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ASSESSING THE PSYCHOMETRIC PROPERTIES OF THE TECHNOSTRESS SCALE AMONG FEMALE SOCIAL WORKERS

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Abstract: In an era of accelerated digitalization, equal opportunities are strongly influenced by access to and adaptability to new technologies. This study analyses the phenomenon of technostress among female social workers, examining and confirming the psychometric value of a specific assessment tool. The research employed a psychometric instrument based on the Technostress Creators Scale (Tarafdar et al., 2007) to evaluate five dimensions of technostress: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. The analysis was conducted on a sample of 200 participants, mostly female social workers in training in undergraduate social work programs, but already active in the social work field. Exploratory factor analysis confirmed a valid structure of the instrument, identifying five factors. The results highlight the gender perspective in managing technological stress and the need for organizational policies that support continuous training and digital adaptability. The conclusions emphasize the importance of developing technological and digital competencies to reduce inequalities and promote equitable inclusion in the field of social work.

Keywords: technostress; equal opportunities; social work; digital competencies; emotional exhaustion; organizational policies.

Résumé : À une époque de numérisation accélérée, l'égalité des chances est fortement influencée par l'accès et l'adaptabilité aux nouvelles technologies. Cette étude analyse le phénomène du technostress chez les femmes assistantes sociales, en examinant et en confirmant la valeur psychométrique d'un outil d'évaluation spécifique. La recherche a utilisé un instrument psychométrique basé sur l'échelle d'évaluation du stress technologique (Tarafdar et al., 2007) pour évaluer cinq dimensions du technostress: surcharge technologique, intrusion technologique, complexité technologique, insécurité technologique et incertitude technologique. L'analyse a été réalisée sur un échantillon de 200 participantes, majoritairement des femmes assistantes sociales en formation dans des programmes de licence en travail social, mais déjà actives dans le domaine. L'analyse

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factorielle exploratoire a confirmé une structure valide de l'instrument, en identifiant cinq facteurs. Les résultats soulignent la perspective de genre dans la gestion du stress technologique et la nécessité de politiques organisationnelles favorisant la formation continue et l'adaptabilité numérique. Les conclusions mettent en évidence l'importance du développement des compétences technologiques pour réduire les inégalités et promouvoir une inclusion équitable dans le domaine du travail social.

Mots-clés : technostress; égalité des chances; travail social; compétences numériques; épuisement émotionnel; politiques organisationnelles.

Rezumat: Într-o eră a digitalizării accelerate, egalitatea de șanse este puternic influențată de accesul și adaptabilitatea la noile tehnologii. Studiul de față analizează fenomenul tehnostresului în rândul femeilor asistenți sociali, analizând și confirmând valoarea psihometrică a unui instrument de evaluare specific. Cercetarea a utilizat un instrument psihometric bazat pe scala evaluării stresului produs de tehnologie (Tarafdar et al., 2007) pentru a evalua cinci dimensiuni ale tehnostresului: supraîncărcarea tehnologică, intruziune tehnologică, complexitatea tehnologică, nesiguranță tehnologică și incertitudine tehnologică. Analiza a fost realizată pe un eșantion de 200 de participante, majoritatea femei asistenți sociali în formare la programe de licență în asistență socială, dar active în domeniul asistenței sociale. Analiza factorială exploratorie a confirmat o structură validă a instrumentului, identificând cinci factori. Rezultatele evidențiază perspectiva de gen în gestionarea stresului tehnologic și necesitatea unor politici organizaționale care să sprijine formarea continuă și adaptabilitatea digitală. Concluziile evidențiază importanța dezvoltării competențelor tehnologice pentru reducerea inegalităților și promovarea unei incluziuni echitabile în domeniul asistenței sociale.

Cuvinte-cheie: tehnostres; egalitate de șanse; asistență socială; competențe digitale; epuizare emoțională; politici organizaționale.

1. Introduction

Technostress, a phenomenon resulting from continuous connectivity and the widespread use of technology across various contexts, especially in the workplace, has become a growing focus in academic research. Its effects are often influenced by demographic factors like gender, with studies suggesting that women may experience this form of stress differently than men. Gaining insight into this gender-specific experience is crucial for designing effective interventions and support systems. Technostress has emerged as a critical challenge in professional settings, particularly within social work, where digital tools and electronic communication have become integral to daily practice. Research indicates that technostress arises from factors such as workflow disruptions, increased workload, and communication challenges, which collectively contribute to reduced efficiency, heightened frustration, and risks of burnout. Malfunctioning technology, duplicative tasks, and rigid digital systems have been identified as key barriers to productivity, often leading to excessive administrative burdens. Furthermore, social workers experience stress due to the expectation of constant availability and ethical uncertainties in electronic communication, exacerbating

professional boundaries and work-life balance issues (Hilty et al., 2023; Scaramuzzino & Barfoed, 2021).

Studies also highlight the correlation between technostress and overall job stress, with increased workloads and emotional exhaustion being prevalent among social workers. The inability to disconnect from work, coupled with high volumes of digital communication, further contributes to burnout and reduced job satisfaction. Additionally, exposure to workplace harassment through digital platforms underscores the broader psychosocial risks associated with technology use in social work (Breyette & Hill, 2015; Hilty et al., 2023). Addressing these challenges requires a multifaceted approach, including improved technology integration, clear communication policies, and workload management strategies at both organizational and individual levels. Strengthening digital literacy, establishing ethical guidelines, and fostering self-care practices can help mitigate the negative impacts of technostress, ensuring a more sustainable and supportive work environment.

Acknowledging the technostress phenomenon requires in depth and contextualised research. This article examines and confirms the psychometric value of a specific assessment tool based on the Technostress Creators Scale (Tarafdar et al., 2007). It evaluates five dimensions of technostress: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Our study among the female social workers in Romania confirms and underlines its psychometric value.

2. Conceptual Approach of Technostress

Technostress is defined as the stress individuals experience due to their inability to adapt to or cope with information and communication technologies (ICTs) in a healthy manner (Tarafdar et al., 2007). Rooted in sociotechnical and role theory, technostress arises when individuals feel overwhelmed by the constant connectivity, complexity, and volume of information that ICTs demand, leading to psychological strain and a negative impact on productivity. These stressors – termed „technostress creators"– include techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty, each reflecting different dimensions of the burden that technology imposes on users (Tarafdar et al., 2011). The phenomenon is not merely a response to isolated events but is conceptualized as an ongoing process of imbalance between environmental demands and personal coping resources, following the transactional theory of stress (Tarafdar et al., 2014). Technostress has been shown to result in adverse outcomes such as job dissatisfaction, reduced organizational commitment, role conflict, role overload, decreased productivity, and innovation. However, subsequent research has acknowledged a more nuanced view, suggesting that the same technological conditions might also lead to „techno-eustress" – positive stress – when users perceive them as manageable and motivating (Tarafdar et al., 2019). This dual nature of technostress underscores the need for design interventions and

organizational support mechanisms that can either mitigate the distressing aspects or enhance the eustress potential of technology use.

Other researchers define technostress as a state of psychological strain and discomfort experienced by individuals as a direct or indirect outcome of dealing with rapidly evolving information and communication technologies (ICT) in organizational or personal contexts (Feng & Liu, 2024). This phenomenon emerges when users are continually exposed to technology-related demands that exceed their coping resources, manifested by adverse impacts on attitudes, thoughts, behaviours, and even physical well-being (Feng & Liu, 2024; Zielonka, 2022). In particular, dimensions such as techno-complexity, techno-uncertainty, techno-overload, and techno-insecurity are considered core aspects of technostress. These dimensions reflect the challenges individuals encounter when engaging with complex and frequently updated technologies, which, in turn, can lead to feelings of inadequacy, job insecurity, and the need for constant relearning (Signore et al., 2023; Zito et al., 2021).

Moreover, technostress is understood as an adaptive response to various stressors inherent in ICT usage. It encompasses cognitive and physiological symptoms, including anxiety, diminished concentration, fatigue, and physical disorders (Zito et al., 2021; Kupang et al., 2024). The prevailing body of literature emphasizes that the rapid digitalization of work environments and the constant connectivity demanded by modern technology play crucial roles in fostering such stress responses (Feng & Liu, 2024; Zielonka, 2022). The interplay between individual characteristics, such as digital literacy and coping strategies, and organizational factors, such as job demands and the support structures available, further modulates the extent of technostress experienced (Bešlagić & Đonlagić-Alibegović, 2024; Kupang et al., 2024). In effect, technostress not only undermines individual well-being but has also been linked to broader implications such as decreased productivity, lower job satisfaction, and adverse health outcomes.

In synthesis, technostress is a multifaceted construct capturing the stress response evoked by the pervasive use of digital technologies more likely. Its emergence is closely tied to the internal conflict between increasingly complex technological demands and an individual's ability to adapt or cope effectively with these demands, thereby affecting both psychological and physiological health.

2.1. Gendered perspective of technostress

Women experiencing telework report notable challenges with technostress. Telework, also referred to as remote work or telecommuting, is a flexible work arrangement that leverages information and communication technologies (ICTs) to enable employees to carry out their job responsibilities outside of conventional office environments. This decentralized approach to work may encompass home-based settings or other remote locations, such as designated telework centers. By reducing the need for daily commuting, telework has the potential to enhance employee productivity, promote work-life balance, and improve overall organizational efficiency (Allen et al., 2015; Macêdo et al., 2020).

Social workers often engage in telework to maintain client contact, provide counseling services, conduct case management, and coordinate care using digital platforms and communication tools. Especially during periods of crisis, such as the COVID-19 pandemic, telework became essential for sustaining service delivery while ensuring safety for both clients and professionals. In a systematic examination of three studies (Gualano et al., 2022) comprising a review aggregating 19 studies (≈10,012 participants), a cross-sectional study (313 participants; 54.6% women), and a survey (927 participants; 43.04% women), researchers measured stressors including techno-overload, techno-invasion, techno-complexity, techno-uncertainty, and role overload. Gualano et al. (2022) reported that TElewoRk-RelAted Stress (TERRA) levels were higher in female workers among 85.7% of the studies considering gender as a variable.

Techno-complexity is highly prevalent and impactful (La Torre et al., 2020). La Torre et al. (2020) found that techno-overload was significantly associated with female gender and unemployment, suggesting that employment status may interact with gender in shaping technostress experiences. They also highlight the association of techno-invasion with the female gender, indicating that women may experience more stress related to the intrusion of work into personal time and space through technology. Finally, they also found that role overload was significantly associated with female gender, indicating that women may experience higher levels of stress related to managing multiple roles and responsibilities. Similarly, Marchiori et al. (2019) suggest that techno-complexity is associated with the female gender and that women reported higher levels of techno-uncertainty.

Research indicates that the sources and impacts of technostress can differ notably between genders. For example, Hu et al. (2022) illustrate that dominant causes of techno-stressors vary across genders, suggesting that while men and women may both experience technostress, the contextual and psychological factors influencing their experiences can be distinct. Furthermore, Rohwer et al. (2022) discuss how women's lower reported levels of technostress in some studies may be due to their differing work conditions, emphasizing that traditional gender roles in the workplace significantly shape experiences of stress related to technology. Similarly, Bondanini et al. (2020) reinforce the notion that women often experience increased anxiety towards technological engagement, a psychological factor that can exacerbate the effects of technostress, particularly in demanding work environments.

The impact of technostress on women's productivity and mental health has also been noted in various contexts. Rosado et al. (2023) describe how technostress can lead to burnout, anxiety, and decreased job satisfaction, highlighting a direct negative correlation between technostress and overall well-being among workers, which can disproportionately affect women due to their often-multifaceted roles at work and home. This finding resonates with Estrada-Muñoz et al. (2021), who emphasize the repercussions of teleworking during the COVID-19 pandemic, where many women in educational settings reported heightened stress from the blend of professional responsibilities and home life. Additionally, studies by García

et al. (2023) confirm a significant correlation between perceived organizational support and technostress, indicating that women often report higher levels of technostress, especially in environments lacking structural support. In healthcare contexts, technostress manifests significantly among female professionals, where Golz et al. (2021) found that although younger healthcare workers perceive themselves as having higher digital competence, women often appear to be more affected by technostress. This suggests a disparity not only in technological comfort but also in the psychological toll that such innovation can impose on women's mental health, thereby affecting their job performance and satisfaction levels. Research by Atanasoff and Venable (2017) highlights the necessity of identifying those most at risk for technostress, supporting the idea that different industries and demographics require tailored interventions.

Synthesizing, the literature reveals a complex interplay between gender and the experience of technostress, where women may face unique challenges influenced by societal roles, workplace dynamics, and support structures. Addressing these disparities is essential for improving work environments and ensuring mental health and productivity in the digital age. Future research should place greater emphasis on these gender differences, exploring the broader implications for organizational practices and personal well-being.

2.2. Technostress Measures

A variety of psychometric instruments have been developed to assess technostress, reflecting the growing theoretical sophistication and practical concern surrounding the impact of digital technologies on well-being. One of the most widely cited and empirically validated tools is the *Technostress Creators Scale* developed by Tarafdar et al. (2007). This scale conceptualizes technostress as arising from five core stress-inducing dimensions: techno-overload (pressure to work faster and longer), techno-invasion (invasion of work into personal life), techno-complexity (feelings of inadequacy due to complex technologies), techno-insecurity (fear of job loss due to new technologies), and techno-uncertainty (stress from constant technological change). Each of these dimensions is operationalized through multiple items rated on a Likert-type scale, allowing for a comprehensive assessment of how individuals experience stress in digitally mediated work environments. The scale has demonstrated high reliability (Cronbach's alpha > .80 across dimensions) and has been applied across diverse occupational settings (Tarafdar et al., 2011, 2014, 2019).

Beyond this foundational measure, the literature reveals a growing number of validated instruments tailored to specific populations and cultural contexts. Despite the solid theoretical grounding of Tarafdar's model, the field exhibits measurement pluralism—i.e., the coexistence of multiple tools with varying factor structures, validation methods, and contextual focus (Borle et al., 2021; Fischer & Riedl, 2017). For example, Kot (2022) conducted a Polish adaptation of the Technostress Creators and Inhibitors Scale, confirming strong psychometric properties and applicability in workplace settings. Similarly, Vega-Muñoz et al.

(2022) validated a technostress instrument for Chilean university students using confirmatory factor analysis (CFA), highlighting the need for academic-specific stress assessments.

Other validations further emphasize context-specific adaptation. Schettino et al. (2022) validated a technostress measure for Italian students in technology-enhanced learning contexts, while Veiga et al. (2022) translated and validated a Brazilian version of the techno-stress questionnaire, achieving robust reliability and construct validity. Additionally, López et al. (2021) used structural equation modelling (SEM-PLS) to assess technostress in professionals, confirming the reflective measurement model's appropriateness with high composite reliability and average variance extracted (AVE). In educational contexts, studies by Wang et al. (2020) and Verde-Avalos et al. (2025) have created and validated technostress measures targeting university students, employing rigorous statistical methods including CFA to confirm internal structure and construct validity. Similarly, Ortega-Jiménez et al. (2023) provided evidence of validity for the Spanish version of the RED/TIC Technostress Scale among Ecuadorian teachers, while Shimabukuro-Lara et al. (2023) adapted the same tool for Peruvian workers.

All these instruments—complemented by the original work of Tarafdar et al.—illustrate the multidimensional and cross-cultural relevance of technostress. However, they also underscore the need for ongoing refinement, standardization, and comparative validation. Effective tools must consistently capture key dimensions such as techno-overload and techno-complexity while accounting for contextual nuances in culture, profession, and digital environment (Tarafdar et al., 2019; Fischer & Riedl, 2017; Kot, 2022). Future research should continue to enhance the diagnostic precision of technostress measures through integrative and interdisciplinary methodologies.

3. Method

The purpose of this research was to analyse the factorial structure of an instrument designed to measure technostress among female social workers, either in training or currently active. All participants were selected based on their involvement in the field of social work, either professionally or through various forms of volunteering. The study included 200 respondents, selected through a convenience sampling method. All participants identified as female and were enrolled in a bachelor's or master's degree program in social work. The data were collected online through Google Forms, and consent was obtained through the form. Data were collected in Romania from a Northeastern academic university. The instruments, consent, and data collection were designed respecting research law from Romania and following recommendation from the Helsinki Declaration. The Declaration of Helsinki (DoH) is the World Medical Association's (WMA) best-known policy statement. The first version was adopted in 1964 and has been amended seven times since, most recently at the General Assembly in October 2024. Of these, 96.5% were full-time students, while the remaining were enrolled in distance learning programs. Regarding age, 91.5% were between 18 and 24 years

old, 7.5% were between 30 and 44 years old, and the rest were over 45. Professionally, 6% were active social workers, 53.5% were social workers in training (students), 22.5% reported having other types of professions, and 18% preferred not to answer. In terms of work experience, 27% reported having between 0 and 2 years of experience, 9.5% had between 3 and more than 10 years, and 63.5% stated they had no work, but voluntary experience. Financially, 35.5% reported an income below the minimum wage, at the minimum wage level, or paid by the hour, 9% reported an income above the minimum wage, and 55.5% indicated that it was not applicable or preferred not to answer.

3.1. Instrument

The assessment of technological stress in this study was conducted using the Technostress Scale developed by Tarafdar et al. (2007) and published in the *Journal of Management Information Systems*. This validated psychometric instrument evaluates five distinct dimensions of technostress: techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. Techno-overload reflects the pressure experienced by individuals – particularly educators – to perform more work, rapidly adapt existing habits, and manage increasingly constrained schedules due to technology use. Techno-invasion captures the blurring of boundaries between professional and personal life, such as reduced time with family and the intrusion of work-related notifications into leisure time. Techno-complexity relates to the perceived difficulty of learning and using new technologies, which often demand significant time and cognitive resources, as well as highly specialized knowledge. Techno-insecurity encompasses fears of job loss or marginalization resulting from insufficient technological skills, as well as feelings of competition or inequality among colleagues. Finally, techno-uncertainty refers to the stress induced by the constant emergence of new technologies and the need to continually adapt to frequent upgrades and changes. The data collection tool consisted of a 22-item questionnaire, with each item rated on a 5-point Likert scale ranging from "1 – Strongly Disagree" to "5 – Strongly Agree." The items were specifically designed to assess perceptions of technostress, including psychological discomfort and the individual adaptability of female social workers – in training, volunteer or work - to technological demands.

4. Results

The exploratory factor analysis (EFA) was used to identify and validate the latent dimensions of the technostress construct among the participants. To assess the suitability of the data for EFA, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were calculated (see Table 1.). The KMO index was 0.928, indicating excellent sampling adequacy for factor analysis (Kaiser, 1974). Bartlett's test of sphericity was significant, $\chi^2(231) = 2628.654$, $p < .001$, suggesting that the correlation matrix is not an identity matrix, thereby justifying the application of EFA (Bartlett, 1954).

Table 1. Tests of Factorability for Principal Component Analysis

Test	Value
Kaiser-Meyer-Olkin (KMO)	0.928
Bartlett's Test of Sphericity	$\chi^2(231) = 2628.654$, $p < .001$

Note. The principal component analysis (PCA) used Varimax rotation. Five factors with eigenvalues greater than 1 were extracted, explaining 69.69% of the total variance.

The principal component analysis (PCA) method was used for factor extraction, with Varimax rotation applied to enhance interpretability. The analysis (see Table 2) identified five factors with eigenvalues greater than 1, which together explained 69.69% of the total variance in the data. The rotated component matrix showed that the items coherently clustered onto five distinct factors.

Table 2. Variance Explained by Each Extracted Factor

Factor	Eigenvalue	% of Variance	Cumulative %
1	9.462	43.01%	43.01%
2	2.193	9.97%	52.98%
3	1.682	7.64%	60.62%
4	1.055	4.79%	65.42%
5	0.940	4.27%	69.69%

Note. Only factors with eigenvalues greater than 1 were retained. Together, the five factors accounted for 69.69% of the total variance.

The overall extraction of factors followed the original structure of the instrument and results indicate that this is a stable structure. The five extracted factors together explain 69.69% of the total variance, which is considered very good in social science research, where values above 60% are generally acceptable. The multicomponent structure identified five factors as predominant. Factor 1 has an eigenvalue of 9.462, which means it explains a large portion of the variance, 43.01% of the total. This indicates that the first factor is the most dominant and captures the most significant pattern in the dataset. Factor 2 explains an additional 9.97% of the variance, with a cumulative variance of 52.98% when combined with Factor 1. This means that over half of the total variability in the responses is accounted for by the first two factors. Factor 3 adds another 7.64% of explained variance, bringing the cumulative total to 60.62%. This shows that three factors together explain a substantial majority of the variance. Factor 4 contributes 4.79%, raising the cumulative variance to 65.42%. Factor 5 explains a further 4.27%, and the total cumulative variance explained by all five factors is 69.69%.

Table 3. Rotated Component Matrix Using Varimax Rotation

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
D11	0.784		0.150	0.231	
D12	0.771	0.198	0.230		0.149
D14	0.766	0.145	0.205	0.117	0.176
D13	0.642	0.302	0.214		0.102

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
D10	0.627		0.270	0.159	
D20	0.138	0.850		0.132	0.124
D21	0.133	0.829	0.142	0.259	0.169
D19	0.146	0.789	0.176	0.117	
D22	0.184	0.765		0.302	0.165

Note. Loadings below .10 are omitted.

The results of the rotated factor loadings highlight that tehno-complexity (D10-D14) and tehno-uncertainty (D19-22) are clustering together clearly, while the other are less nuanced in the latent structure of the construct (see Table 3). Factor 1 (identified as tehno-complexity) exhibited strong loadings from items D10 (0.627), D11 (0.784), D12 (0.771), D13 (0.642), and D14 (0.766), suggesting that these items form a coherent and interpretable factor. Similarly, Factor 2 (identified as tehno-uncertainty) was defined by high loadings from items D19 (0.789), D20 (0.850), D21 (0.829), and D22 (0.765), indicating a second distinct latent construct. Items associated with the other factors (like overload, invasion and insecurity) showed relatively lower or more diffuse loadings, suggesting that these factors may represent more subtle or secondary dimensions of the data. Some items, such as D12 and D14, showed moderate secondary loadings on additional factors, but their primary associations remained with Factor 1. The omission of values below .10 and the communality values ranging from 0.50 to 0.82 (Table 4.) indicate that the factor solution adequately captured the shared variance among all items. Overall, the results support the presence of a clear two-factor structure, with the remaining factors accounting for additional but less distinct variance.

Table 4. Item communalities for Technostress scale

Technostress Scale items	**Extraction**
Techno-overload	
D1 Digitalization in the organization where I work/volunteer forces me to work much faster	,682
D2 Digitalization in the organization where I work/volunteer forces me to work harder than I can.	,662
D3 Digitalization in the organization where I work/volunteer forces me to work to tight deadlines.	,595
D4 Digitalization in the organization where I work/volunteer forces me to change my work habits and adapt to new technologies.	,644
D5 I have more work due to the increasing complexity of technology.	,660
Techno-invasion	
D6 I spend much less time with my family because of the digitalization-specific activities in the organization where I work / volunteer.	,743
D7 I have to be connected to work even during vacations because of the digitalization-specific activities in the organization where I work / volunteer.	,725
D8 I have to sacrifice time from vacation and weekends to stay up to date with new digitalization-specific activities in the organization where I work / volunteer.	,765
D9 I feel that my personal life is invaded because of the digitalization-specific activities in the organization where I work / volunteer.	,721

Techno-complexity	
D10 I don't know enough about digitalization in the organization where I work / volunteer to do my job satisfactorily.	,502
D11 It takes me a long time to understand and use new digital technologies.	,699
D12. I don't find enough time to study and update my technological/digital skills.	,714
D13 I realize that new colleagues or new employees in the organization where 1 work/volunteer know more about technology or computers than I do.	,561
D14 I often find that new technologies are too complex for me to understand and use.	,693
Techno-insecurity	
D15 I constantly feel threatened at work/volunteering because of the digitalization-specific activities in the organization.	,722
D16 I need to update my digitalization-specific skills to avoid being replaced at work/volunteering.	,705
D17 I feel threatened by colleagues who have very well-developed technological skills.	,764
D18 I feel that colleagues share much less about work because they are afraid of being replaced.	,739
Techno-uncertainty	
D19 There are constantly new developments and knowledge of technology that can be used in the organization where I work/volunteer.	,692
D20 There are new changes that always appear in the development of technology of programs or applications used in the organization where I work/volunteer.	,779
D21 There are new changes that always appear in the development of equipment used in the organization where I work/volunteer.	,821
D22 There are always updates in the use of computer networks in our organization.	,741

The communalities for the items ranged from 0.50 to 0.82, indicating an adequate extraction of each item's variance by the identified factors (see Table 4). There were no items with values below 0.50 to be considered for removal in future analyses

Table 5. Reliability analysis for Technostress scale

Factor	Alpha Cronbach
Techno-overload	.83
Techno-invasion	.87
Techno-complexity	.85
Techno-insecurity	.87
Techno-uncertainty	.89

The reliability analysis indicated good internal consistency, above .80 (see Table 5). To test for all items as to whether they should be kept in the final proposal for the instrument, we test for inter-item correlations (Nunnally, 1994) to assess for a consistent pattern of associations between 0,15-0,50 values (Supplementary file Annex 1). Results indicate a good pattern of associations, and also, they are not too high to indicate an overlap of items. Furthermore, we test for the association of each item with the total score (DeVellis, 2016) of the instrument (see Table 6.).

Results indicate that all items correlate with a minimum value of 0,30. All the items are relevant for the overall structure.

Table 6. Item-Total association

Items	Corrected Item-Total Correlation
D1	,564
D2	,610
D3	,543
D4	,571
D5	,673
D6	,620
D7	,652
D8	,660
D9	,652
D10	,530
D11	,573
D12	,639
D13	,572
D14	,626
D15	,691
D16	,692
D17	,668
D18	,615
D19	,525
D20	,528
D21	,631
D22	,608

5. Discussions and concluding remarks

The present study offers a significant contribution to the psychometric validation of the Technostress Scale (Tarafdar et al., 2007) within the specific context of female social workers. By employing exploratory factor analysis (EFA), the research confirmed a robust five-factor structure, like techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty, each aligning with previously established theoretical models (Tarafdar et al., 2011, 2014). The high Kaiser-Meyer-Olkin value and significant Bartlett's test supported the suitability of the dataset for factor analysis. The extracted factors explained 69.69% of the total variance, demonstrating the scale's strong construct validity in this sample. Reliability analysis also revealed very good internal consistency, with Cronbach's alpha values ranging from .83 to .89 for each dimension. Finally, we should also notice that the item loadings indicate strong loadings of items specific to techno-complexity and uncertainty, while the others are less loaded, indicating them as secondary factors. This adds to the extractions of factors analysis where the first factor alone accounts for a substantial proportion of the variance,

suggesting a strong underlying construct, likely corresponding to a central dimension such as techno-complexity. The gradual decrease in explained variance across the next four factors is typical in multidimensional constructs, and each factor likely captures a distinct but meaningful aspect of technostress. This should be further explored in other studies, whether it is specific to gender and type of population.

These results support the scale's applicability in assessing technostress among women in social work training programs and on the labour market, a group that has been underrepresented in previous technostress research. This is especially pertinent considering the growing body of literature that indicates gender-specific vulnerabilities to technostress. For instance, prior studies have shown that women report higher levels of techno-complexity and techno-invasion due to work-life boundary conflicts and lower perceived digital competence (La Torre et al., 2020; Gualano et al., 2023). Given that most participants in this study were early-career or student social workers, the findings emphasize the need for targeted digital skills training and stress-reduction strategies in higher education and field placements.

From a practical standpoint, these findings underline the importance of proactive organizational interventions. Institutions that train or employ social workers should consider integrating digital competence development into their curricula and continuing professional development programs. Furthermore, organizations must recognize technostress not only as a technological issue but also as an occupational health risk, particularly for women balancing multiple social roles (Rosado et al., 2023; Estrada-Muñoz et al., 2021). Supportive workplace practices, such as clear communication policies, flexible scheduling, and peer mentoring, can help mitigate the psychological burden caused by technological demands. Ensuring access to technical support and providing psychological safety in digitally demanding roles are essential for promoting long-term well-being and professional sustainability in social work.

It is important to clarify that, to the authors' knowledge, this study represents one of the first empirical validations of the Technostress Creators Scale (Tarafdar et al., 2007) specifically among social work professionals. While the scale has been extensively applied and psychometrically validated across diverse occupational groups, including educators, healthcare workers, and students, there is limited evidence of its prior application in the social work domain, particularly among female social workers in Romania. This contextual specificity is important, given the unique demands and ethical responsibilities inherent in social work practice, which may influence the experience and manifestation of technostress differently compared to other professions. Consequently, this research offers not only a methodological contribution by confirming the instrument's reliability and factorial structure within this population, but also extends the applicability of the scale to a previously underrepresented professional context. Future comparative studies across professional domains would further clarify whether the scale retains structural invariance or requires adaptation to reflect field-specific stressors.

Concluding, the validated Technostress Scale proves to be a reliable and contextually sensitive instrument for capturing the nuanced experiences of female social workers facing digital transformation in Romania, especially for techno-complexity and techno-uncertainty. Its use can guide both research and practice in identifying at-risk individuals and developing tailored interventions. Future research may benefit from examining longitudinal changes in technostress, exploring intersectional factors such as age, socioeconomic status, and caregiving responsibilities, and testing the effectiveness of specific mitigation strategies.

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