HEALTH PSYCHOLOGY REPORT · VOLUME 11(2), 2023
ORIGINAL ARTICLE

Thalia Bellali 1 · A,E
Evgenia Minasidou 1 · B,F
Petros Galanis 2 · C,D
Chrysovalantis Karagkounis 3 · E,F
Polixeni Liamopoulou 1 · B,E
Georgios Manomenidis 4 · E,F

Psychometric properties of the Bergen Work Addiction Scale in a Greek sample of health professionals

BACKGROUND
Work addiction it is an emerging topic in organizational research because it has a great impact on human resources, especially in the health sector, and has led to the development of a number of valid assessment tools. Among work addiction scales, the Bergen Work Addiction Scale (BWAS) has good psychometric properties and a small number of items, and comes with a recommended cut-off for categorization of work addiction. The aim of the present study was to evaluate the psychometric properties of the BWAS in a Greek sample of health professionals (HPs) and to measure their work addiction.

PARTICIPANTS AND PROCEDURE
A cross sectional study using an online questionnaire related to work addiction was completed by 542 HPs through the official websites of 8 secondary hospitals in Greece.

RESULTS
The level of HPs' work addiction was moderate. The internal structure of the scale was satisfactory ($\alpha = .78$). All seven items of the BWAS were significant and had standardized values above 0.48. Work addiction was significantly associated with older age and the profession of physician.

CONCLUSIONS
Based on the findings of the present study, the Greek BWAS has good psychometric properties, such as good reliability, internal consistency and construct validity and is recommended as a suitable tool to assess work addiction in clinical settings and future research.

KEY WORDS
Bergen Work Addiction Scale; health professionals; work addiction; validation

ORGANIZATION – 1: Department of Nursing, International Hellenic University of Greece, Thessaloniki, Greece · 2: Center for Health Services Management (CHESME), National and Kapodistrian University of Athens (NKUA), Athens, Greece · 3: Department of Social Welfare, Education and Equality, Municipality of Katerini, Katerini, Greece · 4: Department of Internal Medicine General Hospital of Ptolemaida, Ptolemaida, Greece

AUTHORS' CONTRIBUTIONS – A: Study design · B: Data collection · C: Statistical analysis · D: Data interpretation · E: Manuscript preparation · F: Literature search · G: Funds collection

CORRESPONDING AUTHOR – Chrysovalantis Karagkounis, Department of Social Welfare, Education and Equality, Municipality of Katerini, Plateia Dimarcheiou, Katerini 601 33, Greece, e-mail: kchrysov@gmail.com

TO CITE THIS ARTICLE – Bellali, T., Minasidou, E., Galanis, P., Karagkounis, C., Liamopoulou, P., & Manomenidis, G. (2023). Psychometric properties of the Bergen Work Addiction Scale in a Greek sample of health professionals. *Health Psychology Report, 11*(2), 156–165. https://doi.org/10.5114/hpr/153494

RECEIVED 27.03.2022 · REVIEWED 02.09.2022 · ACCEPTED 04.09.2022 · ONLINE PUBLICATION 24.10.2022

BACKGROUND

The rapidly changing world of work has created a new context which employees have to continuously adjust to in order to reach higher targets and satisfy organizations' growing demands for higher performance (Cascio & Montealegre, 2016). Due to technological growth and changes in the nature of work, such as the use of personal digital assistants, tablets and laptops, it was inevitable for working individuals to make changes in their working sphere, namely stay connected to their work from home and extend their working hours beyond the traditional 40-hour workweek (Molino et al., 2016).

Boundaries between work and personal life are erased or they are becoming more and more unclear, leading to potential negative consequences, such as work-family conflicts, impaired recovery from stress, and health problems (Ďuranová & Ohly, 2016; Schlachter et al., 2018). This behavioral addiction, described as work addiction, is a psychological construct that refers to "the compulsion or uncontrollable need to work incessantly" (Oates, 1971). Work addiction is not new to the psychological literature; however, in recent years, there has been a dynamically growing interest in conceptualizing and investigating the framework of addictive work behavior (Andreassen, 2014; Andreassen & Pallesen, 2016; Atroszko et al., 2019, 2021).

Several definitions referring to work addiction as an overindulgence or self-involvement or obsession in work have been suggested (Andreassen et al., 2012). For instance, Fassel (1990, p. 3) defines work addiction as "a progressive, fatal disease in which a person is addicted to the process of working". This definition focuses on addiction and progression. In contrast, the definition of Spence and Robbins (1992) emphasizes more the roots of work addiction, suggesting that work addiction is a multi-dimensional process, consisting of enjoyment of work, inner drive to work, and work involvement.

Work addiction is an emerging topic in organizational research, because it has a great impact on human resources (Kim, 2019). Evidence shows that work addiction is associated with negative working outcomes, with stress at work and high workload, namely burnout, and sickness absence (Atroszko, 2022; Matsudaira et al., 2013). However, various studies have shown the association of work addiction with negative non-work-related outcomes, such as deterioration of private life and social functioning (Azevedo & Mathias, 2017; Lichtenstein et al., 2019), marital disaffection and work-family conflict (Taylor et al., 2019), and health problems including depression (Serrano-Fernández et al., 2021), psychosomatic symptoms (Wojdylo et al., 2016) and sleeping disorders (Allam et al., 2021). Nevertheless, work addiction is also associated with excessive work engagement (Clark et al., 2016), which is a "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), and may buffer the negative consequences of work addiction (Stoeber & Damian, 2016).

Numerous studies have indicated the association of work addiction with individuals' characteristics, namely demographic characteristics (Burke & Matthiesen, 2004; Snir & Harpaz, 2004), beliefs and fears (Burke & Koksal, 2002; Burke et al., 2004), personality traits (Ng et al., 2007), and organizational factors, including attitudinal antecedents (Harpaz & Snir, 2003). According to Atroszko et al. (2020), no single factor determines whether an individual will become work-addicted; thus work addiction goes far beyond personality, being a combination of factors including dispositional traits (e.g., needs, traits, values), sociocultural experiences (e.g., social learning, peer competition), and behavioral reinforcements (e.g., incentive and rewards in organizations).

In order to prevent any forms of addiction to work and its potential negative consequences, it is necessary to spot the early signs, by using valid assessment tools that drive individuals to compulsive work (Atroszko et al., 2017). The Workaholism Battery (WorkBAT; Spence & Robbins, 1992), the Work Addiction Risk Test (WART; Robinson, 1996) and the Dutch Workaholism Scale (DUWAS; Schaufeli et al., 2009) are the three assessment tools in widespread use for work addiction. However, according to Quinones and Griffiths (2015) these scales do not assess work addiction as one construct and lack a theoretical and evidential framework. Furthermore, and more importantly, these tools have raised serious criticism regarding their psychometric properties. For example, the "Work involvement" subscale in WorkBAT failed to display appropriate psychometric properties in several studies (Kanai et al., 1996; McMillan et al., 2002) while the "Enjoyment of work" subscale of the same tool does not represent the characteristics of addiction. The WART tool has also received criticism in relation to its ability to measure a more contemporary view of workaholic addictive behaviors (Sharp, 2016). Although several studies have shown that the DUWAS has shown good psychometric properties (del Líbano et al., 2010; Schaufeli et al., 2009), according to Griffiths (2011) measures of work addiction do not seem to be closely related, as expected, to the key elements of addiction.

Given that the above tools showed weaknesses, a new tool, named the Bergen Work Addiction Scale (BWAS), was developed by Andreassen et al. (2012). In accordance with the well-established biopsychosocial model of addiction and based on previous addiction conceptualizations and measures, the BWAS assesses seven addiction elements (Brown, 1993; Griffiths, 2005; Leshner, 1997): (1) salience (the activity dominates thoughts and/or behavior); (2) mood modification (the behavior is used as a way to modify mood); (3) toler-

ance (the increasing amount of time required to obtain the same experience with the activity); (4) withdrawal (occurrence of unpleasant feelings when the activity is discontinued); (5) conflict (the behavior conflicts with everything in the individual's life, such as relationships, job, and/or education); (6) relapse (tendency for reversion to earlier patterns of activity after abstinence or control); and (7) health and/or other problems.

As reported by numerous previous studies, health professionals (HPs) experience high levels of work addiction (Kubota et al., 2010; van Beek et al., 2012; Nonnis et al., 2017). In more recent studies during the COVID-19 pandemic the levels of work addiction in HPs were even higher than before (Yüncü & Yilan, 2020). Especially, HPs who were in close contact with COVID-19 patients reported higher levels of work addiction (Ayar et al., 2022; Baki & Piyal, 2020), as they felt more vulnerable to infection during the pandemic of COVID-19 and in order to avoid spreading the virus in their families they were working more and longer. However, to the best of our knowledge, few studies have used the BWAS in HPs (Brown & Pashniak, 2018; Li et al., 2020), and in Greece there is no other study that has measured HPs' work addiction.

The rationale for choosing the BWAS among other work addiction scales and validate it in a sample of Greek HPs was: a) the good psychometric properties of BWAS, supported by several studies (Andreassen et al., 2012, 2013, 2014; Molino, 2012; Orosz et al., 2016), b) the small number of items (7 items corresponding to the seven components of addiction), and c) the fact that the BWAS comes with a recommended cut-off (endorsement of at least 4 of 7 items) for categorization of work addiction (Andreassen et al., 2012). According to Atroszko et al. (2017), differences in work addiction across various countries indicate cultural factors as factors contributing to work addiction. In this context, the aim of the present study was to evaluate the psychometric properties of the BWAS in a Greek sample of HPs and to measure HPs' work addiction.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

A convenience sample of HPs participated in our cross-sectional study, conducted between March and May 2021. Participants were recruited from 8 main secondary hospitals of Athens and Thessaloniki (two of them from the private sector), belonging to three different Regional Healthcare Administrations of Greece. An invitation to the study was uploaded to the hospitals' web pages, with the description of the study. Posters were also placed outside all hospital departments. For the purpose of the study and due to COVID-19 restrictions, an electronic questionnaire was constructed using Google Forms. A total of 542 HPs completed voluntarily and anonymously the questionnaire (response rate 87.6%), tagged in the official page of the hospitals. The completion time was approximately 15-20 min. Permission to translate the original BWAS into the Greek language was obtained by the author. Completion of the questionnaires was regarded as providing consent.

MEASURES

The Bergen Work Addiction Scale (BWAS; Andreassen et al., 2012). The scale consists of 7 items, each representing one symptom/aspect of work addiction (salience, mood modification, tolerance, withdrawal, conflict, relapse and problems) on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). The total score ranges from 7 to 35. A score of 4 (*often*) or 5 (*always*) on four out of seven items indicates "high risk of work addiction".

GREEK VERSION OF BWAS: TRANSLATION AND CULTURAL ADAPTATION

The translation and cross-cultural adaptation of BWAS were performed using the guidelines suggested by Beaton et al. (2000). At first, the original English version of the BWAS was translated from English into Greek and back to English again by two-skilled independent bilingual translators. The back-translated version of the BWAS was then compared to the original version for discrepancies. After adjustments, the final Greek version of the BWAS was prepared and pretested on a small sample (n = 12) of HPs to check for linguistic inaccuracy.

To ensure qualitative pretesting of the new version and address problems of cultural adaptation, cognitive interviews were conducted among a group of 10 physicians and 6 nurses working in various hospitals. Participants completed the scale and were asked about comprehension of each item and their responses (Antunes et al., 2012). The interviews lasted between 5 and 15 minutes, were audio recorded and were independently transcribed verbatim.

DATA ANALYSIS

Descriptive statistics. We used the mean and standard deviation to describe quantitative variables, and numbers (percentages) to describe qualitative variables. A score of 4 (*often*) or 5 (*always*) on four out of seven items indicates "high risk of work addiction". Using this criterion, we calculated the prevalence of working addiction.

Factor analysis. We conducted confirmatory factor analysis using AMOS (version 23) to investigate the

goodness of fit of the model with a one factor solution of the Bergen Work Addiction Scale. We assessed the fit of the model by calculating CMIN/df, CFI, GFI, AGFI, RMR, RMSEA and TLI. Also, we calculated standardized regression weights for the seven items.

Correlation analysis. We examined associations between variables using Pearson's correlation coefficient for continuous variables and point-biserial correlation coefficient for continuous variables and categorical variables.

Group differences. We calculated correlations between age and years of experience and score on the BWAS using Pearson's correlation coefficient. Also, we calculated differences for gender, marital status, children, occupation and educational level and score on the BWAS using the independent samples *t*-test.

Regression analysis. We conducted a hierarchical multivariable linear regression analysis with BWAS score as the dependent variable. We used demographic and professional characteristics of the sample as the independent variables. We used a dummy variable in the case of marital status. In particular, we used singles as the reference category, while we did not include widows in the analysis due to the limited number of them.

All tests were two tailed and the significance level was .05. We used IBM SPSS 21.0 for the statistical analysis.

Table 1

Demographic and professional characteristics of the sample

Characteristics	*n*	%
Gender		
Male	113	20.80
Female	429	79.20
Age	43.30[a]	8.70[b]
Marital status		
Single	198	36.50
Divorced	43	7.90
Widowed	10	1.80
Married	291	53.00
Children		
No	218	40.20
Yes	323	59.80
Occupation		
Physician resident	97	12.40
Nurse	313	57.70
Nurse assistant	162	29.90
Educational level		
Secondary education	167	30.80
Tertiary education	301	55.50
PhD/MSc	73	13.50
Years of experience	16.20[a]	9.70[b]

Note. [a]mean, [b]standard deviation.

RESULTS

DESCRIPTIVE STATISTICS

Demographic and professional characteristics of the sample are presented in Table 1. Mean age was 43.30 years and the majority of participants were female (79.2%), married (53%), and nurses (57.7%). Among them, 57.7% were nurses, 29.9% were nurse assistants, and 12.4% were physician residents. The mean number of years of work experience was 16.2.

The mean score for the BWAS was 18.60 (*SD* = 4.70), while the minimum value was 7 and the maximum value was 32. The prevalence of working addiction (score ≥ 4) was 18.5% (100 out of 542). The prevalence of work addiction is shown in Table 2.

FACTOR ANALYSIS

The one factor solution of the Bergen Work Addiction Scale had an acceptable fit: CMIN/df = 7.40, CFI = 0.94, GFI = 0.94, AGFI = 0.88, RMR = 0.08, RMSEA = 0.11 (90% CI [0.09, 0.13]), and TLI = 0.75. The standardized regression weights for the seven items ranged from 0.48 to 0.71 (Table 3). Percentage scoring ≥ 4 on the seven items ranged from 10.7% (addiction component: withdrawal) to 54.2% (addiction component: conflict). Then, we used modification indices and correlations of

Table 2

Prevalence of work addiction in our study

Number of items with score ≥ 4	Prevalence (%)	95% CI
0	20.80	17.50, 24.50
1	20.50	17.20, 24.10
2	21.60	18.20, 25.30
3	18.30	15.10, 21.80
4	11.40	8.90, 14.40
5	4.60	3.00, 6.70
6	2.40	1.30, 4.10
7	0.40	0.10, 1.30

Table 3

Item wording, addiction component, percentage scoring ≥ 4 on items and standardized regression weights for the items (7 item model/7 item model with correlated error terms)

Item	Wording	Addiction component	Percentage scoring ≥ 4 (95% CI)	Standardized regression weights
1	Thought of how you could free up more time to work?	Salience	18.30 (15.10, 21.80)	0.48/0.28
2	Spent much more time working than initially intended?	Tolerance	42.60 (38.40, 46.90)	0.70/0.71
3	Worked in order to reduce feelings of guilt, anxiety, helplessness and/or depression?	Mood modification	18.90 (15.60, 22.40)	0.56/0.38
4	Been told by other to cut down on work, listening to them?	Relapse	27.30 (23.60, 31.30)	0.63/0.61
5	Become stressed if you have been prohibited from working?	Withdrawal	10.70 (8.20, 13.60)	0.54/0.29
6	Deprioritized hobbies, leisure activities, and/or exercise because of work?	Conflict	54.20 (49.90, 58.50)	0.50/0.54
7	Worked so much that it has negatively influenced your health?	Problems	32.30 (28.40, 36.40)	0.57/0.49

Table 4

Correlation analysis between study variables

	Age	Married vs. single	Divorced vs. single	Children	Occupation	Educational level	Years of experience
Gender[a]	−.07	.14**	.05	.08	−.28***	.09*	−.12**
Age		−.44***	−.21***	−.53***	.04	−.12**	.89***
Married vs. single[b]				.70***	−.13**	.15***	−.43***
Divorced vs. single[c]				.11*	−.05	.12**	−.20***
Children[d]					−.11**	.19***	−.48***
Occupation[e]						−.24***	.16***
Educational level[f]							−.15***

Note. *$p < .05$, **$p < .01$, ***$p < .001$; [a]1 – female, 2 – male; [b]1 – married, 2 – single; [c]1 – divorced, 2 – single; [d]1 – yes, 2 – no, [e]1 – medical staff, 2 – nursing staff; [f]1 – secondary education, 2 – university.

error terms (item 1 and item 2; item 1 and item 3; item 1 and 5) were allowed. The one factor solution with correlated error terms had a better fit: CMIN/df = 6.80, CFI = 0.88, GFI = 0.93, AGFI = 0.87, RMR = 0.08, RMSEA = 0.09 (90% CI [0.08, 0.13]), and TLI = 0.77.

CORRELATION ANALYSIS

Correlation analysis between the study variables is shown in Table 4. Females were more often nurses than physicians ($p < .001$) and had more years of experience ($p < .01$), while males more often had university education than females ($p < .05$). Nursing staff and staff with secondary education had more years of experience ($p < .001$ in both cases). Younger participants had a higher educational level ($p < .01$). Nurses more often had children than physicians ($p < .01$), while participants with a lower educational level more often had children ($p < .001$).

RELIABILITY ANALYSIS

Cronbach's α was .78 in our study, indicating an acceptable level of internal reliability.

GROUP DIFFERENCES

Differences between BWAS score and demographic and professional characteristics of the sample are shown in Table 5. We found that males and medical staff were more work addicted (p = .022 and p = .091 respectively).

WORK ADDICTION PREDICTORS

Hierarchical multivariable linear regression analysis showed that the independent variables explained a total of 2.5% of the variance of work addiction (F = 1.18, p = .311). Gender was entered at Step 1 and explained 1% of the variance of work addiction (F = 5.40, p = .022), while in the Step 2 we entered gender and age, explaining 1.5% of the variance (F = 2.53, p = .112). Family-related variables were entered at Step 3 and explained an additional 0.6% of the variance of work addiction (F = 1.66, p = .193). Work-related variables were entered at Step 4 and explained an additional 0.4% of the variance of work addiction (F = 1.18, p = .312). In the final step of the model, only age (b = 0.06, p = .023) was a significant predictor of work addiction. In particular, increased age was related to increased work addiction.

Table 5

Differences between score on BWAS and demographic and professional characteristics of the sample

Characteristics	Mean BWAS score (*SD*)	*p*
Gender		.022[a]
Female	18.40 (4.70)	
Male	19.50 (4.70)	
Age	0.06[b]	.154[b]
Marital status		.654[a]
Single	18.80 (4.60)	
Divorced	18.40 (4.80)	
Widowed	18.90 (4.90)	
Married	19.60 (3.90)	
Children		.413[a]
Yes	18.50 (4.80)	
No	18.80 (4.60)	
Occupation		.091[a]
Medical staff	19.60 (4.10)	
Nursing staff	18.50 (4.80)	
Educational level		.532[a]
Secondary education	18.80 (4.80)	
University education	18.50 (4.70)	
Years of experience	0.01[b]	.882[b]

Note. BWAS – Bergen Work Addiction Scale; [a]independent samples *t*-test; [b]Pearson's correlation coefficient.

DISCUSSION

The aim of the present study was to investigate the psychometric properties of the BWAS in a Greek sample of HPs, which were overall good. The internal structure of the scale was satisfactory, with α coefficient .78. Also, a previous study in HPs showed that the BWAS had a high reliability coefficient (.89) (Li et al., 2020). The one factor solution of the BWAS had an acceptable fit, in accordance with other studies (Atroszko et al., 2017). All seven items of the BWAS

Table 6

Hierarchical multivariable linear regression analysis with BWAS score as the dependent variable

Step	Predictor	b	Standardized β	ΔR^2
1	Gender[a]	1.16*	.10	.01*
2	Gender[a]	1.22*	.10	.00
	Age	0.04	.07	
3	Gender	1.14*	.10	.01
	Age	0.06*	.12	
	Married vs. single	−0.36	−.04	
	Divorced vs. single	−0.03	−.002	
	Children[b]		.07	
4	Gender[a]	1.04	.09	.01
	Age	0.06*	.11	
	Married vs. single	−0.36	−.04	
	Divorced vs. single	−0.09	−.01	
	Children[b]	0.69	.07	
	Occupation[c]	−0.77	−.05	
	Educational level[d]	−0.59	−.06	
Total R^2				.03

Note. BWAS – Bergen Work Addiction Scale; *p < .05; [a]1 – female, 2 – male; [b]1 – yes, 2 – no, [c]1 – medical staff, 2 – nursing staff; [d]1 – secondary education, 2 – university.

were significant and had standardized values above 0.48. These findings are in line with Andreassen et al. (2012), who found that the BWAS had good content validity as well.

Based on the results, HPs in the present study showed moderate levels of work addiction (mean 18.60). Although a recent study of Atroszko (2022) reporting data on work addiction from different countries and different categories of employees using the BWAS scale was found in the literature, these data do not concern HPs, which indicates the importance of assessing work addiction with the BWAS and in this category of employees. However, there are studies in the literature that have investigated work addiction in HPs with different measuring tools. For example, in a study conducted in Egypt, the prevalence of HPs' work addiction using the DUWAS was 24% (Balducci et al., 2017). In addition, a similar study conducted in Turkey during the COVID-19 pandemic using the WART questionnaire found that HPs' levels of work addiction were high but only among those HPs who lived with someone else. However, comparing the prevalence of HPs' work addiction from various researchers is difficult to perform, since different measurement tools have been used (Lichtenstein et al., 2019). Nevertheless, it is worth noting that similar results regarding the level of HPs' work addiction using the BWAS were found in a master thesis conducted in Greece in a sample of 295 HPs (Karagkounis, 2019).

Higher age was related to increased work addiction. However, these findings are inconsistent with previous studies which showed a negative relationship between age and work addiction (Andreassen et al., 2010, 2014; Taris et al., 2012). One possible explanation for this finding could be the fact that older HPs, who were more experienced, took over the role of frontline workers against the COVID-19 pandemic, and thus showed elevated vigor, absorption and dedication against this menace.

The current results also revealed that males and medical staff were more work addicted. However, the results regarding gender differences were not in line with previous studies in which females were significantly more work addicted than males (Beiler-May et al., 2016; Dudek & Szpitalak, 2019). Possibly, due to cultural norms existing in Greece, females are less likely to self-report staying at work longer than others and spending more time at work than other activities. In addition, regarding the higher level of work addiction in medical staff, in a similar study of Kasemy et al. (2020), physicians were also more addicted than other groups of HPs. Physicians are more likely to work increased hours and much harder in order to achieve professional status and elevation in hierarchy.

Overall, based on the work carried out to date, the scale appears to have an adequate factor structure and a relatively high content validity. However, further work is needed to explore the psychosocial and cultural profiles of those with increased risk of addiction and to uncover the prevalence of work addiction in different samples with validated assessment tools.

In terms of limitations, it should be noted that the convenience sampling used in the present study includes possible selection bias. Also, the gender and occupation distribution in the current study was unequal (79.2% were female and 87.6% were nurses/nurse assistants). This might affect the psychometric evaluation and the prevalence estimate, even though in most studies with HPs the majority of participants are female and nurses/nurse assistants. Therefore, the results cannot be generalized to other groups of HPs. Furthermore, all data were based on a self-reported electronic questionnaire which was completed by HPs entering the official website of each of the 8 hospitals that participated in the study, and this might have biased the results. More specifically, in an online study it is difficult to control which work population, age or gender would be likely to answer. In addition, due to the fact that the design of the study was cross-sectional, it makes it impossible to draw causal inferences unequivocally. Another limitation of the study was the fact that test-retest reliability to measure test consistency over time was not assessed. Finally, a limitation of our study was that during the study period, the Greek Ministry of Health suspended all kinds of HPs' extended breaks from work, and this might have affected the levels of their work addiction.

In terms of strengths, the present study is the first translation and cultural adaptation of the original version of the BWAS in Greek language. Given that cultural and socioeconomic factors related to work addiction are different across countries, it is important to validate and culturally adapt this tool in other languages. The present study also offers a valid, a reliable and convenient assessment of work addiction both for research purposes and for screening HPs at risk of work addiction. Future studies are necessary in order to measure test consistency and reliability of the BWAS scale over time and to investigate the reasons and motives of HPs' work addiction**.** Finally, given the fact that the present study took place in quarantine conditions due to the COVID-19 pandemic and HPs were forced to work hard, further work is needed to explore factors affecting their levels of work addiction.

CONCLUSIONS

The present study demonstrated that the BWAS has good psychometric properties (such as good reliability, internal consistency and construct validity) in a Greek sample of HPs, and this has important implications for stakeholders and managers in healthcare

organization settings. To reduce HPs' level of work addiction, healthcare organizations should aim to create and maintain a work environment that neither rewards nor enhances workaholic addictive behaviors. On the contrary, practices and policies which stimulate an organizational culture that provides HPs with opportunities for personal growth should be adopted. A first step in this direction would be the design of specialized educational programs that could support HPs at risk of work addiction. To conclude, the Greek version of the BWAS has proven to be a suitable and useful tool to assess HPs' work addiction.

ACKNOWLEDGEMENTS

We would like to thank Gogopoulou Evangelia for her support in collecting part of study's data.

COMPLIANCE WITH ETHICAL STANDARDS

Ethical approval was granted from the Scientific Boards of all participating hospitals as well as the 1st Regional Health Administration of Attica, the 2nd Regional Healthcare Administration of Piraeus & Aegean Islands and the 3rd Health Region Administration of Macedonia (ethics approval statements: 3808/F448-25-12-2020, 15202/7-11-2020, D3b/12026-3-12-2020 respectively), and the study was carried out in accordance with the Declaration of Helsinki.

References

Allam, H. K, Helmy, M. S., Badry, A. S., & Younis, F. E. (2021). Workaholism, sleep disorders, and potential e-learning impacts among Menoufia University staff during COVID-19 pandemic. *Journal of Public Health Research, 10*, 2203. https://doi.org/10.4081/jphr.2021.2203

Andreassen, C. S. (2014). Workaholism: an overview and current status of the research. *Journal of Behavioral Addictions, 3*, 1–11. https://doi.org/10.1556/JBA.2.2013.017

Andreassen, C. S., Griffiths, M. D., Gjertsen, S., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioral addictions and the five-factor model of personality. *Journal of Behavioral Addictions, 2*, 90–99. https://doi.org/10.1556/JBA.2.2013.003

Andreassen, C. S., Griffiths, M. D., Hetland, J., Kravina, L., Jensen, F., & Pallesen, S. (2014). The prevalence of workaholism: a survey study in a nationally representative sample of Norwegian employees. *PloS One*, 9, e102446. https://doi.org/10.1371/journal.pone.0102446

Andreassen, C. S., Griffiths, M. D., Hetland, J., & Pallesen, S. (2012). Development of a work addiction scale. *Scandinavian Journal of Psychology, 53*, 265–272. https://doi.org/10.1111/j.1467-9450.2012.00947.x

Andreassen, C. S., Hetland, J., & Pallesen, S. (2010). The relationship between workaholism, basic needs satisfaction at work and personality. *European Journal of Personality, 24*, 3–17. https://doi.org/10.1002/per.737

Andreassen, C. S., Hetland, J., & Pallesen, S. (2014). Psychometric assessment of workaholism measures. *Journal of Managerial Psychology, 29*, 7–24. https://doi.org/10.1108/JMP-05-2013-0143

Andreassen, C. S., & Pallesen, S. (2016). Workaholism: an addiction to work. In V. R. Preedy (Ed.), *Neuropathology of drug addictions and substance misuse* (Vol. 3, pp. 972–983). Academic Press.

Antunes, B., Brown, A., Witt, J., Daveson, B., Ramsenthaler, C., Benalia, H., Ferreira, P., Bausewein, C., & Higginson, I. (2012). *The Palliative care Outcome Scale (POS). Manual for cross-cultural adaptation and psychometric validation*. Retrieved from https://pos-pal.org/maix/resources.php

Atroszko, P. A. (2022). Non-drug addiction: Addiction to work. In V. B., Patel & V. R. Preedy (Eds.), *Handbook of substance misuse and addictions* (pp. 1–32). Springer.

Atroszko, P. A., Demetrovics, Z., & Griffiths, M. D. (2019). Beyond the myths about work addiction: Toward a consensus on definition and trajectories for future studies on problematic overworking. *Journal of Behavioral Addictions, 8*, 7–15. https://doi.org/10.1556/2006.8.2019.11

Atroszko, P. A., Demetrovics, Z., & Griffiths, M. D. (2020). Work addiction, obsessive-compulsive personality disorder, burn-out, and global burden of disease: Implications from the ICD-11. *International Journal of Environmental Research and Public Health, 17*, 660. https://doi.org/10.3390/ijerph17020660

Atroszko, P. A., Mytlewska, W. M., & Atroszko, B. (2021). The majority of professionally active women diagnosed with eating disorders may be at risk of work addiction: an overlooked comorbidity. *Health Psychology Report, 9*, 308–337. https://doi.org/10.5114/hpr.2020.98734

Atroszko, P. A., Pallesen, S., Griffiths, M. D., & Andreassen, C. S. (2017). Work addiction in Poland: Adaptation of the Bergen Work Addiction Scale and relationship with psychopathology. *Health Psychology Report, 5*, 345–355. https://doi.org/10.5114/hpr.2017.68759

Ayar, D., Karaman, M. A., & Karaman, R. (2022). Work-life balance and mental health needs of health professionals during COVID-19 pandemic in Turkey. *International Journal of Mental Health and Addiction, 20*, 639–655. https://doi.org/10.1007/s11469-021-00717-6

Azevedo, W. F., & Mathias, L. A. (2017). Work addiction and quality of life: a study with physicians. *Einstein, 15*, 130–135. https://doi.org/10.1590/S1679-45082017AO3960

Baki, S., & Piyal, B. (2020). *Work-family conflict as regard to healthcare workers in extraordinary situations such as COVID-19 pandemic*. Health and Public.

Balducci, C., Avanzi, L., Consiglio, C., Fraccaroli, F., & Schaufeli, W. (2017). A cross national study on the psychometric quality of the Italian version of the Dutch work addiction scale (DUWAS). *European Journal of Psychological Assessment, 33*, 422–428. https://doi.org/10.1027/1015-5759/a000300

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*, 3186–3191. https://doi.org/10.1097/00007632-200012150-00014

Beiler-May, A., Williamson, R. L., Clark, M. A., & Carter, N. T. (2016). Gender bias in the measurement of workaholism. *Journal of Personality Assessment, 99*, 104–110. https://doi.org/10.1080/00223891.2016.1198795

Brown, R. I. F. (1993). Some contributions of the study of gambling to the study of other addictions. In W. R. Eadington & J. A. Cornelius (Eds.), *Gambling behavior and problem gambling* (pp. 241–272). University of Nevada.

Brown, C. A., & Pashniak, L. M. (2018). Psychological health and occupational therapists: Burnout, engagement and work addiction. *Work, 60*, 513–525. https://doi.org/10.3233/WOR-182759

Burke, R. J., & Koksal, H. (2002). Workaholism among a sample of Turkish managers and professionals: an exploratory study. *Psychological Reports, 91*, 60–68. https://doi.org/10.2466/PR0.91.5.60-68

Burke, R. J., & Matthiesen, S. (2004). Workaholism among Norwegian journalists: Antecedents and consequences. *Stress and Health, 20*, 301–308. https://doi.org/10.1002/smi.1025

Burke, R. J., Oberklaid, F., & Burgess, Z. (2004). Workaholism among Australian women psychologists: Antecedents and consequences. *Women in Management Review, 19*, 252–259. https://doi.org/10.1108/09649420410545971

Cascio, W. F., & Montealegre, R. (2016). How technology is changing work and organizations. *Annual Review of Organizational Psychology and Organizational Behavior, 3*, 349–375. https://doi.org/10.1146/annurev-orgpsych-041015-062352

Clark, M. A., Michel, J. S., Zhdanova, L., Pui, S. Y., & Baltes, B. B. (2016). All work and no play? A meta-analytic examination of the correlates and outcomes of workaholism. *Journal of Management, 42*, 1836–1873. https://doi.org/10.1177/0149206314522301

del Líbano, M., Llorens, S., Salanova, M., & Schaufeli, W. (2010). Validity of a brief workaholism scale. *Psicothema, 22*, 143–150.

Dudek, I., & Szpitalak, M. (2019). Gender differences in workaholism and work-related variables. *Studia Humanistyczne AGH, 18*, 59–76. https://doi.org/10.7494/human.2019.18.4.59

Ďuranová, L., & Ohly, S. (2016). *Persistent work-related technology use, recovery and well-being processes: Focus on supplemental work after hours*. Springer Science + Business Media.

Fassel, D. (1990). *Working ourselves to death: The high costs of workaholism, the rewards of recovery*. Harper Collins.

Griffiths, M. D. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use, 10*, 191–197. https://doi.org/10.1080/14659890500114359

Griffiths, M. D. (2011). Workaholism: a 21st century addiction. The Psychologist: Bulletin of the British *Psychological Society, 24*, 740–744.

Harpaz, I., & Snir, R. (2003). Workaholism: Its definition and nature. *Human Relations, 56*, 291–319. https://doi.org/10.1177/0018726703056003613

Kanai, A., Wakabayashi, M., & Fling, S. (1996). Workaholism among employees in Japanese corporations: an examination based on the Japanese version of the Workaholism Scales. *Japanese Psychological Research, 38*, 192–203. https://doi.org/10.1111/j.1468-5884.1996.tb000

Karagkounis, C. (2019). *Factors affecting job crafting of health professionals in facilities of primary and secondary health care.* Retrieved from https://apothesis.eap.gr/bitstream/repo/42552/1/124511_ΚΑΡΑΓΚΟΥΝΗΣ_ΧΡΥΣΟΒΑΛΑΝΤΗΣ.pdf

Kasemy, Z. A., Abd-Ellatif, E. E., Abdel Latif, A. A., Bahgat, N. M., Shereda, H., Shattla, S. I., Aboalizm, S. E., Abd Elhy, A. H., Allam, A. R., Ramadan, A. N., Amer, H. M., Ahmed, N. A., AlJifri, A. A., & El Dalatony, M. M. (2020). Prevalence of workaholism among Egyptian healthcare workers with assessment of its relation to quality of life, mental health and burnout. *Frontiers in Public Health, 8*, 581373. https://doi.org/10.3389/fpubh.2020.581373

Kim, S. (2019). Workaholism, motivation, and addiction in the workplace: a critical review and implications for HRD. *Human Resource Development Review, 18*, 325–348. https://doi.org/10.1177/1534484319845164

Kubota, K., Shimazu, A., Kawakami, N., Takahashi, M., Nakata, A., & Schaufeli, W. B. (2010). Association between workaholism and sleep problems among hospital nurses. *Industrial Health, 48*, 864–871. https://doi.org/10.2486/indhealth.ms1139

Leshner, A. I. (1997). Addiction is a brain disease, and it matters. *Science, 278*, 45–47. https://doi.org/10.1126/science.278.5335.45

Li, Y., Xie, W., & Huo, L. (2020). How can work addiction buffer the influence of work intensification on workplace well-being? The mediating role of job crafting. *International Journal of Environmen-*

tal Research and Public Health, 17, 4658. https://doi.org/10.3390/ijerph17134658

Lichtenstein, M. B., Malkenes, M., Sibbersen, C., & Hinze, C. J. (2019). Work addiction is associated with increased stress and reduced quality of life: Validation of the Bergen Work Addiction Scale in Danish. *Scandinavian Journal of Psychology, 60*, 145–151. https://doi.org/10.1111/sjop.12506

Matsudaira, K., Shimazu, A., Fujii, T., Kubota, K., Sawada, T., Kikuchi, N., & Takahashi, M. (2013). Workaholism as a risk factor for depressive mood, disabling back pain, and sickness absence. *PLoS One, 8*, e75140. https://doi.org/10.1371/journal.pone.0075140

McMillan, L. H. W., Brady, E. C., O'Driscoll, M. P., & Marsh, N. V. (2002). A multifaceted validation study of Spence and Robbins' (1992) Workaholism Battery. *Journal of Occupational and Organizational Psychology, 75*, 357–368. https://doi.org/10.1348/096317902320369758

Molino, M. (2012). *Workaholism: Definitions, measures, and dynamics* [Unpublished doctoral thesis]. University of Torino, Italy.

Molino, M., Bakker, A. B., & Ghislieri, C. (2016). The role of workaholism in the job demands-resources model. *Anxiety, Stress and Coping, 29*, 400–414. https://doi.org/10.1080/10615806.2015.1070833

Nonnis, M., Cuccu, S., Cortese, C. G., & Massidda, D. (2017). The Italian version of the Dutch Workaholism Scale (DUWAS): a study on a group of nurses. *BPA: Applied Psychology Bulletin, 65*, 47–57.

Ng, T. W. H., Sorensen, K. L., & Feldman, D. C. (2007). Dimensions, antecedents, and consequences of workaholism: a conceptual integration and extension. *Journal of Organizational Behavior, 28*, 111–136. https://doi.org/10.1002/job.424

Oates, W. (1971). *Confessions of a workaholic: The facts about work addiction*. World Publishing Co.

Orosz, G., Dombi, E., Andreassen, C. S., Griffiths, M. D., & Demetrovics, Z. (2016). Analyzing models of work addiction: Single factor and bifactor models of the Bergen Work Addiction Scale. *International Journal of Mental Health and Addiction, 14*, 662–671. https://doi.org/10.1007/s11469-015-9613-7

Quinones, C., & Griffiths, M. D. (2015). Addiction to work: a critical review of the workaholism construct and recommendations for assessment. *Journal of Psychosocial Nursing and Mental Health Services, 53*, 48–59. https://doi.org/10.3928/02793695-20150923-04

Robinson, B. E. (1996). Concurrent validity of the Work Addiction Risk Test as a measure of workaholism. *Psychological Reports, 79*, 1313–1314. https://doi.org/10.2466/pr0.1996.79.3f.1313

Schaufeli, W. B., Shimazu, A., & Taris, T. W. (2009). Being driven to work excessively hard: The evaluation of a two-factor measure of workaholism in the Netherlands and Japan. *Cross-Cultural Research, 43*, 320–348. https://doi.org/10.1177/1069397109337239

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: a two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3*, 71–92. https://doi.org/10.1023/A:1015630930326

Schlachter, S., McDowall, A., Cropley, M., & Inceoglu, I. (2018). Voluntary work-related technology use during nonwork time: a narrative synthesis of empirical research and research agenda. *International Journal of Management Reviews, 20*, 825–846. https://doi.org/10.1111/ijmr.12165

Sharp, R. (2016). Work Addiction Risk Test. *Occupational Medicine, 66*, 341–342. https://doi.org/10.1093/occmed/kqv180

Serrano-Fernández, M. J., Boada-Grau, J., Boada-Cuerva, M., & Vigil-Colet, A. (2021). Work addiction as a predictor of anxiety and depression. *Work, 68*, 779–788. https://doi.org/10.3233/wor-203411

Snir, R., & Harpaz, I. (2004). Attitudinal and demographic antecedents of workaholism. *Journal of Organizational Change Management, 17*, 520–536. https://doi.org/10.1108/09534810410554524

Spence, J. T., & Robbins, A. S. (1992). Workaholism: Definition, measurement, and preliminary results. *Journal of Personality Assessment, 58*, 160–178. https://doi.org/10.1207/s15327752jpa5801_15

Stoeber, J., & Damian, L. E. (2016). Perfectionism in employees: Work engagement, workaholism, and burnout. In F. M. Sirois & D. S. Molnar (Eds.), *Perfectionism, health, and well-being* (pp. 265–283). Springer.

Taris, T. W., van Beek, I., & Schaufeli, W. B. (2012). Demographic and occupational correlates of workaholism. *Psychological Reports, 110*, 547–554. https://doi.org/10.2466/03.09.17.PR0.110.2.547-554

Taylor, E. A., Huml, M. R., & Dixon, M. A. (2019). Workaholism in sport: a mediated model of work-family conflict and burnout. *Journal of Sport Management, 33*, 249–260. https://doi.org/10.1123/jsm.2018-0248

van Beek, I., Hu, Q., Schaufeli, W. B., Taris, T. W., & Schreurs, B. H. J. (2012). For fun, love, or money: What drives workaholic, engaged, and burned-out employees at work? *Applied Psychology, 61*, 30–55. https://doi.org/10.1111/j.1464-0597.2011.00454.x

Wojdylo, K., Karlsson, W., & Baumann, N. (2016). Do I feel ill because I crave for work or do I crave for work because I feel ill? A longitudinal analysis of work craving, self-regulation, and health. *Journal of Behavioral Addictions, 5*, 90–99. https://doi.org/10.1556/2006.5.2016.005

Yüncü, V., & Yilan, Y. (2020). Investigating the impacts of COVID-19 pandemic on healthcare staff: a case study. *Igdir University Journal of Social Sciences, 2*, 373–401.