The Psychometric Properties of Acceptable, Accessibility, and Feasibility Scale for Web-based School Resilience Training Program: A Rasch Analysis

K Suranata, I Ifdil
{kadek.suranata@undiksha.ac.id}
Universitas Pendidikan Ganesha, Singaraja, Bali, Indonesia
Universitas Negeri Padang, Padang, Indonesia

Abstract. This study aims to analyze the acceptability, accessibility, and feasibility of the web-based school resilience program. Study participants consisted of 162 students who had attended and successfully completed this program for 3 months. A total of 14 items were acceptability, accessibility, and flexibility (AAF) scale that asked students to respond to their perceptions after joining the program. The scale uses a Likert pattern with five categories. Data analysis using Rasch Analysis Model through Winsteps 4.1.0 Software. The results showed that AAF scale quality met the requirements as a fairly good measuring instrument based on the Rasch measurement model. Students' responses to acceptability, accessibility, and flexibility of web-based school resilience programs were found in the medium and high categories.

Keywords: web-based resiliency, school psikoeducational, cbt, rasch measurement

1 Introduction

Resilience is an ability needed by individuals including students to get up, adjust and survive stress and difficulties[1]. Every student is important to increase the level of resilience in him to avoid psychological, socio-emotional disorders, which have an impact on the emergence of maladjustment behavior[2].

Previous studies have shown that low resilience correlates with low learning readiness, impaired learning concentration and less optimal academic achievement[2],[3],[4]. Many resilience programs in schools are implemented and get acceptability and feasibility from students and counselors [4],[6],[7].

Resilience programs in schools have also been developed through online, website-based methods. However, the level of acceptance and feasibility has not been widely reported. Only a few studies have reported the effectiveness and effectiveness of web-based psychological positives in adolescent [8],[9],[10],[11],[12].

The Web-based School Resilience Training Program that we developed uses a cognitive behavioral approach oriented towards improving students' resilience abilities. This program was developed for middle school students who experience stress, trauma, anxiety, or depression. This program was carried out for approximately 12 weeks (the length of time each student participates in the program varies based on the frequency of access and success in each module). The system can be accessed at www.cbtundiksha.com. This article is focus at assess the feasibility of the instrument and describe students' perceptions of the acceptability, accessibility, and feasibility of the web-based school resilience program from the Rasch model perspective.
2 Method

2.1 Instrumentation

The research data was collected with 14 items of the acceptability scale, accessibility, and feasibility (AAF) of the web-based school resilience program. This AAF scale uses a fourth-point Likert scales. Students choose 1 if strongly disagree, choose 2 for disagree, choose 3 for quite agree, and 4 for agree and 5 for strongly agree.

2.2 Participant

The study involved 162 junior high school students (average age = 14.3 years, 92 of men and 70 of women). They are students who have participated in web-based resilience school training programs for 3 months. Participants are a combination of students from schools in rural, suburban and city areas in the province of Bali.

2.3 Data Analysis

The data collected was analyzed using the Rasch Model approach performed by WINSTEPS 4.1.0 [13]. This research can be accessed from https://osf.io/qbtyd from the Open Science Frameworks.

3 Result and Discussion

3.1 The Quality of AAF Test

The initial focus of this study was to assess the feasibility of AAF scales, the instruments used in this study and at the same time investigate the quality of responses given by respondents in this study. Assessment of the quality of the instruments used is an important first step in this study, whether the tests used really describe students' perceptions of acceptability, accessibility and the complexity of web-based resilience programs that have been followed. The investigation with the Rasch measurement model focused on (1) index reliability and index separation, (2) Undimensionality index, (3) Fit and misfit items, (4) scale information functioning, and (5) probabilities category response. In Table 1 the results of the AAF scale quality are summarized.

| Measure                                      | Values |
|----------------------------------------------|--------|
| Items reliabilities                          | .99    |
| Cronbach Alpha (KR-20) person raw score "test" reliability | .74    |
| Item separation index                        | 8.19   |
| Mean Outfit MNSQ                             | .98    |
| Raw Variance explain by Measures             | 43.8%  |
| Raw Variance unexplained by measures         | 56.2%  |

The quality of AAF Scale in measuring reliability in table 1 (.99) which is a very special value of reliability. The estimated reliability of the interaction between person and item in Cronbach Alpha (.74) is in a good category. The item separation index (8.19) shows that the instrument has able to distinguish respondents into 8 groups.

The value of raw variance explain by measures (43.8%, expected minimum value of 20%) and raw variance unexplained by measures (56.2%, from 1st contrast to 5th contrast none exceed 15%). This value indicates that measurement through this AAF instrument has a good quality of instrument validity, is able to measure what is the purpose of measurement...
[14]. But there is one item that can be expressed as an outfit item, which is not in accordance with the measurement model (based on the value of the MNSQ Outfit > 1.5). Item ac5 (MNSQ Outfit value = 1.80) which asks about “the parts of the module are clearly presented”. In order not to disturb the overall function of the bubble, this item actually needs to be considered to be excluded from the measurement.

In Figure 1 it is shown that all bubble are near the fit line or are in between the outfit and underfit lines. This indicates that in fact all items from the AAF scale are compatible with the Rasch measurement model. Item ac5 that previously had the MNSQ outfit value above the specified criteria so that we estimate it as an inappropriate item, it turns out that it looks fit on this bubble chart. Based on this, even though having a bad MNSQ outfit value, this Ac5 item can still be said to be an item that is fit and worth maintaining. Figure 1 also shows that the ac2 item is somewhat aloof at the bottom, which indicates that this item is too easily approved by the respondent. But it can still be said that the item is fit. While Figure 2 about scala function information shows that this only works well for students (respondents) who are in the median position.

Figure 1. Bubble Chart of AAF Scale (n item = 14)

Figure 2. Information Functioning of Scala

Figure 3. The AAF Scale categories qualities

Figure 3 shows the quality of each response choice on each item scale. This figure shows the functioning of each scale option (5 choices). It can be seen that choices 2 (disagree) and 3 (quite agree) do not function properly (can be seen that the peak scale is below the 60%
probability value. So that in the future this scale is more suitable using only three scale options, such as disagree, quite agree and strong agree.

3.2 Students perception of Acceptability, Acceptability, and Feasibility School Web-based resilience Program

The second focus of this study is to assess the quality of respondents and map respondents' responses to the AAF Scale. The assessment was carried out through reviewing (1) person reliability and separation index, (2) person fit and misfit, and (3) mapping the distribution of students respondents' by Wright Map.

| Measure                      | Values |
|------------------------------|--------|
| Person reliabilities         | 0.72   |
| Person separation index      | 8.19   |
| Mean Outfit MNSQ             | 0.98   |
| Mean Person Measures         | 0.85   |
| Highest Logit Person         | 4.07   |
| Lowest Logit Person          | -0.80  |

Table 2. Summary of person measured based on Rasch fit statistics (N Person= 162)

Table 2 shows that in principle all students have good perceptions regarding acceptability, acceptability and feasibility of the school web-based resilience training programs was followed. This is indicated by the value of Mean of Person Measures (+) .85> 0.00 (in logits). The stability of the answers given by respondents to each AAF item scale is also quite good (.72). This is also supported by the very high separation index value (8.19) where the disclosure of students' perceptions of the programs are correctly identified.

Figure 4. Item Wright Map

In Figure 4 is shown the distribution of student responses to the AAF Scale. On the right side we can see the position of each item on the respondent's answer, from the items that are in
the bottom row which is the easiest item to be approved until the top is more difficult to approve. For example, ac2 items "I can understand the benefits obtained after joining this program" are items that can be approved by all respondents. While the CE12 item "I can access the system at any time without network interference" is an item that tends to be difficult to agree to by most respondents. Other information that can be obtained from Figure 4 is that there are some items that are actually considered by the respondents, such as items CE10 and CE13, CE11 and CE14, and Fe7, Fe8, Fe9. They are in the same position indicating that the item is basically asking the same thing.

In Figure 5 we can map the position of each respondent to the AAF item scale. The distribution of respondents' position about acceptability, accreditation and reliability of the web-based CBT program is moderate to high. There was found one respondent 053FS who had a high perception of acceptability, accreditation and accessibility of a web-based CBT program. But it needs to be investigated whether the response of these students is a fit response and follows the measurement model in the Rasch model or an inappropriate response.

The results of the person fit and misfit assessment can be seen that there were 18 people who gave responses not in accordance with the Rasch measurement model, which was seen from the value of the MNSQ Outfit being > 1.5 or < 0.5. Respondent 053FS had an MNSQ (1.58) outfit value classified as a student who gave a misfit response. Another consideration that can be used to express this student as a misfit is the pattern of answers given. This can be seen in Guttman Scalogram of responses, as exemplified in several student responses to table 3 below.

### 4 Conclusion

This study shows that the AAF scale has good quality that is in accordance with the Rasch measurement model. Nevertheless, the assessment based on reliability index and separation index, unidimensionality index, Fit and index item misfit, scale information functioning, and probabilities category response show there are several aspects that need to be
considered in the use of this scale later. As the merging of items that have similarities and reducing the number of scale categories into only three types of categories is the most important consideration. There are at least 18 students who respond inappropriately, or not fit. However, information about students' perceptions of acceptability, acceptability, and feasibility of school web-based resilience training programs has been obtained, namely at the high level to medium.

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