OPTIMA: Journal of Guidance and Counseling
Volume 2, No.1, March 2022: Page 39-52
ISSN 2776-6624 (print) || 2776-6683 (online)
Available online at http://ejournal.upi.edu/index.php/optima

RASCH ANALYSIS FOR ROSENBERG SELF ESTEEM-SCALE ADAPTATION IN ADOLESCENT SANTRI

Euis Nurjanah[1]and Mamat Supriatna[2]
Universitas Pendidikan Indonesia
euisnurjanah16@upi.edu

Received: January 1th 2022 Revised: February 1th 2022 Accepted: March 25th 2022

Abstract: Self-esteem in adolescent students is one of the important aspects that must be developed to have self-confidence, respect for themselves, be motivated to study religion and general knowledge, and socialize with other students. This survey aims to examine the reliability and validity of the student self-esteem questionnaire using the Rasch model. Participants were 117 young students consisting of 41 boys and 76 girls. The quantitative approach is used as a research method and there are 40 items with a scale of 4 as the answer choices. The results of data analysis showed that the Cronbach Alpha value of 0.84 was included in the high category. The Person Reliability value of 0.78 is included in the good category. From the results of the analysis, it is known that there are 26 out of 40 valid items and the Item Reliability value is 0.97 with a special category so that to examine the self-esteem of student students, it can be measured using this instrument.

Keywords: Self-esteem, Santri, Rasch

OPTIMA: Journal of Guidance and Counseling
Website: http://ejournal.upi.edu/index.php/OPTIMA

Permalink:
How to cite (APA): Nurjanah, E & Supriatna, M. (2022). Rasch Analysis for Rosenberg Self Esteem-Scale Adaptation in Adolescent Santri. *OPTIMA: Journal of Guidance and Counseling, 2*(1), 39-52.

INTRODUCTION

Self-esteem is one part of the psychological side of the individual that can be said to have a big hand in influencing personality. High self-esteem is directly proportional to the success to be achieved. The existence of self-esteem refers to the expectation of being accepted and appreciated by the people around him (Ilyas M., 2021). Self-esteem is seen as one of the important aspects in the formation of personality. When the individual cannot respect himself, it will be difficult for him to be able to respect the people around him. Thus self-esteem is an important element for the formation of an

[1] Universitas Pendidikan Indonesia, Indonesia; euisnurjanah16@upi.edu

individual's self-concept and will have a broad impact on his attitudes and behavior (Srisayekti and Setiady, 2015).

Self-esteem is classified into three types according to Coopersmith, namely (1) high self-esteem, namely individuals who have positive self-acceptance and a good appreciation for themselves. Individuals receive and expect input verbally or nonverbally to assess themselves; (2) moderate self-esteem, namely individuals who feel optimistic, expressive, and able to accept criticism. However, in his social environment, he often depends on his friends, so that it can give him a sense of insecurity; (3) low self-esteem, namely individuals who feel a rejection of them, are unsure of what they are doing, feel that they are not useful to anyone, feel isolated, feel the weakest, feel unworthy of love, unable to express themselves, and others (Susanto A., 2018).

Self-esteem affects an individual's success in social adaptation, a decrease in self-esteem can cause social maladjustment. The relationship between low self-esteem and social adjustment can create a vicious cycle that negatively impacts the overall quality of life (Konrad et al., 2012). In addition, self-esteem is an important factor in personal well-being because individuals' self-esteem has a positive relationship with their psychological health, social adjustment, and quality of life (Boyd, Otilingam, & Deforge, 2014). It is important for individuals to have healthy self-esteem, so individuals will be able to accept their weaknesses and appreciate their strengths (Schab, 2013). The benefits of self-esteem are expressed by being an important factor especially for teenagers or students because self-esteem will help overcome life challenges, psychological adjustments, academic success, physical satisfaction, then social relationships, especially with other people, and also for health (Widianti et al., 2021).

Self-esteem in adolescent students is one of the important aspects that allow adolescent students to have self-confidence and respect for themselves, self-esteem implies an individual's perception of his worth, both positively and negatively. Santri who study in schools and Islamic boarding schools must be able to develop self-esteem to have self-confidence, respect for themselves, be motivated to study religion and general knowledge, and socialize with other students (Almaliki MA, 2019; Albi NS, et al, 2020).

METHOD

Participants

A quantitative approach was used as the survey method and there were 40 questionnaires with a 4-point scale as the answer choices, SS (Strongly Agree), S (Agree), TS (Disagree), and STS (Strongly Disagree). This study uses probability sampling with the number of participants as many as 117 young students as participants consisting of 41 boys and 76 girls, aged 12-15 years in Subang Regency. The following is the data onto the participants of this study:

Table 1
Participants

No.	Boarding school	Districts	Gender		Amount
			Man	Woman	
1	Al-Istiqomah Islamic Boarding School	Cisalak	16	36	52
2	Az-Zahra . Islamic Boarding School	Cape Afternoon	25	40	65
	Amount		41	76	117

Data collection was carried out by distributing questionnaires directly to 2021 participants. Students were informed of the general purpose of the research and data was protected to protect their privacy and was used for survey purposes only. All participants voluntarily contributed to this study, without any incentive or compensation from the researcher.

Indonesian Version of Self Esteem Questionnaire

The instrument used in this survey was compiled and made by the researcher by reconstructing from Rosenberg (1965) by developing four dimensions, namely accepting one's self as it is, accepting its strengths and weaknesses, feeling like a valuable person, and providing value or benefits from itself. and other people. The answer choices are SS (Strongly Agree), S (Agree), TS (Disagree), and STS (Strongly Disagree).

Data Analysis Procedure

Data analysis using Rasch models on Winsteps application. The steps are taken in data analysis, the first is the development of a self-esteem instrument, at this stage verification of unidimensionality and independence of measurement, testing of item accuracy (INFIT-OUTFIT), and item measurement and item suitability are carried out. Second, measurement of bias

to determine items that have the characteristics of the differential item function (DIF). Third, detecting biased individuals. Fourth, identify the measurement dimensions. Fifth, testing the rating scale to verify that the scale used can be understood, the results shown are the average observations and the Andrich threshold.

FINDINGS AND DISCUSSIONS

Results

Unidimensionality

Unidimensionality analysis is a mandatory assumption of the Rasch model, which is carried out to find out each item analyzed only measures one dimension (Natanael, 2021: 175). Unidimensionality was analyzed by looking at two values, namely Raw variance explained by measures and Unexplained variance in 1st to 5th contrast. The assumption of unidimensionality is fulfilled if the Raw variance value is explained by measures 20%, with the sufficient interpretation category if 20-40%, good if 40-60%, and very good if above 60%. Meanwhile, for Unexplained variance in 1st to 5th, the contrast to residuals is fulfilled if each value is <15%.

		-- Empirical --		Modeled
Total raw variance in observations	=	62.1 100.0%		100.0%
Raw variance explained by measures	=	22.1 35.6%		35.4%
Raw variance explained by persons	=	3.9 6.3%		6.3%
Raw variance explained by items	=	18.2 29.3%		29.1%
Raw unexplained variance (total)	=	40.0 64.4%	100.0%	64.6%
Unexplned variance in 1st contrast	=	4.9 7.8%	12.2%	
Unexplned variance in 2nd contrast	=	3.0 4.9%	7.6%	
Unexplned variance in 3rd contrast	=	2.8 4.6%	7.1%	
Unexplned variance in 4th contrast	=	2.1 3.3%	5.2%	
Unexplned variance in 5th contrast	=	1.8 3.0%	4.6%	

Figure 1. Unidimensionality

Based on the results of the analysis in Figure 1, shows that the value of Raw variance explained by measures is 35.6%, which means it is in the sufficient category. While the Unexplained variance in 1st to 5th contrast to residuals is 7.8%, 4.9%, 4.6%, 3.3%, and 3.0%, it is clear that all values are less than 15%. So it can be concluded that the items on the instrument used to measure one dimension, in this case measuring the self-esteem of young students.

Item Analysis

Item analysis was carried out with three measurements, namely by analyzing the level of suitability of items (item fit), analyzing the level of difficulty (item measured), and detecting item bias items.

Item- item Suitability Level

The level of item fit which explains whether the items function normally to take measurements or not, the outfit means-square (OUTFIT MNSQ) value, outfit z-standard (OUTFIT ZSTD), and point measure correlation (PT MEASURE CORR) are criteria. which is used to see the level of item fit (Boone et. al., 2014; Bond & Fox, 2015). More specifically, it is to explain that the items function normally to take measurements so that there is no misunderstanding of the students' understanding of the item. The criteria for checking item fit are as follows:

Table 2
Item Fit Criteria Value

Criteria	Mark
MNSQ OUTFIT	0.5 < MNSQ < 1.5
ZSTD OUTFITS	-2.0 < ZTSD < +2.0
PT MEASURE CORR	0.4 < PT MEASURE CORR < 0.85

Notes, (1) The MNSQ OUTFIT value is closer to 1 the better, (2) the OUTFIT value is closer to 0 the better (Boone et al., 2014). If all three criteria are met in the item items, it can be said that the item is "appropriate" and it can be ascertained that the quality of the item is good and can be used, whereas if there are only two criteria or one criterion that is met, the item can still be maintained and does not need to be changed. Can be categorized as "appropriate" and can be used, but if the three criteria are not met, it can be said that the item is "not appropriate". So it needs to be repaired or replaced (Muntazhimah, Putri, & Khusna, 2020). The detailed analysis results from Winsteps can be seen in Figure 2.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
29	370	117	-.89	.15	1.75	4.7	1.73	4.7	A .18	.32	55.6	57.4	29
38	290	117	.60	.13	1.59	3.8	1.61	3.8	B .37	.37	41.9	50.2	38
35	330	117	-.08	.14	1.40	2.6	1.41	2.7	C .37	.35	56.4	56.4	35
7	358	117	-.63	.14	1.41	2.7	1.38	2.6	D .34	.33	57.3	58.1	7
37	318	117	.13	.13	1.35	2.3	1.36	2.4	E .49	.35	59.8	54.1	37
17	360	117	-.67	.14	1.35	2.4	1.28	2.0	F .41	.33	57.3	58.0	17
13	389	117	-1.32	.16	1.32	2.4	1.23	1.8	G .50	.31	59.8	56.0	13
6	359	117	-.65	.14	1.27	1.9	1.23	1.7	H .21	.33	70.9	58.0	6
20	345	117	-.37	.14	1.22	1.5	1.20	1.4	I .46	.34	62.4	57.9	20
3	211	117	1.70	.11	1.15	1.2	1.19	1.5	J .02	.41	44.4	44.5	3
25	342	117	-.31	.14	1.17	1.2	1.19	1.4	K .08	.34	59.0	57.6	25
14	297	117	.49	.13	1.14	1.0	1.14	1.0	L .48	.37	50.4	50.8	14
33	360	117	-.67	.14	1.13	1.0	1.13	1.0	M .43	.33	53.8	58.0	33
1	330	117	-.08	.14	1.08	.6	1.10	.8	N .29	.35	64.1	56.4	1
11	254	117	1.13	.12	1.07	.6	1.10	.8	O .21	.39	51.3	47.2	11
34	376	117	-1.02	.15	1.08	.7	1.07	.6	P .57	.32	56.4	56.9	34
31	328	117	-.05	.14	1.08	.6	1.06	.5	Q .43	.35	59.8	55.6	31
40	318	117	.13	.13	1.07	.5	1.04	.3	R .50	.35	61.5	54.1	40
10	314	117	.20	.13	1.05	.4	1.05	.4	S .50	.35	53.8	53.6	10
12	283	117	.71	.12	.96	-.2	1.02	.2	T .31	.37	53.8	49.7	12
30	259	117	1.06	.12	.97	-.2	1.00	.1	t .33	.39	56.4	47.6	30
26	413	117	-1.95	.17	.98	-.1	.98	-.1	s .27	.28	57.3	59.2	26
18	365	117	-.78	.15	.94	-.4	.97	-.2	r .30	.32	62.4	57.6	18
15	299	117	.46	.13	.90	-.7	.97	-.2	q .27	.36	63.2	51.1	15
19	325	117	.01	.13	.91	-.6	.93	-.5	p .37	.35	55.6	55.2	19
8	188	117	1.98	.11	.90	-.9	.92	-.7	o -.07	.42	47.0	43.1	8
39	346	117	-.39	.14	.89	-.8	.90	-.7	n .46	.34	60.7	57.9	39
5	278	117	.79	.12	.86	-1.1	.88	-.9	m .42	.38	62.4	49.1	5
4	370	117	-.89	.15	.86	-1.1	.87	-1.0	l .20	.32	63.2	57.4	4
23	327	117	-.03	.14	.83	-1.2	.85	-1.1	k .45	.35	63.2	55.6	23
21	362	117	-.72	.15	.84	-1.2	.80	-1.6	j .46	.33	68.4	57.8	21
16	310	117	.27	.13	.80	-1.5	.81	-1.4	i .33	.36	66.7	52.6	16
36	284	117	.69	.12	.76	-1.9	.81	-1.5	h .41	.37	55.6	49.7	36
2	323	117	.04	.13	.79	-1.6	.72	-2.2	g .44	.35	72.6	54.9	2
9	288	117	.63	.13	.74	-2.1	.78	-1.7	f .46	.37	59.8	49.7	9
27	342	117	-.31	.14	.76	-1.8	.74	-2.1	e .44	.34	71.8	57.6	27
24	290	117	.60	.13	.69	-2.6	.71	-2.3	d .45	.37	61.5	50.2	24
22	346	117	-.39	.14	.66	-2.7	.66	-2.8	c .20	.34	78.6	57.9	22
32	355	117	-.57	.14	.62	-3.2	.62	-3.3	b .38	.33	71.8	58.1	32
28	254	117	1.13	.12	.52	-4.5	.54	-4.3	a .32	.39	64.1	47.2	28
MEAN	321.4	117.0	.00	.14	1.02	.0	1.02	.1			59.8	54.0	
S.D.	46.4	.0	.80	.01	.26	1.9	.26	1.9			7.5	4.3	

Figure 2. Fit Items

Based on Figure 2, shows that in the first criterion, it is known that three items do not comply with the provisions, namely numbers 38, 3, and 8, each of which has an MNSQ OUTFIT value of 1.73; 1.70; and 1.55. According to the second criterion, nine items do not comply with the provisions, namely numbers 38, 3, 8, 29, 11, 35, 25, 40, 21, 22, 32, 27, 28, and 2. according to the provisions, namely numbers 3 and 8. Items that match the provisions of the criteria or valid items, there are 26 items, namely numbers 1, 4, 5, 6, 7, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 23, 24, 26, 30, 31, 33, 34, 36, 37, and 39. The overall result is that 26 of the 40 items on the student self-esteem questionnaire are declared valid, which means function normally, are properly understood by young students, and measure what should be measured, namely self-esteem.

Item Difficulty Level

The item difficulty level has several categories to separate them, namely

Table 3
Item Difficulty Category

Category	Mark
Very Difficult	bigger +1 SD
Hard	0.0 logit + 1 SD
Easy	0.0 logit – 1 SD
Very easy	less than -1 SD

Based on Figure 3, the SD value is known to be 0.87, so it can be categorized as follows:

Table 4
Item Difficulty Category Values

Category	Mark
Very Difficult	More than 0.87
Hard	0.0 to 0.87
Easy	-0.87 to < 0.0
Very easy	less than -0.87

To see the results of the analysis of the item difficulty level more clearly, it can be seen in Figure 3 below.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
20	259	115	1.52	.14	1.38	2.8	1.38	2.8	.21	.45	56.5	54.9	30
3	278	116	1.16	.14	1.07	.6	1.08	.7	.42	.45	63.8	55.8	5
24	284	117	1.09	.14	.95	-.4	.96	-.2	.47	.45	59.0	55.9	36
8	283	116	1.05	.14	1.09	.8	1.10	.8	.41	.44	51.7	55.9	12
6	288	117	1.01	.14	.95	-.3	.97	-.2	.47	.44	64.1	56.0	9
18	290	117	.97	.14	.91	-.7	.90	-.7	.46	.44	63.2	56.1	24
11	299	116	.71	.15	.95	-.3	.97	-.2	.38	.44	67.2	56.2	15
12	310	117	.55	.15	.92	-.6	.92	-.6	.43	.44	67.5	56.5	16
10	297	111	.50	.15	.81	-1.5	.81	-1.5	.52	.43	61.3	56.8	14
7	314	115	.36	.15	1.01	.1	1.01	.1	.53	.44	57.4	57.4	10
15	325	117	.23	.15	1.05	.4	1.06	.5	.42	.43	61.5	57.7	19
17	327	117	.18	.15	.99	.0	.99	.0	.46	.43	63.2	57.9	23
25	318	113	.12	.15	1.03	.3	1.02	.2	.58	.43	62.8	57.9	37
21	328	116	.10	.15	1.00	.0	.99	.0	.55	.43	67.2	58.1	31
1	330	115	-.02	.15	.94	-.4	.95	-.4	.36	.43	66.1	58.4	1
26	346	117	-.24	.15	1.03	.3	1.04	.4	.45	.43	61.5	58.7	39
16	345	114	-.41	.15	.91	-.7	.92	-.6	.47	.42	68.4	59.5	20
22	360	116	-.64	.16	1.02	.2	1.03	.3	.49	.42	59.5	59.5	33
5	358	114	-.73	.16	1.08	.7	1.09	.8	.32	.42	60.5	59.3	7
4	359	114	-.75	.16	.98	-.1	.99	.0	.11	.42	69.3	59.2	6
14	365	116	-.77	.16	.80	-1.6	.81	-1.6	.40	.41	67.2	59.6	18
13	360	114	-.78	.16	1.00	.1	.98	-.1	.39	.42	63.2	59.3	17
2	370	117	-.81	.16	.96	-.3	.99	.0	.24	.41	64.1	59.4	4
23	376	117	-.96	.16	1.08	.7	1.05	.4	.63	.41	61.5	59.3	34
9	389	115	-1.46	.17	.95	-.3	.94	-.5	.51	.39	73.0	60.6	13
19	413	117	-1.98	.18	1.01	.1	1.02	.2	.35	.37	57.3	63.1	26
MEAN	329.7	115.6	.00	.15	.99	.0	1.00	.0			63.0	58.0	
S.D.	38.0	1.5	.87	.01	.11	.8	.11	.8			4.5	1.8	

Figure 3. Difficulty Level

Based on Table 4 Item Difficulty Category Values, the existing items can be categorized into (1) very difficult categories, there are six items, namely numbers 30, 5, 36, 12, 9, and 24. (2) difficult category has eight items, namely number 15, 16, 14, 10, 19, 23, 37, and 31. (3) the easy category has nine items, namely numbers 1, 39, 20, 33, 7, 6, 18, 17, and 4. (4) very easy category There are three items, namely numbers 34, 13, and 26.

Diagnostic Rating Scale

The Diagnostic Rating Scale was conducted to determine whether the participants understood the differences in the answer choices of levels 1, 2, 3, and 4. Or to show the accuracy of the measurement of the response. The response categories in this survey consisted of the choices 'Strongly Agree with the Statement' to 'Strongly Disagree with the Statement'. If the participant chooses an answer close to 1, it means that he does not agree with the statement, and vice versa if he chooses an answer close to 4, it means that he agrees (Natanael, 2021). According to Laumann et al., and Menold (Lidinillah et al., 2020) Rating scale is defined as an assessment based on a certain scale that is ordered from the lowest to the highest. The rating scale is seen as raw data in the form of numbers and is interpreted descriptively. Respondents understand the difference in answers if the observed average and Andrich Threshold values increase, in detail the Andrich Threshold values can be seen in Figure 5.

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	106	4	-.15	-.64	1.34	1.41	NONE	(-3.49)	1
2	2	793	26	-.08	.07	.85	.85	-2.31	-1.26	2
3	3	1549	52	1.02	.97	.86	.88	-.16	1.18	3
4	4	558	19	1.91	1.93	1.05	1.04	2.47	(3.62)	4
MISSING		36	1	.73						

Figure 5: Diagnostic Rating Scale

Based on Figure 5, the observed average value continues to increase from -0.15 to 1.91, while the Andrich threshold value also increases from none to 2.47. So the two conditions of the Diagnostic Rating Scale show an increase in the alternative answers 1, 2, 3, and 4. This means that the level of the self-esteem instrument is following the behavioral conditions of student students in real terms and the level of answers is as expected.

Biased Item Detect

Another measure of the validity of the Winsteps application is that the identification of the items used does not contain bias, which means that one party that has certain characteristics is more profitable than the other party that has other characteristics as well. The item is said to be biased if the probability value of the items in the Output Figure 5 is below 0.05. The results of the bias analysis revealed that there were only 12 biased items, namely item numbers 1 (p = -0.02), 4 (p = -0.81), 6 (p = -0.75), 7 (p = -0 .73), 13 (p = -1.46), 17 (p = -0.78), 18 (p = -0.77), 20 (p = -0.41), 26 (p = -1 .98), 33 (p = -0.64), 34 (p = -0.96), and 39 (p = -0.24). So there are 14 items that do not contain bias, namely numbers 5, 9, 10, 12, 14, 15, 16, 19, 23, 24, 30, 31, 36, and 37. More details can be seen in Figure 5.

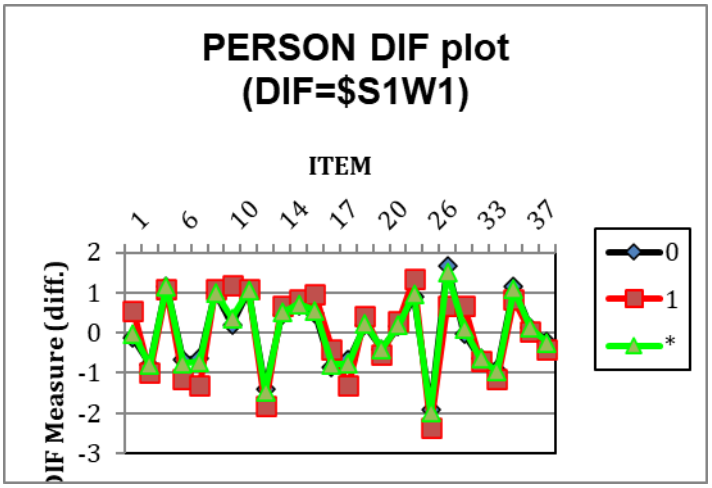

Figure 5: Logit Position of Each Item

Instrument Analysis

Analysis of the instrument was carried out to determine the reliability of the instrument, to see whether this self-esteem instrument was reliable, it could be used as a measuring tool to measure the self-esteem of adolescent students whenever and wherever it was used. To see the reliability of the instrument to be tested, a statistical summary (see Figure 6) is used in the Winsteps application. One of the information that can be interpreted through the output of Summary Statistics is the value of measuring reliability, both measurements of the respondent's side (person reliability) or from question items (item reliability) as well as interactions between respondents and items (Muntazhimah, Putri, & Khusna, 2020). The detailed analysis of the instrument can be seen in Figure 6.

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	73.3	25.7	.85	.32	1.00	-.4	1.00	-.4
S.D.	7.9	.7	.77	.01	.68	2.2	.67	2.2
MAX.	90.0	26.0	2.61	.37	3.80	6.4	3.80	6.5
MIN.	53.0	22.0	-1.00	.31	.24	-4.2	.24	-4.2

REAL RMSE	.36	TRUE SD	.68	SEPARATION	1.88	PERSON RELIABILITY .78
MODEL RMSE	.32	TRUE SD	.70	SEPARATION	2.17	PERSON RELIABILITY .83
S.E. OF PERSON MEAN = .07						

PERSON RAW SCORE-TO-MEASURE CORRELATION = .97
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .84

SUMMARY OF 26 MEASURED ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	329.7	115.6	.00	.15	.99	.0	1.00	.0
S.D.	38.0	1.5	.87	.01	.11	.8	.11	.8
MAX.	413.0	117.0	1.52	.18	1.38	2.8	1.38	2.8
MIN.	259.0	111.0	-1.98	.14	.80	-1.6	.81	-1.6

REAL RMSE	.15	TRUE SD	.86	SEPARATION	5.55	ITEM RELIABILITY .97
MODEL RMSE	.15	TRUE SD	.86	SEPARATION	5.64	ITEM RELIABILITY .97
S.E. OF ITEM MEAN = .17						

Figure 6. Summary of Statistics

Through the output of Summary Statistics, it will provide information on the quality of the instrument (item) and the respondent (person) in answering, as well as the interaction between the person and item at once (Muntazhimah, Putri, & Khusna, 2020). The person measure shows the average value of all participants in working on the student self-esteem instrument items. The average person value is 0.85, greater than the item average, which is 0.00, indicating that the participants' abilities are generally greater than the difficulty of the instrument items. The Cronbach Alpha value, which is a benchmark of reliability, namely the interaction between person and item at the same time, is 0.84 including the high category. Furthermore, the Person Reliability value, to see the consistency of the answers from the respondents, was 0.78, including the fairly good category. Meanwhile, the Item Reliability value, which is the reliability value of the items to determine the quality of the items in the instrument, is 0.97 which is classified as a special category.

Other data used is the value of INFIT MNSQ and OUTFIT MNSQ both in the Person Table and the Item Table. In the Person table, it is known that the average value of INFIT MNSQ and OUTFIT MNSQ are 1.00 and 1.00, respectively. Meanwhile, in the Item table, it is known that the average INFIT MNSQ and OUTFIT MNSQ values are 0.99 and 1.00, respectively. The stipulation is that if the INFIT MNSQ and OUTFIT MNSQ values are both in the Person Table and the Item Table, the closer to 1, the better because

the ideal value is 1. Thus, the average person and item are ideal, except for INFIT MNSQ, the Item Table is close to the criteria. ideal. Meanwhile, for INFIT ZSTD and OUTFIT ZSTD, the average values of a person are -0.4 and -0.4, respectively. While the INFIT ZSTD and OUTFIT ZSTD values for items are 0.0 and 0.0, respectively. The ideal ZSTD value is 0, the closer to 0 the better. Thus it can be said that the quality of the ZSTD OUTFIT for the item is ideal, but the ZSTD OUTFIT for the person is good.

The last analysis is the analysis of the value of the separation or grouping of persons and items. The separation shows how well the items in the student self-esteem instrument spread over a range of abilities. The greater the separation of individuals, the better the instruments are arranged because the items in them can reach individuals with high to low levels of ability. While the item separation shows how large the sample imposed on the measurement is spread along a linear interval scale. The higher the item separation, the better the measurement will be. Based on the analysis results from Summary Statistics, the value of person separation is 1.88 and item separation is 5.55. If the person separation index is more than 2, it means that the participants in the study are highly varied or heterogeneous, and if the item separation index is in the range of 4 to 5, it means that the items tested measure correctly (IOM, 2021). So it can be concluded that the person separation of this survey has varied and the item separation has been able to accurately measure the dimensions of self-esteem.

Meanwhile, based on Figure 6, it is known that the value of person separation is 1.88 and the value of item separation is 5.55. The greater the value of separation, the better the quality of the person and the instrument as a whole. The strata value of participants in this survey according to Nazlinda and Beh (Misbah & Sumintono, 2014) can be seen using the person strata formula, namely:

$$H=([(4 \times \text{Separation})+1])/3$$

Thus the separation value of a person is 2.84 rounded up to 3, while the separation from items is 7.73 rounded up to 8. This means that research participants have a variety of abilities that can be categorized into three groups. Meanwhile, the item difficulty level is spread into 8 groups starting from the easiest to the most difficult groups.

Based on the analysis results, the Raw variance value explained by measures is 35.6%, which is in the sufficient category. Meanwhile, the Unexplained variance in 1st to 5th contrast to residuals values is all less than

15%. So that the items on this instrument do measure one dimension, namely the self-esteem of adolescent students. The instrument also accurately measures the self-esteem of students in the aspect of accepting the situation as it is, accepting the advantages and disadvantages of him, feeling like a valuable person, and providing value or benefits from himself and others. The item analysis yielded results that according to the first criterion three items were misfit from the MNSQ OUTFIT. The second criterion is that nine items are misfit from the ZSTD OUTFIT. And from the third criterion, two items are misfits from PT MEASURE CORR. So that overall the results obtained that as many as 26 of the 40 items on the student self-esteem questionnaire were declared valid, meaning that they functioned normally, understood correctly by the adolescent students.

The results of the Rating Scale Diagnostic show that the observed average and Andrich Threshold value to increase. This means that the level of the self-esteem instrument is by the actual conditions of student behavior and the level of answers is as expected. An item is said to be biased if the probability value of the item is below 0.05. and from the analysis that has been carried out, it is known that 14 items do not contain bias, namely numbers 5, 9, 10, 12, 14, 15, 16, 19, 23, 24, 30, 31, 36, and 37. Through Summary Statistics, it is known that the average person value is 0.85, greater than the item average, which is 0.00, this indicates that the participants' abilities are generally greater than the difficulty of the instrument items. The Cronbach Alpha value of 0.84 is included in the high category. Then the Person Reliability value of 0.78 is included in the pretty good category. While the Item Reliability value of 0.97 is classified as a special category. The separation value of a person is 2.84 rounded up to 3, while the separation from items is 7.73 rounded up to 8. This means that research participants have a variety of abilities that can be categorized into three groups. Meanwhile, the item difficulty level is spread into 8 groups starting from the easiest to the most difficult groups.

CONCLUSION AND RECOMMENDATION

The use of the Rasch models on the analysis of student self-esteem resulted that there were 26 valid items which meant that they functioned normally. The Cronbach Alpha value of 0.84 is included in the high category. Then the Person Reliability value of 0.78 is included in the pretty good category. While the Item Reliability value of 0.97 is classified as a special

category. So that examine the self-esteem of adolescent students can be measured using this instrument.

ACKNOWLEDGEMENTS

The authors would like to thank the Department of Guidance and Counseling at the University of Education Indonesia as a place of study and to organize related courses, as well as to the Al-Istiqomah Islamic Boarding School and the Az-Zahra Islamic Boarding School as research locations for their participation in this research activity.

REFERENCES

Albi N. S., dkk. (2020). Metode Menghafal Alquran Tawazun Dan Peningkatan Self-Esteem Santri di Pesantren Daarul Huffadz Indonesia. *Jurnal Studi Al-Qur'an: Membangun Tradisi Berfikir Qur'ani, 16* (2). DOI:doi.org/10.21009/JSQ.016.2.06

Almaliki M. A. (2019). *Analisis Faktor-Faktor Pembentuk Self esteem Santri (Studi Kasus di Pondok Pesantren Attaqwa Pusat Putera Bekasi)*. (Skripsi). Jurusan Pendidikan Agama Islam, Universitas Islam Negeri Syarif Hidayatullah, Jakarta.

Bond, T., & Fox, C. (2015). *Applying the Rasch Model. In Applying the Rasch Mode*l. Routledge. https://doi.org/10.4324/9781315814698

Boone, W. J., Staver, J. R., Yale, M. S., Boone, W. J., Staver, J. R., & Yale, M. S. (2014). Item Measures. *Rasch Analysis in the Human Sciences*, 93–110. https://doi.org/10.1007/978-94-007-6857-4_5

Boyd, J. E., Otilingam, P. G., and Deforge, B. R. (2014). Brief version of the Internalized Stigma of Mental Illness (ISMI) scale: psychometric properties and relationship to depression, self-esteem, recovery orientation, empowerment, and perceived devaluation and discrimination. Psychiatr. *Rehabil. J. 37*, 17–23. DOI: 10.1037/prj0000035

Ilyas M. (2021). *Efektivitas Program Ma'had dalam Pembentukan Self-Esteem Santri di Ma'had Al-Ulya MAN Kota Batu*. (Skripsi). Jurusan Pendidikan Agama Islam, Universitas Islam Negeri Maulana Malik Ibrahim, Malang.

IOM. (2021). *Rating Scale Instrument Quality Criteria*. [Online] https://www.rasch.org/rmt/rmt211m.htm

Konrad, A. M., Moore, M. E., Doherty, A. J., Ng, E. S., and Breward, K. (2012). Vocational Status and Perceived Well-Being Of Workers With Disabilities. Equal. Divers. *Incl. 31*, 100–123. DOI: 10.1108/02610151211202772

Lidinillah Dindin A. M., Aprilia Mila, Suryana Dodi, dan Ahmad Aslina B. (2020). Development of Creativity Instrument through Rasch Model Analysis. *Universal Journal of Educational Research, 8* (4), pp.1620-1627. DOI: 10.13189/ujer.2020.080455

Misbah, I.H & Sumintono, B. (2014). *Pengembangan dan Validasi Instrumen "Persepsi Siswa terhadap Karakter Moral Guru" di Indonesia dengan Model Rasch*. Seminar Nasional "Pengembangan Instrumen Penilaian Karakter yang Valid" di Fakultas Psikologi, Universitas Muhammadiyah Surakarta.

Muntazhimah, Putri Syifani, dan Khusna Hikmatul. (2020). Rasch Model untuk Memvalidasi Instrumen Resiliensi Matematis Mahasiswa Calon Guru Matematika. *JKPM (Jurnal Kajian Pendidikan Matematika), 6* (1), pp. 65-74.

Natanael Yonathan. (2021). Analisis Rasch model Indonesia Problematic Internet Use Scale (IPIUS). *Persona: Jurnal Psikologi Indonesia, 10* (1), pp. 167-186. DOI: https://doi.org/10.30996/persona.v10i1.4827

Rosenberg, M. (1965). *Society and Adolescent Self-Image*. Princeton, NJ: Princeton University Press.

Schab, Lisa. M. (2013). *The Self-Esteem Workbook for Teens: Activities to Help You Build Confidence and Achieve Your Goals*. Oakland: Raincoast Books

Srisayekti W., dan Setiady D. A. (2015). Harga-diri (*Self-esteem*) Terancam dan Perilaku Menghindar. *Jurnal Psikologi, 42* (2), p. 141-156.

Susanto A. (2018). *Bimbingan dan Konseling di Sekolah: Konsep, Teori, dan Aplikasinya*. Jakarta: Prenada Media.

Widianti, E., Ramadanti, L., Karwati, Kirana, C., Mumtazhas, A., Ardianti, A. A., … Hasanah, H. (2021). Studi Literature : Faktor - faktor Yang berhubugan Dengan Harga Diri Rendah Pada Remaja. *Jurnal Keperawatan Komperehensif, 7*(1), 39– 47.