

Assessing Work–Life Balance in Malta and Italy: A Cross-Cultural Investigation Using Exploratory Structural Equation Modelling (ESEM)

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Purpose: Work-life balance (WLB) represents a well-established construct in several fields. However, the post-pandemic period has prompted substantial re-evaluations of the boundaries between professional and personal life among the general population, highlighting a critical need for renewed theoretical frameworks and empirical updates in this field. Our research focuses on the procedure of effectively assessing WLB in different cultural contexts, grounded in well-established theoretical foundations and involving the testing of measurement quality. Thus, the present cross-cultural study aimed to provide new evidence about the dimensionality, validity, reliability, and cultural invariance of the Work-Life Balance Scale and its practical impact on employee well-being.

Participants and Methods: A sample of 362 employees (50% Maltese; 50% Italian), with a mean age of 43.36 ($SD = 11.51$) completed the WLBS in an online survey from March to April 2023. The cultural invariance was tested using the 13-model ESEM taxonomy of full measurement invariance. Moreover, through Network Analysis, the life satisfaction and optimism scales were administered to test the WLBS validity across countries.

Results: Results showed ESEM model good fit ($\chi^2=127.609$, $df = 63$, CFI = 0.963, TLI = 0.939, RMSEA = 0.053 [0.040–0.066]) and less correlated latent factors than CFA. Tests of cultural invariance supported a weak invariance (ie, factor loadings and item uniqueness or factor variance/covariance matrix) across countries. Furthermore, the findings supported the validity and reliability of the scale.

Conclusion: In conclusion, new evidence about the WLBS theoretical framework and dimensionality was provided by using the ESEM as a challenging psychometric approach. Results from this study also supported its psychometric features and the cross-cultural applicability of the WLBS in two different European countries. The practical recommendations for government policy were discussed.

Keywords: exploratory structural equation modelling, work-life balance, cultural invariance

Introduction

Work-life balance (WLB) is a broadly studied construct in several fields (eg, psychology, sociology), but the balance between work and private life in the general population has undergone important post-pandemic re-evaluations that require new knowledge updates.¹ The present investigation is a substantive and methodological contribution to the (WLB) assessment. According to Fisher,² it is a broader term for the boundary between employee work and non-work lives. It brings new developments to the Work-Life Balance Scale³ (WLBS), studying its psychometric proprieties and cultural invariance across two South European countries, namely Malta and Italy.

Many challenges have increased the focus on WLB in recent years. Above all, *new technologies* have blurred the boundaries between private and working life⁴ due to a continuous demand for availability or new forms of work (ie, work from home).⁵ Indeed, many jobs do not require specific places and times with implications for psychological well-being.⁶ However, the findings are ambiguous: for example, Golden and Simsek⁷ highlighted that work-from-home worsens

family-to-work conflict, but job autonomy and a large house improve this association.⁸ On the other hand, the *gender gap* is amplified: It seems that mainly female workers—especially married or co-habiting and after childbirth—have benefited from the blurred boundaries between work and personal life by better combining their different social roles (eg, women, wife, worker, and mother).^{9–12} Meanwhile, *time spent at work* is altered: Some research showed that employees work more hours than those referring to traditional work with a constant feeling of being always available and productive.¹³ Moreover, the *aging* workforce has increased demands for benefits and flexibility to ensure a high quality of life even for older workers who require more attention to prevent opting for early retirement.^{14,15}

Although WLB is widely deepened, the evidence about the available tools is still limited. Therefore, our research question stressed the dissemination of a robust measure of WLB, based on sound theory and supported by psychometric evidence, as a necessary starting point for the operationalization and reflection on more complex empirical-based models that include other related variables. In this paper, we begin with a review of substantive theoretical knowledge and introduce a methodological approach that has not yet been explored.

Theoretical Issue: Work-Life Balance and Its Psychological Impact

The social and economic changes in the past decade have raised questions about the fit between work and non-work life. Thus, these changes generated increasing interest in WLB. It has been defined as the extent to which a person is equally engaged and satisfied with their roles at home and at work.¹⁶ The idea that one's job and non-work activities are compactable and foster growth in line with one's current life objectives makes the term work-life balance (WLB) more thorough than previous terms like “work-family balance”.¹⁷ For instance, the Greenhaus and Allen¹⁸ conceptual model emphasized how aspects of job and family roles can indirectly affect work-family balance feelings through work-family conflict and work-family enhancement. However, this conceptual model left out all aspects of non-working life that go beyond the family (eg, friends, hobbies, etc). Fisher-McAulley et al's^{2,19} theoretical model of WLB was based on two established theories in the field of occupational stress literature that were high relevant. Firstly, the *role theory's*²⁰ foundation posits the idea that a person's life is made up of various roles, both inside and outside the workplace. When two or more sets of pressure arise simultaneously so that compliance with one set makes it more difficult to comply with the other, it is known as role conflict. Furthermore, Hobfoll's^{21,22} (1988; 1989) *conservation of resources theory* asserts that stress is a response to a situation in which one is either threatened with a loss of resources, has a loss of resources, or does not acquire the resources that were anticipated. The conflict between work and family spheres arises when the demands of one area deplete personal resources, leaving little resources available to meet the demands of the other. An integration of these theories suggests that balancing multiple roles leads to competition for the same resources, which can lead to stressors such as health issues or work displeasure.¹⁹

Some reviews were published to systematize the knowledge around WLB, including the relationship between work and family domains.^{23,24} However, according to Gragnano et al,²⁵ “personal life” should include other important dimensions such as health and job satisfaction from a more inclusive point of view for different socio-demographic characteristics of employers (eg, parental status and age). As a result, those who are highly engaged in both their personal and professional lives are given opportunities that provide them with access to resources that are otherwise unavailable to those who are primarily focused on their work lives.^{26,27} This results in positive outcomes for both work-related (eg, job performance, career development) and non-work-related (eg, life and marital satisfaction, reduced conflict with other family members) outcomes.²⁷ Indeed, seven additional dimensions for evaluating work-life quality based on need satisfaction and spillover effects among the variables were presented by Sirgy et al.²⁷ Economic needs, social needs, esteem needs, actualization requirements, knowledge needs, safety and health needs, as well as aesthetic needs were the seven dimensions that were mentioned. According to previous research,^{2,19,25,28} this study considers the broader WLB in a comprehensive manner, including a more broadly defined domain of the entire compatibility between work and generally private-life roles (ie, the work/non-work domain). The other terms (ie, work-family balance, work-family conflict, work-family enhancement, etc) are, by definition, restricted to people with families, but this makes the results applicable only to people without families.

Therefore, although the family roles remain central in employees' lives, it is crucial to include the other roles when WLB is operationalized²⁹ and consequently measured.³ Thus, the currently available psychometric tools for work-family balance^{30,31} could not be adapted to reflect the complexity of the construct, leaving aside key aspects. According to

Fisher-McAulley et al,¹⁹ the recent theorization of WLB has included both interface and enhancement between work and personal domains. Consequently, the mutual interference between work and private life was included in the comprehensive measures (ie, work interface with personal life and personal life interface with work; WIPL and PLIW, respectively) as well as the potential for reciprocal enhancement (ie, work/personal life enhancement; WPLE).

Psychological Impact of Work-Life Balance

Ultimately, WLB has been a major labor policy topic based on the assumption that WLB impacts people's life satisfaction.³² As empirical evidence, Noda et al³² supported that establishing a WLB policy improves both men's and women's life satisfaction in Organization for Economic Cooperation and Development (OCSE) countries. In line with these findings, research supports the impact of WLB on life satisfaction.^{2,32–34} It has recently been identified as one of the most important non-work-related outcomes.²⁷ Furthermore, according to Hobfoll's theory,^{21,22} research^{28,35} revealed that an optimistic outlook is an adaptive personal resource that can help individuals balance their work and non-work obligations. Thus, optimism aids workers in striking a better work-life balance. Finally, people with adaptive personal resources, such as optimism, are able to maintain a better balance between their personal and professional life, which is linked to higher levels of overall life satisfaction.²⁸ Conversely, interference between spheres (ie, personal life and work life) could result in a negative impact on life satisfaction.³⁶ Based on the previous research, we derived the following hypotheses:

Hypothesis 1 (H1): the WIPL and PLIW are negatively associated with life satisfaction and optimism.

Hypothesis 2 (H2): WPLE is positively associated with life satisfaction and optimism.

Although the WLB is a psychological construct that has been extensively researched, it should be noted that its conceptualization and assessment can vary significantly depending on various cultures, roles, and societal expectations. Cross-cultural investigation is therefore encouraged.

Cultural Differences in Work-Life Balance

Recent studies displayed that WLB is a culturally oriented construct.³⁷ The European Quality of Life Survey³⁸ found that Europeans were generally satisfied with life, but the southern countries showed the worst problems with work-life balance. However, the Working Time Directive in the EU has set 48-hour working-time for a week to reduce the imbalance (Directive 2003/88/EC of November 4). Haar et al³⁹ investigated the psychological outcomes of the WLB across seven populations (ie, Malaysian, Chinese, New Zealand Maori, New Zealand European, Spanish, French, and Italian) and highlighted that high levels of WLB were more associated with job and life satisfaction in individualistic and gender egalitarian cultures. To date, the limited amount of cross-cultural research on the topic is also affected by the lack of evidence concerning Malta. Meanwhile, the current study sought to expand the body of knowledge unique to this nation by comparing it to the closest country, namely, Italy.

Even within the EU, the various cultural influences on people's lives resulted in different rules and roles for work and non-work life. For example, in southern European countries such as Malta and Italy, women's roles have evolved dramatically over the last 60 years.^{40,41} Although the laws in both countries emphasise equality, women continue to deal exclusively with domestic work and care burden. The Maltese government has today introduced a series of initiatives aimed at enhancing women's participation in the workforce, such as free childcare. These cultural challenges have contributed to the development of a more gender-sensitive welfare system.⁴² Men increased their involvement in home and child care, and women were engaged in more flexible, albeit less productive, jobs.⁴³ On the other hand, Italy has also involved extra-state actors (eg, corporate welfare) to reduce the gender gap.⁴⁴

Italy and Malta share significant similarities due to their geographical proximity, comparable climates, and strategic location in the central Mediterranean, which has historically facilitated trade and cultural exchanges. Additionally, both countries are members of the European Union and the Schengen Area, collaborating on economic and political matters. Specifically, the substantial disparity in territorial size and population has resulted in notable differences in political and administrative structures, which are currently reflected in distinct approaches to family and labor policies. Among other things, Malta is a favourite destination for online workers (eg, gambling);⁴⁵ On the other hand, after the pandemic

experience, in Italy, only 14.9% of the employed carry out part of the activity remotely, but it could be almost 40%.⁴⁶ Also at the research level, the Greenhaus and Allen¹⁸ conceptual model was tested in the Italian context,⁴⁷ but no empirical evidence addressing this topic has been documented within the Maltese population. In the same way, some studies⁴⁸ have focused on the Italian perception of WLB as a subsidiary role of the state and a family-oriented conceptualization of WLB with a network of extended family that provides childcare support and lives in close proximity. There are no comparable studies in the Maltese context. However, early evidence⁴⁹ suggests a growing desire for flexibility and economic support for families. In the latter case, the available findings emerged from the English version of the psychometric tools, but these have not been validated for the local cultural peculiarities. Finally, while the two countries are close and similar in many aspects, the differences regarding their cultural and job characteristics require a cultural investigation on the psychometric properties of the WLBS for a more accurate generalization of the results. Globally, these findings supported the choice of Italy and Malta as a starting point for the initial validation of WLBS in European countries. Indeed, these countries offer similarities and differences that allow invariance of the measure hypothesis. Despite the limited results that are currently available and the cultural parallels and contrasts between Malta and Italy, it is plausible to presume invariance between the variables included in this study.

In line with this cross-cultural perspective, the study of invariance is necessary for both psychometric tools for WLB and the association between WLB and relevant measures. Consequently, we have reached the following hypothesis.

Hypothesis 3 (H3): The partial correlation matrix across the WLBS subscales, life satisfaction, and optimism was invariant across cultures.

The Work-Life Balance Scale

The WLBS was first developed by Fisher-McAulley et al.¹⁹ In their work/life balance model, they suggested that «work/life balance includes both work/personal life interferences as well as work/personal life enhancement. However, work/life balance differs from work/family constructs by defining the work/non-work domain more broadly» (p. 3). Based on its theoretical background, the impact of work on personal life and personal life on work has been operationalized to cover both positive (enhancement, positive spillover) and negative (conflict, interference) consequences.^{2,50,51} In contrast to previous scales that examined specific well-known aspects like work-family conflict⁵² and work-family enrichment,⁵³ WLBS integrates all parts of the concept into an overall assessment. Moreover, unlike other instruments already validated in Italy,³⁰ this tool maintains a multidimensional structure and takes into account different aspects of private life (the items contain indications of non-work settings, eg, “personal life”, “non-work activity”) and not only family rules. It was in line with a recent integrative review²⁷ that proposed a comprehensive understanding of work-life balance that incorporates two essential elements: involvement in both work and non-work life and little tension between social roles in work and non-work life.

The WLB has often been studied by adopting a qualitative approach^{15,54} or by using the WLBS without proper validation.^{55,56} However, a psychometrically sound reflection on the WLBS could offer a quantitative approach to assess the WLB; as a matter of fact, it has not been previously validated in European countries. The WLBS original version consisted of 19 English items across three dimensions and was administered to fitness trainers and managers in the United States and Canada. It consisted of three dimensions that reflected the theoretical conceptualization of WLB by simultaneously including the mutual negative and positive impacts of the two domains:² work interference with personal life (WIPL), personal life interference with work (PLIW), work/personal life enhancement (WPLE). Subsequently, Hayman³ proposed a 15-item version that preserved the original tool’s dimensionality in the same factors by performing an Exploratory Factor Analysis (EFA) in a small group of 61 human resource administrators in Western Australia. More recently, Smeltzer et al.⁵⁷ replaced these findings using a principal component analysis in a larger group of 554 doctoral nurses in Pennsylvania and showed good reliability properties of WLBS (Cronbach’s α for WIPL = 0.93, PLIW = 0.85, WPLE = 0.69). Despite the good results, some items showed larger non-target loadings (above or near the threshold: $\lambda \geq 30$) in both versions (ie, some items showed high saturation on both target and non-target latent factors), for example, in Hayman³ item 1: WIPL = -0.369, WPLE = 0.674; item 15: WIPL = -0.425, PLIW = -0.505, WPLE = 0.652; item 12: WIPL = 0.756, PLIW = 0.330; item 8: WIPL = 0.897, PLIW = 0.226; item 14: WIPL = -0.700, WPLE = -0.211; likewise, in Smeltzer et al.⁵⁷ item 1: WIPL = -0.603, WPLE = 0.474; item 15: WIPL = -0.542, WPLE = 0.451; item 12: WIPL = 0.786,

PLIW =0.229; item 8: WIPL=0.879, PLIW =0.233; item 14: WIPL =-.706, WPLE =0.288. These results suggested that a more accurate model should take into account the relevance of cross-loadings: In fact, the three dimensions do not appear to be clearly defined. A statistical model that included non-zero forced cross-loadings is the Exploratory Structural Equation Modelling (ESEM). Moreover, there are small variations in the assignment of the items to the three factors between the two versions. Thus, we used the 15-item version in the present research because it was briefer and more recent than the original version. Moreover, according to a recent scoping review,⁵⁸ the WLBS focused on a bidirectional framework, encompassing both work interference with non-work activities and non-work activities interference with work. This advancement facilitated a deeper understanding of the antecedents and consequences associated with these two distinct forms of conflict (Figure 1).

Methodological Focus: Exploratory Structural Equation Modelling and Invariance Taxonomy

Exploratory Structural Equation Modelling (ESEM)^{59,60} is a challenging approach to studying the dimensionality of psychometric tools and their underlying constructs. Unlike traditional confirmatory factor analysis (CFA), ESEM allows for the estimation of both factor loadings and cross-loadings, providing a more comprehensive understanding of the underlying structure of the measures. This approach is particularly useful when dealing with complex and multidimensional constructs that may not fit neatly into traditional factor analytic models. Indeed, the cross-loadings unforced to zero allow to include new sources of variance in the model compared to traditional approaches, and result in factors that are not “pure” but may be more realistic and meaningful. Simultaneously, including an exploratory point of view, it could be useful for instruments for which evidence is scarce or inconclusive. ESEM could be an advantageous and unexplored model for WLBS³ in light of its previous highlighted issues: i) it is affected by a not yet clear theoretical definition of the construct; as a result, the Geomin rotation could offer a balance between the exploratory and the confirmatory approaches (ie, according to Asparouhov and Muth  n⁵⁹ it is the most promising rotation criterion when little is known about the true loading structure); ii) in line with previous findings,^{3,57} and taking into account the fact that CFA models are preferable for parsimony, the cross-loadings should be included in the model to provide a better representation and to limit misspecifications.^{61–63}

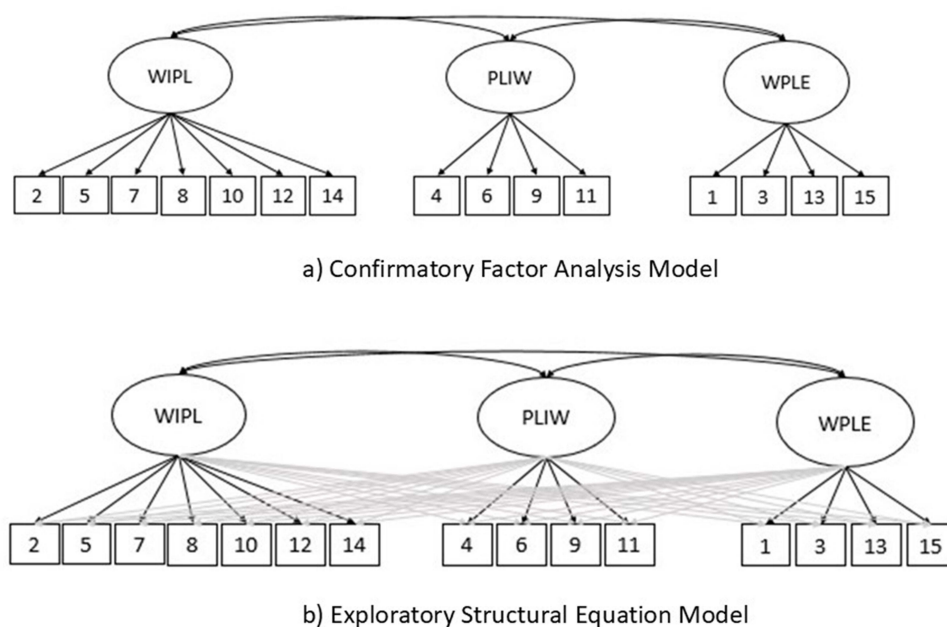


Figure 1 (a) Confirmatory Factor Analysis Model of the Work-Life Balance Scale for Full Sample; (b) Exploratory Structural Equation Model of the Work-Life Balance Scale for Full Sample.

Abbreviations: WIPL, Work Interface with Personal Life; PLIW, Personal Life Interface with Work; WPLE, Work/Personal Life Enhancement.

Testing whether the underlying factor structure is the same across groups is of particular substantive importance for the accurate diffusion of the psychometric instruments. It is a widely applied technique in the Structural Equation Modelling (SEM) framework.⁶⁴ However, the ESEM approach offers an alternative to the traditional approach. Indeed, Exploratory Factor Analysis (EFA) is not suitable for this purpose, and the CFA approach typically does not provide satisfactory goodness-of-fit indices when constraints are imposed to test invariance.⁶⁵ In the ESEM approach, the model should be tested separately for the different groups, and subsequently, some of the parameters can be constrained to be invariant across groups. For an accurate classification of constraints, Marsh et al⁶³ operationalized the 13-model ESEM taxonomy, which comprises 13 partially nested models ranging from the more restrictive (ie, configural invariance, not comprising any constraints) to a model of complete factorial invariance (ie, full measurement invariance of factor loadings, factor variances – covariances, item uniquenesses, correlated uniquenesses, item intercepts, differential item functioning, and latent means). All the included models were schematically presented in Marsh et al.⁶⁵

The Present Study

The present study aimed to analyze the psychometric properties of the WLBS using the Hayman³ 15-item version. Furthermore, for better generalizability of the results, we tested the cultural invariance of the scale for two different Southern European countries, namely Italy and Malta. The importance of examining the psychometric properties (ie, dimensionality, reliability, validity, and cultural invariance) of the WLBS stems from the following reasons: i) the WLBS has not been previously used in Europe; ii) the previous findings about the scale showed some problems at item analysis level (ie, cross-loadings were not included); iii) the ESEM approach could offer new theoretical insight on the WLBS's dimensions (ie, the relationships that link the semantics of items to the different dimensions of the WLBS); iv) the cultural invariance test enhances the applicability of the tool in two different countries. In summary, the present study addressed the emerging interest in WLB and the previous ambiguous findings in WLBS psychometric validation by offering novel and unique findings. Furthermore, the ESEM approach was especially relevant for the present investigation: It offered a new perspective capable of overcoming the psychometric difficulties so far found in WLBS. It also provided psychometric evidence, allowing the tool to be used in two different countries. Finally, the reliability and validity of the tools were tested by the association with relevant measures (ie, life satisfaction and optimism; H1 and H2). Globally, the present study aimed to address the gap in current literature regarding the lack of a psychometric validation of WLBS in Malta and Italy, by using a challenging approach (ie, ESEM) that also contributes to the theoretical and cross-cultural reflection of the WLB construct. As a practical implication, our findings support the use of a robust psychometric measurement of WLBS to detect and prevent the work-life imbalance in employees, which could impact their psychological well-being at personal and organizational levels.

Materials and Methods

Participants and Procedure

Participants ($N = 362$) were Italian ($M_{\text{age}} = 39.2$, $SD = 13.5$) and Maltese ($M_{\text{age}} = 43.4$, $SD = 11.5$) adult workers. We excluded minors (ie, age < 18) as well as people who did not work at the time of data collection. In the overall sample, there were mostly women (64.9% females and 34.3% males) who work mainly in the traditional way (89.9% traditionally and 10.2% remotely) for 36.4 (mean; $SD = 13.4$) work hours per week in the total sample (Malta: $M_{\text{hw}} = 40.7$, $SD = 12.0$; Italy: $M_{\text{hw}} = 32.1$, $SD = 13.6$). For more details and group differences, see Table 1.

Data were collected through an online survey via Social Networking Sites (eg, Facebook, Instagram, and WhatsApp) using a Google Form from March to April 2023. All participants accepted informed consent. Data were collected anonymously and stored in an aggregated form to protect privacy.

The research project proposal was carried out in accordance with the Declaration of Helsinki, and it was filed for records within the Faculty for Social Wellbeing Research Ethics Committee within the University of Malta. The measures were administered in accordance with the privacy guarantee regulations outlined in Legislative Decree no. 196/2003 and the GDPR (EU Regulation no. 2016/679), and they are all available for research purposes.

Table 1 Sociodemographic Characteristics of Participants (N = 362)

Variable	Total Sample		Malta (N = 181)		Italy (N = 181)	
	N	%	N	%	N	%
Gender						
Male	124	34.3	63	34.8	61	33.7
Female	235	64.9	116	64.1	119	65.7
Prefer not to say	3	0.8	2	1.1	1	0.6
Modality of work						
Traditional	325	89.9	154	85.1	171	94.5
Remotely	37	10.2	27	14.9	10	5.5
Kind of Work						
Employed	310	85.6	168	92.8	142	78.5
Self-employed	18	5.0	10	5.5	8	4.4
Freelance	30	8.3	2	1.1	28	15.5
Entrepreneur	4	1.1	1	0.6	3	1.7
Have Children						
Yes	197	54.4	116	64.1	81	44.8
No	165	45.6	65	35.9	100	55.2
Take Care Old parents						
Yes	76	21.0	34	18.8	42	23.2
No	286	79.0	147	81.2	139	76.8

Measures

The online survey consisted of ad hoc items created to detect the sample's sociodemographic characteristics and self-report psychometric instruments. All instruments were administered in an official language of the two countries (Italian in Italy and English in Malta). Specifically, for the WLBS, we adopted two distinct versions of the instrument: an Italian version was developed through back translation ([Appendix 1](#)), and the Maltese population responded to the English original form.

The *Work-life Balance Self-assessment Scale* (WLBS)³ was adopted to assess the work-life balance. The WLBS measures three dimensions: work interference with personal life (WIPL), personal life interference with work (PLIW), and work/personal life enhancement (WPLE). The scale has 15 items (eg, “My personal life suffers because of work”, “My job makes personal life difficult”) that are rated on a 7-point Likert scale (ranging from 1= *not at all* to 7= *all the time*). The scale has good internal consistency, with Cronbach's α values of 0.92, 0.81, and 0.66 for WIPL, PLIW, and WPLE subscales, respectively, and 0.88 for the total score.

The *Satisfaction with Life Scale* (SWLS)⁶⁶ was administered to assess life satisfaction. It was used to detect general information about global individuals' evaluation of self-life domains in the present study (Cronbach's α =0.78). We administered the original English version for the Maltese group, and the Italian version⁶⁷ for the Italian group. In both versions, LS is articulated in five items on a 7-point Likert scale, from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating higher satisfaction with life. The SWLS demonstrated high internal consistency reliability (Cronbach's α =0.87) and confirmed the unidimensional structure of the original version, which was replicated in the Italian sample. Cronbach's α for the present sample was 0.89.

The *Life-Oriented Test* (LOT)⁶⁸ was used to evaluate optimism. It employs a 5-point scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*) for 10 items (eg, “I'm always optimistic about my future”, “I hardly ever expect things to go right”). The total score ranges from 6 to 30, with higher scores indicating higher optimism levels (Cronbach's α = 0.76). The original English version was administered for the Maltese group. Moreover, its Italian version⁶⁹ was used to explore the optimism for the Italian subsample (Cronbach's α values ranged from 0.74 to 0.78). The LOT unidimensionality was confirmed for both versions. Cronbach's α for the present sample was 0.67.

Data Analysis

Firstly, we developed a new Italian version of WLBS using the back translation procedure. Specifically, two Italian native speakers translated the English version of WLBS into Italian independently. The two translations were then compared, and no substantial differences were found. A bilingual speaker familiar with the psychological topic then back-translated the first final version into English. A minor revision was required after comparing the back-translation with the original version. We tested Hayman's (2005) previous proposed 3-factor structure using the Mplus 7⁷⁰ software. We performed and compared the CFA and ESEM approaches for the full sample. Secondly, we tested the model for both Maltese and Italian groups and evaluated the cultural invariance using the 13-ESEM taxonomy. In all cases, according to the current guidelines,⁷¹ we selected the better model based on the goodness-of-fit indices,⁷² information criteria, and measurement quality indicators. Therefore, we selected only the models that met the following traditional cut-off criteria of CFA (ie, all items should load on a single factor; $\lambda \geq 0.30$), the root mean square error of approximation: $0.05 < RMSEA \leq 0.08$ acceptable and $0 \leq RMSEA \leq 0.05$ good, non-significant ($0.05 < p \leq 0.50$ acceptable, $0.50 < p \leq 1$ good), where the range of the 90% confidence interval should not include zero, upper limit ≤ 0.10 acceptable, upper limit ≤ 0.06 good (Cai et al, 2006). Comparative fit index: $0.95 \leq CFI < 0.97$ acceptable and $0.97 \leq CFI \leq 1$ good; Tucker-Lewis index: $0.95 \leq TLI < 0.97$ acceptable and $TLI \geq 0.97$ good; and standardized root mean squared residual: $0.05 < SRMR \leq 0.10$ acceptable and $0 < SRMR \leq 0.05$ good were also performed to compare models. Among them, the model with lower values of the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), and the sample-size adjusted BIC (aBIC), but also with the $\Delta CFI \leq 0.01$ and the $\Delta RMSEA \leq 0.015$ was the preferable model. Finally, we used the R-packages psychonetrics⁷³ and qgraph⁷⁴ to conduct a series of network analyses in RStudio v.2022.12.0+35⁷⁵ to investigate the relationships between WLB, life satisfaction, and optimism. We also compared the evidence between groups (ie, the Malta and Italy groups). The psychonetrics network model for Gaussian graphical models (GGMs) in particular creates an undirected network of partial correlations and is useful for cross-sectional data.

Results

Preliminary Data Processing

Power Analysis

The minimum required sample size for CFA and ESEM estimation was calculated a priori (Soper, 2022; Westland, 2010). We estimated it for a medium effect size (ie, 0.3), a desired statistical power level of 80%, a confidence interval of 95%, and the previous proposed dimensionality (ie, 15 observed variables and 3 latent factors). The minimum sample size recommended was 119. Therefore, our sample largely meets the requirements for the full sample and for both groups.

Screening of the Dataset

In the first phase, we screened the entire dataset for potential issues. No missing data were found. The multivariate normality of the data was checked by the computation of Mahalanobis' distance, which revealed that the data were not normal (ie, Mardia's multivariate Kurtosis coefficient = 297.75; critical value = 288, chi-square critical value = 39.252 when $p < 0.001$).

Comparison Between CFA and ESEM for the Full Sample

Based on the preliminary results, we used the Robust Maximum Likelihood (MLR) estimator, which did not assume the normality of the data distribution. First, we performed a CFA to test Hayman's (2005) proposed dimensionality of WLBS using a parsimonious model (Figure 1a). However, the goodness-of-fit indices (Table 2) did not show satisfactory results (ie, chi-square test = 321.962, p -value = 0.00; RMSEA = 0.086, 90% C.I. [0.076–0.097]; CFI = 0.895; TLI = 0.873; and SRMR = 0.071). In contrast, the ESEM model met the criteria (ie, chi-square test = 127.609, p -value = 0.00; RMSEA = 0.053, 90% C.I. [0.040–0.066]; CFI = 0.963; TLI = 0.939; and SRMR = 0.030). We used a Geomin rotation, which was useful for not well theoretically defined construct as well as WLB.⁵⁹ As further confirmation, the ESEM approach provided better-defined latent factors thanks to lower correlations among them in comparison to those of the CFA (Table 3). Furthermore, at the item analysis level, although the CFA showed good factor saturation with all items' loadings $\lambda \geq 0.30$, the ESEM approach added some significant non-target loadings (eg, items 1, 12, and 14), which improved the model's fit (Table 4). It is important to note that these items were the same that presented problems in

Table 2 Fit Indices of Examined Models

Model	χ^2	p	df	CFI	TLI	RMSEA [90% C.I.]	SRMR	AIC	BIC	aBIC	Meets the criteria
Full sample											
CFA	321.962	0.00	87	0.895	0.873	0.086 [0.076–0.097]	0.071	19291.995	19478.794	19326.511	No
ESEM	127.609	0.00	63	0.963	0.939	0.053 [0.040–0.066]	0.030	19156.884	19437.083	19208.660	Yes
Malta											
CFA	249.094	0.00	87	0.866	0.838	0.101 [0.087–0.116]	0.080	9654.785	9808.313	9656.294	No
ESEM	114.917	0.00	62	0.946	0.909	0.069 [0.041–0.088]	0.034	9573.892	9807.383	9576.187	Yes
Italy											
CFA	220.986	0.00	87	0.882	0.858	0.092 [0.077–0.107]	0.085	9534.364	9687.892	9535.873	No
ESEM	95.880	0.00	63	0.964	0.940	0.054 [0.030–0.075]	0.037	9466.830	9697.122	9469.093	Yes

Note: In bold: models that meet the goodness-of-fit criteria.

Abbreviations: χ^2 , chi-square test; df, degree of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA= root-mean-square error of approximation; 90% CI, 90% confidence interval for RMSEA; SRMR, Standardized-root-mean square residual; AIC, Akaike's information criterion; BIC, Bayesian information criterion; aBIC, adjusted Bayesian information criterion; CFA, Confirmatory Factor Analysis; ESEM, Exploratory Structural Equation Modeling.

Table 3 Correlations Among Latent Factors for the Exploratory Structural Equation Models

	Full Sample			Malta			Italy		
	1.	2.	3.	1.	2.	3.	1.	2.	3.
1. WIPL	–	0.606***	–0.423***	–	0.629***	–0.596**	–	0.702***	–0.344***
2. PLIW	0.572***	–	–0.234***	0.450***	–	–0.118	0.632***	–	–0.348***
3. WPLE	–0.213	–0.128	–	–0.162	0.199	–	–0.217	–0.270*	–

Note: CFA above diagonal, ESEM below. *p < 0.05; **p < 0.01; ***p < 0.001.

Abbreviations: WIPL, work interface with personal life; PLIW, personal life interference with work; WPLE, work/personal life enhancement.

previous research.^{3,57} In detail and in line with previous research that highlighted its ambiguity, item 14 (ie, the only reversed item) showed a higher loading on WPLE ($\lambda = 0.445$) than on WIPL (ie, target loading; $\lambda = -0.377$). These results are also supported by a high Profile Similarity Index (PSI = 0.95), which showed that the pattern of factor loadings was similar across CFA and ESEM solutions; however, the latter solution had several advantages. Finally, our results supported the reliability of the subscales (WIPL: McDonald's $\omega = 0.85$; PLIW $\omega = 0.80$; WPLE $\omega = 0.62$).

Comparison Between CFA and ESEM in Maltese and Italian Groups

The previous findings were replicated in the Maltese and Italian groups (Table 2). In both groups, the ESEM models (Figure 2) showed better goodness-of-fit indices than CFA (ESEM Malta: chi-square test = 114.917, p-value = 0.00; RMSEA = 0.069, 90% C.I. [0.041–0.088]; CFI = 0.946; TLI = 0.909; and SRMR = 0.034; ESEM Italy: chi-square test = 95.880, p-value = 0.00; RMSEA = 0.054, 90% C.I. [0.030–0.075]; CFI = 0.964; TLI = 0.940; and SRMR = 0.037). However, the introduction of a correlation between items 3 and 13 in the Maltese subsample was the only difference across groups, as suggested by modification indices. Indeed, before this change, some goodness-of-fit indices were not within the acceptance threshold. Also, at item-level analysis (Table 5), the results showed similar results in both groups as in the full sample, with minor differences in significant non-target loadings. In detail, only item 14 in the Italy group showed higher loading on WPLE than on WIPL as well as in the full sample.

ESEM Cultural Invariance

The cultural invariance analysis answered the question: How consistent is the factor structure of WLBS over Maltese and Italian cultures? It was evaluated according to the 13-Marsh taxonomy for ESEM models.⁶⁵ In addition to the classic invariance types, it included some combinations of items' factor loadings, item uniqueness/residuals, item intercepts,

Table 4 Item Level Descriptive Statistics, Standardized Loadings of Confirmative Factor Analysis and Exploratory Structural Equation Model of Work-Life Balance Scale in Full Sample

Factors	Item	Mean	SD	Skewness	Kurtosis	CFA								ESEM							
						WIPL		PLIW		WPLE		δ	R ²	WIPL		PLIW		WPLE		δ	R ²
						λ	S.E.	λ	S.E.	λ	S.E.			λ	S.E.	λ	S.E.	λ	S.E.		
WIPL	2	3.49	1.87	0.31	−0.92	0.690	0.030					0.525	0.475	0.603	0.059	0.103	0.089	−0.071	0.121	0.529	0.471
	5	3.78	1.91	0.06	−1.15	0.831	0.020					0.310	0.690	0.869	0.029	0.002	0.031	0.118	0.134	0.272	0.728
	7	3.64	1.84	0.14	−1.09	0.825	0.020					0.319	0.681	0.906	0.044	−0.069	0.092	0.076	0.142	0.269	0.731
	8	3.67	1.93	0.19	−1.15	0.846	0.018					0.285	0.715	0.786	0.057	0.075	0.097	−0.042	0.129	0.293	0.707
	10	3.17	1.95	0.50	−0.96	0.772	0.024					0.404	0.596	0.699	0.058	0.119	0.084	0.024	0.095	0.409	0.591
	12	3.24	1.83	0.45	−0.84	0.662	0.032					0.562	0.438	0.449	0.076	0.289	0.087	−0.098	0.099	0.532	0.468
	14	3.57	1.80	0.29	−0.94	−0.485	0.043					0.764	0.236	−0.377	0.077	−0.017	0.027	0.445	0.081	0.579	0.421
PLIW	4	2.62	1.61	0.84	−0.04			0.558	0.043			0.688	0.312	0.032	0.056	0.557	0.088	0.198	0.104	0.660	0.340
	6	2.31	1.45	1.23	0.95			0.729	0.034			0.468	0.532	−0.021	0.036	0.754	0.057	0.076	0.075	0.471	0.529
	9	2.61	1.43	0.85	0.37			0.790	0.031			0.376	0.624	0.036	0.083	0.754	0.082	−0.118	0.067	0.361	0.639
	11	2.14	1.34	1.42	1.88			0.716	0.033			0.487	0.513	−0.124	0.086	0.813	0.073	0.004	0.012	0.439	0.561
WPLE	1	3.60	1.68	0.27	−0.75					0.739	0.059	0.453	0.547	−0.325	0.069	0.100	0.103	0.541	0.077	0.568	0.432
	3	3.95	1.82	−0.08	−0.96					0.273	0.062	0.926	0.475	−0.006	0.062	0.146	0.085	0.409	0.076	0.827	0.173
	13	4.11	1.63	−0.09	−0.77					0.369	0.061	0.863	0.137	0.060	0.086	−0.146	0.086	0.426	0.080	0.798	0.202
	15	3.91	1.66	−0.05	−0.70					0.663	0.056	0.561	0.439	−0.003	0.030	−0.121	0.115	0.690	0.075	0.486	0.514

Notes: Bold items= Significant target loadings ($p < 0.001$); Underlined items indicate cross-loading items.

Abbreviations: WIPL, work interface with personal life; PLIW, Personal life interface with work; WPLE, work/personal life enhancement; S.E. Standard Error; λ , standardized factor loadings; δ , Item Uniqueness.

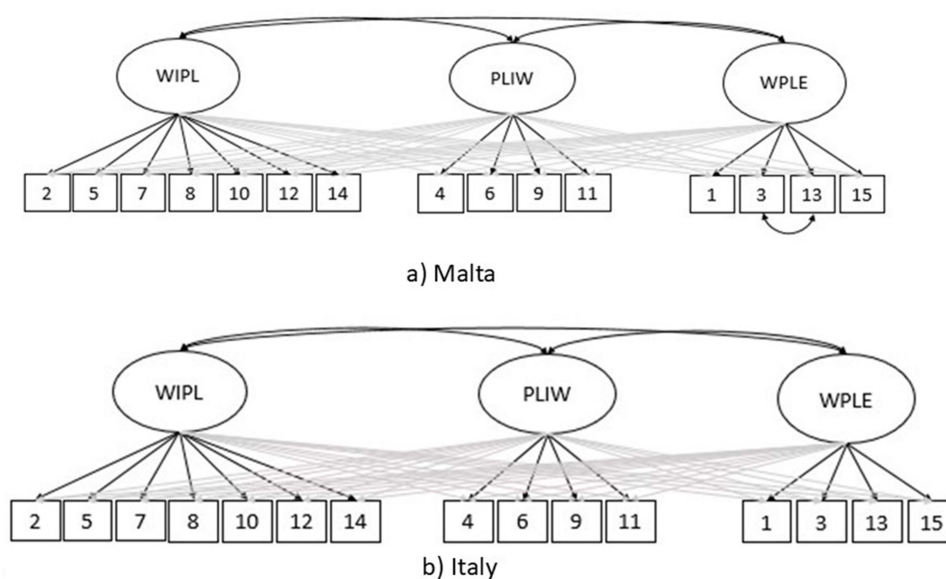


Figure 2 Exploratory Structural Equation Modeling for Work-Life Balance Scale in Malta and Italy Groups.

Abbreviations: WIPL, Work Interface with Personal Life; PLIW, Personal Life Interface with Work; WPLE, Work/Personal Life Enhancement.

latent variable factor covariance matrix, and latent means. The comparison between these nested models (ie, all models are nested under the M1; Table 6) showed optimal results up to the model 4 (M4), namely a weak invariance (ie, requires that factor loadings were invariant over groups; M2: λ) level. Additionally, the high PSI highlighted the similarity of factor loadings between the two groups ($\text{PSI} = 0.85$). Furthermore, the weak invariance was sustained for item uniqueness (M3: λ , δ) and the latent variable factor variance-covariance matrix (M4: λ , ξ/ϕ) individually combined with factor loadings. Particularly in support of the invariance of factor loadings over cultures, fit indices that incorporate a parsimony correction showed not entirely unexpected results (West et al, 2012): RMSEA decreased for the more parsimonious M2 than the less parsimonious M1 (ie, $\text{M2} = 0.067$ and $\text{M1} = 0.068$), and CFI decreased ($\text{M1} = 0.946$ and $\text{M2} = 0.928$). Moreover, the comparison between M3-M2 (ie, $\Delta\text{CFI} = 0.009$ and $\Delta\text{RMSEA} = 0.001$) and M4-M2 (ie, $\Delta\text{CFI} = 0.003$ and $\Delta\text{RMSEA} = 0$) supported more parsimonious models than traditional weak variance models because the differences were less than the cut-off values typically adopted to reject the more parsimonious model. Finally, the test of the other types of invariances did not result in an acceptable fit in absolute terms (Table 6): all models from M5 to M13 did not show good fit indices, and the comparison between the previous nested models did not overcome the threshold criteria in favour of the model with few constraints.

Evidences of Convergent Validity

Full sample

Based on the previous findings, we performed a network analysis for the WLBS. We investigated the relationship between work-life balance subscales, life satisfaction, and optimism to evaluate the convergent validity of the scale. On a graphical level, each variable is represented by a “node”, and the partial correlations are represented by “edges”.⁷³ First, we investigated the relationship for the full sample ($\text{df}=0$, $\chi^2=0$, $p=1$, $\text{CFI}=1$, $\text{RMSEA}=0$; Figure 3 and Table 7). The partial correlation matrix showed significant positive partial correlations between WPLE and life satisfaction and negative partial correlations between WIPL and PLIW and life satisfaction (WIPL: $\beta = -0.013$, $p < 0.001$, PLIW: $\beta = -0.013$, $p < 0.01$ and, WPLE: $\beta = 0.05$, $p < 0.001$, respectively). Moreover, a positive correlation was found between WPLE and optimism (WPLE: $\beta = 0.15$, $p < 0.001$) and negative partial correlations between PLIW and optimism ($\beta = -0.16$, $p < 0.001$), taking into account the presence of the other variables in the network.

Table 5 Item Level Descriptive Statistics, Standardized Loadings of Exploratory Structural Equation Model of Work-Life Balance Scale in Malta and Italy Groups

Factors	Item	ESEM Malta								ESEM Italy							
		WIPL		PLIW		WPLE				WIPL		PLIW		WPLE			
		λ	S.E.	λ	S.E.	λ	S.E.	δ	R2	λ	S.E.	λ	S.E.	λ	S.E.	δ	R2
WIPL	2	0.595	0.069	<u>0.208</u>	0.096	-0.155	0.095	0.450	0.550	0.586	0.082	0.109	0.093	0.004	0.062	0.565	0.435
	5	0.853	0.055	0.021	0.056	<u>0.266</u>	0.130	0.257	0.743	0.887	0.056	-0.019	0.074	0.008	0.058	0.238	0.762
	7	0.842	0.065	-0.071	0.091	0.105	0.108	0.361	0.639	0.931	0.029	0.005	0.023	0.056	0.065	0.147	0.853
	8	0.869	0.053	0.070	0.091	-0.012	0.065	0.182	0.818	0.597	0.100	<u>0.238</u>	0.096	-0.028	0.070	0.396	0.604
	10	0.835	0.051	-0.013	0.044	<u>0.217</u>	0.107	0.325	0.675	0.471	0.090	<u>0.352</u>	0.083	0.005	0.039	0.447	0.553
	12	0.501	0.100	<u>0.255</u>	0.100	0.002	0.048	0.568	0.432	0.294	0.104	<u>0.411</u>	0.115	-0.125	0.071	0.533	0.467
	14	-0.511	0.078	-0.018	0.049	<u>0.291</u>	0.137	0.599	0.401	-0.176	0.128	-0.134	0.115	<u>0.435</u>	0.093	0.667	0.333
PLIW	4	-0.121	0.094	0.681	0.099	-0.009	0.044	0.599	0.401	0.145	0.169	0.545	0.160	<u>0.204</u>	0.083	0.613	0.387
	6	0.005	0.041	0.728	0.065	0.096	0.079	0.429	0.571	-0.150	0.161	0.816	0.140	0.021	0.051	0.475	0.525
	9	0.075	0.145	0.744	0.128	-0.153	0.116	0.409	0.591	0.005	0.018	0.767	0.053	-0.117	0.075	0.344	0.656
	11	-0.149	0.147	0.826	0.109	0.031	0.130	0.393	0.607	-0.099	0.109	0.771	0.095	-0.019	0.059	0.485	0.515
WPLE	1	<u>-0.148</u>	0.089	0.115	0.128	0.409	0.119	0.614	0.386	<u>-0.191</u>	0.079	0.008	0.04	0.628	0.072	0.521	0.479
	3	-0.157	0.089	0.019	0.071	0.413	0.085	0.783	0.217	0.109	0.149	0.176	0.146	0.255	0.121	0.904	0.096
	13	-0.017	0.103	<u>-0.300</u>	0.105	0.289	0.132	0.855	0.145	0.028	0.132	0.012	0.131	0.400	0.116	0.846	0.154
	15	0.008	0.013	-0.297	0.163	0.773	0.098	0.409	0.591	-0.003	0.025	-0.020	0.080	0.844	0.088	0.277	0.723

Notes: Bold items= Significant target loadings ($p < 0.05$); Underlined items indicate cross-loading items.

Abbreviations: WIPL, work interface with personal life; PLIW, Personal life interface with work; WPLE, work/personal life enhancement; S.E. Standard Error; λ , standardized factor loadings; δ , Item Uniqueness.

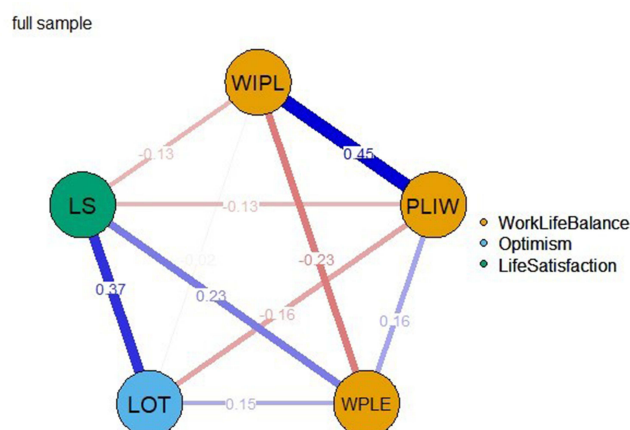
Table 6 Goodness-of-Fit Indices for Models of Malta and Italy Groups

Marsh taxonomy	Constraints	Model	χ^2	df	p	CFI	TLI	RMSEA	[90% CI]	SRMR
M1		Configural	228.738	126	0	0.946	0.91	0.067	[0.053, 0.081]	0.037
M2	FL	Weak (λ)	298.108	162	0	0.928	0.907	0.068	[0.056, 0.080]	0.062
M3	FL, Uniq	(λ , δ)	331.653	177	0	0.919	0.903	0.069	[0.058, 0.081]	0.068
M4	FL, FVCV	(λ , ξ/φ)	310.050	168	0	0.925	0.907	0.068	[0.056, 0.080]	0.073
M5	FL, Inter	Strong (λ , ν)	378.509	174	0	0.892	0.87	0.081	[0.070, 0.092]	0.069
M6	FL, Uniq, FVCV	(λ , δ , ξ/φ)	346.349	183	0	0.914	0.901	0.07	[0.059, 0.081]	0.08
M7	FL, Uniq, Inter	Strict (λ , δ , ν)	411.416	189	0	0.883	0.87	0.081	[0.070, 0.091]	0.075
M8	FL, FVCV, Inter	(λ , ξ/φ , ν)	390.327	180	0	0.889	0.871	0.08	[0.069, 0.091]	0.079
M9	FL, Uniq, FVCV, Inter	Latent variance-covariance (λ , δ , ξ/φ , ν)	425.93	195	0	0.878	0.869	0.081	[0.070, 0.091]	0.087
M10	FL, Inter, Latent Means	(λ , ν , η)	391.757	177	0	0.887	0.866	0.082	[0.071, 0.093]	0.077
M11	FL, Uniq, Inter, Latent Means	(λ , δ , ν , η)	424.164	192	0	0.878	0.866	0.082	[0.071, 0.092]	0.079
M12	FL, FVCV, Inter, Latent Means	(λ , ξ/φ , ν , η)	403.304	183	0	0.884	0.867	0.082	[0.071, 0.092]	0.084
M13	FL, Uniq, FVCV, Inter, Latent Means	Latent mean (λ , δ , ν , ξ/φ , η)	438.57	198	0	0.873	0.866	0.082	[0.072, 0.092]	0.088

Abbreviations: FL, Item factor loadings λ ; Uniq, Item uniquenesses/residuals δ ; Inter, Item intercepts ν ; FVCV, Latent variable factor variance covariance matrix ξ/φ ; Latent Means η ; χ^2 , chi-square test; df, degree of freedom; CFI, comparative fit index; TLI, Tucker-Lewis index; RMSEA= root-mean-square error of approximation; 90% CI, 90% confidence interval for RMSEA; SRMR, Standardized-root-mean square residual.

Invariance Across Groups

Finally, we tested the invariance between the Malta and Italy groups in order to highlight the eventual differences. We compared two models: one model with free parameters (ie, model-free) and the second model with parameters forced to be equal (ie, model equal), using the “compare” function of the psychometrics R-package, and we did not find statistically significant differences ($p = 0.12$). The findings revealed no significant differences in the direction of the associations between the two groups (Figure 4 and Table 7). However, the most significant differences were found in the strength of these associations: Generally, the Maltese group showed stronger partial correlations than the Italian group. Furthermore, the association between PLIW and LOT was statistically significant only for the Maltese group; on the other hand, the association between WIPL and life satisfaction and between WPLE and optimism was statistically significant only for the Italian group.

**Figure 3** Network Analysis for Full Sample.

Abbreviations: WIPL, Work Interface with Personal Life; PLIW, Personal Life Interface with Work; WPLE, Work/Personal Life Enhancement; LOT, Life Orientation Test; SWLS, Satisfaction with Life Scale.

Table 7 Partial Correlation Matrix of Network Analysis

Full Network					Malta					Italy				
var1	var2	est	s.e.	p	var1	var2	est	s.e.	p	var1	var2	est	s.e.	p
PLIW	WIPL	0.45	0.042	<0.001	PLIW	WIPL	0.38	0.064	<0.001	PLIW	WIPL	0.56	0.051	<0.001
WPLE	WIPL	-0.23	0.050	<0.001	WPLE	WIPL	-0.29	0.068	<0.001	WPLE	WIPL	-0.14	0.073	0.05
LOT	WIPL	-0.022	0.053	0.67	LOT	WIPL	0.022	0.074	0.77	LOT	WIPL	-0.089	0.074	0.23
SWLS	WIPL	-0.13	0.052	<0.001	SWLS	WIPL	-0.097	0.074	0.19	SWLS	WIPL	-0.14	0.073	0.05
WPLE	PLIW	0.16	0.051	<0.001	WPLE	PLIW	0.15	0.073	0.04	WPLE	PLIW	0.14	0.073	0.05
LOT	PLIW	-0.16	0.051	<0.001	LOT	PLIW	-0.18	0.072	0.01	LOT	PLIW	-0.11	0.073	0.12
SWLS	PLIW	-0.13	0.052	0.01	SWLS	PLIW	-0.13	0.073	0.08	SWLS	PLIW	-0.13	0.073	0.08
LOT	WPLE	0.15	0.051	<0.001	LOT	WPLE	0.070	0.074	0.34	LOT	WPLE	0.22	0.071	<0.001
SWLS	WPLE	0.23	0.050	<0.001	SWLS	WPLE	0.28	0.068	<0.001	SWLS	WPLE	0.18	0.072	0.01
SWLS	LOT	0.37	0.046	<0.001	SWLS	LOT	0.43	0.061	<0.001	SWLS	LOT	0.32	0.067	<0.001

Abbreviations: Var, Variable; est, Estimate; s.e., Standard Error; WIPL, Work Interface with Personal Life; PLIW, Personal Life Interface with Work; WPLE, Work/Personal Life Enhancement; LOT, Life Orientation Test; SWLS, Satisfaction with Life Scale.

Discussion

Psychometric Evidence for the Work-Life Balance Scale

Notwithstanding the increasing interest in WLB, no previous studies have examined the factorial validity of the WLBS measure at the item-level using statistical methods that address the relevant concerns. The present study represents a substantial and methodological reflection on WLBS to evaluate its internal structure and examine the cross-cultural generalizability of the factorial structure between Malta and Italy using the advanced ESEM methodology.^{59,60} Moreover, the relationship between semantic items and all of the dimensions of WLBS (ie, the inclusion of the cross-loadings in the ESEM models) allows us to consider these dimensions as being interrelated from a theoretical point of view. For example, item 12 (ie, “I struggle to juggle work and non-work”) was only included in WIPL in the CFA model. Recognizing and quantifying links also with the PLIW and WPLE dimensions allows the rethinking of these dimensions as closely interdependent. This psychometric approach accounts for the relevant non-target loadings, which were a major issue in previous versions.^{3,57} These findings were the basis for our analysis: the WLBS dimensionality was tested using both CFA and ESEM approaches. The CFA model was not supported; instead, the ESEM model showed an adequate structural representation of the WLBS using an eclectic approach,⁶⁰ which considers: i) satisfactory goodness-of-fit

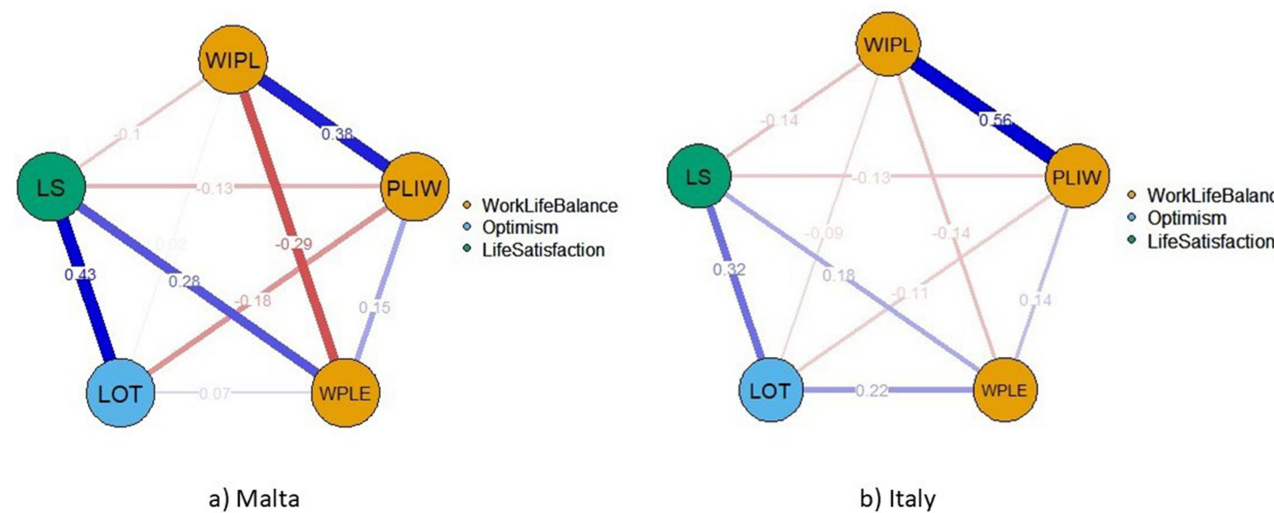


Figure 4 (a) Psychometric Network Analysis for Malta group; (b) Psychometric Network Analysis for Italy group. Abbreviations: WIPL, Work Interface with Personal Life; PLIW, Personal Life Interface with Work; WPLE, Work/Personal Life Enhancement; LOT, Life Orientation Test; SWLS, Satisfaction with Life Scale.

indices, ii) lower correlations among latent factors; iii) appropriate item parameters for target loadings ($\lambda \geq 30$). Overall, the restriction of non-zero non-target loadings in the CFA approach caused model distortions. The results of the ESEM models indicated that they were more suitable for the WLBS than the alternative methods, as evidenced by their superior performance and outcomes. Furthermore, consistent with previous theoretical suggestions,⁷⁶ the apparent over-parametrization of the retained ESEM solution (ie, due to some non-target loadings near zero, for example, item 5 on PLIW and item 3 on WIPL) is overcome by three non-target loadings exceeding a standardized value of 0.20. Finally, the inclusion of cross-loadings in ESEM models highlighted that some items (eg, item 1 and 14) showed relevant non-target loadings, especially for the WPLE subscale. Although this may slightly compromise the internal consistency of the WPLE subscale, it simultaneously provides a clearer reflection of the semantic interconnectedness among the subscales. Specifically, the construct of enhancement appears to be strongly shaped by the bidirectional interferences between work and personal life. Furthermore, although the WLPE items were theoretically aligned with the same overarching construct (ie, enhancement between work and personal life), they captured conceptually distinct facets (ie, energy: items 1 and 13; mood: items 3 and 15), thereby diminishing item communalities. Thus, this research contributes to the increasing literature indicating that the CFA technique may be too restrictive for multidimensional psychological constructs.

Cross-Cultural Findings for Italy and Malta

Furthermore, our findings were consistent with the results obtained in the full sample in both the Malta and Italy groups, with minor variations. Specifically, the Malta ESEM model improved fit indices due to the correlations between items 3 and 13. However, we regarded this addition as acceptable because of both statistical and theoretical reasons: i) the items loaded on the same latent factor (ie, WPLE) and ii) they had similar semantical content (ie, item 3: “I am in a better mood at work because of personal life” and item 13: “Personal life gives me energy for my job”). On the other hand, item 14 in the Italy group showed a higher loading on WIPL than on WPLE (ie, the previous target loading) as well as in the full sample. However, item 14 has already shown this ambiguity in previous versions. As a psychometric consideration, the ESEM approach—which incorporates all cross-loadings in the model—effectively addresses this issue.

Additionally, the present study supported the weak invariance across two cultures. This psychometric evidence was crucial for the valid generalization of the results: indeed, especially in Malta, English tools are often used due to the language’s uniformity, but without conducting a proper validation procedure. Notably, the invariance of factor loadings was consistent across groups. In addition, following the 13-Marsh taxonomy for ESEM models,⁶³ our results supported the cultural invariance also for item uniqueness (M3) and the latent variable factor variance-covariance matrix (M4) individually combined with factor loadings. Thus, our findings supported the use of WLBS in both Malta and Italy and encouraged further validation in other countries. Indeed, at the theoretical level, our findings are in line with previous research recognizing the WLB as a culturally oriented psychological construct and highlighting the cultural differences between Malta and Italy,^{40,43–45} and demonstrating weak invariance using a model that accounts for the factorial complexity of the WLBS test items. As a practical consequence, the applicability of WLBS in other cultural contexts should be carefully assessed: The cultural and organizational peculiarities of countries could distort the concept of a “healthy balance” or include elements that are not present in the current version of the scale. For instance, the work-from-home could be considered marginally in the Italian context, but it is an essential issue in Maltese welfare policies. In detail, although the English language was already available in the original version of the WLBS, the present results provide the necessary cultural depth for the Maltese context. On the other hand, we have provided primary evidence for the use of WLBS in Italy. Globally, a tool that measures a culturally oriented construct may require careful statistical and content reviews before it can be applied in other countries and provide reliable and useful results. As a robust psychometric procedure, it is essential to conduct the process validation before applying the scale in another country, even if the language spoken is one of those used in this study. Indeed, although it may be an expensive research practice, it would be useful to test the invariance whenever differences in key aspects of social role management are detectable. Specifically, if theoretical grounds suggest substantial variations in cultural norms, social frameworks, or labor policies, a revalidation of the WLBS is recommended, in contrast to linguistic considerations alone. In conclusion, using ESEM, we provided new evidence on the WLB theoretical framework and supported its use in two different European countries, overcoming previous issues with large cross-loadings.

Work-Life Balance Scale Validity

Lastly, our findings supported the WLBS subscales' convergent validity by performing a Network Analysis for the full sample. In line with our initial hypotheses H1 and H2 and according to previous research^{2,27,28,32–35} and established theories,^{20–22} our findings displayed the negative partial correlations between WIPL, PLIW, life satisfaction, and optimism. Furthermore, they highlighted negative partial correlations between WPLE, life satisfaction, and optimism. Based on these results, our findings supported the positive impact of the WLB on the employees' psychological wellbeing and were in line with the Fisher-McAulley et al¹⁹ conceptual model. As a practical implication, the welfare policies of individualistic countries (eg, Malta and Italy) should take into account the consequences of worse imbalanced time-spending on public health. Based on these considerations, companies that favor WLB are considered more attractive to employees.⁷⁷ A systemic approach to WLB by both corporations and governments can yield benefits at both the micro (individual and organizational well-being) and macro (sustainable economic growth and social cohesion) levels. From a practical perspective, corporate policies may include support for telecommuting and flexible working hours (eg working time with flexible start and end times), alongside the implementation of new strategies for managing remote work (eg, clear definition of objectives and responsibilities, use of collaborative online tools, continuous feedback, focus on cyber security). Such measures enable employees to better address personal life demands while responsibly integrating them with professional responsibilities. Concurrently, organizations that adopt these strategies are perceived as more attractive, particularly in the post-pandemic context.^{78,79} Furthermore, WLB-oriented policies, such as well-structured parental leave and incentives for flexible work arrangements, have the potential to enhance the participation of women and other marginalized groups in the labor market.

Cultural Invariance of the Networks

Finally, we also tested the invariance of the networks across groups. Partially in line with our H4, our results supported the results across the two South European countries. However, the partial correlations were stronger in the Maltese than in the Italian group. As a viable interpretation, the cultural differences between the two included states could explain these differences. Specifically, Malta has been identified as a favored destination for remote workers.⁴⁵ This preference could potentially influence familial dynamics due to the reduction of exclusive workspace within residential environments. Moreover, the issue of gender disparity³⁹ appears to have a more pronounced effect within Maltese cohorts⁴³ as compared to their Italian counterparts.⁴⁴ The stronger association between WLBS, life satisfaction, and optimism in the Maltese population compared to the Italian population suggests the need for targeted attention to workers' welfare and government interventions to support labor participation (eg, through policy guidelines) that consider the specifics of each country. Our findings underline the impact of work-life balance (WLB) on workers' mental health; however, these disparities also indicate a heightened awareness within the Maltese population, particularly among those more engaged in flexible and digital work arrangements.

Practical Application for Policymakers and Organizations

Our results are in line with the recent changes in post-pandemic work-life conceptualization and with the growing interest in WLB from psychological researchers. At a general level (ie, cross-cutting to national contexts), our findings encourage the recognition of WLB as an indicator of employees' psychological well-being. Labor policies should include the WLB as a central objective, alongside pay, security, and employability. As a support of this objective, having a psychometrically sound measure of WLB (ie, WLBS) allows policymakers and organizations to monitor and evaluate interventions (eg, work flexibility, parental leave, remote working) with greater precision. Moreover, the psychological distress in organizations (eg, burnout, depression, and turnover) can be monitored and prevented through targeted preventive actions supported by a valid scale.^{80,81} From a national point of view, our results could inform the Italian context—which is characterized by strong work-family dualism, with traditional gender roles and little spread of flexible work⁴⁴—with reforms for WLB (eg, more equitable parental leave, childcare, and smart working policies) or improved the national plans for public health; on the other hand, the Maltese context—which has a growing female participation in work-life and more online workers^{42,43}—our findings encourage sharing of family responsibilities and strengthening leave arrangements for fathers, and promote the well-being assessment for online workers.

Limitations and Directions for Further Research

Our study had some critical limitations that serve to guide the appropriate interpretation of the findings and require further investigation. First, we collected data through an online survey, which precluded the possibility of controlling and standardizing the test conditions. Moreover, this method could introduce some response bias (eg, self-report bias) due to social desirability or acquiescence response bias. Furthermore, we developed a rather short battery of tools to contain fatigue bias, but did not include control questions that could identify random answers. Likewise, the social-networking sites' based dissemination of the online survey has created a bias in the participants' selection procedure, as it excludes those who do not use these platforms. Additionally, on a technical level, we applied the cut-off criteria for goodness-of-fit indices that were originally developed for SEM models. However, more research is needed to establish the appropriateness of these "golden rules" for the ESEM technique. Meanwhile, following the current recommendations,⁶⁰ an eclectic approach that considers fit indices, correlations, and item-level analysis simultaneously seems to be the most accurate and methodologically sound choice. Furthermore, although the non-normality of the data was considered by using a robust estimator, the subsamples are rather small. This does not guarantee the absence of distortions. Future research should replicate the results on larger samples. Finally, further studies are necessary to provide more evidence regarding the WLBS's psychometric features. For example, we selected only two South European countries in line with our resources. However, further research should include more European and extra-European countries to provide more evidence regarding the operationalization of WLB and the psychometric validation of WLBS. Indeed, the cultural and political characteristics that impact this psychological construct should also be reconsidered for each country. Moreover, from a methodological point of view, we do not exclude that further methods beyond the ESEM may offer an optimal re-definition of the WLBS. For instance, mixed-methods or item-response theory studies could provide new insights into the WLBS.

Conclusion

In conclusion, our results supported the ESEM 3-factor model as the optimal choice for the WLBS for both Malta and Italy groups: this psychometric technique offered a novel perspective to incorporate cross-loadings in the model and address the limitations of previous research^{3,57} while including semantic links between subscales that better highlight the WLB construct and more accurately reflect the psychometric characteristics of the scale (eg, weaker internal consistency of WPLE). It also provided new theoretical evidence to elucidate the operationalization of WLB. Ultimately, the current study contributed to the growing methodological literature about the advantages of the ESEM application on multi-dimensional psychological measures and advanced new knowledge about the theoretical conceptualization of work-life balance. Taken together, this research could represent a valuable and relevant contribution to both research and clinical/organizational psychological practice. Specifically, our findings highlighted that the WLBS is a psychometrically sound instrument to detect work-life imbalances, which can affect workers' health and performance. The validation of this tool enhances and extends its applicability in two European countries, and also updates the results for the post-pandemic era, in which changes to work-life balance need general rethinking. Future research should take into account cultural changes affecting the work-life balance rather than focusing on past achievements. Particularly, psychometric studies should address the evolving needs of workers to provide timely, culturally oriented tools.

Disclosure

The authors report no conflicts of interest in this work.

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