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Spanish Adaptation of the Intensified Job Demands Scale (IDS)

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ABSTRACT

Background: The Intensification of Job Demands Scale (IDS) is a multidimensional instrument designed to capture the phenomenon of work intensification that characterizes modern Western societies. However, in Spain the instrument has not been validated to assess this phenomenon. The aim of this study was to examine the psychometric properties of the IDS adaptation with a heterogeneous sample of Spanish workers. **Method:** The sample consisted of 722 Spanish workers (57.8% female, 42.2% male) who completed a survey between January and April 2022. **Results:** A five-factor correlated model, as in the original IDS, had an optimal fit with 15 items, and displayed invariance across gender, level of education, and organizational tenure. Reliability coefficients were all satisfactory, and scale adaptation showed evidence of convergent, discriminant, and incremental validity. **Conclusions:** The Spanish adaptation of the IDS is a valid, reliable measure for analyzing the phenomenon of work intensification and intensified job demands in Spain.

Adaptación Española de la Escala de Demandas Laborales Intensificadas (IDS)

RESUMEN

Antecedentes: La Escala de Intensificación de las Demandas Laborales (IDS) es un instrumento multidimensional diseñado para captar el fenómeno de la intensificación laboral que caracteriza a las sociedades occidentales modernas. Sin embargo, en España, el instrumento no ha sido validado para evaluar este fenómeno. Por ello, el objetivo de este estudio fue examinar las propiedades psicométricas de la IDS para su adaptación a una muestra heterogénea de trabajadores españoles. **Método:** La muestra estuvo formada por 722 trabajadores españoles (57,8% mujeres) que completaron una batería de cuestionarios entre enero-abril de 2022. **Resultados:** Un modelo correlacionado de cinco factores, como en la IDS original, tuvo un ajuste óptimo con 15 ítems, y mostró invarianza en género, nivel de estudios y antigüedad dentro de la organización. Los coeficientes de fiabilidad fueron satisfactorios, y la adaptación de la escala mostró evidencias de validez convergente, discriminante e incremental. **Conclusiones:** La adaptación española de la IDS es una medida válida y fiable para analizar el fenómeno de la intensificación laboral en España.

Palabras clave:

Escala de Intensificación de las Demandas Laborales
Propiedades psicométricas
Riesgo psicosocial en el trabajo
Adaptación española
Intensificación del trabajo

In recent decades, numerous rapid changes have occurred in markets, work, and employment conditions and relations in Western societies, including Spain (Eurofound & International Labour Organization, 2019; Prieto, 2021). Major international changes include globalization, digitalization, job insecurity, an expanding service sector, and increasing competitiveness and productive pressure in all sectors (del Rey & Cámara, 2022). Consequently, new types of jobs have emerged, such as those based on digital platforms, and new forms of employment, including all forms of flexible work (Korunka & Kubicek, 2017), blurring the boundaries between work and private life (Flecker et al., 2017). The COVID-19 pandemic has also affected the world of work, with massive job losses, company closures, and deteriorating working conditions (Méndez & Muñagorri, 2021).

There have always been changes, but sociologist Rosa (2013) pointed out that social changes in particular have accelerated in the modern world, reflected in (a) technological advances in transportation, communication, and production processes mediated by the expansion of information and communication technologies (ICTs); (b) swift changes in social structures, values, lifestyles, and work organizations; and (c) an acceleration in the pace of life. According to Rosa (2014), this social acceleration and its processes have especially relevant consequences for the organization of work and for workers' daily routines.

The increase in changes and their speed in the socioeconomic context described above has required organizations to adapt significantly to remain competitive, and new management models have emerged (e.g., objective-based management). However, it has also imposed new requirements and job demands on workers (Korunka & Kubicek, 2017); for example, greater work intensification (i.e., having to do more things and meet more objectives in less time; Green, 2004); an increased need for workers to update their knowledge and job skills, manage more frequent changes in technical equipment, and adapt to them in ever shorter periods of time (Obschonka et al., 2012); and greater demands for autonomy and self-management in work, task, and/or career planning (Wood, 2011). These are the so-called new, intensified job demands related to social acceleration (Kubicek et al., 2015). The difference between these demands and other traditional demands (e.g., work overload or time pressure) lies in the concept of dynamization (Ulferts et al., 2013), which includes the temporal (time-critical) aspect of demands, and the resulting continuous deployment of resources. Work tasks are increasingly complex and must be completed in less time (Chowhan et al., 2019; Franke, 2015).

Research and surveys have confirmed the increase in these types of demands in recent decades (Korunka & Kubicek, 2017). According to a report published by Eurofound (2019), work intensity and job control have been increasing since 2010, and this trend, which is already widespread in most Western countries, shows no signs of slowing down. In Spain, according to the latest National Working Conditions Survey (Instituto Nacional de Seguridad e Higiene en el Trabajo [INSHT], 2017), 33% of employed people consider that they must always or almost always work at a high speed, and 35% consider that they must increasingly meet tight deadlines. Among those who experience both conditions (both of which increased from 2005 to 2015), there is a strong perception of not having enough time to get the job done and of never or rarely being able to take a break.

To measure the new work demands related to social acceleration, Kubicek et al. (2015), developed the Intensification

of Job Demands Scale (IDS)—a 19-item instrument organized into five dimensions. The first dimension is the *work intensification* (WI) dimension, which refers to the need to work faster and meet tight deadlines by reducing downtime, and the need to conduct certain work tasks simultaneously. The second dimension is the *intensified job-related planning and decision-making demands* (IJP) dimension, which refers to the increased demand requiring workers to self-manage and have greater autonomy and decision-making power in managing their tasks and planning their work. The third dimension, *intensified career-related planning and decision-making demands* (ICP), refers to the increased requirements for employees to plan and pursue their professional careers autonomously within and outside the organizations for which they work. Fourth, the *intensified knowledge-related learning demands* (IKL) dimension refers to the increased pressure and intensity with which workers have to update their old knowledge to work effectively and remain competitive in the labor market. Finally, the *intensified skills-related learning demands* (ISL) dimension refers to the pressure and intensity with which workers must acquire new skills autonomously and self-directedly to adjust to new equipment, practices, and labor regulations.

The IDS is based on a direct measure of change (Burchell et al., 2002), with the wording of the items capturing workers' perceptions of increased job demands (Paškvan & Kubicek, 2017) over the past five years. The original scale showed validity evidence across all four samples (with a five-factor model correlating to the best fit). Furthermore, the results suggested that the factor structure of the IDS was metric invariant across different countries (Germany and Austria) and languages (German and English). It also showed satisfactory reliability in terms of internal coherence, and evidence of convergent, discriminant, and incremental validity.

An interesting aspect on this topic is that not all intensified job demands are unequivocally related to strain and distress. Thus, Mauno et al.'s (2022) recent systematic review showed that, while the work intensification dimension is almost always perceived as a hindrance associated with discomfort, other dimensions, such as intensified learning demands, which exhibit less consistent results, could be categorized as challenge demands, but also as hindrance demands, associated with positive and negative indicators of well-being and performance (e.g., job satisfaction or engagement). Therefore, some of the demands proposed in the IDS could be perceived as providing more autonomy and offering opportunities to learn new things and improve career development and employability (Herttälampi et al., 2022; Mauno, Minkkinen, et al., 2019). However, the results at present remain inconsistent, and sometimes the same demands are antecedents of cognitive stress and burnout (Huhtala et al., 2021). The final outcomes may depend on multiple organizational and personal factors (Korunka & Kubicek, 2017).

In Spain, few studies have investigated this subject (Montoro et al., 2022; Pérez-Zapata et al., 2020), probably due to a lack of assessment tools. However, surveys and their analyses have indicated that work intensification may be one of the most important psychosocial work risks in Spain, which is a country where this phenomenon occurs most frequently within the European Union (Pérez-Zapata & Álvarez-Hernández, 2021). Outside Spain's borders, in a Spanish-speaking context, Sandoval-Reyes et al. (2020) translated the instrument into Spanish and examined the evidence for the reliability and validity of the IDS in a sample of Colombian

health-care workers. Their results, using CFA, maintained the five-factor structure but eliminated one item of the original scale. However, they did not examine more sources of validity.

Considering the previous discussion, we aimed to examine the psychometric properties of the IDS for adaptation to a heterogeneous sample of Spanish workers, based on previous works by Kubicek et al. (2015) and Sandoval-Reyes et al. (2020). We analyzed evidence of reliability, factorial structure, and construct validity of the instrument. The adaptation of this scale to Spanish workers provides the country with a new instrument to measure the growing phenomenon of work intensification and the intensification of job demands, allowing the measurement of the constructs in this context for descriptive and/or stress-preventative purposes. The choice of quantitative methods enabled us to delve deeper into their antecedents, consequences, and intervening variables; make cross-cultural and cross-country comparisons of the results; and consider programs and policies for managing psychosocial work risk (Paškvan & Kubicek, 2017; Pérez-Zapata et al., 2020). The intensification of the aforementioned work demands may have increased during the COVID-19 pandemic (Venz & Boettcher, 2022), to the extent that current working conditions are becoming more precarious and digitalization processes are increasing in companies (Salas-Nicás et al., 2021). In this sense, an instrument capable of capturing the impact of current or future economic, political, labor, technological, and social changes may have implications for studying the prevalence and consequences of this phenomenon.

Method

Participants

The sample comprised 722 Spanish workers (57.8% female, 42.2% male) with different occupations, according to the Spanish Classification of Occupations maintained by the National Institute of Statistics (CNO-11). The demographic characteristics of the sample are shown in Table 1. Initially, 872 participants gave their informed consent to participate, but 150 did not complete the entire survey and were therefore excluded.

Instruments

Intensified Job Demands

These were measured using the IDS (Kubicek et al., 2015). The scale evaluates the intensification of job demands over the past five years using five sub-scales (see Table 3): work intensification (WI, 5 items), intensified job-related planning and decision-making demands (IJP, 5 items), intensified career-related planning and decision-making demands (ICP, 3 items), intensified knowledge-related learning demands (IKL, 3 items), and intensified skill-related learning demands (ISL, 3 items). The response format ranged from 1 = “not at all” to 5 = “completely.” Those participants who had been working for less than five years could complete the scale, thus introducing a temporal adaptation recommended in previous studies (i.e., over the past five years or for the time they had been working; Herttälampi et al., 2022; Mauno et al., 2022). We initially based our investigation on the work of Sandoval-

Reyes et al. (2020), who translated the instrument into Spanish and adapted the scale to Colombian workers using a back-translation procedure (Brislin, 1970). The final Spanish version consisted of 18 items. This translation was reviewed in Spain by three Spanish researchers—experts in work and organizational psychology—and they approved all the items, except for suggesting three small modifications: for item 2 of the IJP subdimension, using inclusive language by considering both male and female supervisors, and for item 2 of the ICP subdimension and item 1 of the ISL, making more effort to respect the meaning of the original items.

Psychological Job Demands and Job Control

These were measured using 13 items (e.g., “My job requires working very hard” and “My job allows me to make a lot of decisions on my own”) taken from the Spanish validation of the Job Content Questionnaire (Escribà-Agüir et al., 2001; Karasek et al., 1998). The response format ranged from 1 = “strongly disagree” to 4 = “strongly agree.”

Work Self-Efficacy

This was measured with a 10-item scale (e.g., “I can find a way to get what I want even if someone opposes me”)(Baessler & Schwarzer, 1996; Suárez et al., 2000). The response format ranged from 1 = “not well at all” to 4 = “very well.”

Vigor and Dedication

These were measured using the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006). Specifically, we employed three items for each dimension (e.g., “At my work, I feel bursting with energy” and “I am enthusiastic about my job”). The response format ranged from 1 = “never/almost never” to 4 = “almost always/always.”

Emotional Exhaustion

This was measured using the subscale for emotional exhaustion taken from the Short Burnout Questionnaire (Cuestionario Breve de Burnout [CBB]; Moreno-Jiménez et al., 1997). The three items (e.g., “I am burned out from my job”) used a response scale ranging from 1 = “strongly disagree” to 4 = “strongly agree.”

Stress

This was measured using the subscale for stress drawn from the Spanish version of the Depression, Anxiety, and Stress Scales (DASS-21; Bados et al., 2005). The seven items (e.g., “During the previous week... I found it difficult to relax”) were measured with a response scale ranging from 0 = “Nothing applies to me” to 4 = “This applies a lot to me most of the time.”

Procedure

The sample was collected between January and April 2022 using the snowball technique based on the researchers’ personal and professional contacts and the LinkedIn professional social

networking site. The inclusion criteria for participation were that participants should be 18 years of age or older, and employed (i.e., not self-employed or unemployed). Participants could access the questionnaire through an electronic link that led them to the survey hosted on the Qualtrics platform. Immediately after gaining access, the participants had to provide their informed consent in writing. Thereafter, they proceeded to complete the questionnaire. The University Ethics Committee Universidad Autónoma de Madrid approved the study [CEI-117-2351].

Table 1
Sociodemographic and Occupational Characteristics of the Sample

Variables	<i>n</i>	%
Sex		
Male	305	42.2
Female	417	57.8
Education level		
No formal studies	8	1.1
Basic certificate	14	1.9
Mandatory secondary education	63	8.7
Professional qualification, intermediate level	39	5.4
High school	50	6.9
Professional qualification, high level	101	14
Bachelor's studies	227	31.4
Master's studies	199	27.6
PhD studies	21	2.9
Age groups		
18–29 years	217	30.1
30–39 years	183	25.3
40–49 years	160	20.4
50–59 years	147	1.9
60–65 years	14	22.2
> 65 years	1	0.1
Occupations (CNO-11)		
Directors and managers	61	8.4
Scientific and intellectual technicians and professionals	259	35.9
Technical support professionals	154	21.3
Accounting and administrative employees and other office employees	33	4.6
Workers in catering, personal and protection services, and sales	102	14.1
Skilled workers in the agricultural, livestock, forestry, and fishing sectors	4	0.6
Installation and machinery operators and assemblers	24	3.3
Artisans and skilled workers in the manufacturing and construction industries	23	3.2
Elementary occupations	23	3.2
Missing values	39	5.4
Organizational tenure		
< 5 years	417	57.8
5–10 years	104	14.4
> 10 years	100	13.9
> 20 years	101	14
Weekly working hours	= 37.06 (<i>SD</i> = 10.05)	

Note: CNO-11 = Spanish classification of occupations maintained by the National Institute of Statistics.

M = mean, *SD* = standard deviation.

Data Analysis

We analyzed the factor structure of the IDS using IBM® SPSS® AMOS® v.26.0 software and CFA to compare different models. We based the model tests on maximum likelihood estimation and tested six factorial models based on previous research (Heikkilä et al., 2022; Kubicek et al., 2015). First, for Model 1 (M1), we evaluated the hypothesized theoretical model for five different but correlated factors (WI, IJP, ICP, IKL, ISL), followed by evaluation of a reduced five-factor Model 2 (M2), which included only three items per dimension, items with greater factor loadings, and those that respected the minimum criterion of three items per factor (Tabachnick & Fidell, 2007). We decided to remove items 4 and 5 (from the WI dimension), and item 6 (from the IJP dimension) for a parsimony criterion since we consider that item 6 of the IJP subdimension is redundant, and that items 1, 2 and 3 of the WI subdimension are sufficient to capture the essence of the construct of work intensification (i.e., having to do more things and meet more objectives in less time). Next, for comparison with M1, we created a four-factor model (M3) in which the learning demands were unified into a single dimension (*intensified learning demands*, IL: IKL-ISL). We made the next comparison with a three-factor model (M4), in which we unified the learning demands and those related to planning and autonomy (IP: IJP-ICP). We then developed a bifactor model (M5) consisting of a *general intensified job demand factor* and five second-order dimensions and compared it with M1. Finally, we compared a one-factor model (M6) with M1. We evaluated the global model fit for the factor analyses using the comparative fit index (CFI), the Tucker-Lewis index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean-Square (SRMR). These indices were interpreted according to the standard guidelines (Marsh et al., 2004), where values greater than .90 and .95 for CFI/TLI indicate adequate and excellent fit of the data, respectively, and .08 and .06 values for RMSEA/SRMR indicate acceptable and excellent fit, respectively. We also employed chi-square difference scores and the Akaike information criterion (AIC) to compare the models (higher values indicated worse model fit; Hu & Bentler, 1999). We also examined internal coherence coefficients (i.e., Cronbach's alphas and item-total correlations).

Afterwards, we implemented measurement invariance analyses of the IDS to explore if scores were invariant across gender (males and females), level of studies (high school, BA/similar and college/above), and organizational tenure (≥ 5 years vs. < 5 years working). Five levels of invariance were implemented (following Dimitrov, 2010 but adding one level): (M1) configural (equal latent structure), (M2) metric (adding equal factor loadings), (M3) scalar (adding equal item intercepts), (M4) covariance (adding equal factor covariances), and (M5) strict (adding equal item residuals). We added M4 due to having a model with 5 correlated factors, which we consider interesting to explore if they would be invariant in our sample. Following literature, metric invariance must be achieved to allow comparisons between groups. Fit indices were differences in CFI, TLI and RMSEA between models (from M1 to M5), with criteria of lack of invariance as ΔCFI and $\Delta TLI \leq -.010$, while also $\Delta RMSEA \geq .015$ (Chen, 2007). Given the controversy with thumb rules in literature, we also considered differences in χ^2 and SRMR as complements (Putnick & Bornstein, 2016).

Finally, we used correlation and multiple linear regression analysis with SPSS® v.26.0 to assess evidence of convergent validity, discriminant validity, and incremental validity.

Results

Validity Related to the Internal Structure

All models, except the one-factor and three-factor models, yielded good fit indices (see Table 2). The model with five correlated factors reduced to 15 items (M2), with three items per dimension, achieved the best fit (see Figure 1), showing excellent fit indices. When comparing the models, the AIC value showed that the reduced five-factor model was superior to all the other models. The three items that were removed from the scale, out of the 18 subjected to analysis, were items 4 and 5 (from the WI dimension), and item 6 (from the IJP dimension), the factor loadings of which were: .66, .58, and .57, respectively. The items,

means, and standard deviations, corrected item–total correlations, and standardized loading for that model are shown in Table 3.

Invariance analyses are displayed in Table 4. Metric invariance was achieved in all comparisons. Given metric invariance was achieved in all cases, we did not consider partial invariance analyses. Thus, scores of the IDS are allowed for comparison. More concretely, the IDS achieves strict invariance across gender, allowing full comparisons of scores. Level of studies and <5 vs. >5 years working did not achieve invariances above metric, suggesting differences in item intercepts, residuals and factor covariances. As previously stated, we regarded differences in factor covariances as interesting. An examination of said differences between level of studies and <5 vs. >5 years working revealed all covariances as positive, but generally higher in low and medium levels (around .42 and .43) while lower at high levels (around .35). <5 years workers displayed almost identical covariances with >5 years workers except of the covariance between WI and IJP (0,35 in <5 years, 0,19 in >5 years).

Table 2
Fit Indices for the Measurement Models

Model	χ^2	<i>df</i>	CFI	TLI	RMSEA	SRMR	AIC	Model Comparison	$\Delta\chi^2$	Δdf	<i>p</i>
Five-factor model (WI, IJP, ICP, IKL, ISL)	405.78	125	.94	.93	.05	.06	533.78	M1			
Reduced five-factor model (WI, IJP, ICP, IKL, ISL)	209.811	80	.97	.96	.04	.04	309.81	M2–M1	223.96	45	.001
Four-factor model (WI, IJP, ICP, IL)	534.05	129	.92	.90	.06	.05	654.05	M3–M1	120.27	4	.001
Three-factor model (WI, IP, IL)	880.85	132	.85	.83	.08	.07	994.85	M4–M1	461.07	7	.001
Two-factor model (General IJD factor and five second-order dimensions)	517.34	130	.926	.91	.06	.08	635.34	M5–M1	101.56	5	.001
One-factor model (General IJD factor)	2221.60	135	.60	.55	.14	.13	2329.60	M6–M1	1795.82	10	.001

Notes: WI = work intensification, IP = intensified planning and decision-making demands, IJP = intensified job-related planning and decision-making demands, ICP = intensified career-related planning and decision-making demands, IL = intensified learning demands, IKL = intensified knowledge-related learning demands, ISL = intensified skill-related learning demands, IJD = intensified job demands.

Table 3
Items, Descriptions, CITC, and CFA Loadings for the Spanish Adaptation of the IDS

Item wording	<i>M (SD)</i>	CITC	1	2	3	4	5
1. Intensificación del trabajo							
Es cada vez más difícil para mí tener suficiente tiempo para las tareas de trabajo	3.06 (1.33)	.62	.73				
Me es cada vez más difícil tomar tiempo para los descansos	3.28 (1.41)	.64	.78				
Cada vez es menor el tiempo entre las fases de mayor intensidad en el trabajo	3.45 (1.26)	.60	.71				
2. Demandas intensificadas de planificación y de autonomía en el trabajo							
Cada vez más defino por mí mismo la forma en que hago el trabajo	3.96 (1.10)	.53		.68			
Cada día más tomo las decisiones de mi puesto sin estar consultando a los jefes y/o las jefas	3.52 (1.34)	.56		.69			
Cada vez más debo comprobar por mí mismo si he alcanzado los objetivos del trabajo	3.61 (1.19)	.50		.66			
3. Demandas intensificadas de planificación y de toma de decisiones respecto a la carrera profesional							
Cada vez tengo mayor exigencia para mantenerme atractivo para el mercado laboral (p. ej.: educación avanzada, obtener certificaciones, pertenecer a redes)	3.73 (1.27)	.58			.63		
Mi propio desarrollo profesional requiere cada vez más mantener otras oportunidades abiertas	4.14 (1.07)	.60			.84		
Cada vez más debo planear mi carrera profesional por mí mismo	4.06 (1.07)	.62			.69		
4. Demandas intensificadas de aprendizajes de nuevos conocimientos							
Debo adquirir nuevos conocimientos para mi trabajo más a menudo	4.06 (1.10)	.68				.84	
Recibo cada vez más nuevos conocimientos para realizar las tareas de mi trabajo	3.61 (1.19)	.55				.61	
Debo actualizar mis niveles de conocimiento con mayor frecuencia	3.90 (1.07)	.68				.82	
5. Demandas intensificadas de aprendizaje de habilidades							
Cada vez más existen nuevos procesos en el trabajo con los que debo familiarizarme	3.99 (1.08)	.74					.86
Cada vez más debo aprender nuevos procesos y flujos de trabajo	3.87 (1.13)	.77					.86
Debo usar nuevas herramientas de trabajo más a menudo (p. ej.: programas, equipos, aplicaciones, etc.)	3.85 (1.22)	.66					.73

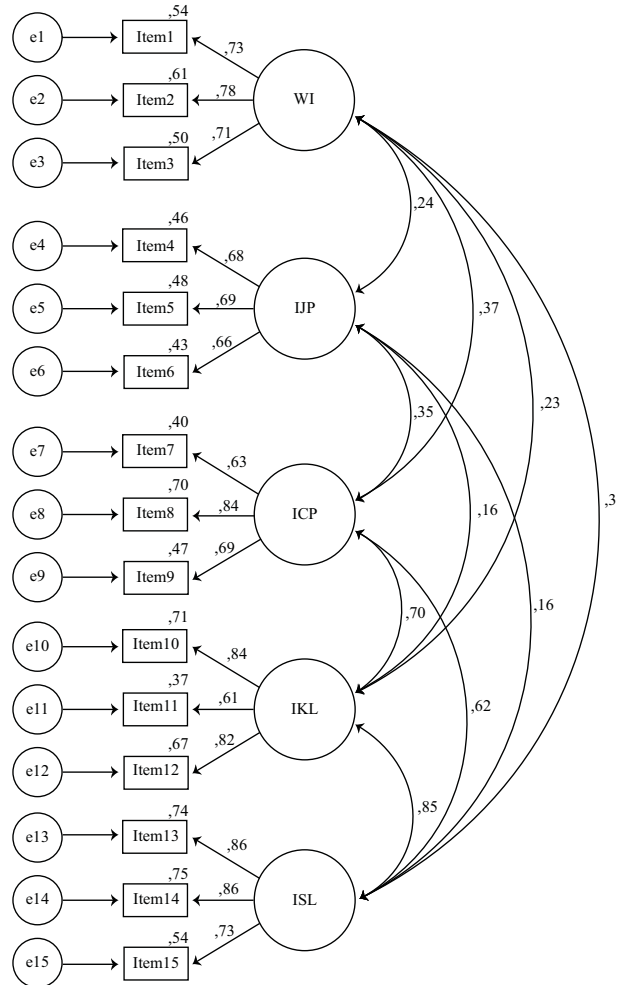
Notes: IDS = intensified job demands scale, CFA = confirmatory factor analysis, CITC = corrected item–total correlations; all standardized loadings, $p < .001$. $N = 722$

Table 4
Measurement Invariance Analysis (Males vs. Females) for the IDS (Reduced Five-Factor Model)

Model	$\chi^2(df)$ ^a	CFI	TLI	RMSEA	SRMR	Difference	$\Delta\chi^2(\Delta df)$	ΔCFI	ΔTLI	$\Delta RMSEA$	$\Delta SRMR$
Males vs. Females											
M1 – Configural invariance	296.73(160)	.96	.95	.03	.05	–	–	–	–	–	–
M2 – Same weights (metric)	303.88(170)	.97	.96	.03	.05	M2–M1	7.14(10)	.001	.004	-.001	.000
M3 – Same intercepts (scalar)	344.67(185)	.96	.95	.03	.05	M3–M2	40.79(15)***	-.006	-.004	.002	.000
M4 – Same covariances	367.56(200)	.96	.96	.03	.05	M4–M3	22.89(15)	-.002	.001	-.001	.003
M5 – Same residuals (strict)	395.76(215)	.95	.96	.03	.05	M5–M4	27.93(15)*	-.003	.000	.000	.001
Studies: Low vs. Med vs. High											
M1 – Configural invariance	448.04(240)	.95	.93	.03	.06	–	–	–	–	–	–
M2 – Same weights (metric)	474.85(260)	.94	.93	.03	.07	M2–M1	26.81(20)	-.002	.004	-.001	.004
M3 – Same intercepts (scalar)	540.14(290)	.94	.93	.03	.09	M3–M2	65.29(30)***	-.008	-.003	.001	.018!
M4 – Same covariances	660.32(320)	.92	.92	.03	.11	M4–M3	120.18(30)***	-.021!	-.015!	.003	.019!
M5 – Same residuals (strict)	786.82(350)	.89	.90	.04	.09	M5–M4	126.50(30)***	-.023!	-.014!	.004	-.002
≥ 5 years vs. < 5 years working											
M1 – Configural invariance	314.06(160)	.94	.95	.03	.04	–	–	–	–	–	–
M2 – Same weights (metric)	321.00(170)	.96	.96	.03	.04	M2–M1	6.94(10)	.001	.003	-.001	.002
M3 – Same intercepts (scalar)	381.65(185)	.95	.95	.03	.04	M3–M2	60.35(15)***	-.010!	-.007	.003	.000
M4 – Same covariances	413.40(200)	.95	.95	.03	.05	M4–M3	31.05(15)**	-.003	.000	.000	.008
M5 – Same residuals (strict)	448.64(215)	.95	.95	.03	.06	M5–M4	36.24(15)**	-.005	-.002	.001	.012

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; ^aall p -values in this column were $< .001$; $\Delta CFI \leq -.010$, $\Delta TLI \leq -.010$, $\Delta RMSEA \geq .015$, or $\Delta SRMR \geq .015$

Figure 1
CFA Model of the Spanish Adaptation of the Intensification of Job Demands Scale



Notes: Standardized solution for the reduced five-factor model. WI = work intensification, IJP = intensified job-related planning and decision-making demands, ICP = intensified career-related planning and decision-making demands, IKL = intensified knowledge-related learning demands, ISL = intensified skill-related learning demands. All factor loadings were significant at $p < .001$.

Reliability

Cronbach’s alpha values for the five dimensions ranged from .71 to .85 (see Table 5), and all were satisfactory (DeVellis, 2014). The corrected item-total correlations were all equal to or above .50 and thus more than acceptable (De Vaus, 2002).

Evidence of Convergent and Discriminant Validity

As Table 5 shows, the WI dimension correlated positively and significantly with the psychological job demands scale. The IJP and IJC dimensions both correlated positively and significantly with psychological job demands, but only the former correlated with job control. Finally, IKL and ISL correlated positively and significantly with psychological job demands, and with job control. Also, four of the five dimensions showed no correlation with the work self-efficacy variable, except in the case of IJP.

Evidence of Incremental Validity

Overall, intensified job demands explained a significant percentage of the variance in the examined outcomes, controlling for psychological job demands and job control (see table 6). Specifically, WI was a significant variable for explaining the variance in vigor and dedication at work scores, and the emotional exhaustion and stress scores. ICP was also negatively associated with dedication, and positively associated with emotional exhaustion and stress. IKL was positively and significantly associated with vigor and dedication, and negatively associated with emotional exhaustion and stress. Finally, ISL was negatively and significantly associated with vigor and was positively associated with stress. The IJP dimension did not increase the variance explained of the criteria previously controlling for psychological job demands and job control.

Table 5
Intercorrelations and Cronbach’s Alphas

	1	2	3	4	5	6	7	8	9	10	11	12
1. WI	(.78)	.18**	.29**	.15**	.26**	.48**	.05	.00	-.18**	.31**	-.18**	.37**
2. IJP		(.71)	.26**	.11**	.12**	.12**	.15**	.18**	.06	.03	.06	.08*
3. ICP			(.76)	.47**	.48**	.15**	.05	.05	-.09**	.11**	-.07*	.22**
4. IKL				(.79)	.72**	.12**	.32**	.05	.10**	-.14**	.17**	.02
5. ISL					(.85)	.22**	.24**	-.02	-.04	.00	.03	.15**
6. Psychological job demands						(.70)	.24**	.11**	-.09*	.26**	-.08*	.32**
7. Job control							(.82)	.36**	.42**	-.30**	.49**	-.11**
8. Self-efficacy								(.88)	.33**	-.18**	.28**	-.18**
9. Vigor at work									(.89)	-.64**	.81**	-.38**
10. Emotional exhaustion										(.88)	-.68**	.50**
11. Dedication											(.86)	-.35**
12. Stress												(.90)

Notes: WI = work intensification, IJP = intensified job-related planning and decision-making demands, ICP = intensified career-related planning and decision-making demands, IKL = intensified knowledge-related learning demands, ISL = intensified skill-related learning demands; Cronbach’s alphas in parenthesis on the diagonal.
* $p < .05$. ** $p < .01$.

Table 6
Relationships Among the Intensified Job Demand Dimensions to Positive and Negative Outcomes Beyond the Dimensions of Karasek’s Model

Predictor variables	Criterion Variables							
	Vigor		Dedication		Emotional Exhaustion		Stress	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Psychological job demands	-.20***	-.12**	-.22***	-.14***	.36***	.24***	.37***	.22***
Job control	.47***	.44***	.55***	.51***	-.39***	-.33***	-.20***	-.17***
WI		-.11**		-.11**		.19***		.22***
IJP		.05		.04		.01		.01
ICP		-.06		-.08*		.09*		.14***
IKL		.12*		.13**		-.19***		-.13**
ISL		-.15***		-.08		.07		.11*
R2	.218***	.250***	.291***	.315***	.219***	.270***	.142***	.222***
Δ R2	.218***	.033***	.291***	.024***	.219***	.051***	.142***	.079***

Notes: All statistics reported are standardized coefficients (β). WI = work intensification, IJP = intensified job-related planning and decision-making demands, ICP = intensified career-related planning and decision-making demands, IKL = intensified knowledge-related learning demands, ISL = intensified skill-related learning demands.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The aim of this study was to validate the psychometric properties of a Spanish adaptation of the IDS (Kubicek et al., 2015) for a sample of Spanish workers based on the initial translation into Spanish conducted by Sandoval-Reyes et al. (2020). The results of the analysis were aligned with the original theoretical model with five different but correlated factors (Kubicek et al., 2015). However, in the case of the Spanish validation, the model that best fits the data was the one in which each factor contained three items, so that the final questionnaire comprised 15 items instead of 19 proposed by Kubicek et al. (2015), and 18 proposed by Sandoval-Reyes et al. (2020). This allowed us to propose a shorter and more parsimonious scale (Rammstedt & Beierlein, 2014), maintaining the minimum criterion of three items per dimension (Tabachnick & Fidell, 2007). This shorter scale provided good fit, while also showing to be invariant across gender, level of studies and organizational tenure. The internal coherence coefficients analyses indicated that all factors had adequate reliability indices (Nunnally & Bernstein, 1994). Thus, the IDS seems as an instrument with a clear and stable internal structure.

The Spanish adaptation of the scale showed evidence of convergent validity, since all dimensions were related to traditional measures of job characteristics (i.e., to the psychological job demands and job control of Karasek's model; Karasek et al., 1998). Moreover, the correlations were low to moderate, indicating that we were dealing with different constructs. The ICP dimension was the only one that did not relate to job control, whereas the IJP dimension did, which made sense because job control is linked to workers' margins of decision-making autonomy when organizing and planning their tasks. Furthermore, the fact that work self-efficacy did not relate to the dimensions of the IDS, except for IJP (which had a low correlation), provided evidence of discriminant validity: it seems that the IDS measures changes in job demands but does not reflect personal perceptions of being able to manage tasks and achieve work goals effectively (Kubicek et al., 2015). Finally, most of the IDS subscales predicted vigor, dedication, emotional exhaustion, and stress, above and beyond traditional job characteristics, providing evidence of incremental validity (Montoro et al., 2022). The only variable that was not significant in this analysis was IJP. More precisely, WI showed a negative association with vigor and dedication, and a positive association with stress and exhaustion (which had the strongest correlations), which is congruent with previous research (Heikkilä et al., 2022; Huhtala et al., 2021). ICP was also negatively associated with workers' dedication and positively associated with stress and exhaustion (Kubicek et al., 2015). For learning demands, while demands related to learning new knowledge (IKL) had a positive association with indicators of vigor and dedication (Mauno et al., 2019), and a negative association with exhaustion and stress, demands related to learning new skills (ISL) were associated with greater stress (Kubicek et al., 2015) and lower vigor. Thus, job demands related to social acceleration could be considered either a hindrance or a challenge (Lepine et al., 2005), in line with previous literature (Mauno et al., 2022), probably depending on workers' cognitive appraisals of them, among other organizational and personal factors that we did not explore in this study (Korunka & Kubicek, 2017; Mazzola & Disselhorst,

2019; Paškvan et al., 2016). The fact that the IJP dimension was not significant may be explained by the fact that we followed a conservative strategy by introducing in regression Model 2 the two powerful traditional job demands plus the five dimensions of the IDS scale. In complementary analyses introducing only the IJP dimension, controlling for the traditional job demands, IJP also explained significant levels of variance in stress and emotional exhaustion.

One aspect that deserves attention is that, when considering the evidence of convergent, discriminant and incremental validity, the correlations and beta weights were not of large magnitude. Nevertheless, our results are quite similar to the original validation of Kubicek et al. (2015). It is even worth noting that the evidence of incremental validity in this study was tested by entering all subdimensions of the IDS into the same regression model.

A major limitation of this study was the cross-sectional nature of its design and the use of self-report data. It would be interesting for future research to validate these results with longitudinal studies, including objective measures as criteria. Also, the Spanish validation work was carried out based on the Spanish translation of 18 items conducted by Sandoval-Reyes et al. (2020) with Colombian workers, which did not align with the translation process of the original scale (Kubicek et al., 2015). However, three experts in the field ensured that the survey was comprehensible to the Spanish population, with minor modifications of only three items (two to respect the meaning of the original scale and one to maintain gender neutrality in the wording of the item). Finally, although the sample was large and heterogeneous, some occupational groups were not balanced, so this variability was underrepresented in the sample (Ferrando et al., 2022). It would be interesting that future studies analyze the measurement invariance of the scale according to different job classifications (e.g., blue-collar vs. white-collar jobs). In addition, future research could also examine intensified job demands from a gender perspective, analyzing possible differences in its manifestation according to gender, and its association with well-being and mental health variables.

In conclusion, this study has examined the Spanish adaptation of the IDS, which proved to have adequate psychometric properties in the Spanish context. Thus, this study makes significant contributions to the field, and allows for the development of future research in Spain. Given that a multidimensional questionnaire to analyze this phenomenon did not exist previously in our country, this tool can help facilitate a deeper understanding of the phenomenon and further cross-cultural comparisons. For example, there is initial evidence that work intensification may be different for men and women, or for manual and non-manual workers across countries and cultures. To have this scale in our country will allow us to know how the intensification of job demands behaves within our country and comparatively with other countries and cultures where it is also being studied. In addition, future research should continue to delve deeply into the antecedents of intensified job demands since most research revolves around their consequences and has employed cross-sectional methodologies (Mauno et al., 2022). A major gap that should also be addressed is the analysis of variables that moderate the relationship between intensified job demands and

their outcomes (Mauno & Kinnunen, 2021). At a practical level, this scale can be included in the assessments of psychosocial risks at work, allowing occupational health technicians and experts to assess the impact of different policies and interventions aimed at preventing this important and current psychosocial risk.

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