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MANAGEMENT | RESEARCH ARTICLE

Development of short questionnaire to measure an extended set of role expectation conflict, coworker support and work-life balance: The new job stress scale

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Abstract: This study aimed to investigate the reliability and validity of a new version of job stress scale, which measures the extended set of psychosocial stressors by adding new scales to the current version of the job stress scale. Additional scales were extensively collected from theoretical job stress models and similar questionnaire from different countries. Items were tested in workplace and refined through a pilot survey ($n = 400$) to examine the reliability and construct validity. Most scales showed acceptable levels of internal consistency, intra-class reliability, and test-retest reliability. Factor analysis and correlation analysis showed that these scales fit the theoretical expectations. These findings provided enough evidences that the new job stress scale is reliable and valid. Although confirmatory analysis should be examined in future studies. The new job stress scale is a useful instrument for organization and academicians to evaluate job stress in modern Indian workplace.

Subjects: Behavioral Sciences; Development Studies, Environment, Social Work, Urban Studies; Social Sciences

Keywords: job stress; reliability; stress assessment; validity; factor analysis



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PUBLIC INTEREST STATEMENT

A silent killer is rooted in Indian industry, and now it is taking its toll. In India, job stress is one of the single largest sources of anxiety for working adults. Nowadays, on-the-job stressors are caused due to fuzzy job expectations, deadline pressures, and noisy work areas, which are compounded by social stresses such as child care, fraying marriages, and family relationships. For measuring the job stress, it is important to have an accurate and updated instrument, which can measure the modern factors causing job stress. This study is aimed to investigate about the new version of job stress questionnaire, which measures the extended set of psychosocial stressors by adding new dynamics to the existing job stress scale. The new job stress questionnaire is a useful instrument for organizations and academicians, to evaluate the causes of job stress in modern Indian workplace.

1. Introduction

Occupational role stress is the stress experienced by the persons due to their role (job) in the organization. Job stress is defined as the harmful physical and emotional responses that occur when role (job) requirements do not match with the employees' capabilities, resources, and needs (National Institute for Occupational Safety & Health, 1999). Occupational role stress and job stress are interchangeable terms (Frone, 1990). The twenty-first century is a time of globalization, the revolution of information, and speed (Cascio, 2001). Change is only a factor appears to be constant in the organization (Mossholder, Settoon, Armenakis, & Harris, 2000). In this rapidly changing environment, characterized by intensified competition and escalating demands for flexibility and adjustment, organizations have taken strong decisions such as outsourcing, downsizing, and mergers in order to adapt to the new situation (Hellgren & Sverke, 2003). Job stress created in the organization due to changes in the global economy. Job stress among employees is not a new phenomenon. There are many studies which specifically addresses to the concerns of job stress and their consequences. Stress can evoke the negative emotions like fear, frustration, sadness, and anger (Cavanaugh, 1988). Job stressors such as workload, working conditions, and expectation from management cause strain (Behr & Glazer, 2001) and can lead to poor health of employees.

The organizational stress framework includes sources of work stress, such as role conflict, role ambiguity, work overload, and role expectations. The demographic variables such as age, sex, occupation, health status, education, and social support also can influence occupational stress (Matteson & Ivancivich, 1989). Men and women experience many of the same stressors (Desmarais & Alksnis, 2005). Work stress studies in India have been conducted on various groups such as teachers (Aggarwal, 1972; Dixit, 1986; Kumar, 2001; Malik, 1996; Negi, 1974; Padmanabhaiah, 1986; Wadhwa, 1977), banking sector (Bhatnagar & Bose, 1985; Elahi & Apoorva, 2012), information technology sector (Rao Jakkula & Chandraiah, 2012).

Job stress is a major concern for Indian employers, due to demanding schedules and high level of stress, nearly 78% of corporate employees in India sleep less than six hours a day, leading to severe sleep disorders (Associated Chambers of Commerce and Industry of India [ASSOCHAM], 2012, <http://www.bpmwatch.com/research/attrition-rate-falls-in-it-bpo-sector-assochem/>). The survey pointed out that 21% of the people in the sample suffered from depression. Stressors are dynamic in nature, it change according to individual characteristics and environment (Lecic Tosevski, Vukovic, & Stepanovic, 2011).

Sources of managerial stress have been well documented since the late 1970s. Ivancevich and Matteson (1980) identified four categories of work stressors: physical environment, individual level (a mixer of role and career development variables), group level (primarily relationship-based), and organizational level (a mixture of climate, structure, job design, and task characteristic). Schuler (1982) also identifies seven categories of work stressors in organizations: job qualities, relationships, organizational structure, physical qualities, career development, change and role in the organization. Quick and Quick (1984) proposed four categories of stressors: task demands, physical demands, and interpersonal demands. Cooper and Marshall's (Cooper & Marshall, 1976; Marshall & Cooper, 1979) Stress at Work model is similar to PE-Fit theory, but is more specific in identifying five major categories of job pressure and lack of organizational support in the workplace that contribute to occupational stress: (1) pressures intrinsic to the job; (2) the employee's role in the organization; (3) interpersonal relationships at work; (4) limitations in career development; and (5) organizational structure and climate. Cooper (1983, 1985) summarized and categorized six factors responsible for stress (1) Intrinsic factors related to the job (heat, noise, chemical fumes, shift work); (2) Relationships at work (conflict with co-workers or supervisors, lack of social support); (3) Role in the organization (for example, role ambiguity); (4) Career development (lack of status, lack of prospects for promotion, lack of a career path, job insecurity); (5) Organizational structure and climate (lack of autonomy, lack of opportunity to participate in decision-making, lack of control over the pace of work); (6) Home and work interface (conflict between domestic and work roles; lack of spousal support for remaining in the workforce).

The diversity of concepts and models of job stress has made it difficult to summarize or statistically aggregate the research results and to draw on a cumulative body of substantiated theory in order to set new directions for investigation. Theoretical diversity in stress research has also fostered the development of a number of incongruous research scales and stress inventories. Available measures differ according to their applicability to various occupations, their theoretical basis, and their completeness in representing the domain of organizational stressors.

Job stress in India measured by two occupational stress instruments (Pareek, 1981; Srivastava & Singh, 1981). Job stress scale (Pareek, 1981) identified ten only role-related job stress dimensions (inter-role distance, role stagnation, role expectation conflict, role erosion, role overload, role isolation, personal inadequacy, self role distance, role ambiguity, and resource inadequacy) to measure job stress, whereas occupations stress index (Srivastava & Singh, 1981) identified 12 dimensions related to role and organizational working conditions. Whereas, due to the effects of modernization, specifically happening in India in recent times, have led to drastically change the socioeconomic, socio-philosophical, and cultural perspective of employee's lives, which have augmented the stress in their life, leading to substantially higher rates of suicides (Gehlot & Nathawat, 1983). In India, the high rate of suicide among young adults can be associated with greater socioeconomic stressors that have followed the liberalization of the economy and privatization leading to the job insecurity, huge disparities in incomes, and the inability to meet role obligations in the new socially changed environment (Vijaykumar, 2007). The breakdown of the joint family system that had previously provided emotional support and stability is also seen as an important causal factor of increasing suicides in India (De Leo, 2003). Relationships in organizations, as well as in the personal life, do play an important role in providing an emotional support. Therefore, it is necessary to include social stressors such as relationship in the Indian job stress questionnaire.

The intention of present study is to identify the potential stressors, which was selected from stress-related literature includes previous developed scales and develops a new job stress measurement tool for Indian population. This study identifies important stressors from the previous studies and introduces newly induced stressors among the Indian employees. As of now, there is no instrument available to measure all these identified stressors for Indian population. Although identified factors are well established in reference to other countries, but there exist no literature regarding validation of the identified stressors specifically on Indian population. This study motivates from various reasons: Firstly, there is an older instrument available for measuring job stress, which is deficient by new stressors induced in Indian population. Secondly, there is no instrument available, that includes different psychosocial stressors, and lastly there is lack of literature available regarding the validation of the identified stressors with reference to Indian population. Therefore, there is a scope to develop a new job stress questionnaire, by including all important psychosocial stressors according to target population and validate it.

Previous studies have shown that "assessing and improving work environment" effectively reduces mental health problems (Kawakami, 2002; Semmer, 2006). Psychosocial stress, like other risk factors in the working environment (e.g. lighting, noise) should be subjected to constant monitoring (compare, e.g. Kompier & Levi, 1994), which allows to identify its sources and to measure the level of intensity. The intervention programs are designed based on stress measured by the organization. Stress has been studied from the different perspectives of individual differences, organizational factors, job-related factor, environmental factors, social factors and mixtures of five. A recent meta-analysis of 79 studies reported cross-sectional and longitudinal relationships between physical symptoms and various occupational stressors. Major stressors identified were organizational constraints, interpersonal conflict, role conflict, role ambiguity, workload, work hours, and lack of control were found to be significantly associated with physical symptoms (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011). Work-life conflict is associated with employee burnout, mental health issues, substance abuse, and diminished family functioning (Lingard, Brown, Bradley, Bailey, & Townsend, 2007). Research in work-life conflict has typically examined the conflicts due to an interaction between the two roles. Such research has investigated various factors (for example marital status,

child-care responsibilities, and work stress) in each sphere contributing to work-life conflict (Boyar, Maertz, Pearson, & Keough, 2003). Further, some researchers (Luk & Shaffer, 2005; Poelmans et al., 2003) have found that there is a shortcoming of existing research with reference to different countries, as well as, very little work has been carried out in the Asia-pacific region.

However, more than thirty years have passed since the development of the existing measurement tool and since then, the field of job stress and workplace mental health has developed rapidly. First, in addition to these tools, different job stress questionnaire have been developed (Cummins, 1990; Quick & Quick, 1984; Williams & Cooper, 1998) with reference to different countries. Second, recent research in this field is focused on stressors caused due to imbalance in relationships and job expectations. Third, advancing research on work-life conflicts has indicated both positive and negative effects on employees mental health. These psychosocial factors are useful, practical, and irreplaceable. Previous studies reported a large number of individual self-report scales (Table 1). Most of the reported factors (Table 1) are included in the job stress scale (Jamal & Baba, 2000; Parker & DeCotiis, 1983). It measures job stress through six stressors identified in job stress scale for e.g. job characteristics, organizational structure, climate and information flow, role, relationship, career development, external commitments and responsibilities (Jamal & Baba, 2000; Parker & DeCotiis, 1983).

While executing the JS aforementioned scale on Indian respondents it was inferred by the author that majority of them were unable to understand the relationship stressors. When the relationship stressors were executed, most of the respondents were found to be confused to rate either their organizational relationship or personal relationship. Moreover, in India there has been no instrument, which is used to measure psychosocial variables refer to working conditions, peer relationship, and role-related conflicts. Even, these psychosocial stressors cannot be measured by current job stress scale (Jamal & Baba, 2000; Parker & DeCotiis, 1983) Therefore, it is important to extend the questionnaire by including organizational relationship (peer support), personal relationship (work-life balance), and role expectation conflict which leads to stress in workplace. One of the major factors hindering research into job stress is the lack of newly job stressors in the measurement tools according to Indian population. The absence of a reliable, valid, and usable standardized measuring instrument makes studies of job stress highly problematic (Love & Beehr, 1981).

The development of this instrument based on Parker and DeCotiis (1983) identified stressors. It consists of two main scales—Anxiety stress and time stress—and three additional scales adapted from the role expectation conflict, coworker support, and work-life balance (Brough, Timms, & Bauld, 2009; O'Driscoll, Brough, & Kalliath, 2004; Srivastava & Singh, 1981), found top stressors in India (Tower Watson Survey, 2014). Parker and DeCotiis (1983) proposed six specific causes of work stress which include job characteristics, organizational structure, climate and information flow, role, relationship, career development and external commitments and responsibilities which was divided in two dimensions. One dimension was time stress (feelings of being under constant pressure) and the second dimension was found to be anxiety (job-related feelings of anxiety). All these factors do corroborate with our discussion held with top management officials of Indian organization. Moreover, the existing management literature with reference to Indian organizations does support that these identified stressors are important according to Indian employees and should be included in the questionnaire to measure their job stress. This instrument used widely across the globe, demonstrated high internal consistency reliability ranging from .74 to .89 across different occupational groups and cultures (Addae & Wang, 2006; Glazer & Kruse, 2008; Hsieh, 2004; Jamal, 2007; Parker & DeCotiis, 1983; Xie, 1996). The scale was also used and found to be reliable among nurses working in Canadian hospital reporting a Cronbach's alpha of .84 (Jamal & Baba, 2000).

Therefore, the purpose of the present study was to develop a new version of the job stress scale/questionnaire for the Indian population, which can measure nine identified stressors job characteristics, organizational structure, climate and information flow, role, relationship, career development, external commitments and responsibilities, role conflict, coworker support, and work-life balance. Thus, this instrument is very effective to measure psychosocial work environment and related stress.

Table 1. Review of self report scales

Stressors/authors scale	Zander and Quinn (1962)	Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964)	Cooper and Marshal (1976)	Ivancevic and Matteson (1980)	Parek (1981)	Srivastav and Singh (1981)	Schuler (1982)	Parker and Decotis (1983)	Parasuraman and Alutto (1984)	Quick and Quick (1984)	Schuler and Jackson (1986)	Ospow and Spokane (1987)	Hurrell and McLaney (1988)	Cummins (1990)	Wynne, Clarkin, and McNive (1993)	Denesi and Decotis (1994)	Hendrix et.al (1994)	Williams and Cooper (1998)	Cartwright and Cooper (2002)	Tower Watson Survey (2014)
Job insecurity							1													
Conflict job expectation		1			1	1							1	1				1		1
Inadequate staffing/coworker support															1			1	1	1
Lack of work/life balance/Work load		1			1	1			1			1	1	1	1			1	1	1
Shift work	1												1							
Little autonomy	1																			
Rapid technological changes	1																			
Threat to self esteem	1																			
Unmet expectation		1																		
Interpersonal conflict among members		1																		
Contextual stressors		1																		
Role-related stress			1	1	1			1	1			1								
Personal stressors									1											
Characteristics and condition of job itself								1												
Condition associated with Org. structure, climate & information flow				1		1	1	1		1		1	1					1	1	1
Relationship at work			1	1		1	1	1										1	1	
Perceived career development			1	1			1	1												
External commitment & responsibility	1					1		1				1	1					1		

Table 1. (Continued)

Stressors/authors scale	Zander and Quinn (1962)	Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964)	Cooper and Marshal (1976)	Ivancevic and Matteson (1980)	Pareek (1981)	Srivastav and Singh (1981)	Schuler (1982)	Parker and Decotis (1983)	Parasuraman and Alutto (1984)	Quick and Quick (1984)	Schuler and Jackson (1986)	Ospow and Spokane (1987)	Hurrell and McLaney (1988)	Cummins (1990)	Wynne, Clarkin, and McNieve (1993)	Denesi and Decotis (1994)	Hendrix et.al (1994)	Williams and Cooper (1998)	Cartwright and Cooper (2002)	Tower Watson Survey (2014)
Underutilization of skills														1						
Resource Inadequacy				1																
Lack of participation						1														
Unreasonable group & political pressure						11														
Powerlessness						1														
Intrinsic improvement						1														
Low status						1														
Change							1													
Recognition																		1		
Daily hassles																		1		
Employment Opportunity												1								
Control																				
Safety and health																				1
Pay & benefits																				1

Note: 1—included in the study.

2. Methods

Development of a questionnaire

2.1. Review of the current job stress scale

First, we reviewed the current version of job stress scale is a 13-item questionnaire used to measure job stress along two dimensions. One dimension is time stress (four items) and second dimension is anxiety (five items). The scale has proven to show acceptable and high internal consistency reliability (alpha-.83) and factor-based validity. Factor analyses have shown that time and anxiety are empirically distinct dimensions (Melamed, Hawes, Heiby, & Glick, 1991; Xie & Johns, 1995).

2.2. Collection of items based on literature review

We collected scales and items related to “Role expectation conflict or role ambiguity”, “Coworker Support (Inadequate staffing, uneven workload or performance in group)”, and “Work-life balance (excessive workload or long hours)” for the new job stress questionnaire based on two sources: literature related to job stress and organizational job stress survey.

The occupational stress indicator (OSI)—A stress audit instrument, such as the occupational stress indicator (OSI) (Cooper, Sloan, & Williams, 1988), which measures the level of perceived stress. The literature presents a consistent picture of strong scales measuring job satisfaction, mental and physical health, and sources of pressure (Cooper & Bramwell, 1992; Rees & Cooper, 1992; Robertson, 1990). However, the measure of type A behavior appears to be problematic and requires further development; the locus of control and coping strategies scales are also flawed (Ingledeew, Hardy, & Cooper, 1992; Kirkcaldy, Cooper, Eysenck, & Brown, 1994) and need to be improved or redesigned (Williams & Cooper, 1998). Different job stress measurement tools consists of stressors like conflict job expectation (Cummins, 1990; Hendrix, Spencer, & Gibson, 1994; Hurrell & McLaney, 1988; Kahn et al., 1964; Pareek, 1981; Schuler, 1982; Srivastava & Singh, 1981; Tower Watson Survey, 2014; Williams & Cooper, 1998), inadequate staffing (Tower Watson Survey, 2014), work-life balance (Cartwright & Cooper, 2002; Srivastava & Singh, 1981; Tower Watson Survey, 2014; Williams & Cooper, 1998), role ambiguity (Cummins, 1990; Hendrix et al., 1994; Hurrell & McLaney, 1988; Kahn et al., 1964; Osipow & Spokane, 1987; Pareek, 1981; Schuler & Jackson, 1986; Zander & Quinn, 1962), shift work (Zander & Quinn, 1962), autonomy (Hendrix et al., 1994; Zander & Quinn, 1962), rapid technological changes (Zander & Quinn, 1962), threat to self esteem (Zander & Quinn, 1962), unmet expectation (Kahn et al., 1964), work load (Cartwright & Cooper, 2002; Cummins, 1990; Hendrix et al., 1994; Hurrell & McLaney, 1988; Kahn et al., 1964; Osipow & Spokane, 1987; Pareek, 1981; Quick & Quick, 1984; Srivastava & Singh, 1981; Williams & Cooper, 1998). Occupational role stress (Pareek, 1981; Srivastava & Singh, 1981) developed for Indian population emphasized on role-related job stress rated by the respondent. But from the theoretical literature we found that organizational and social stressors are not been included in the present instruments (Pareek, 1981; Srivastava & Singh, 1981). We compared different job stress scales (Table 1) and the latest organizational survey (Tower Watson Survey, 2014), found that job characteristics, organizational structure, climate and information flow, role, relationship, career development, external commitments and responsibilities, unclear or conflicting job expectations, inadequate staffing (lack of support, uneven workload, or performance in-group), and lack of work/life balance are the top stressors. Due to lack of these newly and important induced stressors in Indian job stress questionnaire, we concluded that there is a pressing need to augment the existing scale, which includes role, organizational, and relationship aspects of the job stress.

2.3. Scales/items for the pilot study

Through the process described above, we developed job stress scale/questionnaire for pilot study (Study 1) comprising of five scales (27 items). These were “Time stress” (8 items), “Anxiety” (5 items), “Role expectation conflict” (5 items), “Coworker Support” (4 items), and “Work life Balance” (4 items).

2.4. A pilot survey

A pilot survey was conducted on Indian employees (retail sector) aged 18–50 years and above during June 2014. 400 employees responded to the survey (men 284 and women 116). 65% and 35% of respondents were male and female, respectively. 71% of them were married and 29% were single. In terms of educational level, 66% were higher secondary passed, 28% were graduate, and approx 4% were postgraduates. We have considered the respondents falling in the age group of below 20-to-30 years were treated as young, between 31-to-40 years as a middle-age, and over 45 year as old, the results of the statistical analysis show that 80% were young, 18% were middle-aged, and 2% were old. As far as income of the employees are concerned 61% is earning less than 2 lakhs per annum, 31% were earning in the income bracket of Rs 2lakhs–4 lakhs per annum and 7% of the sample was in the income bracket of Rs 4 lakhs–6 lakhs per annum. We calculated Cronbach's alpha coefficient and item total correlation coefficients (ITC) for each respondents scale.

2.5. Reliability and validity of the new job stress scale

2.5.1. Participants

In June 2014, a survey was conducted among 400 employees (284 Men and 116 women) aged 18–50 years through random sampling to test reliability and validity of new job stress questionnaire, who could understand the questionnaire in English language and gave their response without any assistance. In December 2014, the same questionnaire survey was conducted among the same 304 participants (209 men and 95 women) to assess the test–retest reliability of job stress questionnaire. Detailed demographic characteristics of respondents are shown in Table 2.

2.5.2. Measures

2.5.2.1. *Job stress scale*: The items (TS1, TS2, TS3, TS4, TS5, TS6, TS7, TS8, AS1, AS2, AS3, AS4, and AS5) of job stress (Table 3) were adopted from the short version questionnaire developed by Jamal and Baba (1992). The reliability of the nine-item job stress scale was .83. Factor analyses have shown that time stress and anxiety are the two distinct dimensions (Melamed et al., 1991; Xie & Johns, 1995).

2.5.2.2. *Job expectation conflict*: Job expectation conflict items (Table 3) (C1, RC2, RC3, RC4, and RC5) have adopted from a well developed and widely used occupational stress index (OSI) in the Indian context developed by Srivastava and Singh (1981).

2.5.2.3. *Coworker support*: Coworker support items (Table 3) (CS1, CS2, CS3, and CS4) were adopted from social support scale designed by O'Driscoll (2000). This scale has a reliability of .89 (O'Driscoll et al., 2004) in previous research and obtains responses on a point likert type scale ranging from 6 (all the time) to 1 (never).

2.5.2.4. *Work-life balance*: The work-life balance items (Table 3) (WLB1 WLB2, WLB3, and WLB4) adopted from work-life balance scale developed by Brough et al. (2009) was used to assess employees' experience in balancing between their work and non-work life. Items were "I currently have a good balance between the time I spend at work and the time I have available for non work activity", "I have difficulty balancing my work and non work activity", "I feel that the balance between my work demands and non work activity is currently about right", and "Overall, I believe that my work and non work activity are balanced". Five-point rating scales were used (1 = strongly disagree, 5 = strongly agree). Alpha coefficient for the overall scale was .81.

2.5.3. Face validity

It is important to evaluate the validity of the questionnaire (McDowell, 2006; Streiner & Norman, 2003). Face validity refers to the target group's recognition and acceptance of the questionnaire (Golden, Sawicki, & Franzen, 1990; Switzer, Wisniewski, Belle, Dew, & Schultz, 1999). Cultural and historical circumstances influence the validity of a questionnaire and to achieve face validity it is

Table 2. Demographics characteristics of respondents

Profile of respondents	Study 1		Study 2	
	Total (n = 400)	n Percentage (%)	Total (n = 304)	n Percentage (%)
<i>Gender</i>				
Males	284	71	209	68.75
Females	116	29	95	31.25
<i>Age</i>				
20 years old and below	105	26.25	102	33.55
21-30 years old	218	54.5	147	48.36
31-40 years old	70	17.5	50	16.45
41-50 years old	7	1.75	5	1.64
<i>Work experience</i>				
5 years and below	128	32	99	32.57
6-10 years	205	51.25	160	52.63
11-15 years	60	15	40	13.16
16 years and above	7	1.75	5	1.64
<i>Education</i>				
12th	266	66.5	185	60.86
Graduation	115	28.75	105	34.54
Post graduation	19	4.75	14	4.61
Doctoral	0	0	0	.00
<i>Income</i>				
Under 2 lakhs	243	60.75	190	62.50
2-4 lakhs	123	30.75	90	29.61
4-6 lakhs	25	6.25	20	6.58
Above 6 lakhs	9	2.25	4	1.32
<i>Marital status</i>				
Single	281	70.25	200	65.79
Married	119	29.75	104	34.21
Divorced	0	0	0	.00
Widow	0	0	0	.00

important to take into account the framework of the target group (Switzer et al., 1999). The discussions with experts gave an opportunity to gain knowledge of the target group's and their stress. To improve the items and scales, and confirm face validity, the respondents of the pilot study respond the questionnaire and provided concerns related to the items and the scales. The comments were evaluated and the items and the scales were accordingly reformulated and clarified.

2.5.4. Statistical analysis

Based on the survey conducted of 400 employees, an average and standard deviation of each scale of the job stress questionnaire were calculated. In the item analysis, any item that not met the following condition was eliminated: (1) one of any two items whose correlation coefficient was .8 or higher, (2) Communalities are .5 or less (Curbow, Spratt, Ungaretti, McDonell, & Breckler, 2006; DeVellis, 2003; Foxcroft & Roodt, 2005).

For reliability, internal consistency, test-retest coefficient and intra-class coefficient were examined. With regards to internal consistency, the homogeneity of the items in each dimensions were

Table 3. New job stress scale

Job stress scale								
S. No.	Statements	Abbrevia- tion	Strongly disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly agree 5	
1	I have a lot of work and fear that very little time to do it.	TS1						
2	I feel so burdened that even a day without work seems bad	TS2						
3	I feel that I never take a leave.	TS3						
4	Many people at my office are tired of the company demand.	TS4						
5	My job makes me nervous.	AS1						
6	The effect of my job on me is too high.	AS2						
7	Many a times, my job becomes a big burden.	AS3						
8	Sometimes when I think about my job I get a tight feeling in my chest.	AS4						
9	I feel bad when I take a leave.	AS5						
Role expectation conflict								
S. No.	Statements	Abbrevia- tion	Strongly disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly agree 5	
1	I'm not able to satisfy the different demands of various peoples above me.	RC1						
2	I'm not able to satisfy the conflicting demands of my colleagues and juniors.	RC2						
3	I'm not able to satisfy the demands of clients and others, because they are opposite to each other.	RC3						
4	The expectations of my seniors different from my juniors.	RC4						
5	I am concerned about the different expectations of different peoples.	RC5						
Coworker support								
S. No.	Statements	Abbrevia- tion	Never 1	Very Occa- sionally 2	Some- times 3	Often 4	Very Often 5	All the Time 6
1	Have the people working with me ever given any information or advice to me?	CS1						
2	Have the people working with me ever understand me and given advice?	CS2						
3	Has anyone given me a clear and helpful feedback about my work?	CS3						
4	Has anyone given me assistance in my work?	CS4						
Work-life balance								
S. No.	Statements	Abbrevia- tion	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5	
1	I am able to balance between time at work and time at other activities.	WLB1						
2	I have difficulty balancing my work and other activities.	WLB2						
3	I feel that the job and other activities are currently balanced.	WLB3						
4	Overall, I believe that my work and other activities are balanced.	WLB4						

evaluated using Cronbach’s alpha coefficient. A coefficient of .7 or higher is selected for the questionnaire to be internal consistent (Cronbach, 1951). A proportion of variance explained by the first factor was calculated for scales with more than one item to examine their factor-based validity. Furthermore, intra-class coefficient and Pearson’s correlation coefficients were calculated to evaluate test–retest reliability for the participants.

Exploratory and principal component factor analyses were conducted for five dimensions. For exploratory factor analyses, the principal component method with varimax rotation was used to extract the number of factors based on the scree plot criterion. All the analyses were conducted using IBM SPSS Statistics version 20.

3. Results

3.1. Descriptive statistics for the new job stress scale

Table 4 shows means and standard deviations for new job stress questionnaire items. For a sample of 400 employees, mean score for all items of new job stress questionnaire fell between 2.5 and 3.5, with a mean of 3.10 (Table 4). The mean score was higher for time stress and coworker support-related items TS1 (3.7), TS2 (3.4), TS3 (3.4) TS4 (3.5), CS1 (3.4), and CS2 (3.4).

3.2. Reliability of the new job stress scale

Almost all items showed high internal consistency reliability in study 1 (Cronbach’s alpha > .7) (Table 5). Overall the scale showed .81. Furthermore, among 304 employees who completed the study 2, test–retest reliability as measured by Pearson’s correlation and intra-class correlation coefficient was high (.50 or greater) for all the scales.

Table 4. Mean and standard deviation of the new job stress scale

Descriptive statistics			
	<i>n</i>	Mean	Standard deviation
TS1	400	3.7475	.86058
TS2	400	3.4300	1.02603
TS3	400	3.4325	.94482
TS4	400	3.5225	.88400
AS1	400	3.0575	.87528
AS2	400	3.2925	.98202
AS3	400	2.9550	.83349
AS4	400	3.0450	.68494
AS5	400	3.2075	.94958
RC1	400	2.7300	.88264
RC2	400	2.7375	.95177
RC3	400	2.7025	.85488
RC4	400	2.7700	1.00480
RC5	400	2.8600	.94214
CS1	400	3.4400	.79560
CS2	400	3.4175	.73794
CS3	400	3.1475	.87616
CS4	400	3.3525	.77119
WLB1	400	2.8925	.76643
WLB2	400	2.8400	.72160
WLB3	400	3.3700	.77434
WLB4	400	3.1375	.86630

Table 5. Internal consistency, test–retest reliability, and intra-class correlation coefficient

Items	Communalities extraction	Study 1 Cronbach's Alpha coefficient (n = 400)	Study 2 Test–retest (Pearson's correlation coefficient, n = 304)	Study 2 Intra-class correlation coefficient (n = 304)
TS1	.780	.817*	.760*	.863**
TS2	.656	.816*	.918*	.956**
TS3	.755	.825*	.929*	.963**
TS4	.732	.816*	.809*	.894**
AS1	.711	.807*	.973*	.986**
AS2	.908	.799*	.997*	.998**
AS3	.895	.796*	.977*	.988**
AS4	.820	.801*	.987*	.993**
AS5	.846	.797*	.994*	.997**
RC1	.754	.818*	.987*	.993**
RC2	.880	.805*	.977*	.988**
RC3	.893	.808*	.991*	.996**
RC4	.714	.809*	.992*	.996**
RC5	.864	.818*	.985*	.993**
CS1	.834	.811*	.986*	.993**
CS2	.661	.811*	.972*	.986**
CS3	.677	.815*	.963*	.981**
CS4	.761	.813*	.972*	.986**
WLB1	.783	.819*	.973*	.986**
WLB2	.842	.822*	.939*	.969**
WLB3	.830	.822*	.982*	.991**
WLB4	.663	.824*	.930*	.964**

Note: Extraction method: Principal component analysis.

*Correlation is significant at the .001 level ($p < .001$).

** $p < .01$.

3.3. Correlations among items

Examination of the correlations among items (Table 6) for the new job stress questionnaire showed that most items were not highly correlated. Table 6 showed that only few items were moderately inter-correlated (average range of correlations $< .50$).

3.4. Construct validity

In this study, four items are eliminated from the original job stress scale based on principal component factor analysis of the items. Eliminated items not only had low primary loading but inclusion of the item lowered the overall Cronbach alpha. After elimination, total 22 items are selected of five different dimensions. Table 7 presents the results of exploratory factor analysis. All 22 items of the five scales of time stress, anxiety stress, role expectation conflict, coworker support, and work-life balance were included in this analysis. Exploratory factor analysis showed the first factor was associated with the scales of role expectation conflict. All items of this scale were loaded with the greatest loading factor with the load ranging from .73 to .87. The second factor was associated with all items of anxiety stress scale with the greatest load ranging from .70 to .88. The third factor more accurately reflects the coworker support scale with the load ranging from .67 to .87. The fourth factor was associated with time stress with the load ranging from .60 to .85. In addition, the last factor

Table 6. Inter-item correlation matrix

	TS1	TS2	TS3	TS4	AS1	AS2	AS3	AS4	AS5	RC1	RC2	RC3	RC4	RC5	CS1	CS2	CS3	CS4	WLB1	WLB2	WLB3	WLB4
TS1	1.000	.694	.443	.727	-.004	.574	.292	.215	.561	-.394	-.231	-.262	-.148	-.378	.346	.241	-.093	.297	-.273	-.279	.310	.013
TS2	.694	1.000	.345	.617	.017	.492	.275	.154	.459	-.328	-.207	-.237	-.115	-.350	.379	.322	-.110	.296	-.062	-.083	.418	.243
TS3	.443	.345	1.000	.506	-.194	.196	.034	-.003	.196	-.229	-.099	-.222	.023	-.154	.143	.107	-.029	.145	-.088	-.067	.219	.019
TS4	.727	.617	.506	1.000	-.023	.482	.253	.156	.447	-.346	-.188	-.225	-.090	-.339	.314	.199	-.122	.273	-.150	-.191	.314	.171
AS1	-.004	.017	-.194	-.023	1.000	.415	.646	.669	.402	.406	.530	.676	.357	.533	.046	.068	.097	.026	.114	-.001	-.176	-.001
AS2	.574	.492	.196	.482	.415	1.000	.740	.640	.727	-.146	.072	.188	.152	-.107	.380	.367	.060	.360	-.175	-.213	.250	.056
AS3	.292	.275	.034	.253	.646	.740	1.000	.781	.773	.191	.421	.565	.428	.289	.234	.247	.205	.212	.024	-.083	-.029	-.061
AS4	.215	.154	-.003	.156	.669	.640	.781	1.000	.672	.298	.568	.699	.452	.476	.203	.201	.210	.160	.047	-.061	-.107	-.078
AS5	.561	.459	.196	.447	.402	.727	.773	.672	1.000	-.068	.152	.265	.226	-.004	.313	.302	.180	.297	-.038	-.098	.199	-.068
RC1	-.394	-.328	-.229	-.346	.406	-.146	.191	.298	-.068	1.000	.602	.647	.523	.672	-.155	-.038	.214	-.173	.668	.416	-.176	.072
RC2	-.231	-.207	-.099	-.188	.530	.072	.421	.568	.152	.602	1.000	.788	.733	.811	.196	.156	.512	.188	.250	.132	-.392	-.138
RC3	-.262	-.237	-.222	-.225	.676	.188	.565	.699	.265	.647	.788	1.000	.693	.826	-.094	-.009	.253	-.118	.269	.166	-.382	-.121
RC4	-.148	-.115	.023	-.090	.357	.152	.428	.452	.226	.523	.733	.693	1.000	.670	-.005	.093	.315	.001	.254	.129	-.328	-.145
RC5	-.378	-.350	-.154	-.339	.533	-.107	.289	.476	-.004	.672	.811	.826	.670	1.000	-.222	-.146	.253	-.229	.309	.207	-.461	-.188
CS1	.346	.379	.143	.314	.046	.380	.234	.203	.313	-.155	.196	-.094	-.005	-.222	1.000	.643	.442	.780	-.181	-.183	.207	.163
CS2	.241	.322	.107	.199	.068	.367	.247	.201	.302	-.038	.156	-.009	.093	-.146	.643	1.000	.428	.578	-.045	-.067	.133	.145
CS3	-.093	-.110	-.029	-.122	.097	.060	.205	.210	.180	.214	.512	.253	.315	.253	.442	.428	1.000	.383	.210	.156	-.070	-.225
CS4	.297	.296	.145	.273	.026	.360	.212	.160	.297	-.173	.188	-.118	.001	-.229	.780	.578	.383	1.000	-.118	-.155	.213	.096
WLB1	-.273	-.062	-.088	-.150	.114	-.175	.024	.047	-.038	.668	.250	.269	.254	.309	-.181	-.045	.210	-.118	1.000	.757	.253	.287
WLB2	-.279	-.083	-.067	-.191	-.001	-.213	-.083	-.061	-.098	.416	.132	.166	.129	.207	-.183	-.067	.156	-.155	.757	1.000	.474	.476
WLB3	.310	.418	.219	.314	-.176	.250	-.029	-.107	.199	-.176	-.392	-.382	-.328	-.461	.207	.133	-.070	.213	.253	.474	1.000	.623
WLB4	.013	.243	.019	.171	-.001	.056	-.061	-.078	-.068	.072	-.138	-.121	-.145	-.188	.163	.145	-.225	.096	.287	.476	.623	1.000

Table 7. Exploratory factor analysis of 22 new job stress scale with varimax rotation

	Component				
	Role conflict	Anxiety	Coworker support	Time stress	Work-life balance
RC5	.874				
RC2	.864				
RC4	.819				
RC3	.785				
RC1	.732				
AS3		.880			
AS2		.859			
AS5		.821			
AS4		.780			
AS1		.708			
CS1			.878		
CS4			.846		
CS2			.788		
CS3			.670		
TS3				.854	
TS4				.770	
TS1				.717	
TS2				.608	
WLB2					.855
WLB4					.767
WLB1					.746
WLB3					.734

Note: Extraction method: Principal component analysis.
 Rotation method: Varimax with Kaiser normalization.

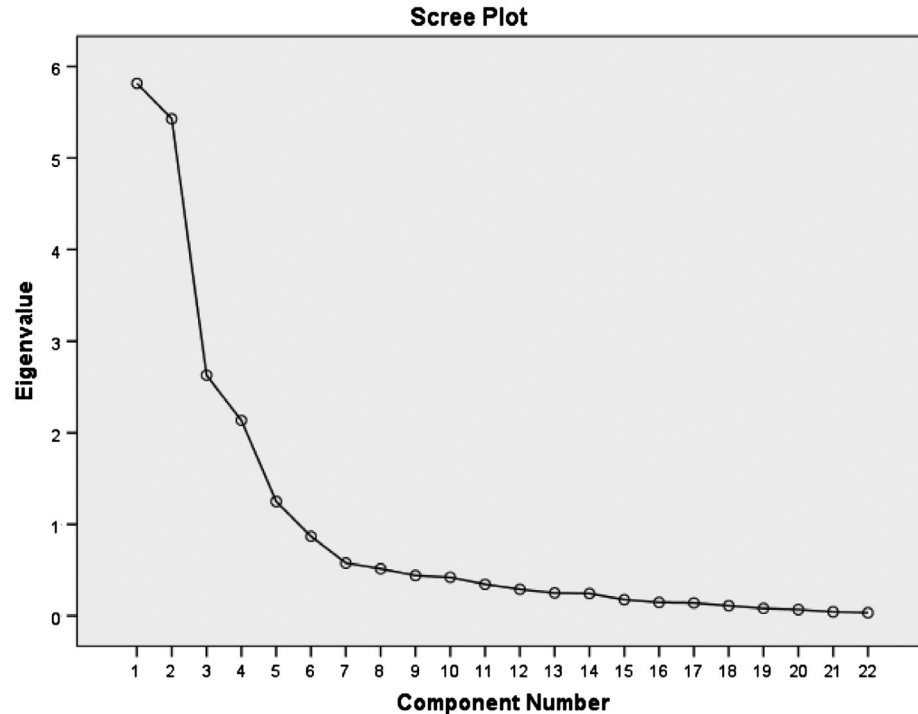
reflects the work-life balance scale with load ranging from .73 to .85. Five factors accounted for 78.4% of the total variance in the data. The first factor accounted for 26.4% of the total variation. This factor is a reasonable representation of the job stress. It means that high job stress is associated with the high role conflict variable. For the second factor, anxiety variable showed strong positive loadings. The second factor accounted for 24.6% of the variance. This interpretation was supported by the fact that the first eigenvalue was about 9 times that of the second; this can be demonstrated graphically by the scree test (Cattell, 1966) (Figure 1), a plot of the eigenvalues against the factor rank. The communalities (Table 5) showed that all the items are significant for further analyses.

4. Discussion

In the present study, we developed the new Indian job stress scale, which can assess an extensive set of time stress, anxiety due to job, role expectation conflict, coworker support, and work-life balance. All items showed high internal consistency and test-retest reliability. A inter-item correlation showed most of the items are moderately inter-correlated. Exploratory factor analyses of scale items showed that the first factor explained more than 40% of the variance for most scales. Communalities showed high values (>.50) for all items (Table 5). These findings provided evidence that the job stress questionnaire is reliable and valid.

The objectives were to develop an instrument to assess job stress in workplace according to Indian context included variables (time stress, anxiety, role conflict, coworker support, and work-life

Figure 1. Scree plot.



balance). This purpose was covered with the implementation of the two studies that include the construction and qualitative assessment of the items (study 1), the analysis of the measurements through test-retest analysis and intra class correlation, along with the estimation of their reliability (study 2). Although the intent in developing this instrument was in practical, the content of items identified by factor analysis and item analysis was of considerable theoretical interest in the understanding of the nature of different variables contributing in the job stress. Theoretically, numerous stressors (Table 1) identified for measuring job stress, according to different contexts. Job stress in India was measured by occupational stress scales (Pareek, 1981; Srivastava & Singh, 1981). Job stress scale (Pareek, 1981) identified ten only role-related dimensions (inter-role distance, role stagnation, role expectation conflict, role erosion, role overload, role isolation, personal inadequacy, self role distance, role ambiguity, and resource inadequacy) to measure job stress, whereas occupations stress index (Srivastava & Singh, 1981) identified 12 dimensions related to role and organizational working conditions. The development of this instrument based on newly stressors, which is not being included in the previous scales. So theoretically, it will contribute by adding new stress-related dimensions in the scale according to Indian context.

The results and literature support the consideration of factors that contribute to perceptions of job stress in proposing several practical implications. The most obvious of these implications is that it may prove beneficial for human resource practitioners to consider the employee's level of robustness and perception of stressors in the work environment when planning interventions to reduce stress and enhance job satisfaction and productivity at the workplace. Researchers have made significant contributions to the literature on job stress scale but stress is dynamic in nature. The factors causes stress changes according to the work environment. So it becomes important to check the stressors according to the current scenario of workplace and design the instrument accordingly. This instrument helps organization to know about job stress accurately in different perspectives. This instrument will contribute in job stress literature by adding new stressors in the current job stress questionnaire. Organization will evaluate job stress by knowing, what employees have issues related to their job description, work pressure, social support, and balance between work and family, which will lead to job stress. This instrument helps organization to design policy according to time pressure,

anxiety, role conflict, coworker support, and work-life balance to decrease job stress that directly increases the job satisfaction in Indian organizations. Organizations may benefit by including the work pressure, anxiety, and social environment concepts in training and assimilation programs for employees and managers. In addition, employee and managers development programs should emphasize the value of coworker and supervisor support, providing training to develop the skills necessary to create more supportive work environments. This instrument helps organization to reduce or diminish job stress in the family-work system as it will require today significant reconfiguration of the structure of work and family life in India. "Families are struggling to survive in an increasingly complex and bewildering world. With more choices than they can consider, people are struggling to find the right balance between work, play, love and family responsibility." (Shellenberger, Hoffman, & Gerson, 1994). Human resource professionals can have more input into manager and executive training sessions within the company to address the issue related to supportive environment for their employees. Both strategies have the potential to build organizational strength while also providing the opportunity for employees to build relationship skills and make a happier place to work. The study findings have led to practical implications for intervening at the level of the individual to evaluate and train to handle job stress.

5. Limitations and future directions

The results of this research should be considered in light of limitations. It is possible that questionnaire survey responses were untruthful due to suspicion or biased due to the bitter experiences with job surveys or changes in the job setting. This instrument to assess job stress has adequate reliability and validation. There is some debate regarding whether the approach to the future study of work stress should emphasize the individual's subjective perception or the objective environment (Frese & Zapf, 1999; Schaubroeck, 1999). Future research is to validate the instrument with different samples according to different industries and demographic profiles. Note also that our scale of job stress combined five types of stressors (time stress, anxiety, role conflict, coworker support, and work-life balance) into one construct. It is thus recommended that future studies retest this scale. Note, however, that the scale developed in this article will be helpful to provide important information about job stress that occurs to the employees, Future studies can focus on the way to measure job stress by collecting independent objective data that are not self-reported. Furthermore, validation according to different samples can be the scope of future work.

Despite its limitations, this scale will contribute in job stress literature and provide interesting empirical findings that will stimulate future efforts. Since job stressors are dynamic in nature especially in modern workplace, it is an essential that we understand them better to provide human resource managers with practical tools for improvement. The findings of this study have demonstrated the usefulness of examining workplace stress factors, but more work related to external validation can give confidence to researcher to use this questionnaire.

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