

Rasch Model Analysis: Validity and Reliability of Body Image Instrument for Adolescent Prisoners

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ABSTRAK

Citra tubuh dapat dilihat sebagai konsep multifaset yang mencakup pemahaman sadar individu tentang penampilan fisik mereka, yang melibatkan pikiran dan emosi yang timbul dari persepsi tersebut. Kesulitan yang muncul pada remaja dipicu oleh perubahan fisik yang menyebabkan ketidakpuasan terhadap diri mereka sendiri. Perasaan ketidakpuasan menunjukkan bahwa remaja menolak tubuh mereka. Sepertinya sangat penting untuk memahami persepsi dan perasaan remaja terhadap tubuh mereka dengan mengukur variabel citra tubuh. Penelitian ini bertujuan untuk menganalisis validitas dan reliabilitas instrumen citra tubuh dengan menggunakan analisis Model Rasch. Studi ini menggunakan metode survei dengan desain studi cross-sectional yang dianalisis melalui Model Rasch menggunakan Aplikasi Winstep versi 3.73. Peserta dalam penelitian ini adalah 135 narapidana remaja. Hasil reliabilitas pearson adalah 0,57 dan reliabilitas item adalah 0,84. Hasil analisis menunjukkan bahwa konsistensi jawaban responden masih lemah, tetapi kualitas item termasuk dalam kategori sangat baik. Berdasarkan kriteria tingkat validitas item, semua item pada instrumen citra tubuh terbukti sesuai, karena telah memenuhi setidaknya satu dari tiga kriteria dengan model Rasch. Selain itu, hasil analisis menunjukkan bahwa tidak ada item yang tidak sesuai pada instrumen citra tubuh. Hal ini menunjukkan bahwa instrumen yang digunakan termasuk dalam kategori sangat baik.

ABSTRACT

Body image can be seen as a multifaceted concept that includes an individual's conscious understanding of their physical appearance, involving thoughts and emotions that arise from that perception. The distress that arises in adolescents is triggered by physical changes that cause dissatisfaction with themselves. Feelings of dissatisfaction indicate that adolescents reject their bodies. It seems very important to understand adolescents' perceptions and feelings towards their bodies by measuring body image variables. This study aims to analyze the validity and reliability of the body image instrument using the Rasch Model analysis. This study used a survey method with a cross-sectional study design that was analyzed through the Rasch Model using the Winstep Application version 3.73. The participants in this study were 135 juvenile inmates. The result of Pearson Reliability is 0.57 and Item Reliability is 0.84. This shows that the consistency of respondents' answers is still weak, but the quality of the items is included in the excellent category. Based on the criteria for the level of fit of the items, all items on the body image instrument are proven to be fit, because they have met at least one of the three criteria with the Rasch model. This indicates that there are no unfit items on the body image instrument. This shows that the instrument used is included in the excellent category.

1. INTRODUCTION

Body image can be viewed as a multifaceted concept encompassing an individual's conscious understanding of their physical appearance, which involves the thoughts and emotions arising from that perception. (Ifdil et al., 2017; Stice & Shaw, 2002). Ideally, the body image that every individual should have been positive. A positive body image must be possessed by every individual so that they can accept themselves without having to think about other people's ideal body standards. Body image is a multidimensional concept that encompasses an individual's perception, beliefs, and attitudes towards

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their own body's shape, size, and appearance. This concept is not only related to physical aspects but is also influenced by complex psychological and emotional factors. Body image is formed from an early age through an individual's interaction with their social environment, including family, peers, and the media. Over time, this perception can develop either positively or negatively depending on personal experiences and exposure to prevailing beauty standards in society (Bucchianeri et al., 2013; Verplanken & Velsvik, 2008). For example, in some cultures, a slim body is considered the beauty standard, while in other cultures, a fuller body is more valued. Therefore, understanding Body image must consider the cultural and social context in which the individual resides (Gallagher et al., 2007; Sung et al., 2019).

The role of the media in shaping body image cannot be overlooked. In the last decade, media, especially social media, has become one of the most powerful socialization agents in shaping perceptions of the ideal body. The body images often portrayed in the media are perfect, flawless, and often unrealistic, which can create pressure for individuals to conform to these standards. Numerous studies have shown that repeated exposure to these ideal body images can lead to body dissatisfaction, especially among adolescents and young adults. Previous study revealed that exposure to social media could increase the risk of body dissatisfaction and eating disorders, as individuals frequently compare themselves to the body images they see in the media (Mills et al., 2018; Noviyanto et al., 2015).

In addition to media, psychological factors such as self-esteem and self-image also play a crucial role in the formation of body image. Individuals with low self-esteem are more vulnerable to the negative influence of unrealistic beauty standards. They may feel that their self-worth depends on how closely their body aligns with the ideal body image promoted by the media. Body dissatisfaction can lead to mental health disorders, such as depression, anxiety, and eating disorders, which ultimately affect overall quality of life (Jiotsa et al., 2021; Verplanken & Velsvik, 2008). Therefore, it is essential to understand the relationship between body image and mental health and to develop effective intervention strategies to prevent potential negative impacts. In addressing these challenges, educational approaches and psychological interventions have been proposed as preventive and remedial measures for body image issues. Education that promotes body acceptance and the diversity of body shapes can help reduce social pressure to conform to specific beauty standards. Additionally, psychological interventions focused on enhancing self-esteem and developing healthy coping strategies can help individuals manage body dissatisfaction and improve their mental health (Jiotsa et al., 2021; Rustam et al., 2020). Further research is needed to explore the effectiveness of these various approaches in different contexts and to understand how cultural and social factors can influence body image.

Several extensive longitudinal studies investigating the evolution of long-term body image indicate that the majority of adolescents undergo significant enhancements. Adolescence represents a transitional phase from childhood to adulthood, during which individuals undergo self-growth and development across various dimensions as they transition into adulthood (Bucchianeri et al., 2013; Ramanda et al., 2019). This period is pivotal for the formation of one's body image as adolescents encounter numerous changes—biological, emotional, cognitive, and social—directing their attention towards their evolving physical selves. Negative body image prompts significant efforts in individuals to alter their appearance (Gattario & Frisén, 2019; Stice & Shaw, 2002). One of the challenges faced by adolescents stems from physical transformations, particularly the emergence of secondary sexual characteristics, which evoke unfamiliar and uneasy sensations, setting them apart from their peers. This change creates a separate response for adolescents, such as behavior that pays close attention to changes in body shape (Alidia, 2018; Sari & Soejiningsih, 2021). As a result of this, adolescents will become uncomfortable and confused which causes dissatisfaction with themselves. Feelings of dissatisfaction with themselves show that teenagers reject their bodies. Nevertheless, feelings of discontent with one's body can fluctuate, and this phase may be transient (Rudiger et al., 2007; Verplanken & Velsvik, 2008). This occurs because physical appearance constitutes a significant component of an individual's body image. Research in the last 20 years shows that there have been two studies that analyzed body image instruments using the Rasch Model, namely research entitled "Calibration and Validation of The Body Self-Image Questionnaire Using The Rasch Analysis" and "Body image in people with lower-limb amputation: A Rasch analysis of the amputee body image scale" (Gallagher et al., 2007; Nur et al., 2022). This shows that there is still a lack of researchers who analyze the reliability and validity of body image instruments using the Rasch model. Meanwhile, in obtaining the success of an instrument, what can be done is to analyze the construct with reliability and validity. If a variable construct is said to be valid, the measuring instrument for a variable will describe the construct accurately.

With the growing emphasis on body image, it appears particularly crucial to comprehend adolescents' perspectives and emotions regarding their bodies. Therefore, this discussion regarding body image must be further investigated following the times and the impacts that occur for each individual, especially adolescents (Seekis et al., 2021; Verplanken & Velsvik, 2008). With the reliability and validity

analysis using the Rasch Model analysis of this body image instrument, it can assist future researchers in conducting body image research. Rasch model analysis can provide good data processing results regarding the construct validity of the instrument and can ensure that the data obtained is accurate. The Rasch model can also assist in analyzing an item, which aims to see the quality of the instrument item (Febrina Tarigan et al., 2022; Yusuf et al., 2021). The novelty of this study is supported by research entitled “Analisis Instrumen Tes Menggunakan Rasch Model dan Software SPSS 22.0”, that the results obtained by the Rasch Model are more accurate than using SPSS 22.0 Software. This study aims to analyze the validity and reliability of the body image instrument using the Rasch Model analysis.

2. METHOD

This study adopts the postpositivism paradigm with a quantitative approach. The methodology involves conducting a survey with a cross-sectional study design, which is then analyzed using the Rasch model. The survey research method entails administering surveys to samples or the entire population with the aim of describing attitudes, opinions, behaviors, or characteristics of the population (Creswell, 2012). A cross-sectional study is an observational study that analyzes data from a population at a single time point. This design is utilized to measure outcome prevalence, understand determinants, and depict a population (Wang & Cheng, 2020). The Rasch model, an analytical tool, aims to determine the ability of respondents and items, aligning with the difficulties faced by respondents. Rasch model analysis offers insight into the construct validity of the instrument, ensuring the accuracy of the collected data (Nur et al., 2022).

Juvenile prisoners are children who commit deviant or criminal acts so that they face legal proceedings because of their actions (Inderasari et al., 2022). This is supported by Law of the Republic of Indonesia Number 11 of 2012 concerning *Sistem Peradilan Pidana Anak* Article 1 Paragraph (3), “Anak yang Berkonflik dengan Hukum yang selanjutnya disebut Anak adalah anak yang telah berumur 12 (dua belas) tahun, tetapi belum berumur 18 (delapan belas) tahun yang diduga melakukan tindak pidana”. Therefore, this prisoner is an individual entering adolescence. There were 135 juvenile prisoners in this study, 54 in Jakarta and 81 in Bandung. The sampling method employed was non-probability sampling, specifically using saturated sampling. Saturated sampling involves selecting all members of the population as samples and is typically utilized when the population size is relatively small (Sugiyono, 2015). This is supported by Arikunto's statement which explains that all members of the population can be sampled if the population is less than 100 people (Arikunto, 2009; Wang & Cheng, 2020). This technique is appropriate to use with the assumption that in research using Cross-sectional Study participants have the aim of describing population.

The instrument used in this study is a questionnaire consisting of 20 question items with four alternative answers. The instrument was compiled and modified based on the constructs of the MBSRQ-Appearance Scales. That way, an operational definition can be formulated which consists of three aspects, namely cognitive aspects, affective aspects, and psychomotor aspects as show in Table 1.

Table 1. Instrument Analysis Based on Definition, Essence, Aspects, Indicators

No.	Dimensions	Reference Source		Synthesis
		Cash, 1994	Cash, 2000	
1	Definition	Body image is the perception of an individual's perceived experiences related to appearance, fitness, and health that shape an action to improve the body.	Body image is a psychological experience encompassing perceptions that include an individual's evaluations, beliefs, and actions toward body size, weight, and other aspects of the body.	Body image is an individual's perceptions and attitudes that include evaluations, feelings, and actions toward body size, weight, and appearance.
2	Essence	Individual perception of the body	Individual perception of the body	Individual perception of the body

No.	Dimensions	Reference Source	Synthesis	Synthesis
		Cash, 1994	Cash, 2000	
4	Indicators	<ol style="list-style-type: none"> 1. Cognitive <ol style="list-style-type: none"> 1.1 Individual assessment of overall appearance 1.2 Individual assessment of body health 1.3 Individual assessment of body fitness 1.4 Individual assessment of specific body parts 1.5 Individual assessment of body weight 2. Affective <ol style="list-style-type: none"> 2.1 Individual feelings of fitness 2.2 Individual feelings of health free from physical disease 2.3 Individual feelings regarding symptoms of physical illnesses 2.4 Individual feelings regarding body weight 3. Psychomotor <ol style="list-style-type: none"> 3.1 Individual efforts to lose weight 3.2 Individual efforts to seek medical attention 3.3 Individual efforts to improve appearance 	<ol style="list-style-type: none"> 1. Cognitive <ol style="list-style-type: none"> 1.1 Individual evaluation of the body as a whole 1.2 Individual evaluation of appearance 1.3 Individual evaluation of body weight 2. Affective <ol style="list-style-type: none"> 2.1 An individual's confidence in their body 2.2 Individual's confidence in overall appearance 3. Psychomotor <ol style="list-style-type: none"> 3.1 Individual efforts to maintain weight 3.2 Individual efforts to improve appearance 	<ol style="list-style-type: none"> 1. Cognitive <ol style="list-style-type: none"> 1.1 Individual evaluation of the body as a whole 1.2 Individual evaluation of appearance 1.3 Individual evaluation of body weight 2. Affective <ol style="list-style-type: none"> 2.1 Feelings the individual has toward his or her body. 2.2 Feelings the individual has toward overall appearance 3. Psychomotor <ol style="list-style-type: none"> 3.1 Individual efforts to maintain weight 3.2 Individual efforts to improve appearance

The validation and reliability of the body image instrument were assessed utilizing the Rasch model with the Winstep version 3.73 application. This approach was employed to evaluate the quality of the body image instrument. The validity and reliability tests conducted using the Rasch model included assessments of a) Unidimensionality. The results of unidimensionality measurements are useful for finding out whether the instrument being developed can measure what it should measure; b) Item Measure. Item difficulty level analysis is an analysis to measure people's abilities and the difficulty of items detected in a data set; c) Item Fit. The suitability of the items reflects their effectiveness in accurately measuring body image, ensuring that individuals do not misinterpret the items; and d) Summary Statistics. Summary Statistics for Items and Respondents is an analysis to determine the reliability of respondents and items.

Based on the conceptual definition analysis, it can be concluded that body image is an individual's perceptions and attitudes that include evaluations, feelings, and actions towards body size, weight, and appearance. Body image consists of three aspects, namely cognitive aspects, affective aspects and psychomotor aspects. The cognitive aspect has three indicators, namely individual evaluation of the body as a whole; individual evaluation of appearance; and individual evaluation of weight. The affective aspect has two indicators, namely the feelings that individuals have towards their bodies and the feelings that individuals have towards overall appearance. The psychomotor aspect has two indicators, namely individual efforts in maintaining weight and individual efforts in improving appearance.

3. RESULT AND DISCUSSION

Result

Table 2. The Result of Undimensionalitas

Undimensionalist				
Table of Standardized Residual Variance (in Eigenvalue Units)				
		Empirical		Model
Total raw variance in observation	23.9	100.0%		100.0%
Raw variance explained by measures	3.9	16.4%		16.1%
Raw variance explained by persons	0.4	1.8%		1.8%
Raw variance explain by items	3.5	14.5%		14.3%
Raw unexplained variance (total)	20.0	83.6%	100.0%	83.9%
Unexplained variance in 1 st contrast	2.4	9.9%	11.8%	
Unexplained variance in 2 nd contrast	1.9	8.3%	9.5%	
Unexplained variance in 3 rd contrast	1.8	7.8%	8.9%	
Unexplained variance in 4 th contrast	1.7	7.4%	7.9%	
Unexplained variance in 5 th contrast	1.6	6.0%	7.0%	

This analysis uses [Table 2](#), the value of raw variance explained by measures and unexplained variance in 1st to 5th contrast. The data processing results of the body image instruments conducted at Lembaga Pembinaan Khusus Anak (LPKA) indicate that the raw variance explained by measures is 16.9%. The unexplained variance values in the 1st to 5th contrasts sequentially start from 9.9% for the 1st contrast, 8.3% for the 2nd contrast, 7.8% for the 3rd contrast, 7.4% for the 4th contrast, and 6.0% for the 5th contrast. Some results demonstrate that the unexplained variance values in the 1st to 5th contrasts are less than 15%, indicating that the instrument construct utilized meets the requirements. The result of item measure is show in [Table 3](#).

Table 3. Item Measure

Entrance Number	Total Score	Measure	Infit		Outfit		Point Measure correlation		Exact Observed %	Match Expected
			MNSQ	ZSTD	MNSQ	ZSTD	Corr.	Ex. Value		
1	242	0.63	1.22	2.4	1.23	2.3	0.5	0.33	21.5	41.1
8	260	0.38	1.11	1.4	1.12	1.4	0.34	0.33	35.6	40.8
20	264	0.32	1.4	4.4	1.43	4.5	0	0.33	31.9	40.9
16	270	0.24	1.36	3.9	1.36	3.8	0.22	0.33	25.9	41.1
13	271	0.23	1.15	1.8	1.15	1.7	0.39	0.33	30.4	41.1
17	272	0.21	0.82	-2.4	0.82	-2.2	0.38	0.33	50.4	41.1
18	273	0.2	1	0	1.02	0.3	0.27	0.33	44.4	41.2
15	280	0.1	0.84	-2	0.86	-1.7	0.22	0.32	54.1	41.5
19	284	0.05	1.12	1.5	1.14	1.6	0.2	0.32	37.8	41.5
4	288	-0.01	0.74	-3.4	0.77	-2.8	0.33	0.32	61.5	42.9
7	288	-0.01	0.68	-4.4	0.67	-4.2	0.32	0.32	60	42.9
6	290	-0.03	0.61	-5.3	0.62	-4.9	0.42	0.32	64.4	42.9
2	291	-0.05	0.48	-7.6	0.49	-7.1	0.5	0.32	68.1	42.9
12	302	-0.2	1.15	1.7	1.12	1.3	0.41	0.31	37.8	44.2
5	304	-0.23	1.18	1.9	1.15	1.6	0.3	0.31	31.9	44.1
14	304	-0.23	1.22	2.3	1.1	1.8	0.21	0.31	25.2	44.1
9	306	-0.26	1.02	0.3	0.97	-0.2	0.47	0.31	44.4	44.1
11	310	-0.32	0.97	-0.3	0.96	-0.4	0.42	0.3	45.2	44.4
10	312	-0.35	0.93	-0.8	0.93	-0.6	0.27	0.3	46.7	44.3
3	331	-0.65	1.05	0.5	1.05	0.4	0.27	0.28	52.6	48.4
MEAN	287.1	0	1	-0.2	1	-0.2			43.5	42.8
S.D.	20.7	0.29	0.24	3.1	0.24	2.9			13.4	1.9

Base on [Table 3](#), item difficulty analysis is an analysis to measure the ability of people and the difficulty of items detected in the data set. Actual item and person performance probabilities determine the size of the interval. Item difficulty assesses the ease or difficulty of a question for respondents, expressed as the percentage of respondents who answered the statement. A higher percentage of respondents answering indicates easier questions. While a lower percentage indicates more difficult questions. When combined with the average logit value, item difficulty levels can be categorized into four groups.

Based on the categories used, it can be obtained that the value limit of very difficult category is >0.29 , difficult category is $0.0 - 0.29$, easy category is $0.0 - (-0.29)$, and very easy category is $>(-0.29)$. Very difficult category items totaled three items, located at item numbers 1, 8, and 20. Difficult category items totaled six items located at numbers 16, 13, 17, 18, 15, and 19. Easy category items totaled eight items located at numbers 4, 7, 6, 2, 12, 5, 14, and 9. Very easy category items totaled three items located at numbers 11, 10, and 3. The item fit is show in [Table 4](#).

Table 4. Item Fit

Entrance Number	Total Score	Measure	Infit		Outfit		Point Measure correlation		Exact Observed %	Match Expected
			MNSQ	ZSTD	MNSQ	ZSTD	Corr.	Ex. Value		
20	264	0.32	1.4	4.4	1.43	4.5	0	0.33	31.9	40.9
16	270	0.24	1.36	3.9	1.36	3.8	0.22	0.33	25.9	41.1
1	242	0.63	1.22	2.4	1.23	2.3	0.5	0.33	21.5	41.1
14	304	-0.23	1.22	2.3	1.1	1.8	0.21	0.31	25.2	44.1
5	304	-0.23	1.18	1.9	1.15	1.6	0.3	0.31	31.9	44.1
12	302	-0.2	1.15	1.7	1.12	1.3	0.41	0.31	37.8	44.2
13	271	0.23	1.15	1.8	1.15	1.7	0.39	0.33	30.4	41.1
19	284	0.05	1.12	1.5	1.14	1.6	0.2	0.32	37.8	41.5
8	260	0.38	1.11	1.4	1.12	1.4	0.34	0.33	35.6	40.8
3	331	-0.65	1.05	0.5	1.05	0.4	0.27	0.28	52.6	48.4
18	273	0.2	1	0	1.02	0.3	0.27	0.33	44.4	41.2
9	306	-0.26	1.02	0.3	0.97	-0.2	0.47	0.31	44.4	44.1
11	310	-0.32	0.97	-0.3	0.96	-0.4	0.42	0.3	45.2	44.4
10	312	-0.35	0.93	-0.8	0.93	-0.6	0.27	0.3	46.7	44.3
15	280	0.1	0.84	-2	0.86	-1.7	0.22	0.32	54.1	41.5
17	272	0.21	0.82	-2.4	0.82	-2.2	0.38	0.33	50.4	41.1
4	288	-0.01	0.74	-3.4	0.77	-2.8	0.33	0.32	61.5	42.9
7	288	-0.01	0.68	-4.4	0.67	-4.2	0.32	0.32	60	42.9
6	290	-0.03	0.61	-5.3	0.62	-4.9	0.42	0.32	64.4	42.9
2	291	-0.05	0.48	-7.6	0.49	-7.1	0.5	0.32	68.1	42.9
MEAN	287.1	0	1	-0.2	1	-0.2			43.5	42.8
S.D.	20.7	0.29	0.24	3.1	0.24	2.9			13.4	1.9

The level of item suitability can be assessed based on data processing using winstep in [Table 4](#), the level of item suitability is the core of the Rasch Model measurement by focusing on two aspects, namely infit and outfit, which are seen from the results of Mean Square (MNSQ) and Z-standard (ZSTD). Infit is a misfit indicator whose assessment is weighted, while outfit is a misfit indicator whose assessment is unweighted. There are three criteria for examining item fit or item misfit. If the processing results meet at least one of the three criteria, the item can be said to be fit. The three criteria for examining item fit or item misfit are described as follows. a.) Outfit Mean Square (MNSQ) is accepted if $0.5 < MNSQ < 1.5$. b.) Outfit Z-standard (ZSTD) is accepted if $-2.0 < ZSTD < 2.0$. c.) Point measure correlation is accepted if $0.4 < \text{Point measure correlation} < 0.85$.

The level of item suitability interprets items that function normally in measuring body image, so that there is no miss conception in the individual against the item. Then the results can be obtained as follows: First. The MNSQ outfit value is obtained which shows that there is one item that does not meet the criteria limit one, namely item 2 with a value of 0.49. Second. There are results on Outfit ZSTD which show that there are eight items that do not meet the criteria limit two, namely item numbers 20, 16, 1, 17, 4, 7, 6, and 2. Third. At the point measure correlation, there are 14 items that do not meet criterion three,

namely item numbers 20, 16, 14, 5, 13, 19, 8, 3, 18, 10, 15, 17, 4, and 7. Based on the criteria for the level of item suitability, it can be seen that all items on the body image instrument are proven to be fit, because they have met at least one of the three criteria with the Rasch model. This indicates that there are no misfit items in the body image instrument. The result of summary statistic is show in [Table 5](#).

Table 5. Summary Statistics

Summary Person								
	Total		Model		Infit		Outfit	
	Score	Count	Measure	Standard Error	MNSQ	ZSTD	MNSQ	ZSTD
Mean	42.5	20.0	0.25	0.31	1.01	0.0	1.00	0.0
Standard Deviation	4.9	0.0	0.48	0.03	0.26	1.2	0.26	1.2
Maximum	55.0	20.0	1.75	0.46	1.67	2.9	1.69	2.9
Minimum	32.0	20.0	-0.75	0.30	0.52	-2.7	0.53	-2.7
Real Root	0.33	True	0.35	Separation	1.05	Pearson Realibility		0.52
Mean Square Deviation		Standard Deviation						
Model Root Mean Square Deviation	0.31	True Standard Deviation	0.36	Separation	1.15	Pearson Realibility		0.57

Summary Item								
	Total		Model		Infit		Outfit	
	Score	Count	Measure	Standard Error	MNSQ	ZSTD	MNSQ	ZSTD
Mean	287.1	20.0	0.25	0.31	1.01	0.0	1.00	0.0
Standard Deviation	20.7	0.0	0.48	0.03	0.26	1.2	0.26	1.2
Maximum	331.0	20.0	1.75	0.46	1.67	2.9	1.69	2.9
Minimum	242.0	20.0	-0.75	0.30	0.52	-2.7	0.53	-2.7
Real Root	0.12	True	0.27	Separation	2.33	Pearson Realibility		0.82
Mean Square Deviation		Standard Deviation						
Model Root Mean Square Deviation	0.12	True Standard Deviation	0.27	Separation	2.25	Pearson Realibility		0.84

The Summary of Item and Respondent Statistics analysis is conducted to assess the reliability of both respondents and items, as observed from [Table 5](#). Utilizing the Rasch model summary statistical analysis to process the data from the Body Image instrument comprising 20 questions, the results indicate a Person Reliability of 0.57 and an Item Reliability of 0.84. These findings suggest that the consistency of respondents' responses is still relatively weak, although the quality of the items falls within the very good category, as their reliability ranges from 0.81 to 0.90. This is supported by previous research recommendations which explain that in future studies it would be better to pay attention to other factors by taking a larger number of participant samples to get better results.

Discussion

The validity and reliability analysis of the body image instrument for juvenile prisoners conducted through the Rasch model using the Winstep application version 3.73 has been evaluated based on the aspects of dimensionality and item analysis, including the level of difficulty and suitability of the items. This study found that the respondent reliability (Person Reliability) was 0.57, which indicates weak consistency of respondent answers. In contrast, the item reliability of 0.84 indicates that the instrument

items have very good quality, with a very good category (Iskandar & Rizal, 2018; Nguyen & Habók, 2021; Rubio et al., 2007). This finding is consistent with previous studies showing that high item reliability reflects the quality of an instrument that is reliable and appropriate for use in a particular measurement context (Ardiyanti, 2017).

In addition, all items in the body image instrument showed adequate fit based on the criteria set by the Rasch model, indicating the suitability of the items for measurement. In other words, there were no items that were not suitable for inclusion in the body image instrument, so this instrument can be considered to have very good quality (Agustin & Soetjningsih, 2021; Gallagher et al., 2007). This is in line with research by previous study which states that item suitability is an important indicator in assessing the validity and reliability of measurement instruments (Ramdan et al., 2019).

For future research, it is recommended that researchers ensure equitable measurement across participants by checking for item bias based on categories such as age, gender, race, residence, or activity of participants. This recommendation is supported by previous research which explains that in future studies, it is better to consider other factors by taking a larger sample size of participants to obtain better results (Rohmah et al., 2022). Thus, this approach has the potential to produce more objective results from Indonesian body image instruments, as suggested by previous research which emphasizes the importance of using more diverse samples to increase the generalizability of research findings (Hanifah, 2014).

Overall, the results of the validity and reliability analysis through the Rasch model indicate that this body image instrument is suitable for measuring body image in juvenile prisoners. However, to further improve the accuracy and generalization of the results, future studies need to consider additional factors and expand the sample size, in accordance with suggestions from previous studies. This approach will not only strengthen the validity of the instrument, but also increase confidence in the results obtained from its use.

4. CONCLUSION

The validity and reliability analysis of the body image instruments for adolescent prisoners, conducted through the Rasch model using the Winstep version 3.73 application, is evaluated based on dimensional aspects and item analysis, including item difficulty and item suitability levels. The Person Reliability result is 0.57, indicating weak consistency in respondents' answers, while the Item Reliability is 0.84, suggesting high quality items falling within the very good category. All items on the body image instrument demonstrate a satisfactory fit based on the criteria established by the Rasch model, indicating their appropriateness for measurement. This implies that there are no items unfit for inclusion in the body image instrument, rendering it excellent in quality. For future research, it is recommended that researchers ensure even measurement of participants by examining item bias across categories such as age, gender, race, place of residence, or participant activities. This is supported by previous research recommendations which explain that in future studies it would be better to pay attention to other factors by taking a larger number of participant samples to get better results. This approach can potentially yield more objective results from the Indonesian body image instrument.

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