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Research Article

Digital Life Balance Scale: Validity and Reliability in the Turkish Context

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In our increasingly interconnected world, maintaining a healthy balance between online and offline activities is crucial for personal well-being. The Digital Life Balance (DLB) Scale has been introduced to understand the impact of Internet use on well-being, drawing upon the framework of the psychology of harmony and harmonization. This study is aimed at validating and assessing the reliability of the DLB Scale among Turkish university students. A sample of 424 university students (50.7% females, 49.3% males; age range: 20-31 years) participated. The scale was translated into Turkish, and its language validity was ensured through expert reviews. Confirmatory factor analysis supported the construct validity of the scale, effectively measuring Digital Life Balance in the Turkish context. Convergent validity analysis revealed significant correlations between the DLB Scale and measures of well-being and addiction tendencies. The DLB Scale exhibited good internal consistency (Cronbach's alpha and composite reliability). Test-retest reliability analysis showed consistent responses over a three-week interval. These findings provide empirical evidence for the validity and reliability of the scale, making it a valuable tool for assessing individuals' perceptions of balance in their online and offline activities.

1. Introduction

The use of new communication technologies such as smartphones, computers, and smartwatches is an essential element of our contemporary society. Knowing how to use ICT (information and communication technologies) is necessary for a variety of reasons that go beyond mere entertainment [1–3]. For example, ICT allows for quicker access to a wide range of informational content, although at times this content can be potentially false or misleading [4, 5]. Furthermore, ICT can promote the development and maintenance of social connections, leading to an increase in one's social capital [6–9]. Nowadays, many workers (e.g., telecommuters and work-from-home employees) and students (remote learning, online universities) rely on ICT for their professional and educational activities [10, 11]. Additionally, online platforms are frequently used for exercising citizens' rights and fulfilling civic duties (e.g., public administration certificates and online voting) [12].

The increasing availability and importance of ICT have resulted in a significant surge in online usage [7, 13–15]. It is no longer a peripheral activity and so must be seamlessly integrated with other offline needs and desires. In this context, the psychology of harmony and harmonization offers valuable insights into understanding this phenomenon [16].

The concept of "harmony" unfolds with distinct hues across Western and Eastern cultural palettes. In the Western cultural canvas, its origins can be traced to luminaries like

Pythagoras and the melodious cadence of music. Here, harmony assumes the role of an intrinsic order, one to be carefully preserved [17]. In stark contrast, Eastern philosophies draw from the essence of "he" a concept woven with the threads of living in consonance with nature and one's fellow beings, eschewing the confines of preordained structures [18, 19].

However, despite these cultural chiaroscuros, both perspectives converge on a shared understanding of harmony as a dynamic process. It emerges from the orchestration and delicate balance of disparate elements, ultimately culminating in a unified whole [16]. The notion of harmony, whether in the individual psyche, interpersonal relations, societal dynamics, or the natural world, is one that can be perturbed and restored [16].

Transposing this framework from the realm of abstract concepts to the domain of cutting-edge technologies, we encounter the construct of "Digital Life Balance" (DLB), a recent addition to the lexicon [20]. DLB ventures into the territory of individuals' perceptions of equilibrium, or lack thereof, between their digital and offline engagements.

In essence, this equilibrium is not disturbed solely by an overindulgence in technology but also by its underutilization. While excessive online engagement can be emblematic of addiction or problematic usage [21–23], inadequate harnessing of ICT and related services—often owing to limited computer literacy or Internet self-efficacy—can lead to social marginalization and a diminished quality of life [24, 25]. The rapid development of ICT has significantly influenced human life in many countries worldwide. In this aspect, the use of these technologies in Turkey is higher than in many other countries [26]. In particular, individuals between the ages of 16 and 64 spend an average of 4 hours per day using the mobile Internet, which is higher than the global average [26]. In addition, Turkish individuals spend an average of 7 hours and 29 minutes per day using the Internet overall [26]. It is also important to note that 98% of the general population in Turkey owns a mobile phone [27]. Although this high level of usage brings many daily conveniences to Turkish individuals, it also brings various negative consequences. Technology-related addictions (e.g., smartphone addiction, Internet gaming disorder, and Internet addiction), which are among the most important of these negative results, threaten the mental health of individuals by affecting a considerable part of the population in Turkey [28–32]. This condition also highlights the importance of "harmony" between ICT and human beings and emphasizes the importance of studying this situation in the sample of Turkey. Unfortunately, the lack of a scale in the Turkish language to meet this requirement causes a gap in the field in response to this need.

2. Aim of the Study and Hypothesis Development

Since our aim is to validate an existing scale in the Turkish context, we decided to replicate the relationships identified based on the literature by Duradoni et al. [33] in terms of external validity. Our research was grounded expecting specific associations related to DLB scores within two distinct domains: well-being and technology addiction. We postulated that diminished DLB scores would be coupled with decreased levels of affective hedonic well-being (e.g., PANAS; [34]), cognitive hedonic well-being (e.g., SWL; [35]), and eudaimonic well-being (e.g., Flourishing; [36]). Furthermore, we predicted that DLB scores would manifest inverse relationships with measurements pertaining to technology addiction [33]. In this regard, the hypotheses of our study are as follows:

Hypothesis 1 (H1). It is expected that DLB scores will have a positive correlation with PANAS-Positive scores and a negative correlation with PANAS-Negative scores.

Hypothesis 2 (H2). DLB scores are expected to show a positive relationship with scores on the Life Satisfaction Scale.

Hypothesis 3 (H3). DLB scores are expected to have a positive relationship with scores on the Flourishing Scale.

Hypothesis 4 (H4). DLB scores are expected to show a negative relationship with scores on the Young Internet Addiction Test Short Form.

Hypothesis 5 (H5). DLB scores are expected to have a negative relationship with scores on the BSMAS.

Hypothesis 6 (H6). DLB scores are expected to show a negative relationship with scores on the SABAS.

3. Method

3.1. Participants. In order to ensure appropriate sample size determination for our study, we considered two types of statistical analyses: confirmatory factor analysis (CFA) and Pearson's correlations. For CFA, we adhered to the recommendation of having at least a 10 : 1 ratio of participants to items [37], and a sample size greater than 200 was deemed "adequate" to successfully conduct the confirmatory factor analysis [38, 39]. Furthermore, we conducted a power analysis using G*Power [40]. In preparation for our investigation into the association between DLB scores and external validity using Pearson's correlations, we performed a targeted power analysis. This analysis indicated that a minimum sample size of 153 participants would be necessary to attain a statistical power of 0.80. This sample size would enable the detection of even the smallest effect size observed in the study conducted by Duradoni et al. [33], specifically an effect size of $r = 0.20$, all while maintaining a significance level of 0.05. In light of the required number of observations for each analysis, we have determined that a sample size exceeding 200 (which represents the largest requirement) is deemed appropriate for the purposes of our study. The participants of the study consisted of 424 university students, of whom 215 were female (50.7%) and 209 were male (49.3%) between the ages of 20 and 31 ($M = 23.3$, SD = 3.3), attending various departments of Dokuz Eylul University in the 2022-2023 academic year. Detailed information about the participants can be found in Table 1.

3.2. Data Collection Tools

3.2.1. Personal Information Form. This was designed by the researchers to collect information about the participant's age, gender, level of education, and level of class.

3.2.2. PANAS. The scale employed in this study, originally developed by Watson et al. [41], comprises 20 items. It assesses both positive affect, reflected in 10 items (e.g.,

Table 1: Participants' demographics.

	n	%
Gender		
Female	215	50.7
Male	209	49.3
Level of education		
Graduate	387	79.5
Postgraduate	87	20.5
Level of class		
First grade	80	18.9
Second grade	70	16.5
Third grade	119	28.1
Fourth grade	155	36.6
Total	424	

excited and inspired), and negative affect, represented by the remaining 10 items (e.g., upset and afraid). Respondents rate each item on a five-point Likert scale, ranging from 1 (very slightly or not at all) to 5 (extremely), indicating the extent to which they have experienced the specified emotions within a defined time frame. The Turkish adaptation of this scale, undertaken by Gencöz [42], demonstrated an internal consistency coefficient of .83 for positive emotions and .86 for negative emotions. In the current study, the internal consistency coefficients were calculated as .93 for positive emotions and .94 for negative emotions.

3.2.3. Life Satisfaction Scale. The assessment tool employed in this study, originally developed by Diener et al. [43], is designed to gauge individuals' overall life satisfaction. The original version is a 7-point Likert-type scale consisting of 5 items (e.g., "I am satisfied with my life" and "The conditions of my life are excellent"), measuring a single factor. Higher scores on the scale indicate greater life satisfaction. The Turkish adaptation of this scale, conducted by Köker [44], yielded a Cronbach alpha internal consistency coefficient of .80. In the current study, the internal consistency coefficient was computed as .82.

3.2.4. Bergen Social Media Addiction Scale (BSMAS). The scale was developed by Andreassen et al. [45], consisting of six items (e.g., "Have you felt the desire to use social media more and more? "Have you used social media to forget about your personal problems?"). Each item in the scale meets six basic addiction criteria, including mental exertion, mood change, tolerance, withdrawal, conflict, and unsuccessful quitting. The scale is answered on a five-point Likert-type rating ranging from (1) very rarely to (5) very often. The scale was adapted to Turkish by Demirci [46]. The internal consistency coefficient of the scale was calculated as .82. In this study, the internal consistency coefficient was calculated as .92.

3.2.5. Smartphone Application-Based Addiction Scale (SABAS). The scale was developed by Csibi et al. [47] and used to screen for smartphone application-based addiction risk. The scale consists of 6 items (e.g., "My smartphone is the most important thing in my life." "Over time, I fiddle around more and more with my smartphone."). Participants are expected to express their opinions on the scale items on a 7-point Likert-type rating ranging from 1 (strongly disagree) to 7 (strongly agree). The scale was adapted to Turkish by Gökler and Bulut [48]. The internal consistency coefficient of the scale was calculated as .85. In this study, the internal consistency coefficient was calculated as .91.

3.2.6. Young Internet Addiction Test Short Form. The scale was developed by Young [49] and converted into a short form by Pawlikowski et al. [50]. The scale is a five-point (1=never, 5=very often) Likert-type scale consisting of 12 items (e.g., "How often do you stay online longer than you planned? "How often do you spend more time online, neglecting family chores?"). The internal consistency reliability coefficient of the scale was calculated as 0.85. The scale was adapted to Turkish by Kutlu et al. [51]. The internal consistency coefficient of the scale was calculated as .91. In this study, the internal consistency coefficient was calculated as .95.

3.2.7. Flourishing Scale. Flourishing Scale was developed by Diener et al. [43]. The scale is a self-report measurement tool that evaluates participants' perceptions of well-being and is based on their own self-assessment. The scale consists of 8 items (e.g., "I am a good person and lead a good life" and "People respect me"). Participants are expected to express their opinions on the scale items on a 7-point Likert-type rating ranging from 1 (strongly disagree) to 7 (completely agree). The scale was adapted to Turkish by Fidan and Usta [52]. The internal consistency coefficient of the scale was calculated as .83. In this study, the internal consistency coefficient was calculated as .96.

3.2.8. Digital Life Balance (DLB) Scale. The scale was developed by Duradoni et al. [20]. This scale was developed to capture individuals' harmonic (i.e., balanced) and disharmonic (i.e., unbalanced) ICT uses. The scale consists of four items (e.g., "I currently have a good balance between the time I spend online and the time I have available for offline activities") measured on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Reliability analysis of the DLB single-factor model was performed by calculating McDonald's omega, and an optimal reliability coefficient of the scale was calculated as .89. The results of confirmatory factor analysis for the single-factor model of the DLB Scale showed an optimal fit of the scale ($\chi^2/df = 4.38$, $p = 0.012$, TLI = 0.99, CFI = 0.99, RM-SEA = 0.0048, SRMR = 0.0097).

3.2.9. Procedure. Following the acquisition of necessary permissions from the developers of the measurement tool, our research commenced with the translation of scale items into Turkish by the research team. Subsequently, we sought approval from the Izmir Dokuz Eylul University Ethics Committee to create an online questionnaire for data collection. The study received approval on February 28, 2023, under protocol number E-87347630-659-528134.

To guarantee linguistic and cultural alignment, the translated version underwent a review process. This involved soliciting feedback from three faculty members with doctoral

Table 2: PANAS, Life Satisfaction, Bergen Social Media Addiction, Smartphone Application-Based Addiction, Young Internet Addiction Test Short Form, Flourishing, Digital Life Balance Scales, descriptive statistics, and normality test.

Scales	Mean	Sd	Min.	Max.	Kurtosis		Skewness	
					Coefficient	Se	Coefficient	Se
PANAS-Positive	39.2	17.9	14	92	1.308	.119	1.296	.237
PANAS-Negative	24.3	12.4	10	48	.803	.119	-.768	.237
Life Satisfaction Scale	16.1	6.1	5	25	-.329	.119	-1.178	.237
BSMAS	17.8	7.9	6	30	.213	.119	-1.459	.237
SABAS	17.4	8.4	7	35	.310	.119	-1.090	.237
Young Internet Addiction Test Short Form	31.1	15.1	14	59	.638	.119	-1.106	.237
Flourishing Scale	38.9	14.1	11	56	-1.012	.119	-.444	.237
DLB Scale	11.2	3.7	4	19	-.190	.119	-.936	.237

degrees in Guidance and Psychological Counseling who possessed fluency in both Turkish and English. The invaluable insights provided by these experts were thoughtfully considered, leading to meticulous revisions in accordance with their recommendations.

The refined version was then resubmitted to the same faculty members for further evaluation. Based on their conclusive assessments, we made the necessary adjustments to the scale items. This comprehensive translation process resulted in the creation of a Turkish-translated scale that exhibited congruence with Turkish culture, thereby affirming its language validity.

In the context of the original study, we seamlessly integrated the translated items into an online questionnaire. Within the framework of the original application, we assessed construct validity through convergent validity. Confirmatory factor analysis was our chosen method to scrutinize the construct validity of the scale.

Reliability assessments were equally rigorous. We calculated the internal consistency coefficient of the scale using Cronbach's alpha coefficient and composite reliability. Additionally, to provide robust evidence of the scale's reliability, we administered the scale to a distinct group of participants after a three-week interval, enabling a comprehensive examination of test-retest reliability.

3.3. Data Analysis. To assess the Digital Life Balance Scale's validity and reliability, we initially transferred the collected data from the scales into SPSS 23. Subsequently, SPSS 23 (IBM Corp., 2015) was employed to compute descriptive statistics for participant characteristics, establish correlations between variables, and determine internal consistency scores for the scales. Additionally, we assessed normal distribution indicators, namely, skewness and kurtosis values, to determine the suitability of applying parametric analysis. For the confirmatory factor analysis (CFA), we utilized the AMOS 24 software package.

4. Results

Before starting the analyses regarding the validity and reliability of the Digital Life Balance Scale, the averages, standard deviations, and minimum and maximum score values of the total scores are obtained from the scales used in the study. Normality was assessed and is shown in Table 2.

When Table 2 is examined, the mean, standard deviation, and minimum and maximum values of the scores obtained from the PANAS-Positive Scale ($M = 39.2$, Sd = 17.9, minimum = 14, maximum = 92), PANAS-Negative Scale ($M = 24.3$, Sd = 12.4, minimum = 10, maximum = 48), Life Satisfaction Scale ($M = 16.1$, Sd = 7.9, minimum = 5, maximum = 25), BSMAS ($M = 17.8$, $Sd = 7.9$, minimum = 6, maximum = 30), SABAS ($M = 17.4$, Sd = 8.4, minimum = 7, maximum = 35), Young Internet Addiction Test Short Form ($M = 31.1$, Sd = 15.1, minimum = 14, maximum = 59), Flourishing Scale ($M = 38.9$, Sd = 14.1, minimum = 11, maximum = 56), and Digital Life Balance Scale ($M = 11.2$, Sd = 3.7, minimum = 4, maximum = 19) are seen. Upon close examination of Table 2, an interesting observation comes to light. In conventional practice, normality tests yield statistically insignificant results; however, in our study, all variables exhibited significant values in these tests. It is worth noting that the normality tests employed are recognized for their high sensitivity.

To gain a comprehensive understanding of data distribution, it is advisable to assess the skewness and kurtosis values in conjunction with insights drawn from Q-Q graphs and histograms [53]. Tabachnick et al. [54] provide guidelines suggesting that skewness and kurtosis values falling within the range of ±1.5 indicate adherence to the assumption of normal data distribution. Upon a meticulous review of our obtained values, it becomes evident that the dataset under scrutiny in our study indeed conforms to the assumption of normal distribution.

4.1. Language Validity. In order to evaluate the linguistic validity of the Digital Life Balance Scale, we conducted a comparative assessment involving both the original and Turkish versions of the scale. This evaluation was administered to a cohort of 54 students who were actively enrolled in the English language teaching program at a state university. The assessments took place at precise 21-day interval. The outcome of this comprehensive scrutiny unveiled a correlation coefficient of .74 ($p < .01$) when comparing the original and adapted versions. This statistically robust correlation serves as robust evidence, affirming that both the original and adapted versions effectively measure congruent constructs. This finding substantiates the linguistic validity of both versions of the scale.

Table 3: Values regarding the goodness-of-fit tests of the Digital Life Balance Scale.

Examined fit index	Perfect fit criteria	Acceptable compliance criteria	Fit index values obtained from the CFA
χ^2/df[1]	$0 \leq \chi^2/\text{sd} \leq 2$	$2 \leq \chi^2/\text{sd} \leq 3$	1.813
AGFI[2]	.90 ≤ AGFI ≤ 1.00	.85 ≤ AGFI ≤ .90	.97
CFI[2]	.95 ≤ CFI ≤ 1.00	.90 ≤ CFI ≤ 95	.99
IFI[3]	.95 ≤ IFI ≤ 1.00	.90 ≤ IFI ≤ .95	.99
NFI[3]	.95 ≤ NFI ≤ 1.00	.90 ≤ NFI ≤ .95	.99
GFI[3]	.95 ≤ GFI ≤ 1.00	.90 ≤ GFI ≤ .95	.99
RMSEA[4]	.00 ≤ RMSEA ≤ .05	.05 ≤ RMSEA ≤ .08	.044
SRMR[4]	.00 ≤ SRMR ≤ .05	.05 ≤ SRMR ≤ .10	.012

[1]([55]; [39]), [2][56], [3][57], [4][58].

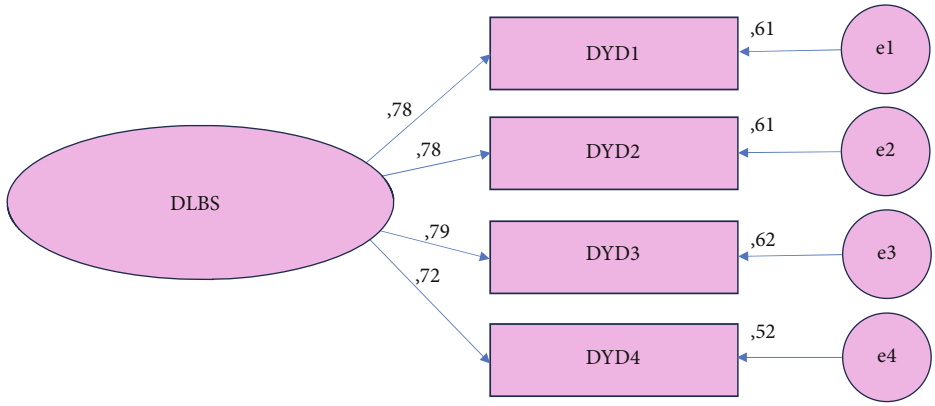

Figure 1: Results of confirmatory factor analysis of the DLB Scale.

4.2. Construct Validity. To evaluate the construct validity of the Turkish adaptation of this original scale [33], we conducted a confirmatory factor analysis (CFA) centered on a unidimensional structure. Table 3 provides a comprehensive overview of the model-data fit indices pertaining to the assessed unidimensional structure of the scale.

Various goodness-of-fit indices were utilized to assess the models, including the chi-square to degrees of freedom ratio (χ^2/df), the Tucker-Lewis index (TLI), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), and comparative fit index (CFI) [57, 59–63].

For the sake of clarity, it is emphasized that Cronbach's alpha values can be classified as minimally acceptable ($\alpha = .65$), acceptable ($\alpha = .70$), and optimal ($\alpha = .80$) [64].

Upon scrutinizing the fit indices displayed in Table 3, it becomes evident that the chi-square value normalized by degrees of freedom (χ^2/df) is a crucial indicator, with a range of 2 to 4 generally denoting an acceptable model fit [55]. In this context, the chi-square value ($\chi^2/\text{df} = 1.813$, $p < .05$) pertaining to the Turkish adaptation of the "Digital Life Balance Scale" demonstrates an exceptionally close fit to the model.

Furthermore, the suite of other fit indices, including CFI, IFI, NFI, GFI, and AGFI, all registering at or above .90, consistently affirms the model's commendable fit, with values surpassing .95 signifying an almost impeccable fit [57]. Additionally, the RMSEA value, a critical metric, is notably less than or equal to .05, aligning perfectly with the criteria for an excellent fit, while falling within the .05 to .10 range, which is deemed acceptable [56, 58].

Table 4: Factor loadings of the DLB items.

Items	Loading
Item 1	0.84
Item 2	0.84
Item 3	0.83
Item 4	0.80

In summation, it can be asserted with a high degree of confidence that the CFI (.99) employed to validate the nature of the Digital Life Balance scale harmonizes impeccably with the IFI (.99), NFI (.99), GFI (.99), and AGFI (.97) indices. Furthermore, the RMSEA value (.044) and the SRMR value (.012) fall comfortably within the spectrum denoting an outstanding model fit.

A diagram of the CFA conducted within the scope of the construct validity of the Digital Life Balance Scale is given in Figure 1.

In addition, results showed that the item loadings of all items displayed substantial saturation (all λ 0.80–0.84, $p <$ 0.001; see Table 4).

4.3. Convergent Validity. In order to examine the convergent validity of the Digital Life Balance Scale for similar scales,

Table 5: Relationships between Digital Life Balance and other variables.

	1	2	3	4	5	6	7	8
(1) PANAS-Positive	—	-.370**	.455**	-.433**	-.471**	-.459**	.561**	.325**
(2) PANAS-Negative		—	-.466**	.655**	.623**	.680**	-.576**	-.377**
(3) Life Satisfaction Scale			—	-.588**	-.546**	-.495**	.747**	.375**
(4) BSMAS				—	.951**	.921**	-.688**	-.359**
(5) SABAS					—	.929**	-.694**	-.341**
(6) Young Internet Addiction Test Short Form						—	-.795**	-.347**
(7) Flourishing Scale							—	.359**
(8) Digital Life Balance Scale (DLBS)								—

**$p < .01$.

PANAS-Positive, PANAS-Negative, Life Satisfaction, BSMAS, SABAS, Young Internet Addiction Test Short Form, and Flourishing Scale scores were used. The associations between the scales were investigated through the computation of the Pearson product-moment coefficients. In Table 4, you can find the resulting correlation coefficients.

According to Table 5, the correlation coefficient between Digital Life Balance and PANAS-Positive is $r = .325$ and $p < .01$; the correlation coefficient between Digital Life Balance and PANAS-Negative is $r = -.377$ and $p < .01$; the correlation coefficient between Digital Life Balance and life satisfaction is $r = .375$ and $p < .01$; the correlation coefficient between Digital Life Balance and Bergen Social Media Addiction is $r = -.359$ and $p < .01$; the correlation coefficient between Digital Life Balance and Smartphone Application-Based Addiction is $r = -.341$ and $p < .01$; the correlation coefficient between Digital Life Balance and Young Internet Addiction is $r = -.347$, $p < .01$; the correlation coefficient between Digital Life Balance and Flourishing is $r = .359$, $p < .01$. The Digital Life Balance Scale demonstrated negative correlations with measures of addiction and positive correlations with measures of well-being. The scores obtained from the DLBS showed relatively strong associations with external validity measures.

4.4. Reliability. The reliability of the Digital Life Balance Scale was evaluated using both the test-retest method and Cronbach's alpha internal consistency estimation. For the test-retest reliability analysis, the scale was administered to a cohort of 76 participants at intervals of three weeks. The test-retest reliability coefficient for Digital Life Balance was determined to be .81 ($p < .05$).

Moreover, an assessment of internal consistency was conducted using Cronbach's alpha coefficient, yielding a value of .85. Additionally, to strengthen the evidence of reliability, the composite reliability (CR) was computed and resulted in a value of .85.

5. Discussion

In an increasingly interconnected world, where work, social interactions, and learning activities extend into the online realm, it becomes crucial to frame and integrate these activities in a beneficial manner for personal well-being. While activities like cultivating one's social capital are associated with increased well-being [65, 66], dysfunctional technology use can have the opposite effect [67, 68]. The theoretical framework of the psychology of harmony and harmonization, particularly the construct of Digital Life Balance proposed by Duradoni et al. [33], offers a way to reconcile this apparent discrepancy regarding the effects of Internet use on well-being. The present study is aimed at examining the validity and reliability of the Digital Life Balance Scale in the Turkish context which is characterized by a high level of Internet and mobile usage [46, 69]. This scale captures individuals' perceptions of balance or imbalance between their online and offline activities, providing valuable insights into the impact of technology on well-being and addiction tendencies. The language validity of the scale was established by comparing the original form with the Turkish version, confirming their similarity in measuring the intended constructs. Confirmatory factor analysis supported the construct validity of the scale, showing a good fit between the single-factor structure and the collected data. This suggests that the scale effectively measures the concept of Digital Life Balance in the Turkish context. The analysis of convergent validity demonstrated significant correlations between the Digital Life Balance Scale and measures of well-being and addiction. Individuals who reported higher Digital Life Balance scores also reported higher levels of positive affect, life satisfaction, and flourishing (H1, H2, and H3). Additionally, they showed lower tendencies towards social media addiction and smartphone application-based addiction (H4, H5, and H6). Reliability analysis indicated that the Digital Life Balance Scale exhibits good internal consistency, as reflected by the high Cronbach's alpha coefficient and composite reliability value. Moreover, the test-retest reliability coefficient showed consistent responses over a three-week interval, further supporting the reliability of the scale. These findings provide empirical evidence for the validity and reliability of the Digital Life Balance Scale in the Turkish context. Researchers and practitioners can utilize this scale to assess individuals' perceptions of balance in their online and offline activities, gaining insights into the impact of technology on their well-being and addiction tendencies. By understanding these factors, interventions can be developed to promote a healthier integration of technology in individuals' lives. However, it is important to acknowledge the limitations of this study. The sample consisted of students from one university,

which may limit the generalizability of the findings to other populations. Future research should aim to replicate these findings in larger and more diverse samples, encompassing various age groups and backgrounds. Additionally, cross-cultural validation of the scale is essential to ensure its applicability in different cultural contexts.

Overall, the Digital Life Balance Scale has demonstrated satisfactory validity and reliability in the Turkish context. This instrument provides a valuable tool for assessing individuals' perceptions of balance in their online and offline activities, contributing to a better understanding of the impact of technology on well-being and addiction tendencies. DLB could be used also as a primary and secondary prevention screening tool. Indeed, a longitudinal monitoring of Digital Life Balance levels could prove invaluable for remote workers and telecommuters who contend with prolonged screen-time durations, which may be precursors to a range of adverse outcomes. In this sense, future research should continue to explore the dynamics of Digital Life Balance and its implications for individuals' overall quality of life in an increasingly digitalized world. In this context, the very construct of Digital Life Balance could prove pivotal in reshaping the theoretical understanding of dysfunctional technology use. It shifts the focus from a dynamic primarily originating and manifesting online to one where such outcomes are interdependently shaped by both online and offline spheres. Moving forward, future research should focus on identifying the factors that contribute to Digital Life Balance, both as promotive and risk factors. Exploring individual characteristics like personality traits [70, 71], self-regulation abilities [72, 73], and perceived need for online social feedback [33], as well as contextual factors like social support [74] and cultural norms [75], can provide valuable insights.

6. Conclusion

In conclusion, this study validated the Digital Life Balance Scale in the Turkish context, highlighting its importance in assessing individuals' perceptions of balance between their online and offline activities. The scale demonstrated satisfactory validity and reliability, capturing the impact of technology on well-being and addiction tendencies. Future research should aim to replicate these findings in diverse populations and cultures, exploring individual and contextual factors that contribute to Digital Life Balance. Understanding these factors can inform interventions to promote a healthier integration of technology and enhance overall well-being in an increasingly digitalized world.

Data Availability

The data presented in this study are available on request from the corresponding author.

Ethical Approval

All procedures performed in this study received approval by the Izmir Dokuz Eylul University Ethics Committee on February 28, 2023, under protocol number E-87347630-659-528134.

Consent

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

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] C. Chan, "ICT-supported social work interventions with youth: a critical review," *Journal of Social Work*, vol. 18, no. 4, pp. 468–488, 2018.

[2] M. F. Christie, A. Jaun, and L.-E. Jonsson, "Evaluating the use of ICT in engineering education," *European Journal of Engineering Education*, vol. 27, no. 1, pp. 13–20, 2002.

[3] N. M. Milic, N. Ilic, D. M. Stanisavljevic et al., "Bridging the gap between informatics and medicine upon medical school entry: implementing a course on the applicative use of ICT," *PLoS One*, vol. 13, no. 4, article e0194194, 2018.

[4] S. Vosoughi, D. Roy, and S. Aral, "The spread of true and false news online," *Science*, vol. 359, no. 6380, pp. 1146–1151, 2018.

[5] M. Westerlund, "The emergence of deepfake technology: a review," *Technology Innovation Management Review*, vol. 9, no. 11, pp. 39–52, 2019.

[6] J. Donath and D. Boyd, "Public displays of connection," *BT Technology Journal*, vol. 22, no. 4, pp. 71–82, 2004.

[7] M. Duradoni, S. Meacci, G. Panerai, G. Salvatori, and A. Guazzini, "Development and validation of the social media capital scale (SMC): a brand new measure for online social capital," *Human Behavior and Emerging Technologies*, vol. 2022, Article ID 9903615, 15 pages, 2022.

[8] N. B. Ellison, C. Steinfield, and C. Lampe, "The benefits of Facebook "friends:" social capital and college students' use of online social network sites," *Journal of Computer-Mediated Communication*, vol. 12, no. 4, pp. 1143–1168, 2007.

[9] C. Steinfield, N. B. Ellison, and C. Lampe, "Social capital, self-esteem, and use of online social network sites: a longitudinal analysis," *Journal of Applied Developmental Psychology*, vol. 29, no. 6, pp. 434–445, 2008.

[10] C. Sullivan, "Remote working and work-life balance," in *Work and Quality of Life*, pp. 275–290, Springer Netherlands, 2012.

[11] L. Yang, D. Holtz, S. Jaffe et al., "The effects of remote work on collaboration among information workers," *Nature Human Behaviour*, vol. 6, no. 1, pp. 43–54, 2022.

[12] F. Zagórski, R. T. Carback, D. Chaum, J. Clark, A. Essex, and P. L. Vora, "Remotegrity: design and use of an end-to-end verifiable remote voting system," in *International Conference on Applied Cryptography and Network Security*, pp. 441–457, Springer Berlin Heidelberg, Berlin, Heidelberg, 2013.

[13] Y.-L. Lin and T. J. Lee, "The impacts of the online reservation system in London City hotels," *Journal of Hospitality Marketing & Management*, vol. 19, no. 1, pp. 82–96, 2009.

[14] A. Martucci, M. C. Gursesli, M. Duradoni, and A. Guazzini, "Overviewing gaming motivation and its associated psychological and sociodemographic variables: a PRISMA systematic review," *Human Behavior and Emerging Technologies*, vol. 2023, Article ID 5640258, 156 pages, 2023.

[15] A. Smith and M. Duggan, *Online Dating & Relationships*, Pew Internet & American Life Project, 2013.

[16] A. Di Fabio and A. Tsuda, "The psychology of harmony and harmonization: advancing the perspectives for the psychology of sustainability and sustainable development," *Sustainability*, vol. 10, no. 12, p. 4726, 2018.

[17] H. Schenker, *Harmony*, University of Chicago Press, 1954.

[18] C. Li, *The Confucian Philosophy of Harmony*, Routledge, 2013.

[19] Y. B. Zhang, M.-C. Lin, A. Nonaka, and K. Beom, "Harmony, hierarchy and conservatism: a cross-cultural comparison of Confucian values in China, Korea, Japan, and Taiwan," *Communication Research Reports*, vol. 22, no. 2, pp. 107–115, 2005.

[20] M. Duradoni, E. Serritella, C. Avolio, C. Arnetoli, and A. Guazzini, "Development and validation of the digital life balance (DLB) scale: a brand-new measure for both harmonic and disharmonic use of ICTs," *Behavioral Sciences*, vol. 12, no. 12, p. 489, 2022.

[21] C.-H. Ko, "Internet Gaming Disorder," *Current Addiction Reports*, vol. 1, no. 3, pp. 177–185, 2014.

[22] L. Widyanto and M. Griffiths, "'Internet addiction': a critical review," *International Journal of Mental Health and Addiction*, vol. 4, no. 1, pp. 31–51, 2006.

[23] H. Yıldız Durak, "Modeling of variables related to problematic Internet usage and problematic social media usage in adolescents," *Current Psychology*, vol. 39, no. 4, pp. 1375–1387, 2020.

[24] S. K. Adams and T. S. Kisler, "Sleep quality as a mediator between technology-related sleep quality, depression, and anxiety," *Cyberpsychology, Behavior and Social Networking*, vol. 16, no. 1, pp. 25–30, 2013.

[25] L. Leung and P. S. N. Lee, "Multiple determinants of life quality: the roles of Internet activities, use of new media, social support, and leisure activities," *Telematics and Informatics*, vol. 22, no. 3, pp. 161–180, 2005.

[26] B. Sayiner, "Problemli akıllı telefon kullanımı ve teknostres," *Süleyman Demirel Üniversitesi Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi*, vol. 56, p. 56, 2022.

[27] B. N. Buğdaycı Yalçın, D. Kale, B. Ekici et al., "Mersin Üniversitesi Tıp Fakültesi Öğrencilerinde Akıllı Telefon Bağımlılığı Prevalansı Ve İlişkili Faktörlerin Araştırılması," *Dokuz Eylül Üniversitesi Tıp Fakültesi Dergisi*, vol. 36, no. 3, pp. 211–224, 2023.

[28] E. Bal and Ş. Balcı, "Akıllı Cep Telefonu Bağımlılığı: Kişilik Özellikleri ve Kullanım Örüntülerinin Etkinliği Üzerine Bir İnceleme," *Erciyes İletişim Dergisi*, vol. 7, no. 1, pp. 369–394, 2020.

[29] S. Günüç and M. Kayri, "Türkiye'de İnternet Bağımlılık Profili Ve İnternet Bağımlılık Ölçeğinin Geliştirilmesi: Geçerlik-Güvenirlik Çalışması," *Hacettepe University Journal of Education*, vol. 39, pp. 220–232, 2010.

[30] Ö. Soyöz Semerci, "Lise Öğrencilerinde Dijital Oyun Bağımlılığı Üzerine Bir Alan Araştırması: Uşak Örneği," *Journal of Humanities and Tourism Research*, vol. 10, no. 10–3, pp. 538–567, 2020.

[31] M. Şata, İ. Çelik, Z. Ertürk, and U. E. Taş, "Akıllı Telefon Bağımlılığı Ölçeği'nin (ATBÖ) Türk Lise Öğrencileri İçin Uyarlama Çalışması," *Eğitimde ve Psikolojide Ölçme ve Değerlendirme Dergisi*, vol. 7, no. 1, pp. 156–169, 2016.

[32] D. Ümmet and F. Ekşi, "Internet addiction in young adults in Turkey: loneliness and virtual-environment loneliness," *Addicta: The Turkish Journal on Addictions*, vol. 3, no. 1, pp. 42–55, 2016.

[33] M. Duradoni, V. Spadoni, M. C. Gursesli, and A. Guazzini, "Development and validation of the need for online social feedback (NfOSF) scale," *Human Behavior and Emerging Technologies*, vol. 2023, Article ID 5581492, 11 pages, 2023.

[34] S. E. Althammer, D. Reis, S. van der Beek, L. Beck, and A. Michel, "A mindfulness intervention promoting work–life balance: how segmentation preference affects changes in detachment, well-being, and work–life balance," *Journal of Occupational and Organizational Psychology*, vol. 94, no. 2, pp. 282–308, 2021.

[35] D. Bari and P. Róbert, "Who benefits more from a balanced life? Gender differences in work-life balance and satisfaction with life in eight post-communist countries," *Intersections*, vol. 2, no. 3, 2016.

[36] L. C. Hone, A. Jarden, S. Duncan, and G. M. Schofield, "Flourishing in New Zealand workers," *Journal of Occupational & Environmental Medicine*, vol. 57, no. 9, pp. 973–983, 2015.

[37] A. L. Comrey, "Factor-analytic methods of scale development in personality and clinical psychology," *Journal of Consulting and Clinical Psychology*, vol. 56, no. 5, pp. 754–761, 1988.

[38] A. L. Comrey and H. B. Lee, *A First Course in Factor Analysis*, Psychology Press, 2013.

[39] R. B. Kline, *Principles and Practice of Structural Equation Modeling*, Guilford Publications, 2023.

[40] F. Faul, E. Erdfelder, A.-G. Lang, and A. Buchner, "G∗Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences," *Behavior Research Methods*, vol. 39, no. 2, pp. 175–191, 2007.

[41] D. Watson, L. A. Clark, and A. Tellegen, "Development and validation of brief measures of positive and negative affect: the PANAS scales," *Journal of Personality and Social Psychology*, vol. 54, no. 6, pp. 1063–1070, 1988.

[42] T. Gencöz, "Pozitif Ve Negatif Duygu Ölçeği: Geçerlik Ve Güvenirlik Çalışması," *Türk Psikoloji Dergisi*, vol. 15, no. 46, pp. 19–26, 2000.

[43] E. Diener, R. A. Emmons, R. J. Larsen, and S. Griffin, "The satisfaction with life scale," *Journal of Personality Assessment*, vol. 49, no. 1, pp. 71–75, 1985.

[44] S. Köker, *Normal ve sorunlu ergenlerin yaşam doyumu düzeyinin karşılaştırılması, [M.S. thesis]*, Ankara Üniversitesi, 1991.

[45] C. S. Andreassen, S. Pallesen, and M. D. Griffiths, "The relationship between addictive use of social media, narcissism, and self-esteem: findings from a large national survey," *Addictive Behaviors*, vol. 64, pp. 287–293, 2017.

[46] İ. Demirci, "The adaptation of the Bergen social media addiction scale to Turkish and the evaluation its relationships with depression and anxiety symptoms," *Anatolian Journal of Psychiatry*, vol. 20, no. 1, 2019.

[47] S. Csibi, M. D. Griffiths, B. Cook, Z. Demetrovics, and A. Szabo, "The psychometric properties of the smartphone application-based addiction scale (SABAS)," *International Journal of Mental Health and Addiction*, vol. 16, no. 2, pp. 393–403, 2018.

[48] M. Gökler and Y. Bulut, "Validity and reliability of the Turkish version of the smart phone application based addiction scale," *Journal of Cognitive-Behavioral Psychotherapy and Research*, vol. 8, no. 2, pp. 100–106, 2019.

[49] K. S. Young, *Caught in the Net: How to Recognize the Signs of Internet Addiction–and a Winning Strategy for Recovery*, John Wiley & Sons, 1998.

[50] M. Pawlikowski, C. Altstötter-Gleich, and M. Brand, "Validation and psychometric properties of a short version of Young's

Internet addiction test," *Computers in Human Behavior*, vol. 29, no. 3, pp. 1212–1223, 2013.

[51] M. Kutlu, M. Savci, Y. Demir, and F. Aysan, "Turkish adaptation of Young's Internet addiction test-short form: a reliability and validity study on university students and adolescents," *Anadolu Psikiyatri Dergisi*, vol. 17, no. 1, pp. 69–77, 2016.

[52] M. Fidan and F. Usta, "İyilik Hali Ölçeği'nin Türkçe Formu'nun güvenirlik ve geçerliğinin incelenmesi," *Eğitim ve Öğretim Araştırmaları Dergisi*, vol. 2, no. 3, pp. 265–269, 2013.

[53] A. Field and J. Miles, *Discovering Statistics Using SAS*, Sage Publications Ltd., 2010.

[54] B. G. Tabachnick, L. S. Fidell, and J. B. Ullman, *Using multivariate statistics (Vol. 6, pp. 497-516)*, Pearson, Boston, MA, 2013.

[55] I. D. Haigh, M. Eliot, and C. Pattiaratchi, "Global influences of the 18.61 year nodal cycle and 8.85 year cycle of lunar perigee on high tidal levels," *Journal of Geophysical Research*, vol. 116, no. C6, article C06025, 2011.

[56] K. Schermelleh-Engel, H. Moosbrugger, and H. Müller, "Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures," *Methods of Psychological Research Online*, vol. 8, no. 2, pp. 23–74, 2003.

[57] L. Hu and P. M. Bentler, "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives," *Structural Equation Modeling: A Multidisciplinary Journal*, vol. 6, no. 1, pp. 1–55, 1999.

[58] B. G. Tabachnick and L. S. Fidell, *Using Multivariate Statistics (pp. xxvii, 980)*, Allyn & Bacon/Pearson Education, 5th edition, 2007.

[59] P. M. Bentler, "Comparative fit indexes in structural models," *Psychological Bulletin*, vol. 107, no. 2, pp. 238–246, 1990.

[60] P. M. Bentler, *EQS Structural Equations Program Manual*, Multivariate Software, Encino, CA, USA, 1995.

[61] M. W. Browne and R. Cudeck, *Alternative ways of assessing model fit*, L. Bollen and J. S. Bollen, Eds., Sage, CA, 1993.

[62] K. G. Jöreskog, "A general approach to confirmatory maximum likelihood factor analysis," *Psychometrika*, vol. 34, no. 2, pp. 183–202, 1969.

[63] L. R. Tucker and C. Lewis, "A reliability coefficient for maximum likelihood factor analysis," *Psychometrika*, vol. 38, no. 1, pp. 1–10, 1973.

[64] J. C. Nunnally and I. H. Bernstein, *Psychometric Theory*, McGraw-Hill, New York, NY, USA, 3rd edition, 1994.

[65] J. F. Helliwell, H. Huang, and S. Wang, "Social capital and well-being in times of crisis," *Journal of Happiness Studies*, vol. 15, no. 1, pp. 145–162, 2014.

[66] W. Yip, S. V. Subramanian, A. D. Mitchell, D. T. S. Lee, J. Wang, and I. Kawachi, "Does social capital enhance health and well-being? Evidence from rural China," *Social Science & Medicine*, vol. 64, no. 1, pp. 35–49, 2007.

[67] S. E. Caplan, "Problematic Internet use and psychosocial well-being: development of a theory-based cognitive–behavioral measurement instrument," *Computers in Human Behavior*, vol. 18, no. 5, pp. 553–575, 2002.

[68] A. Guazzini, M. C. Gursesli, E. Serritella, M. Tani, and M. Duradoni, "Obsessive-compulsive disorder (OCD) types and social media: are social media important and impactful for OCD people?," *Psychology and Education*, vol. 12, no. 8, pp. 1108–1120, 2022.

[69] M. Kartal, "Türkiye'de Sosyal Medya Raporu," *İletişim ve Diplomasi*, vol. 1, pp. 159–165, 2013.

[70] J. Golbeck, C. Robles, and K. Turner, "Predicting personality with social media," in *CHI'11 Extended Abstracts on Human Factors in Computing Systems*, pp. 253–262, Association for Computing Machinery, 2011.

[71] L. R. Goldberg, "The structure of phenotypic personality traits," *American Psychologist*, vol. 48, no. 1, pp. 26–34, 1993.

[72] N. A. Khan, A. N. Khan, and M. F. Moin, "Self-regulation and social media addiction: a multi-wave data analysis in China," *Technology in Society*, vol. 64, article 101527, 2021.

[73] D. E. Mithaug, *Self-Regulation Theory: How Optimal Adjustment Maximizes Gain (pp. xv, 233)*, Praeger Publishers/Greenwood Publishing Group, 1993.

[74] S. Oh and S. Y. Syn, "Motivations for sharing information and social support in social media: a comparative analysis of Facebook, Twitter, Delicious, YouTube, and Flickr," *Journal of the Association for Information Science and Technology*, vol. 66, no. 10, pp. 2045–2060, 2015.

[75] B. Ur and Y. Wang, "A cross-cultural framework for protecting user privacy in online social media," in *Proceedings of the 22nd International Conference on World Wide Web*, pp. 755–762, New York, 2013.