Analysis of Self Resilience Instruments on Orphaned Students at Secondary School Level in South Tambun District Using the Rasch Model

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Abstract
This study aims to determine the validity and reliability of the self resilience instrument for orphans in secondary school students in South Tambun District. This instrument was adapted from the theory of resilience by Clarke & Nicholson (2010). The self resilience instrument for orphans consists of 56 items that cover aspects of resilience including optimism, freedom from stress and anxiety, individual accountability, openness and flexibility, and problem orientation. The subjects of the study were orphans totaling 62 people spread across 5 secondary schools in South Tambun sub-district. The Rasch model test results can be seen from the dimensionality analysis, item measure, item fit order, rating scale diagnostic, and summary. This adaptation instrument is said to be reliable by analyzing the person reliability value of .72 and item reliability of .95. The results of data analysis show that there are several items that need improvement and a decrease in the level of difficulty. This research is useful for enriching references and providing information about self resilience in orphans.

Keywords: Rasch model; Reliability; Self Resilience, Validity

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INTRODUCTION

Resilience is the ability to overcome severe events or problems that occur in life due to trauma or adversity experienced and be able to adapt to it (Reivich & Shatte, in Agustina, 2021). Resilience refers to positive adaptation, or the ability to maintain or regain mental health, despite adversity (Fikretoglu & McCreary, 2012). Early research on resilience focused on selective strengths or assets, such as intellectual functioning that help people survive adversity (Herrman et al, 2011). Resilience is a psychological term used when a person is able to cope and find meaning in events such as severe stress experienced with

individual responses in the form of healthy intellectual functioning and social support (Richardson, in Hidayati & Yuwono, 2014). Resilience can be possessed by anyone, including orphans, because they tend to experience excessive difficulties compared to children living with complete parents (Salifu & Somhlaba, 2015; Yasin & Iqbal, 2013; Dey & Beena, 2019; Davidson & Navarro, 2015).

Resilience is a study that discusses the ability of individuals to bounce back when faced with problems that befall the individual (Wahyudi & Suardiman, 2018). In research conducted by Suardiman & Wahyudi (2018) resilience is influenced by several factors such as family, relativity, meaningfulness of life and individual life goals, media, and peers, this is in line with the results of research from Bonano, et al. Resilience is considered a process of adaptation to stressful situations, such as situations of trauma, tragedy, or stressful events (Charney, in Khotimah, Panggabean, & Ardianti, 2021). Resilience is not a personality trait, but an engagement between behaviors, thoughts, or actions that can be learned by anyone.

In line with that, previous research found that those with high resilience tend to experience high difficulties as well (Salifu & Somhlaba, 2015; Matyash & Volodina, 2015; Davidson & Navaro, 2015; Collishow, et al, 2007; Destriana, 2017; Kalesaran, 2016; Sari, 2022). Previous research shows that children who are under pressure such as cases of parental divorce and broken homes (Destriana, 2017; Wahyu; 2019), children living under orphanages (Purwanti & Aulia, 2017; Rachmawati, et al, 2019, Mishra & Sondhi, 2019), and orphans or orphans (Budi, 2019; Agustina, 2021; Kalesaran, 2016; Sari, 2022) tend to have high resilience or endurance and this is influenced by several aspects. The theory regarding the aspects in put forward by Clarke and Nicholson (2010), namely aspects of optimism, freedom from stress and anxiety, individual accountability, openness and flexibility, and problem orientation. Many studies show that a person is said to have high resilience if they fulfill these aspects. In addition, many studies prove that someone who has high resilience tends to have high self-esteem as well (Yasin & Iqbal, 2013; Kenneth & Golda, 2020; Lete, et al, 2019; Legault, et al, 2006; Destriana; 2017; Aunillah & Adiyanti, 2015). In connection with this, an accurate measurement is needed to determine the level of resilience of orphans so that prevention or treatment can be carried out on children related to their resilience.

There are many types of measurements regarding resilience. Some researchers focus on measuring students' academic resilience (Stiles et al, 2016). There are also researchers who developed a module on "The Resilience and Youth Development Module" which discusses adolescent resilience to their personal and social problems (Hanson & Kim, in Ramdani et al, 2021). Basically, the concept of resilience is one and universal, but the implementation and difficulties vary due to cultural differences and different human lives (Sagone & Caroli, 2014). The researcher decided to measure the level of resilience in orphans. Researchers developed their own self resilience instrument in orphans by adapting Clarke and Nicholson's (2010) theory. This study aims to test the validity and reliability of the instrument developed using the Rasch model.

Rasch model is a measurement model for measuring items and subject people (Brogden, in Nur et al, 2022). The use of the Rasch model has been tested by various fields, one of which is the field of psychology (Hidayat, et al, 2022). Rasch model analysis (RM) which is an item response theory (IRT) model developed by Georg Rasch around 1960, is here to provide solutions to the shortcomings of CTT (Higgins, in Indihadi; Suryana, & Ahmad, 2022). Measurement models found in item response theory (IRT) can provide the information needed to develop and/or assess the quality of a desired measure.

Desirable measures are those that are simple and easy to use and characterized by high quality of the information obtained, which is usually reported as reliability and validity (Green & Frantom, 2002). In the Rasch model, raw data cannot be directly analyzed and must first be converted into an "odds ratio" to convert logarithms into logit units as a manifestation of the probability of respondents responding to items (San Martin & Rolin, 2013). The Rasch model has the advantage of producing a measurement scale with the same interval and can provide accurate information about respondents and the quality of answers (Taufiq et al, 2021). The use of Rasch model theory to measure resilience instruments has been carried out by several researchers.

Ramdani et al (2021) conducted research to develop and validate a scale to measure student academic resilience at the junior high school level. Denovan, Dagnall, & Drinkwater (2022) conducted research on the psychometric properties of the "Ego Resiliency Scale" using the Rasch model to determine the accuracy of items that are relatively useful for general population samples. Another study was conducted by Heritage, Al Asadi, & Hegeney in 2021 to measure the validity of the 10 items of the Connor-Davidson resilience scale. Meanwhile, research measuring the suitability of the self resilience instrument in orphans using the Rasch model has not been found. Therefore, the researcher decided to test the accuracy of the instrument using the Rasch model theory so that it could be useful and used for other studies.

METHOD

Design

This study uses quantitative methods and uses self resilience questionnaires. Each statement item contains a choice of five Likert scales. This instrument specifically consists of 56 statement items covering five aspects of self resilience, namely aspects of optimism consisting of 13 items, aspects free from stress and anxiety consisting of 8 items, aspects of individual accountability consisting of 19 items, aspects of openness and flexibility consisting of 8 items, and aspects of problem orientation consisting of 8 items (Clarke & Nicholson, 2010). The Likert scale used consists of five options, including: 1) very suitable, 2) suitable, 3) less suitable, 4) not suitable, 5) very unsuitable (Vagias & Wade, 2006).

Participants

This study used purposive sampling, which is a sample method using criteria that have been chosen by the researcher (Guarte; Jacqueline; Barrios; & Erniel, 2006). The sample criteria in the study were orphans, orphans, and orphans. The participants in this study amounted to 62 participants who were studying in secondary schools in South Tambun District with the age of 16-18 years. Researchers distributed instruments to 5 schools and only 3 schools had orphans in them. Among the 62 participants, there were 7 participants at SMAN 2 South Tambun, 19 participants at SMAN 4 South Tambun, 10 participants at SMAN 1 South Tambun, 6 participants at SMAN 9 South Tambun, and 20 participants at SMK Boedi Luhur.

Data Analysis

The data analysis procedure in this study used the Rasch Model. Rasch model is the right approach to construct an instrument because through Rasch model, researchers can find out the relationship between participants and item answers (Nur; Yulianto; Suryana; Malik; Ardha; & Hong, 2022; Zahirah, & Susanto, 2021). This study did not use the classical

model because data analysis is inconsistent and can change depending on the researcher's ability to manage, therefore, researchers used the Rasch model to anticipate the shortcomings and limitations in analyzing instruments (Yusuf; Budiman; Yudha; Suryana; & Yusof, 2021; Fischer & Molenaar, 2012).

Instrument

The measuring instrument that has been adapted in the form of a questionnaire by the researcher is then compiled and packaged in a google form link which is then distributed in 5 schools. The statistical program used in this study is the Winstep version 3.73 application developed by Linacre (Zahirah & Susanto, 2021; Natanael, 2021; Ryan, Angela, & Surya, 2021). The output results displayed are dimensionality, item measure, item fit, rating scale diagnostic, and summary statistics (Muslihin; Suryana; Ahman; Suherman; & Dahlan, 2022).

RESULT

Data from the results of the orphan self resilience instrument were tested using the Rasch model and examined several aspects such as dimensionality, item analysis (item difficulty level, item suitability level, and item bias detection), rating scale, and instrument analysis in detail presented as follows:

Dimensionality

Dimensionality analysis identifies several dimensions or attributes measured by the instrument. This analysis was conducted in the winstep version 3.73 application using table 23 output by identifying the raw variance explained by measure and unexplained variance in 1st to 5st contrasts. Measurement dimentionality can be proven when the raw variance explained by measure is more than equal to 20% with a note of the general criteria for interpretation, namely 20-40% is sufficient. Good if 40-60%, and very good if above 60% and when the variance in 1st to 5st contrasts is less than 15% respectively (Linacre, 2011).

Table 1 Measuring the Dimentionality Aspects of Self Resilience

Variable	Nilai 1	Nilai 2	Nilai 3	Nilai 4
Total raw variance in observations =	88.05.00	100.0%		100.0%
Raw variance explained by measures =	26.05.00	29.9%		30.8%
Raw variance explained by persons =	01.03	1.5%		1.5%
Raw Variance explained by items =	25.02.00	28.5%		29.3%
Raw unexplained variance (total) =	62.00.00	70.1%	100.0%	69.2%
Unexplned variance in 1st contrast =	08.01	9.2%	13.1%	
Unexplned variance in 2nd contrast =	06.00	6.8%	9.7%	
Unexplned variance in 3rd contrast =	04.05	5.1%	7.3%	
Unexplned variance in 4th contrast =	03.08	4.2%	6.1%	
Unexplned variance in 5th contrast =	03.01	3.5%	5.0%	

Based on table 23 shows the results of raw variance explained by measure 30.8% so that it is classified in the sufficient category. While the Unexplained variance in 1st to 5st contrast of residuals is Unexplained variance in 1st contrast of 9.2%, Unexplained variance in 2nd contrast of 6.8%, Unexplned variance in 3rd contrast of 5.1%, Unexplained variance in 4th contrast of 4.2%, and Unexplained variance in 5th contrast of 3.5%.

Item Analysis

Item analysis is a test that measures the level of difficulty (item measure), the level of item fit and detects item bias.

Item difficulty level

The level of item difficulty can be identified from the table 13 item measure order in the winstep application and can be reviewed in table 2 below:

Table 2 Measuring the Level of Item Difficulty

Entry Number	Total Score	Total Count	Measure	Model	Infit		Outfit		Pt-Measure		Exact Macth		Item
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD	CORR.	EXP.	OBS%	EXP%	
10	87	62	01.51	.22	.87	-.5	.85	-.6	.33	.17	67.7	61.08.00	Z10
9	94	62	01.19	.20	.61	-2.0	.63	-1.9	.20	.19	54.8	51.08.00	Z9
6	96	62	01.11	.20	.62	-1.9	.63	-1.9	.48	.19	62.9	50.09.00	Z6
8	96	62	01.11	.20	.78	-1.0	.84	-.7	.03	.19	54.8	50.09.00	Z8
14	96	62	01.11	.20	.62	-1.9	.63	-1.9	.46	.19	66.1	50.09.00	Z14
2	98	62	01.04	.19	.78	-1.0	.78	-1.0	.28	.19	53.2	49.02.00	Z2
31	98	62	01.04	.19	.95	-.1	.87	-.6	.37	.19	62.9	49.02.00	Z31
16	105	62	.80	.18	1.08	.4	1.03	.2	.32	.21	48.4	46.06.00	Z16
4	106	62	.77	.18	.94	-.2	.99	.0	.12	.21	53.2	46.06.00	Z4
20	108	62	.71	.17	2.10	03.09	1.96	03.06	.38	.22	.65	46.08.00	Z20
17	110	62	.65	.17	1.11	.6	1.06	.4	.33	.22	48.4	46.08.00	Z17
40	114	62	.54	.16	.74	-1.3	.70	-1.5	.42	.23	58.1	47.05.00	Z40
27	116	62	.49	.16	.72	-1.4	.72	-1.4	.42	.23	54.8	47.03.00	Z27
5	117	62	.46	.16	.29	-4.7	.30	-4.6	.47	.23	75.8	47.04.00	Z5
45	117	62	.46	.16	1.16	.8	1.14	.7	.25	.23	40.3	47.04.00	Z45
54	117	62	.46	.16	.79	-1.0	.78	-1.1	.49	.23	46.8	47.04.00	Z54
44	120	62	.39	.16	1.52	02.02	1.48	02.01	.37	.24	37.1	47.07.00	Z44
13	122	62	.34	.15	1.94	03.06	2.06	04.00	.03	.24	30.6	47.08.00	Z13
18	127	62	.22	.15	.61	-2.2	.55	-2.6	.38	.25	64.5	47.03.00	Z18
51	129	62	.18	.15	1.13	.7	1.07	.4	.37	.25	53.2	46.09.00	Z51
34	130	62	.16	.14	.37	-4.2	.39	-3.9	.53	.25	61.3	46.06.00	Z34
57	130	62	.16	.14	.64	-2.0	.66	-1.9	.47	.25	43.5	46.06.00	Z57
48	134	62	.08	.14	.85	-.8	.83	-.8	.29	.26	54.8	45.09.00	Z48
50	134	62	.08	.14	.88	-.6	.87	-.6	.37	.26	59.7	45.09.00	Z50
36	136	62	.04	.14	.80	-1.1	.82	-.9	.32	.26	46.8	45.02.00	Z36
41	137	62	.02	.14	1.19	01.00	1.47	02.02	-.11	.27	50.0	44.08.00	Z41
55	137	62	.02	.14	1.23	01.02	1.28	01.04	.20	.27	32.3	44.08.00	Z55
25	138	62	.00	.14	.43	-3.8	.41	-3.9	.48	.27	61.3	44.07.00	Z25

39	142	62	-.07	.13	.98	.0	1.03	.2	.03	.27	40.3	43.01.00	Z39
28	144	62	-.11	.13	1.32	01.07	1.25	01.03	.41	.28	33.9	42.01.00	Z28
32	146	62	-.14	.13	.61	-2.5	.59	-2.5	.56	.28	56.5	41.04.00	Z32
47	149	62	-.19	.13	.84	-.9	.81	-1.0	.25	.28	40.3	40.04.00	Z47
7	153	62	-.26	.13	1.34	01.08	1.41	02.01	.39	.29	32.3	38.03.00	Z7
30	155	62	-.29	.13	1.02	.2	1.09	.5	-.13	.29	41.9	37.04.00	Z30
35	156	62	-.31	.13	1.01	.1	1.07	.4	.12	.29	41.9	37.01.00	Z35
23	159	62	-.36	.12	.84	-1.0	.84	-.9	.43	.30	43.5	36.02.00	Z23
24	159	62	-.36	.12	1.14	.9	1.22	01.03	-.07	.30	38.7	36.02.00	Z24
22	160	62	-.37	.12	1.07	.5	1.06	.4	.22	.30	29.0	35.09.00	Z22
53	162	62	-.40	.12	.51	-3.6	.52	-3.4	.56	.30	46.8	35.08.00	Z53
15	163	62	-.42	.12	1.49	02.07	1.45	02.04	.21	.30	27.4	35.05.00	Z15
26	163	62	-.42	.12	1.08	.5	1.18	01.01	-.12	.30	48.4	35.05.00	Z26
49	168	62	-.49	.12	1.21	01.03	1.24	01.04	.18	.31	35.5	34.00.00	Z49
46	171	62	-.53	.12	.96	-.2	.98	-.1	.22	.31	33.9	33.04.00	Z46
21	172	62	-.55	.12	1.04	.3	1.02	.2	.32	.31	40.3	33.01.00	Z21
37	172	62	-.55	.12	1.01	.1	1.04	.3	.11	.31	41.9	33.01.00	Z37
38	172	62	-.55	.12	.98	-.1	.95	-.2	.33	.31	38.7	33.01.00	Z38
29	176	62	-.61	.12	.54	-3.6	.56	-3.4	.53	.31	53.2	32.05.00	Z29
19	177	62	-.62	.12	1.10	.7	1.12	.8	.22	.31	32.3	32.02.00	Z19
43	179	62	-.65	.12	1.39	02.04	1.39	02.03	.50	.31	16.1	31.03.00	Z43
33	180	62	-.66	.12	1.24	01.06	1.28	01.08	.34	.31	19.4	31.03.00	Z33
56	183	62	-.70	.12	1.11	.8	1.13	.9	.46	.32	35.5	30.03.00	Z56
42	192	62	-.82	.12	1.35	02.03	1.36	02.03	.49	.32	17.7	29.06.00	Z42
3	200	62	-.93	.12	1.15	01.01	1.17	01.02	.09	.32	30.6	29.05.00	Z3
52	207	62	-1.03	.12	1.25	01.07	1.28	01.09	-.02	.32	22.6	29.02.00	Z52
12	215	62	-1.13	.12	1.29	02.00	1.35	02.03	.00	.32	35.5	29.07.00	Z12
11	247	62	-1.60	.13	.82	-1.2	.82	-1.1	.26	.30	46.8	30.06.00	Z11
MEAN	144.01.00	62.00.00	.00	.14	.99	-.1	1.00	-.1			44.1	41.03.00	
S.D.	34.02.00	.0	.66	.03	.34	01.09	.35	01.09			14.1	07.06	

From the table above, it can be seen that the SD or standard deviation value is .66. The SD value when combined with the logit value on average, the difficulty level of the items can be grouped in the very difficult category (> + 1 SD), the difficult category (.0 logit + 1SD), the easy category (.0 logit-1 SD), and the very easy category (< -1 SD). Thus, it can be seen that the value limit for the very difficult category is > .66, the difficult category is .0 - .66, the easy category is .0 - (-.66), and the very easy category is < -.66. By looking at the logit value of each item in table 13 of the item suitability level, the difficulty level of the items in order (from the most difficult item to the easiest) is known to have no items with a very difficult difficulty level. There are 56 items, including items 1-23, 25, 27-29, 31-

40, 42-51, 53-56 are in the difficult category. There are 5 items including items 24, 26, 30, 41, and 52 in the easy category. There are no items in the very easy category.

Level of item suitability

In the level of item suitability, the item interprets that the item functions normally to measure self resilience so that there is no misunderstanding of thoughts in the individual against the items reviewed based on data processing using winstep in table 10.1, namely item fit order and can be reviewed in table 3 as follows:

Table 3 Measuring the Level of Item Fit

Entry Number	Total Score	Total Count	Measure	Model	Infit		Outfit		Pt-Measure		Exact Macth		Item
				S.E.	MNSQ	ZSTD	MNSQ	ZSTD	COR.	EXP.	OBS%	EXP%	
20	108	62	.71	.17	02.10	03.09	1.96	03.06	A .38	.22	6.5	46.8	Z20
13	122	62	.34	.15	0,106944	03.06	2.06	04.00	B .03	.24	30.6	47.8	Z13
44	120	62	.39	.16	01.52	02.02	1.48	02.01	C .37	.24	37.1	47.7	Z44
15	163	62	-.42	.12	01.49	02.07	1.45	02.04	D .21	.30	27.4	35.5	Z15
41	137	62	.02	.14	01.19	01.00	1.47	02.02	E-.11	.27	50.0	44.8	Z41
7	153	62	-.26	.13	01.34	01.08	1.41	02.01	F .39	.29	32.3	38.3	Z7
43	179	62	-.65	.12	01.39	02.04	1.39	02.03	G .50	.31	16.1	31.3	Z43
42	192	62	-.82	.12	01.35	02.03	1.36	02.03	H .49	.32	17.7	29.6	Z42
12	215	62	-1.13	.12	01.29	02.00	1.35	02.03	I .00	.32	35.5	29.7	Z12
28	144	62	-.11	.13	01.32	01.07	1.25	01.03	J .41	.28	33.9	42.1	Z28
33	180	62	-.66	.12	01.24	01.06	1.28	01.08	K .34	.31	19.4	31.3	Z33
55	137	62	.02	.14	01.23	01.02	1.28	01.04	L .20	.27	32.3	44.8	Z55
52	207	62	-1.03	.12	01.25	01.07	1.28	01.09	M-.02	.32	22.6	29.2	Z52
49	168	62	-.49	.12	01.21	01.03	1.24	01.04	N .18	.31	35.5	34.0	Z49
24	159	62	-.36	.12	01.14	.9	1.22	01.03	O-.07	.30	38.7	36.2	Z24
26	163	62	-.42	.12	01.08	.5	1.18	01.01	P-.12	.30	48.4	35.5	Z26
3	200	62	-.93	.12	01.15	01.01	1.17	01.02	Q .09	.32	30.6	29.5	Z3
45	117	62	.46	.16	01.16	.8	1.14	.7	R .25	.23	40.3	47.4	Z45
56	183	62	-.70	.12	01.11	.8	1.13	.9	S .46	.32	35.5	30.3	Z56
51	129	62	.18	.15	01.13	.7	1.07	.4	T .37	.25	53.2	46.9	Z51
19	177	62	-.62	.12	01.10	.7	1.12	.8	U .22	.31	32.3	32.2	Z19
17	110	62	.65	.17	01.11	.6	1.06	.4	V .33	.22	48.4	46.8	Z17
30	155	62	-.29	.13	01.02	.2	1.09	.5	W-.13	.29	41.9	37.4	Z30
16	105	62	.80	.18	01.08	.4	1.03	.2	X .32	.21	48.4	46.6	Z16
22	160	62	-.37	.12	01.07	.5	1.06	.4	Y .22	.30	29.0	35.9	Z22
35	156	62	-.31	.13	01.01	.1	1.07	.4	Z .12	.29	41.9	37.1	Z35
46	171	62	-.53	.12	.96	-.2	.98	-.1	z .22	.31	33.9	33.4	Z46
38	172	62	-.55	.12	.98	-.1	.95	-.2	y .33	.31	38.7	33.1	Z38
31	98	62	01.04	.19	.95	-.1	.87	-.6	x .37	.19	62.9	49.2	Z31
50	134	62	.08	.14	.88	-.6	.87	-.6	w .37	.26	59.7	45.9	Z50

10	87	62	01.51	.22	.87	-.5	.85	-.6	v .33	.17	67.7	61.8	Z10
48	134	62	.08	.14	.85	-.8	.83	-.8	u .29	.26	54.8	45.9	Z48
47	149	62	-.19	.13	.84	-.9	.81	-1.0	t .25	.28	40.3	40.4	Z47
23	159	62	-.36	.12	.84	-1.0	.84	-.9	s .43	.30	43.5	36.2	Z23
8	96	62	01.11	.20	.78	-1.0	.84	-.7	r .03	.19	54.8	50.9	Z8
36	136	62	.04	.14	.80	-1.1	.82	-.9	q .32	.26	46.8	45.2	Z36
11	247	62	-1.60	.13	.82	-1.2	.82	-1.1	p .26	.30	46.8	30.6	Z11
54	117	62	.46	.16	.79	-1.0	.78	-1.1	o .49	.23	46.8	47.4	Z54
2	98	62	01.04	.19	.78	-1.0	.78	-1.0	n .28	.19	53.2	49.2	Z2
40	114	62	.54	.16	.74	-1.3	.70	-1.5	m .42	.23	58.1	47.5	Z40
27	116	62	.49	.16	.72	-1.4	.72	-1.4	l .42	.23	54.8	47.3	Z27
57	130	62	.16	.14	.64	-2.0	.66	-1.9	k .47	.25	43.5	46.6	Z57
9	94	62	01.19	.20	.61	-2.0	.63	-1.9	j .20	.19	54.8	51.8	Z9
6	96	62	01.11	.20	.62	-1.9	.63	-1.9	i .48	.19	62.9	50.9	Z6
14	96	62	01.11	.20	.62	-1.9	.63	-1.9	h .46	.19	66.1	50.9	Z14
18	127	62	.22	.15	.61	-2.2	.55	-2.6	g .38	.25	64.5	47.3	Z18
32	146	62	-.14	.13	.61	-2.5	.59	-2.5	f .56	.28	56.5	41.4	Z32
29	176	62	-.61	.12	.54	-3.6	.56	-3.4	e .53	.31	53.2	32.5	Z29
53	162	62	-.40	.12	.51	-3.6	.52	-3.4	d .56	.30	46.8	35.8	Z53
25	138	62	.00	.14	.43	-3.8	.41	-3.9	c .48	.27	61.3	44.7	Z25
34	130	62	.16	.14	.37	-4.2	.39	-3.9	b .53	.25	61.3	46.6	Z34
5	117	62	.46	.16	.29	-4.7	.30	-4.6	a .47	.23	75.8	47.4	Z5
MEAN	144.01.00	62.00.00	.00	.14	.99	-.1	1.00	-.1			44.1	41.3	
S.D.	34.02.00	.0	.66	.03	.34	01.09	.35	01.09			14.1	7.6	

Based on table 10.1, the item fit order can be examined based on the outfit ZSTD, outfit MNSQ, and point measure correlation columns. Criteria for examining the suitability of item fit or item mismatch (misfit). That is, the outfit MNSQ value is >.5 and <1.5, the closer to 1 the better. Oufit ZSTD >-2.0 and <2.0, the closer to 0 the better. Point Measure Correlation >.4 and <.85. Statement items can be reviewed for fit if they meet at least one of the three criteria (Boone, et al., 2014).

Rating Scale Diagnostic

This diagnosis is carried out to find out that participants understand the difference in the scale of answer choices in self resilience 1,2,3,4, and 5. The difference in answers is understood by respondents if the observed average and andrich threshold values increase according to the scale, in detail the andrich threshold value can be seen in the winstep table number 3.2 rating scale and can be seen in table 4 as follows:

Table 4 Diagnostic Rating Scale

Category		Observed		Obvsd Avrge	Sample Expect	Infit	Outfit	Andrich Threshold	Category Measure	
Label	*Score*	*Count*	*%*			*MNSQ*	*MNSQ*			
1	1	840	24	-1.11	-1.13	1.08	01.05	NONE	(-2.66)	1
2	2	1401	40	-.75	-.71	.90	.94	-1.43	-.87	2
3	3	683	20	-.29	-.34	.84	.78	.20	.14	3
4	4	360	10	.06	-.03	.89	.87	.46	.97	4
5	5	188	5	.10	.25	1.18	01.27	.76	(2.25)	5

Table 4 shows the suitability and both show increasing values on alternative scales 1, 2, 3, 4, and 5. The results of the analysis show that the scale on the self resilience instrument is in accordance with the real behavioral conditions of orphans.

Instrument Analysis

For instrument analysis, the information presented in winstep table 3.1: Summary Statistic is used. In detail the instrument analysis can be seen in table 5 as follows:

Table 5 Instrument Analysis

	Total			Model	Infit		Outfit	
	Score	Count	Measure	Error	MNSQ	ZSTD	MNSQ	ZSTD
Mean	130.02.00	56.00.00	-.61	.15	01.03	-.3	01.00	-.3
S.D.	14.05	.0	.31	.01	.52	02.06	.48	02.04
Max.	161.00.00	56.00.00	-.02	.18	02.42	05.00	02.24	04.08
Min.	101.00.00	56.00.00	-1.32	.13	.29	-5.1	.33	-4.8

Real Rmse .16 True Sd .26 Separation 1.67 Person Reliability .72
Model Rmse.15 True Sd .27 Separation 1.87 Person Reliability .77
S.E. Of Person Mean = .04
Person Raw Score-To-Measure Correlation = 1.00
Cronbach Alpha (Kr-20) Person Raw Score "Test" Reliability = .77

	Total			Model	Infit		Outfit	
	Score	Count	Measure	Error	MNSQ	ZSTD	MNSQ	ZSTD
Mean	144.01.00	62.00.00	.00	.14	.99	-.1	01.00	-.1
S.D.	34.02.00	.0	.66	.03	.34	01.09	.35	01.09
Max.	247.00.00	62.00.00	01.51	.22	02.10	03.09	02.06	04.00
Min.	87.00.00	62.00.00	-1.60	.12	.29	-4.7	.30	-4.6

Real Rmse .15 True Sd .64 Separation 4.16 Item Reliability .95
Model Rmse.15 True Sd .65 Separation 4.41 Item Reliabilit .95
S.E. Of Person Mean = .09

Person measure is a measurement that shows the average score of all respondents in answering the items of the instrument to reveal orphan self resilience data. In this measurement, when the person average is greater than the item average (item average of .00 logit) it can be seen that the ability of respondents is greater in general than the difficulty of the instrument items. The Cronbach Alpha value, which is a value that

represents the interaction between the items and the person as a whole, is at .77, including in the good category. Furthermore, the person reliability value is at .72 which acts as an indicator of the consistency of respondents' answers, including the good category. While item reliability is at .95 which is an indicator of the quality of the items in the instrument, classified as an excellent category.

DISCUSSION

The Self Resilience instrument tested is the result of adaptation of the aspects of self resilience according to Clarke & Nicholson's (2010) theory. Researchers test the accuracy of the instrument from various aspects so that this instrument can prove its validity and reliability for use in ongoing research. This instrument test uses the IRT approach because it is considered more accurate and efficient than using the CTT approach (Adiyo, 2014).

Based on the research results, it is known that the raw variance explained by measure value is at 30.8%. Linacre (2011) suggests that the minimum value in the antimensionality aspect is 20%. The results of the calculation of the self resilience instrument show a number higher than 20% so that it can be fulfilled. This instrument is also in the sufficient category, so it is suitable for use. The results also show that other variances cannot be explained by other measuring instruments and have a percentage below 10%, indicating the level of independence of items in the tool is good.

The author then measures the level of item difficulty with a 13 item measure order looking at the magnitude of the MNSQ outfit value. By defining item difficulty and person ability on the same scale, we can easily build an interpretation for the "score" of people's ability in terms of answering items (Wu & Adams, 2007). It was found that 51 items were at high difficulty and 5 items were at easy difficulty. The results of the analysis show that the level of difficulty of the instrument is dominated by the difficult category. It can be seen that the level of difficulty of the items is not good and needs to be reviewed. Because the level of difficulty of items is categorized as good if it is dominated by moderate difficulty (Palimbong et al, 2018). This is an evaluation for the author to reduce the level of item difficulty so that it can be balanced.

Fit analysis can use item measurement: fit order is usually most common using the Infit Mean Square (IMS) index for weighted information and Outfit Mean Square (OMS) for unweighted index information (Yudha & Taufiq, 2021). From the analysis results, it can be seen that the items that do not fit are in items 13 & 20. In item 13, the outfit value (MNSQ) is 1.96, the ZTSD outfit value is 3.06, and the correlation value on PT-Measure is .38. Item 13 does not meet these three criteria so it can be said that it does not fit. The correlation point measure value on item 13 is classified as unable to discriminate based on the theory of Alagumalai, et al (2005). Meanwhile, item 20 shows an MNSQ outfit value of 2.06, a ZTSD outfit value of 04.00, and a correlation point measure value of .03. This shows that item 15 can also be said to not fit or missfit because it does not meet these three criteria.

Based on the Andrich Threshold measurement, it is known that the observer average moves from a logit value of -1.11 for very suitable choices and increases to a logit of .10 for very unsuitable choices. This shows that there is a logical improvement and the Likert scale used is understandable to respondents. The Likert scale also has a good vulnerability in measuring the intensity of self resilience of orphans using this instrument. Then, in the Andrich Threshold column by looking at the accuracy of the polynomial value used shows the results from NONE to be at .77 with the acquisition of positive numbers in sequence. It can be seen that the 5 answer choices used are said to be valid.

CONCLUSION

The results showed that overall the self resilience instrument for orphans can be said to be reliable and valid. In the calculation of Summay of Measured Items, seen from the Cronbach Alpha value, the person reliability value of .72 is included in the good category. Furthermore, the measurement of item reliability value is .95 and is classified as an excellent category. The results of the analysis test conducted, there are several items, namely items 13 and 20 that need to be corrected. This is done so that the self resilience instrument for orphans as a whole can be proven valid. The choice between scales 1 to 5 has a good range, not too high or low so that the use of a scale with 5 choices is appropriate for this orphan self resilience instrument. Future researchers can improve existing instruments by lowering the level of difficulty of items so that items are at a moderate and balanced level of difficulty. Then researchers can test the suitability of items using the same approach or can use a different approach with more credible participants.

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