

Psychometric Properties of a Technostress Scale in Young People in Trujillo, Peru

Eveling Alejandra Atoche Maceda

eatochema@ucvvirtual.edu.pe

Universidad César Vallejo

Ana Lucia Diaz Vasquez

Universidad César Vallejo

Mirtha Mercedes Fernández Mantilla

Universidad César Vallejo

Research Article

Keywords: Technostress, Psychometric Properties, Validity, Reliability, Young People, Technology

Posted Date: October 19th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11144457/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Background

Technostress is an increasingly relevant phenomenon among young people due to the intensive and continuous use of digital technologies. Therefore, it is necessary to have instruments with adequate psychometric evidence to assess this construct in the Peruvian context. This study aimed to establish the psychometric properties of the Technostress Scale in young people in Trujillo, Peru.

Methods

A psychometric, instrumental, and cross-sectional study was conducted with 600 young people aged 18 to 30 years residing in Trujillo. The participants were selected through non-probabilistic convenience sampling and were divided into two groups of 300 participants for exploratory and confirmatory analyses. The instrument consisted of 40 items distributed across four dimensions: technological overload, invasion and connectivity pressure, perceived technological complexity and inefficacy, and affective reaction and technological exhaustion. Content validity was assessed through expert judgment, while exploratory factor analysis (EFA), confirmatory factor analysis (CFA), convergent validity, and internal consistency were examined using Cronbach's alpha and McDonald's omega coefficients.

Results

The content validity showed adequate agreement among the five experts. The EFA supported a four-factor structure, with a KMO value of 0.88 and significant Bartlett's test results ($p < .01$), with factor loadings ranging from .604 to .728. The CFA showed adequate model fit, with CFI = .975, TLI = .973, SRMR = .049, and RMSEA = .020. Convergent validity with the RED-Tecnoestrés measure was high (Spearman's $\rho = .856$, $p < .001$). Internal consistency was adequate across the four dimensions, with omega and Cronbach's alpha coefficients ranging from .862 to .883.

Conclusion

The Technostress Scale for Young People presented adequate evidence of content validity, internal structure, convergent validity, and internal consistency. Therefore, the instrument may be useful for assessing technostress among young people in Trujillo, although further studies with more diverse samples are recommended.

Introduction

Digitalization has increased the presence of information and communication technologies in academic, work, and everyday activities. The use of virtual platforms, mobile devices, and communication systems

facilitates access to information and interaction; however, intensive exposure to these resources may also be associated with digital fatigue, information overload, concentration difficulties, and psychological distress. [1][2, 3]

Technostress refers to stress responses associated with certain demands arising from the use of technologies. According to the model proposed by Tarafdar et al. (2007), these demands may manifest through technostress creators associated with overload, invasion, complexity, and insecurity. Subsequently, technology-related experiences may affect well-being and performance when perceived demands exceed the resources available to cope with them.[4] [5]

From a complementary perspective, cognitive load theory proposes that information-processing capacity is limited; therefore, a high amount of information and simultaneous tasks may increase cognitive load. The transactional model helps explain that stress responses depend on the individual's appraisal of the demands and the resources perceived as available to cope with them.[6][7]

Likewise, the Job Demands-Resources (JD-R) model describes that stress arises when environmental demands exceed a person's capacity to cope with them. This occurs when there are many demands and few resources, resulting in distress, such as the pressure to remain constantly connected and the accumulation of tasks. [8]

Empirical evidence shows that the measurement of technostress varies according to the population and context. Eidman and Basualdo Felleau (2021), in Argentine university students, reported a five-dimensional structure for the RED-Tecnoestrés adaptation. In Spain, Penado-Abilleira et al. (2020) obtained psychometric evidence for a measure of technostress in university students. Finstad and Giorgi (2021) also reported evidence for the Technostress Questionnaire. [9] [10]

In Peru, Solano Castro and Núñez Lira (2024) reported favorable psychometric evidence for an adaptation of the RED-TIC in higher education students, while other studies obtained psychometric evidence for instruments intended to assess technostress in Peruvian university students. These differences show that the factor structure may vary according to the population and context. [11]

Overall, previous studies provide evidence of instruments for assessing technostress, but they also show variability in their dimensions and psychometric characteristics. This situation supports the need to generate specific evidence for young people in Trujillo, considering the characteristics of the population and the context of intensive use of digital technologies.

Within this framework, the general objective was to establish the psychometric properties of a Technostress Scale in young people in Trujillo. Specifically, the study sought to assess content validity through expert judgment, establish evidence of validity based on internal structure, obtain evidence of validity related to another variable, assess reliability through internal consistency, and establish percentile norms for interpreting scores.

Method

2.1 Design and context

The study was conducted using a quantitative approach and was psychometric in nature, with a non-experimental, cross-sectional, and descriptive design. The research was carried out with young people residing in the city of Trujillo, Peru.

2.2 Participants

The population consisted of young people aged 18 to 30 years residing in Trujillo. The sample consisted of 600 participants, selected through non-probabilistic convenience sampling.[9]

To assess the internal structure, the total sample was divided into two independent groups of 300 participants each. The first group was used for exploratory factor analysis and the second for confirmatory factor analysis.

Participants aged 18 to 30 years, permanent residents of Trujillo, with reading comprehension in Spanish, and who voluntarily agreed to participate through informed consent were included. Participants with any cognitive disability that hindered understanding of the instrument and those who provided incomplete responses were excluded.

2.3 Instrument

The Technostress Scale for Young Adults was developed by the authors Atoche Maceda, Eveling y Diaz Vasquez, Ana Lucia, for the present study to assess technostress experiences among young people in Trujillo, Peru. The initial version consisted of 40 items organized into four proposed dimensions: digital overload; digital invasion and connectivity pressure; perceived technological complexity and inefficacy; and affective reactions and technology-related exhaustion.

Items were rated on a five-point Likert scale ranging from 1 (Never) to 5 (Always). The estimated administration time was approximately nine minutes. The scale's psychometric properties were examined through exploratory and confirmatory factor analyses and internal consistency estimates. The complete English version of the instrument, including its instructions, items, and response options, is provided in Supplementary File S2.

2.4 Procedure

Participants were informed about the purpose of the study, the voluntary nature of their participation, the confidentiality of the information, and the academic and scientific use of the data. Subsequently,

informed consent was obtained.

Content validity was assessed through the judgment of five psychology specialists. Subsequently, the instrument was administered to the participants and the statistical analysis of the data was conducted.

2.5 Statistical analysis

Descriptive analyses of the items were performed, and evidence of content validity was examined using Aiken's V coefficient. The internal structure was studied through exploratory factor analysis in 300 participants and confirmatory factor analysis in another 300 participants.

Likewise, evidence of validity related to another variable was estimated using Spearman's rho coefficient. Internal consistency was assessed using Cronbach's alpha and McDonald's omega coefficients. Finally, percentile norms were calculated for the four dimensions.

3. Results

3.1 Item analysis

Descriptive analyses showed means ranging from 3.31 to 3.55 for Digital overload; from 3.37 to 3.59 for Invasion and connectivity pressure; from 3.34 to 3.51 for Perceived technological complexity and inefficacy; and from 3.40 to 3.62 for Affective reaction and technological exhaustion. These results are presented in (Table 3).

3.2 Evidence of validity based on content

The 40 items were evaluated through the judgment of five experts. Most items presented Aiken's V values of 1.00, whereas items 31 and 33 obtained $V = .75$. Overall, the results provided evidence of content validity for the scale items (Table 1).

3.3 Evidence of validity based on internal structure

The internal structure was examined using two independent samples. EFA was conducted with 300 participants, and the resulting structure was subsequently evaluated through CFA in a second group of 300 participants (Table 1).

3.4 Exploratory factor analysis

EFA identified a four-factor structure with 40 items. The Kaiser-Meyer-Olkin index presented a KMO value of .88, while Bartlett's test of sphericity was statistically significant ($p < .01$). The reported factor loadings ranged from .604 to .728 (Tables 2 and 3; Fig. 1).

3.5 Confirmatory factor analysis

CFA was conducted with the remaining 300 participants. Model 1 presented CFI = .960, TLI = .960, SRMR = .050, and RMSEA = .020. Model 2, which incorporated covariances between errors, presented CFI = .975, TLI = .973, SRMR = .049, and RMSEA = .020 (Table 4; Fig. 2).

The reported values show better fit indices for Model 2 compared with Model 1. The definitive interpretation of the covariances between errors should retain the justification established in the original statistical analysis.

3.6 Evidence of validity related to another variable

The relationship between the Technostress Scale and the RED variable was examined using Spearman's rho coefficient. A value of $\rho = .856$, $p < .001$, $N = 300$, was obtained. This result constitutes evidence of a relationship between the scores of both measures and does not imply equivalence between the instruments (Table 5).

3.7 Internal consistency

Internal consistency coefficients were estimated using McDonald's omega and Cronbach's alpha. The omega values were .866, .883, .870, and .862 for the four dimensions, respectively. The alpha values were .866, .883, .869, and .8622, respectively, according to the original table (Table 6).

3.8 Percentile norms

Percentile norms from the 5th to the 95th percentile were established for the four dimensions. The norms were calculated from the sample of 600 participants (Table 7).

Table 1
Evidence of content validity using Aiken's V

Item	Relevance	Sufficiency	Clarity	Coherence	SD	Aiken's V	LL	UL
1	1	1	1	1	0.00	1.00	1.00	1.00
2	1	1	1	1	0.00	1.00	1.00	1.00
3	1	1	1	1	0.00	1.00	1.00	1.00
4	1	1	1	1	0.00	1.00	1.00	1.00
5	1	1	1	1	0.00	1.00	1.00	1.00
6	1	1	1	1	0.00	1.00	1.00	1.00
7	1	1	1	1	0.00	1.00	1.00	1.00
8	1	1	1	1	0.00	1.00	1.00	1.00
9	1	1	1	1	0.00	1.00	1.00	1.00
10	1	1	1	1	0.00	1.00	1.00	1.00
11	1	1	1	1	0.00	1.00	1.00	1.00
12	1	1	1	1	0.00	1.00	1.00	1.00
13	1	1	1	1	0.00	1.00	1.00	1.00
14	1	1	1	1	0.00	1.00	1.00	1.00
15	1	1	1	1	0.00	1.00	1.00	1.00
16	1	1	1	1	0.00	1.00	1.00	1.00
17	1	1	1	1	0.00	1.00	1.00	1.00
18	1	1	1	1	0.00	1.00	1.00	1.00
19	1	1	1	1	0.00	1.00	1.00	1.00
20	1	1	1	1	0.00	1.00	1.00	1.00
21	1	1	1	1	0.00	1.00	1.00	1.00
22	1	1	1	1	0.00	1.00	1.00	1.00
23	1	1	1	1	0.00	1.00	1.00	1.00
24	1	1	1	1	0.00	1.00	1.00	1.00
25	1	1	1	1	0.00	1.00	1.00	1.00
<i>Note. Evaluation by five experts. M = mean; SD = standard deviation; V = Aiken's V coefficient; LL = lower limit; UL = upper limit.</i>								

Item	Relevance	Sufficiency	Clarity	Coherence	SD	Aiken's V	LL	UL
26	1	1	1	1	0.00	1.00	1.00	1.00
27	1	1	1	1	0.00	1.00	1.00	1.00
28	1	1	1	1	0.00	1.00	1.00	1.00
29	1	1	1	1	0.00	1.00	1.00	1.00
30	1	1	1	1	0.00	1.00	1.00	1.00
31	1	1	1	0.8	0.50	0.75	0.40	1.73
32	1	1	1	1	0.00	1.00	1.00	1.00
33	1	1	0.8	1	0.50	0.75	0.67	2.00
34	1	1	1	1	0.00	1.00	1.00	1.00
35	1	1	1	1	0.00	1.00	1.00	1.00
36	1	1	1	1	0.00	1.00	1.00	1.00
37	1	1	1	1	0.00	1.00	1.00	1.00
38	1	1	1	1	0.00	1.00	1.00	1.00
39	1	1	1	1	0.00	1.00	1.00	1.00
40	1	1	1	1	0.00	1.00	1.00	1.00
<i>Note. Evaluation by five experts. M = mean; SD = standard deviation; V = Aiken's V coefficient; LL = lower limit; UL = upper limit.</i>								

Table 2
Reported indices for the exploratory factor analysis

Model	CFI	TLI	SRMR	RMSEA
Four factors (40 items)	0,990	0,987	0,028	0,015
<i>SRMR = Standardized Root Mean Square Residual, RMSEA = Root Mean Square Error of Approximation, CFI = Comparative Fit Index, and TLI = Tucker-Lewis Index</i>				

Figura 1. Estructura Factorial Exploratorio de la Escala de Tecno – Estrés en jóvenes de la ciudad de Trujillo.

Table 3
Reported factor loadings from the exploratory factor analysis

Dimension	M	DE	Skewness	Kurtosis	IHC	h ²
Digital overload	3.31– 3.55	1.09– 1.28	–.47–.10	–1.17– –.73	.70–.73	.67–.77
Invasion and connectivity pressure	3.37– 3.59	1.15– 1.31	–.56–.22	–1.17– –.77	.80–.86	.71–.79
Perceived technological complexity and inefficacy	3.34– 3.51	1.11– 1.32	–.42–.24	–1.16– –.51	.73–.84	.61–.77
Affective reaction and technological exhaustion	3.40– 3.62	1.09– 1.19	–.36–.12	–1.08– –.80	.73–.84	.61–.76
<i>Note. M = mean; SD = standard deviation; g1 = Fisher's skewness coefficient; g2 = Fisher's kurtosis coefficient; IHC = corrected homogeneity index; h² = communality.</i>						

Table 4
Fit indices of the confirmatory factor analysis

Model	Sample	CFI	TLI	SRMR	RMSEA
Modelo 1	300	.960	.960	.050	.020
Modelo 2	300	.975	.973	.049	.020
<i>Note. CFA was conducted with an independent group of 300 participants. Model 2 incorporated covariances between errors.</i>					

Table 5
Evidence of validity related to another variable

Indicator	Value
Rho de Spearman	.856
r ²	0.73
Significance	< .001
N	300
<i>Note. ρ = Spearman correlation; r² = coefficient of determination.</i>	

Table 6
Internal consistency of the scale dimensions

Dimension	Omega	Alpha
Digital overload	.866	.866
Invasion and connectivity pressure	.883	.883
Perceived technological complexity and inefficacy	.870	.869
Affective reaction and technological exhaustion	.862	.8622
<i>Note. ω = McDonald's omega; α = Cronbach's alpha.</i>		

Table 7
Percentile norms of the Technostress Scale

PC	Digital overload	Invasion and connectivity pressure	Perceived complexity and inefficacy	Affective reaction
95	42	43	41	43
90	40	41	39	40
85	38	39	37	39
80	37	37	36	37
75	35	35	35	36
70	34	34	33	34
65	33	33	32	34
60	33	32	31	32
55	31	31	30	31
50	30	30	28	30
45	29	29	28	29
40	28	28	27	28
35	27	27	26	27
30	26	25	25	26
25	24	23	24	25
20	23	22	22	23
15	21	21	21	22
10	20	19	18	21
5	17	16	16	18
Mean	29.91	29.69	28.89	30.34
Standard Deviation	7.716	8.152	7.626	7.597
Minimum	11	12	12	11
Maximum	49	48	45	49
<i>Note. PC = percentile. The norms correspond to the sample of young people from Trujillo.</i>				

4. Discussion

The purpose of this study was to establish the psychometric properties of the Technostress Scale in young people in the city of Trujillo. Overall, the results provided favorable evidence of content validity, internal structure, relationship with another variable, and internal consistency, supporting the usefulness of the scale for assessing technostress in this population.

Regarding content validity, Aiken's V coefficients ranged from .87 to 1.00, while items 31 and 33 reached .75, values that remain within acceptable ranges. These results indicate an adequate level of agreement among experts regarding the relevance, sufficiency, clarity, and coherence of the items. Likewise, the findings are consistent with the proposed conceptualization of technostress by incorporating experiences related to overload, permanent connectivity, technological complexity, and negative responses derived from its use. This evidence is comparable with Eidman and Basualdo, who reported adequate psychometric properties in the adaptation of the RED-Tecnoestrés, and with Finstad and Giorgi (2021), who found item-total correlations above .30 and favorable evidence of factor structure.[4] [12]

Regarding evidence of validity based on internal structure, exploratory factor analysis identified four dimensions: digital overload, invasion and connectivity pressure, perceived technological complexity and inefficacy, and affective reaction and technological exhaustion. The KMO was .88 and Bartlett's test was significant ($p < .01$), while the factor loadings were at adequate levels. These results support a multidimensional structure of the construct and are consistent with the technostress model of Tarafdar et al. (2007), as well as Sweller's (1994) cognitive load theory and the transactional model of Lazarus and Folkman (1986). However, the structure obtained differs from previous research, such as Eidman and Basualdo (2021), who found five dimensions; Avalos et al. (2025), who reported three; and Araya et al. (2025), who obtained two factors. These differences may be related to the particular characteristics of the samples and application contexts, reinforcing the importance of having contextualized instruments.

The results of the confirmatory factor analysis reinforced this structure. The model with covariances between errors presented better fit indices (CFI = .975, TLI = .973, SRMR = .049, and RMSEA = .020), demonstrating an adequate correspondence between the theoretical model and the observed data. These results are consistent with research conducted in Peruvian populations, such as Avalos et al., who obtained CFI = .982 and TLI = .975, and Araya et al., who reported CFI = .998 and RMSEA = .019. Overall, the findings support that the four-dimensional organization constitutes an empirically supported representation of technostress in young people in Trujillo. [13] [14]

Regarding validity in relation to another variable, a positive, strong, and statistically significant correlation was found between the Technostress Scale and the RED variable ($\rho = .856$, $p < .001$; $N = 300$), with a shared variance of 73.3%. This result provides favorable evidence of validity because both measures show a high association with experiences related to technostress. The finding is consistent with the Technological Overload model, according to which technological demands may generate negative responses when they exceed the resources available to cope with them. It is also related to Eidman and Basualdo, who identified manifestations of fatigue, anxiety, inefficacy, skepticism, and addiction within

the construct. However, the magnitude of the correlation should be interpreted as evidence of association between the measures and not as equivalence between the two instruments.[4, 5][12]

Regarding reliability through internal consistency, omega and alpha coefficients were above .86 across the four dimensions: digital overload ($\omega = .866$; $\alpha = .866$), invasion and connectivity pressure ($\omega = .883$; $\alpha = .883$), perceived technological complexity and inefficacy ($\omega = .870$; $\alpha = .869$), and affective reaction and technological exhaustion ($\omega = .862$; $\alpha = .862$). These results demonstrate adequate homogeneity of the items and are comparable with the findings of Eidman and Basualdo, who obtained α values between .76 and .93; Vivas et al. (2022), with coefficients between .878 and .918; and Solano and Núñez, who also reported satisfactory levels of internal consistency.[12] [15]

Finally, percentile norms between the 5th and 95th percentiles were established for the four dimensions, allowing individual scores to be interpreted according to the reference group. This information constitutes an applied contribution to the use of the scale, although it should be considered that the norms were obtained from the study sample and therefore should not be automatically generalized to all young people in Peru. Overall, the results support the psychometric usefulness of the scale for assessing technostress in young people in Trujillo; however, future research should incorporate probability samples, diversify application contexts, and assess temporal stability through procedures such as test-retest. [16]

Conclusions

The Technostress Scale presented favorable psychometric evidence in the sample of young people from Trujillo, Peru.

Content validity was examined through the judgment of five experts and showed Aiken's V values of 1.00 for most items and .75 for items 31 and 33.

The internal structure consisted of four dimensions and 40 items. The exploratory factor analysis, conducted with 300 participants, and the confirmatory factor analysis, conducted with another 300 participants, provided evidence for the proposed structure.

The relationship with another variable presented an association of $p = .856$, $p < .001$, $N = 300$, providing evidence of validity related to other variables.

Cronbach's alpha and McDonald's omega coefficients showed internal consistency across the four dimensions, and percentile norms were established for the interpretation of scores.

Interpretation of the results should be limited to the conditions and characteristics of the study sample until additional evidence is available from other contexts and populations.

Abbreviations

EFA

Exploratory factor analysis
CFA
Confirmatory factor analysis
CFI
Comparative Fit Index
TLI
Tucker-Lewis Index
SRMR
Standardized Root Mean Square Residual
RMSEA
Root Mean Square Error of Approximation
KMO
Kaiser-Meyer-Olkin
DE
Standard deviation
IHC
Corrected homogeneity index
V
Aiken's V coefficient
 α
Cronbach's alpha
 ω
McDonald's omega
RED
RED variable
ETE
Technostress Scale

Declarations

Ethical approval and consent to participate

The research project entitled "Psychometric Properties of a Technostress Scale in Young People in the City of Trujillo, 2026" underwent an expedited review by the Research Ethics Committee of the School of Psychology of Universidad César Vallejo, which issued a favorable opinion for the continuation of the research project, as documented in Report No. 00219–2026/CEI-PSI, dated April 13, 2026. The study was conducted in accordance with the applicable ethical guidelines and regulations for research involving human participants, including the relevant principles of the Declaration of Helsinki. All participants voluntarily provided informed consent before participating in the study. Confidentiality of the collected information was ensured, and the data were used for academic and scientific purposes.

Consent for publication

None.

Conflicts of interest

The authors declare no conflicts of interest.

Author Contribution

EAM and ALD contributed to the conceptualization of the study, methodological design, data collection and analysis, interpretation of the results, and drafting of the manuscript. MMFM served as the research advisor, providing academic and methodological supervision, as well as critical review of the manuscript and guidance throughout the development of the study. EAM, ALD, and MMFM reviewed and approved the final version of the manuscript and take responsibility for its content.

Data Availability Statement

The anonymized dataset supporting the findings of this study is provided as Supplementary Material (Supplementary File S2). The file includes the data used for the psychometric analyses and a codebook describing the variables and response coding. The dataset is shared in accordance with applicable ethical requirements and confidentiality safeguards.

References

1. An Y, Kaplan-Rakowski R, Yang J, Conan J, Kinard W, Daughrity L. Digital fatigue in higher education: Effects on students' cognitive engagement and psychological well-being. *Sci Rep.* 2025;15:29313. <https://doi.org/10.1038/s41598-025-29313-7>.
2. Avalos E, Turpo-Chaparro JE, Palomino-Ccasa J, Requena-Cabral G, Malca-Peralta SS. Validation of measurement scale for technostress in Peruvian university students. *Front Psychol.* 2025;16:1503442. <https://doi.org/10.3389/fpsyg.2025.1503442>.
3. Araya-Ugarte G, Armesto-Céspedes M, Contreras-Barraza N, Vega-Muñoz A, Salazar-Sepúlveda G, Lay N. Contextual study of technostress in higher education: Psychometric evidence for the TS4US scale from Lima. *Peru Sustain.* 2025;17(6974). <https://doi.org/10.3390/su17156974>.
4. Bakker AB, Demerouti E. Job demands–resources theory: Taking stock and looking forward. *J Occup Health Psychol.* 2017;22(3):273–85. <https://doi.org/10.1037/ocp0000056>.
5. Campos Camacho C, Eduardo V, Jarama J, Luis M, Ibarguen I, Hermilio M, Pantigoso F, Miguel, Acero P, Félix William. (2026). Digital competencies and research skills in university students in Trujillo, Peru. *Revista InveCom*, 6(3), e603021. Epub October 30, 2025. <https://doi.org/10.5281/zenodo.17280908>

6. Dunn TJ, Baguley T, Brunsden V. From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *Br J Psychol.* 2014;105(3):399–412. <https://doi.org/10.1111/bjop.12046>.
7. Eidman L, Basualdo Felleau SE. Adaptation and validation of the RED-technostress scale in a population of Argentine university students. *ACADEMO Revista de Investigación en Ciencias Sociales y Humanidades.* 2021;8(2):178–88. <https://doi.org/10.30545/academo.2021.jul-dic.7>.
8. Finstad GL, Giorgi G. The technostress questionnaire: A pilot study. *J Adv Health Care.* 2021;3(1):49–59. <https://doi.org/10.36017/jahc202133149>.
9. National Institute of Mental Health. (2025, September 25). Youth mental health: 32.3% of Peruvian young people report mental health problems. Ministerio de Salud del Perú. <https://www.insm.gob.pe>
10. National Institute of Statistics and Informatics. (2025). Estimates and population projections of Peru by department, province, and district. INEI. <https://www.inei.gob.pe/estadisticas-indice-tematico/>
11. Lazarus RS, Folkman S. Dynamics of a Stressful Encounter: Cognitive Appraisal, Coping, and Encounter Outcomes. *J Personal Soc Psychol.* 1986;50(5):992–1003. <https://doi.org/10.1037/0022-3514.50.5.992>.
12. World Health Organization (WHO). (2024). Teens, screens and mental health. WHO Regional Office for Europe. <https://www.who.int/europe/news/item/25-09-2024-teens--screens-and-mental-health>
13. Penado Abilleira M, Rodicio-García ML, Ríos-de-Deus MP, Mosquera-González MJ. Technostress in Spanish university students: Validation of a measurement scale. *Front Psychol.* 2020;11:582317. <https://doi.org/10.3389/fpsyg.2020.582317>.
14. Romero-Rodríguez JM, Hinojo-Lucena FJ, Kopecký K, García-González A. Digital fatigue in university students as a consequence of online teaching during the COVID-19 pandemic. *Educación.* 2023;XX1(2):165–84. <https://doi.org/10.5944/educxx1.34530>.
15. Solano Castro VV, Núñez Lira L. (2024). Tecnoestrés en estudiantes de educación superior. *Revista InveCom: Estudios transdisciplinarios en comunicación y sociedad*, 5(2). <https://www.revistainvecom.org/index.php/invecom/article/view/3365/551>
16. Sweller J. Cognitive load theory, learning difficulty, and instructional design. *Learn Instruction.* 1994;4(4):295–312. [https://doi.org/10.1016/0959-4752\(94\)90003-5](https://doi.org/10.1016/0959-4752(94)90003-5).
17. Tarafdar M, Pullins EB, Ragu-Nathan TS. Technostress: Negative effect on performance and possible mitigations. *Inform Syst J.* 2019;29(1):1–26. <https://doi.org/10.1111/isj.12176>.
18. Tarafdar M, Tu Q, Ragu-Nathan BS, Ragu-Nathan TS. The impact of technostress on role stress and productivity. *J Manage Inform Syst.* 2007;24(1):301–28. <https://doi.org/10.2753/MI S0742-1222240109>.
19. Universidad César Vallejo. (2024). University Council Resolution No. 0659–2024/UCV.
20. Vega-Muñoz A, Salazar-Sepúlveda G, Contreras-Barraza N. Validation of a technostress measurement scale in Chile. *Int J Environ Res Public Health.* 2022;19:14493. <https://doi.org/10.3390/ijerph192114493>.

21. Wang X, Li B, Ma Q. The impact of digital stress on psychological well-being among university students. *Computers Hum Behav Rep.* 2021;4:100123. <https://doi.org/10.1016/j.chbr.2021.100123>.
22. White RF, Braun JM, Kopylev L, Segal D, Sibrizzi CA, Lindahl AJ, Hartman PA, Bucher JR. NIEHS Report on Evaluating Features and Application of Neurodevelopmental Tests in Epidemiological Studies: NIEHS Report 01. National Institute of Environmental Health Sciences; 2022. <https://doi.org/10.22427/NIEHS-01>.

Figures

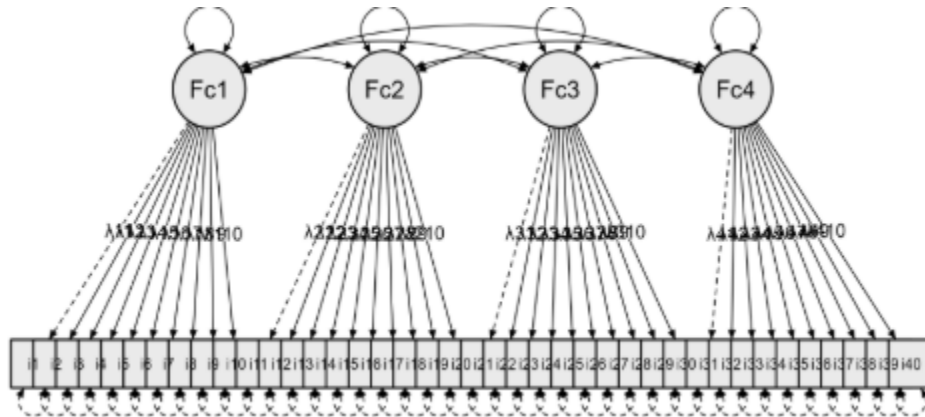


Figure 1

Estructura Factorial Exploratorio de la Escala de Tecno – Estrés en jóvenes de la ciudad de Trujillo.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SupplementaryFileS1TechnostressScaleETE.docx](#)
- [EthicsCommitteeFavorableOpinion.pdf](#)
- [SupplementaryFile2AnonymizedData.zip](#)