

Validation of the academic burnout scale with the Rasch model

Arbin Janu Setiyowati^{a*}, Universitas Negeri Malang, Department of Guidance and counselling, Semarang St. No. 5, Malang, 65145, Indonesia <https://orcid.org/0000-0003-4839-9631>

Indriyana Rachmawati^b, Universitas Negeri Yogyakarta, Department of Guidance and counselling, Colombo St. No. 1, Yogyakarta, 55281, Indonesia <https://orcid.org/0000-0002-2867-8847>

Riskiyana Prihatiningsih^c, Universitas Negeri Malang, Department of Guidance and counselling, Semarang St. No. 5, Malang, 65145, Indonesia <https://orcid.org/0000-0002-1638-5510>

Suggested Citation:

Setiyowati, A. J., Rachmawati, I. & Prihatiningsih, A. (2022). Validation of the academic burnout scale with the Rasch model. *Cypriot Journal of Educational Science*. 17(8), 2888-2898. <https://doi.org/10.18844/cjes.v17i8.7844>

Received from May 11, 2022; revised from July 21, 2022; accepted from August 20 2022.

©2022 Birlesik Dünya Yenilik Arastirma ve Yayıncılık Merkezi. All rights reserved.

Abstract

Academic burnout can cause exhaustion, frustration, lack of motivation and reduced academic ability in school. This research aims to develop an academic burnout scale with the Rasch model approach. The convenience sampling method was applied in taking samples, which involved 576 high school students. The research instrument used was the academic burnout scale. The analysis technique applied the Rasch model with the Winstep programme. The results of this research show that the developed academic burnout scale indicates better validity and reliability, and so it complies with the psychometric principles of psychology assessment instrument development. The research findings can be utilised as the instruments for student academic burnout assessment. Further experiments involving diverse subjects are necessary to improve the quality of the academic burnout scale's items.

Keywords: Validation, scale, academic burnout, psychology assessment, Rasch model.

* ADDRESS OF CORRESPONDENCE: Arbin Janu Setiyowati, Universitas Negeri Malang, Department of Guidance and counselling, Semarang St. No. 5, Malang, 65145, Indonesia
Email address: arbin.janu.fip@um.ac.id

1. Introduction

1.1 Theoretical framework

Academic burnout has become an important issue in the education system that negatively impacts the learning process. It can even lead to long-term impact after graduation. The main purpose of an education system everywhere is to develop directed, motivated, progressive and productive students (Bikar & Pourghaz, 2018). Unfortunately, academic burnout has become an incontrovertible issue and the contrary to academic achievement. Academic burnout occurs if certain workloads do not match the individuals carrying out the work (Rahmati, 2015). This burnout might cause mental distress on students as frustration, anxiety, hostility and fear.

Andriyani et al. (2017) and Mostafavian et al. (2018) state that academic burnout is a feeling of incapability and mental fatigue caused by academic stress that occurs because of the inadequacy of resources essential in carrying out and getting the academic tasks done. Burnout causes mental distress in various forms, such as anxiety, depression, frustration and fear. Other research shows that burnout causes lack of commitment, as well as productivity and concentration decrease (Rahmati, 2015). The burnout dimension, such as physical fatigue and emotional exhaustion, causes a decrease in performance and other negative feelings (Greenberg & Baron, 1990).

Fun et al. (2021) stated that individuals who experience strong academic burnout in the learning process will not be able to complete their studies properly. This is due to a decrease in the quality of learning, being happy to delay assignments and lack of concentration in learning, thereby reducing academic achievement. This means that academic burnout in the long term has a significant influence on an individual's academic future. The behaviour of delaying/completing tasks or even decreasing academic achievement can overshadow the future of individuals who experience academic burnout. This condition occurs because individuals feel bored with activities that continuously occur, causing burnout.

Maslach and Leiter (1997) stated that there are three dimensions of academic fatigue, namely exhaustion, cynicism and ineffectiveness. Exhaustion occurs when individuals experience excessive fatigue, both emotional and physical. Individuals feel that their energy is drained; they cannot relax and recover, and even wake up feeling tired. Cynicism occurs when individuals show a cold attitude and keep a distance from the task and individuals involved in the task. In addition, the individual reduces involvement in the task but does not abandon idealism. Individuals who exhibit this cynical attitude try to protect themselves from feeling tired and disappointed. Ineffectiveness in individuals is indicated by a lack of sense to grow because they think that every new job that must be completed is something extraordinary. As a result, individuals feel pressured to complete a new task, which causes academic stress.

Schaufeli et al. (2002) developed the burnout conditions in the academic context that includes the aspects of exhaustion, cynicism and the feeling of being incompetent among students. The academic burnout aspects stated by Schaufeli et al. (2002) are similar to those stated by Maslach et al. (2001), the difference is the adjustment of exhaustion aspects in each academic situation experienced by students. Therefore, the burnout theory stated by Maslach et al. (2001) is believed to be more qualified to reveal the student academic burnout condition in detail.

1.2 Related research

Lack of essential sources is not the only reason of academic burnout, but academic demands, pessimism and demotivation are also the reasons for it (Bikar & Pourghaz, 2018; Chahid et al., 2018;

Leupold et al., 2020; Safarzaie et al., 2017). This gives us a clear idea that high academic demands might trigger academic burnout in students. They become pessimistic in achieving the high demands and being demotivated in getting academic tasks done. Wangid and Purwanti (2020) agree to this by stating that academic burnout may be caused by the school as a new community which possibly has various rules that are different from what the students have at home. Therefore, students do not have the confidence to adapt to the academic situation at school, which results in academic burnout.

The above description explains that students have a high possibility of experiencing academic burnout, especially during the pandemic, in which student workloads did not differ much from what it was before the pandemic. This condition should be considered seriously, one of which is recording the academic burnout experienced by students to obtain real data. This action is necessary to design proper intervention strategies in preventing and helping students manage academic burnout.

Several academic burnout instruments had been developed so far, such as Maslach Burnout Inventory (Jackson et al., 2018) and Maslach Burnout Inventory-General Survey (Schaufeli et al., 1996), and specific instrument used for students is Maslach Burnout Inventory-Student Survey (Schaufeli et al., 2002). There is also School Burnout Inventory developed by Salmela-Aro and Näätänen (2005). All instruments have good psychometric attributes. The instruments were developed with the classic test theory approach. However, an academic burnout scale with proper psychometric principles, such as the Rasch model, is not developed yet. Rasch modelling is believed to be able to produce objective measurements that can connect respondents and the items, compared to the classic test theory (Van Zile-Tamsen, 2017).

Measurement tools with adequate validity and reliability are needed to record the academic burnout experienced by students. However, the instruments that are believed to be able to measure the actual condition of students are not only considered through its validity and reliability, but it must also be able to perform objective measurements. Objective measurements can be achieved with the Rasch model. Rasch formulated a model that can connect students and items (Sumintono & dan Widhiarso, 2015). Analysis with the Rasch model produces fit statistics that provide information on whether the obtained data ideally describes that the individuals who have high ability provide answer patterns on items according to the difficulty level.

The development of psychological measurement tools at school includes the Rasch model, as proved by a research conducted by Bui et al. (2020), which showed that the development of teaching quality evaluation questionnaires for creativity development was able to fulfil the principles of psychology assessment instrument development. Veas et al. (2016) proved that the Rasch measurement model can accurately estimate the validity of a construct, intelligence test and academic values, for the calculation of students with low achievement. Hamdu et al. (2020) conducted a research and found that analysis with the Rasch model can identify the quality of critical thinking ability items based on the difficulty level and suitability between the items and respondents. It can be concluded from several findings that the Rasch model is appropriate for the development of psychology measurement tools used for the various psychological attributes of students and teachers.

1.3 Purpose of the study

This research aims to development an academic burnout scale that fulfils the proper psychometric principles using the Rasch model. In this research, the development of an academic burnout scale refers to the concept of Maslach et al. (2001). Academic burnout is a condition in which students are physically and emotionally exhausted and bored due to high academic intensity and demands of achieving results as expected. There are three burnout dimensions according to Maslach et al. (2001), which are

exhaustion, cynicism and reduced personal accomplishment. Exhaustion is related to an individual's experience in reducing stress. Cynicism refers to the detachment from people and jobs as a reaction to exhaustion and discrepancy with the work environment (Maslach et al., 2017). Reduced personal accomplishment refers to the ineffective condition and low self-esteem.

2. Method and Materials

2.1 Research model

This is a quantitative research. This study used the research and development approach that adopts the ADDIE model. ADDIE stands for analyse, design, develop, implement and evaluate. For analysis, the researchers conducted an analysis on how to develop the academic burnout scale. For design, the researchers designed a grid of academic burnout instruments. For implementation, the researchers conducted an academic burnout scale test on students in a senior high school in Indonesia. For evaluation, the researchers evaluated the results of the academic burnout scale test using the Rasch model.

2.2 Participants

The participants of this study were high school students in grades 10, 11 and 12 in Indonesia. A total of 576 students participated in the study, aged 14–18 years. The participants consisted of students from the science department and the social science department. The convenience sampling technique was applied.

2.3 Data collection tool, and process

We collected data using the academic burnout scale. This scale was a Likert-type scale with four response options, which were ever, seldom, often and always. Forty items were developed based on the previously made blueprint. Item review was conducted in terms of language and content (professional judgement). Item review aims to identify the suitability of the written items with the disclosed aspects and language appropriateness. This process was conducted to have the developed inventories' own proper validity. Item review was performed by two psychology experts. The results showed that all items were in accordance with the measurement purpose. However, several items were slightly revised to make it easier for the respondents to understand. Editor improvement was taken in this process based on the suggestions of the reviewers.

Data were collected by distributing the academic burnout scale to students. The academic burnout scale was created using Google Form. With regard to ethical consideration, the students' consent to take part in this study was sought first before they filled in the questionnaires. On the front cover of the questionnaire, it was stated that the students are given the choice either to take part in the survey or otherwise. Participation was strictly voluntary and anonymous. Thus, by completing the questionnaire, the students have given their consent.

2.4. Data analysis

The data analysis applied the Rasch modelling through the Winstep programme. The Rasch model is applied to develop instruments quantitatively and psychometric detection attributes describe the quality of the instruments. Analysis with the Rasch model produces fit statistics that provide information for the researchers whether the obtained data ideally describes that individuals with high ability provide answer patterns on items according to the difficulty level (Sumintono & dan Widhiarso, 2015). Rasch modelling is applied to produce a burnout academic scale that suits the objective measurement concept in social sciences. The shown analysis results are the reliability of respondents and items,

unidimensionality, fit model and instrument validity: rating scale and item, item-person-map, item difficulty level and differential item functioning (DIF).

3. Results

3.1. Results

The academic burnout scale is developed from 3 dimensions with 40 items in total. The academic burnout scale provides four answer options on the Likert-type scale. This academic burnout scale has passed four phases of instrument development. The first phase produced 48 items; 46 items were declared valid after the trial. In the second phase, 43 out of 46 items are declared valid after the trial. In the third phase, 40 out of the 43 items are stated valid. In the fourth phase, the final trial was executed with the 40 items, and all of them were declared valid.

3.1.1. Item Reliability

Statistics summary on the analysis results of 576 respondents on 40 academic burnout scale items showed that the data given are by 22,880 with 52,026.44 chi-squared value and 22,267 ($p = 0,000$) degrees of freedom. The results showed that the overall measurement is great and comes with significant results. The analysis results also showed that instrument reliability and separation are great on both person and items. Person reliability instrument value was 0.90, with a 2.95 separation. On the other hand, the item reliability was 0.95, with great separation by 4.15. Cronbach's alpha instrument was also great, which had a value of 0.92.

3.1.2. Unidimensionality

Table 1.

	<i>Dimensionality</i>	<i>Dimensionality</i>		
			Empirical	Modelled
Total raw variance in observations	54.2	100.0%		100.0%
Raw variance explained by measures	14.2	26.2%		26.0%
Raw variance explained by persons	5.0	9.1%		9.0%
Raw variance explained by items	9.3	17.1%		16.9%
Raw unexplained variance (total)	40.0	73.8%	100.0%	74.0%
Unexplained variance in first contrast	3.1	5.7%	7.7%	
Unexplained variance in second contrast	2.4	4.5%	6.1%	
Unexplained variance in third contrast	1.8	3.3%	4.5%	
Unexplained variance in fourth contrast	1.7	3.1%	4.2%	
Unexplained variance in fifth contrast	1.5	2.9%	3.9%	

Table 1 presents the comparison between raw variance explained by items, and unexplained variance in the first contrast is around 3:1. The comparison is quite significant. Hence, it can be said that most items can significantly explain the measured latent variable; only 3 out of 40 items do not entirely measure the measured variations. The small raw variance value (26.2%) indicates that not all the logit scales are covered by the instrument; other evidence tells that small item standard deviation impacts the ability of the instrument to measure.

3.1.3. Validity

The validity response pattern and validity internal structure are shown by displaying the Wright map and item fit of each dimension. The frequently used values are outfit MNSQ and AZTD because they are

more sensitive on outlier data. The MNSQ score declared fit with the modelling was 0.6–1.4 or with ZSTD ± 2 . Therefore, items which show the outfit MNSQ scores outside these ranges will be disqualified. Table 2 shows that all items fit the Rasch modelling. The range of the low items' difficulty (logit), with a 0.22 standard deviation, indicates limited distribution.

Table 2

Item Estimated Measure, Correlation and Fit Statistics

Entry Number	Total Score	Total Count	Measure	Model S.E.	Infit		Outfit		PT-Measure		Exat	Match	Item	ITEM
					MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.				
1	1613	576	0.19	0.5	1.21	3.9	1.36	6.1	A 0.42	0.47	31.8	41.0	AB1	
3	1683	576	0.01	0.5	1.24	4.4	1.26	4.4	B 0.44	0.46	33.6	41.4	AB3	
37	1506	576	0.45	0.5	1.22	4.1	1.25	4.4	C 0.40	0.48	35.0	40.4	AB37	
12	1606	576	0.07	0.5	1.20	3.8	1.23	4.0	D 0.39	0.47	37.6	41.2	AB12	
7	1536	576	0.38	0.5	1.17	3.2	1.15	2.8	E 0.48	0.47	34.1	40.3	AB7	
19	1612	576	0.19	0.5	1.03	0.7	1.12	2.2	F 0.54	0.47	33.7	41.0	AB19	
36	1607	576	0.20	0.5	1.12	2.2	1.10	1.8	G 0.48	0.47	41.1	40.5	AB36	
33	1566	576	0.30	0.5	1.11	2.2	1.10	1.9	H 0.48	0.47	33.9	40.3	AB33	
38	1663	576	0.06	0.5	1.11	2.0	1.10	1.9	I 0.46	0.47	44.6	41.2	AB38	
30	1650	576	0.10	0.5	1.08	1.6	1.06	1.2	J 0.47	0.47	41.4	41.1	AB30	
26	1592	576	0.24	0.5	1.08	1.5	1.07	1.4	K 0.50	0.47	34.1	40.5	AB26	
4	1593	576	0.24	0.5	1.04	0.9	1.07	1.3	L 0.48	0.47	40.0	40.5	AB4	
27	1677	576	0.03	0.5	1.03	0.6	1.01	0.2	M 0.52	0.46	39.2	41.1	AB27	
2	1531	576	0.39	0.5	1.00	0.1	a	0.5	N 0.54	0.47	37.8	40.3	AB2	
35	1666	576	0.06	0.5	1.01	0.3	1.00	0.1	O 0.49	0.47	40.6	41.2	AB35	
21	1681	576	0.02	0.5	1.00	0.1	1.01	0.2	P 0.47	0.46	35.0	41.4	AB21	
13	1784	576	-0.26	0.5	1.00	0.0	1.00	0.1	Q 0.36	0.45	50.0	42.7	AB13	
23	1719	576	-0.08	0.5	0.99	-0.2	0.96	-0.8	R 0.50	0.46	41.4	41.4	AB23	
14	1693	576	-0.01	0.5	0.98	-0.4	0.99	-0.2	S 0.46	0.46	44.9	41.4	AB14	
25	1692	576	-0.01	0.5	0.98	-0.3	0.98	-0.3	T 0.50	0.46	39.2	41.4	AB25	
17	1650	576	0.10	0.5	0.98	-0.5	0.98	-0.4	t 0.48	0.47	39.2	41.1	AB17	
10	1703	576	-0.04	0.5	0.98	-0.4	0.98	-0.4	s 0.45	0.46	42.7	41.5	AB10	
31	1731	576	-0.11	0.5	0.97	-0.6	0.95	-0.8	r 0.47	0.46	44.2	41.8	AB31	
20	1742	576	-0.14	0.5	0.92	-1.5	0.96	-0.7	q 0.37	0.46	47.4	42.0	AB20	
32	1693	576	-0.01	0.5	0.96	-0.8	0.94	-1-1	p 0.49	0.46	40.9	41.4	AB32	
9	1637	576	0.13	0.5	0.95	-0.9	0.96	-0.8	o 0.49	0.47	37.6	41.1	AB9	
22	1751	576	-0.17	0.5	0.95	-0.8	0.93	-1.2	n 0.48	0.46	46.7	41.9	AB22	
18	1620	576	0.17	0.5	0.94	-1.1	0.95	-0.9	m 0.54	0.47	40.0	40.9	AB18	
40	1665	576	0.06	0.5	0.94	-1.1	0.95	-1.0	l 0.49	0.47	42.5	41.2	AB40	
34	1743	576	-0.15	0.5	0.94	-1.2	0.92	-1.3	k 0.53	0.46	41.6	42.0	AB34	
15	1798	576	-0.30	0.5	0.91	-1.7	0.93	-1.2	j 0.39	0.46	46.2	43.5	AB15	
16	1612	576	0.19	0.5	0.93	-1.5	0.90	-1.9	i 0.55	0.47	38.6	41.0	AB16	
8	1705	576	-0.05	0.5	0.92	-1.5	0.91	-1.7	h 0.48	0.46	44.8	41.5	AB8	
39	1764	576	-0.20	0.5	0.88	-2.4	0.87	-2.3	g 0.43	0.45	47.7	42.4	AB39	
11	1788	576	-0.27	0.5	0.87	-2.5	0.87	-2.3	f 0.44	0.45	48.6	42.7	AB11	
5	1879	576	-0.54	0.5	0.82	-3.4	0.86	-2.2	e 0.21	0.44	47.9	47.2	AB5	
24	1789	576	-0.27	0.5	0.82	-3.5	0.85	-2.7	d 0.44	0.45	50.2	42.7	AB24	
6	1781	576	-0.25	0.5	0.83	-3.3	0.82	-3.1	c 0.47	0.45	53.8	42.8	AB6	
28	1810	576	-0.33	0.5	0.80	-3.9	0.80	-3.6	b 0.42	0.45	50.9	44.1	AB28	
29	1822	576	-0.37	0.5	0.78	-4.4	0.79	-3.6	a 0.37	0.45	54.5	44.7	AB29	
Mean	1685.2	576.0	0.00	0.05	0.99	-0.2	1.00	0.0			41.9	41.7		
SD	85.0	0.0	0.22	0.00	0.12	2.2	0.13	2.2			5.8	1.3		

3.1.4. Rating scale

Figure 1 shows that the rating scale tends to distributed evenly. The top score for scales 1–4 can be differentiated clearly. By looking at the Andrich threshold score, the value keeps increasing regularly from 1 to 4 (–1.2 to 1.13). Therefore, scales 1–4 on the instrument function properly.

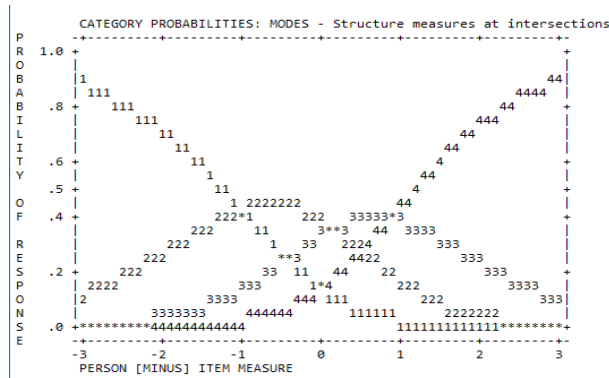
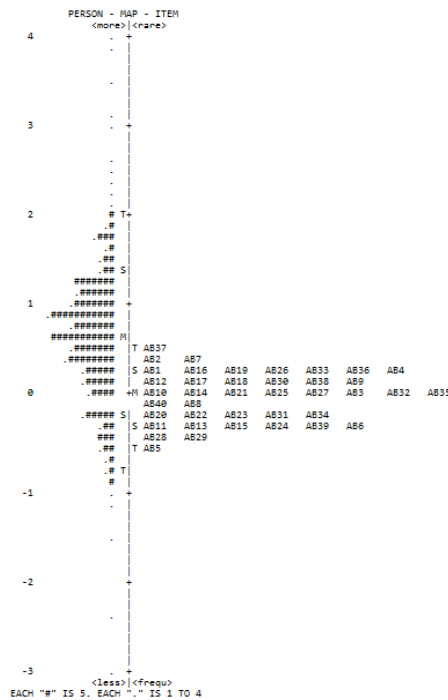


Figure 1.
Functioning of the Rating Scale

3.1.5. Wright map

Figure 2 shows that the average score of the endorsability item is 0.5 logit, which is lower than the ability of a person. This is a good indication for the psychology scale of such instrument. The downside is that the items are not well distributed. Many items are united in one level.



3.1.6. Differential Item Functioning (DIF)

From the results of the DIF analysis on gender, items that statistically show response differences are 1, 3, 4, 8, 11, 23, 24, 27, 28 and 30. While based on the DIF contrast, the analysis results show that the DIF contrast value is below 0.64, which shows that the DIF on items are insignificant. In other words,

instruments work well on male and female students. Department DIF analysis also reports that several items show response differences statistically, which are items 3, 5, 11, 12, 18, 31 and 36. On DIF analysis on the education level of parents, items that statistically show response difference are 7, 23 and 30.

4. Discussion

Development of the academic burnout scale with the Rasch model approach aims to produce a psychology measurement tool that can precisely measure, in a sense of considering, the suitability between items and respondents. The increased usage of the Rasch model in the development of psychology measurement tools, especially psychological instruments that are often used in schools, shows the recognition of the Rasch model as a method to produce data that can inform instructions better (Ark, 2013). The statement is supported by Boone and Noltemeyer (2017) wherein measurements can be used to inform school psychology research and practices by improving the quality of instrument functions, thus researchers will possibly analyse the data quality in detail before further conducting a statistical test. Improving the quality will also allow the researchers to communicate the instrument performance better.

Based on the analysis results with the Rasch modelling, the academic burnout scale gives consistent results and is proved to reveal a psychological construct (unidimensional), which is student academic burnout. The analysed items (40 items) are said to correspond to the model with a reliability coefficient alpha of 0.95. This means that the developed academic burnout scale can produce consistent and reliable measurement scores. The reliability coefficient of the respondents can also be classified as good, which is 0.90. It shows that the developed academic burnout scale items are of high quality and the group of respondents completed the scale earnestly. It can be interpreted that the academic burnout scale development with the Rasch model can result in information on the accuracy of respondents and the model, which cannot be achieved with the classic test theory. Boone (2016) agrees to this by stating that the Rasch analysis is a psychometric technique intentionally developed to increase accuracy in preparing instruments, monitoring instrument quality and calculating the performance of respondents.

Based on the analysis of the difficulty level of the items, the most frequently approved item by the respondents is AB 5, 'When I'm bored, I decided to skip online classes via Zoom/Google Meet by saying that I have network problems or power outage'. This item is frequently approved because it is a way for students to avoid exhaustion from the teacher's exposure material. In addition, the network problems/power outage is a relevant reason to consider in the geographical conditions of Indonesia.

The academic burnout scale item that was less approved by the respondents is AB 37, 'I prefer to turn off the camera while having Zoom/Google Meet'. This item is less approved because every teacher of each subject has similar rules regarding online learning, in which students are required to show participation in learning by turning on the camera. Turning on the camera is required to prevent students from doing other activities while studying.

The analysis results show that the developed academic burnout scale meets the instrument validity and reliability criteria. However, the analysis results also show that the difficulty item level of the academic burnout scale is not evenly distributed. The Wright map analysis shows that the items are distributed horizontally. This indicates that to fulfil an evenly distributed difficulty level of items (items are not too easy or not too difficult), the academic burnout scale items must be reviewed, one of which is by having editor improvement before retest.

DIF is analysed based on the type of gender, department and education level of parents. DIF occurs if respondents of equal ability level respond to the items differently. Different responses are possible because they come from different groups (for instance, gender). In this research, several items are indicated to contain DIF. The research findings need to be followed up further by conducting further testing for DIF with different respondents (An & Yu, 2021)

The development of the academic burnout scale is expected to enhance the attention and awareness of all parties on mental health of students, considering the high stress level and exhaustion concerning quitting school (Lin & Huang, 2013; Stallman & Hurst, 2016), which are undeniable facts. Especially during online learning today, mental health is decreasing significantly in a statistic manner, $t = 0.636$ ($p < 0.001$), before and during the pandemic (Rao & Rao, 2021). The findings show the importance of mental health assessment on students, especially regarding academic burnout.

5. Conclusion

This research aimed to develop the academic burnout scale with great psychometric attributes. The academic burnout scale consists of 40 items on a 4-point Likert-type scale. The analysis results with the Rasch modelling show that the instrument has a great validity and reliability level. The developed academic burnout scale can measure the necessary aspects to be measured, meeting the unidimensional requirements. The developed academic burnout scale can be used to assess student academic burnout objectively.

6. Recommendations

There are several limitations in this research which actually lead to opportunities for developing related research in the future. First, this research involved senior high school students from one province. This can actually limit the generalisation of the findings for all the population of senior high school students in Indonesia. Second, to improve item quality, which is a difficulty level of items, it requires a review on the items by conducting editorial improvement before retest. Third, this instrument implementation on respondents of different levels must be performed cautiously. Further testing is also necessary by involving respondents from the intended group. In addition, DIF must be examined further during the instrument implementation of different respondent group to make a significant comparison.

References

- An, M., & Yu, X. (2021). A Rasch analysis of emerging adults' health motivation questionnaire in higher education context. *PLoS One*, 16(3), e0248389. <https://doi.org/10.1371/journal.pone.0248389>
- Andriyani, A., Himma, A., Alizar, S., Amin, Z., & Mulawarman, M. (2017). The relationship of anxiety, school burnout and well-being in high school students. *Proceedings of the International Conference on Teacher Training and Education 2017 (ICTTE 2017)*. Atlantis Press. <https://doi.org/10.2991/ictte-17.2017.5>
- Ark, T. V. (2013). *A proposal for better growth measures (Opinion)*. Education Week. <https://www.edweek.org/leadership/opinion-a-proposal-for-better-growth-measures/2013/06>.
- Bikar, S., & Pourghaz, A. (2018). Affective structures among students and its relationship with academic burnout with emphasis on gender. *International Journal of Instruction*, 11(1), 183–194. <https://doi.org/10.12973/iji.2018.11113a>
- Boone, W. J. (2016). Rasch analysis for instrument development: Why, when, and how? *CBE Life Sciences Education*, 15(4), rm4. <https://doi.org/10.1187/cbe.16-04-0148>

- Setiyowati, A. J., Rachmawati, I. & Prihatiningsih, A. (2022). Validation of the academic burnout scale with the Rasch model. *Cypriot Journal of Educational Science*, 17(8), 2888-2898. <https://doi.org/10.18844/cjes.v17i8.7844>
- Boone, W. J., & Noltemeyer, A. (2017). Rasch analysis: A primer for school psychology researchers and Practitioners. *Cogent Education*, 4(1), 1416898. <https://doi.org/10.1080/2331186x.2017.1416898>
- Bui, T. L., Kazarenkov, V. I., & De Tran, V. (2020). Application of Rasch model to develop a questionnaire for evaluating the quality of teaching for students' creativity development. *International Journal of Learning, Teaching and Educational Research*, 19(8), 278–296. <https://doi.org/10.26803/ijlter.19.8.15>
- Chahid, H., Ahami, P. A. O. T., Chigr, P. F., & Najimi, P. M. (2018). Burnout and school performance: A study among students in the region of Béni Mellal (Morocco). *World Journal of Research and Review*, 6(6), 33–36. <https://www.wjrr.org/burnout-and-school-performance-a-study-among-students-in-the-region-of-beni-mellal-morocco>.
- Fun, L. F., Kartikawati, I. A. N., Imelia, L., & Silvia, F. (2021). Peran bentuk social support terhadap academic burnout pada mahasiswa Psikologi di Universitas "X" Bandung. *MEDIAPSI*, 7(1), 17-26. <https://doi.org/10.21776/ub.mps.2021.007.01.3>
- Greenberg, J., & Baron, R. A. (1990). *Behavior in organization: Understanding and managing the human side of work* (3rd ed.) Allyn and Bacon.
- Hamdu, G., Fuadi, F. N., Yulianto, A., & Akhirani, Y. S. (2020). Items quality analysis using Rasch model to measure elementary school students' critical thinking skill on STEM learning. *JPI (Jurnal Pendidikan Indonesia)*, 9(1), 61. <https://doi.org/10.23887/jpi-undiksha.v9i1.20884>
- Jackson, S. E., Maslach, C., & Leiter, M. (2018) *Maslach Burnout Inventory Manual* (4th ed.) <https://www.researchgate.net/project/Maslach-Burnout-Inventory-Manual-4th-Edition>.
- Leupold, C. R., Lopina, E. C., & Erickson, J. (2019). Examining the effects of core self-evaluations and perceived organizational support on academic burnout among undergraduate students. *Psychological Reports*, 123(4), 1260–1281. <https://doi.org/10.1177/0033294119852767>
- Lin, S. H., & Huang, Y. C. (2013). Life stress and academic burnout. *Active Learning in Higher Education*, 15(1), 77–90. <https://doi.org/10.1177/1469787413514651>
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it*. Jossey-Bass.
- Maslach, C., Schaufeli, W. B., & Leiter, M. (2001). Job burnout. *Annual Review of Psychology*, 52, 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- Mostafavian, Z., Farajpour, A., Ashkezari, S. N., & Shaye, Z. A. (2018). Academic burnout and some related factors in medical students. *Journal of Ecopgysiology and Occupational Health*, 18(1 & 2), 1–5. <https://doi.org/10.18311/jeoh/2018/20928>
- Rahmati, Z. (2015). The study of academic burnout in students with high and low level of self-efficacy. *Procedia-Social and Behavioral Sciences*, 171, 49–55. <https://doi.org/10.1016/j.sbspro.2015.01.087>
- Rao, M. E., & Rao, D. M. (2021). The mental health of high school students during the COVID-19 pandemic. *Frontiers in Education*, 6. <https://doi.org/10.3389/feduc.2021.719539>
- Safarzaie, H., Nastiezaie, N., & Jenaabadi, H. (2017). The relationship of academic burnout and academic stress with academic self-efficacy among graduate students. *The New Educational Review*, 49(3), 65–76. <https://doi.org/10.15804/tner.2017.49.3.05>
- Salmela-Aro, K., & Näätänen, P. (2005). BBI-10. *Nuorten Koulu-Uupumusmenetelmä [Method of assessing adolescents' school burnout]*. Edita.
- Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). *MBI-general survey*. Consulting Psychologists Press.

- Setiyowati, A. J., Rachmawati, I. & Prihatiningsih, A. (2022). Validation of the academic burnout scale with the Rasch model. *Cypriot Journal of Educational Science*, 17(8), 2888-2898. <https://doi.org/10.18844/cjes.v17i8.7844>
- Schaufeli, W. B., Martínez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students. *Journal of Cross-Cultural Psychology*, 33(5), 464–481. <https://doi.org/10.1177/0022022102033005003>
- Sumintono, B., & dan Widhiarso, W. (2015). *Aplikasi Pemodelan Rasch pada Assessment Pendidikan*. Trim Komunikata.
- Stallman, H. M., & Hurst, C. P. (2016). The university stress scale: Measuring domains and extent of stress in university students. *Australian Psychologist*, 51(2), 128–134. <https://doi.org/10.1111/ap.12127>
- Van Zile-Tamsen, C. (2017). *Using Rasch analysis to inform rating scale development—Research in higher education*. SpringerLink. <https://link.springer.com/article/10.1007/s11162-017-9448-0>.
- Veas, A., Gilar, R., Miñano, P., & Castejón, J. L. (2016). Estimation of the proportion of underachieving students in compulsory secondary education in Spain: An application of the Rasch model. *Frontiers in Psychology*, 7, 303. <https://doi.org/10.3389/fpsyg.2016.00303>
- Wangid, M. N., & Purwanti, I. Y. (2020). Implementation of group activity to solve academic burnout elementary school students. *Jurnal Prima Edukasia*, 8(2), 135–144. <https://doi.org/10.21831/jpe.v8i2.33267>