OPTIMA: Journal of Guidance and Counseling
Volume 2, No.1, March 2022: Page 62-73
ISSN 2776-6624 (print) || 2776-6683 (online)
Available online at http://ejournal.upi.edu/index.php/optima

ANALYSIS OF THE RELIABILITY AND VALIDITY OF ACADEMIC PROCRASTINATION QUESTIONNAIRES USING RASCH MODEL

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

Abstract: The analysis aims to validate and develop instruments regarding academic procrastination of Indonesian Korean Pop (K-Pop) fans. In 2021, research was carried out with a survey method on 5 boys and 171 teenage girls who are K-Pop fans spread across Indonesia. The research method used is a quantitative research method which contains 50 statement items with 5 answer choices using a Likert scale model. Data analysis using the Rasch model with the help of the Winstep application. The survey results show the value Cronbach Alpha which describes the interaction between the person and the items as a whole is 0.90 and is included in the high category. The value of person reliability and the value of item reliability are both in the special category with values of 0.89 and 0.99. This shows an indicator of the consistency of participants' answers with an indicator of very good item quality.

Keywords: Academic Procrastination, K-Pop Fans, Reliability, Rasch Model, Validity

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

Permalink:
How to cite (APA): Boree, M and Supriatna, M. (2022). Analysis of The Reliability and Validity of Academic Procrastination Questionnaires Using Rasch Model. *OPTIMA: Journal of Guidance and Counseling, 2*(1), 62-73.

INTRODUCTION

Academic procrastination is a delay in doing formal tasks related to academic tasks and is carried out at the stage of delayed academic assignments and anxiety disorders appear (Ferrari et al., 1995). Aspects of academic procrastination consist of delays in starting work on assignments; b) late in completing assignments; c) non- compliance with the planned time; d) doing other activities that are more enjoyable. According to Solomon & Rothblum (1984), academic procrastination is a futile act of postponing a task until it experiences subjective discomfort. Procrastination can occur in six academic areas (writing reports/papers, studying for exams, weekly reading assignments, administrative tasks, attendance assignments, academic assignments in

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general), reasons for procrastinating, frequency of doing academic procrastination, impact of academic procrastination and desire to quit procrastinate (Solomon & Rothblum, 1984). In addition, Tuckman (2002) views academic procrastination as a one-sided nature with serious consequences for students whose lives are often marked by deadlines (Tuckman, 2002). The aspects of academic procrastination are delaying doing and completing assignments, avoiding assignments, and blaming others.

The study was conducted to test the test instrument used. The instrument used is an adaptation of the academic procrastination instrument developed and used by Solomon & Rothblum (1984). This test instrument is designed to be able to describe the level of academic procrastination carried out by young Indonesian K-Pop fans. The results of the research that have been carried out are then analyzed using the Rasch model analysis. The research identified several things which include; reliability, validity, analysis of the level of difficulty of the questions, distribution of items, as well as a picture of the projection of respondents' answers in the scalogram. According to Hambleton, RK, Swaminathan, H., & Rogers, HJ (1991) the Rasch model belongs to modern test theory which is based on two assumptions. individual abilities consist of verbal, cognitive, psychomotor, and others. The second assumption is the relationship between the ability of test participants and various latent abilities (traits) which can be described through a characteristic curve (Azizah & Wahyuningsih, 2020).

The purpose of this study is to describe the academic procrastination instrument for Indonesian K-Pop fans using the Rasch model. The results of this study are measuring instruments with good quality and can be used to obtain accurate information about the academic procrastination of Indonesian K-Pop fans. This is very useful for students themselves as a form of self-evaluation and reflection, as well as for guidance and counseling teachers in designing a guidance and counseling service program that aims to reduce academic procrastination behavior.

METHOD

Participants

Participants involved in this study amounted to 176 teenage K-POP fans who were recruited through social media Twitter. The following are the details of the participants.

Table 1
Details of Participants

Island	Male	Female	Total
Sumatra	-	13	13
Java	4	139	143
Kalimantan	1	12	13
Sulawesi	-	4	4
Bali	-	3	3
Total	**5**	**171**	**176**

Academic Procrastination Scale

This article is the result of a literature study and survey. Survey using instruments. 5 scale Academic Procrastination, adapted from Solomon & Rothblum (1984). Academic Procrastination Scale consists of 63 items statements favorable and unfavorable. The concept of the instrument aims to find out academic procrastination in 6 academic areas (study for exam preparation, reading assignments, assignments that require attendance, administrative tasks, general academic tasks) and reasons for doing academic procrastination (anxiety, perfectionism, dependence and seeking help, lack of trust). self-determination, lack of assertiveness, fear of success, overwhelm, rebellion against control, aversion to task, risk taking, difficulty in making decisions, poor time management, and peer influence).

FINDINGS AND DISCUSSIONS

Undimensionality

Analysis identifies the dimensions that are measured by the instrument. Undimensionality analysis shows the value raw variance explained by measures and unexplained variance in 1st to 5th contrast. Undimensionality can be said to be good if the value of raw variance explained by measures is above 20-40% and the value of unexplained variance in 1st to 5th contrast is less than 15%. Here's a picture of undimensionality.

Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units)

		-- Empirical --		Modeled
Total raw variance in observations	=	100.7	100.0%	100.0%
Raw variance explained by measures	=	50.7	50.3%	49.9%
Raw variance explained by persons	=	7.8	7.7%	7.7%
Raw Variance explained by items	=	42.9	42.6%	42.2%
Raw unexplained variance (total)	=	50.0	49.7% 100.0%	50.1%
Unexplned variance in 1st contrast	=	4.3	4.3% 8.6%	
Unexplned variance in 2nd contrast	=	3.7	3.7% 7.4%	
Unexplned variance in 3rd contrast	=	3.1	3.1% 6.2%	
Unexplned variance in 4th contrast	=	2.2	2.1% 4.3%	
Unexplned variance in 5th contrast	=	2.0	2.0% 4.1%	

STANDARDIZED RESIDUAL VARIANCE SCREE PLOT

Figure 1. Undimensionality

From the picture above, the value of raw variance explained by measures is 49.9% which if rounded up to 50%, it means that the undimensionality is in the good category (good). The value of unexplained varience in 1st to 5th contrast is less than 15%, respectively, namely 8.6%, 7.4%, 6.2%, 4.3%, and 4.1%. This shows that the value of unexplained varience in 1st to 5th contrast is in the good category (good).

Item

Analysis of the items on this academic procrastination instrument includes the level of difficulty (item measure) and the level of (item fit item fit).

Item Item Difficulty Level

ITEM STATISTICS: MEASURE ORDER

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
12	257	176	1.80	.12	.96	-.3	.91	-.6	.33	.30	58.0	59.1	E13
16	270	176	1.62	.11	1.32	2.3	1.12	.9	.51	.31	59.7	54.2	E17
30	292	176	1.37	.10	.67	-3.1	.68	-2.9	.43	.34	58.0	47.1	E35
11	296	176	1.32	.10	.99	.0	1.01	.1	.27	.34	42.0	46.5	E12
47	304	176	1.24	.10	.93	-.6	.86	-1.2	.56	.35	47.7	45.9	E60
17	306	176	1.22	.10	.91	-.7	1.00	.1	.17	.35	55.7	45.9	E19
29	309	176	1.19	.10	.95	-.4	1.07	.6	.26	.36	54.0	45.3	E34
41	322	176	1.07	.09	.82	-1.7	.79	-1.9	.36	.37	51.7	44.0	E50
25	328	176	1.02	.09	.96	-.3	.88	-1.0	.59	.37	41.5	43.4	E30
15	329	176	1.01	.09	1.18	1.6	1.17	1.5	.48	.37	39.2	43.4	E16
18	330	176	1.00	.09	1.01	.2	1.04	.4	.37	.37	45.5	43.3	E20
46	332	176	.99	.09	1.46	3.7	1.75	5.6	.19	.38	43.8	43.2	E58
19	338	176	.94	.09	1.07	.6	1.12	1.1	.33	.38	44.3	42.8	E21
50	356	176	.79	.09	1.11	1.1	1.35	3.0	.20	.39	44.9	41.8	E63
48	366	176	.72	.09	1.09	.9	1.07	.7	.52	.40	31.3	41.0	E61
5	380	176	.61	.08	.83	-1.8	.82	-1.8	.36	.41	52.3	40.6	E6
10	387	176	.56	.08	1.03	.3	1.04	.4	.23	.41	43.2	40.0	E11
40	408	176	.42	.08	.64	-4.2	.64	-4.1	.45	.42	51.7	39.4	E49
4	421	176	.33	.08	1.18	1.8	1.23	2.2	.19	.43	40.3	39.0	E4
13	449	176	.16	.08	1.35	3.4	1.34	3.2	.41	.44	30.1	37.7	E14
23	453	176	.13	.08	.95	-.5	.93	-.7	.42	.44	34.7	37.6	E25
14	455	176	.12	.08	1.21	2.1	1.20	2.0	.42	.44	32.4	37.6	E15
34	459	176	.09	.08	.84	-1.8	.85	-1.6	.67	.44	36.4	37.6	E43
3	468	176	.04	.08	.82	-2.0	.82	-2.0	.60	.44	40.3	37.2	E3
26	473	176	.01	.08	.67	-3.9	.69	-3.6	.65	.44	47.2	36.9	E31
43	490	176	-.09	.08	.88	-1.3	.88	-1.2	.69	.44	35.2	36.6	E52
45	502	176	-.16	.08	.99	-.1	1.00	.0	.34	.45	43.8	36.7	E57
28	507	176	-.19	.08	.90	-1.1	.90	-1.1	.53	.45	36.4	36.8	E33
37	508	176	-.20	.08	.93	-.7	.93	-.7	.55	.45	38.6	36.8	E46
22	512	176	-.22	.08	1.04	.5	1.05	.5	.36	.45	34.1	36.8	E24
21	535	176	-.36	.08	1.64	5.8	1.73	6.5	.13	.45	23.3	36.7	E23
20	557	176	-.49	.08	1.50	4.6	1.51	4.7	.43	.45	25.6	36.7	E22
31	566	176	-.54	.08	.84	-1.7	.84	-1.7	.62	.45	43.2	36.7	E40
49	571	176	-.57	.08	.62	-4.7	.62	-4.7	.57	.45	52.3	36.8	E62
1	575	176	-.60	.08	.74	-3.0	.75	-2.9	.65	.45	42.6	36.8	E1
6	578	176	-.61	.08	.79	-2.4	.80	-2.3	.47	.45	46.0	36.8	E7
7	578	176	-.61	.08	.79	-2.4	.78	-2.5	.64	.45	42.0	36.8	E8
8	580	176	-.63	.08	.81	-2.1	.81	-2.1	.49	.45	50.0	36.9	E9
39	601	176	-.75	.08	.92	-.9	.90	-1.1	.51	.44	38.1	37.1	E48
2	611	176	-.81	.08	.83	-1.9	.85	-1.6	.51	.44	38.6	37.5	E2
9	617	176	-.85	.08	.89	-1.2	.89	-1.1	.47	.44	42.0	37.6	E10
36	631	176	-.94	.08	1.06	.6	1.05	.5	.33	.44	39.8	38.0	E45
33	636	176	-.97	.08	.99	.0	1.02	.2	.43	.44	36.9	38.1	E42
44	672	176	-1.22	.08	.89	-1.1	.85	-1.5	.55	.43	44.3	39.7	E56
35	683	176	-1.29	.09	.94	-.5	.96	-.4	.20	.42	53.4	40.0	E44
38	693	176	-1.37	.09	1.16	1.5	1.22	2.0	.28	.42	48.9	40.4	E47
32	709	176	-1.49	.09	1.09	.9	1.09	.8	.21	.41	42.0	41.3	E41
24	715	176	-1.54	.09	1.37	3.2	1.38	3.2	.07	.40	45.5	41.6	E26
27	720	176	-1.58	.09	1.20	1.8	1.21	1.8	.26	.40	49.4	42.5	E32
42	731	176	-1.67	.09	.97	-.2	.99	-.1	.27	.39	46.0	43.1	E51
MEAN	483.3	176.0	.00	.09	.99	-.2	1.01	-.1			43.3	40.5	
S.D.	138.7	.0	.93	.01	.22	2.1	.24	2.3			8.0	4.6	

Figure 2. Item Item Difficulty Level The Item

The difficulty level of the academic procrastination instrument can be seen from Figure 2 regarding the item measure order. It can be seen that the SD value is 0.93. The difficulty level of this item can be grouped into the very difficult category (> +1 SD), the difficult category (0.0 logit + 1 SD), the easy category (0.0 logit – 1 SD), and the very easy category (less than - 1 SD). Thus, the score limit for the very difficult category is more than 0.93, the difficult

category is 0.00 to 0.93, the easy category is -0.93 to less than 0.00, and the very easy category is less than -0.93. From the table image, it can be seen that the level of difficulty of the items, namely the very difficult category there are 13 items (13, 17, 35, 12, 60, 19, 34, 50, 30, 16, 20, 58, 21), the difficult category is 12 items (63, 61, 6, 11, 49, 4, 14, 25, 15, 43, 3, 31), the easy category contains 9 items (45, 42, 56, 44, 47, 41, 26, 32, 51), and the very easy category contains 16 items (52, 57, 33, 46, 24, 23, 22, 40, 62, 1, 7, 8, 9, 48, 2, 10).

Level of Conformity of Items

In order for an item to be included in item fit, the value must be in the range 0.5<MNSQ<1.5. Judging from the table in Figure 3, of the 50 questions developed, 3 items are in the misfit category and the other 47 items are in the good category (fit) and accepted and there are no misconceptions from young K-Pop fans about these items. The ZSTD value scale is categorized as acceptable or not with a range of -2.0 <ZSTD < +2.0, with the value listed in the figure as 0.1 meaning that the overall item is in the category of meeting the criteria for a good item. However, there are 15 items that fall into the category misfit. Then the PT-Measure Corr value has a range between more than 0.4 and less than 0.85. Judging from the PT-Measure Corr value of 50 items, 12 items were declared misfit and 38 items were declared fit.

Rating Scale

Rating scale is calculated to see the functionality of the selected answer choices. In the academic procrastination instrument there are 5 answer choices, namely very appropriate, appropriate, less appropriate, inappropriate, and very inappropriate. The following describes the rating scale of the academic procrastination instrument.

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY LABEL	OBSERVED SCORE	COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	1718	20	-1.40	-1.37	.96	.98	NONE	(-2.69)	1
2	2	2339	27	-.75	-.76	1.00	1.00	-1.38	-1.07	2
3	3	2110	24	-.15	-.12	.91	.89	-.34	.01	3
4	4	1725	20	.57	.46	.85	.89	.37	1.08	4
5	5	908	10	.81	.95	1.19	1.26	1.34	(2.67)	5

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

CATEGORY LABEL	STRUCTURE MEASURE	S.E.	SCORE-TO-MEASURE AT CAT.	ZONE		50% CUM. PROBABLTY	COHERENCE M->C	C->M	RMSR	ESTIM DISCR	
1	NONE		(-2.69)	-INF	-1.92		72%	25%	1.0081		1
2	-1.38	.03	-1.07	-1.92	-.49	-1.65	41%	57%	.7380	1.09	2
3	-.34	.03	.01	-.49	.50	-.43	38%	51%	.6831	1.03	3
4	.37	.03	1.08	.50	1.91	.45	46%	54%	.8086	1.12	4
5	1.34	.04	(2.67)	1.91	+INF	1.63	54%	6%	1.4159	.76	5

M->C = Does Measure imply Category?
C->M = Does Category imply Measure?

Figure 3. Rating Scale

When viewed from the observed count, all participants have chosen the items and show a proportional value. In addition, the scores on the category measure increased from -2.69, -1.07, 0.01, 1.08, and 2.67. This indicates that the rating scale is functioning properly. The picture can be seen in Figure 5 as follows.

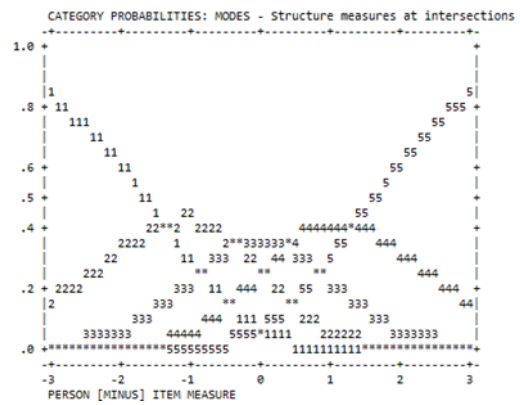

Figure 4. Overview of the Rating Scale

Instrument

The complete instrument analysis is presented in Figure 6 as follows.

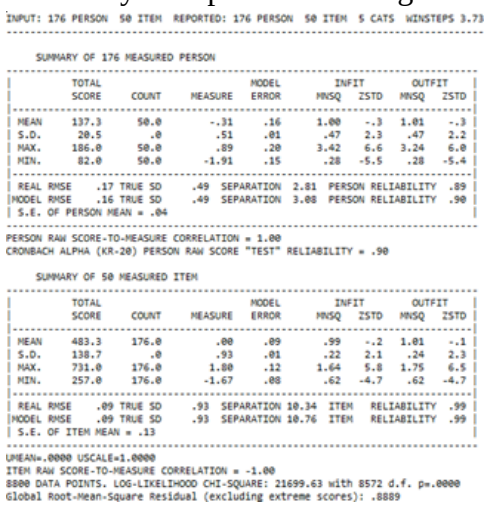

Figure 5. Instrument Analysis

The average final score (score) of all participants in working on and selecting items in the instrument is reflected in the person measure. In the analysis it is shown that the average value of the items is greater than the average value of the participants. This shows that the difficulty of the instrument items is greater than the ability of the participants. The interaction between person and

item as a whole is described in Cronbach alpha. The value is Cronbach alpha 0.90 and is included in the high category. The value of person reliability and the value of item reliability are both in the special category with a value of 0.89 and 0.99, this shows an indicator of the consistency of participants' answers with an indicator of very good item quality.

The average MNSQ value in the person table and the item table are both in the good category. In the table person, the INFIT and OUTFIT MNSQ values are in the good category with values of 1.00 and 1.01. Then in the item table, the INFIT and OUTFIT MNSQ values also feel in the good category with values 0.99 and 1.01. Both MNSQ results fit into the ideal criteria. Then the INFIT ZSTD and OUTFIT ZSTD values in the table person are 0.3 each. While the INFIT ZSTD and OUTFIT ZSTD values in the item table are -0.2 and 0.1, respectively. The ideal value for ZSTD is 0, the ZSTD value in these two tables is close to ideal. The value separation in the table person is 2.81 and the value separation in the items table is 10.34. The value separation has a calculation formula to find out how much the value is separation final.

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

$$H \text{ students} = [(4 \text{ X}2.81) + 1] / 3 = 4.08$$

$$Hs = [(4 \text{ X}10.34) + 1] / 3 = 14.12$$

Thus, the value separation for the table person is 4 and the value separation for the item table is 14. It can be concluded that the research participants of this instrument have diverse abilities which are categorized into 4 groups and the difficulty level of the items is spread into 14 groups from the easiest group to the most difficult group.

Discussion

Based on the results of undimensionality, the value of raw variance explained by measures is at a value of 49.9% which is included in the good category. This academic procrastination instrument can measure all aspects contained in it. As for the aspects of academic procrastination, the first aspect is delaying writing assignments, this task is related to delays in completing writing tasks such as writing reports, writing papers, and writing essays; the second aspect is delaying studying in exam preparation, including studying for preparation and facing exams (eg UTS and UAS); the third aspect is delaying weekly reading assignments, including postponing reading books or references related to academic assignments; the fourth aspect is postponing administrative tasks, including administrative activities (borrowing books from the library,

copying notes, and completing administration); the fifth aspect is postponing activities that require attendance; include delays in attending activities (late) and other meetings; the sixth aspect is postponing academic assignments in general, delaying working on and completing academic assignments as a whole.

The seventh aspect is the difficulty in making decisions, in making decisions it will be difficult and not knowing to prioritize the work of the task, resulting in delays in collecting assignments; the eighth aspect is reluctance to do the task, the tendency to avoid doing the task; the ninth aspect, namely anxiety, feelings of anxiety arise when unable to do and complete tasks on time; the tenth aspect is perfectionism, the feeling to do and complete tasks perfectly; the eleventh aspect, namely poor time management, inability to manage time and result in late or unfinished academic assignments; the twelfth aspect, namely dependence and seeking help, the tendency to seek help from others; the thirteenth aspect, namely lack of confidence, a tendency to be unsure of the task at hand; the fourteenth aspect, namely lack of firmness, undisciplined feelings that can result in not completing assignments and being late in collecting assignments; the fifteenth aspect is the fear of success, the fear of being relied upon when successful; the sixteenth aspect, namely being overwhelmed, the tendency of difficulty in doing and completing academic tasks; the seventeenth aspect, namely rebellion against control, the tendency to be undisciplined over the rules set in the giving of academic assignments; and the last aspect is the influence of peers, how strong is the influence of peers in doing academic tasks.

The academic procrastination instrument also showed unexplained varience in 1st to 5th contrast of less than 15%, respectively, namely 8.6%, 7.4%, 6.2%, 4.3%, and 4.1%. This means that this instrument is in the good category and can measure as a whole. Analysis of the average value of MNSQ and INFIT in the person table and the item table are both in the good and ideal categories. In the person table, the INFIT and OUTFIT MNSQ values are in the good category with values of 1.00 and 1.01. Then in the item table, the INFIT and OUTFIT MNSQ values also feel in the good category with values 0.99 and 1.01 and -0.2 and 0.1. There was an increase in the category measure, this indicates that the rating scale works well and participants have selected items and show a proportional value.The findings from the study can illustrate that Indonesian K-Pop fans are doing academic procrastination, this can be seen from several aspects contained in the instrument. This instrument has also been analyzed as it should and its validity and reliability have been measured.

CONCLUSION AND RECOMMENDATION

This academic procrastination instrument consists of 50 valid and reliable statement items. This instrument consists of 5 answer choices that have been selected by each participant. The Cronbach alpha value is in the high category with the value of person reliability and the value of item reliability which are both in the special category with values of 0.89 and 0.99. This shows the consistency indicator of participants' answers with the item quality indicators very good. The average final score of all participants in selecting items in the instrument is reflected in the person measure. In the analysis it is shown that the average value of the items is greater than the average value of the participants. This shows that the difficulty of the instrument items is greater than the ability of the participants. The urgency of the results of this study is expected to be used to measure academic procrastination and the results can be an initial picture in the formulation of guidance and counseling services that aim to reduce the academic procrastination behavior of Indonesian K-Pop fans in the future.

ACKNOWLEDGEMENTS

Thank you to the Special Population Guidance and Counseling Supervision Practicum Course, Guidance and Counseling Study Program, University of Education Indonesia as well as the participation and parties who assisted in the research and preparation of this article.

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