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Validation of Occupational Well-being Scale using RASCH Analysis

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Abstract

The blessing of a job in the field of education will be felt by an educator when happiness and enjoyment are present in the teaching process, which can be illustrated through the variable of occupational well-being. Therefore, a valid and reliable scale to measure the occupational well-being variable in teachers is needed. This study aims to validate the Tripartite Occupational Well-being scale in its Indonesian version using the RASCH analysis model. The study used a sample of early childhood education teachers, with a total of 120 teachers selected through accidental sampling. The results indicate that the measurement tool is valid and reliable for use in research, with a Cronbach's alpha value of α=0.89, person reliability of 0.84, and item reliability of 0.90. Furthermore, results show that the measurement tool is capable of measuring construct of occupational well-being with a raw variance by measures value of 44.1%, which categorized as excellent category. However, it is recommended to revise item no.1 on subjective vitality because its infit MNSQ value exceeds the average infit MNSQ value of 1.61. This study implies that Tripartite Occupational Well-being Scale which adapted into Bahasa Indonesia is valid and reliable for measuring occupational well-being among early childhood teachers.
Keyword: *Early Childhood Teacher, RASCH Analysis, Occupational Well-being*

Abstrak

Keberkahan sebuah pekerjaan di bidang pendidikan akan dirasakan oleh seorang pendidik ketika kebahagiaan dan kenikmatan hadir dalam proses mengajar, yang mana salah satunya dapat tergambar melalui variabel *occupational well-being*. Oleh sebab itu, dibutuhkan pengukuran melalui skala yang valid dan reliabel untuk mengukur variabel *occupational well-being* pada guru. Penelitian bertujuan untuk memvalidasi skala *Tripartite Occupational Well-being* dengan versi bahasa Indonesia dengan menggunakan model analisis RASCH. Penelitian ini menggunakan sampel guru anak usia dini dengan total sampel 120 Guru. Penelitian ini menggunakan accidental sampling. Hasil analisis model RASCH menunjukkan bahwa alat ukur dikatakan valid dan reliabel untuk digunakan dalam penelitian dengan nilai alpha cronbach α=0,89 dengan nilai reliabilitas person = 0,84 dan nilai reliabilitas item = 0,90. Selanjutnya hasil analisis menunjukkan bahwa skala *Tripartite Occupational Well-being* mampu digunakan untuk mengukur konstrak *occupational welll-being* dengan nilai raw variances by measures = 44,1% yang masuk kedalam kategori sangat bagus. Namun, disarankan untuk melakukan revisi kepada aitem no.1 subjective vitality karena nilai infit MNSQ melebih nilai rerata infit MNSQ = 1,61. Hasil penelitian ini mengimplikasikan bahwa skala *Tripartite Occupational Well-being* telah memiliki validitas dan reliabilitas yang baik untuk digunakan dalam mengukur occupational well-being pada guru anak usia dini yang telah diadaptasi dalam bahasa Indonesia.
Kata Kunci : Analisis RASCH, Guru Anak Usia Dini, *Occupational Well-being*

1. Introduction

A person's work plays a crucial role in their lives, taking up a large amount of their time and having an effect on their general wellbeing. A person's physical and emotional well-being can be significantly impacted by how they handle their work (Bartels et al., 2019). Researchers and scholars have focused increasingly intently on the connection between mental health and work during the last several decades (Weziak-Bialowolska et al., 2020). This is because people's lives are being significantly impacted by work-related stress, which emphasizes the need to investigate causes linked to employees' mental health (Ornek & Esin, 2020).

Discussion about mental health of people who work in the education sector, especially instructors who are essential to the success of planned educational programs fascinating subject. Being a teacher can result in high levels of stress. If this stress is not controlled, it can lead to burnout, low job satisfaction, and decreased job performance, all of which can have an adverse effect on teachers' mental health (Agyapong et al., 2022). A study by Yogi Susanti et al. (2020) provided an example of teacher stress statistics, showing that all 38 of the sampled teachers reported feeling mildly stressed.

Teacher stress is also common among kindergarten instructors, who face specific obstacles. Gagnon et al. (2019) explained that in 2014, the United States suffered an early childhood education crisis in which many instructors reported high levels of stress, and 30-50% of young teachers quit their professions within the first five years of employment. According to the report, high stress levels among early childhood educators are caused by excessive demands for children's learning results, a lack of professional recognition, and insufficient resources for teachers to accomplish their jobs. Interestingly, same behaviour was recently noticed in Indonesia. Afrida and Rohim (2020) in their research showed that 37 kindergarten instructors were under excessive stress. Early childhood educators experience stress as a result of various high-intensity professional demands, such as managing noisy classrooms and being responsible for stimulating children's social and emotional development, which impacts their well-being (Cheng et al., 2020)..

Occupational well-being (OWB) refers to the state of being well at work. OWB is described as mental health in the workplace, which includes feeling at ease with one's employment and being able to do professional tasks effectively (Collie, 2023). OWB is regarded as a broad problem that affects individuals in their workplaces and indirectly influences society (Vauhkonen et al., 2023). The parts of OWB that benefit the field of an individual's work include the quality of the individual's job, as well as the feelings and perspectives the individual develops about their work (Bhatti et al., 2024).

High levels of occupational well-being have a positive impact on teachers' job performance, capacity to offer excellent instruction, ability to establish a favourable and fun classroom environment, and teacher retention (Li et al., 2021).Occupational well-being is an area that should be enhanced and given special attention by educational institutions because of its ability to increase the interaction between students and teachers, which is a crucial motivator for enhancing teaching quality and the broader education system (Kume, 2024).

Several studies show that OWB can be influenced by both negative and positive variables. Excessive workplace stress and emotional weariness are negative elements impacting OWB, whereas

work engagement and getting work incentives are positive elements that can have an impact on OWB (Pöysä et al., 2022). Furthermore, OWB among teachers is influenced by a variety of characteristics, including gender, motivation and excitement for teaching, and a desire to succeed (Brouskeli et al., 2018).

Scarcity of research on teachers' well-being, particularly in relation to their teaching responsibilities, occupational well-being is a fascinating topic to investigate among Indonesian early childhood educators. When conducting a study on occupational well-being, it is necessary to choose a scale that can effectively evaluate the idea of occupational well-being within the context and culture of Indonesia. However, studies on well-being, particularly among teachers, have mostly focused on variables such as subjective well-being and psychological well-being. As a result, research that use measures related to occupational well-being are relatively rare.

RASCH analysis is one way for measuring the quality of an assessment tool. Rasch is a mathematical model created by Georg RASCH in 1960 that is commonly used to assess the quality of measurement equipment, notably in psychology. The RASCH technique follows the notion of objective measurement, which ensures that the metric used remains consistent independent of the construct or theory being measured, resulting in accurate results (Boone & Noltemeyer, 2017). Unlike the Classical Test Theory (CTT) approach, RASCH analysis uses Item Response Theory (IRT) to determine the quality of a scale based on both the respondents and the items. Both are measured using the same metric, logits, resulting in more consistent and accurate results (Van Zile-Tamsen, 2017). RASCH analysis has significant benefits and is frequently used in psychometric research in the field of psychology (Aryadoust et al., 2019).

This study aimed to analyse the validity and reliability of the occupational well-being scale using Rasch analysis, which is accurate in measuring the quality of assessment instruments and the phenomena observed. It is intended that this occupational well-being measurement method can be employed in future well-being studies and thus provide an accurate portrayal of the occupational well-being of teachers.

2. Literature Review

2.1 Occupational Well-being

Collie (2023)defines occupational well-being as a condition of mental health in the workplace that is characterized by job satisfaction and the ability to perform work duties and tasks efficiently. According to Van Horn, occupational well-being can be broadly defined based on distinct domains of work, embracing affective, motivational, behavioural, cognitive, and psychosomatic elements (Chan et al., 2023).

Teaching profession can be extremely stressful, requiring involvement, high focus, mental flexibility, emotional regulation, confidence, and resilience (Braun et al., 2019). Teaching and being a teacher are complex professions in which teachers can succeed when there is a balance between the responsibilities imposed on them and the resources and support available to them (Collie

et al., 2020). Excessive demands have a severe impact on a teacher's occupational well-being. Low occupational well-being can have an impact on self-esteem, work satisfaction, and the quality of early childhood education (Cumming, 2017). Ayudya et al. (2022) describe the phenomenon of teachers with low occupational well-being. The study explains that early childhood teachers experience stress due to excessive job demands, resulting in symptoms such as headaches, irritability, anxiety, sleep problems, overeating, and other issues.

Several studies have sought to analysed the factors that can affect and influence teachers' occupational well-being. Puertas Molero et al. (2019) discovered that emotional intelligence is an essential factor in avoiding unpleasant emotions and sustaining well-being stability. Mariyati et al. discovered that religiosity can have an impact on the occupational well-being of early childhood teachers, and mindfulness can mitigate this association (Mariyati et al., 2024). However, research on scales and assessment instruments for occupational well-being is relatively scarce.

The Tripartite Occupational Well-Being Scale was designed by Collie (2023) to assess teachers' occupational well-being. This scale is based on Collie's idea of occupational well-being, which considers subjective vitality, behavioural engagement, and professional advancement. Subjective vitality is characterized as an individual's excitement for their job. Behavioural engagement is defined as an individual's attempt to work efficiently, productively, and effectively. Professional growth refers to the contemplation and planning that an individual does to advance their profession. These three elements serve as components of the Tripartite Occupational Well-Being Scale (Collie, 2023)

2.2 RASCH Analysis

RASCH analysis is a type of analysis that is widely utilized in the field of psychometrics because of its accuracy and depth. The main assumption behind RASCH analysis is that the likelihood of an individual's score on a test is determined by two factors: the individual's "ability" and the difficulty of the scale items or tests utilized (Tesio et al., 2024). RASCH analysis, which employs the principles of item response theory, is appropriate for analysing scales and measurement tools that contain multi-item construct measures, with each item measuring a specific aspect based on the construct of the variable or theory used (Kean et al., 2018).

Several earlier psychometric investigations on psychological scales used the RASCH technique. Kristiana et al. (2019) used RASCH analysis to investigate the Utrecht Work Engagement Scale-9. Similarly, Efandi & Putri (2023) used RA SCH analysis to assess a self-efficacy scale for nurses. Furthermore, Mariyati et al. (2023) employed RASCH analysis to assess an academic procrastination measure for school pupils.

3. Method

This study uses a descriptive quantitative research method to describe the scope of the research instrument. This study's population consists of 177 teachers from Aisyiyah Kindergarten in Sidoarjo, according to data from Sekolah Kita by the Ministry of Education and Culture. Using the Krejcie Morgan table and a 5% margin of error, a sample size of 118 teachers was calculated.

This study will make use of Collie's Tripartite Occupational Well-being Scale (2023). This measure has 12 items that represent three dimensions of occupational well-being: subjective vitality (4 items), behavioural engagement (4 items), and professional growth (4 items). Each feature is provided a code for easy reference in tables, with code A representing subjective vitality, code B representing behavioral engagement, and code C representing professional development. Experts will translate the scale into Indonesian and tweak it for the context of Indonesian teachers.

RASCH Analysis will be used to assess the validity and reliability of the Tripartite Occupational Well-Being Scale. Winstep for Windows will be utilized to assist with data analysis.

4. Result And Discussion

Demographic Data

Table 1. Demographic Sample

Age	Number	Percentage
51 Above	10	8,47%
41-50	38	32,20%
31-40	40	33,90%
21-30	30	25,42%
Total	118	100%
Education Background		
Highschool	10	8,47%
D1-D3 Vocational	6	5,08%
Bachelor	100	84,75%
S2/ Masters	2	1,69%
Total	118	100%

Table 1. Demographic Sample

Marriage Status	Number	Percentage
Married	93	78,81%
Not Married	17	14,41%
Divorced with living spouse	2	1,69%
Divorced by death	6	5,08%
Total	118	100%
Number of Children		

5 or more	1	0,85%
3-4 Children	21	17,80%
1-2 Children	70	59,32%
No Children	26	22,03%
Total	118	100%

The sample group will also be asked to provide demographic information for future research. This demographic information includes age, educational background, marital status, and the number of children. The demographic data from the successfully obtained research sample is presented above.

Reliability

Table 2. Reliability

					Infit		Outfit	
	Total Score	Count	Measure	Model S.E.	MNSQ	ZSTD	MNSQ	ZSTD
Mean	47.5	12.0	2.10	.64	-	-	-	-
SEM	.5	.0	.18	.02	-	-	-	-
P.SD	5.4	.0	1.97	.22	-	-	-	-
S.SD	5.5	.0	1.98	.22	-	-	-	-
Max.	60.0	12.0	8.33	1.85	-	-	-	-
Min.	27.0	12.0	-1.96	.32	-	-	-	-
Real RMSE	.79	True SD	1.80	Separation	2.28	Person Reliability		.84
Model RMSE	.68	True SD	1.85	Separation	2.72	Person Reliability		.88

S.E. Of Person Mean = .18

Person Raw Score-To-Measure Correlation = .96

Cronbach Alpha (Kr-20) Person Raw Score "Test" Reliability = .89 Sem = 1.82

Standardized (50 Item) Reliability = .97

	Total Score	Count	Measure	Model S.E.	MNSQ	ZSTD	MNSQ	ZSTD
Mean	474.8	120.0	.00	.19	1.04	-.10	1.09	.17
SEM	5.7	.0	.20	.00	.17	.74	.17	.75

P.SD	19.0	.0	.65	.02	.57	2.44	.57	2.49
S.SD	19.9	.0	.68	.02	.60	2.55	.59	2.60
Max.	500.0	120.0	1.16	.21	2.85	7.11	2.80	6.96
Min.	437.0	120.0	-.92	.16	.60	-2.71	.50	-3.34
Real RMSE	.20	True SD	.62	Separation	3.03	Item Reliability		.90
Model RMSE	.19	True SD	.62	Separation	3.33	Item Reliability		.92

Based on the test results using the summary table, it was found that the scale has a reliability value of α = .89. According to Sumintono & Widhiarso (2014), this reliability value falls into the category of excellent or satisfactory. Furthermore, based on item fit, the item reliability score is α = .84, and based on person fit, the person reliability score is α = .90. Both reliability results are considered excellent (Sumintono & Widhiarso, 2014). Thus, the tripartite occupational well-being scale adapted to the context of Indonesian teachers can be said to be reliable for measuring the level of occupational well-being in early childhood education teachers.

Item Measure

Table 3. Measure

Entry Number	Measure	Item
5	1.16	B1
11	.74	C3
10	.51	C2
2	.42	A2
6	.39	B2
12	.22	C4
1	-.09	A1
7	-.20	B3
9	-.71	C1
3	-.75	A3
8	-.75	B4
4	-.92	A4
Mean	.00	

SD	.65

Based on the Logit values collected, an item measure can be used to assess which items are the easiest and most difficult to agree on (Sumintono & Widhiarso, 2014). According to the item measure values, item B1 is the easiest item for the research sample to agree on. Item B1 includes the statement, " Saya menyelesaikan pekerjaan saya dengan standard yang tinggi," which represents the behavioral engagement component. On the other hand, item A4 is the one on which subjects prefer to differ. Item A4 has the phrase " Saya merasa bersemangat dengan pekerjaan yang saya lakukan," which represents the subjective vitality aspect.

Item Fit Order

Table 4. Tabel Item Fit Order

Entry Number	MNSQ	ZTSD	MNSQ	ZTSD	Item
1	2.85	7.11	2.80	6.96	A1
2	1.17	.98	1.36	1.94	A2
5	1.00	.07|	1.24	1.43	B1
4	1.11	.67	1.09	.56	A4
6	1.00	.05	1.11	.67	B2
8	.97	-.14	.81	-1.06	B4
11	.79	-1.33	.93	-.38	C3
7	.89	-.57	.91	-.49	B3
12	.79	-1.24	.87	-.75	C4
10	.64	-2.43	.76	-1.48	C2
3	.74	-1.62	.66	-2.09	A3
9	.60	-2.71	.50	-3.34	C1
Mean	1.04	-.10	1.09	.17	
SD	.57	2.44	.57	2.49	

Item fit order can be used to identify which items do not fit or are outliers among the others (Sumintono & Widhiarso, 2014). This can be accomplished by comparing the Logit values on the MNSQ for both infit and outfit to the total value of Mean and Standard Deviation (1.04 + 0.57 = 1.61). Based on the comparison, it was determined that item A1 does not fit or is an outlier when compared to the others. Item A1 depicts item number one with the phrase " saya merasa bersemangat untuk bekerja

setiap hari," which illustrates the subjective vitality concept. Based on these findings, it is recommended to update the item to ensure that it appropriately assesses occupational well-being.

Unidimensionality

Table 5. *Raw Variances* dan Unidimensionality

Raw Variances Explained By Measures	58,10%
Raw Unexplained Variances	41,90%
1st Contrast	8,90%
2nd Contrast	6,50%
3rd Contrast	5,40%
4th Contrast	4,70%
5th Contrast	3,50%

Unidimensionality in RASCH analysis is used to assess whether the tripartite occupational well-being scale is adequate and accurate in evaluating occupational well-being among Indonesian early childhood educators. This can be assessed by looking at the percentage of raw variances by measure, which in Table 4 is 58.10%. According to Sumintono and Widhiarso (2014), the minimum value for a scale is 20%, with values higher than 40% regarded more favorable. Based on these criteria, we may infer that the tripartite occupational well-being scale has good dimensionality. This is additionally reinforced by the contrast values of unexplained variances, where none exceed 10% in each comparison, demonstrating that the scale is suitable for evaluating the construct of occupational well-being.

Differential Item Functioning

Table 6. Raw Differential Item Functioning

Item	Probability	Keterangan
A1	.213	Terdapat bias aitem bedasarkan usia
A2	.49	Terdapat bias aitem bedasarkan jumlah anak
A2	.49	Terdapat bias aitem bedasarkan status pernikahan
A2	.006	Terdapat bias aitem bedasarkan usia

Differential Item Functioning (DIF) can be used to determine whether certain demographic data can influence responses or introduce bias in items of the scale (Sumintono & Widhiarso, 2014). The testing results indicate that item A1 shows bias based on Age, while item A2 exhibits bias based on number of children, marital status, and age. Item A1 states " saya merasa bersemangat untuk bekerja setiap hari" and item A2 states " Saya merasa penuh dengan energi ketika saya memikirkan tentang pekerjaan saya." Both aspects represent the subjective vitality construct.

5. Discussion

Based on the results of the RASCH analysis, it can be stated that Collie's (2023) tripartite occupational well-being scale, which has been adapted into Indonesian, is valid and reliable for assessing the construct of occupational well-being among early childhood educators. Furthermore, due to its unidimensionality, the tripartite occupational well-being scale has a great potential to assess the occupational well-being construct, as seen by the percentage of raw variations explained by measures of 58.10%. Sumintono and Widhiarso (2014).classify this score as excellent. As a result, it is possible to conclude that this scale can be employed in a variety of research investigations to produce accurate and dependable findings, maximizing the insights gained (Surucu & Maslakci, 2020).

The findings are consistent with other earlier research that used the RASCH analysis method to assess the quality of scales. Shofia and Nawangwulan's (2021) investigation on the adaption self-adjustment scale discovered that unidimensionality, as shown by raw variances explained by measurements, reached 29%. Afdal et al. (2020) also found a 38.5% unidimensionality score in their RASCH analysis of the family interpersonal communication theory. In their study of the perceived social support scale converted to Indonesian language, Syahputra et al. (2022) found a 49.9% unidimensionality score. Sumintono and Widhiarso (2014)reported that the results of these three research above the 20% barrier, suggesting that they satisfied the minimal criteria for an acceptable percentage of variance explained by measurements.

However, some items identified as outliers and not fitting well with others should be checked and revised. A1 comes out as an anomaly in terms of item fit and response bias related to age, according to the differential item functioning study. Furthermore, A2 exhibits response bias based on the number of children, marital status, and age. Revising these items is critical to ensuring that the measurement tool effectively assesses the target construct and produces exact results (Boateng et al., 2018). This revision process should concentrate on improving statement sentences' clarity and ensuring appropriate comprehension by the intended audience.

This study has various limitation, notably the online dissemination of the scale, which prohibited the researchers from personally overseeing each questionnaire completion. This approach has the potential to introduce response bias into the study population.

6. Conclusion

Based on the RASCH analysis of the Tripartite Occupational Well-being Scale translated into Indonesian, it can be concluded that the scale is valid and reliable for measuring the construct of

occupational well-being in early childhood educators. A1 and A2 are two elements that need to be double-checked and reevaluated, but the scale is generally of high quality. Future occupational well-being research should look at demographic data, as demographic characteristics in this study may have introduced bias in several scale items.

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