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# Item development and psychometric testing of Work Stress Scale

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## Abstract

In 2020, the COVID-19 pandemic demanded employees work from home (Ishak & Mangundjaya, 2020). The work-from-home regulation provides several advantages, including high work flexibility. However, this regulation also creates excessive workloads and requires employees to work overtime due to various challenges from superiors with short deadlines. This situation encouraged researchers to develop an accurate psychological scale to identify the employees/ working stress. The scale comprised physical and mental individual responses to managing their uncomfortable work environment. It consists of 48 items measuring four dimensions: role overload, role conflict, role ambiguity, and role responsibility. The participants responded to the items by sending their responses on a 6-point scale, whether s/he felt the sentences described their psychological state from absolutely appropriate (score 1) to absolutely inappropriate (score 6). We recruited 91 employees aged 21 to 36 years old. In the content validity test, three experts judged whether the items were relevant, simple, clear, and unambiguous. The S-CVI was in the range of 0.89 to 0.92, with an S-CVI average of 0.90. Corrected item-total correlation revealed that all items were valid with a coefficient range from 0.40 to 0.79. Cronbach's Alpha was 0.97. We concluded that the instrument was valid and reliable. We also simulated the norm to interpret the participant's obtained scores. We created a standardized interpretation of the scores by applying percentile 25 and 75 to have three categories: low, medium, and high.

## Introduction

Since the first announcement in March 2020, the COVID-19 pandemic has continued until 2022. The pandemic pushes the need to adapt and implement social distancing to minimize the Coronavirus spread. A strategy to adjust to the pandemic is to do school and work from home. Working from home is known as WFH.

Implementing the WFH policy provides several advantages for both employees and companies. One of the advantages for employees is high flexibility and saving time for travel. The benefit for the company is that it can save electricity and water budgets. However, implementing the WFH policy also has drawbacks. The flexibility of time during WFH sometimes impacts the workload. It becomes more excessive, and the employees

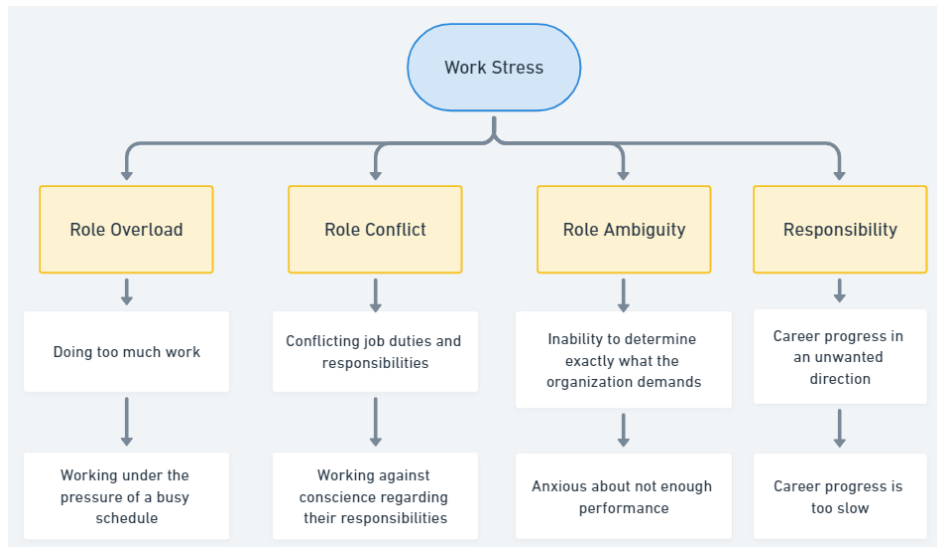
should work overtime because the workload is higher. In addition, the communication between the supervisor, staff, and coworkers resulted in misunderstandings that affected work. Then, because of poor communication, employees became confused and uncertain about their work because they did not have clear directions from colleagues or superiors. The heavy workload and unclear job description made employees do the job overtime, especially the IT employees. According to Azizmunaji (2018), the employee in the IT department is the most stressful worker because employees who cannot meet the demands of the work assigned to them can cause losses to the company (Abid & Safiih, 2021). Goleman (1997) suggests that emotions play a significant role in action and making "rational" decisions. Work stress in the organization has become a vital symptom to observe since the emergence of demands on employees to be efficient at work (Aisah, 2020).

A survey by PwC in 2020 included 300 Chief Financial Officers in the US showed a decrease in work productivity. This was the third most significant concern for companies after the financial impact and global recession (Ishak & Mangundjaya, 2020). Disorientation and anxiety from being burdened with excessive workload can cause employees to experience stress. We interviewed ten retail company employees in Jakarta in the IT department. We found 7 out of 10 employees reported that they had experienced work stress while undergoing WFH. This phenomenon encourages researchers to develop measuring tools that are valid and reliable and can measure employee work stress while working from home.

Working stress is the stress experienced by people because of their role (or job) in the organization. Working or job stress is a harmful physical and emotional response when the role requirements do not match employees' abilities, resources, and needs (Sauter et al., 1999). In this rapidly changing environment characterized by intensifying competition and increasing demands for flexibility and adaptability, organizations have made firm decisions such as outsourcing, downsizing, and mergers to adapt to new situations (Hellgren & Sverke, 2003). Job stressors such as workload, working conditions, and expectations from management cause tension and can lead to poor employee health (Beehr & Glazer, 2015). Stress can evoke negative emotions such as fear, frustration, sadness, and anger (Beehr & Glazer, 2015). Demographic variables such as age, gender, occupation, health status, education, and social support can also affect work stress (Matteson & Ivancevich, 1990). Men and women experience many of the same stressors (Barling et al., 2005). Other experts, Kreitner and Kinicki (2005), suggested that stress is an adaptive response linked by individual psychological characteristics and processes, which is a consequence of any external action, situation, or event that places particular mental and physical demands on a person or their job. Individual-level stressors are directly related to personal and work (person-job interface). The most common examples of individual-level stressors are:

1. Role Overload is a condition in which employees have too much work to do or are under pressure from a busy schedule.
2. Role conflict occurs when employees have duties and responsibilities that conflict with one another. This conflict also occurs when employees should do something contrary to their conscience or morals.
3. Role ambiguity occurs when the job itself is not clearly defined. Because employees are unable to determine what the organization is asking of them, they are constantly worried about whether their performance is sufficient or lacking.
4. Responsibility is related to employee career advancement. Career progress that is too slow, too fast, or in an unwanted direction will cause employees to experience high-stress levels. Especially if they have to be responsible for someone else's career will cause the stress level to be higher.

Robbins (2006) defined job stress as a dynamic condition in which individuals face opportunities, constraints, or demands related to their desires. However, the results are uncertain but essential. According to Robbins, indicators or dimensions of work stress are task demands, role demands, interpersonal demands, organizational structure, and leadership. Considering the review literature, we applied Kreitner and Kinicki's (2005) perspective.



**Figure 1. Kreitner and Kinicki's (2005) working stress structure**

The instrument consists of 48 items with four domains, and the participants responded to the items by answering in 6 options, whether they feel the statement describes their psychological state from "very describing me" (score 1) to "very not describing me" (score 6).

**Table 1. The dimensions and examples of items.**

Dimensions	Indicators	Items (examples)
1. Role overload	a. Doing too much work	I am very uncomfortable doing too much work
	b. Working under the pressure of a busy schedule	I am stressed with a busy work schedule
2. Role Conflict	a. Conflicting job duties and responsibilities	I am overwhelmed by the demands of a job that is different from my responsibilities
	b. Working against conscience regarding their responsibilities	I feel the conflict within myself when doing a task that goes against my conscience

Dimensions	Indicators	Items (examples)
3. Role Ambiguity	a. Inability to identify the organization's demands precisely	I am worried about the results of my work if I am not able to provide what my boss asks for
	b. Anxious about not having enough performance	I am worried that my performance will not meet the expectations of my superiors
4. Responsibility	a. Career progress in an unwanted direction	I am very disappointed because the opportunity for career advancement is not paid attention to by my superiors
	b. Career progress is too slow	I feel dissatisfied because my career progress in the company is too slow

## Method

### Participants

We recruited employees in the IT department of a retail company in Indonesia. We applied census by distributing the instrument via Google Forms to 120 employees in this department. After inspecting the quality of the data, we dropped some incomplete data and had 91 data. The composition of the participants is 59 male and 32 female, age 21 – 31 years old ( $M = 27$ ,  $SD = 4$ ).

### Psychometric testing methods

We implemented three psychometric tests in this study: content and construct validity for the validity testing and reliability testing. In content validity, we involved expert judgment in evaluating the items in qualitative and quantitative approaches. In the qualitative method, the expert delivered their opinion and evaluation on the relevance and statement of the items. Quantitatively, we applied the content validity index (S-CVI = scale-CVI) with scores 1 and 2 indicating the poor item and scores 3 and 4 as good items, whether the items were relevant to the dimension and written in simple, clear, and unambiguous sentences.

In the construct validity testing for the scale, we employed corrected item-total correlation with Pearson correlation. Here we intended to identify whether the items accurately measured the construct. The critical value of this analysis was 0.174 ( $df = 89$ ,  $\alpha = 0.05$ ). For the reliability testing, we used a standard of 0.70 to interpret the coefficient reliability (Anastasia & Urbina, 2004).

We also designed a simulation of a norm, a standard, to interpret the scores of the scale. We implemented the within-group norm method by dividing the score distribution into three groups: low, medium, and high. We applied percentiles 25, 50, and 75 for categorizing.

## Result

### Content validity

In the qualitative analysis, three experts with psychology backgrounds gave inputs to revise some sentences such as hating work to being anxious and unhappy being under pressure from work. In the quantitative analysis, we conducted a CVI analysis and calculated the scale level of the CVI. The result of S-CVI is presented in table 2. The result revealed that the content of the scale was valid.

**Table 2. The SCVI coefficients of the Working Stress Scale**

Content validity Index	Relevance	Clarity	Simplicity	Unambiguity
S-CVI/UA	0,77	0,71	0,71	0,75
S-CVI/AVE	0,92	0,90	0,89	0,92

*\*S-CVI/UA = Scale-CVI universal agreement of experts; S-CVI/AVE = Scale-CVI average.*

### Construct validity

Corrected item-total correlation revealed that all items were valid, with coefficients ranging from 0.40 to 0.79. Table 3 describes the list of the items.

**Table 3. The list of the final 48 items**

No	Bahasa Indonesia	English	item-total (total score of 48 items)
1	Saya sangat tidak nyaman melakukan pekerjaan yang terlalu banyak	I am very uncomfortable doing too much work	0.621
2	Pekerjaan lebih dari satu membuat saya kewalahan	Multiple jobs overwhelm me	0.470
3	Saya merasa kesal melakukan banyak pekerjaan yang diberikan oleh atasan	I feel annoyed doing a lot of work given by my superiors	0.671
4	Saya merasa terbebani ketika mengerjakan lebih dari satu pekerjaan	I feel overwhelmed when I do more than one job	0.584
5	Saya merasa terbebani karena atasan memberikan pekerjaan yang melebihi tanggung jawab saya	I feel burdened because my boss gives me work that exceeds my responsibility	0.622
6	Pekerjaan saya terlalu banyak sehingga membuat saya kelelahan secara psikologis	I have so much work that it makes me psychologically exhausted	0.651
7	Saya terbebani ketika harus bekerja dengan jadwal kerja yang padat	I am burdened when I have to work with a busy work schedule	0.624
8	Saya tertekan dengan jadwal pekerjaan yang padat	I am stressed with a busy work schedule	0.677
9	Saya kewalahan dengan jadwal pekerjaan yang padat.	I am overwhelmed with a busy work schedule.	0.578

No	Bahasa Indonesia	English	item-total (total score of 48 items)
10	Jadwal pekerjaan yang padat membuat saya tidak dapat beristirahat	Busy work schedule makes me unable to rest	0.741
11	Tekanan jadwal yang padat membuat saya tidak dapat berkonsentrasi	The pressure of a busy schedule keeps me from concentrating	0.744
12	Jadwal pekerjaan yang padat membuat saya kehilangan waktu pribadi	Busy work schedule makes me lose personal time	0.631
13	Saya bingung dengan jenis tugas yang tidak sesuai	I'm confused by the incompatible task type	0.574
14	Tanggung jawab yang tidak sesuai dengan pekerjaan membuat saya terbebani	Responsibilities that are not by work burden me	0.670
15	Saya kewalahan dengan tuntutan pekerjaan yang berbeda dengan tanggung jawab saya	I am overwhelmed by the demands of a job that is different from my responsibilities	0.631
16	Saya gelisah ketika tanggung jawab pekerjaan saya saling bertentangan	I get restless when my job responsibilities conflict with each other	0.662
17	Tugas yang bertentangan dengan tanggung jawab membuat saya merasa konflik batin	Tasks that conflict with responsibilities make me feel inner conflict	0.646
18	Saya merasa cemas hasil pekerjaan saya tidak berkualitas karena bertentangan dengan tanggung jawab saya	I feel worried that my work is not of good quality because it conflicts with my responsibilities	0.576
19	Saya merasakan konflik dalam diri sendiri ketika mengerjakan tugas yang bertentangan dengan hati nurani saya	I feel the conflict within myself when doing a task that goes against my conscience	0.507
20	Saya merasa konflik batin ketika mengerjakan pekerjaan yang berbeda dengan keinginan saya	I feel inner conflict when doing work that is different from what I want	0.653
21	Konflik moral yang saya rasakan dalam bekerja membuat saya tidak nyaman melakukan tugas-tugasnya	The moral conflict that I feel at work makes me uncomfortable doing the tasks	0.727
22	Saya sangat kecewa kepada atasan ketika diberikan tugas yang tidak sesuai dengan bidang kompetensi saya	I am very disappointed with my superiors when given assignments that are not in accordance with my area of competence	0.789

No	Bahasa Indonesia	English	item-total (total score of 48 items)
23	Saya lelah untuk mengerjakan pekerjaan yang bertentangan dengan hati nurani saya	I'm tired of doing work that goes against my conscience	0.723
24	Saya menjadi mudah marah ketika pekerjaan saya tidak sesuai dengan apa yang saya inginkan	I get angry easily when my work is not the way I want it to be	0.621
25	Saya bingung mengerjakan pekerjaan saya karena peran saya ambigu	I am confused about doing my job because my role is ambiguous	0.780
26	Saya cemas atas hasil pekerjaan saya apabila tidak mampu memberikan yang diminta atasan	I am worried about the results of my work if I am not able to provide what my boss asks for	0.403
27	Saya tidak mampu menentukan apa yang sebenarnya diharapkan oleh perusahaan	I am unable to determine what the company actually expects	0.762
28	Saya mudah patah semangat ketika saya tidak mampu memahami permintaan atasan	I get discouraged easily when I can't understand my boss's requests	0.599
29	Saya kesal terbebani menerima umpan balik buruk dari atasan terkait pekerjaan saya	I resent the burden of receiving bad feedback from my boss regarding my work	0.523
30	Saya cemas ketika sulit memahami tugas yang diberikan atasan	I worry when it is difficult to understand the tasks given by superiors	0.765
31	Saya khawatir kinerja yang saya lakukan tidak sesuai dengan ekspektasi atasan	I am worried that my performance will not meet the expectations of my superiors	0.583
32	Saya cemas ketika kinerja saya belum memenuhi indikator pencapaian minimal	I am worried when my performance does not meet the minimum achievement indicators	0.738
33	Saya gelisah ketika memikirkan kinerja yang saya lakukan belum maksimal	I get nervous when I think that my performance is not optimal	0.698
34	Saya sangat kecewa pada diri sendiri karena kinerja saya belum maksimal	I was very disappointed in myself because my performance was not optimal	0.718
35	Saya cemas ketika pekerjaan yang saya lakukan tidak tepat dengan yang diharapkan oleh atasan	I am worried when the work I do is not in accordance with the expectations of the boss	0.664
36	Saya kesulitan tidur nyenyak di malam hari karena cemas memikirkan pekerjaan	I have trouble sleeping well at night because I worry about work	0.682

No	Bahasa Indonesia	English	item-total (total score of 48 items)
37	Saya sangat kecewa karena kesempatan kenaikan jenjang karir kurang diperhatikan atasan	I am very disappointed because the opportunity for career advancement is not paid attention to by my superiors	0.729
38	Saya cemas karena tidak ada jenjang karir yang menjanjikan pada perusahaan	I am worried because there is no promising career path in the company	0.735
39	Saya kesal karena tidak mendapatkan promosi naik jabatan	I was upset that I didn't get a promotion	0.725
40	Saya merasa tertekan ketika ditolak saat mengajukan kenaikan jabatan	I felt pressured when I was turned down when I applied for a promotion	0.725
41	Saya cemas pada perkembangan karir saya sehingga ingin mengundurkan diri dari perusahaan ini	I am worried about my career development, so I want to resign from this company	0.633
42	Saya merasa tertekan dengan ketidakjelasan perkembangan karir di perusahaan	I feel pressured by the unclear career development in the company	0.653
43	Saya merasa tidak puas karena kemajuan karir di perusahaan terlalu lambat	I feel dissatisfied because my career progress in the company is too slow	0.534
44	Saya merasa gelisah dengan kebijakan karir di perusahaan	I feel uneasy about the company's career policy	0.576
45	Saya kecewa karena tidak memiliki kemajuan karir yang sesuai dengan kinerja saya	I was disappointed because I didn't have career advancement that matched my performance	0.532
46	Saya cemas karena prestasi kerja saya tidak memberikan kemajuan pada karir saat ini	I am worried that my work performance is not advancing my current career	0.538
47	Saya menyesal karena kurangnya prestasi kerja membuat kemajuan karir saya lambat	I regret that the lack of work performance has slowed my career progress	0.717
48	Saya tertekan ketika melihat rekan kerja memiliki karir yang lebih maju dari saya	I get depressed when I see co-workers who have more advanced careers than me	0.779

### Reliability

The reliability testing showed that the Cronbach Alpha for the scale was 0.974. Table 4 explains the reliability coefficients of each dimension. According to Anastasia and Urbina (2004), the scale is reliable.



**Table 4. Reliability Coefficients of Working Stress Scale for each dimension**

<b>Dimensions</b>	<b>Cronbach Alpha</b>
Role Overload	0.917
Role Conflict	0.923
Role Ambiguity	0.917
Role Responsibility	0.925

### **The norm for score interpretation (a simulation)**

The distribution score was from 73 to 263 ( $M = 148.71$ ,  $SD = 45,56$ ). With  $P_{25} = 110$  (Low Stress);  $P_{50} = 140$  (Medium Stress); dan  $P_{75} = 179.5$  (High Stress). We assumed that individuals in the medium category could cope well with work stressors such as role overload, role conflict, role ambiguity, and responsibility. There are some stressors that cannot be handled well by individuals, but individuals can handle other work stressors well. For example, employees very uncomfortable doing too much work and employees feel worried about their performance. In the low-stress category, we think employees can cope with pressure in the work environment and with coworkers. In the high-stress group, we suppose employees cannot cope with their emotions, and the pressure is too intense.

Based on this category, we made a simulation of the interpretation. We found 32 participants in the low group, 40 in the medium group, and 19 in the high group. This simulation showed that working from home is not stressful for some employees. We hypothesized it is due to flexible working hours; therefore, the employees can adjust their working hours according to their needs. They can stretch and take a break between working hours to reduce stress. This study's results align with research by Utami et al. (2021) on Jakarta employees. They found that working from home made employees have normal stress levels.

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