



## Research Article

# Factorial Structure and Psychometric Characteristics of the Job Stress Index (JSI) within the Bulgarian Cultural Context

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## Abstract

The present study reports the results of the Bulgarian adaptation of the Job Stress Index (JSI) scale. The research was conducted on a sample of 412 participants. The factorial structure of the instrument was examined, and key descriptive statistics, including means and standard deviations, were calculated. The findings demonstrated satisfactory psychometric properties, providing evidence for the reliability and construct validity of the instrument within the Bulgarian cultural context ( $\alpha = .942$ , and KMO measure of sampling adequacy was  $.938$ , Bartlett's test of sphericity was statistically significant  $\chi^2 = 3989.616$ ,  $p < .001$ ), confirming that the correlation matrix was appropriate for factor analysis and that the observed correlations were not random. The strong convergence between parametric and non-parametric results, together with the consistent ranking of item effects, provides compelling evidence for the discriminant validity of the scale. Collectively, these results confirm that the questionnaire possesses a high and stable capacity to distinguish between individuals with low and high levels of perceived occupational stress.

*Keywords:* job stress; Job Stress Index; psychometric properties; reliability; validity; factorial structure



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### Conceptual framework

Within the context of the contemporary work environment, occupational stress has emerged as one of the most significant risk factors affecting employees' mental and physical health ([Chen et al., 2022](#); [Hasin et al., 2023](#)). The accelerated pace of work, increasing job demands, and the growing complexity of modern life place an ever larger number of employees under conditions of prolonged psychological stress ([Marcatto et al., 2011](#)). Consequently, scholarly interest in the study of occupational stress, as well as in the development and refinement of reliable psychological instruments for its assessment, continues to expand ([Marcatto et al., 2022](#)).

According to the definition provided by the [National Institute for Occupational Safety and Health \(NIOSH\)](#), work-related stress refers to the harmful physical and emotional responses that arise when job demands exceed or fail to correspond with the worker's abilities, resources, or needs. Within this framework, occupational stress may contribute to adverse health outcomes and may even result in occupational injuries.

The significance of the problem is further emphasized in a [European Commission guideline](#) addressing work-related stress and the necessity of understanding and managing it within organizational settings. The document highlights that work-related stress constitutes both a consequence and a contributing factor to serious environmental, economic, and public health challenges. It further reports that work-related stress affects at least 40 million workers across the

15 Member States of the European Union and is associated with annual economic losses estimated at no less than €20 billion. Moreover, work-related stress contributes substantially to human suffering, morbidity, and mortality, while simultaneously impairing productivity and organizational competitiveness. Of particular importance is the observation that a considerable proportion of these adverse outcomes could potentially be prevented. The following definition of work-related stress has also been proposed:

Work-related stress may be understood as a pattern of emotional, cognitive, behavioral, and physiological reactions arising in response to adverse and harmful working conditions, organizational structures, and workplace environments. It is characterized by elevated levels of arousal and psychological distress, frequently accompanied by a perceived inability to cope effectively with occupational demands. ([EU commission, n.d.](#))

A 2009 report issued by the [European Agency for Safety and Health at Work](#) defined work-related stress as a condition that arises “when the demands of the work environment exceed the workers’ ability to cope with (or control) them” ([OSH in Figures: Stress at Work – Facts and Figures, 2009](#), p. 14). According to surveys conducted every five years by the [European Foundation for the Improvement of Living and Working Conditions \(Eurofound, 2017\)](#), work-related stress represents the second most significant work-related health risk, surpassed only by musculoskeletal disorders. In 2005, approximately 22% of employees within the European Union reported experiencing work-related stress. Furthermore, the annual economic burden associated with work-related stress in the EU was estimated at €20 billion in 2002, reflecting substantial human costs related to suffering and diminished well-being, as well as considerable economic losses resulting from decreased productivity ([Brezin & Antov, 2013](#)). Similarly, the [Health and Safety Executive](#) defines work-related stress as “the adverse reaction where people have to excessive pressures or other types of demand placed on them” .

An analysis of data collected across 15 European countries demonstrates that socio-cultural factors exert a substantial influence on the perception of work-related stress. Cross-national differences cannot be explained solely by demographic variables, working conditions, or levels of job satisfaction. Rather, they are also associated with broader cultural characteristics, including attitudes toward risk and the influence of mass media ([Daniels, 2004](#)). For example, in 2005, the highest reported levels of occupational stress were observed in Greece (55%), Sweden (38%), and Slovenia (38%). By contrast, the lowest levels were reported in Ireland (16%) and the

Netherlands (16%), although both countries demonstrated an increasing trend over time. A declining trend was identified in the United Kingdom (12%), whereas Italy, Cyprus, and the Czech Republic showed a progressive decrease in stress levels across the years. In Bulgaria, the prevalence of occupational stress remained comparatively moderate; however, it increased from 15% to 18% over a four-year period.

In the United Kingdom, the significance of work-related stress has been widely acknowledged by employers' organizations, employee representatives, and governmental institutions. In response, the [Health and Safety Executive](#) developed the Management Standards for Work-Related Stress, which serve as practical guidance within the legislative framework. These standards emphasize collaboration among employers, employees, and their representatives in identifying effective strategies for stress reduction and promoting continuous organizational improvement. Six core domains are identified as critical for the effective management of work-related stress: job demands, control, support, interpersonal relationships, role clarity, and organizational change ([ibid.](#), p. 40). The stress response manifests across physiological, psychological, and behavioral domains. Chronic stress is particularly detrimental, as it compromises physical health ([Avitsur et al., 2005](#); [Engler et al., 2004](#); [McEwen & Stellar, 1993](#); [Heim et al., 2000](#)) negatively affects emotional functioning, and may contribute to the development of anxiety and depressive disorders ([Dantzer et al., 2008](#)). Furthermore, prolonged stress may influence behavior, increasing the likelihood of maladaptive coping strategies such as smoking, alcohol consumption, and substance use ([Dale et al., 2009](#)), and in some cases may even contribute to the emergence of deviant behavioral patterns ([Jensen, 1994](#); [de Wit et al., 2007](#)).

The balance between job demands and available resources plays a central role in determining both the risk of work-related stress and burnout, as well as levels of work engagement and psychological well-being. High occupational demands in the absence of adequate resources are associated with increased burnout, whereas the availability of sufficient personal and organizational resources may buffer the adverse effects of stress and enhance employee motivation and engagement ([Schaufeli & Taris, 2014](#)).

Social determinants exert a substantial influence on health outcomes at both the individual and population levels. Individuals with higher socioeconomic status (SES) generally demonstrate better health outcomes, whereas those with lower SES are more likely to experience poorer physical and psychological health. Health inequalities are particularly evident in relation to: a) material conditions (e.g., housing and income); b) psychosocial factors (e.g., stress and social



support); and c) behavioral factors (e.g., lifestyle patterns). The cumulative impact of socioeconomic inequalities has been associated with an increased risk of hypertension and coronary heart disease. Individuals occupying lower social status frequently report elevated levels of stress and anxiety, whereas higher socioeconomic status is consistently linked to greater life expectancy and improved quality of life ([Blane, 1999](#)).

Chronic social stressors, including discrimination, poverty, and social isolation, constitute enduring environmental and psychosocial conditions that exert a profound and cumulative influence on both physical and mental health outcomes. These stressors operate not only at the level of individual experience but also within broader structural contexts that shape life opportunities, access to resources, and exposure to adversity. In their seminal analysis of the relationship between political and economic institutions and patterns of societal development, [Acemoglu and Robinson \(2013\)](#), in „Why Nations Fail?“ underscore the decisive role of institutional disparities in shaping population health and well-being. They argue that inequalities in political and economic organization produce systematic differences in human development outcomes, noting that “in rich countries, people are healthier, live longer, and are much better educated” ([Acemoglu & Robinson, 2013, p. 40](#)). This observation highlights the embeddedness of health within macro-structural conditions and reinforces the notion that well-being is fundamentally shaped by socio-political context.

In addition, the availability and quality of social support represent critical moderating factors in the stress–health relationship. A consistent body of empirical evidence indicates that insufficient social support is associated with heightened levels of psychological stress and an increased vulnerability to a wide range of somatic and mental health disorders. Social support functions as both a protective buffer against stress exposure and a key determinant of adaptive coping processes, thereby mitigating the deleterious effects of chronic stressors on physiological and psychological functioning.

Within the occupational domain, stress represents a central determinant of employee health, exerting a direct and bidirectional influence on both mental and physical well-being. Occupational stress is not merely a reaction to environmental demands, but rather a complex transactional process involving the interaction between job demands, individual resources, and organizational conditions. Importantly, the perception and subjective experience of occupational stress are significantly shaped by the cultural context in which individuals are embedded, including normative expectations regarding work, authority, and coping behavior.

Moreover, occupational stress has been shown to exert a substantial influence on individual behavior, often manifesting in maladaptive coping strategies, reduced performance, and changes in health-related behaviors. Stress, however, should not be conceptualized as a uniform response; rather, it represents a highly individualized phenomenon, characterized by marked inter-individual variability in vulnerability and resilience. While some individuals demonstrate heightened susceptibility to stress-related impairment, others exhibit adaptive resilience, reflecting the interplay of genetic, psychological, and environmental factors.

Finally, socioeconomic status (SES) plays a critical role in shaping adolescent health trajectories through a range of interrelated psychological mechanisms, particularly those involving the perception, interpretation, and appraisal of stress. Lower SES is consistently associated with increased exposure to chronic stressors and diminished access to coping resources, which in turn contribute to adverse developmental and health outcomes. Conversely, higher SES provides both material and psychosocial resources that facilitate more adaptive stress appraisal and regulation, thereby promoting healthier developmental pathways across the lifespan.

Chronic social stressors, including discrimination, poverty, and social isolation, are persistent psychosocial and environmental conditions that cumulatively affect both physical and mental health. These influences extend beyond the individual level, operating within structural contexts that shape access to resources, life opportunities, and exposure to adversity. [Acemoglu and Robinson \(2013\)](#), in “Why Nations Fail?”, argue that institutional inequalities in political and economic systems generate systematic differences in human development outcomes, noting that “in rich countries, people are healthier, live longer, and are much better educated” (p. 40). This highlights that health is deeply embedded in macro-structural and socio-political conditions.

Social support is a key moderating factor in the stress–health relationship. Evidence consistently shows that low social support is associated with increased psychological stress and greater vulnerability to both physical and mental disorders. It functions as a protective buffer, enhancing adaptive coping and reducing the adverse effects of chronic stress on psychological and physiological functioning.

In the occupational domain, stress is a central determinant of employee health, directly affecting both mental and physical well-being. Rather than a simple response to demands, it reflects the interaction between job demands, individual resources, and organizational conditions, and is shaped by cultural norms regarding work, authority, and coping.

Occupational stress also significantly influences behavior, often resulting in maladaptive coping, reduced performance, and adverse health-related behaviors. However, it is not uniform; it is highly individualized, with variability in vulnerability and resilience determined by genetic, psychological, and environmental factors.

Finally, socioeconomic status (SES) influences adolescent health through psychological mechanisms related to stress perception and appraisal. Lower SES is associated with greater exposure to chronic stressors and fewer coping resources, leading to poorer health and developmental outcomes. In contrast, higher SES provides material and psychosocial advantages that facilitate more adaptive stress regulation and healthier developmental trajectories across the life course.

## Methodology

### Research Design

The study included 412 participants aged between 18 and 70 years, stratified according to place of residence (within Bulgaria and abroad). The sample was further categorized into five age groups, four levels of educational attainment, and five categories of marital status.

Data collection was conducted over a two-and-a-half-month period, from 6 September 2024 to 20 November 2024. The survey was administered daily via a Google Forms link, with voluntary assistance provided by three interviewers based in Blagoevgrad (Bulgaria), London (United Kingdom), and Brussels (Belgium). The study adhered to established ethical standards for research, including the principles of anonymity and confidentiality in data collection.

### Ethical issues

This empirical study was conducted on a voluntary basis, with the explicit informed consent of all participants. Participants were informed in advance regarding the aims, content, and significance of the study, as well as the fact that their participation was not associated with any direct personal benefit. Fundamental ethical standards for scientific research were strictly observed, including the assurance of anonymity and confidentiality. All collected data are used exclusively for scientific purposes, with no disclosure of any personally identifiable information.

### **Statistical Methods for Data Analysis**

For statistical analysis of the obtained data, the Statistical Package for the Social Sciences (SPSS), version 23, was employed. The following procedures were applied: descriptive statistics; assessment of distribution normality using skewness and kurtosis coefficients; evaluation of the questionnaire's reliability through Cronbach's alpha and test-retest analysis; and examination of the instrument's structural organization (construct validity) via exploratory factor analysis.

### **Sample description**

#### *Gender*

According to the first demographic characteristic, three gender categories were identified: women, men, and other. The option not to disclose one's gender or to identify outside the male/female binary has become an increasingly recognized standard in contemporary research practice. The sample comprised 260 women, representing the majority of participants (63.11%), and 151 men (36.65%), while only one respondent identified as "other" (0.24%). Women thus constituted nearly two-thirds of the sample, which is an important consideration in the interpretation of the results.

#### *Age*

The average age of respondents was 45 years. All respondents were classified into five age groups. Individuals aged 18–25 represented the smallest group, accounting for 1.7% of the sample ( $n = 7$ ). Those aged 26–35 comprised 8.5% of participants ( $n = 35$ ). The largest group consisted of individuals aged 36–45, representing just under half of the sample at 42.96% ( $n = 177$ ). Respondents aged 46–55 formed the second largest group, accounting for 38.83% ( $n = 160$ ). Participants aged over 56 years represented 8.01% of the sample ( $n = 33$ ). Overall, individuals aged between 36 and 55 years predominated, comprising more than 80% of the total sample.

#### *Education Level*

Based on educational attainment, respondents were classified into four groups. Individuals with secondary education accounted for 18.69% of the sample, corresponding to 77 respondents. Those holding a bachelor's degree represented 26.70% of participants, making this the second largest group with 110 respondents. Respondents with a master's degree constituted the majority of the sample, comprising 51.94% or 214 individuals, and thus forming the largest group. Individuals with a doctoral degree were the least represented, accounting for 2.6% of the sample ( $n = 11$ ). Overall, more than half of the participants held a master's degree, indicating a highly educated respondent population.

### *Marital Status*

Based on marital status, respondents were classified into six categories. Single individuals accounted for 10.19% of the sample, corresponding to 42 respondents. Those in a registered partnership constituted 6.55% of participants ( $n = 27$ ). Respondents living in a cohabiting relationship formed the second largest group, representing 29.15% of the sample ( $n = 83$  individuals). Married participants represented the largest group, comprising 52.18% of respondents ( $n = 215$ ). Divorced individuals accounted for 9.47% of the sample ( $n = 39$  respondents), while widowed participants were the least represented group, comprising 1.46% ( $n = 6$ ). Overall, more than half of the participants were in a formal marriage, and approximately one fifth were in cohabiting partnerships, indicating a generally high level of relationship commitment within the sample.

### *Residence*

A total of 412 individuals participated in this study, all of whom were Bulgarian citizens. The sample was evenly distributed in terms of place of residence, with 50% ( $n = 206$ ) residing in Bulgaria and 50% ( $n = 206$ ) living abroad. This balanced distribution enables comparative analysis between respondents residing within the country and those living outside it. In addition, participants were classified by settlement type, with 386 residing in urban areas and 26 in rural areas. Further variation was observed in citizenship status. A total of 95 respondents held foreign citizenship in addition to Bulgarian citizenship, including two individuals with three citizenships in total. The majority of respondents ( $n = 317$ ) held Bulgarian citizenship. The sample included Bulgarians residing in Bulgaria ( $n = 206$ ) as well as respondents living abroad in a range of countries, including the United Kingdom ( $N = 111$ ), Belgium ( $N = 21$ ), the United States ( $n = 13$ ), Germany ( $n = 11$ ), Spain ( $n = 10$ ), Australia ( $n = 6$ ), Canada ( $n = 5$ ), Italy ( $n = 4$ ), the Netherlands ( $n = 4$ ), France ( $n = 3$ ), Scotland ( $n = 3$ ), the Dominican Republic ( $n = 3$ ), Malta ( $n = 2$ ), Austria ( $n = 2$ ), Ireland ( $n = 2$ ), Norway ( $n = 2$ ), Denmark ( $n = 1$ ), New Zealand ( $n = 1$ ), and Georgia ( $n = 1$ ), while one respondent preferred not to disclose their country of residence.

### *Professional domain*

Respondents represented a wide and diverse range of professional fields. The sample included managerial positions such as mayors, directors, and managers, as well as a broad group of specialists, including teachers, auditors, accountants, lawyers, entrepreneurs, psychologists, engineers, ecologists, musicians, artists, choreographers, coaches, computer specialists, and other related professions. It also comprised technicians and associate professionals such as

insurance agents, administrators, and sales representatives, along with administrative support staff including secretaries, human resources personnel, and other administrative employees. Service, sales, and security occupations were likewise represented, including cooks, sales consultants, hairdressers, waiters, beauticians, and private security personnel. In addition, the sample included skilled workers and tradespeople such as furniture makers, builders, decorators, installers, and machine mechanics, as well as machine operators and assemblers including drivers, machinists, and assembly line workers. Respondents also came from occupations not requiring specialised qualifications, such as cleaners, and included unemployed individuals.

### **Methodological tools and procedures**

The Job Stress Index (JSI) is a self-report questionnaire comprising 12 items rated on a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Prior to administration, the instrument underwent linguistic review and refinement by a philologist to ensure clarity, semantic accuracy, and appropriate academic style.

The JSI was originally developed by [Bernas and Major \(2000\)](#) to assess the psychological construct of perceived job stress. This construct refers to an individual’s subjective appraisal that environmental demands, particularly those associated with work, are experienced as excessively burdensome or as exceeding available personal resources. Such appraisals are reflected in measurable experiences of tension, perceived inadequacy, and psychological distress.

The questionnaire additionally examines work–family conflict and explores individual, organizational, and social factors associated with resilience to stress. Furthermore, it assesses protective resources, including emotional support from family, the quality of leader–member relationships, and individual resilience. These factors are examined in relation to their potential to reduce perceived occupational stress and mitigate work–family conflict, particularly among women ([Bernas & Major, 2000](#)).

## Results and discussion

### Descriptive statistics of raw/total score on the job stress scale

**Table 1.**

*Descriptive statistics of raw/total score on the job stress scale*

	<i>M</i>	Median (Md)	Mode (Mo)	<i>SD</i>	Skewness (Sk)	Kurtosis (K)
Job stress	29.20	28	24	11,963	0.600	-0.360

For the purposes of interpreting the results, normative ranges for the occupational stress indicator were established. The sample demonstrated a mean score of  $M = 29.20$  and a standard deviation of  $SD = 11.96$ . Based on these parameters, five normative intervals were calculated using the half-standard-deviation method. The resulting ranges allow for the differentiation of five levels of occupational stress: very low, low, moderate, high, and very high. The moderate level falls within the interval between 23.22 and 35.18 points, encompassing the majority of the observed scores within the sample. The results are presented in Table 2.

**Table 2.**

*Regulatory limits*

Level	Interval
Very low level of professional stress	Under 17.24
Low level	17.24-23.22
Intermediate level	23.23-35.18
High level	35.19-41.16
Very high level	Over 41.16

### Assessment of the Reliability of the Stress Scale (Cronbach's $\alpha$ )

In the original study by [Bernas and Major \(2000\)](#), as well as in subsequent research, Cronbach's alpha coefficients exceeding .85 were reported. This high level of internal consistency suggests that the instrument represents a stable and reliable measure of perceived occupational stress. In the present study, conducted with a sample of 412 participants, the reliability of the scale was evaluated using Cronbach's alpha.

**Table 3.**  
*Internal consistency of the stress scale (Cronbach's Alpha)*

Items	<i>M</i>	<i>SD</i>	Correlation with the total scale	Alpha if item deleted
1. I work under a great deal of tension.	2.84	1.32	.718	.938
2. I have too much work to do.	3.25	1.24	.618	.941
3. My working environment is very stressful.	2.51	1.25	.773	.936
4. I feel I cannot work long enough or hard enough.	2.38	1.26	.488	.945
5. I feel stressed by my job.	2.29	1.22	.828	.934
6. I feel as if I will never get all my work done.	2.33	1.35	.683	.939
7. It makes me tense to think about my job.	2.25	1.29	.770	.936
8. While at work, I feel there is too much pressure to get things done.	2.20	1.22	.817	.934
9. I have unwanted stress as a result of my present job.	2.6	1.29	.824	.934
10. I feel "burned-out" after a full day of work.	2.76	1.31	.731	.937
11. The tension I feel at work makes me unhappy.	2.02	1.24	.756	.936
12. My job is stressful.	2.20	1.31	.826	.934

The obtained Cronbach's alpha coefficient ( $\alpha = .942$ ) indicates excellent internal consistency, confirming that the 12 items measure dimensions of a common psychological construct. The mean scores of the individual items ranged from 2.02 to 3.25, with all items contributing positively to the overall reliability of the scale. No item demonstrated an increase in reliability if deleted, indicating that all items contribute meaningfully to the internal coherence of the instrument.

In order to assess the temporal stability of the measurement, a test-retest procedure was conducted. This approach enables the evaluation of the degree of consistency between the initial and repeated administrations of the instrument. The correlation analysis between the first administration (Test) and the second administration (Retest) revealed a **strong positive**

**association ( $r = .720$ )**, indicating that participants who obtained higher scores during the initial measurement also tended to obtain higher scores during the repeated measurement. These findings demonstrate **good test–retest reliability** of the instrument. Furthermore, the obtained correlation coefficient **was statistically significant ( $p < .001$ )**, suggesting that the likelihood of this result occurring by chance is extremely low.

### **Factor Analysis of the Work Stress Scale**

To examine the internal structure of the stress scale, exploratory factor analysis was conducted using Principal Component Analysis (PCA) with Varimax rotation. Preliminary analyses indicated that the data were suitable for factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .938, demonstrating excellent adequacy of the sample for factor extraction. In addition, Bartlett’s test of sphericity was statistically significant ( $\chi^2 = 3989.616$ ,  $p < .001$ ), confirming that the correlation matrix was appropriate for factor analysis and that the observed correlations were not random.

According to the Kaiser criterion, which retains factors with eigenvalues greater than 1, two factors were extracted, jointly accounting for 70.92% of the total variance. The first factor explained 36.42% of the variance, whereas the second factor accounted for 34.50%.

Following rotation, the factor loadings demonstrated a clear differentiation between the two factors. The first factor comprised variables associated with general workload and psycho-emotional exhaustion, while the second factor included variables related to cognitive pressure and perceived inefficiency. These findings support a two-factor structure of the stress scale.

The first factor, conceptualized as psycho-emotional stress, encompasses experiences related to emotional tension, irritability, feelings of helplessness, and internal overload. Factor loadings for these variables ranged between .64 and .75. The second factor, identified as cognitive stress, includes items reflecting difficulties in concentration, confusion, mental fatigue, and a perceived loss of control, with factor loadings ranging from .67 to .89.

Notably, seven of the twelve items demonstrated substantial cross-loadings, with coefficients exceeding .40 on both factors. This pattern may reflect overlapping content characteristic of both psycho-emotional and cognitive dimensions of job stress.

**Table 4.**  
*Factor analysis - rotated component matrix (Varimax)*

Items	Factor 1 Psycho-emotional exhaustion from work	Factor 2 Experiencing cognitive overload
8 While at work, I feel there is too much pressure to get things done.	<b>.754*</b>	<b>.450*</b>
7 It makes me tense to think about my job.	<b>.742*</b>	<b>.404*</b>
11 The tension I feel at work makes me unhappy.	<b>.712*</b>	<b>.419*</b>
9 I have unwanted stress as a result of my present job.	<b>.684*</b>	<b>.539*</b>
10 I feel "burned-out" after a full day of work.	<b>.636*</b>	<b>.456*</b>
4 I feel I cannot work long enough or hard enough.	<b>.740</b>	.011
6 I feel as if I will never get all my work done.	<b>.732</b>	.291
3 My working environment is very stressful.	.325	<b>.842</b>
1 I work under a great deal of tension.	.215	<b>.885</b>
2 I have too much work to do.	.192	<b>.765</b>
12 My job is stressful.	<b>.534*</b>	<b>.699*</b>
5 I feel stressed by my job.	<b>.559*</b>	<b>.669*</b>

*Note* : Loadings  $\geq 0.400$  are considered significant and indicate the degree of relationship between the variable and the factor. \* – variables with cross-loading.

The results of the present study allow for several general conclusions regarding the level and structure of occupational stress within the examined sample. The established normative ranges, derived from the mean and standard deviation, enable the differentiation of five levels of occupational stress, ranging from very low to very high. The observed distribution indicates that the majority of participants fall within the moderate range, suggesting an overall moderate level of perceived occupational stress within the sample.

Analysis of the distributional characteristics revealed moderate positive skewness, indicating a greater proportion of participants reporting lower to moderate levels of occupational stress. The relatively flatter distribution further suggests increased variability in individual scores around the mean.

The psychometric evaluation of the instrument demonstrated very high reliability. The obtained Cronbach's alpha coefficient ( $\alpha = .942$ ) indicates excellent internal consistency of the scale, while the results of the test–retest analysis ( $r = .720, p < .001$ ) confirm good temporal stability of the measurement.



Factor analysis revealed a two-factor structure comprising psycho-emotional and cognitive dimensions of occupational stress. The presence of cross-loadings among several items suggests an interrelationship between these two components, supporting the conceptualization of occupational stress as a complex and multidimensional psychological construct.

### **Normality of Distribution and Functionality of Distractors**

The item distributions demonstrated an acceptable approximation to normality, with skewness values ranging from  $-0.202$  to  $1.067$  and kurtosis values from  $-1.126$  to  $0.082$ , all within the acceptable statistical range of  $\pm 2$ . With the exception of Item 2, all items exhibited a consistent positive skewness ( $0.303 - 1.067$ ), accompanied by predominantly negative kurtosis, indicating relatively flat distributions and a concentration of responses in the lower response categories of the occupational stress scale.

Items 1 ( $Sk = 0.114$ ) and 2 ( $Sk = -0.202$ ) showed the most balanced distributional properties, with near-symmetrical response patterns and relatively even dispersion across categories. In contrast, Items 9 ( $Sk = 0.852$ ) and 11 ( $Sk = 1.067$ ) demonstrated pronounced positive skewness and a strong clustering of responses in the lower categories, suggesting reduced discriminative capacity.

Standard deviations remained relatively stable ( $SD = 1.22 - 1.35$ ), indicating satisfactory internal variability and adequate sensitivity of the instrument to individual differences.

Frequency analyses across all 12 items revealed a consistent tendency toward lower response categories on the five-point Likert scale. In most items, the highest frequencies were observed for response category 1 ("strongly disagree"), selected by 37.4% of respondents for Item 6, 39.1% for Item 7, 37.6% for Item 8, 43.4% for Item 9, 47.3% for Item 11, and 42.0% for Item 12. The second most frequent response category was option 2 ("disagree"), which also accounted for substantial proportions (e.g., 23.8% for Items 6 and 7; 27.4% for Item 8; 22.8% for Item 9; 24.3% for Item 11; and 22.8% for Item 12). A similar pattern was observed for Items 3, 4, and 5.

Overall, these findings indicate a general tendency toward lower endorsement of occupational stress across the sample.

Item 1 showed a relatively balanced distribution, with responses evenly distributed across categories 1–4 (20.1%–23.3%) and a lower proportion in category 5 (12.9%), indicating good response discrimination. A similar but slightly positively shifted pattern was observed for Item 2,

where the highest proportion of responses was recorded in category 3 (28.2%), followed by categories 4 (25.0%) and 5 (18.9%), suggesting a more even distribution compared to other items. In contrast, Items 3–12 displayed a marked concentration of responses in the lower categories. For example, more than half of the respondents selected categories 1 or 2 for Item 3 (53.4%), while this proportion reached 60.0% for Item 4. Concurrently, the proportion of responses in categories 4 and 5 remained relatively limited (20.4%). This tendency was further pronounced for Items 5, 6, and 7, where endorsement of the lowest category ranged between 33.3% and 39.1%, indicating a clear floor effect and a systematic bias toward low stress ratings.

### **Discriminative Power of Items**

The sample was divided using the extreme-groups method (27%), with the lowest 27% of the distribution (scores  $\leq 20$  points) forming the low-stress group ( $n = 121$ ), and the highest 27% (scores  $\geq 36$  points) forming the high-stress group ( $n = 120$ ). This grouping enables an evaluation of the discriminative capacity of the items through comparison of respondents with the lowest and highest overall levels of perceived occupational stress.

The adequate group sizes, together with acceptable deviations from normality, justified the application of the parametric Independent Samples t-test. In addition, the non-parametric Mann–Whitney U test was applied as a complementary procedure to verify the robustness of the results under potential violations of normality assumptions.

The group comparisons indicate statistically significant differences between the two groups across all items, with the high-stress group consistently demonstrating substantially higher mean values. For instance, for Item 1, the low-stress group showed a mean of  $M = 1.58$  ( $SD = 0.77$ ), whereas the high-stress group reached  $M = 4.13$  ( $SD = 0.88$ ). A similar pattern is observed across all remaining items, with mean differences ranging approximately between 1.7 and 3.0 scale points, indicating a clear and consistent separation between the groups. The largest mean differences were observed for Item 9 ( $M_{low} = 1.08$ ;  $M_{high} = 3.72$ ), Item 12 ( $M_{low} = 1.08$ ;  $M_{high} = 3.74$ ), and Item 5 ( $M_{low} = 1.13$ ;  $M_{high} = 3.65$ ). These findings are further supported by the t-test results, which confirmed statistically significant differences between groups for all items ( $p < .001$ ). The results are presented in Table 5.



**Table 5.**

*Comparative analysis of the discriminative power of the items between the weak and strong groups ( t-test and Mann–Whitney U test )*

Items	M	SD	M	SD	t	p	U	Z	p
Item 1	1.58	0.77	4.13	0.88	-23.96	<.001	491.50	-12.82	<.001
Item 2	2.18	1.06	4.25	0.79	-17.11	<.001	1174.00	-11.50	<.001
Item 3	1.34	0.56	3.80	0.96	-24.42	<.001	364.50	-13.17	<.001
Item 4	1.48	0.88	3.16	1.30	-11.75	<.001	2242.00	-9.69	<.001
Item 5	1.13	0.34	3.65	0.99	-26.38	<.001	346.00	-13.51	<.001
Item 6	1.24	0.52	3.53	1.28	-18.24	<.001	1085.00	-12.03	<.001
Item 7	1.19	0.52	3.63	1.07	-22.49	<.001	542.50	-13.10	<.001
Item 8	1.14	0.39	3.59	1.02	-24.55	<.001	462.00	-13.32	<.001
Item 9	1.08	0.28	3.72	1.04	-26.95	<.001	302.00	-13.70	<.001
Item 10	1.61	0.81	4.03	0.97	-20.92	<.001	694.50	-12.42	<.001
Item 11	1.10	0.44	3.38	1.18	-20.03	<.001	743.00	-13.96	<.001
Item 12	1.08	0.28	3.74	1.02	-27.55	<.001	186.00	-13.88	<.001

M = mean; SD = standard deviation; t = t-value from independent t-test; U = Mann–Whitney U; Z = standardized value. All differences are statistically significant at  $p < .001$ . The weak and strong groups were formed using the extreme 27% method.

The highest discriminative power is observed in Item 12 ( $t = -27.55$ ), Item 9 ( $t = -26.95$ ), and Item 5 ( $t = -26.38$ ), indicating an exceptionally strong capacity to distinguish between respondents with low and high total scores. Strong discriminative performance is also evident for Item 1 ( $t = -23.96$ ), Item 3 ( $t = -24.42$ ), Item 7 ( $t = -22.49$ ), and Item 8 ( $t = -24.55$ ), all of which display robust and consistent differences between groups. Items 10 and 11 exhibit slightly lower, yet still substantial, discriminative values ( $t_{10} = -20.91$ ;  $t_{11} = -20.03$ ), confirming their adequate functioning within the workplace stress scale. The weakest, although still statistically significant, discrimination is found for Item 4 ( $t = -11.75$ ), which aligns with the comparatively smaller mean difference between groups ( $M_{low} = 1.48$ ;  $M_{high} = 3.16$ ) and suggests a reduced but still meaningful capacity to differentiate respondents.

The Mann–Whitney U test fully corroborates these findings, indicating statistically significant differences between the low- and high-stress groups across all 12 items ( $p < .001$  for all). This convergence provides strong evidence for the stability of the scale's discriminative properties, even when assumptions of normality are relaxed. The analysis of Z-values further confirms consistently high sensitivity to group differences, with the most pronounced effects observed in Item 12 ( $Z = -13.884$ ), Item 9 ( $Z = -13.701$ ), Item 5 ( $Z = -13.508$ ), Item 8 ( $Z = -13.318$ ), and Item



3 ( $Z = -13.173$ ). These items demonstrate the greatest ability to differentiate respondents according to levels of perceived occupational stress. The remaining items also show strong discriminative performance, with Z-values generally ranging from approximately  $-12.0$  to  $-13.1$ , including Items 1, 6, 7, 10, and 11. The weakest, though still statistically significant, discrimination is again observed for Item 2 ( $Z = -11.495$ ) and Item 4 ( $Z = -9.685$ ), with Item 4 emerging as the least efficient indicator within the scale.

In summary, the instrument includes a combination of highly efficient items and a smaller number of items that may require revision due to a pronounced floor effect and reduced variability. The most evident concentration of low scores is found in Items 9, 11, and 12, where the response option “1” is selected by 43.4%, 47.3%, and 42.0% of respondents, respectively. In these cases, more than two-thirds of participants fall within the lowest two response categories, indicating a marked floor effect and restricted dispersion at the upper end of the stress continuum.

### Limitations of the Study

The main limitations of the present study include the following: (1) the sample is restricted to individuals aged between 42 and 65 years; (2) the sample is not gender-balanced; and (3) a proportion of the respondents are practitioners of yoga, which may have influenced their levels of perceived stress and coping strategies. Overall, the present findings may be of value to researchers engaged in the measurement of job stress.

### Conclusion

The present study provides evidence supporting the validity and reliability of the Job Stress Index (JSI). Future research is recommended to replicate the study using a larger, randomly selected sample representative of the Bulgarian population. Despite its limitations, this study contributes to the development of a validated instrument for the assessment of occupational stress, which is of particular relevance to work and organizational psychology. The JSI offers a reliable method for evaluating employees' emotional and psychological states and may be applied in the processes of assessment, intervention planning, and progress monitoring. Overall, the strong convergence between parametric and non-parametric results, together with the consistent ranking of item effects, provides compelling evidence for the discriminant validity of the scale. Both analytical approaches confirm statistically significant differences between low- and high-stress groups ( $p < .001$  across all items), with the high-stress group consistently exhibiting higher scores and ranks. Although discriminative strength varies across items, with Items 12, 9, and 5



performing best and Item 4 performing least strongly, all items demonstrate statistically significant and practically relevant discriminative validity. Collectively, these results confirm that the questionnaire possesses a high and stable capacity to distinguish between individuals with low and high levels of perceived occupational stress.

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