

The Development of the Job Stressor Appraisal Scale as Part of the Job Stress Battery

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Abstract. This study introduces the psychometric qualities of the Job Stressor Appraisal Scale (JSAS), a part of the Job Stress Battery, which comprehensively measures job stress in terms of job stressors, moderators, and strains. The JSAS measures employees' appraisals of job stressors by considering both their frequency and intensity. To test its psychometric qualities, we administered the JSAS to a sample of 1,069 employees in Turkey. Factor analysis revealed a 5-factor structure, with 43 items explaining 46.1% of the variance. Cronbach's α coefficients of the factors and the total scale varied between .66 and .93. In terms of construct and convergent validities, results generally showed significant correlations in the expected directions. These findings obtained on the validity and reliability of the scale imply good psychometric qualities.

Keywords: job stress, job stressors, scale, Turkey

To date, stress has been studied as a stimulus (environmental demands), as a response (reactions to demands), and as an interaction between demands and responses (Beehr, 1976). In recent years, a successor to the interactional model, the transactional model of stress, was proposed, which defines stress as the perceived result of a transaction between the individual and the environment in which the individual's continual cognitive evaluation takes place (Lazarus, 1991). Researchers emphasized that contemporary job stress research should adopt the transactional approach, since it provides the opportunity to describe the dynamics of the entire process including job stressors, strains, and moderators/mediators between them (e.g., Hurrell, Nelson, & Simmons, 1998).

Different conceptualizations of stress have also affected the approaches toward its measurement. Some job stress scales have been frequently used in job stress research, such as the Job Stress Survey (Vagg & Spielberger, 1998), the Pressure Management Indicator (Williams & Cooper, 1998), and the Job Content Questionnaire (Karasek, 1979). Besides these, there are also more recent scales in the literature, like the Stress in General Scale (Stanton, Balzer, Smith, Parra, & Ironson, 2001), the UK Health and Safety Executive's Management Standards Work-Related Stress Indicator Tool (Edwards, Webster, Van Laar, & Easton, 2008), and A Shortened Stress Evaluation Tool (Faragher, Cooper, & Cartwright, 2004).

All of these measures evaluate different aspects of job stress/stressors; however, few simultaneously assess strain

experienced or moderator variables such as personality, coping, and social support, which might play important roles between job stressors and strains. Some of these tools measure only the frequency of job stressors, an approach criticized by Dewe (1989), who emphasized that the frequency and intensity of stressors (e.g., how much disturbance it gives to the individual) should also be taken into account. Vagg and Spielberger (1998) suggest that if the intensity of the stressors is not measured, the effect of those stressors infrequently faced is ignored. Similar problems exist among job stress scales used in Turkey. The most comprehensive stress scale existing there is the Stress Audit Scale, which was adapted by Şahin and Durak-Batgün (1997). However, there is no instrument in Turkey that measures stressors, moderators, and outcomes simultaneously.

For the above reasons, it seems necessary to develop a comprehensive job stress battery to overcome the limitations of job stress measures developed previously. Therefore, we decided to develop a comprehensive job stress battery, including measures of stressors (both frequency and intensity), strain (both organizational and individual), as well as moderating variables.

This study presents the psychometric qualities of the Job Stressor Appraisal Scale (JSAS) of the battery. It contributes to the literature in several ways: First of all, as suggested by Vagg and Spielberger (1998), it evaluates both the frequency and intensity of job stressors. Second, in accordance with the suggestion by Hurrell et al.

(1998), it encompasses a wide variety of job stressors and includes new ones suggested in the literature, such as emotional labor and mobbing. Third, since it does not include occupation-specific items, it can be used for all employees, meaning that it allows for comparisons of the experience of stressors across occupations and organizations.

Various methods were used to test the validity of our scale. For construct validity, exploratory factor analyses were conducted for construct validity, and the relationships of the factors with each other and with the scale were examined. For convergent validity, we investigated the relationship between the JSAS and another job stress scale. Moreover, we examined the relationships between our scale and various personal and organizational outcomes, such as job satisfaction, affective commitment, and intention to leave.

Development of the JSAS

In order to determine the job stressors to be included in the JSAS, we first conducted a comprehensive literature review. While many stressor classifications exist in the literature, we adopted the classification suggested by Cooper and Marshall (1976), who categorized stressors in five groups: “intrinsic job characteristics,” “organizational roles,” “work relationships,” “career issues,” and “organizational characteristics.” Since then, a new category has been added to these five: “home-work interface” (see Cartwright & Cooper, 1997).

Intrinsic job characteristics refer to working conditions. Research has shown that certain physical aspects of work environments, workload, long working hours, and shift-work have negative effects on employees’ health (Lundberg & Frankenhaeuser, 1999; Vischer, 2007).

In terms of organizational roles, we know that role ambiguity, role conflict (Örtqvist & Vincent, 2006), and lack of responsibility (Seegers & Van Elderen, 1996) are related to many negative organizational and individual outcomes. Studies regarding relationships at work have shown that adverse work relationships can cause strain (Motowidlo, Packard, & Manning, 1986). Career-related issues like job insecurity, promotion, and job relocation might also be important job stressors (Ito & Brotheridge, 2009; Mak & Mueller, 2000). Another group of stressors is related to the benefits and requirements of the job. Insufficient salary and social benefits might be a stressor for employees (Bednar, Marshall, & Bahouth, 1995). Lack of resources and means to do the job accurately (Malach-Pines & Keinan, 2007), and certain requirements of the job, such as the necessity to travel, may also cause stress (Striker, Luippold, Nagy, Liese, Bigelow, & Mundt, 1999).

At the organizational level, organizational structure (i.e., bureaucratic), social climate (i.e., communication styles), and change (i.e., downsizing) might cause stress among

employees (Bedeian, Armenakis, & Curran, 1981; Rafferty & Griffin, 2006). Also, negative practices displayed toward employees, e.g., discrimination and injustice, are other workplace stressors (Judge & Colquitt, 2004).

Moreover, researchers have taken some other work-related issues into account as stressors, such as the use of technology (Karasek & Theorell, 1990), emotional labor (Pugliesi, 1999), and underemployment (Dooley, Prause, & Ham-Rowbottom, 2000). Finally, organizational outcomes, such as lack of job satisfaction and poor person-organization fit should be considered stressors (French, Caplan, & Harrison, 1982; Guppy & Gutteridge, 1991).

Based on the literature review, we developed a pool of 77 items where each job stressor was represented by at least one item. For the items with a larger content, the number of items was increased to two or three. Four items were specifically written for employees with subordinates.

In the scale, each job stressor is evaluated regarding both its frequency and the intensity it causes. In other words, participants are first asked to indicate the frequency of a particular job stressor on a five-point response scale ranging from *never* to *always* (scored from 0–4), and then to indicate the discomfort they perceive as a result of this job stressor on a 10-point scale ranging from *nothing to a lot* (scored from 0–9). The instructions underline that a respondent who does not face a particular job stressor (when the frequency is “0”) should not reply to the intensity part. Frequency and intensity scores are multiplied for each job stress item to obtain a total score. For the sake of objectivity, as Jex, Beehr and Roberts (1992) suggested, we avoided using the term “stress” in the scale.

Method

Sample and Procedure

We distributed the scales to voluntary undergraduate students of a state university in Turkey and asked them to hand out the scales to employed people from among their family members and their social network. Students were informed about the scales and administration procedures and were not offered any credit.

In this study, 1,321 employees took part. However, 252 were excluded due to missing information. As a result, a total of 1,069 employees from various sectors and positions completed the JSAS. A portion of the sample ($n = 168$ –199) were administered the validity scales after 2 to 4 weeks.

The mean age of the sample is 33.6; 49.3% are female; 60.9% have a graduate degree; 54% are in professional, technical, or managerial occupations, 49.1% are working for services sector, and 53.4% have worked for their organization for 1 to 5 years.

Table 1. Factors, items, factor loadings, and common variance values obtained after oblique rotation

Factor/Item	Factor Loading					Communality
	1	2	3	4	5	
<i>Organizational Rules and Practices</i> 16 items. Eigenvalue: 11.8, Variance: 27.5%						
61	There are ambiguous and inconsistent practices of rules, politics, and goals in my organization.	.74				.64
72	I think the practices and treatment toward employees in my workplace are unfair.	.72				.67
56	There are people in my organization who are undeservingly promoted to positions above their capacities in terms of knowledge, skills, and ability.	.69				.60
70	My organization causes problems regarding the supply of materials, support, or budget that I need while doing my job.	.65				.46
73	In my opinion, the method used to appraise of my performance is unfair.	.65				.61
69	I think when compared to my responsibilities my authority is low.	.57				.47
54	In my opinion, the employees in my organization have insufficient personal rights (social rights, insurance, health services, leave, etc.).	.54				.36
37	The appreciation I get is insufficient compared to the job I do.	.49				.53
60	In my workplace, people talk behind each others' backs.	.49				.52
49	Promotion opportunities are limited in my organization.	.47				.41
43	My organization's work ethic, treatment of employees, and values contradict my own.	.46				.48
18	Although they do not feel ready, employees might be promoted too rapidly in my organization.	.45				.35
38	It is difficult to get along with my manager.	.41				.62
44	I feel that in joint tasks, my colleagues' responsibilities are also loaded on me.	.37				.51
8	There are bureaucratic procedures in my workplaces.	.36				.36
12	I think the wage I receive for the work I do is insufficient.	.30				.33
<i>Role and Work Overload</i> 10 items. Eigenvalue: 2.7, Variance: 6.2%						
59	I have to carry out many difficult and complicated tasks simultaneously.	.73				.60
68	I have to do too much work in too little time.	.61				.60
47	During the day, I have to answer endless phone calls while I'm doing my job.	.60				.44
21	I have to keep my mobile phone on for the calls from my organization, even after out-of-office hours.	.57				.44
6	My work requires making critical decision on various matters during a day.	.56				.45
51	My performance is expected to be high in more than one aspect at the same time.	.52				.55
1	Due to things I am required to do, I leave work late.	.47				.44
58	For my work, I have to put on a smiling face even though I do not want to.	.44				.33
31	In my workplace, my performance is appraised.	.36				.38
22	My work affects my family and social life negatively.	.31				.57
<i>Insecure Relationships</i> 10 items. Eigenvalue: 2.2, Variance: 5.2%						
34	I feel that most of my colleagues do not trust me.	.75				.63
4	I feel some of my colleagues do not trust me.	.70				.51
11	I am not sure whether they are satisfied with my performance at my workplace.	.56				.43
28	I feel that my manager does not trust me.	.52				.49
32	I think that some people in my organization are looking forward to my resignation.	.47				.46
10	I feel there is ambiguity about whose subordinate I am.	.43				.44
27	I have communication problems with most of my colleagues.	.35				.41

Table 1 continued

Factor/Item	Factor Loading					Communality
	1	2	3	4	5	
9 I am working with the thought I might be fired at any time.			.35			.37
50 Although I do not deserve it, I am exposed to insulting behaviors of others at my workplace.			.34			.60
35 There is a lot of competition among employees at my workplace.			.33			.46
<i>Role Insufficiency</i> 4 items. Eigenvalue: 1.7, Variance: 3.9%						
63 The work I do hinders my personnel development.				.67		.50
26 I think my job is monotonous.				.64		.51
65 Generally speaking, I can say that I am not satisfied with my job.				.61		.58
3 I think I am underemployed in terms of knowledge, skills, and ability.				.48		.35
<i>Physical Work Demands</i> 3 items. Eigenvalue: 1.5, Variance: 3.5%						
46 The physical environment of my work is harmful for my health (noise, chemical substances, health, pollution, or inconvenient work conditions).					.62	.51
42 My work setting has a risk of accidents.					.55	.63
30 My work requires kinds of tasks which place too much strain on parts of my body.					.53	.41

Notes. Anyone interested in the Turkish or English version of the scale can contact with the corresponding author. The items of the Subordinate Related Stress Dimension are as follows:

74. I have some subordinates who I do not trust.
 75. I experience problems in my relationships with some of my subordinates.
 76. I have difficulty with my authority being accepted by my subordinates.
 77. I have subordinates whose work knowledge and skills I find insufficient.

Measures

The Job Satisfaction Scale

We used a 4-item job satisfaction scale developed by Os-hagbemi (1999) adapted to Turkish by Özalp Türetgen (2006). The responses are obtained on a 5-point scale.

The Affective Commitment Scale

Eight items from the Organizational Commitment Scale (Meyer, Allen, & Smith, 1993) were used to measure affective commitment. The scale was adapted to Turkish by Wasti (2003) and has a 7-point response scale.

The Intention to Leave Scale

This 2-item scale was developed by Özbenli (1999) and has a 5-point response scale.

The Stress Audit Scale

The Stress Audit Scale was developed by Miller, Smith, and Mahler and was adapted to Turkish by Şahin and Durak-Batıgün (1997). It consists of 41 items that evaluate stress level on a 5-point response scale. Respondents are also presented another optional response *not valid* to indicate that the item is not appropriate to them.

Results

An exploratory factor analysis was conducted for the construct validity of the scale using the principal axis method and oblique rotation ($n = 1,069$). We did not include subordinate related items in the factor analysis, since that would have led to conducting the analysis with only a manager sample. The KMO coefficient was found to be .94, and the Bartlett test value was 30538.344 ($p = .000$). The unrotated component matrix revealed that the factor loadings of 13 items on the principle component were below .30, so that they were excluded from the scale.

On the basis of eigenvalues, the explained variance and the scree plot examination, a 5-factor varimax rotation was performed. The items loading only 1 factor with a factor load above .30 were kept in the scale. This 43-item and 5-factor structure explained 46.1% of the total variance. These factors, named after examining the contents of the items, include "Organizational Norms and Practices," "Role and Work Overload," "Insecure Relationships," "Role Insufficiency," and "Physical Work Demands." Items regarding subordinate relationships were called "Relationships with Subordinates" and kept in the scale for further psychometric analyses. The items and their factor loadings are presented in Table 1.

Table 2 presents descriptive statistics, Cronbach's α coefficients, and the intercorrelations among the factors and validity scales.

The items in the scale were examined in terms of the

Table 2. Descriptive statistics, Cronbach's α coefficients, and intercorrelations of factors, total score and validity scales ($n = 1,069$)

Factors	Mean	SD	Min.	Max.	α	1	2	3	4	5	6	7
Stress audit ($n = 199$)	90.7	35.7	12	183	.94	.41**	.34**	.40**	.24**	.23**	.46**	.40** ¹
Job satisfaction ($n = 168$)	11.9	3.3	2	19	.85	-.36**	-.23**	-.22*	-.47**	-.26**	-.39**	-.29** ²
Affective commitment ($n = 171$)	36.9	11.4	10	56	.87	-.33**	-.08	-.23**	-.41**	-.19*	-.32**	-.19# ³
Intention to leave ($n = 170$)	5.0	2.5	2	12	.76	.37**	.21**	.32*	.45**	.27**	.41**	.31* ⁴
1. Organizational norms and practices	8.7	7.0	0	35.4	.90	–	.55**	.59**	.55**	.42**	.92**	.57**
2. Role and work overload	7.8	6.6	0	32.9	.83	–	–	.46**	.36**	.38**	.77**	.36**
3. Insecure relationships	3.2	4.2	0	34.8	.81	–	–	–	.43**	.34**	.74**	.46**
4. Role insufficiency	7.0	7.8	0	36.0	.75	–	–	–	–	.33**	.66**	.42**
5. Physical work demands	5.6	7.8	0	36.0	.66	–	–	–	–	–	.55**	.27**
6. Total scale	6.8	5.1	0	30.1	.93	–	–	–	–	–	–	.57**
7. Subordinate-related stress dimension ($n = 586$)	6.7	7.6	0	36.0	.83	–	–	–	–	–	–	–

Notes. # $p < .10$, * $p < .05$, ** $p < .01$, ¹ $n = 99$, ² $n = 95$, ³ $n = 97$, ⁴ $n = 97$.

correlations between their frequency and intensity. According to the scoring format, a participant who responds “never” to the frequency scale of a particular item should not respond to the intensity scale of that item. We coded the intensity scores of these items as “0.” However, this method of coding artificially increased the correlation coefficient between frequency and intensity scores. Therefore, we excluded the participants who replied “never” to any of the frequency items from the analyses. The mean correlation was .53, where the minimum correlation was observed for item 31 ($r = .06$, $p > .05$), and the maximum for item 12 ($r = .75$, $p = .000$).

In addition, we separately investigated the correlations of intensity and frequency scores with validity scales. These correlations were similar to the correlations between the validity scales and the JSAS, and all its factors except for “Role and Work Overload.” For that factor, the intensity scores’ correlations with job satisfaction ($r = -.23$, $p < .01$) and intention to leave ($r = .23$, $p < .01$) were different from those of the relations frequency scale ($r = .07$, $p > .05$; $r = .09$, $p > .05$, respectively).

Discussion

This study develops a psychometrically sound scale to assess not only the frequency, but also the intensity of stressors in various occupational groups. The results support this major goal.

The exploratory factor analysis shows that JSAS has a 5-factor structure with a total of 43 items. The factor structure of the scale is consistent with the factor structures of other scales in the job stress literature (e.g., Cooper & Marshall, 1976; Williams & Cooper, 1998). Based on the analysis, the final version of the scale no longer includes some stressors (e.g., using technology, travel to work, and role conflict). The scale and its factors show a sufficient level

of internal reliability, except for “Physical Work Demands.” While there is no consensus regarding the minimum reliability coefficient a measurement tool has to have, it is generally expected to be higher than .70 (Urbina, 2004). Therefore, researchers need to be careful about using that factor alone as a separate tool.

The significant correlations among the factors can be seen as evidence for construct validity. Furthermore, the strong associations of the dimension “Subordinate Related Stress” with other factors, as well as with the scale, may show that these four items can be accepted as a dimension of job stress constructs.

The correlation between the JSAS and another job stress measure was calculated for convergent validity, as in the first analysis. The positive significant relationship between the JSAS and the Stress Audit Scale means that these two tools measure the same construct, but the correlation value, which is not too high, shows they assess different types of stressors and use different approaches to evaluate them.

The relationships between the JSAS and organizational outcomes were investigated as in the second analysis. The negative, and significant, relationship between the scale and job satisfaction is consistent with the literature findings (e.g., Williams et al., 2001). For the factors, it is obvious that significant positive relationships support the previous literature results. There is significant evidence that organizational practices, relationships (e.g., Penney & Spector, 2005), physical environmental conditions (e.g., Gelsema, van der Doef, Maes, Akerboom, & Verhoeven, 2005), work, and role demand stressors (e.g., Noblet, Rodwell, & Allisey, 2009) affect job satisfaction negatively.

Consistent with previous results, we found that, while job stress has negative a relationship with affective commitment (e.g., Boswell, Olson-Buchanan, & LePine, 2004), it has a positive relationship with intention to leave (Boswell et al., 2004). It is not surprising that the “Role and Work Overload” stressor did not show a significant relationship with affective commitment. There are some incon-

sistent results in the literature: While in some studies negative relationships were found between these types of stressors and organizational commitment (e.g., Jones, Chonko, Rangarajan, & Roberts, 2007), other studies report no relationships between them (Lambert, Hogan, Paoline, & Clarke, 2005).

As Vagg and Spielberger (1998) found concerning the relationship between frequency and intensity scores of the items, the mean coefficient value was moderate, and all of the coefficients varied between low and strong. Additionally, the frequency and intensity scores of the factors correlated similarly with validity scales in general. These findings show that the frequency and intensity assessment of stressors are not identical. Therefore, consideration of multiplication of frequency and intensity would provide a better picture of stress experience.

In future studies, additional evidence should be provided regarding the further psychometric properties of the present scales, such as test-retest reliability and crossvalidity. Additionally, in order to test the discriminative validity of the scale, JSAS scores of those employed in highly stressful jobs might be compared to those working in jobs with low stress.

The evidence collected regarding the psychometric qualities of the scale is valuable. Most importantly, this scale is one of the main scales of the Job Stress Battery, which is currently being developed, and enables the evaluation of job stress using the transactional approach. The scale can be used to investigate various topics with respect to job stress.

In summary, these findings show that the JSAS is a useful measure for evaluating job stress and planning stress interventions at the individual, organizational, sectoral, and societal levels.

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