feedback on the equivalence of the Polish and original versions. After reviewing the Polish version after retranslation, these researchers proposed a slightly different wording of items 2, 4, 5, and 6. After making changes to the Polish version of the OHQ and having it approved by a Polish language specialist, it was retranslated into Spanish (by a Spanish language specialist) and sent to the authors. They then accepted the revised version after re-translation and considered it equivalent to the original version.

STUDY 1

Method

Procedure and Participants

The study 1 was conducted in March–June 2020, in 14 Polish provinces in 289 institutions (e.g., hospitals, schools, banks, service establishments) where the

surveyed people worked. The research was conducted by a polling company specializing in social surveys. The research was questionnaire-based and took place in a “paper-and-pencil” format, observing the principles of voluntariness and anonymity.

Included in the analysis were 1,212 (out of 1,315 surveyed) employees working in the health care ($n = 400$, 33%), education and science ($n = 410$, 34%), and customer service ($n = 400$, 33%) sectors. The largest number of respondents came from the following provinces: Lower Silesia ($n = 207$, 17%), Mazovia ($n = 190$, 16%), Lodz ($n = 165$, 14%), and Opole ($n = 145$, 12%). The age of respondents ranged from 20 to 71 ($M = 44.04$, $SD = 11.09$). Among the respondents, there were more women ($n = 873$, 72%) than men ($n = 338$, 28%). The average length of service of the respondents was 19.75 years ($SD = 10.99$, $Mo = 20.00$). The largest group among them were female/male teachers ($n = 304$, 25%), female/male nurses ($n = 128$, 11%) and female doctors/male doctors ($n = 121$, 10%). Management positions were held by 217 (18%), while non-management positions were held by 989 (82%).

Instruments

Occupational hardiness measure. The OHQ (Occupational Hardiness Questionnaire) is a scale developed by Moreno-Jiménez et al. (2014). It features 15 items, consisting of three factors: Control, Challenge, and Commitment (there are five items for each factor). Responses are given on a 4-point Likert scale, where 1 means *strongly disagree* and 4 means *strongly agree*. The authors proposed two ways of scoring: (a) using the Likert scales, and (b) using the scalar score (absolute scalar scoring, i.e., the result of dividing the sum of the items in a given factor by 4). The scalar score only provides information about the location of people in a given representative group, without providing direct information about their level of hardiness). A score can be calculated for each of the 3 factors of this questionnaire and/or for the OHQ (Moreno-Jiménez et al., 2014) as a whole, creating an aggregate occupational hardiness score. The original version of the OHQ was validated on a sample of health workers and firefighters. All items of the OHQ questionnaire can be found in Table 1.

Meaning of work, job satisfaction, generalized self-efficacy, psychological stress, somatic stress, and burnout. The COPSQ II (Copenhagen Psychosocial Questionnaire II) is a questionnaire developed by Pejtersen et al. (2010). The purpose of this instrument is to measure the broad psychosocial work environment. The COPSQ II has three versions: long, medium, and short. The long version is used for scientific research and contains 127 questions for 41 subscales. Responses

are given on a Likert scale, usually with five levels, which relates to the frequency as well as intensity of occurrence of a given phenomenon. This instrument is characterized by satisfactory reliability (Cronbach's α for most scales was above .70) and confirmed its theoretical validity. For Polish conditions, this tool was adapted by Baka (2019). The following subscales (long version) were used in the research presented: (a) meaning of work (3 questions; α in this study = .69), e.g., *Do you feel that the work you do is important?* (b) job satisfaction (4 questions; α in this study = .87), e.g., *How pleased are you with your work prospects?* (c) generalized self-efficacy (6 questions; α in this study = .90), e.g., *I feel confident that I can handle unexpected events;* (d) psychological stress (4 questions; α in this study = .88), e.g., *How often have you had problems relaxing?* (e) somatic stress (4 questions; α in this study = .79), e.g., *How often have you had stomach ache?* and (f) burnout (4 questions; α in this study = .87), e.g., *How often have you felt worn out?*

Data Screening

The initial sample size was 1,315 respondents. After a "data screening" procedure, including the identification and removal of univariate outliers (i.e., standard scores [z-scores] above 3.29 and below -3.29 [Tabachnick & Fidell, 2013] and multivariate outliers [estimated using the Mahalanobis distance (MD) measure]), the sample was reduced to 1,212 respondents. Data gaps (1.2%) were filled with values calculated using the expectation-maximization (EM) algorithm.

Results

Descriptives

Firstly, the mean, median, standard error, skewness, and kurtosis were calculated for each item included in the scale (see Table 1). Statistical analyses were performed with JASP 0.16.3 software.

The mean score for each item exceeded the value of 3.0, which is a high score. The skewness and kurtosis values of none of the items exceed ± 2 , which, according to George and Mallery (2020), indicates a normal distribution of the data.

Table 1*Descriptives for Items of the Polish Version of OHQ (Study 1, N = 1,212)*

Item	<i>M</i>	<i>SE</i>	<i>Me</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>
1. I involve myself seriously in what I do, because it is the best way to reach my own goals / Poważnie angażuję się w to, co robię, ponieważ jest to najlepszy sposób na osiągnięcie moich celów.	3.41	0.02	3.00	0.60	-0.48	-0.65
2. Even when it supposes greater effort, I choose jobs that suppose a new experience for me / Nawet jeśli wymaga to większego wysiłku, wybieram tę pracę, która jest dla mnie nowym doświadczeniem.	3.16	0.02	3.00	0.65	-0.42	0.37
3. I do everything I can to make sure I control the results of my work / Robię wszystko, co w mojej mocy, aby być pewnym, że kontroluję wyniki mojej pracy.	3.34	0.02	3.00	0.61	-0.36	-0.68
4. I consider that the work that I do is of value for society and I do not mind putting all my efforts / Uważam, że praca, którą wykonuję, ma wartość dla społeczeństwa i chcę poświęcić jej wszystkie moje wysiłki.	3.30	0.02	3.00	0.69	-0.74	0.39
5. In my job I feel attracted to innovations and developments in the proceedings / W pracy pociągają mnie przede wszystkim innowacje i nowości, które się w niej pojawiają.	3.05	0.02	3.00	0.72	-0.41	-0.07
6. Things are only obtained from personal effort / Pewne rzeczy osiąga się wyłącznie dzięki osobistemu wysiłkowi.	3.40	0.02	3.00	0.61	-0.48	-0.65
7. I worry and I identify myself with my work / Zależy mi na mojej pracy i identyfikuję się z nią.	3.39	0.02	3.00	0.59	-0.38	-0.71
8. In my job I feel attracted to tasks and situations involving a personal challenge / W mojej pracy pociągają mnie te zadania i sytuacje, które wiążą się z osobistym wyzwaniem.	3.16	0.02	3.00	0.66	-0.34	-0.12
9. The control of situations is the only thing that ensures success / Kontrola sytuacji jest jedyną rzeczą, która gwarantuje sukces.	3.19	0.02	3.00	0.72	-0.51	-0.21
10. My daily work satisfies me and makes me totally dedicated to it / Moja codzienna praca mnie satysfakcjonuje i sprawia, że całkowicie jej się poświęcam.	3.18	0.02	3.00	0.66	-0.34	-0.23
11. To the extend I can, I try to have new experiences in my daily work / W zakresie, w jakim mogę, próbuję zdobywać nowe doświadczenia w mojej codziennej pracy.	3.27	0.02	3.00	0.58	-0.13	-0.53
12. Things go well when you prepare them thoroughly / Wszystko wychodzi dobrze, gdy dokładnie to przygotujesz.	3.35	0.02	3.00	0.62	-0.39	-0.67
13. When possible I look for new and different situations in my work environment / W miarę możliwości szukam nowych i różnorodnych sytuacji w moim środowisku pracy.	3.11	0.02	3.00	0.65	-0.24	-0.21
14. My own excitement is what makes me go ahead with the completion of my activity / Moje zamierzenia i plany sprawiają, że kontynuuję realizację mojej aktywności.	3.22	0.02	3.00	0.60	-0.14	-0.51
15. When one works seriously and thoroughly the results are controlled / Kiedy pracuje się sumiennie i dokładnie, kontroluje się wyniki swojej pracy.	3.36	0.02	3.00	0.59	-0.29	-0.70

Note. *M* = mean; *SE* = standard error of mean; *Me* = median; *SD* = standard deviation; *Sk* = skewness; *K* = kurtosis

Factorial Validity

The original version of the Occupational Hardiness Questionnaire (Moreno-Jiménez et al., 2014) has a three-factor structure. To determine the factor structure of the Polish version of the OHQ, the Confirmatory Factor Analysis (CFA) method was applied, checking the fit of three models: (a) a one-factor model, (b) a model with three independent factors, and (c) a model with three dependent factors.

The SEM module in the statistical software program JASP 0.16.3 was used to assess the model fit. The CFA was conducted using the Robust Maximum Likelihood (RML) estimator. The following parameters were selected to assess the fit of the analyzed model: Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Goodness of Fit Index (GFI), and Akaike’s Information Criterion (AIC). The results are shown in Table 2.

Table 2

CFA: Fit Indexes of Tested Models (Study 1, N = 1,212)

Model	χ^2	<i>df</i>	<i>p</i>	χ^2/df	RMSEA (90% CI)	SRMR	CFI	TLI	GFI	AIC
1-factor	759.42	90	< .001	8.44	.08(.07; .08)	.05	.91	.89	.91	45157.26
3-factor: independent factors	2239.91	90	< .001	24.89	.14(.14; .15)	.31	.70	.65	.81	46637.74
3-factor: dependent factors	456.06	87	< .001	5.24	.06 (.05; .07)	.04	.95	.94	.95	44859.89

The best fit to the data obtained in the model with three dependent factors: although the χ^2 statistic proved to be statistically significant (which is a typical result for groups of more than 200 respondents), the RMSEA measure reached an acceptable value of .06; the CFI, TLI, and GFI measures exceeded .90 (reasonable fit), and the χ^2/df ratio and the AIC values were the lowest for this model (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003).

In further analysis, factor loadings (regression coefficients) were estimated for the items included in each of the three factors of this questionnaire (Table 3).

Table 3

Factor Loadings of Items of the Polish Version of the OHQ (Model With Three Dependent Factors) (Study 1, N = 1,212)

Factor	Indicator	Estimate	SE	Z	p	95% LLCI	95% ULCI	Standardized estimate
Challenge	Item 2	1.00	0.00			1.00	1.00	.64
	Item 5	0.97	0.05	17.92	< .001	0.86	1.08	.62
	Item 8	1.14	0.05	21.33	< .001	1.03	1.24	.73
	Item 11	1.04	0.06	18.91	< .001	0.94	1.15	.67
	Item 13	1.03	0.06	18.70	< .001	0.92	1.14	.66
Control	Item 3	1.00	0.00			1.00	1.00	.66
	Item 6	0.94	0.05	19.90	< .001	0.84	1.03	.62
	Item 9	1.05	0.04	25.45	< .001	0.97	1.13	.69
	Item 12	1.05	0.05	22.07	< .001	0.96	1.14	.70
	Item 15	1.04	0.05	21.97	< .001	0.95	1.13	.69
Commitment	Item 1	1.00	0.00			1.00	1.00	.69
	Item 4	0.93	0.04	21.10	< .001	0.85	1.02	.64
	Item 7	0.90	0.04	20.43	< .001	0.82	0.99	.62
	Item 10	1.00	0.04	22.70	< .001	0.92	1.09	.69
	Item 14	1.04	0.05	23.45	< .001	0.96	1.13	.72

Note. Estimate = unstandardized factor loading/regression coefficient; standardized estimate = standardized factor loading/regression coefficient; Items 2, 3, 1 = fixed parameter (factor scaling by fixing factor loading).

All indices load relatively strongly on three factors: .62–.73 (according to Hair Jr. et al. [2014] factor loadings should exceed .50, or ideally .70). The multiple correlation coefficients (R²) values range between .38–.53. On the other hand, correlations between factors (challenge, commitment, and control) were .77–.91. In conclusion, the Polish version of the Occupational Hardiness Questionnaire, like the original version (Moreno-Jiménez et al., 2014), has a three-factor structure.

Construct Validity

To establish construct validity, it was decided to examine the relationship of occupational hardiness with the following variables: meaning of work, job satisfaction, generalized self-efficacy, psychological stress, somatic stress, and burnout.

Based on previous studies (Crosson, 2015; Loebel, 2020; Logan, 2016; Mazzetti et al., 2020; Moreno-Jiménez et al., 2014; Talavera-Velasco et al., 2018; Teo et al., 2021) occupational hardiness was predicted to be positively related to meaning of work, job satisfaction, generalized self-efficacy, psychological stress, somatic stress, and burnout. Since the values of skewness and kurtosis of the studied variables did not exceed ± 2 (values of skewness from -0.50 to 0.92 and values of kurtosis from -0.41 to 1.34), which, according to George and Mallery (2020), implies the assumption of normality of the data distribution, Pearson parametric correlation was used. Statistical analyses were performed with the JASP 0.16.3 software. Table 4 presents the results.

Table 4

Pearson's Correlation Coefficients Between Study Variables (Study 1, N = 1,212)

	Occupational hardiness	Generalized self-efficacy	Job satisfaction	Meaning of work	Psychological stress	Somatic stress	Burnout
Occupational hardiness	–						
Generalized self-efficacy	0.47***	–					
Job satisfaction	0.44***	0.38***	–				
Meaning of work	0.66***	0.46***	0.49***	–			
Psychological stress	-0.27***	-0.35***	-0.36***	-0.30***	–		
Somatic stress	-0.28***	-0.27***	-0.38***	-0.29***	0.60***	–	
Burnout	-0.36***	-0.30***	-0.41***	-0.39***	0.43***	0.44***	–

Note. *** $p < .001$.

According to the assumptions, occupational self-efficacy is significantly and positively related to meaning of work, job satisfaction, generalized self-efficacy, and negatively related to psychological stress, somatic stress, and burnout. Occupational hardiness correlates most strongly with meaning of work, and relatively least (and negatively) with somatic and psychological stress. The results indicate that the Polish version of the OHQ meets the criteria of convergent and discriminant validity.

Reliability

In Study 1, the reliability of the validated tool was calculated by internal consistency analysis. Measures of internal consistency were Cronbach's α , Guttman's λ -2, McDonald's ω , greatest lower bound, and average inter-item correlation. Statistical analyses were performed with statistical software: JASP 0.16.3. The obtained results are presented in Table 5.

Table 5

Internal Consistency Coefficients for Polish Version of OHQ (Study 1, N = 1,212)

Factor	Cronbach's α (90% CI)	Guttman's λ -2 (90% CI)	McDonald's ω (90% CI)	Greatest lower bound (90% CI)	Average inter-item correlation (90% CI)
Challenge	.80 (.78; .81)	.80 (.78; .82)	.80 (.78; .82)	.81 (.79; .83)	.44 (.41; .47)
Control	.80 (.78; .82)	.80 (.78; .82)	.80 (.79; .82)	.82 (.80; .84)	.45 (.42; .48)
Commitment	.80 (.79; .82)	.81 (.79; .82)	.81 (.79; .82)	.82 (.81; .84)	.45 (.42; .48)
Overall score (OHQ as a whole)	.91 (.90; .92)	.91 (.90; .92)	.91 (.90; .92)	.93 (.93; .94)	.40 (.38; .42)

Values of internal consistency coefficients for the three factors (.80 and above) and for the tool as a whole (.90 and above) suggest: good (for factors) and very good (for the whole) reliability of the Polish version of the OHQ. The last coefficient, the average inter-item correlation, estimates the degree of redundancy of items in relation to each other (Cohen & Swerdlik, 2009). Ideally, this coefficient should be from .20 to .40, which suggests that the items (albeit relatively homogeneous) are not identical to each other (Piedmont, 2014). In this study, the average correlation between items was .40–.45, which may indicate that some of the items are isomorphic.

STUDY 2

Method

Procedure and Participants

The research on the professional group of sales/customer service/customer consultants was conducted in a prospective study paradigm with an 8-month interval between measurements. It was conducted by the same polling company as for Sample 1. The first measurement was conducted in April–May 2020, and the second in February–March 2021. The research was conducted in 12 provinces in Poland in 40 drawn organizations (e.g., enterprises, banks, markets, service premises). It was questionnaire-based and took place in a “paper-and-pencil” format, observing the principles of voluntariness and anonymity. In the first stage (measurement 1), 400 employees involved in sales/customer service/consulting were surveyed, of whom 205 (51%) completed the questionnaire after 8 months (measurement 2). All 205 respondents were included in the analysis. Most of them came from the provinces of Lodz ($n = 51$, 25%), Holy Cross ($n = 41$, 20%) and Mazovia ($n = 41$, 12%). The age of respondents (in measurement 2) ranged from 21 to 64 ($M = 40.25$, $SD = 10.51$). Among the respondents, there were more women ($n = 135$, 66%) than men ($n = 70$, 34%). The average length of service of the respondents (in measurement 2) was 17.60 years ($SD = 10.37$, $Mo = 10.00$). The number of respondents who completed questionnaires in the first and second measurement was 205. After a “data screening” procedure identical to the one described above, all 205 respondents were included in the analyses. Data gaps (1.5%) were filled with values calculated using the expectation-maximization (EM) algorithm.

Results

Factorial Validity

The factor structure of the Polish version of the OHQ was rechecked on sample 2 (customer service employees, $N = 205$). The Confirmatory Factor Analysis (CFA) was conducted in the SEM module in JASP 0.16.3. The CFA was conducted using the Robust Maximum Likelihood (RML) estimator. The results are shown in Table 6.

Table 6

CFA: Fit Indexes of the Tested Models (Study 2: Customer Service Employees, N = 205)

Model	Time 1					Time 2				
	χ^2/df	RMSEA	CFI	TLI	AIC	χ^2/df	RMSEA	CFI	TLI	AIC
1-factor	2.49	.08 (.07; .10)	.89	.87	5012.42	3.08	.10 (.08; .11)	.82	.79	5756.14
3-factor: independent factors	5.22	0.14 (.13; .15)	.68	.63	5257.89	4.65	.13 (.12; .14)	.69	.64	5897.56
3-factor: dependent factors	2.04	.07 (.05; .08)	.92	.91	4971.88	2.24	.08 (.06; .09)	.90	.88	5679.92

The best fit to the data (in 2 measurements) was obtained by the model with three dependent factors. This is indicated by the values of all fit indexes. This is consistent with the result obtained on sample 1 ($N = 1,212$). This also proves the validity of the three-factor Polish version of the OHQ.

Reliability

The second method of measuring the reliability of the validated tool was based on the estimation of temporal stability, the test–retest method. To determine the coefficient of temporal stability for the Polish version of the OHQ, two measurements were made on a sample of customer service employees (205 respondents completed the questionnaire twice; $N = 205$) with an interval of eight months. Table 7 contains descriptive statistics and correlation results between the three factors and the total score of the Polish version of the OHQ in two measurements. Statistical calculations were performed in JASP 0.16.3 software.

Pearson's correlation coefficients between the sets of results from the first and second measurement were .25–.34, so they are relatively low. However, it should be considered that the time interval between measurements was 8 months. In view of this, the Polish version of the OHQ (Moreno-Jiménez et al., 2014) can be considered relatively stable over time.

Table 7

Descriptives and Pearson's Correlation Coefficients for Three Factors and for Total Score of Polish Version of OHQ in 2 Measurements (Study 2: Customer Service Employees, N = 205)

Factor	Time 1				Time 2				Test-retest <i>r</i>
	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>	<i>M</i>	<i>SD</i>	<i>Sk</i>	<i>K</i>	
Challenge	3.14	0.45	-0.23	-0.10	2.97	0.56	-0.82	1.47	.25***
Control	3.29	0.44	-0.13	-0.30	3.23	0.44	-0.08	-0.39	.31***
Commitment	3.21	0.45	-0.40	0.17	3.14	0.44	-0.08	-0.07	.29***
Overall score (OHQ as a whole)	3.22	0.39	-0.31	0.10	3.11	0.41	-0.16	-0.01	.34***

Note. *** $p < .001$.

DISCUSSION

Psychological hardiness is a personality variable that functions as a relevant personal resource promoting psychosomatic health, even in the face of stressful and difficult life events (Kobasa, 1979; Kobasa et al., 1982). This variable is usually measured in a general way, such as with the Personal Views Survey III-R (Maddi et al., 2006) or the Dispositional Resilience Scale-15 (DRS-15; Bartone, 2007). Narrowing it down to the professional work environment seems interesting and useful, both from a theoretical and empirical point of view, especially since a specific form of hardiness is a “better” predictor of occupational well-being than hardiness conceived as general mental toughness (Moreno-Jiménez et al., 2014). However, there are no research tools to measure this specific construct validated in Polish conditions.

The purpose of the present study was to evaluate the psychometric properties of one such tool, the Polish version of the Occupational Hardiness Questionnaire by Moreno-Jiménez et al. (2014). Factor and construct validity and reliability (i.e., internal consistency and temporal stability) were estimated. The research was conducted with 2 independent samples: the first with 1,212 health, education and science and customer service employees, and the second with 205 customer service employees.

To verify the hypothesis of the three-dimensional structure of this tool in Polish conditions, the Confirmatory Factor Analysis (CFA) method was used. Maximum likelihood was selected as the estimator, with an additional robust correction for the estimation of standard errors (RML). The CFA results confirmed the assumed three-factor structure of the Polish version of the OHQ (Moreno-Jiménez et al.,

2014), and, as with the original version, an acceptable fit of the model to the data was obtained. The three-factor structure was also obtained by the authors of the Spanish (on a sample of police officers; Luceño-Moreno et al., 2020) and Iranian validations (Akbari Balotanbegan et al., 2015).

The construct validity of the tool was demonstrated by significant and positive correlations of occupational hardiness with meaning of work, job satisfaction, generalized self-efficacy (convergence), and significant and negative correlations of occupational hardiness with psychological stress, somatic stress, and burnout (discrimination). Comparing our results with those of other authors, it can be observed that the magnitudes of the correlation coefficients are similar to each other, e.g., for meaning of work $r = .66$ (our result) and $r = .70$ (Loebel, 2020), for job satisfaction $r = .44$ (our result) and $r = .32$ (Logan, 2016), for self-efficacy $r = .47$ (our result) and $r = .44$ (Crosson, 2015), for psychological stress $r = -.27$ (our result) and $r = -.31$ (Teo et al., 2021), for somatic stress $r = -.28$ (our result) and $r = -.13$ (Talavera-Velasco et al., 2018), for burnout $r = -.36$ (our result) and $r = -.21$ (Mazzetti et al., 2020). This similarity also provides a confirmation of the construct validity of the Polish version of the OHQ.

Hardiness can be treated as a personal resource that buffers the negative impact of occupational stress and translates into higher work engagement (Corso-de-Zúñiga et al., 2020). This is especially important in professions where the scope of work includes building relationships with other people, since, as the results of research (e.g., Lubrańska, 2012) show that it is this type of work that is most predisposed to job burnout. It is no coincidence, therefore, that the authors of the article presented chose a group people employed in health care, education and science, and customer service as a validation.

The Polish version of the validated tool even achieved slightly higher internal consistency than the original version (as indicated by the values of Cronbach's α , Guttman's $\lambda-2$, McDonald's ω , greatest lower bound, and average inter-item correlation coefficients). The values of average inter-item correlations (.40–.45) suggest that some of the items may be redundant with respect to each other (Piedmont, 2014). The Cronbach's alpha coefficient values we obtained are also slightly higher than those obtained by other authors. For example: for the OHQ questionnaire as a whole, we obtained a score of $\alpha = .91$, while other authors came up with $\alpha = .85$ (Mazzetti et al., 2020), $\alpha = .79$ (Tahmasebzadeh Sheikhlari et al., 2019), $\alpha = .78$ (Akbari Balotanbegan et al., 2015), $\alpha = .77$ (Mazzetti et al., 2019), and $\alpha = .75$ (Uwannah et al., 2021).

To determine the coefficient of temporal stability (test-retest stability) for the Polish version of the OHQ, two measurements were taken, with an 8-month interval between them, on a sample of 205 customer service employees. Pearson's correlation coefficients between the two sets of results were $r = .25-.31$ for the three factors

of the questionnaire and $r = .34$ for the questionnaire taken as a whole. Although the authors of the original version (Moreno-Jiménez et al., 2014) obtained higher results: $r = .43$ – $.54$ (for the factors), it should be noted that they conducted their test–retest reliability study on a different professional group (93 Portuguese nurses) and in a shorter 1-month interval. The authors (Moreno-Jiménez et al., 2014) point out that although their results are satisfactory, in further research on the temporal stability of the OHQ they recommend extending the time intervals, which our study addresses. Baka (2019) notes that the relatively low correlations between the same “occupational” variables studied longitudinally over longer time intervals (about 1 year) are likely due to the high variability of psychosocial working conditions that affect these variables. In addition, personality variables, conceived specifically (as pertaining to a particular sphere of human functioning, e.g., learning or work), are presumably more dependent on the psychosocial context than generalized variables, and may change over a relatively short period of time (Bandura, 1997).

Limitations

The study conducted also has some limitations. First of all, it was conducted on samples composed of employees of social and service professions. It is not known what results would have been obtained in studies of other occupational groups, e.g., industrial workers. Second, the distributions of the surveyed groups were unequal by gender. As is well known, the so-called “professions with a social mission” are dominated by females (Borkowska & Czerw, 2013), so attempts to generalize the results to the male population should be undertaken with caution. Third, it is worth considering the experience of the respondents. In sample 1, the dominant value of the seniority variable was 20 years ($M = 19.75$), and in sample 2 it was 10 years ($M = 17.60$). This suggests an over-representation of older workers with seniority, in whom the level of hardiness may be higher than in younger workers (Bartone et al., 2022). Therefore, further studies on a more diverse population are indicated.

Conclusions

In conclusion, the research conducted indicates that the psychometric parameters of the Polish version of the OHQ are satisfactory. The analyses confirmed the three-factor structure of the tool. Its construct validity and high internal consistency were also confirmed. The scale can be used in scientific research, in the area of occupational health, but also for practical purposes—in career counseling, recruitment, selection, or screening.

CRediT Author Statement

KRZYSZTOF GRALA (60%): conceptualization, software, validation, formal analysis, writing (original draft), writing (review and editing).

ŁUKASZ BAKA (40%): conceptualization, methodology, validation, resources, supervision, writing (review and editing).

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