



# Psychometric qualities of the Argentine version of the Dutch work addiction scale (DUWAS)

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## Abstract

The objective of this study was to validate the 10-item Dutch Work Addiction Scale (DUWAS) for use with Argentine workers. This measure comprises a total of 10 items equally distributed in two dimensions: working excessively and working compulsively. Data were obtained from 459 employees of public and private organizations (52.3% men;  $M_{\text{tenure}} = 6.5$  years). Participants completed the adapted version of the DUWAS together with measures of work passion, job satisfaction, and work-family enrichment. In line with the original validation, exploratory factor analysis revealed a two-factor structure, namely working excessively and working compulsively. Confirmatory factor analysis showed satisfactory standardized loadings and good model fit indices for the two-factor model ( $SB\chi^2 = 2.35$ ;  $GFI = .90$ ;  $CFI = .96$ ;  $RMSEA = .03$ ; 95% CI [.04; .05];  $AIC = 150.31$ ). Both factors showed good internal consistency and composite reliability, and presented expected correlations with the other study variables. These findings support the use of the DUWAS to identify, prevent, and reduce the harmful consequences of work addiction within Argentine organizations.

**Keywords** Workaholism · Work addiction · DUWAS · Factor analysis · Scale validation · Validity

## Introduction

The study of work addiction is currently attracting the interest of health professionals, researchers, and human resource managers, for its multiple individual, social, and organizational implications. *Work addiction* (WA), also known as *workaholism*, has been conceptualized in terms of a negative, pathological, and dysfunctional way of working (Wojdyło

2015). WA is rapidly developing in modern societies, possibly stimulated by the continuing need to access new material goods, to achieve demanding production goals, to maintain some position of power or privilege, or by other similar motivations. In most cases, this addiction goes unnoticed and/or is socially accepted (Moreno et al. 2005), as it is generally appreciated when people expand their work schedules to achieve increasingly ambitious goals, or postpone their holidays when they have a backlog of work. Technology also helps to minimize the social disapproval WA receives in comparison to other frequent addictions (Derks and Bakker 2014), since being constantly connected to a personal computer or a mobile phone has become a lifestyle for the majority of people.

Over the last years there has been a growing interest in WA due to its harmful impact on well-being, satisfaction, interpersonal relationships, and harmonic social functioning (Clark et al. 2016). The current trend is to consider WA as a syndrome that develops over time and recognizes numerous antecedents and consequences (Quinones and Griffiths 2015). Although there is no consensus on the nomological network of WA, recent research has reported that neuroticism, perfectionism, tendency to loneliness, aggressive work behaviors, and excessive work commitment are relevant antecedents of WA, while work-family conflict, increased occupational

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stress, and decreased job satisfaction and psychological well-being are among its most important consequences (Andreassen et al. 2012; Andreassen et al. 2016; Clark et al. 2016; Hakanen and Peeters 2015).

The literature review indicates that empirical research on the subject is still relatively scarce. The earliest studies date back to the early 1990s, when specialists noted that WA was a trigger for vascular, digestive, psychosomatic, and cardiologic disorders as well as for emotional and family problems. However, no solid body of knowledge currently exists to help implement prevention strategies or recovery programs once the addiction is established. Systematic reviews (Ng et al. 2007) have indicated that of 131 studies published until the year 2000 that contained the term *workaholism* in their titles, only 40 appeared in scientific journals, and as few as 28 were of an empirical nature. In fact, a search in the PsycINFO database yields approximately 140 papers published in academic journals between 2010 and 2017 with the term *workaholism* or *work addiction* in their titles. This limited amount of empirical research is striking given the aforementioned growing interest in the subject, in line with the increase in the number of workaholics.

Since the appearance of the construct, different conceptual definitions of WA have been put forward, but none has yet achieved general consensus among specialists (Wojdyło 2015). The term workaholism was coined by Oates (1971), who compared WA to alcoholism and defined it as an excessive and uncontrollable need to work incessantly that affects people's health and social relationships. It has been noted, for example, that a workaholic is someone who establishes an irrational commitment to overwork, who is incapable of regulating his/her work habits, who excludes other activities and interests, who strives beyond reason to meet the requirements of his/her occupation, and/or who works compulsively because of an internal necessity and not motivated by external factors (Andreassen 2014; Clark et al. 2016). In a recent attempt to summarize this profusion of definitions, Andreassen (2014) pointed out that WA was initially conceptualized in behavioral terms, that is, people who worked a minimum of 50 h per week were considered addicts. Nonetheless, considering that the number of hours dedicated to work was an insufficient parameter to define the construct—as many employees work overtime because of financial problems or specific career goals—it was highlighted that the distinguishing feature of a workaholic was his/her tendency to work beyond situational requirements. At present, the focus has shifted to the motivational components (van Wijhe et al. 2014), defining workaholic as a person who invests a considerable amount of time in work-related activities with negative consequences for their social and family development, who continues to concentrate on work even in their leisure time, and who works beyond the expectations, needs or demands of the organization.

As for the operational definitions of WA, since the late 1990s several tools have been developed to measure the construct. One of the most recent measures is the Bergen Work Addiction Scale (BWAS; Andreassen et al. 2012), which is composed of 7 items, with a 5-point Likert scale, that reflect seven core elements of addiction (salience, mood modification, tolerance, withdrawal, conflict, relapse, and problems). It has been validated with a multi-occupational sample of Norwegians ( $n = 5837$ ), showing a one-factor model with acceptable fit indices. Also, among the pioneering measures of WA is the Workaholism Battery Scale (WorkBat), developed by Spence and Robbins (1992). This 25-item Likert-type measure explores the dimensions of work involvement, work drive, and work enjoyment. Although it is of the most widespread measures of WA, it has been objected that the work involvement subscale does not meet the appropriate psychometric properties, and that the work enjoyment subscale does not match any criteria of WA. Later, in 1999, Robinson developed the Work Addiction Risk Test Scale (WART Scale), which allows workers to be classified into addicts, pseudo-addicts, and non-addicts. It is also a 25-item Likert-type scale that measures compulsive tendencies, control, impaired communication and self-absorption, inability to delegate, and self-worth. The main criticism levelled at this instrument is that its items overlap with the scales designed to measure type A behavior pattern (Linley et al. 2002).

Considering the work drive subscale of the WorkBat (Spence and Robbins 1992) and the compulsive tendencies subscale of the WART (Robinson 1999), Schaufeli et al. (2009) developed the Dutch Work Addiction Scale (DUWAS), which includes two components: working excessively and working compulsively. *Working excessively (WE)* expresses a behavioral tendency to devote an exceptional amount of time to work activities. *Working compulsively (WC)* refers to the cognitive or mental component of WA, which is expressed through an obsession with work, i.e. a compulsive nature of the underlying motivation to work hard. Although the preliminary version of this instrument consisted of 17 items (Taris et al. 2005), the version that has achieved the greatest popularity and consensus among researchers is the abbreviated 10-item scale with a 5-point Likert-type format (Schaufeli et al. 2009).

So far, different validation studies have demonstrated the psychometric qualities of the 10-item DUWAS. The initial validation (Schaufeli et al. 2009) presented evidence of the two-factor structure of the scale with data from independent samples of Dutch ( $n = 7594$ ) and Japanese ( $n = 3311$ ) workers ( $\chi^2_{(68)} = 1300.23$ ; Goodness-of-Fit Index [GFI] = .95; Comparative Fit Index [CFI] = .91; Root Mean Square Error of Approximation [RMSEA] = .06). Similar results were reported by del Libano et al. (2010) from a heterogeneous sample of Dutch ( $n = 2164$ ) and Spanish ( $n = 550$ ) workers, concluding that this two-factor structure was invariant across both

countries ( $\chi^2_{(65)} = 602.42$ ; GFI = .96; CFI = .93; RMSEA = .05). The factorial structure of the scale was later confirmed on samples of 324 Brazilian (Carlotto and del Libano 2010), 351 Israeli (Littman-Ovadia et al. 2014), 665 French (Sandrin and Gillet 2016), and 1027 Italian workers (Balducci et al. 2017).

Since a valid version of this measure is not yet available for use in Argentina, the objective of the present study was precisely to validate the DUWAS (Schaufeli et al. 2009) with a large sample of Argentine workers. The availability of a validated version of this instrument will allow to diagnose, prevent, and anticipate the harmful consequences of WA, contributing to both the health of workaholics and the climate of the organizations.

## Method

### Design

The study falls into the category of instrumental research (Ato et al. 2013), for it is oriented to the validation of a measurement instrument and to the analysis of its psychometric properties. In conformity with international standards and guidelines for validation practices (Chan 2014), the following steps were followed to conduct the study: translation and semantic adaptation of each item of the original scale; exploratory and confirmatory analysis of the factorial structure of the instrument; determination of convergent, concurrent, and discriminant validity; and reliability analyses (internal consistency and composite reliability).

### Participants

An initial non-random sample of 500 participants was obtained, of which 30 cases had to be discarded for not having fully completed the data collection instrument, giving a final sample of 470 workers (246 men and 224 women). The mean age was 37 years ( $SD = 4.86$ ), and the mean tenure was 6.50 years ( $SD = 5.18$ ). Thirty-nine percent of the sample had higher education (tertiary and/or university level), while the remaining 61% had primary/secondary education. On average, employees worked 42.5 h per week ( $SD = 6.50$ ). Sixty-nine percent had a permanent position, while 31% had a temporary contract. Regarding the organizational sector, 55% worked in public organizations and 45% worked in private companies, and regarding the distribution of the sample by organizational activity, 42% worked in trade and services, 24% in industry, 21% in health, and 13% in education. Finally, 70% lived with a partner and 30% lived alone.

## Procedure

Data collection took place in the first semester of 2017. Invitations to participate in the study were sent to the human resource managers of the organizations that accepted to collaborate with the research. These invitations included not only information about the objectives and relevance of the study, but also about the rights of potential research participants. Managers were responsible for sending written invitations to all employees who met the following inclusion criteria: (1) being 18 years or older; (2) having at least primary education level; and (3) having tenure of at least six months. Of a total of 800 invitations sent, 500 employees finally accepted to participate in the study (62.5% response rate). Data collection was carried out with different groups of workers, on specific dates arranged with the organizational authorities, and at the physical places provided for that purpose. The whole process was conducted by specially trained personnel. Participation was voluntary, anonymous, and confidential, without incentives of any kind. In all cases, participants individually completed a booklet containing a first sheet with the purpose of the study and the instructions to respond the survey, a second sheet with the informed consent form, and the remaining pages with a random distribution of the measures described below. Specific doubts about the questionnaire and/or its response options were individually clarified.

The research was conducted in full accordance with the ethical standards established by the 1964 Declaration of Helsinki and its later amendments and by the American Psychological Association (2017) Ethical Principles of Psychologists and Code of Conduct. CONICET ethical recommendations for research in the social and human sciences (Resolution 2827/06) were also considered in the implementation of the study (CONICET 2006).

### Instruments

**Work Addiction Scale** The adapted version of the Dutch Work Addiction Scale (DUWAS; Schaufeli et al. 2009) was used to measure this construct. The scale is composed of 10 items with a 5-point Likert format (1 = *Totally disagree* to 5 = *Totally agree*), equally distributed in two subscales: WE (5 items; e.g., “I find myself continuing to work after my co-workers have called it quits” [“Por lo general sigo trabajando después que mis compañeros ya han terminado”];  $\alpha = .70$ ) and WC (5 items; e.g., “I feel obliged to work hard, even when it is not enjoyable” [“Me siento obligado a trabajar duro, incluso cuando no lo disfruto”];  $\alpha = .68$ ). Although there were previous validations of the DUWAS in Spanish language, given the lexical and semantic particularities of Argentine Spanish, we decided to adapt and validate the original English scale ourselves. Following the international guidelines for adapting measures (Chan 2014), the adaptation

process was carried out in three steps: the original instrument was translated from English to Argentine Spanish; two English translators back-translated the Argentine version to English; the same translators blindly compared the two versions of the instrument in order to identify the degree of agreement between the original items and the translated items, taking full account of the linguistic and cultural characteristics of the Argentine population. After this analysis, both professionals indicated that the semantic equivalence between the original and the translated items was highly satisfactory.

**Work Passion Scale** The Argentine adaptation (Salessi and Omar 2018) of the homonymous scale (Vallerand et al. 2003) was employed. The measure comprises 14 items with a 5-point Likert format (1 = *Totally disagree* to 5 = *Totally agree*) equally distributed among the subscales of harmonic passion (e.g., “The new things that I discover with this activity allow me to appreciate it even more”;  $\alpha = .79$ ) and obsessive passion (e.g., “The urge is so strong that I can’t help myself from doing this work”;  $\alpha = .80$ ).

**Job Satisfaction Scale** The Argentine adaptation (Salessi and Omar 2016) of the Generic Job Satisfaction Scale (Macdonald and MacIntyre 1997) was used to explore this variable. The measure is composed of seven items (e.g., “In my work I can apply all my talents and skills”;  $\alpha = .87$ ) with a 5-point Likert scale (1 = *Totally disagree* to 5 = *Totally agree*).

**Work-Family Enrichment Scale** The Argentine version (Omar et al. 2015) of the homonymous scale developed by Carlson et al. (2006) was applied to measure this construct. The instrument is composed of 12 items that are presented in a 5-point Likert format (1 = *Totally disagree* to 5 = *Totally agree*) and distributed in the subscales of work-family enrichment (6 items; e.g., “My involvement in my work provides me with a sense of accomplishment and this helps me be a better family member”;  $\alpha = .81$ ) and family-work enrichment (6 items; e.g., “My involvement in my family helps me acquire skills and this helps me be a better worker”;  $\alpha = .78$ ).

## Data Analysis

Data processing and analysis were performed using Factor, SPSS 19, G\* Power, and EQS 6.1.

Initially, a series of preliminary analyses were carried out in order to evaluate the quality and reliability of the data. The data matrix was examined to detect the presence of outliers and missing values. Outliers were identified by means of  $Z$  scores and the squared Mahalanobis distances ( $D^2$ ) for each variable. Atypical univariate observations were considered to be more than 3.5  $SD$  of the mean, and atypical multivariate observations were those with  $D^2$  with a probability of .001 or less (Hair et al. 2010). The distribution of the variables was

analyzed by calculating descriptive statistics (means and  $SD$ ), skewness and kurtosis coefficients, and discrimination indices (corrected item-total correlations) for each item. Values of kurtosis and skewness lower than 1.60 and positive correlations higher than .30 were considered adequate (Tabachnick and Fidell 2013).

Construct validity was determined by factorial analyses. First, an exploratory factor analysis was executed, after obtaining the sample adequacy indices (Kaiser-Meyer-Olkin measure and Bartlett’s sphericity test). Given the ordinal nature of the data, the unweighted least squares (ULS) method was used based on the matrix of polychoric correlations (Lloret-Segura et al. 2014). A two-step analytical strategy was applied to determine the number of factors. On the one hand, an optimized parallel analysis was performed, randomly extracting 500 submatrices and implementing minimum rank factor analysis (MRFA). On the other hand, the suggested factors were extracted considering the Promin oblique rotation that assumes factor intercorrelation. Complementarily, the scree test was examined taking into account the components located above the curve of the scree plot. The criteria for selection of items was that they weighed .40 or more on the factor and that they did not load on more than one factor at the same time (Lloret-Segura et al. 2014).

Then a confirmatory factor analysis was carried out using maximum likelihood (ML) estimation method with the Satorra-Bentler robust chi-square ( $S-B\chi^2$ ; Bentler 2006). To evaluate the goodness of fit of the model, the following conditions were examined: that the  $S-B\chi^2$  divided by the degrees of freedom ( $S-B\chi^2/df$ ) was less than 3, that GFI and the CFI were equal to or greater than .90, and that the RMSEA was less than .05. Also, the Akaike information criterion (AIC) index was calculated, knowing that the lower its value, the more parsimonious the model is (Hair et al. 2010).

The validity of the instrument was analyzed at the convergent, discriminant, and concurrent levels, together with the internal consistency and composite reliability of the scale. In line with the recommendations of the literature (Henseler et al. 2015), convergent and discriminant validity was computed by means of the average variance extracted (AVE) and its square root. The AVE estimates the common variance between the indicators and their latent factor; values greater than .50 indicate adequate convergent validity, since they show that more than 50% of the factor variance of the construct is due to its indicators. Besides, values of the square root of the AVE greater than the correlation between the latent factors show that each construct shares more variance with its indicators than with the rest. Concurrent validity was assessed from the calculation of the relationships between the constructs. Given the ordinal nature of the data, the Spearman correlation coefficient was used for such analysis. The reliability of the instrument was established through the composite reliability (CR) and the ordinal alpha coefficients. In



both cases, values above .70 are considered evidence of satisfactory reliability (Gadermann et al. 2012).

Next, the relationships between socio-demographic variables (gender, age, tenure, educational level, organizational sector, type of contract, and branch of activity) and WA were analyzed. According to each type of variable, analyses of variance (one-way ANOVA), differences between means (Student's *t*), and correlation analyses were performed. When significant differences were found, the Cohen *d* statistic (t-test) and the partial square-eta coefficient ( $\eta^2$ , ANOVA) were computed to estimate the effect size. According to Cohen (1988), small ( $d = |.2|$ ,  $\eta^2 = 1\%$ ), medium ( $d = |.5|$ ,  $\eta^2 = 10\%$ ), and large values ( $d = |.8|$ ,  $\eta^2 = 25\%$ ) were considered for the effect size interpretation.

Finally, in order to calculate the percentage of addiction in the total sample, all participants were classified into five levels of WE and WC (*very low to very high*). Such levels were established by dividing the response range (1-to-5 Likert scale) into five equal intervals. The cut-off scores were set in accordance with previous operationalizations of behavioral addictions (Andreassen et al. 2014), as well as with the nosological approach found in contemporary psychiatric diagnostic systems (APA 2013).

## Results

### Preliminary Analyses

Missing data followed a random distribution and did not exceed 5% in each item, so they were replaced by the estimation-maximization method (Tabachnick and Fidell 2013). Eleven atypical multivariate cases were detected and excluded from the 470 of the original data matrix, which was finally made up of 459 cases. No skewness or kurtosis problems were observed, and the item-total correlations were positive. Table 1 presents the descriptive, skewness, kurtosis, and discrimination indices.

### Construct Validity

Given the recommendation to have a minimum of 200 observations to ensure a stable and generalizable factor solution (Lloret-Segura et al. 2014), 230 cases were randomly selected from the 459 cases in the database. The Bartlett sphericity test was significant ( $\chi^2_{(36, 230)} = 499.82$ ,  $p < .001$ ) and the Kaiser-Meyer-Olkin sample adequacy measure reached a value of .89, showing the plausibility of the factor analysis. The parallel analysis suggested two factors with eigenvalues greater than their equivalent of the random data matrix. As can be seen in Fig. 1, the scree test for the magnitude of eigenvalues also indicated the relevance of retaining two factors. The

**Table 1** Descriptive statistics, skewness, and kurtosis indices, and corrected item-total correlation for the DUWAS items ( $n = 459$ )

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	<i>r</i> i-total
1	2.92	1.25	-.33	-1.06	.46
2	2.81	1.20	-.18	.94	.45
3	2.80	1.33	.17	.21	.50
4	3.31	1.16	-.40	-.60	.43
5	3.06	1.30	-.92	1.07	.50
6	2.18	1.17	-.52	.77	.49
7	3.04	1.22	.80	-.54	.53
8	2.47	1.36	.25	-.95	.60
9	2.30	1.31	.43	-.99	.48
10	3.24	1.12	-.38	-.61	.51

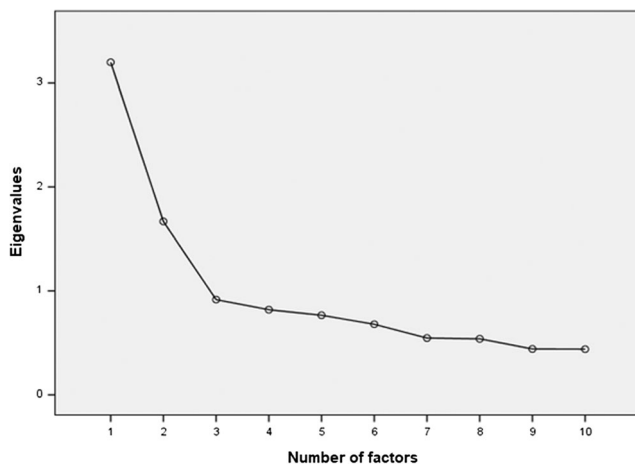
overall percentage of common variance explained by the extracted factors was 53.48%.

The distribution of the items was in accord with the originally proposed dimensions labelled “working excessively” (WE) and “working compulsively” (WC). In line with the recommendations of the specialized literature (Lloret-Segura et al. 2014), Table 2 shows both the pattern matrix (with the factor loadings of each item) and the structure matrix (containing the correlations between observed and latent variables).

A confirmatory factor analysis was carried out with the remaining sample ( $n = 229$ ). Following the guidelines of the strategy of rival models, the goodness of fit of the model derived from the exploratory factor analysis was compared with a one-factor model. The results obtained are reported below.

**One-Factor Model (a General Factor of WA with 10 Items as Observed Variables)** This model did not present an adequate fit to the data:  $SB\chi^2 = 11.74$ ; GFI = .69; CFI = .62; RMSEA = .11; 95% CI [.10; .11]; AIC = 437.42. Standardized factor loadings were between .33 and .66 ( $p < .05$ ). The deletion of the items with the lowest loadings (item 4: “Por lo general estoy ocupado, haciendo muchas cosas al mismo tiempo”, and item 5: “Por lo general hago dos o tres cosas al mismo tiempo, como comer y tomar notas mientras estoy hablando por teléfono”) did not produce a significant improvement in fit:  $SB\chi^2 = 9.24$ ; GFI = .75; CFI = .79; RMSEA = .09; 95% CI [.08; .10]; AIC = 334.89.

**Two-Factor Model (Two Correlated Factors with 10 Items as Observed Variables)** This model exhibited a good fit to the data:  $SB\chi^2 = 2.35$ ; GFI = .90; CFI = .96; RMSEA = .03; 95% CI [.04; .05]; AIC = 150.31. Modification indices suggested that model fit could be improved by correlating the error terms of items 1 (“Para mí es importante trabajar duro incluso cuando no disfruto lo que estoy haciendo”) and 5 (“Me siento obligado a trabajar duro, incluso cuando no lo



**Fig. 1** Scree plot corresponding to the items of the DUWAS

disfruto”) of the WC factor. However, considering that model fit in the absence of such correlation was already satisfactory, and taking into account the recommendations of specialists (Brown 2015; Gerbing and Anderson 1984; Shah and Goldstein 2006) who advise to dismiss model respecification when it is not based on conclusive theoretical or methodological reasons, we decided not to add such covariation. The two factors (WE and WC) correlated positively and significantly ( $r = .64, p < .001$ ). The standardized loadings of the factor WE oscillated

between .50 and .73 ( $p < .05$ ), while the loadings of the factor WC were between .59 and .75 ( $p < .05$ ). The final measurement model is shown in Fig. 2.

### Concurrent, Convergent, and Discriminant Validity

Table 3 shows the correlation coefficients and the values corresponding to the AVE index and its square root.

As can be seen in Table 3, WC and WE are negatively associated with job satisfaction and enrichment in both directions (family-work and work-family). The same pattern was observed with harmonic passion. Moreover, positive relationships were found between both dimensions of WA and obsessive passion, being slightly higher for WC. Findings also indicate that the scale has adequate convergent-discriminant validity, since the variance captured by the factors is greater than the variance due to measurement errors, and it can be explained by the chosen indicators. In addition, the square root of the AVE was greater than the squared correlations between each dimension and the remaining ones, suggesting adequate discriminant validity of the constructs (Henseler et al. 2015).

### Reliability Analyses

The factor WE obtained an ordinal alpha of .74 and a CR of .71, while the factor WC slightly exceeded those values,

**Table 2** Factor analysis. Structure matrix and pattern matrix corresponding to the items of the DUWAS (Spanish version / original English version;  $n = 230$ )

Item	Pattern matrix		Structure matrix	
	I	II	I	II
<b>Working excessively (WE)</b>				
1. Dedico más tiempo a trabajar que a hacer cosas que me causan placer / <i>I spend more time working than on socializing with friends, on hobbies, or on leisure activities</i>	.68		.44	
2. Por lo general sigo trabajando después que mis compañeros ya han terminado / <i>I find myself continuing to work after my coworkers have called it quits</i>	.65		.49	
3. En mi trabajo siento que estoy en una carrera contrarreloj / <i>I seem to be in a hurry and racing against the clock</i>	.77		.58	
4. Por lo general estoy ocupado, haciendo muchas cosas al mismo tiempo / <i>I stay busy and keep many irons in the fire</i>	.50		.42	
5. Por lo general hago dos o tres cosas al mismo tiempo, como comer y tomar notas mientras estoy hablando por teléfono / <i>I find myself doing two or three things at one time such as eating lunch and writing a memo, while taking on the telephone</i>	.46		.43	
Percentage of variance explained: 37,12%				
<b>Working compulsively (WC)</b>				
1. Para mí es importante trabajar duro incluso cuando no disfruto lo que estoy haciendo / <i>It is important to me to work hard even when I do not enjoy what I am doing</i>		.69		.57
2. Me siento culpable cuando tengo un día libre en el trabajo / <i>I feel guilty when I take time off work</i>		.61		.51
3. Siento un impulso interno que me lleva a trabajar mucho, lo quiera o no / <i>I feel that there is something inside me that drives me to work hard</i>		.76		.69
4. Me resulta difícil relajarme cuando no estoy trabajando / <i>It is hard for me to relax when I am not working</i>		.68		.52
5. Me siento obligado a trabajar duro, incluso cuando no lo disfruto / <i>I feel obliged to work hard, even when it is not enjoyable</i>		.64		.59
Percentage of variance explained: 16,36%				

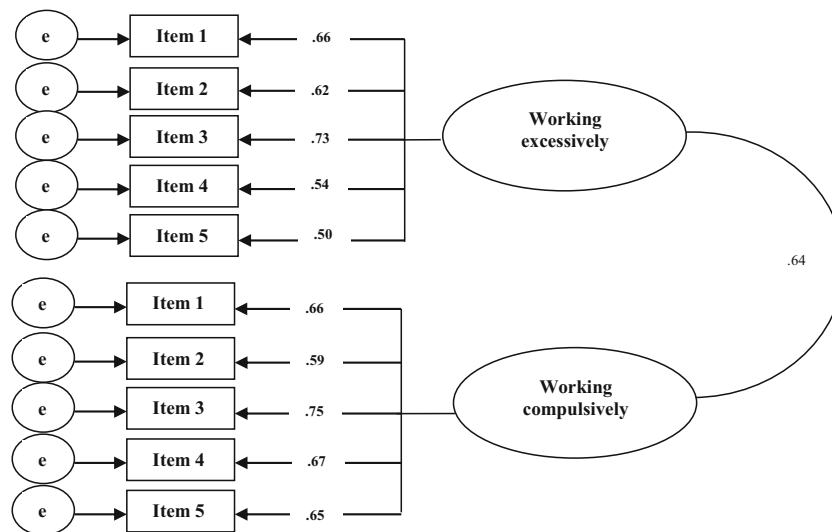


Fig. 2 Measurement model of the DUWAS (own validated version)

$\alpha = .79$ ,  $CR = .81$ . Such results show that the adapted version of the instrument has satisfactory internal consistency and CR.

### Analysis of Group Differences

The results of Student’s t-tests indicated that the dimensions WE ( $M_{men} = 2.89$ ,  $SD = .87$ ;  $M_{women} = 2.94$ ,  $SD = .95$ ;  $t_{(457)} = -.31$ ,  $p = .75$ ) and WC ( $M_{men} = 2.84$ ,  $SD = .97$ ;  $M_{women} = 2.92$ ,  $SD = .99$ ;  $t_{(457)} = -.45$ ,  $p = .65$ ) were not significantly different between men and women, nor between single or married workers (WE:  $M_{single} = 3.01$ ,  $SD = .95$ ;  $M_{married} = 2.62$ ,  $SD = .89$ ;  $t_{(457)} = .92$ ,  $p = .60$ ; WC:  $M_{single} = 3.10$ ,  $SD = 1.04$ ,  $M_{married} = 2.80$ ,  $SD = 1.01$ ;  $t_{(457)} = 1.49$ ,  $p = .15$ ). Also, there were no differences between permanent and temporary workers (WE:  $M_{permanent} = 3.01$ ,  $SD = .95$ ;  $M_{temporary} = 2.62$ ,  $SD = .89$ ;  $t_{(457)} = .92$ ,  $p = .60$ ; WC:  $M_{permanent} = 3.10$ ,  $SD = 1.04$ ;  $M_{temporary} = 2.80$ ,  $SD = 1.01$ ;  $t_{(457)} = 1.49$ ,  $p = .15$ ). On the other hand, there were significant differences between workers in the public sector and workers in the private sector. The latter showed higher levels in both dimensions (WE:  $M_{public} = 2.66$ ,  $SD = .95$ ;  $M_{private} = 3.04$ ,  $SD = .89$ ;  $t_{(457)} = -1.95$ ,  $p = .04$ ;  $d = -.41$ ; WC:  $M_{public} = 2.71$ ,  $SD = .90$ ;  $M_{private} = 3.09$ ,  $SD = 1.04$ ;  $t_{(457)} = -1.98$ ,  $p = .04$ ;  $d = -.39$ ). In both cases, the effects were moderate. Similarly, workers with higher academic studies reported higher levels of WA than workers with average educational level (WE:  $M_{middle\_level} = 2.46$ ,  $SD = 1.05$ ;  $M_{high\_level} = 2.81$ ,  $SD = 1.08$ ;  $t_{(457)} = -2.16$ ,  $p = .18$ ;  $d = -0.32$ ; WC:  $M_{middle\_level} = 2.31$ ,  $SD = 1.03$ ;  $M_{high\_level} = 2.89$ ,  $SD = 1.13$ ;  $t_{(457)} = -3.89$ ,  $p < .001$ ;  $d = -.52$ ), showing, once again, moderate effects. The one-way ANOVA yielded significant differences for organizational activity only in the dimension WE ( $F_{(3, 454)} = 11.19$ ,  $p < .001$ ;  $\eta^2 = .09$ ). The post hoc comparison using Bonferroni test determined that workers in the industrial sector tend to perceive they devote more time and energy to work

than workers in the education sector ( $M_{industry} = 3.89$ ,  $SD = 1.53$ ;  $M_{education} = 2.02$ ,  $SD = .67$ ). Finally, the correlation analysis did not show significant associations between WA and age, tenure, or weekly working hours.

### Percentages of Argentine Employees with WE and WC in the Study Sample

In view of the 5-point Likert scale used to answer the 10 items of the DUWAS, the total sample was classified into five levels of WC and WE, as shown in Table 4. Such levels were labeled *very low* [1.00–1.80), *low* [1.80–2.60), *medium* [2.60–3.40), *high* [3.40–4.20), and *very high* [4.20–5.00], considering *individuals with WC* or *with WE* those that present very high scores in these dimensions of WA.

This analysis showed that 25.5% of participants present high scores in WE, while 7.8% have very high scores, thus suffering from WE. Similarly, 23.3% got high scores in WC, while 5.9% obtained very high scores in WC, thus suffering from WC.

### Discussion

The objective of this study was to validate the Dutch Work Addiction Scale (DUWAS) developed by Schaufeli et al. (2009) for use with Argentine workers. The analyses indicated that the adapted measure has satisfactory validity and reliability. Regarding the structural validity, the two factors identified through the exploratory factor analysis and then corroborated by the confirmatory factor analysis demonstrated the two-dimensional nature of the construct. This structure reproduces the solution reported by both the original authors (Schaufeli et al. 2009) and other validation studies (Balducci et al. 2017; Carlotto and del Libano 2010; del Libano et al. 2010; Littman-

**Table 3** Correlation coefficients, average variance extracted (AVE), and square root of the AVE corresponding to the variables under study

Variables	1	2	3	4	5	6	7	AVE
1. WE	(.87)	.74**	-.35**	.55**	-.46**	-.41**	-.37**	.77
2. WC		(.87)	-.37**	.64**	-.44**	-.44**	-.40**	.76
3. Harmonic passion			(.90)	.35**	.62**	.35**	.32**	.82
4. Obsessive passion				(.89)	.25*	-.42**	-.46**	.80
5. Job satisfaction					(.92)	.45**	.42**	.85
6. W→F enrichment						(.84)	.55**	.72
7. F→W enrichment							(.84)	.71

Square roots of the AVE are shown along the diagonal

WE Working excessively, WC Working compulsively, W→F work-family, F→W family-work

\* $p < .05$ ; \*\* $p < .01$

Ovadia et al. 2014; Sandrin and Gillet 2016). Therefore, in line with the latent structure of the construct, the factors were named *working excessively* (WE) and *working compulsively* (WC), keeping the original labels proposed by Schaufeli and his colleagues.

Our findings indicate that the DUWAS has an acceptable convergent-discriminant validity, which means that the variance of the WA construct can be adequately explained through its 10 indicators. In addition, the scale showed good concurrent validity, given that the dimensions of WC and WE were, as expected, negatively associated with job satisfaction, work-family enrichment (in both directions), and harmonic passion, and positively related to obsessive passion. These results confirm previous observations (Caesens et al. 2014) that posit that workaholics devote too much time to work, resulting in few opportunities to recover from their excessive efforts. This fact prevents them from enjoying work, enriching by performing both family and work roles, and feeling satisfied with their jobs. In turn, as they think obsessively about their work, even when they are not working, workaholics are more likely to develop obsessive passion, which increases their dissatisfaction and feelings of discomfort (Hakanen and Peeters 2015).

**Table 4** Distribution of participants according to WE and WC scores (N = 459)

Score	WE		WC	
	N	%	N	%
Very low [1.00–1.80)	27	5.9	48	10.5
Low [1.80–2.60)	84	18.3	94	20.5
Medium [2.60–3.40)	195	42.5	183	39.9
High [3.40–4.20)	117	25.5	107	23.3
Very high [4.20–5.00]	36	7.8	27	5.9

WE Working excessively, WC Working compulsively

In comparison with the original version of the scale, our results also show that the DUWAS has good internal consistency, even within the range obtained in previous research (Balducci et al. 2017; Carlotto and del Libano 2010; del Libano et al., 2010; Littman-Ovadia et al. 2014; Sandrin and Gillet 2016). Furthermore, the fact that the ordinal alpha coefficient for each dimension was greater than the coefficient for the total scale indicates that both dimensions have acceptable reliability, suggesting they could be used separately for practical purposes.

With regard to WA and socio-demographic characteristics, no differences were found in relation to gender or age, which coincides with previous validation findings with Israeli and French workers reported by Littman-Ovadia et al. (2014) and Sandrin and Gillet (2016), respectively. There were also no significant differences for any of the two dimensions of WA based on marital status, tenure, or weekly working hours. However, differences in the WE dimension were observed in relation to the educational level of workers and to the sector and activity of their organizations. In this sense, employees with higher education recognized that they work more excessively than those with medium-level studies, which agrees with the results reported by Butuceanu and Uscătescu (2013) and by Sandrin and Gillet (2016). Moreover, private sector employees expressed higher levels of both WE and WC than those in the public sector. These differences could be interpreted in light of the human resource management practices that characterize each of these sectors. In this regard, it has been reported (Omar et al. 2017) that Argentine public organizations are characterized by the implementation of employee-oriented practices and by rigid human resource management systems. These practices do not promote excessive or compulsive work, since the former are aimed at protecting and meeting the needs of employees and the latter impose such strict regulations that prevent any extra-role initiative. On the contrary, Argentine private companies are characterized by the implementation of market- and results-oriented practices and by open systems. These are practices that stimulate competitiveness, favor the establishment of



increasingly high goals, and require sustained long-term efforts, which is why they are more likely to contribute to the WA. Also, in line with the results reported by Littman-Ovadia et al. (2014) in their validation of the DUWAS with Hebrew-speaking workers, our findings show that both managers and employees in the industrial sector perceive they devote more time and energy to work than employees in the education sector. Possibly, these differences could also be explained considering the organizational culture of companies in the industrial sector (Omar and Urteaga 2010), which are characterized by greater competitiveness and by increasingly higher production standards, which could lead to lower feelings of satisfaction and, possibly, to higher levels of WA.

### **Strengths, Limitations, Practical Implications, and Suggestions for Future Studies**

Despite the promising results of the present study, it is necessary to make some considerations in terms of its possible limitations. First, the stability of the dimensions over time has not been tested, so it would be advisable for future studies to examine their test-retest reliability, even when there is evidence that WA is a relatively stable psychological characteristic. Second, causal relationships between WA and other variables could not be established due to the cross-sectional nature of the research, so it would be pertinent to conduct future longitudinal or experimental studies to determine such relationships. Third, since the DUWAS is a self-report measure that evaluates perceived WA, responses could be contaminated by the subjective component that this entails, limiting the generalization of the results. Finally, given that the data were collected at the same time point and using self-report measures, the results could present common method bias and, for this reason, the relationships between the variables could be somewhat inflated. It would be important for future studies to resort to the combination of various data collection techniques in order to overcome the possible contamination due to systematic error variance shared among variables measured.

In spite of such limitations, it should be noted that the validated 10-item version of the DUWAS stands as a very parsimonious and easy-to-apply scale, especially if it is considered that short measures require less time to be completed, present lower rates of missing data, and tend to generate lower of amounts fatigue and rejection among individuals. From a practical standpoint, it is important to have these brief scales in the language of the target population, in order to know if and to what extent workers perceive themselves as workaholics. Furthermore, the validated version of the DUWAS can be useful for researchers and professionals, especially for those who are looking for a simple, valid, and reliable measure to screen for addiction. This valuable information can help design and implement strategies and interventions to promote a more harmonious relationship between the worker and his/her

work, which will undoubtedly result in a better quality of life for all. Also, data obtained from the use of a valid and reliable scale can contribute to generating consistent statistics on the prevalence of this addiction in Argentina, given there are no official figures on the subject. In fact, the only information available on Argentinians' WA has been published by mass circulation newspapers ("La adicción al trabajo, una tendencia en aumento", Clarín 2011) that report figures from surveys or opinion polls with little scientific rigor. The findings of this research contribute to fill this knowledge gap by showing that 7.8 and 5.9% of the Argentine study sample suffers from WE and WC, respectively. These WA percentages are similar to those reported in previous studies, such as Andreassen et al. (2014) with Norwegian employees and Sussman et al. (2011) with U.S. workers. These results highlight the need to have adequate treatments, especially for individuals located at the extreme of each dimension of the construct (WE and WC), for whom the costs of WA can be very high. However, until now there is no consensus on effective therapies to be implemented, since WA is not sufficiently acknowledged as other traditional addictions. Therefore, major future challenges include: (a) to agree on cut-off scores and/or specific criteria to diagnose WA, and (b) to agree on therapeutic and recovery programs, possibly based on general guidelines for alcoholism, gambling, and other similar addictions.

The results (and limitations) of the present study could also be capitalized for future research in the area. These suggestions, although not exhaustive, could be oriented to: (a) conducting cross-cultural research to validate the DUWAS with samples of employees from different countries of the region, in order to form a body of knowledge that genuinely reflects WA among Latin Americans; (b) encouraging organizational specialists and researchers to perform studies to analyze work health and psychosomatic symptoms associated with WA; (c) producing reliable statistics that show the impact of WA in Argentina and thus promote prevention and/or intervention programs to eradicate (or palliate) this dysfunctional way of working.

### **Conclusions**

In summary, the results of the present study indicate that the Argentine adaptation of the DUWAS has satisfactory psychometric properties, therefore standing as a valid and reliable measure for the evaluation of WA. The adapted version of the DUWAS for use with Argentine Spanish-speaking workers presented a two-factor model, labeled WE and WC, in line with the original proposal by Schaufeli et al. (2009). This model was confirmed with an acceptable goodness of fit. The two components of the construct showed good internal consistency, which suggests they could be applied individually for practical purposes. The availability of a parsimonious

WA scale that is linguistically adapted to the target population (Argentine workers) entails having a useful tool to diagnose, prevent, and/or modify one of the most widespread non-chemical addictions in modern societies.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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