VALIDATION OF THE SHORT FORM OF THE REMOTE WORK STRESS SCALE

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Extant literature on remote work stress has yet to yield a reliable scale. This study aims to refine the previously established 5-factor, 15-item Remote Work Stress Scale into a unidimensional construct comprising 5 items. As part of the research, we conducted a survey of 602 employees in Turkey who currently actively work remotely. The results showed that the 5 item Short form of the Remote Work Stress Scale is valid (X^2/df= 4.91; RMSEA=.08; SRMR=.02; NFI=.99; NNFI=.98; CFI=.99; GFI=.99; AGFI=.95) and reliable (Cronbach's Alpha=.88; Guttman Split-Half Coefficient=.72). In addition, to examine how the Remote Work Stress Scale differs according to demographic factors, we used multiple correspondence analysis and found that remote work stress is mainly affected by the sex, education and job position. Accordingly, male employees in managerial positions, working in private companies with university or lower education experienced lower remote work stress whereas female and non-managerial employees with master or higher education experienced higher remote work stress.

DOI
https://doi.org/10.18690/um.epf.5.2025.5

ISBN
978-961-286-984-7

Keywords:
remote work, stress, scale, validity, reliability, short-form

JEL:
J24, J28, O15

University of Maribor Press

1 Introduction

Despite the growing body of research on remote work stress, there has been a lack of a reliable measurement tool specifically designed to assess this phenomenon. Remote work is defined as working outside of a traditional office setting, often utilizing information and communication technology to perform tasks and communicate with others (Beckel & Fisher, 2022). Remote work provides numerous advantages, such as flexible hours and enhanced work-life balance; nonetheless, it also entails specific disadvantages, such as isolation, increased workload, and reduced communication (Ipsen et al., 2021). Costin et al. (2023) indicate that remote workers encountered challenges related to work-life balance, emotional labor, job burnout, and daily occupational pressures.

This study aims to make a significant contribution to the existing literature by addressing two key objectives. First, it seeks to propose a valid and reliable measurement instrument for remote work stress. Second, it aims to simplify the Remote Work Stress Scale developed by the research group, which initially comprises 5 factors and 15 items, into a more concise single-factor scale. By achieving these objectives, the study intends to enhance the understanding and assessment of stress experienced by remote workers. The primary objectives of this research are to create a valid and reliable measurement instrument that accurately captures the nuances of remote work stress while also condensing the original scale into a more practical format, which aims to facilitate easier application and interpretation of the scale in various organizational contexts.

This study also aligns with the United Nations' Sustainable Development Goal 8 (SDG 8), which emphasizes the promotion of sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all (United Nations, 2015). As remote work becomes a defining element of the modern labor market, understanding and mitigating stress related to remote working conditions is crucial for ensuring both productivity and worker well-being. Elevated stress levels among remote employees can reduce job satisfaction, increase burnout, and hinder overall performance, thereby threatening the goals of decent and inclusive work environments (Eurofound, 2021; Wang et al., 2021). By developing a reliable and valid instrument to measure remote work stress, this study contributes to global efforts in advancing workplace practices that support employee mental health and

promote sustainable economic participation. Furthermore, identifying vulnerable groups who are more susceptible to remote work stress—such as women and highly educated non-managerial employees—can inform targeted interventions that reduce inequalities in work conditions and improve labor market inclusivity.

2 Methodology

For this study, we recruited white-collar employees with remote work experience through LinkedIn, inviting them to participate voluntarily. We based our sample size on the representative population size of 380 individuals at the 95% confidence level with a 5% margin of error (Sample Size Calculator, 2025; Costello & Osborne, 2005). The data collection tool consisted of two sections. The first section gathered demographic information, including gender, educational status, marital status, parental status, organizational type, job position, and age. The second section contained the 15 item, 5 factor Remote Work Stress Scale developed by the research group, which we aimed to shorten.

The study sample includes 602 participants. The majority are female (58.8%), have a master's degree or higher (52.2%), are married (55.6%), and do not have children (61.3%). Most work in the private sector (82.9%) and hold non-managerial roles (64.5%). The average age is 36 years (SD = 8).

3 Results

To develop a concise scale, we performed an exploratory factor analysis (EFA) on a suitable dataset (KMO = .92; Bartlett's Test $\chi^2 = 6576.679$, df = 105, $p < .001$). Using Principal Component Analysis and Varimax rotation, we retained items with factor loadings $\geq .40$ (Yong and Pearce, 2013), resulting in a single-factor scale comprising items s4, s5, s6, s8, s9, and s12 (loadings: .76 – .79). This factor exhibited an eigenvalue of 8.07, accounting for 53.80% of variance, surpassing the 50% threshold typical in social sciences (Beavers et al., 2013).

Table 1: Rotated Matrix Results (n=602)

Items	Mean	Standard Deviation	Factor Loadings
s1	2.82	1.30	-
s2	3.08	1.38	-
s3	3.07	1.45	-
s4	3.28	1.40	.791
s5	3.44	1.35	.767
s6	3.32	1.37	.799
s7	2.96	1.27	-
s8	3.18	1.29	.765
s9	3.16	1.33	.777
s10	2.74	1.31	-
s11	3.12	1.33	-
s12	3.00	1.30	.764
s13	3.38	1.41	-
s14	2.98	1.34	-
s15	2.66	1.37	-
Eigenvalues			8.07
% of Variance			53.80

We conducted a confirmatory factor analysis (CFA) and found that item s9 had a coefficient < .50 and a non-significant t-value (p > .05), leading to its exclusion. After re-running the CFA, the final single-factor scale comprised 5 items with coefficients ranging from .60 to .89, all significant at the 5% level (t > 1.96) (Hair et al., 2010).

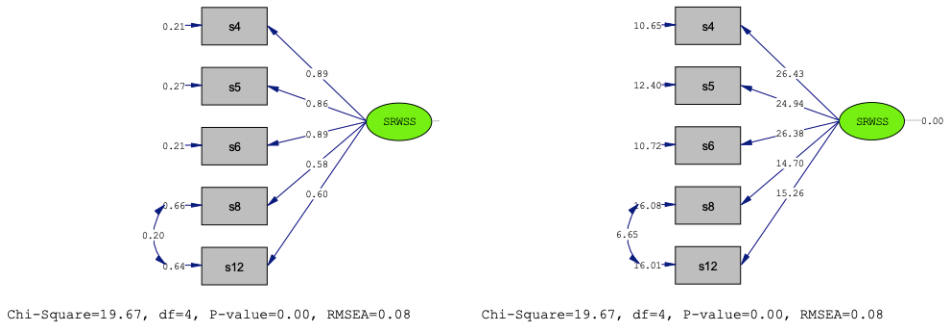


Figure 1: Standardized Coefficient Solutions and t-Values for the Scale

Goodness-of-fit indices supported an acceptable model: $X^2/df < 5$, RMSEA = .08, SRMR = .02, NFI = .99, NNFI = .98, CFI = .99, GFI = .99, AGFI = .95, validating the short-form Remote Work Stress Scale (Çömlekçi & Başol, 2019; Özkan et al.,

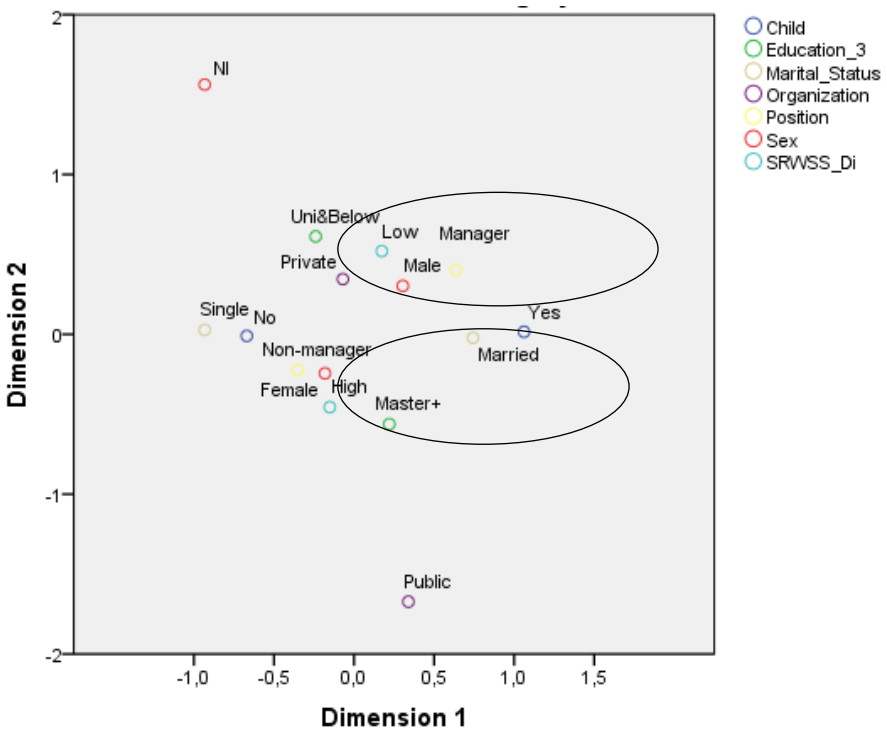
2023). Reliability metrics included Cronbach's Alpha (CA) = .88, Composite Reliability (CR) = .88 (Başol & Çömlekçi, 2022), and Average Variance Extracted (AVE) = .60 (Bagozzi & Yi, 1988). Split-half reliability showed an inter-form correlation of .64 and a Guttman Split-Half Coefficient of .72 (Talli, 2019), with corrected total-item correlations of .61–.80 (De Vaus, 2002). No item deletion improved CA beyond .88, confirming the 5-item scale's reliability (M = 3.25 ± 1.11). Correlations between the short and original forms ranged from .64 to .95, supporting its substitutability (Table 2). Psychometric evaluations affirmed the short form's validity and reliability.

Table 2: Correlations Results Between Short and Original Form

	SRWSS
SRWSS	1
WLI	.64**
OWE	.95**
MIS	.79**
INA	.77**
INS	.65**
RWSS	.93**

SRWSS= Short form of Remote Work Stress Scale; WLI = Work-Life Imbalance; OWE= Overworking; MIS= Miscommunication; INA= Inactivity; INS= Insecurity; RWSS= Remote Work Stress Scale
**p<.01

A multiple correspondence analysis (MCA) was conducted to examine typologies among demographic variables and remote work stress levels (Figure 2). When categorizing remote work stress into two groups (Low and High) and grouping demographic variables into binary categories, four main axes emerged: remote work stress, sex, education and job position. The results indicated that male employees in managerial positions, working in private companies with university or lower education experienced lower remote work stress; whereas female and non-managerial employees with master or higher education experienced higher remote work stress. This finding highlights the impact of sex, education and job position as key determinants of remote work stress.



Child= Yes, No; Education= University and Below, Master or High; Marital Status= Married, Single; Organization= Private, Public; Position= Manager, Non-manager; Sex= Female, Male; Remote Work Stress= High, Low

Figure 2: Results of the Multiple Correspondence Analysis

4 Discussion and conclusions

The main objective of this study is to shorten the Remote Work Stress Scale. The scales were shortened for several reasons, including time savings, reducing the number of behaviors measured, and creating a short form with the same validity as the long form (Koğar, 2020). Additionally, among its benefits are the ability to eliminate challenges frequently encountered in empirical studies, reduce participant burden, and provide efficiency, focus, and ease of implementation (Botes et al., 2021; Kruyen et al., 2013). It also may be convenient for longitudinal studies, does not intimidate participants when refilled at short intervals, and reduces the likelihood of being left unfinished.

This study aimed to condense the 5-factor, 15-item Remote Work Stress Scale into a unidimensional, 5-item construct. In the first phase, data from 602 remote workers were analyzed, yielding a valid and reliable shortened scale. In the second phase, Multiple Correspondence Analysis assessed the relationship between the shortened scale and six dichotomously coded demographic variables. Findings revealed that male managers in private firms with university or lower education reported lower stress, while female non-managers with master's or higher education exhibited elevated stress, highlighting the influence of gender, education, and occupational status on remote work stress.

It is imperative that policymakers consider gender-sensitive and education-specific policies when designing remote work regulations. Given that female and highly educated non-managerial employees experience higher levels of stress, governments and organizations should implement policies that promote work-life balance, mental health support, and equitable work environments. Additionally, labor laws may need to address remote work stress disparities to ensure fair working conditions for all employees.

The present study makes a contribution to the existing literature on occupational stress by providing a validated and reliable Short Remote Work Stress Scale (SRWSS). The findings also lend support to the role of demographic factors—particularly gender, educational attainment, and managerial status—in influencing remote work stress levels. Future theoretical models on remote work stress should integrate these factors to develop more nuanced frameworks for understanding workplace well-being in remote settings.

Organizations should adapt remote work policies to address stress disparities among different demographic groups. Furthermore, managers should implement targeted interventions, such as flexible work arrangements, mentorship programs, and mental health resources, to support highly educated non-managerial employees and female workers. Additionally, HR professionals can use the shortened Remote Work Stress Scale for quick and efficient stress assessments to improve employee well-being.

This study has some limitations. First, the sample consisted of remote workers from a specific demographic, organizational and country context, which may limit the generalizability of the findings. Second, the study relied on self-reported data, which

may be subject to response bias. Third, while the shortened scale was found to be valid and reliable, further validation across diverse industries and cultural settings is needed. Future research should test the shortened scale in different occupational sectors and geographical regions to enhance its applicability. Longitudinal studies can explore how remote work stress evolves over time and whether interventions effectively mitigate stress.

References

Bagozzi, R.P. & Yi, Y. (1988). On the evaluation of structural equation models. Journal of the Academy of Marketing Science, 16(1), 74-94. https://doi.org/10.1007/BF02723327

Başol, O., & Çömlekçi, M. F. (2022). Validity and reliability study of the Remote Work Attitude Scale. Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty, 9(1), 243-261. https://doi.org/10.30798/makuiibf.862439

Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2013). Practical considerations for using exploratory factor analysis in educational research. Practical Assessment, Research and Evaluation, 18(6), 1-13. https://doi.org/10.7275/qv2q-rk76

Beckel, J. L. O., & Fisher, G. G. (2022). Telework and worker health and well-being: A review and recommendations for research and practice. International Journal of Environmental Research and Public Health, 19(7), 3879. https://doi.org/10.3390/ijerph19073879

Botes, E., Dewaele, J. & Greiff, S. (2021), The Development and Validation of the Short Form of the Foreign Language Enjoyment Scale. The Modern Language Journal, 105, 858-876. https://doi.org/10.1111/modl.12741

Costello, A. B. & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. Practical Assessment, Research & Evaluation, 10(7), 1-9. https://doi.org/10.7275/jyj1-4868

Costin, A., Roman, A.F. & Balica, R-S. (2023). Remote work burnout, professional job stress, and employee emotional exhaustion during the COVID-19 pandemic. Frontiers in Psychology, https://doi.org/14:1193854

Çömlekçi, M. F., & Başol, O. (2019). Analysis of relationship between youths' social media usage motives and social media addiction. Manisa Celal Bayar Üniversitesi Sosyal Bilimler Dergisi, 17(4), 173-188. https://doi.org/10.18026/cbayarsos.525652

De Vaus, D. A. (2002). Surveys in Social Research. Australia: Allen & Unwin.

Eurofound. (2021). Living, working and COVID-19. Publications Office of the European Union. https://www.eurofound.europa.eu/publications/report/2021/living-working-and-covid-19

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). Multivariate data analysis: A global perspective (7th ed.). USA: Pearson.

Ipsen, C., van Veldhoven, M., Kirchner, K., & Hansen, J. P. (2021). Six key advantages and disadvantages of working from home in Europe during COVID-19. International Journal of Environmental Research and Public Health, 18(4), 1826. . https://doi.org/10.3390/ijerph18041826

Koğar, H. (2020). Development of a Short Form: Methods, Examinations, and Recommendations. Journal of Measurement and Evaluation in Education and Psychology, 11(3), 302-310. https://doi.org/10.21031/epod.739548

Kruyen,P.M., Wilco H. M. Emons & Sijtsma, K. (2013) On the Shortcomings of Shortened Tests: A Literature Review, International Journal of Testing, 13:3, 223-248, https://doi.org/10.1080/15305058.2012.703734

Özkan, A., Çiftçioğlu, G. A., Güzel, B. H., & Başol, O. (2023). Validity and reliability study of the charity hazard scale. International Journal of Disaster Risk Reduction, 99, 104100-104111. https://doi.org/10.1016/j.ijdrr.2023.104100

Sample Size Calculator (2025). Retrieved from http://www.raosoft.com/samplesize.html

Talli, I. (2019). Assessing written language in Greek: Validity and reliability considerations. The Educational Review, USA, 3(8), 87-95. http://dx.doi.org/10.26855/er.2019.08.001

United Nations. (2015). Transforming our world: the 2030 Agenda for Sustainable Development. https://sdgs.un.org/goals

Wang, B., Liu, Y., Qian, J., & Parker, S. K. (2021). Achieving effective remote working during the COVID-19 pandemic: A work design perspective. Applied Psychology, 70(1), 16–59. https://doi.org/10.1111/apps.12290

Yong, A.G., & Pearce, S. (2013). A beginner's guide to factor analysis: Focusing on exploratory factor analysis. Tutorials in Quantitative Methods for Psychology, 9, 79-94. https://doi.org/10.20982/tqmp.09.2.p079