

Article

Work Addiction among Bank Employees in Italy: A Contribution to Validation of the Bergen Work Addiction Scale with a Focus on Measurement Invariance across Gender and Managerial Status

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Abstract: This study contributes to the validation of the Bergen Work Addiction Scale (BWAS) in the Italian context, with a focus on measurement invariance across gender and managerial status. The BWAS is a consolidated measure of work addiction (WA) anchored in general addiction theory that comprises seven items representing the core addiction components. Participants were 8419 bank workers (37.7% women, 12.9% managers) who completed a self-report questionnaire including the Italian version of the BWAS (BWAS-I) and the Dutch Work Addiction Scale, as well as measures of work engagement, perfectionism, workload, psycho-physical symptoms, work–family conflict, and job satisfaction. Results confirmed the single-factor structure of the BWAS-I. Partial scalar invariance held across gender and managerial status, meaning that most—but not all—item intercepts were equivalent across different populations. Furthermore, the BWAS-I showed adequate convergent, discriminant, criterion-related, and incremental validity. This study showed that the BWAS-I is a valuable instrument that can be used by researchers and practitioners to assess WA in the Italian context.

Keywords: work addiction; psychometric properties; scale validation; measurement invariance; gender; managerial status



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1. Introduction

In the few last decades, increasing attention has been devoted to the phenomenon of work addiction (WA) [1], also referred to as workaholism in the literature [2]. Although different conceptualizations of the construct exist—as a syndrome, a stable behavior pattern, a personality trait, or an attitude toward work, for example [3–6]—from an addiction perspective, Andreassen, Griffiths, et al. [7] (p. 265) defined WA as “being overly concerned about work, being driven by an uncontrollable work motivation, and spending so much energy and effort on work that it impairs private relationships, spare-time activities and/or health”. Empirical research has shown that WA is associated with a wide range of negative consequences for both individuals and organizations [8,9], suggesting that WA should be distinguished from positive phenomena such as work engagement [10] and harmonious passion [11].

Given the different conceptualizations of WA, it is not surprising that several quantitative measures of the construct are described in the literature, such as the Workaholism Battery (WorkBAT) [12], the Work Addiction Risk Test (WART) [13], and the Dutch Work Addiction Scale (DUWAS) [14,15]. Unfortunately, these well-established measures have

some drawbacks. First, although these scales assess WA as a multidimensional construct, they differ in the core dimensions considered. Moreover, despite the popularity of these measures in the literature, several psychometric issues have been identified in previous research (e.g., nonconvergent findings concerning their factor structure) (see [16] for a review). Furthermore, the above-mentioned scales tend to confound WA with related constructs (e.g., work engagement and perfectionism) or do not directly measure some central aspects of their proposed definition of the construct (see [17] for a review). Finally, it was argued that most of these WA measures have not specifically been developed from an addiction perspective and could lack face validity [18]. Not surprisingly, Andreassen et al. [16] noted that the WorkBAT, the WART, and the DUWAS correlate too low with each other to reflect the same underlying construct. The authors also suggested that future studies should be aimed at establishing consensus about the definition of WA and constructing a corresponding, well-validated measurement scale [16].

1.1. The Bergen Work Addiction Scale

Given the origins of the construct in the field of addiction [19], Andreassen, Griffiths, et al. [7] developed the Bergen Work Addiction Scale (BWAS) based on the idea that WA measures should be closely linked to the core elements of addictions [20]. Specifically, the BWAS is founded on the components model of addiction [21], according to which all addictions appear to comprise six core components, namely salience, tolerance, mood modification, relapse, withdrawal, and conflict. Additionally, addictive behaviors may pose health or psychosocial problem to the individual [7,21]. Accordingly, the BWAS measures a single dimension, that is, WA, and comprises seven items, each of which represents one of the core components of addiction. These include: (1) salience (preoccupation with work), (2) tolerance (work increasingly more to achieve the initial effect), (3) mood modification (work to avoid or reduce dysphoria), (4) relapse (returning to earlier pattern of working after a period in control of work), (5) withdrawal (dysphoria/unpleasant feelings when prohibited from working), (6) conflict (work conflicts with one's own as well as others' needs), and (7) problems, that is, working so much that health/relationships/other activities are negatively affected [7–9].

The BWAS seems to have some advantages over previous measures of WA: it is a brief, unidimensional, valid, and psychometrically sound measure that is based on a well-defined theoretical foundation [7,9]. Moreover, by being anchored in general addiction theory, the BWAS should adequately reflect the addictive element of WA. This is potentially a clear advantage of the BWAS, since several previous empirical studies did not actually conceptualize WA as a genuine addiction to work [22]. Not surprisingly, the scale has been translated in several languages and used in studies carried out in Hungary [23], Poland [24], Denmark [25], Turkey [26,27], France [28], and India [29]. The BWAS has also been adopted in several empirical studies within the Italian context [30–32], including a recent validation study [33].

1.2. Validation of an Italian Adaptation of the BWAS

The aim of this study was to contribute to the validation of the Bergen Work Addiction Scale in the Italian context (BWAS-I), with a focus on measurement invariance across gender and managerial status. The study was carried out in a large sample of bank workers, since employees in the banking sector report above-average levels of both work demands and use of technology for work [34], two factors that are associated with WA [31,35]. Not surprisingly, previous research has shown that bank employees report high levels of WA [36,37], which in turn may result in job stress and health complaints [38].

A multistep approach was adopted in the validation process. First, we examined the factor structure and reliability of the BWAS-I, and we expected that the single-factor structure of the scale would be confirmed in this study. We also expected adequate levels of reliability. Second, we examined the measurement invariance of the BWAS-I by gender and managerial status, and we expected that factor loadings and item intercepts would be

equivalent across different populations. This is a relevant step, given that measurement invariance is a prerequisite to the evaluation of substantive hypotheses concerning group differences (e.g., mean differences across gender/managerial status) [39]. In this respect, past research suggested that gender and managerial status may affect self-reported levels of WA. In line with the traditional stereotypes regarding the gender roles (e.g., men are expected to work, women are to carry out family responsibilities), men are more likely than women to report higher levels of WA. For example, men are more inclined than women to respond positively to an item which refers to the number of hours spent on work, matching with social expectations [40]. Likewise, managers may report higher levels of investment in their work since working long hours is considered typical for their jobs and consistent with their role in the organization [41,42]. Hence, we believe the investigation of measurement invariance of the BWAS-I by gender and managerial status to be a central step in the validation process. Third, we assessed convergent and discriminant validity—two aspects of construct validity—as well as criterion validity of the BWAS-I by examining its association with another well-established measure of WA, namely the DUWAS, as well as with several related/unrelated constructs in the nomological network [43]. Finally, we investigated incremental validity of the BWAS-I by examining whether the scale adds unique variance to the prediction of outcomes in the individual, family, and work domains over and above the DUWAS. A detailed description is provided below.

1.3. Convergent and Discriminant Validity of the BWAS-I

To investigate the convergent validity, the association between the BWAS-I and the DUWAS [14,15] was investigated. The DUWAS is a well-established measure of WA that is based on the conceptualization of Schaufeli and colleagues [15] (p. 204), who defined it as “the tendency to work excessively hard in a compulsive way”. Accordingly, the two central dimensions of the construct are working excessively (WE) and working compulsively (WC), and WA is characterized by high levels of both. Based on theoretical reasoning and previous empirical research [7], we expected positive correlations between the BWAS-I and the DUWAS as well as its dimensions of WE and WC.

Next, we investigated the discriminant validity of the BWAS-I by examining the correlation between WA and work engagement. According to Schaufeli and colleagues [10] (p. 21), work engagement is a “positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption”. Although addicted and engaged workers may both invest relevant time and effort in their work [44,45], previous research has shown that WA and work engagement are two relatively independent constructs [46,47], with different correlates (e.g., personality and motivation) and outcomes [48–51]. For example, previous research based on the self-determination theory [52] has shown that work-addicted employees were mostly driven by controlled motivation (e.g., external and introjected regulation), whereas engaged workers were mostly driven by autonomous motivation (e.g., identified and intrinsic regulation) [47]. Furthermore, WA is mostly associated with negative outcomes (e.g., psycho-physical strain, sleep problems, and reduced job and life satisfaction), whereas work engagement is mostly associated with positive outcomes (e.g., psycho-physical health, job and life satisfaction, and job performance) [49,50]. Hence, we expected no correlation between the BWAS-I and work engagement.

1.4. Criterion Validity of the BWAS-I

Criterion validity of the BWAS-I was assessed by examining the association between WA and several correlates and outcomes in its nomological network. On the one hand, in line with previous empirical work in the field [49], perfectionism and workload were considered as dispositional and work-related correlates of WA, respectively. On the other hand, psycho-physical strain (i.e., stress-related psychological and physical symptoms), work–family conflict (WFC), and job satisfaction (JS) were regarded as outcomes in the individual, family, and work domains, respectively [8,49,53,54].

Perfectionism is a personality disposition that entails a striving for flawlessness and the setting of excessively high—and often unrealistic—standards of performance, accompanied by excessively critical evaluations of one's own behavior [55,56]. Several conceptualizations of perfectionism exist in the literature. In this study, drawing on the influential model proposed by Hewitt and Flett [57], we focused on self-oriented perfectionism (SOP), the inclination to set extremely high standards for oneself, and socially prescribed perfectionism (SPP), the perception of unrealistically high standards that are imposed on the self by significant others. Previous theoretical studies have suggested a central role of perfectionism in the onset of WA [58,59]. Furthermore, empirical research and meta-analyses have shown that overall perfectionism, as well as facets of perfectionism including SOP and SPP, are positively associated with WA [49,60]. Overall, we expected the BWAS-I to be positively associated with both SOP and SPP.

Workload may refer to the quantity of work to be completed in a given amount of time [61]. There is a well-documented, positive, and likely complex association between workload and WA [49,62]. Work-addicted individuals may create more work for themselves, as an attempt to continue working (e.g., by not delegating their work) [15], or they may choose to stay in demanding jobs [63]. It is also possible that an elevated workload may contribute to the onset of WA over time [64]. Hence, in line with previous research, we expected a positive association between the BWAS-I and workload.

Furthermore, WA is related to negative outcomes in individual, family, and work domains [49]. More specifically, work-addicted individuals often work longer than others, and they may engage in work activities or think about work during leisure time [15,63,65]. This implies insufficient opportunities for a complete recovery during after-work hours, which may result over time in psychological and physical symptoms related to stress, that is, psycho-physical strain [53,66]. Accordingly, we expected the BWAS-I to be positively associated with psycho-physical strain, in terms of both psychological and physical symptoms.

WFC may be defined as a type of inter-role conflict in which role pressures arising from work and family domains are mutually incompatible to some degree [67]. Individuals addicted to work invest an excessive amount of their personal resources (e.g., time and energy) into work, which leaves them with fewer resources available for other relevant roles of their life, (e.g., partner and/or parent) [30,54]. Hence, we expected a positive association between the BWAS-I and WFC.

Finally, JS refers to the overall evaluative judgment—positive or negative—one makes about one's job [68]. Past research has shown negative association between WA and JS, which can be explained in the light of the self-determination theory [52]. Work-addicted individuals are mostly driven by controlled motivation (e.g., introjected regulation) rather than autonomous motivation, such as identified or intrinsic regulation [47]. Stated differently, individuals addicted to work may engage in work activities because “they should”, not because they find their work inherently enjoyable or because they perceive their work as meaningful and important [69], hence they may not experience true satisfaction in their work. Accordingly, we expected a negative association between the BWAS-I and JS.

1.5. Incremental Validity of the BWAS-I

Finally, incremental validity of the BWAS-I was assessed by examining whether it adds unique variance to the prediction of outcomes of WA over and above the DUWAS. Particularly, given the different theoretical underpinnings of the BWAS, which is anchored in general addiction theory, and the specific operationalization of WA based on the seven core addiction components [7,8], we expected that the BWAS-I adds unique variance to the prediction of psycho-physical strain, WFC, and JS over and above the DUWAS.

2. Materials and Methods

2.1. Participants and Procedure

The study was conducted in a large Italian bank as part of a work-related stress risk assessment. Data collection occurred in December 2019. All workers of the organization

(i.e., the entire population of the organization) were invited to take part in a study about how they experience their work. Employees were also informed beforehand about the aims of the investigation and that participation in the study was anonymous and voluntary. Participants then completed a self-report questionnaire aimed at determining WA as well as the aforementioned correlates and outcomes. The instrument was administered online, and anonymity was guaranteed. Overall, 11,828 workers were eligible to participate in the study, and 8966 workers completed the online questionnaire. No substantive differences in demographic characteristics (including gender and managerial status) emerged between employees who took part in the study and those who did not. Participants with extensive missing data (i.e., more than 50% of missing items on a given scale) [70] were excluded from subsequent analyses. Accordingly, the final sample comprised 8419 participants. Then, missing values were estimated using the expectation–maximization algorithm [71]. Overall, 319 missing values (0.09%) were imputed. The sample included 5249 men (62.3%) and 3170 women (37.7%). With respect to managerial status, 87.1% were frontline workers, and 12.9% were managers. Most respondents were aged between 40 and 50 years (41.9%), 36% were older than 50 years, and 22.1% were younger than 40 years. Regarding the type of contract, 97.2% of workers had a permanent contract, whereas 2.8% had a temporary contract. Finally, with respect to education, 51.5% of workers held a secondary degree, whereas 48.5% had a university degree.

2.2. Measures

The psychometric properties of all the scales were assessed in terms of factor structure and internal consistency (Cronbach's alpha) whenever possible. These results are available as supplementary information (see Supplementary Materials S1). The questionnaire included the following measures.

Work addiction was measured using the BWAS-I. The scale included seven items (e.g., "How often during the last year have you ... Thought of how you could free up more time to work?") with no reverse-coded items. The five-point response scale ranged from 1 (never) to 5 (always). To ensure that the translation of the BWAS into Italian was adequate, a translation and back-translation procedure was adopted. Briefly, an expert first translated items into Italian, then a second expert independently translated the items back into English. The original and back-translated versions of the scale were then compared for differences and comparability.

Dutch Work Addiction Scale. The Italian adaptation [72] of the DUWAS [14,15] is composed of ten items designed to detect the two dimensions of WE (six items; e.g., "I seem to be in a hurry and racing against the clock") and WC (four items; e.g., "I feel that there's something inside me that drives me to work hard"). The six-point response scale ranged from 1 (strongly disagree) to 6 (strongly agree). According to Schaufeli, Taris, and Bakker [15], WA reflects the tendency to work excessively hard in a compulsive way. Hence, an overall DUWAS score was used, in addition to the scores of WE and WC.

Work engagement was determined using an Italian adaptation of the ultrashort version of the Utrecht Work Engagement Scale (UWES-3) [73]. The scale was composed of three items (e.g., "At my work, I feel bursting with energy"), and, in this study, the six-point response scale ranged from 1 (never) to 6 (always).

Perfectionism was measured using an Italian adaptation [74] of a short version of the Multidimensional Perfectionism Scale [57]. The scale is composed of six items and measures SOP (three items; e.g., "One of my goals is to be perfect in everything I do") and SPP (three items; e.g., "Anything that I do that is less than excellent will be seen as poor work by those around me"). The six-point response scale ranged from 1 (strongly disagree) to 6 (strongly agree).

Workload was assessed using a scale taken from the Q_u -Bo test, an instrument standardized for the Italian context [75]. The scale included four items (e.g., "Your job requires you to do more work than you can do well"), with a response scale ranging from 1 (strongly disagree) to 6 (strongly agree).

Psycho-physical strain was determined using a scale taken from the Q_u-Bo test [75,76]. Respondents were asked to indicate how often, over the past six months, stress-related psychological and physical symptoms had appeared or exacerbated. The scale includes four dimensions, namely psychological symptoms (four items; e.g., “feeling tense and nervous”), musculoskeletal symptoms (three items; e.g., “pain in the neck or shoulders”), gastrointestinal symptoms (two items; e.g., “heartburn or pain in the stomach”), and cardiac symptoms (two items; e.g., “tightness in the chest”). The response scale ranged from 1 (never) to 6 (everyday).

Work-family conflict was assessed using a scale taken from the Q_u-Bo test [75]. The scale is composed of two items (e.g., “Work takes up much of the time I should devote to my family”), and the response scale ranged from 1 (strongly disagree) to 6 (strongly agree).

Job satisfaction was measured using a single item, namely whether or not the employee was satisfied with his/her job. Past research has shown that single-item measures are a valid indicator of overall job satisfaction [77]. The response scale ranged from 1 (very dissatisfied) to 6 (very satisfied).

2.3. Statistical Analysis

A multistep approach was adopted to investigate the psychometric properties of the BWAS-I in terms of factor structure, measurement invariance across gender and managerial status, construct validity (i.e., convergent and discriminant validity), criterion-related, and incremental validity [39,43]. First, the factor structure of the BWAS-I was examined through confirmatory factor analysis (CFA). At this stage, the reliability of the BWAS-I was assessed by estimating the composite reliability (CR). Values of CR greater than 0.70 suggest satisfactory reliability [78]. Next, the measurement invariance of the BWAS-I across gender and managerial status was examined through a multiple-group CFA approach. More specifically, different levels of measurement invariance were investigated, namely configural invariance (i.e., equality of factor structure), metric invariance (i.e., equality of factor loadings), and scalar invariance, that is, equality of indicators intercepts [39]. Population heterogeneity was also investigated, in terms of difference in latent means across groups [79]. To assess construct and criterion-related validity, we examined the concurrent correlations between the BWAS-I and: (1) the DUWAS and its dimensions of WE and WC (i.e., convergent validity); (2) work engagement (i.e., discriminant validity); and (3) correlates and outcomes of WA (i.e., criterion-related validity). The former included SOP, SPP, and workload, whereas the latter encompassed psycho-physical strain, WFC, and JS. Finally, incremental validity was investigated using hierarchical multiple regression to examine whether the BWAS-I adds unique variance to the prediction of each outcome (i.e., psycho-physical strain, WFC, and JS) over and above the DUWAS, after controlling for the effect of gender and managerial status.

CFAs were carried out using the maximum likelihood estimation with robust standard errors and a scaled test statistic [80]. To evaluate model fit, the scaled chi-square test was used together with additional fit indices, namely the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root mean square residual (SRMR). A model shows a good fit to data if the chi-square is nonsignificant. For RMSEA, values smaller or close to 0.08 indicate acceptable model fit, values in the range 0.08–0.10 suggest mediocre fit, and values greater than 0.10 indicate poor fit. For CFI, values close to or greater than 0.90 indicate acceptable model fit, whereas values close to or greater than 0.95 suggest good fit. Finally, values close to or smaller than 0.08 for SRMR indicate acceptable model fit [79,81]. Furthermore, although the evaluation of measurement invariance usually relies on the chi-square and the chi-square difference test, previous research showed that, when sample size is very large (e.g., 6000 cases), the chi-square difference test might indicate lack of measurement invariance, even when differences in model parameters across groups are trivial. On the contrary, values of approximate fit indices (e.g., CFI) are generally less affected by sample and group size [82]. For this reason, in this study, we considered changes in CFI values less than or equal to 0.01 as indicative of

noninvariance (i.e., if $\Delta CFI \leq 0.01$, then the stricter invariance hypothesis should not be rejected) [83,84]. Statistical analyses were carried out using the software R version 4.0.3 [85], and, more specifically, CFAs were carried out using the lavaan package version 0.6–8 [80] for R software.

3. Results

Descriptive statistics, correlations between study variables, and Cronbach's alphas are available as supplementary information (see Supplementary Materials S2). First, a CFA was performed to investigate the single-factor structure of the BWAS-I. The model showed a poor fit to data: $\chi^2(14) = 1455.12$, $p < 0.001$, RMSEA = 0.111, 90% CI = 0.106–0.115, CFI = 0.882, SRMR = 0.056. A closer inspection of the modification indices revealed that two error covariances, between items 1 (i.e., salience) and 2 (i.e., tolerance), and between items 2 and 6 (i.e., conflict), should be freely estimated. This makes sense, given that these items share similar wording (for a more in-depth argumentation, please see Section 4). A new CFA was carried out, and fit indices showed an acceptable fit to data: $\chi^2(12) = 791.03$, $p < 0.001$, RMSEA = 0.088, 90% CI = 0.083–0.093, CFI = 0.936, SRMR = 0.042. A closer examination of the fit indices revealed that RMSEA still seemed to suggest a less than acceptable fit. However, although the use of RMSEA to assess model fit in models with small degrees of freedom could be problematic [86], it should be noted that the upper value of the 90% CI was below the 0.10 criterion, thus suggesting that the model does not have poor fit [87]. The completely standardized loadings were all significant and ranged from 0.36 to 0.72. Composite reliability was 0.76. Overall, single-factor structure of the BWAS-I is confirmed in this study, and an adequate reliability emerged.

Next, the measurement invariance of the BWAS-I across gender was investigated. The fit indices of the models tested are presented in the upper part of Table 1. The configural invariance model (Model 1) and the metric invariance model (Model 2) showed an acceptable fit to data. Furthermore, the small change in CFI between Model 2 and Model 1 ($\Delta CFI = 0.004$) suggested that metric invariance is supported. The scalar invariance model (Model 3) showed an acceptable fit to data, but the change in CFI between Model 3 and Model 2 was greater than 0.01 ($\Delta CFI = 0.011$). Accordingly, scalar invariance was not supported. An inspection of the modification indices showed that the intercept of item 3 (i.e., mood modification) should be freely estimated. A new CFA was carried out, and the partial scalar invariance model (Model 4) showed an acceptable fit to data. Furthermore, the change in CFI between Model 4 and Model 2 was smaller than 0.01 ($\Delta CFI = 0.008$), and partial scalar invariance was supported. The intercept of item 3 was higher in women than in men ($\tau_x = 2.45$ vs. 2.30, respectively). Finally, the latent mean of WA for women was not different from the latent mean for men, considered as the reference group for this analysis ($\Delta_{\text{mean}} = -0.002$, $p = 0.88$).

Table 1. Values of fit statistics for measurement invariance of the BWAS-I across gender and managerial status.

Invariance Model	χ^2	df	RMSEA [90% CI]	Gender		Model Comparison	ΔCFI
				CFI	SRMR		
Configural (Model 1)	802.360	24	0.088 [0.083, 0.093]	0.937	0.038	-	-
Metric (Model 2)	859.159	30	0.081 [0.077, 0.085]	0.933	0.042	2 vs. 1	0.004
Scalar (Model 3)	1004.212	36	0.080 [0.076, 0.084]	0.921	0.046	3 vs. 2	0.011
Scalar, partial ^a (Model 4)	967.638	35	0.080 [0.076, 0.084]	0.924	0.045	4 vs. 2	0.008
				Managerial status			
Configural (Model 5)	829.045	24	0.089 [0.084, 0.094]	0.933	0.037	-	-
Metric (Model 6)	862.804	30	0.081 [0.077, 0.086]	0.931	0.040	6 vs. 5	0.002
Scalar (Model 7)	1393.858	36	0.095 [0.091, 0.099]	0.888	0.050	7 vs. 6	0.044
Scalar, partial ^b (Model 8)	973.241	33	0.082 [0.078, 0.087]	0.922	0.042	8 vs. 6	0.009

Note. BWAS-I: Italian adaptation of the Bergen Work Addiction Scale; χ^2 = Satorra–Bentler scaled chi-square; df = degrees of freedom; RMSEA = root mean square error of approximation; CI = confidence interval; CFI = comparative fit index; SRMR = standardized root mean square residual. ^a The intercept of item 3 was freely estimated. ^b The intercepts of items 2, 4, and 6 were freely estimated.

Similarly, the measurement invariance of the BWAS-I across managerial status was investigated. The fit indices of invariance models are presented in the lower part of Table 1. The configural invariance model (Model 5) and the metric invariance model (Model 6) showed an acceptable fit to data. The small change in CFI between Model 6 and Model 5 ($\Delta\text{CFI} = 0.002$) suggested that metric invariance is supported. The scalar invariance model (Model 7) showed a less than acceptable fit to data, and the change in CFI between Model 7 and Model 6 was greater than 0.01 ($\Delta\text{CFI} = 0.044$). Accordingly, scalar invariance was not supported. An inspection of the modification indices showed that the intercept of item 2 (i.e., tolerance), item 4 (i.e., relapse), and item 6 (i.e., conflict) should be freely estimated. A new CFA was carried out, and partial scalar invariance (Model 8) was supported, since the model showed an acceptable fit to data and the difference in CFI between Model 8 and Model 6 was smaller than 0.01 ($\Delta\text{CFI} = 0.009$). The intercept of item 2 ($\tau_x = 3.55$ vs. 3.17), item 4 ($\tau_x = 2.45$ vs. 2.08), and item 6 ($\tau_x = 3.42$ vs. 2.82) were all higher in managers than in frontline workers. Finally, the latent mean of WA for frontline workers was not different from the latent mean for managers, considered as the reference group for this analysis ($\Delta_{\text{mean}} = 0.014$, $p = 0.31$). Overall, partial scalar invariance of the BWAS-I held across gender and MS, meaning that factor loadings and most—but not all—item intercepts were equivalent across different populations.

Then, construct and criterion-related validity were investigated. The correlations between the total BWAS-I score and measures of several expectedly related and unrelated constructs and scales (i.e., the DUWAS and the UWES-3 for WA and work engagement, respectively) were examined. With respect to convergent validity, as expected, the BWAS-I was positively correlated with the DUWAS ($r = 0.57$, $p < 0.001$, 95% CI [0.55, 0.58]) as well as with its dimensions of WE ($r = 0.62$, $p < 0.001$, 95% CI [0.61, 0.64]) and WC ($r = 0.31$, $p < 0.001$, 95% CI [0.29, 0.33]). Interestingly, the correlation between the BWAS-I and WE was higher than the correlation between the BWAS-I and WC ($t = 35.95$, $p < 0.001$). Furthermore, contrary to our expectations, the BWAS-I was negatively correlated with work engagement ($r = -0.12$, $p < 0.001$, 95% CI [-0.14, -0.10]), although this correlation was small in magnitude [88].

Next, criterion validity of the BWAS-I was investigated. With respect to correlates of WA, the BWAS-I was positively, albeit weakly, correlated with SOP ($r = 0.06$, $p < 0.001$, 95% CI [0.04, 0.08]) and SPP ($r = 0.22$, $p < 0.001$, 95% CI [0.20, 0.24]), although the correlation was higher in the latter case ($t = 13.34$, $p < 0.001$). There was also a positive correlation between the BWAS-I and workload ($r = 0.60$, $p < 0.001$, 95% CI [0.59, 0.61]). Overall, as expected, the BWAS-I was positively associated with dimensions of perfectionism (although with some differences) and workload, which reflect dispositional and work-related correlates of WA, respectively. Turning to outcomes of WA, the BWAS-I was positively associated with psychological symptoms ($r = 0.52$, $p < 0.001$, 95% CI [0.50, 0.53]) as well as physical symptoms, in terms of musculoskeletal ($r = 0.39$, $p < 0.001$, 95% CI [0.37, 0.40]), gastrointestinal ($r = 0.41$, $p < 0.001$, 95% CI [0.39, 0.43]), and cardiac symptoms ($r = 0.39$, $p < 0.001$, 95% CI [0.38, 0.41]). Furthermore, the BWAS-I was positively associated with WFC ($r = 0.61$, $p < 0.001$, 95% CI [0.59, 0.62]) but negatively associated with JS ($r = -0.25$, $p < 0.001$, 95% CI [-0.27, -0.23]). All in all, the BWAS-I was associated in the expected direction with outcomes of WA in the individual, family, and work domains.

Finally, with respect to incremental validity (see Supplementary Materials S3), hierarchical multiple regression results showed that, after controlling for the effect of gender and managerial status, the BWAS-I added unique variance to the prediction of outcomes in the individual, family, and work domains over and above the DUWAS. Specifically, the change in R^2 values ranged from 0.06 ($p < 0.001$) for JS to 0.17 ($p < 0.001$) for psychological symptoms and WFC.

4. Discussion

The aim of this study was to contribute to the validation of the BWAS in the Italian context—the BWAS-I—with a focus on measurement invariance across gender and man-

agerial status. Overall, the BWAS-I showed adequate psychometric properties in terms of factor structure, reliability, and measurement invariance across gender and managerial status. Furthermore, the BWAS-I showed satisfactory convergent, discriminant, criterion-related, and incremental validity. However, some issues also emerged. First, the original single-factor structure of the BWAS-I was confirmed in this study, with the seven items reflecting a common underlying latent factor, namely WA. However, correlated measurement errors between two couples of items were freely estimated (between items 1 and 2, and between items 2 and 6, respectively). Although this is consistent with similarities in the wording of scale items, this finding warrants further consideration. As originally proposed by Andreassen, Griffiths, et al. [7], the items of the BWAS-I reflect an affective, a cognitive, and a behavioral domain [89]. Interestingly, in line with this reasoning, items 2 and 6 (i.e., tolerance and conflict, respectively) cover working long hours and the intrusion of work into private life, that is, the behavioral domain [89]. Similarly, item 1 (i.e., salience) may reflect a general high devotion of time and energy to working [24], thus being strictly associated with the behavioral aspects of WA. Hence, our findings could suggest a more complex factor structure underlying the BWAS-I [90], which may involve, for example, both a general as well as domain-specific factors of WA [23]. Hence, although these considerations are beyond the aim of this study, future research could investigate alternative factor structures underlying the BWAS-I.

Second, partial scalar invariance of the BWAS-I held across gender and managerial status, meaning that factor loadings and most—but not all—item intercepts are equivalent across different populations. However, with respect to gender, this study showed that the intercept of item 3 (i.e., mood modification) was higher in women than in men. A possible explanation is that women report higher levels of behaviors in response to negative emotions because they are generally more aware of their emotional states [91]. It is also possible that men are generally rewarded for being competitive at work, where control of emotions, aggression, and assertiveness are seen as “effective”, whereas showing feelings of vulnerability and weakness are not [92]. Hence, to meet societal norms and expectations, men may report lower levels of work behaviors in response to negative emotions. Concerning managerial status, the intercepts of item 2 (i.e., tolerance), item 4 (i.e., relapse), and item 6 (i.e., conflict) were all higher in managers than in frontline workers. Workers in managerial positions are often expected to work long hours, to demonstrate complete commitment to their organization, and to prioritize work over family or domestic responsibilities [93]. Hence, it is possible that managers are more likely to report working long hours at the expense of their private life, since these behaviors are consistent with their role expectations. Overall, this result suggests the presence of differential item functioning [94] across gender and managerial status in the BWAS-I. On the one hand, this is consistent—although with some differences—with a previous study showing differential item responding by gender in the compulsive tendencies subscale of the WART [40]. On the other hand, this finding suggests that future studies should further examine measurement invariance of the BWAS-I (as well as other measures of WA), given its potential implications for research and practice. While invariance of factor loadings suggests that numerical values assigned on the BWAS-I have no different meanings across gender and managerial status, further attention should be devoted to partial metric invariance. In fact, previous works have shown that unequal indicator intercepts may substantially affect mean differences when composite scores are used to compare means across groups [95]. Observed means are a function of factor loadings, item intercepts, and the latent mean; differences in one of these three parameters across groups may affect the observed mean difference. Hence, when composite scores are used to compare means across groups, unequal intercepts may result in spurious differences in composite means between groups with equal latent means or in attenuated differences in composite means for groups with unequal latent means [95]. In other words, differences in indicator intercepts in the BWAS-I across gender or managerial status may substantially affect composite mean differences in WA across these groups. Interestingly, when composite scores are considered, women did not show higher levels of WA ($M = 2.41$)

than men ($M = 2.41$) in our study, $t(6412.4) = -0.10$, $p = 0.92$, $d = 0$. However, managers did show higher levels of WA ($M = 2.57$) than frontline workers ($M = 2.39$), $t(1491.3) = -8.92$, $p < 0.001$, $d = 0.27$, a different picture compared to latent mean differences.

Third, the BWAS-I showed adequate convergent and discriminant validity. Indeed, the BWAS-I was positively associated with the DUWAS as well as its dimension of WE and WC. Interestingly, the correlation between the BWAS-I and WE was higher than the correlation between the BWAS-I and WC. However, this is not surprising, given that the WE scale includes items from the Compulsive Tendencies (CT) of the WART, whereas the WC scale encompasses items from the Drive subscale of the WorkBAT [96], and previous research has shown a stronger association between the BWAS and CT [7]. Furthermore, contrary to our expectation, there was a negative—albeit small—association between the BWAS-I and work engagement. Although somewhat unexpected, this result is consistent with a previous study that adopted a multirater perspective [97]. Furthermore, these findings are in line with the idea that the BWAS, by being rooted in the addiction paradigm, reflects the negative features of WA such as the compulsion to work and preoccupation with work activities [1,7], which are distinct from the positive features that characterize work engagement (e.g., positive energy, involvement and focused effort) [98].

Fourth, criterion validity of the BWAS-I was supported in this study. First, WA was positively associated with dimensions of perfectionism and workload, which reflect dispositional and work-related correlates of WA, respectively, although it should be noted that the correlation between WA and SOP was very small in magnitude. Furthermore, the correlation between BWAS-I and SPP was higher than that between BWAS-I and SOP. This result was not completely unexpected, given that a previous meta-analysis [60] has shown that the association between WA and failure-avoiding perfectionism, which includes maladaptive aspects of perfectionism such as SPP, was stronger than the association between WA and excellence-seeking perfectionism, which encompasses adaptive aspects of perfectionism such as SOP. Moreover, in a longitudinal study from Falco et al. [99], SOP predicted WA over time only in workers facing high workloads, suggesting that SOP may be associated with WA only in situations of high stress or in the presence of an adverse environment. Overall, these findings are in line with the biopsychosocial model, according to which WA—similarly to stress [100,101]—may stem from both dispositional and situational factors [18,102]. Second, the BWAS-I was associated in the expected direction with outcomes in the individual, family, and work domains in terms of psycho-physical strain, WFC, and JS, respectively [49,62]. Furthermore, these correlations were higher than those of the DUWAS and its dimensions of WE and WC. These results further suggest that the BWAS reflects the negative features of WA [7]. Finally, the BWAS-I demonstrated incremental validity over the DUWAS in the prediction of the aforementioned outcomes. These results suggest that the BWAS is distinct from prior measures of WA such as the DUWAS and that the BWAS-I could be a useful tool for practitioners to detect WA and prevent negative consequences for the individual and the organization in the Italian context.

This study has some limitations. First, the cross-sectional research design precluded the ability to investigate the longitudinal invariance of the BWAS-I, which is a prerequisite for the assessment of change in a construct over time [39]. Second, the focal constructs were measured using the same measurement method, namely self-report questionnaires; hence, the observed relationships could be affected by method bias [103]. Future research could include a multimethod approach including, for example, observer ratings or biomarkers as measures of WA and its correlates/consequences [104,105]. Third, our study was conducted in a large Italian bank, which may pose problems for the generalization of the results. Hence, further research is needed to replicate and extend our findings in different populations. Fourth, while the gender ratio was not balanced in our study, it reflects the ratio of gender at the bank under investigation. Finally, we only investigated the association between the BWAS and the DUWAS, but it would be interesting to further examine the convergent validity of the BWAS-I by analyzing its relationship with other instruments such as the Multidimensional Workaholism Scale [17] and the Workaholism Analysis

Questionnaire [106]. Finally, although not a limitation per se, it should be acknowledged that a recent study by Molino and colleagues [33] contributed to the validation of the BWAS in the Italian context. However, the validation of a self-report instrument should be intended as a process that involves the accumulation of relevant evidence with the aim to provide a sound scientific basis for the score interpretations [107]. In this perspective, by thoroughly investigating criterion-related validity, incremental validity, and measurement invariance of the BWAS across gender and managerial status, we believe that our study provides a valuable contribution to the validation of the instrument in the Italian context, over and above the previous work by Molino and colleagues, with relevant implications for researchers and practitioners in the field.

Finally, while considering the limitations mentioned above, we believe our study to have relevant implications for organizations and practitioners. The BWAS-I can be used to monitor the levels of WA in different occupational sectors (e.g., during work-related stress risk assessment), thus facilitating interventions at primary, secondary, and tertiary levels [108]. At the primary level, occupational physician/psychologists could suggest to the management interventions aimed at modifying the work environment to reduce the risk of WA (e.g., by promoting organizational cultures that discourage the attainment of work objectives at the expense of private life) [109]. Concerning secondary prevention, interventions should be aimed at promoting personal resources (e.g., self-esteem) [110,111] in individuals at risk of workaholism. Finally, with respect to tertiary prevention, occupational physicians or psychologists/psychotherapists [112] could be involved in the support, treatment, and rehabilitation of work-addicted individuals to prevent further psychiatric [113] or physical [35,114] symptoms that may be associated with WA.

5. Conclusions

Despite the aforementioned limitations, we believe that this investigation provides a relevant contribution to research in the field of WA. On the one hand, by showing its adequate psychometric properties, this study suggests that the BWAS-I is a valid and reliable tool that can be used by researchers and practitioners to assess WA in the Italian context. We also think that the Italian version of the BWAS, which has already been translated in several other languages, can promote cross-cultural investigations of WA. On the other hand, given that some items' intercepts were not equivalent across gender and managerial status, our findings suggest that additional research is needed to further investigate these possible sources of noninvariance and that caution should be taken when assessing mean differences across gender and managerial status using the composite score of the BWAS-I.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/su142113714/s1>, Supplementary Material S1: Psychometric properties of the self-report measures administered in the study [115]; Supplementary Material S2: Descriptive statistics and correlations between study variables; Supplementary Material S3: Incremental validity of the BWAS-I.

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Institutional Review Board Statement: The study procedures were carried out in accordance with the Helsinki Declaration of 1975, as revised in 2000. No ethical approval was sought, since the study was part of a mandatory work-related stress risk assessment conducted by the organization under the Italian law on workplace health and safety (Legislative Decree n. 81/2008). All subjects were informed about the study, and all provided informed consent.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on reasonable request from the corresponding author. The data are not publicly available due to privacy reasons.

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