

SOFTWARE STRESS ASSESSMENT TEST: A PRELIMINARY INVESTIGATION

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Abstract

Though research on stress has been on the increase in recent years, occupational stress literature is based, to a large extent, on individual perception rather than substantiated fact. The present study was undertaken with the objective of developing a stress assessment test for the software professional. The test consists of 57 items covering four factors namely, job-related, organisational, personal and behavioural. The test was administered to 33 software specialists from a software firm in Bangalore. Based on the data, percentile norms were established. The scale was subjected to reliability test. The split half reliability is 0.816**. Work is currently on in the area and further research is required in this direction. Individual moves into a state of exhaustion, from which tissue breakdown and even death can result. In other words, continued stress can lead to bodily damage. The body manifests the stress reaction by a rise in blood pressure, increased adrenaline, changed heartbeat, more RBCs, slower digestion, and so on. However, Selye argued that a moderate amount of stress could be a positive experience while too little stress could be negative.

Although all people, including psychologists and psychiatrists, frequently use the term 'stress', there is no consensus regarding the definition, at present.

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The research contribution of organisational psychologists has not resolved these conceptual differences. Organisational researchers have tended to study situational variables hypothesised to be stressors, that is, those that create anxiety, emotional tension, sleep disorders, gastric symptoms, and other such symptoms in the employees. Kahn, Wolfe, Quinn, and Snoek (1964) in one of the earliest of such studies, investigated the hypothesised effects of two situational variables, role conflict and role ambiguity, which they referred to as organisational stressors. In subsequent years, other researchers have studied a wide range of stimuli in work settings, some of them characteristics of physical work environment, some, social or socio-technical, and some, temporal. All these investigators would agree that they were working in the domain of organisational or occupational stress, but they would by no means agree on whether the term 'stress' should be used to designate the objective stimuli in the work setting, the subjective perception and appraisal of those stimuli by the individual, or some subsequent psychological response. In short, the old arguments of conceptual definition persist; organisational researchers have enlarged the arena without resolving the conflicts. It is appropriate, therefore, to put such conceptual disagreements first in the list of problems and gaps in stress research.

The exact process by which stress leads to strain is not well understood. Furthermore, little is understood as to why strain takes such different forms for different people. For some, it might involve specific, transitory, physiological changes, such as changes in BP, and/or in acids in the blood. Others may develop some health problems such as heart disease, cancer, high BP, or ulcers. Still others might have mental problems, such as anxiety attacks, depression, or even psychosis. Behaviour problems such as alcoholism, crime, drug addiction, or suicide, might occur in others' lives. The form the strain takes may depend on the type of stress or each individual may have a propensity to show strain in specific ways. The relationship among these various forms of strain is also not well understood.

Technology is changing people's jobs and their work behaviour. The emphasis on continuous improvement can increase employee stress, as individuals find that performance expectations are constantly being increased. Employees are expected to learn new skills and accept increased responsibilities. Technology is making many job skills obsolete and shortening the professional life span of almost all skills - technical, administrative, and managerial.

Constant demands on employees to update their skills induce stress in them. The IT industry is no exception. In fact, the above statement is more relevant to it.

The software scenario

Information Technology. Today, it's the buzzword. Everybody wants to be part of the IT industry. These professionals are a bunch of young graduates. Now, with a challenging job and a fat pay package, come all the other hardships like meeting strict deadlines, extended working hours, stiff competition, and proving oneself professional all the time.

Today's ever increasing demand for the software professionals has led to a remarkable increase in job-hopping. The demand and supply are reportedly disproportionate! Companies are sparing no effort in retaining their employees. As more and more opportunities come up, even a good pay package of attractive perks is unable to keep these professionals with the same organisation for a longer time. The privilege of being the most sought after professional today, however, comes with a price! Studies by occupational health physicians show that lots of software professionals suffer from stress-related problems.

Despite the contribution of computers to productivity, they also create stress for many workers, which are computer-specific. 'Computer Shock' is a strong negative reaction to being forced to spend many more hours working at a computer than one expects or desires. Among its symptoms are glassy-eyes, detached look, aching neck muscles and a growing dislike for high technology.

VDT Stress: Computer Shock is a general form of stress associated with computer work that is largely emotional. A more physical form of stress associated with computer work is tied specifically to Video Display Terminal (VDT). VDT stress is an adverse physical and psychological reaction to prolonged work at a VDT. The symptoms most often reported by VDT work are irritability, shaking inside the body, headaches, extreme fatigue, pressure in the neck, nervousness and high levels of tension, stress in general, severe eyestrain, numbness and tingling sensation in the arms, legs and feet, and loss of strength in arms and legs.

Though stress assessment tests are widely used in industries, clinical settings, and other sectors of our community, most of the tests are designed to cater to a wide population of workers and the software professional cannot be clubbed with them as the nature of the job is entirely different. Despite the widespread use of stress assessment tests and availability of many empirically and theoretically sound instruments that measure various aspects of stress, for example, ORS (Organisational Role Stress) Scale (Udai Pareek, 1986); Human Services Survey (Christina Maslach and Susan Jackson, 1982); Role Pics; Inter-role Distance; Role Overload, Distance and Stagnation (RODS) Scale (quoted in Pareek), they are not directly applicable to the software industry. Hence there was a need to develop a test exclusively for the software professional, keeping in view their job demands and job profile.

Hence an attempt has been made in this direction in this study and the resulting instrument is Stress Assessment Test for the Software Professional. This paper outlines the steps involved in the development of the stress assessment test and the method of establishing its psychometric properties.

Development of the Test

Item Pool

The stress assessment test was designed to investigate the perceived stress levels in the software professionals. The development of the test proceeded in several stages. The first step was to develop a pool of items. The items for the scale were selected by reviewing the existing measures of stress and also by interviewing people either directly or indirectly associated with the software profession. This resulted in a list of forty-six stressors, which were incorporated into the statements.

This list was given to HR professionals and experts in academics for further modifications/ additions. The list was refined to the present form, which consists of Fifty-seven [57] items covering four factors / areas of stress namely,

A. Job-related: This area measures the stress caused due to factors inherent in the job, that is, work overload, nature of the job, skill, etc.

B. Organisational: Factors like promotion, perks, interpersonal relations in the organisation, organisational policies, type of supervision, etc. that could cause stress in the individual are measured under this area.

C. Personal: This includes items that measure the extent of stress experienced by the individual. The rating on these items is dependent, to a larger extent, on the individual rather than on environmental factors, for e.g., 'Deadlines help me work better'.

D. Behavioural: This area measures the manifestation/consequences of stress unlike the other three areas, which measure the causal agents of stress. E.g.: 'I eat at regular intervals'.

All the items are rated on a 5-point Likert type rating scale. The test includes a global assessment in the end that contains the following: general health scale, family life satisfaction scale, social life satisfaction scale and coping with stress.

Method

Sample: The 57 item pool was administered to a normal adult sample of 33 software professions in the age range of 22-33 years, working in an IT firm in Bangalore city. The Mean age of the sample was 24.58 years, with an SD of 2.30 years. The average experience was 2.89 years and the SD was 2.27 years. The sample consisted of 33.33% females and 66.66% males. 87.88% of the sample was unmarried while 12.12% was married. The sample was predominantly Hindus (90.91%), with the remaining being Muslims (6.06%) and Christians (3.03%).

TABLE 1

Giving the details of the sample, with regard to age and years of experience.

	Mean(in years)	SD(in years)
Age	22.58	2.30
Experience	2.89	2.27

TABLE 2

Giving the details of the sample with respect to religion, sex and marital status

Religion			Sex		Marital Status	
Hindu	Muslim	Christian	Male	Female	Married	Unmarried
30	02	01	22	11	04	29

Procedure

The scale was administered individually or in groups to software professionals who had a minimum of six months' experience in the software profession, at their workplace. The data thus obtained was scored.

Scoring

Positive and negative items on the scale are given separate ratings. The positive items are scored in the reverse order and for the negative items the ratings given by the person are retained. For example: for the positive item if the rating given by the individual is 0, then, the researcher rates it as 4. In case of the negative item, if the rating given by the individual is 0, then, the researcher also rates it as 0. Therefore, the greater the score obtained on the scale, greater the perceived stress. The maximum possible score is 228.

Psychometric properties

Reliability

Split-half reliability was determined to be 0.816** which is highly significant.

Norms

The mean stress score for the sample is 88.24 and SD is 22.48. Skewness is -0.09. This means that score are massed at the high end of the scale (the right end) and are spread out more gradually toward the low end (or left), justifying the fact that software professionals appear to suffer from high stress. Kurtosis is 0.467. Since it is greater than 0.263, the distribution is platykurtic.

The percentile norms were determined from the data obtained.

Percentile	Score
10	61.80
20	69.60
30	76.20
40	79.00
50	90.00
60	95.80
70	99.80
80	105.00
90	118.00

A score below 76 (30th percentile) is considered indicative of low stress while scores above 100 (80th percentile) are considered indicative of high stress. These norms, however, are tentative and require further refinement. Test-retest reliability and validity measures are also in the process of being established.

Use for HRD

The instrument could be used to conduct surveys. It may indicate significant areas of stress experienced by software professionals, and its effect on the efficiency / well being of the individual. It could provide information on why some people experience stress to a greater degree than others. It may also be useful to find out the type of coping strategies, if any, used by these people. Measures can be taken to reduce those stresses that are high. Counselling programmes and action to remedy some aspects can be taken in order to relieve people of stress. The same applies to individual respondents. They can be helped to recognise stresses and examine which ones are helping them to perform better and which ones are disrupting their functioning.

Future Perspectives

The advent of new communication technology has made the world a global village, with the boundaries between nations and cultures getting blurred. The integration of economies of the world will soon be a reality. The introduction of Euro, the common currency evolved by the European countries is proof enough. In future, there will be greater emphasis on quality as there is a shift from individual consumerism to global consumerism. In order to stay in the competition, organisations will have to be highly maneuverable. To win the race, they have to be proactive in discerning change and preparing to brace it.

Though the changes are varied and are likely to manifest themselves in all the areas of management - financial, marketing, operational and personnel, there is no doubt that the effects of these changes will largely be borne by the people.

With the integration of the workforce, there is greater uniformity and individual differences are reduced. The terms and conditions of work are almost the same and most companies work round the clock. Hence, the test will have greater relevance in the years to come.

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