ORIGINAL ARTICLE

DOI: https://doi.org/10.63050/jpps.22.03.256

JPPS JOURNAL OF PAKISTAN PSYCHIATRIC SOCIETY WWW.JPPS.PK

DEVELOPMENT AND VALIDATION OF THE SELF-AWARENESS OF STRESS SCALE FOR TEACHERS

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Submitted: March 16, 2023
Accepted: September 30 , 2025

ABSTRACT

OBJECTIVE

To develop a reliable and valid self-report instrument assessing teachers' self-awareness of stress.

STUDY DESIGN

Mixed-method research design

PLACE & DURATION OF STUDY

Three private and semi-government higher education institutions in Pakistan (Lahore and Multan), from September 2015 to September 2017 (duration of 02 years).

METHOD

To determine the psychometric properties of the Self-Awareness of Stress Scale (SSS), it was administered with a demographic proforma to a sample of 250 teachers.

RESULTS

Exploratory factor analysis, internal consistency, inter-factor correlations, and convergent validity were assessed. The Cronbach's alpha coefficients ranged from 0.89 to 0.97, demonstrating excellent internal reliability. Inter-factor correlations and concurrent validities were statistically significant at $p < 0.01$. Three factors were identified: Interpersonal Challenges, Personal Malfunctioning, and Work Inefficacy with each showing strong psychometric properties.

CONCLUSION

The SSS demonstrated strong reliability and validity, identifying three core domains, which were Interpersonal Difficulties, Personal Dysfunction, and Work Ineffectuality, that overall demonstrate teachers' self-awareness of stress.

KEYWORDS

Occupational Stress; Psychometrics; Self-Assessment; Stress, Psychological; Teaching; Pakistan.

INTRODUCTION

Occupation has a significant and durable effect on life. Professional responsibilities can generate multiple forms of occupational stress, affecting individuals biologically, psychologically, and socially. If unresolved, acute stress can transform into debilitating chronic stress, affecting physical, psychological, and social health. The relationship to health also impacts job performance as it causes difficulties in decision-making, concentration, communication, and interpersonal relations. Job performance is inversely related to the level of perceived stress. The level of stress for university faculty also increases among varying teaching positions.[1]

Based on one definition, stress is the response or difficulty to any risk, stimulus, or change in everyday situations that is essentially a part of each human being's existence. Occupational stress is an individual's reaction to expectations at work and demands from their employer regarding their requirements, skills, and obligations. Stress is categorised into three types based on duration and level of impact: acute, episodic acute, and chronic stress.[2]

Acute stress is the type of stress that occurs due to the recent past and the effects of pressures and demands or challenges in the near future. Eustress refers to the positive stress response, characterised by optimal levels of stimulation - the stress that is produced from demanding but achievable, enjoyable or worth-while tasks (for example competing as an athlete, or giving a speech).[3] Distress is the negative stress response, often involving negative affect and physiological reactivity - the type of stress involves that occurs when someone feels overwhelmed by demands, losses or threats. Episodic acute stress is stress that is acute in nature and occurs in episodes, and these recurrences can be caused by an overload of work in employees, where employees cannot complete multiple tasks simultaneously, which can lead to negative consequences in the workplace. Chronic stress is stress that lasts over an extended time duration and is the most damaging and challenging kind of stress.[3]

Individual awareness or perception of stress differs, and its impact on mental health differs for individuals. Besides the physical reactions of stress as fight-or-flight response, the psychological reactions include changes in emotions, thoughts, feelings and behaviours.[4] Stress does not only affect the content of our thoughts, feelings, attitudes and behaviours but it also affects our performance and decision making.

The teaching profession has been recognised as one of the most challenging professions, both physically and mentally. Teachers, specifically at the university level, exert a lot of energy in their roles professionally and personally, both in front of and away from students.[5] In fact, teaching is included among the most stressful occupations. Occupational stress among teachers is a significant stressor, related to several factors like planning lessons, planning activities, curriculum development, and establishing co-curricular and extra-curricular activities. Additionally, in the academic part of teaching, teachers are also heavily engaged in maintaining discipline, keeping records, performing administrative tasks as assigned, and coaching the disciples. Situations like these can lead to stress in teachers, which can impact teachers' performance.[6]

The teaching profession is often characterised by stress, which has a direct impact on the organisational culture in the schools in which teachers work. Organisational culture refers to the culture of educational institutions and the workplace, which incorporates job ambiguity, excessive workload, and over-monitoring. Stressors for teachers can present as the general living and work environment, faculties and individual attributes or characteristics; however, the majority of stressors come from factors related to the working environment, such as cumbersome work load, the institution's overall organisational setting, limited access to appropriate resources that could have a positive impact, absence of professional autonomy, and support from parents and/or administration.[7]

Environmental factors can also include stressors such as ambient noise, classroom size, risk of violence at school, and administrative demands. This adds to the already perceived stress due to individual factors. Individual stressors can be related to one's career aspirations, such as opportunities for promotion, success or failure on work projects, competition among coworkers, multiple roles (especially for female teachers), and being perfectionistic.

Individuals exhibit differences in stress reactivity and in responding to stress. Stress response is dependent on stressors, personal traits, and vulnerability to stress.8 Cross-cultural studies show the similarities and variations of stress and its impact in different cultures.9 The current literature does not, however, appear to demonstrate self-awareness of stress in university teachers.

This study focuses on awareness of stress among teachers working at the university level in Pakistan. It aims to develop an indigenous scale of self-awareness of stress for phenomenological knowledge, understanding, prevalence, indication and manifestation, and report the degree of stress. In addition, this opens up further areas of research and highlights the importance of self-awareness of stress in teachers. Since limited attention has been given to teachers' self-awareness of stress, i.e., how they perceive, understand, and respond to their own stress experiences. Thus, this study addresses this gap by developing a culturally relevant Self-Awareness of Stress Scale (SSS) for teachers in Pakistan.

METHOD

Phase 1: Item Generation

The SSS was developed via exploration of phenomenology. Phenomenological open-ended interviews took place with individuals in the main population. The prompt questions were, “How do you believe, what is the effect of stress in your daily life?” Individuals provided different responses and were recorded. Thus, items were developed for the Self-Awareness of Stress Scale (SSS). The verbatim accounts of the interviewees became statements later. A total of 30 individuals participated in the phenomenology process for the SSS, which included female and male teachers.

Phase II: Expert validation

In this phase, validation for the statements previously obtained was sought through experts with more than 5 years' experience, where the raters validated the statements. The raters were posed operational definition of the topic variable, and the question of the phenomenology of the research variable. Raters provided responses to every statement, numerically rating each statement on a Likert scale from 0 to 3, based on its relation to the phenomenology under investigation. After the analysis, the researchers rejected any statements where the rating was below a specific percentage. The statements evaluated by the researcher and raters were used for the expert validation. In order to evaluate the statements, experts of both male and female genders, including lecturers and assistant professors, were selected to engage in a pilot study.

Phase III: Pilot study

A pilot study was carried out to evaluate the user-friendliness of both scales. In this stage of the process, expert validation was completed, along with possible final statements. For this purpose, a group consisting of both male and female lecturers and assistant professors from semi-government and private sector universities were employed. A total of 10% of the main population was selected as representatives of main sample. After the pilot study, it was analysed that no subsequent changes were required as the pilot participants were able to conveniently report their responses and the statements were clear and comprehensible.

Phase IV: Main Study

The study was conducted for assessment and validation of the psychometric properties of the SSS.

Measures

Depression Anxiety Stress Scale (DASS-21):[10] It has 21 items in total, where 7 items each make a subscale for scores on depression, anxiety and stress. All three subscales have high alpha coefficients. The Cronbach's alpha for the anxiety, stress, and depression sub-scales of DASS is 0.94, 0.85 and 0.87, respectively.

Self-Awareness of Stress Scale (SSS): It is a self-administered scale comprising 37-items. Each item has a 3-point rating scale. SSS measures three aspects of stress awareness: Interpersonal Challenges, Personal Malfunctioning and Work Inefficacy, containing 20, 10 and 7 items, respectively.

Procedure

Before the initiation of the study, ethical approval for the research was sought from the Institute of Clinical Psychology, University of Management and Technology, Lahore, Pakistan. The teachers of three universities including University of Management and Technology Lahore, Comsats University, Lahore Campus and the University of Central Punjab, Lahore, Pakistan, were approached in their respective departments after seeking permission from their respective institutional authorities. Participants were briefed about the study, its process, the right to participate and withdraw, and adverse effects, which were none, before the written informed consent was obtained. Booklets containing research tools were provided to the participants along with a demographic sheet.

Data Analysis

Data collected were analysed using SPSS (version 25). Exploratory Factor Analysis (EFA) with Principal Axis Factoring and Varimax rotation was performed to determine the underlying structure of the SSS. Factor-retention criteria included eigenvalues greater than 1, inspection of the scree plot, and conceptual interpretability according to standard exploratory-factor-analysis guidelines. Internal consistency was assessed through Cronbach's alpha, inter-factor correlations were computed to examine structural validity, and convergent validity was tested using correlations between the SSS subscales and corresponding DASS-21 subscales.

Ethical consideration

The following ethical considerations were observed: confidentiality and privacy of participants were respected by the investigator. The researcher monitored participants' comfort level, and the participants had the choice to be part of the research, without having to feel pressure to be involved. They were briefed about the study's purpose, procedure, voluntary participation, and right to withdraw before providing written informed consent. After the completion of the questionnaire, the respondents were debriefed about any emotional arousal or stress they might have felt when responding to the questionnaire.

RESULTS

Exploratory Factor Analysis

The results of the Factor Analysis for the developed indigenous instrument, the “Self-Awareness Stress Scale,” along with the Eigenvalues for the three factors finalised, inter-factor correlation and internal consistency are illustrated.

Table 1

Factor Structure and Eigenvalues of 37 Items of the Self-Awareness of Stress Scale (SSS) with Varimax Rotation (N=250).

Sr. No.	Item No.	Factor I	Factor II	Factor III
1	41	**.80**	.04	.30
2	31	**.80**	.14	.34
3	32	**.80**	.19	.26
4	30	**.78**	.26	.26
5	29	**.74**	.30	.28
6	38	**.72**	.02	.45
7	26	**.72**	.06	.45
8	37	**.71**	.23	.28
9	33	**.71**	.45	.00
10	39	**.69**	.25	.26
11	25	**.68**	.25	.31
12	27	**.67**	.35	.27
13	34	**.66**	.32	.05
14	36	**.65**	.32	.25
15	22	**.62**	.29	.29
16	28	**.61**	.42	.25
17	24	**.61**	.54	.04
18	40	**.56**	.27	.19
19	23	**.55**	.24	.33
20	10	**.51**	.28	.51
21	15	.13	**.81**	.06
22	4	.15	**.78**	.19
23	14	.28	**.78**	.09
24	1	.03	**.66**	.26
25	5	.18	**.66**	.36
26	2	.25	**.64**	.19
27	3	.33	**.63**	.16
28	16	.29	**.59**	.27
29	13	.29	**.53**	.29
30	12	.37	**.53**	.40
31	7	.39	.30	**.71**
32	8	.21	.28	**.70**
33	6	.30	.43	**.64**
34	17	.51	.27	**.55**
35	18	.51	.19	**.54**
36	20	.38	.24	**.53**
37	11	.43	.24	**.51**
	Eigen Values	18.62	2.90	1.40
	% Variance	50.33	7.84	3.77
	Cumulative %	50.33	58.17	61.94

Note. Items with .50 or above loading are boldfaced.

As shown in Table 1, the criterion for the final structure of the scale was .50 or above; items less than .50 were rejected. Consequently, model 6, 5, 4 and 3 factor solutions were attempted in order to achieve the best fit structure, however, only 3-factor model produced the best fit with a clear factor structure and slightly less fit. The final three-factor model explained 61.94% of total variance, with factors comprising between 7 and 20 items each.

Figure 1

Scree Plot showing the Eigenvalue of the Factors Generated.

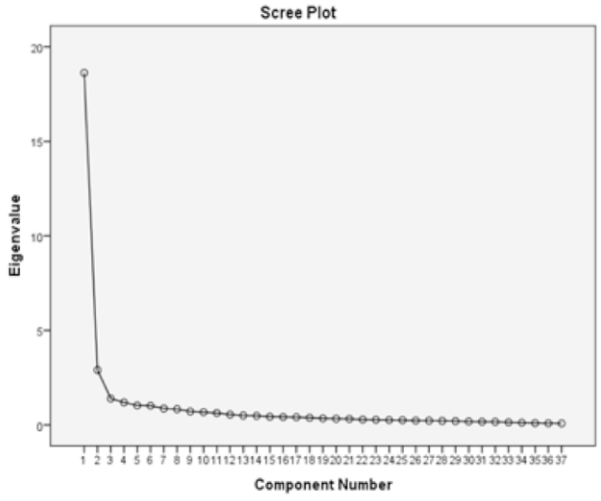

Figure 1 illustrates a scree plot, where the steepness of the curve indicates that the development of three factors. As a result, these factors would be cross-loaded to organise the trends or groups categorically. After developing the factors, it allowed for further analysis. The three factor solutions were also tasked to be used or retained for further examination.

In order to develop the final factors from the scale items, the extraction process was employed. A scree plot was also made based on the components of the scale. The scree plot suggested 6 large or significant and 3 moderate or slightly significant components. Researchers began to analyse the results by developing 6 factors and going backwards. The 6 had plenty of dubious factors, so the scree plot was rejected. Factors 6, 5 and four were also ignored when observed with dubiousness. Finally, three factors were developed based on the least amount of dubious items. As well, the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was .95, and Bartlett's test of Sphericity was significant ($\chi 2$ (666) = 8014.72, $p < .001$).

Factor descriptions: Each factor was labeled according to shared themes and suitability of each item.

Factor 1: Interpersonal challenges: This first factor contains 20 items. A high score on this factor indicates that an individual is experiencing difficulties with other people. Items included "I become harsh with students," "I cannot give positive praise to students," "I feel difficulty during communication," "I feel a lack of patience," "I behave aggressively," "relations with colleagues suffer," etc.

Factor 2: Personal malfunctioning. This second factor contains 10 items. A high score on this factor indicates an individual is experiencing difficulties with self-chores and is confused and disoriented. Items included "I feel tired/exhausted," "I feel a burden on my nerves," "my overall performance is affected," "I feel sad/down," "I feel de-motivated for my daily activities," "I cannot well manage household responsibilities," etc.

Factor 3: Work inefficacy. This third factor contains 7 items. A high score on this factor indicates that an individual is inefficient and struggling to deal with work matters. Items included "I cannot well prepare class lectures," "I cannot manage time properly," "I lose hope for promotion," "I cannot fulfill work schedule," etc.

Psychometric Properties: Reliability of the Self-Awareness of Stress Scale (SSS)

Cronbach's Alpha Reliability

The psychometric characteristics of the SS were based on mean, standard deviation, Cronbach's alpha, potential and actual ranges, and skewness values calculated using reliability and descriptive analysis, as well as inter-factor correlation, which demonstrated the relationship among Self-Awareness of Stress Scale (SSS) factors (Table 4).

Table 2

Psychometric Properties of Self-Awareness of Stress Scale (SSS, N=250).

				Range		
Factor	n	M (SD)	a	Potential	Actual	Skew
1. IC	20	27.54 (18.41)	.96	0.0-4.0	0.0-3.7	.49
2. PM	10	15.42 (7.72)	.91	0.0-4.0	0.2-3.9	.70
3. WE	7	8.91 (6.15)	.89	0.0-4.0	0.0-3.7	.70
4. SSS T	37	51.87 (29.61)	.97	0.0-4.0	0.1-3.6	.53

Note. n: no. of items. α = Cronbach's alpha. IC: interpersonal challenges; PM: personal malfunctioning; WI: work inefficacy; SSS: Self-Awareness of Stress Scale.

Table 2 shows the means, standard deviations, Cronbach's alpha values, potential and actual response range with skewness values. Results indicate that Cronbach's alpha values range from .89 to .97, indicating high internal consistency among the Self-Awareness of Stress Scale (SSS) and its factors. In addition, the Self-Awareness of Stress Scale (SSS) demonstrates skewness values ranging from .49 to .70.

Table 3

Summary of Intercorrelations, Means, and Standard Deviations for Scores on the Self-Awareness of Stress Scale (SSS) and its Subscales (N=250).

Factor	1	2	3	4
1. IC	-	.67**	.81**	.96**
2. PM		-	.69**	.82**
3. WI			-	.89**
4. SSS T				-
M	27.54	15.42	8.91	51.87
SD	18.40	7.71	6.15	29.60

Note. IC: interpersonal challenges; PM: personal malfunctioning; WI: work inefficacy; SSS: Self-awareness of Stress Scale. **p < .01.

Table 3 depicts the strength of association between factors, and the total of SS was examined using Pearson product-moment correlation. The results showed that all factors of Stress Scale were found to have a significant and positive correlation (p<.01). In addition, the total SS score was found to have a significant and positive correlation with its factors, notably interpersonal challenges (r = .96, p < .01), personal malfunctioning (r = .82, p < .01), and work inefficacy (r = .89, p < .01).

Validation: Convergent Validity of Self-Awareness of Stress Scale (SSS)

To assess the convergent validity of scale, Pearson product-moment correlation was computed. The Depression Anxiety Stress Scale-21 (DASS-21) was used and compared to the newly created Self-Awareness of Stress Scale (SSS).

Table 4:

Summary of Intercorrelations, Means, Standard Deviations, and Cronbach Alphas of the Self-Awareness of Stress Scale (SSS), Factors, and DASS-21 (N=100).

Measure	1	2	3	4	5	6	7	8
1. IC	—	.84**	.85**	.98**	.51**	.46**	.44**	.52**
2. PM		—	.77**	.91**	.50**	.54**	.49**	.56**
3. WI			—	.90**	.45**	.45**	.38**	.47**
4. SSS T				—	.53**	.50**	.46**	.55**
5. D					—	.69**	.73**	.91**
6. A						—	.81**	.91**
7. S							—	.92**
8. DASS T								—
M	22.49	15.15	7.51	45.15	5.83	5.27	6.00	17.10
SD	16.34	7.81	5.61	28.21	4.99	3.99	3.89	11.72
A	.96	.91	.86	.97	.61	.81	.81	.89

Note. IC: interpersonal challenges; PM: personal malfunctioning; WI: work inefficacy; SSS T: total of Self-Awareness of Stress Scale; D: depression; A: anxiety; S: stress; DASS T: total of Depression Anxiety Stress Scale. **p < .01.

Table 4 presents the inter-correlations, means, standard deviations, and the Cronbach's Alpha for SS, its factors, and the DASS-21. The data indicated that overall, each scale possesses high reliability and positive significant correlation with one another. Additionally, the DASS-21 and its factors have positive significant correlations with the Stress Scale and its factors.

DISCUSSION

The present study developed and validated an indigenous measure assessing self-awareness of stress among teachers working at private and semi-government universities in Pakistan. An exploratory factor extraction method was employed to identify the underlying factor structure of the scale items. The scree plot suggested 6 significant factors and 3 somewhat significant factors. Factors 4, 5, and 6 were excluded due to low or cross-loadings, consistent with psychometric best practices (Hair et al., 1998). Factors 4, 5 and 6 were also omitted based on dubious items. A total of three factors were selected, based on the low number of dubious items. Additionally, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was found to be .95, and Bartlett's test of Sphericity was found to be significant ($\chi 2$ (666) = 8014.72, $p < .001$).

Stress is increasingly recognised as a global public-health issue affecting teachers' mental health and work efficiency.[6,9] The negative effects of stress in daily lives can cause mental, physical and social disruptions. Without adequate self-awareness, individuals may fail to manage these adverse effects, which can interfere with daily functioning. Individual personality traits and coping styles can moderate the relationship between stressors and outcomes.[11,12] Teachers are pivotal to national development, and their wellbeing is essential to maintaining stable educational systems and societal progress. As discussed in previous studies of current explored research factors contributed factors of stress among teachers as specifically examined in Pakistan, but there has not been enough evidence to examine self-awareness of stress as psychological variables in teachers particularly in this context. As highlighted by Riolli and Savicki and emphasised by Raedeke and Smith, individual personality traits may moderate the relationship between stressors and outcomes, with adaptive traits buffering and maladaptive ones amplifying stress effects.[11,12]

The first factor of the SSS is Interpersonal Challenges, which consists of 20 items. A high score on this factor suggests a person is experiencing difficulty when dealing with other people. Items in this factor included, 'I become harsh with students,' 'I cannot give positive feedback to students,' 'I feel difficulty during a communication,' 'I feel a lack of patience,' 'I behave aggressively,' and 'relations with colleagues being affected,' etc. This study reports that predictors of interpersonal challenges amongst teachers. Research shows that stress occurs when someone believes that there is a disparity between the challenges that they typically face and the resources available to them to deal with those difficulties. When an individual perceives job demands to exceed personal resources, stress intensifies, resulting in emotional exhaustion and reduced efficacy.[8,13] This could result in burnout, which is one's physical, emotional, or mental exhaustion with a decrease in motivation, decreased performance, and a negative attitude to oneself and others.

Burnout occurs when an individual has been performing at a high level and stress and pressure take their toll, particularly from extreme and prolonged physical or mental exertion, or from excessive workload. Stress arises not only from actual demands but from one's appraisals of the task and the personal capability to meet those challenges effectively.[13,14] This study supported prior findings that neuroticism was a strong positive predictor of teachers' interpersonal difficulties. Thus, teachers experiencing frequent interpersonal conflicts with students or colleagues report higher burnout and emotional exhaustion, consistent with previous research.[13,15]

The second factor, Personal Malfunctioning, comprising ten items, reflects internal disorganisation, fatigue, and reduced motivation in managing personal and professional tasks. These items included “I feel tired/exhausted,” “I feel a burden on my nerves,” “my overall performance is affected,” “I feel sad/down,” “I feel de-motivated for my daily activities,” “I cannot well manage household responsibilities,” etc. The consequences of a teacher's high levels of stress include dissatisfaction, aggressive conduct, anxiety, avoiding work, subpar performance, and absenteeism.[5,16] If the workplace is unfavourable, employee stress will increase and the task will provide incorrect outcomes, and the teacher may ultimately wish to leave the field. Persistent occupational stress may ultimately lead to job dissatisfaction and increased turnover intentions among teachers. Stress is also linked to a person's inability to function at work. Workplace stress has been linked to a number of factors, where stress and a worker's diminished ability to function are directly related. Certain aspects of work may also contribute to stress because of job overload and role-based problems, such as power imbalances, conflict of roles, and ambiguous roles.[17,18]

The third component of SSS was Work Inefficacy, which consisted of 7 items. A high score here indicates that a person feels ineffective and is having trouble managing work-related activities. The items were “I cannot prepare class lectures well,” “I cannot manage my time adequately,” “I have lost hope of getting promoted,” “I cannot stay on schedule for work-related activities,” etc. Stress relates to impairment in individual functioning as it relates to work. Inefficient functioning of individuals relates back to stress in the tasks completed at work.[15] These adverse outcomes include decreased productivity, diminished initiative, reduced motivation, cognitive rigidity, and weakened organisational commitment.[17,18] Consistent with prior literature, teacher stress frequently exerts detrimental effects on both individual wellbeing and the standard of instruction.[16,19] Probable outcomes of this could be lower teacher self-efficacy, lower dedication, lower job satisfaction, higher burnout, and increased turnover rate, which necessitate psychosocial interventions.[17-19]

Thus, the three extracted factors, which are Interpersonal Challenges, Personal Malfunctioning, and Work Inefficacy, collectively illustrate the multidimensional nature of stress awareness among teachers. These results corroborate

previous findings that stress perception and coping are deeply intertwined with occupational context and self-evaluative processes.[7,8,15,18]

Limitations and Recommendations

Although this study yielded significant findings, its main limitation was the restricted sampling from only two Pakistani cities. The study examined a sample of institutes in the private sector (2 universities) and semi-government sector (1 university). Future research should include faculty from different government universities, particularly associate and full professors, to enhance generalisability. Additionally, longitudinal assessments could establish predictive validity and intervention effectiveness.

CONCLUSION

This study made important contributions to the development of a measure of the self-awareness of stress in teachers. In this study, three factors were identified: Factor 1 as Interpersonal Challenges, Factor 2 as Personal Malfunction, and Factor 3 being Work Inefficacy. The Self-Awareness Stress Scale may also be applied to other occupational groups, offering valuable insights into stress awareness and management across professions.

CONFLICT OF INTEREST

None

FUNDING

None

DISCLOSURE

This article is part of a thesis for MS in Counselling Psychology at the Institute of Clinical Psychology, University of Management and Technology, Lahore, Pakistan.

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