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VALIDITY AND RELIABILITY OF ADOLESCENT LEARNING STYLE INSTRUMENT (IGBR) DEVELOPMENT: RASCH MODEL ANALYSIS

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Abstract

Learning style is the way each learner begins to contribute to processing, processing and retain new and difficult information. The development of an adolescent learning style instrument helps students to identify learning style patterns based on the theory used. However, the limitations of the adolescent learning style instrument have only been tested on junior high school students. This research aims to develop, test the validity and reliability of an adolescent learning style instrument using the Winstep software RASCH model. Participants in this research were 840 students at the junior high school level in Tasikmalaya City and Regency. The results of the item validity test using the RASCH Model program Winstep software show that all items are valid (126 items) with the Outfit Mean Square (MNSQ) value. The results of the reliability test of the adolescent learning style instrument, consisting of 126 items, were declared valid; the Cronbach's Alpha value was 0.85, which is in the very good category. The Person Reliability value of 0.87 is at a good level. And the Item Reliability value of 0.99 shows that the level of item consistency is in the special category.

Keywords: Development, Validity, Reliability, Learning Style, RASCH Model

Abstrak

Gaya belajar merupakan cara setiap pembelajar mulai berkontribusi mengolah, memproses, dan menyimpan informasi baru dan sulit. Pengembangan instrumen gaya belajar remaja membantu siswa untuk mengidentifikasi pola gaya belajar berdasarkan teori yang digunakan. Namun keterbatasan dari instrumen gaya belajar remaja baru di uji ke remaja siswa SMP. Penelitian ini bertujuan untuk mengembangkan, menguji validitas dan reliabilitas instrumen gaya belajar remaja menggunakan model RASCH software Winstep. Partisipan dalam penelitian ini adalah 840 siswa di tingkat SMP se Kota dan Kabupaten Tasikmalaya. Hasil uji validitas item menggunakan program Model RASCH software Winstep menunjukkan seluruh item valid (126 item) dengan ketentuan nilai Outfit Mean Square (MNSQ). Hasil uji reliabilitas instrumen gaya belajar remaja yang terdiri dari 126 item yang dinyatakan valid nilai Alpha Cronbach's nya sebesar 0,85 yang berada pada kategori bagus sekali. Nilai Person Reliability sebesar 0,87 berada pada tingkat bagus. Dan nilai Item Reliability sebesar 0,99 menunjukkan tingkat konsistensi item berada pada kategori istimewa.

***Kata kunci**: Pengembangan, Validitas, Reliabilitas, Gaya Belajar, Model RASCH*

INTRODUCTION

Adolescents are undergoing a developmental process related to achieving learning independence and developing learning strategies that suit individual needs. This is in accordance with the task of adolescent development, according to Santrock, 2017: 123), which is the achievement of self-identity that involves the ability to understand and explore learning preferences as part of their self-discovery. In the learning process, adolescents tend to try various learning methods to find the most effective learning style, both individually and in groups. In line with Piaget's theory of cognitive development, adolescents are at a formal operational stage, which allows them to think abstractly, logically, and systematically, so that the right learning style can support their ability to complete complex tasks. (Slavin, 2018).

The results of the study entitled "The Level of Learning Independence in Adolescents" stated that learning independence was not ideal, namely, 72.7% in the medium category. Ideally, adolescents are said to be very independent in learning if they reach the high or very high category, which is between 76-100% (Fitriani & Yusri, 2022). Learning independence has several characteristics, according to Babari in Sundayana (2016) There are five characteristics of learning independence, namely: 1) Confidence; 2) Able to work alone; 3) Mastering the expertise and skills that are in accordance with their work; 4) Value time; and 5) Responsible. In the results of the study Hermawati & Andayani (2020) Shows that learning style affects students' learning independence. And supporting the achievement of student learning outcomes is the learning style (Rijal & Bachtiar, 2015).

Learning style is a set of personal, biological, and developmental characteristics that make teaching equally effective for some students and ineffective for others. Although originally conceived as the result of practitioner observation combined with the research of university researchers, Rita Dunn & Kenneth Dunn's learning style model is rooted in two different theories of learning, namely cognitive style theory and brain lateralization theory (Dunn & Dunn, 1993). Adapting learning to learning styles is a challenge for an educator, not only subject teachers, but guidance and counseling teachers in schools also have difficulty choosing methods that suit students (Sandra & Ifdil in Mashurwati, 2018).

Learning style is the way in which each learner begins to contribute to processing, retaining, and applying new and difficult information. These interactions occur differently for each person. To identify patterns of a person's learning style, it is necessary to examine the multidimensional characteristics of each individual to determine what is most likely to trigger each student's concentration, maintain it, process his or her natural responses, and elicit long-term memory (Dunn & Dunn, 1993). Students sometimes do not know what kind of learning style is suitable for use in learning; therefore, students need to know what kind of learning style is most suitable for themselves. Learning styles arise from scientific factors (innate from birth) and environmental factors (Cholifah *et al*., 2018).

The first step to achieving good learning outcomes is to know the learning style of students. The key to successful learning and work, according to Prashign, is to know the unique learning or working style of each person, accept one's own strengths and weaknesses, and adjust personal preferences as much as possible personal preferences in

each learning, study, and work situation. Thus, learning style is the key to students' success in learning (Papilaya & Huliselan, 2016).

BK teachers at the School are tasked with assisting students in personal, social, learning, and career development (Ifdil, 2010). In carrying out guidance and counseling services in schools, there are various types of services and supporting activities, namely, using instruments (Kamaluddin *et al*., 2011). A research instrument is a tool used to collect data or measure objects from a research variable to collect data or measure objects from a research variable (Sappaile, 2007). An instrument can be said to be reliable if the data can reveal reliable data (Arikunto, 2010).

To uncover learning styles, it is necessary to use a comprehensive learning style model because not every individual is influenced by different elements of learning styles, and the number of these elements can increase the academic achievement of people who are considered important in a short period of time. It is impossible to obtain reliable and valid data from unreliable or invalid instruments. The instruments with the highest reliability and validity, and the most widely used in learning style research, are the *Learning Style Inventory* (LSI) by Dunn, Dunn, and Price (Dunn & Dunn, 1993).

A measuring instrument can be said to be valid if the measuring instrument can measure what is to be measured accurately and reliably. If the measuring instrument is tested on the same group at different times or occasions, it will give relatively the same results (Nurkancana, 1992: 141). Even though the instrument has been standardized and reliable, it does not make the instrument directly usable anywhere, anytime, to any subject. However, the instrument needs to be retested every time it is going to be used (Tavakol & Dennick, 2011).

Based on the considerations and background that have been presented, the researcher intends to develop learning style instruments for junior high school students in the city and district of Tasikmalaya. It is hoped that the existence of learning style instruments that have been tested for validity and reliability can contribute to guidance and counseling teachers or school counselors in analyzing the needs in uncovering learning styles in adolescents at school. So that BK teachers or school counselors can get valid, reliable and accurate data or information related to learning styles in adolescents and the provision of what kind of services are appropriate to be provided to students according to the needs of adolescents themselves.

METHOD

This study uses a qualitative descriptive design that aims to develop and test the validity and reliability of adolescent learning style instruments using the RASCH Model measurement model. The analysis of the RASCH model was used as a data analysis technique using *Winstep software* version 5.1.5.1. This study identifies the Adolescent Learning Style Instrument (IGBR) by considering several things, including Item Validity and Reliability.

Participants in this study were junior high school students in grades 7, 8, and 9. The sampling technique used in the research conducted was *Non-Probability Sampling*.

Sample collection was carried out online using *Google Forms* and offline by distributing instrument sheets directly to students. Participants consisted of 840 students.

Adolescent learning style instruments can be used in this study, which was developed based on the concept and construction of learning styles based on the opinions of experts, namely Rita Dunn & Kenneth Dunn. The instruments that can be learned from the constructs of Rita Dunn & Kenneth Dunn's learning styles are *Learning Style Inventory* (LSI), where the instrument has the highest validity and reliability, LSI has five aspects of learning style, namely Environment (*Environmental*), Emotional (*Emotional*), Sociological (*Sociological*), Physiological (*Physiological*), and Psychological (*Psychological*) (Dunn. R & Dunn. K, 1992). The learning style variables have aspects and indicators described in Table 1. Next:

Table 1. Aspects and Indicators of Learning Style

VARIABEL	ASPECTS	INDICATOR
LEARNING STYLE	Milieu	Voice
		Light
		Temperature
		Furniture Design / Seating
	Emotional	Motivation
		Tenacity
		Responsibility
		Structure
	Sociological	Alone and with Others
		Otoritas
		Variansi
	Physiological	The Power of Perception
		Intake
		Energy Level
		Mobility
	Psychological	Analytics/Global
		Brain Preferences
		Impulsive-Reflective

RESULTS AND DISCUSSION

Validity Test

Validity is a measure that shows "the quality of the accuracy of the test in measuring the material aspects or aspects of behavior that should be measured" (Coaley, 2010). Valid means that the instrument can be used to measure what is to be measured (Scott, 2016). Testing of the validity of learning style instruments was carried out using *software* Winstep by showing the results that the instrument can be used to measure what should be measured. To determine valid and invalid at least 2 criteria must be met (MNSQ & ZSTD), but the value of ZSTD is very sensitive to the number of samples. If the sample is used by more than 500 people, there will be a tendency for the ZSTD value to exceed

3, so some experts suggest that it is not necessary to use the ZSTD value (Sumintono & Widhiarso, 2014). The results of the validity test of the adolescent learning style instrument can be seen in Figure 1. next.

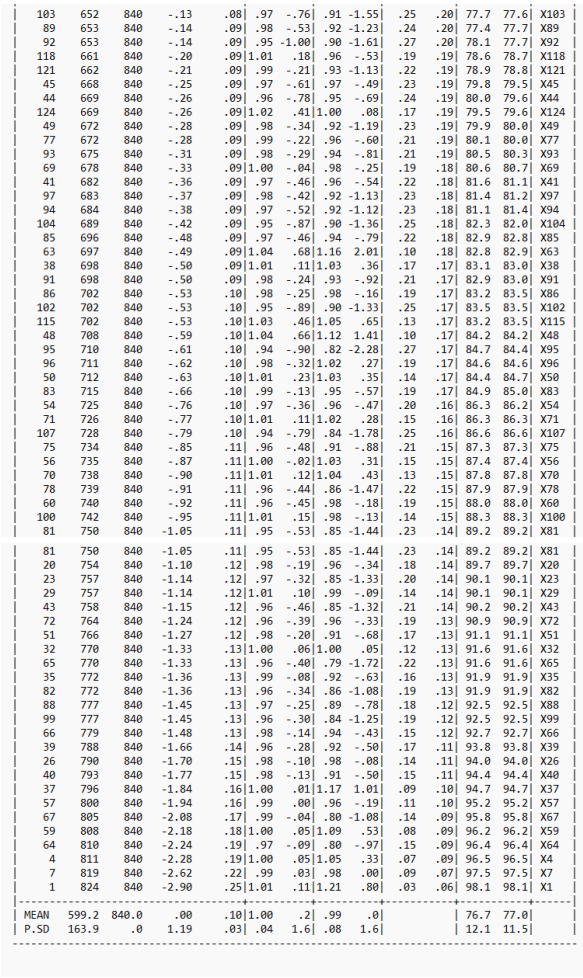
Figure 1. Validity Test Results

TABLE 13.1 UNTUK ANALISIS RASCH MODEL PART 2.xls ZOU645WS.TXT Dec 22 2024 19:34
INPUT: 840 PERSON 126 ITEM REPORTED: 840 PERSON 126 ITEM 2 CATS WINSTEPS 5.1.5.1

PERSON: REAL SEP.: 2.47 REL.: .86 ... ITEM: REAL SEP.: 11.62 REL.: .99

ITEM STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	JMLE MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-AL CORR.	PTMEASUR-AL EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
5	75	840	3.74	.13	.99	-.07	1.08	.65	.30	.30	91.9	91.7	X5
10	191	840	2.53	.09	1.04	.94	1.13	2.13	.21	.28	78.0	78.2	X10
13	200	840	2.46	.08	1.04	.81	1.09	1.64	.23	.28	76.6	77.2	X13
31	238	840	2.21	.08	1.00	.07	1.02	.56	.27	.28	74.0	73.2	X31
16	244	840	2.17	.08	1.05	1.48	1.13	2.91	.19	.28	72.3	72.5	X16
2	248	840	2.14	.08	1.05	1.51	1.08	1.76	.21	.28	70.7	72.1	X2
28	252	840	2.12	.08	1.06	1.59	1.10	2.21	.20	.28	71.1	71.7	X28
34	258	840	2.08	.08	1.02	.52	1.07	1.59	.24	.28	72.1	71.1	X34
46	312	840	1.77	.07	1.05	1.81	1.07	2.31	.21	.27	65.1	66.2	X46
111	344	840	1.60	.07	1.02	1.07	1.03	1.17	.24	.27	64.4	63.7	X111
53	349	840	1.57	.07	1.13	5.60	1.16	5.63	.10	.27	57.7	63.4	X53
8	365	840	1.48	.07	1.05	2.50	1.05	2.07	.20	.27	58.2	62.5	X8
125	369	840	1.46	.07	.94	-3.04	.95	-2.15	.34	.27	67.8	62.3	X125
24	374	840	1.44	.07	1.02	1.15	1.02	.95	.24	.27	60.5	62.0	X24
55	374	840	1.44	.07	1.05	2.36	1.05	2.10	.20	.27	59.8	62.0	X55
27	378	840	1.42	.07	1.03	1.75	1.04	1.54	.22	.27	60.0	61.8	X27
119	383	840	1.39	.07	.92	-4.60	.90	-4.11	.38	.26	68.5	61.6	X119
73	407	840	1.27	.07	1.10	5.52	1.12	4.70	.13	.26	53.7	60.8	X73
58	408	840	1.26	.07	1.06	3.21	1.07	2.77	.18	.26	55.7	60.8	X58
21	410	840	1.25	.07	1.04	2.42	1.05	1.93	.20	.26	58.8	60.7	X21
122	410	840	1.25	.07	.91	-5.32	.89	-4.66	.38	.26	67.2	60.7	X122
113	417	840	1.21	.07	.98	-1.39	.97	-1.44	.29	.26	62.0	60.6	X113
19	444	840	1.07	.07	1.00	-.22	.99	-.34	.26	.25	61.4	60.5	X19
6	467	840	.96	.07	1.02	.92	1.02	.61	.23	.25	60.6	61.1	X6
22	467	840	.96	.07	1.00	-.06	.99	-.35	.25	.25	61.1	61.1	X22
47	470	840	.94	.07	1.12	6.34	1.17	6.14	.08	.25	53.3	61.2	X47
52	470	840	.94	.07	1.05	2.57	1.06	2.05	.18	.25	59.5	61.2	X52
9	471	840	.93	.07	1.01	.60	1.01	.30	.24	.25	60.4	61.2	X9
25	472	840	.93	.07	1.00	-.03	.99	-.36	.25	.25	61.2	61.2	X25
116	482	840	.88	.07	.97	-1.84	.94	-2.13	.30	.25	60.7	61.6	X116
110	491	840	.83	.07	1.00	-.12	.99	-.49	.25	.24	61.9	62.1	X110
3	494	840	.81	.07	1.02	.78	1.03	.95	.22	.24	62.3	62.3	X3
114	498	840	.79	.07	1.05	2.54	1.05	1.65	.18	.24	56.5	62.5	X114
126	506	840	.75	.07	.99	-.52	1.00	-.08	.26	.24	62.9	63.0	X126
14	517	840	.69	.07	1.10	4.27	1.13	3.94	.10	.24	59.0	63.7	X14
76	517	840	.69	.07	1.08	3.47	1.11	3.16	.13	.24	58.1	63.7	X76
108	524	840	.65	.07	.94	-2.51	.92	-2.36	.32	.24	67.4	64.3	X108
120	525	840	.65	.07	.99	-.33	.98	-.64	.25	.24	64.4	64.3	X120
123	525	840	.65	.07	.98	-1.08	.95	-1.44	.28	.24	64.9	64.3	X123
87	528	840	.63	.07	1.01	.40	1.01	.27	.22	.24	65.3	64.6	X87
11	529	840	.63	.07	1.06	2.68	1.09	2.66	.15	.24	60.1	64.7	X11
90	535	840	.59	.07	.97	-1.28	.96	-1.12	.28	.23	66.1	65.2	X90
17	555	840	.48	.08	1.05	1.68	1.06	1.62	.17	.23	65.6	66.9	X17
117	555	840	.48	.08	1.02	.81	1.02	.50	.20	.23	65.6	66.9	X117
84	569	840	.40	.08	.96	-1.47	.93	-1.77	.29	.22	68.9	68.3	X84
33	571	840	.39	.08	.98	-.80	.98	-.58	.25	.22	69.3	68.5	X33
79	571	840	.39	.08	1.01	.21	.99	-.30	.22	.22	67.4	68.5	X79
98	573	840	.38	.08	.96	-1.45	.93	-1.70	.29	.22	69.6	68.7	X98
105	575	840	.37	.08	.97	-.98	.95	-1.10	.26	.22	68.6	68.9	X105
109	583	840	.32	.08	1.06	2.04	1.11	2.37	.13	.22	68.4	69.8	X109
74	597	840	.23	.08	.98	-.71	.95	-1.02	.25	.22	71.0	71.3	X74
18	599	840	.22	.08	1.05	1.50	1.08	1.59	.14	.22	71.0	71.5	X18
61	599	840	.22	.08	1.00	.14	.98	-.41	.22	.22	70.8	71.5	X61
106	603	840	.20	.08	.98	-.62	.94	-1.21	.25	.21	71.5	72.0	X106
15	604	840	.19	.08	1.05	1.45	1.09	1.84	.14	.21	71.5	72.1	X15
12	612	840	.14	.08	1.05	1.25	1.07	1.40	.15	.21	72.3	73.0	X12
36	616	840	.11	.08	.97	-.88	.97	-.66	.25	.21	73.8	73.4	X36
68	620	840	.09	.08	.98	-.50	.95	-1.02	.24	.21	74.1	73.9	X68
101	620	840	.09	.08	.99	-.35	.97	-.50	.23	.21	74.6	73.9	X101
42	622	840	.07	.08	.97	-.72	.96	-.71	.24	.21	74.1	74.1	X42
112	624	840	.06	.08	1.02	.47	1.04	.72	.18	.21	74.4	74.3	X112
30	647	840	-.10	.08	.97	-.60	.99	-.17	.23	.20	76.9	77.0	X30
62	649	840	-.11	.08	1.00	-.06	1.01	.23	.20	.20	77.4	77.3	X62
80	649	840	-.11	.08	.99	-.26	.94	-.95	.22	.20	77.4	77.3	X80
103	652	840	-.13	.08	.97	-.76	.91	-1.55	.25	.20	77.7	77.6	X103



103	652	840	-.13	.08	.97	-.76	.91	-1.55	.25	.20	77.7	77.6	X103
89	653	840	-.14	.09	.98	-.53	.92	-1.23	.24	.20	77.4	77.7	X89
92	653	840	-.14	.09	.95	-1.00	.90	-1.61	.27	.20	78.1	77.7	X92
118	661	840	-.20	.09	1.01	.18	.96	-.53	.19	.19	78.6	78.7	X118
121	662	840	-.21	.09	.99	-.21	.93	-1.13	.22	.19	78.9	78.8	X121
45	668	840	-.25	.09	.97	-.61	.97	-.49	.23	.19	79.8	79.5	X45
44	669	840	-.26	.09	.96	-.78	.95	-.69	.24	.19	80.0	79.6	X44
124	669	840	-.26	.09	1.02	.41	1.00	.08	.17	.19	79.5	79.6	X124
49	672	840	-.28	.09	.98	-.34	.92	-1.19	.23	.19	79.9	80.0	X49
77	672	840	-.28	.09	.99	-.22	.96	-.60	.21	.19	80.1	80.0	X77
93	675	840	-.31	.09	.98	-.29	.94	-.81	.21	.19	80.5	80.3	X93
69	678	840	-.33	.09	1.00	-.04	.98	-.25	.19	.18	80.6	80.7	X69
41	682	840	-.36	.09	.97	-.46	.96	-.54	.22	.18	81.6	81.1	X41
97	683	840	-.37	.09	.98	-.42	.92	-1.13	.23	.18	81.4	81.2	X97
94	684	840	-.38	.09	.97	-.52	.92	-1.12	.23	.18	81.1	81.4	X94
104	689	840	-.42	.09	.95	-.87	.90	-1.36	.25	.18	82.3	82.0	X104
85	696	840	-.48	.09	.97	-.46	.94	-.79	.22	.18	82.9	82.8	X85
63	697	840	-.49	.09	1.04	.68	1.16	2.01	.10	.18	82.8	82.9	X63
38	698	840	-.50	.09	1.01	.11	1.03	.36	.17	.17	83.1	83.0	X38
91	698	840	-.50	.09	.98	-.24	.93	-.92	.21	.17	82.9	83.0	X91
86	702	840	-.53	.10	.98	-.25	.98	-.16	.19	.17	83.2	83.5	X86
102	702	840	-.53	.10	.95	-.89	.90	-1.33	.25	.17	83.5	83.5	X102
115	702	840	-.53	.10	1.03	.46	1.05	.65	.13	.17	83.2	83.5	X115
48	708	840	-.59	.10	1.04	.66	1.12	1.41	.10	.17	84.2	84.2	X48
95	710	840	-.61	.10	.94	-.90	.82	-2.28	.27	.17	84.7	84.4	X95
96	711	840	-.62	.10	.98	-.32	1.02	.27	.19	.17	84.6	84.6	X96
50	712	840	-.63	.10	1.01	.23	1.03	.35	.14	.17	84.4	84.7	X50
83	715	840	-.66	.10	.99	-.13	.95	-.57	.19	.17	84.9	85.0	X83
54	725	840	-.76	.10	.97	-.36	.96	-.47	.20	.16	86.3	86.2	X54
71	726	840	-.77	.10	1.01	.11	1.02	.28	.15	.16	86.3	86.3	X71
107	728	840	-.79	.10	.94	-.79	.84	-1.78	.25	.16	86.6	86.6	X107
75	734	840	-.85	.11	.96	-.48	.91	-.88	.21	.15	87.3	87.3	X75
56	735	840	-.87	.11	1.00	-.02	1.03	.31	.15	.15	87.4	87.4	X56
70	738	840	-.90	.11	1.01	.12	1.04	.43	.13	.15	87.8	87.8	X70
78	739	840	-.91	.11	.96	-.44	.86	-1.47	.22	.15	87.9	87.9	X78
60	740	840	-.92	.11	.96	-.45	.98	-.18	.19	.15	88.0	88.0	X60
100	742	840	-.95	.11	1.01	.15	.98	-.13	.14	.15	88.3	88.3	X100
81	750	840	-1.05	.11	.95	-.53	.85	-1.44	.23	.14	89.2	89.2	X81
81	750	840	-1.05	.11	.95	-.53	.85	-1.44	.23	.14	89.2	89.2	X81
20	754	840	-1.10	.12	.98	-.19	.96	-.34	.18	.14	89.7	89.7	X20
23	757	840	-1.14	.12	.97	-.32	.85	-1.33	.20	.14	90.1	90.1	X23
29	757	840	-1.14	.12	1.01	.10	.99	-.09	.14	.14	90.1	90.1	X29
43	758	840	-1.15	.12	.96	-.46	.85	-1.32	.21	.14	90.2	90.2	X43
72	764	840	-1.24	.12	.96	-.39	.96	-.33	.19	.13	90.9	90.9	X72
51	766	840	-1.27	.12	.98	-.20	.91	-.68	.17	.13	91.1	91.1	X51
32	770	840	-1.33	.13	1.00	.06	1.00	.05	.12	.13	91.6	91.6	X32
65	770	840	-1.33	.13	.96	-.40	.79	-1.72	.22	.13	91.6	91.6	X65
35	772	840	-1.36	.13	.99	-.08	.92	-.63	.16	.13	91.9	91.9	X35
82	772	840	-1.36	.13	.96	-.34	.86	-1.08	.19	.13	91.9	91.9	X82
88	777	840	-1.45	.13	.97	-.25	.89	-.78	.18	.12	92.5	92.5	X88
99	777	840	-1.45	.13	.96	-.30	.84	-1.25	.19	.12	92.5	92.5	X99
66	779	840	-1.48	.13	.98	-.14	.94	-.43	.15	.12	92.7	92.7	X66
39	788	840	-1.66	.14	.96	-.28	.92	-.50	.17	.11	93.8	93.8	X39
26	790	840	-1.70	.15	.98	-.10	.98	-.08	.14	.11	94.0	94.0	X26
40	793	840	-1.77	.15	.98	-.13	.91	-.50	.15	.11	94.4	94.4	X40
37	796	840	-1.84	.16	1.00	.01	1.17	1.01	.09	.10	94.7	94.7	X37
57	800	840	-1.94	.16	.99	.00	.96	-.19	.11	.10	95.2	95.2	X57
67	805	840	-2.08	.17	.99	-.04	.80	-1.08	.14	.09	95.8	95.8	X67
59	808	840	-2.18	.18	1.00	.05	1.09	.53	.08	.09	96.2	96.2	X59
64	810	840	-2.24	.19	.97	-.09	.80	-.97	.15	.09	96.4	96.4	X64
4	811	840	-2.28	.19	1.00	.05	1.05	.33	.07	.09	96.5	96.5	X4
7	819	840	-2.62	.22	.99	.03	.98	.00	.09	.07	97.5	97.5	X7
1	824	840	-2.90	.25	1.01	.11	1.21	.80	.03	.06	98.1	98.1	X1
MEAN	599.2	840.0	.00	.10	1.00	.2	.99	.0			76.7	77.0	
P.SD	163.9	.0	1.19	.03	.04	1.6	.08	1.6			12.1	11.5	

In Figure 1, the results of the item validity test using the Winstep software RASCH Model program show that all items are valid with the provisions of *the Outfit Mean Square* (MNSQ) value < 0.5 and < 1.5, then the item can be said to be valid. Validation is an effort to determine the extent to which an instrument is able to measure an attribute well (Anastasi & Urbina, 2003: 85; Suyabrata, 1999: 58). An instrument is considered valid if it is able to accurately measure the concept in question and accurately reveal data from the variables being studied (Arikunto, 2002). The instrument's validity level describes the extent to which the data collected conforms to the concept of expected validity. This means that the validity of the instrument that has been created illustrates how well the instrument can measure learning style variables.

Reliability Test

Reliability tests are performed to see the internal consistency of the instrument used or the accuracy of the measuring instrument (Scott, 2016). As Sumintono & Widhiarson (2014) reveals that reliability explains how far measurements taken multiple times will yield the same information. This means that it does not produce many significant differences in information. Therefore, there will always be differences in information, reliable measurements do not always produce exactly the same information. The information produced may have differences, but the value is small and still within the tolerance limit.

The reliability test in this study used RASCH modeling (*Rasch Model*) with *software* WinSteps version 5.1.5.1. The results of the estimates that have been submitted using the RASCH Model *software* Winstep points out that reliability falls into the high category. The results that have been presented are based on two reliability coefficients that are characteristic of the results of the analysis using the RASCH Model *software* Winstep, i.e. *Person Reliability* and *item reliability* which is interpreted to be the same as the reliability coefficient in classical measurements (Booner, *et al*., 2014). Based on criteria Sumintono & Widhiarson (2014), is described as follows.

a. *Pearson Measure*, an average score higher than logit 0.0 indicates a student's ability is greater than the item's difficulty level.
b. Cronsbach's Alpha *value*, the interaction between a person and an item as a whole.
c. Person Reliability *and* Item Reliability *values* also need to be considered in measuring the reliability of the instrument.

Based on the results of the reliability test on the adolescent learning style instrument, the results of *the person reability* are in the range of 0.86 to 0.87 which is interpreted as having good criteria. The results of *the person reability* test for adolescent learning style instruments are shown in Figure 2. below.

Figure 2. Person Reliability *Test Results*

```
     SUMMARY OF 840 MEASURED (EXTREME AND NON-EXTREME) PERSON
-------------------------------------------------------------------------------
|         TOTAL                        MODEL         INFIT        OUTFIT    |
|         SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     89.9     126.0        1.23     .24                                |
|  SEM       .4       .0         .03     .00                                |
| P.SD     11.5       .0         .74     .13                                |
| S.SD     11.5       .0         .74     .13                                |
| MAX.    126.0     126.0        6.78    1.84                                |
| MIN.     45.0     126.0        -.76     .20                                |
|-----------------------------------------------------------------------------|
| REAL RMSE    .28 TRUE SD     .68  SEPARATION  2.47  PERSON RELIABILITY  .86 |
|MODEL RMSE    .27 TRUE SD     .69  SEPARATION  2.53  PERSON RELIABILITY  .87 |
| S.E. OF PERSON MEAN = .03                                                   |
-------------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .91 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .85  SEM = 4.48 (approximate due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .72
```

Reliability indicates the level of reliability or setting an instrument (*level of consistency*) research or in other words the extent to which the instrument is able to produce scores consistently (Coaley, 2010: 100). Based on the results of the reliability test on learning style instruments in adolescents, the results were obtained *item reliability* is at a value of 0.99 which is interpreted as having special criteria. Test results *item reliability* Adolescent learning style instruments are shown in Figure 3. Following.

Figure 3. Item Reliability *Test Results*

```
     SUMMARY OF 126 MEASURED (NON-EXTREME) ITEM
-------------------------------------------------------------------------------
|         TOTAL                        MODEL         INFIT        OUTFIT    |
|         SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     599.2     840.0         .00     .10      1.00    .18    .99    .05 |
|  SEM      14.7       .0         .11     .00       .00    .14    .01    .15 |
| P.SD     163.9       .0        1.19     .03       .04   1.55    .08   1.63 |
| S.SD     164.6       .0        1.19     .03       .04   1.56    .08   1.64 |
| MAX.     824.0     840.0        3.74     .25      1.13   6.34   1.21   6.14 |
| MIN.      75.0     840.0       -2.90     .07       .91  -5.32    .79  -4.66 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .10 TRUE SD    1.18  SEPARATION 11.62  ITEM   RELIABILITY  .99 |
|MODEL RMSE    .10 TRUE SD    1.18  SEPARATION 11.67  ITEM   RELIABILITY  .99 |
| S.E. OF ITEM MEAN = .11                                                     |
-------------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.97 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

The results of the calculation using the RASCH model on 126 statement items that were declared valid had *an alpha Cronbach's* value of 0.85. So it can be concluded that the consistency of the answers from the respondents as a whole is on a very good criterion.

Reliability tests explain how far measurements taken multiple times will yield the same information (Sumintono & Widhiarson, 2014: 31). Reliability indicates the level of reliability or setting an instrument (*level of consistency*) research or in other words the extent to which the instrument is able to produce scores consistently (Coaley, 2010: 100). The reliability test in this study does not use a retest approach because its implementation requires two scale presentations and takes a long time. According to Azwar (2019) there are several things that need to be considered when conducting a reliability test through the retest approach, including the inherent effect, namely the possibility of a change in the subject's condition between the two scale presentations, the subject's memory of the answer that has been given when it is first presented so that it only repeats the answer that the respondent has given and the possibility of rejection or rejection reaction to the scale in the subject who is in behavior Responding to the scale is not earnest.

CONCLUSION

Validity is obtained by correlation between each item with a total score, while the reliability test uses valid items based on the validity test. The validity test used RASCH modeling by generating 126 valid items all based on MNSQ. The results of the reliability test using *Alpha Cronbach's* showed a value of 0.85 with very good criteria and in the adolescent learning style instrument obtained results that *Person Reliability* was in the range of 0.86 and 0.87 which was interpreted as having good criteria. Meanwhile, *Item Reliability* is in the range of 0.99 and 0.99 which is interpreted as having special criteria.

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