Emotional Regulation Scale: A Rasch Model Approach

Muqaffi[1], Nandang Rusmana[2], Ilfiandra[3]
Guidance and Counselling Study Program, Faculty of Education,
Universitas Pendidikan Indonesia, Indonesia[1]
Guidance and Counselling Study Program, Faculty of Education,
Universitas Pendidikan Indonesia, Indonesia[2]
Guidance and Counselling Study Program, Faculty of Education,
Universitas Pendidikan Indonesia, Indonesia[3]
E-mail: muqaffi07@upi.edu[1], nandangrusmana@upi.edu[2], ilfiandra@upi.edu[3]
Correspondent Author: Muqaffi, muqaffi07@upi.edu
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Abstrack

This study evaluates students' emotion regulation ability during the first three years of study with a qualitative experimental approach in a within group design. The instrument used was James J. Gross' Emotion Regulation, which was translated into Bahasa Indonesia. This instrument includes two main aspects: Cognitive Reappraisal (6 items) and Expressive Suppression (4 items), with a total of 10 items. The validity and reliability of the instrument were tested using Rasch modeling through the Winsteps application. The results of the validity analysis showed 8 items were valid and 2 items required revision. Instrument reliability was measured by Cronbach's Alpha, resulting in a value of 0.79 (Good category) for the overall instrument, and a value of 0.97 (Excellent category) for item reliability. These validity and reliability tests ensure that the data collected is accurate, consistent, and reliable, so that this instrument can be used to measure students' level of emotion regulation.
Keywords: emotional regulation, rasch model, emotional regulation scale, college students

Abstrak

Penelitian ini mengevaluasi kemampuan regulasi emosi mahasiswa selama tiga tahun pertama perkuliahan dengan pendekatan kualitatif eksperimen dalam desain within group. Instrumen yang digunakan adalah regulasi emosi dari James J. Gross, yang diterjemahkan ke Bahasa Indonesia. Instrumen ini mencakup dua aspek utama: Cognitive Reappraisal (6 item) dan Expressive Suppression (4 item), dengan total 10 item. Validitas dan reliabilitas instrumen diuji menggunakan pemodelan Rasch melalui aplikasi Winsteps. Hasil analisis validitas menunjukkan 8 item valid dan 2 item memerlukan revisi. Reliabilitas instrumen diukur dengan Alpha Cronbach, menghasilkan nilai 0.79 (kategori Bagus) untuk keseluruhan instrumen, dan nilai 0.97 (kategori Istimewa) untuk reliabilitas item. Uji validitas dan reliabilitas ini memastikan data yang dikumpulkan akurat, konsisten, dan dapat diandalkan, sehingga instrumen ini dapat digunakan untuk mengukur tingkat regulasi emosi mahasiswa.
***Kata Kunci**: regulasi emosi, rasch model, instrumen regulasi emosi, mahasiswa*

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INTRODUCTION

Emotional regulation is a skill included in positive psychology, which means an effort to develop, create, and find a positive situation to create strength for the individual. Emotional regulation itself is the ability to recognize, distinguish, and regulate the intensity of emotions that are being felt. Emotional regulation is responsible for monitoring, evaluating, and modifying individual emotional reactions (Cerolini et al., 2022). Emotional regulation itself also plays a role in the process of protecting, holding and directing unpleasant emotions when felt to avoid negative conditions that can be displayed by individuals (Fernandes et al., 2023).

Understanding emotional regulation can help individuals better cope with their emotions and improve their well-being. Emotional regulation is a process that occurs both unconsciously and consciously (Moyal et al., 2023). It involves changes in emotion dynamics such as latency (Cerolini et al., 2022), awakening time, magnitude, and duration (Kadociv et al., 2023). The purpose of emotional regulationis to reduce, intensify, or maintain certain emotions based on individual goals and needs (Aprilia, 2022). There are four interrelated constructs that make up emotional regulation: overcoming negative conditions (Salimzadeh et al., 2020), regulating emotions (Usan & Quilez, 2021), regulating mood (Vega et al., 2022), and psychological defense (Tan et al., 2023). Emotional regulation plays a crucial role in managing and controlling emotions to adapt to different situations. Various studies have explored different aspects of emotion regulation, including its mechanisms and effects (Lemos, 2021).

Mastery of good emotional regulation can get many benefits such as problem solving skills, the ability to reassess a situation, and acceptance of conditions that occur to individuals (Moyal et al., 2023). In addition, good emotional regulation is also able to suppress perceived stress (Uccula et al., 2023), improve emotional well-being (Wickett et al., 2023), and increase resilience (Ritkumrop et al., 2022). Difficulties in emotion self-regulation can lead to various problems such as anxiety, eating disorders, depression, insomnia, fatigue and obsessive-compulsive disorder (Oyanadel et al., 2023).

In the emotional regulation process itself there are five models of the emotional regulation process which include situation selection, situation modification, attention spreading, cognitive change and response modulation (Ursu & Mairean, 2022). So that in the process when a strategy has a match between the strategy and a certain situation, it is said to be adaptive. The five situations can be described as follows (Cerolini et al., 2022):

1. Situation Selection

Choosing certain situations that can increase or decrease the intensity of the emotions felt so as to take good actions and generate the desired emotions. Examples include avoiding an angry neighbor by reducing the duration of interactions that occur or avoiding making trouble with the neighbor.

2. Situation Modification

Situation modification refers to making direct and conscious changes to the situation to alter its emotional impact. An example is when someone is angry with himself sneidri instead of cursing and swearing at himself with offensive verbal sentences it is better if he motivates himself by doing a personal evaluation and including constructive verbal sentences so that the emotions that arise are not sad and angry but will cause emotions that focus on the desire to get better.

3. Attention Spreading

Attention spreading centers on paying attention to different aspects of the situation or shifting attention from a defeating condition to a constructive one. For example, when individuals are sad because of failure to complete the final project, instead of focusing on the failure that occurred, it is better to focus on how to correct the mistakes in the failure so that attention is more directed to positive things.

4. Cognitive Change

Cognitive change focuses on the way individuals assess a situation to change their emotional state. An example is from changing the focus that mistakes happen because of my shortcomings or even blaming the situation to focusing on the advantages that are owned and maximizing them and seeing failure as an absolute part of success.

5. Response Modulation

Response modulation is an ability to express perceived emotions in a good and healthy way by reviewing the emotions felt and displaying a response in a non-excessive manner. An example is being able to stay calm and act well even in very stressful conditions so that individuals are able to keep thinking clearly.

In addition to the strategy model, there are four aspects that affect a person's emotional regulation which are then classified into two main aspects that cover the other four aspects (Moyal et al., 2023). The four aspects in question are;

1. Strategies to emotional regulation (strategies), which consist of individual beliefs to solve problems, the ability to know how to reduce negative emotions, and the ability to calm down again.
2. Engaging in goal directed behavior (goals), which consists of an individual's ability not to be affected by negative emotions that are felt and able to keep thinking clearly.
3. Control emotional responses (encouragement), which consists of an individual's ability to be able to control the emotions felt and the emotional responses displayed.
4. Acceptance of emotional responses, which consists of the individual's ability to accept an event that causes negative emotions and is not ashamed to feel these emotions.

It is also further explained that humans use two aspects of the approach in managing emotional experiences, namely cognitive reappraisal which involves cognitive processes to manage their emotional responses before responding to a situation and expressive suppression which emphasizes the suppression of expressions displayed by individuals as a way of managing their emotions (Moyal et al., 2023).

While the factors of emotional regulation consist of two, namely intrinsic and extrinsic factors (Tang et al., 2022). Intrinsic factors are influenced by individual differences and individual cognitive abilities (Tan et al., 2023). Meanwhile, extrinsic factors are influenced by age, gender, ethnicity, personality, parenting and culture (Tang & He, 2022).

To see the level of emotional regulation ability itself, of course, requires a measuring instrument to measure the level of individual emotional regulation ability. The instrument used is the Emotional Regulation instrument developed by James J Gross. The instrument was then translated into Indonesian which was then adapted to conditions in Indonesia. To determine the quality of the instrument translated into Indonesian, it is necessary to fulfill the criteria for measuring the quality of the instrument which consists of validity, reliability, difficulty level and differential power (Sumintono & Widhiarso, 2015). Meanwhile, to see the validity of content, construct, and grammar by conducting internal trials conducted by experts. Expert judgment is carried out to assess scientific content and instrument structure (Nadhirah, 2022). While external trials by going directly

to the field were carried out to strengthen the validity of the instrument. Field trials were conducted on subjects that were in accordance with the research subjects who would be used as participants (Yusuf et al., 2021). Finally, after conducting internal and external trials, the results are analyzed to see the level of quality of the instrument that has been translated.

Validity is the level of validity of the instrument to measure what needs to be measured and reliability is the consistency of the instrument itself (Norhayati et al., 2023). In addition, in determining the quality of an instrument, it is also necessary to test the difficulty level to see how many respondents can understand and answer the questions in the instrument (Diswantika et al., 2023). Finally, the differentiation test is to see how much the question's ability to distinguish respondents who fill in with a high level of ability to answer questions from respondents with a low level of ability to answer questions (Yusuf et al., 2021).

This article tries to describe the results of the analysis of the emotional regulation instrument that has been translated into Indonesian using the RASCH model as a modern way to reveal the level of validity, reliability, readability and differential power of the instrument itself to see the quality of the emotional regulation instrument used.

METHOD

This research uses a qualitative approach of experimental type with within group research design. The emotional regulation instrument consists of two main aspects consisting of Cognitive reapresial and Expresive Supression. This instrument itself consists of 10 items, which for the Cognitive reapresial aspect consists of 6 statement items and the Expresive Supression aspect which consists of 4 statement items. This emotional regulation instrument uses a Likert scale with five answer choices with information very suitable (5), suitable (4), somewhat suitable (3), less suitable (2) and not suitable (1). The sampling technique used is Perposive Sampling with the criteria that participants are students in the 1-6 semester range and experience academic stress. The total population used in the field trial of this instrument was 339 students. Field data analysis using RASCH model (Winstep).

RESULT AND DISCUSSION

Validity

Test validity basically refers to the level of accuracy and effectiveness of a test in measuring what is intended to be measured. To assess the validity of an instrument itself can be seen through the extent to which the instrument can measure in accordance with the intended purpose which is composed of three criteria, namely content validity, construct validity and criterion validity (Ifdil 2024). Content validity represents the overall measurement of an instrument covering all relevant aspects of a theoretical construct used so that the results obtained can accurately describe the concept of the theory Abhrani et al., 2023). Construct validity is a description of the extent to which the instrument made can actually measure the theoretical construction of the concept used (Lianawati & Puspitasari, 2020). Criterion validity describes the extent to which the results of an instrument correlate with the results of a standardized or valid criterion of the measured construct (Nadhirah, 2022).

Testing the validity of the instrument using the RASCH model is based on the fulfillment of the following criteria (Sumintono & Widhiarso, 2015).

a. The accepted Outfit MNSQ (Mean Square) values are: 0.5< Outfit - MNSQ < 1.5

b. The accepted ZSTD (Z - Standard) Outfit values are: -2.0 < ZSTD < +2.0
c. Pt Measure Corr (Point Measure Correlation) value: 0.4< Point Measure Corr < 0.85

Items are said to be valid if they meet at least two measurement criteria, corrected if they only meet one measurement criterion and discarded if they do not meet all measurement criteria. After conducting a validity analysis using the RASCH model on the translated emotional regulation instrument, the validity analysis results are as follows.

Table 1.
Item Validity Analysis

Item Number	MNSQ	ZSTD	Pt.Corr	Results
1.	1,13	1,5	0,44	Valid
2.	1,38	4,5	0,44	Valid
3.	0,86	-1,8	0,59	Valid
4.	1,26	3,3	0,51	Valid
5.	1,11	1,5	0,57	Valid
6.	1,06	0,9	0,64	Valid
7.	0,71	-4,1	0,64	Revised
8.	0,67	-4,8	0,61	Revised
9.	1,17	2,1	0,60	Valid
10.	0,65	-5,2	0,67	Valid

From the results of the analysis of the emotional regulation instrument items using the RASCH MODEL, it was found that there were 8 valid items and could be used immediately. Meanwhile, there are also 2 items that need to be revised before use because they only meet one measurement criterion, namely the Point Measure Correlation criterion.

Reliability

The reliability of a test is the extent to which an instrument produces consistent and stable results even though it is repeated in the same conditions and subjects (Gunawan & Rahmanadia, 2023). Reliability itself is measured by looking at the Cronbach Alpha value and the item reliability value. The measurement criteria when an instrument can be said to be reliable when measured using the RASCH model as follows (Sumintono & Widhiarso, 2015).

Table 2.
Cronbach's Alpha Reliability Criteria

Rate	Criteria
< 0,5	Very Bad
0,5 – 0,6	Bad
0,6 – 0,7	Fair
0,7 – 0,8	Good
>0,8	Very Good

Table 3.
Item Reliability Criteria

Rate	Criteria
< 0,67	Weak
0,67 – 0,80	Fair
0,81 – 0,90	Good
0,91 – 0,94	Very Good
>0,95	Special

The following presents the results of the emotional regulation instrument reliability test using the RASCH model.

Table 4.
Cronbach's Alpa Value And Item Reliability Of Emotional Regulation Instrument

Categori	Rate	Criteria
Alpha Cronbach	0.79	Good
Item Reability	0.97	Special

In the emotional regulation instrument reliability test using Cronbach's Alpha, a value of 0.79 was obtained. So that based on the criteria in table 3 it can be said that the reliability of the emotional regulation instrument when viewed from the Cronbach Alpha value is in the good category. Meanwhile, the item reliability of the emotional regulation instrument gets a value of 0.97 which when viewed in the criteria of table 4 is in the Special category. Thus this emotional regulation instrument after testing can be said to be reliable.

Level of Difficulty

The level of difficulty is a criterion given to the item to indicate how many items the respondent can answer correctly (Yudha, 2023). This level of difficulty describes whether an item is too difficult or too easy for respondents to answer Yusuf et al., 2021). An item is said to be good when the item is not too difficult and not too easy for respondents to answer. For the RASCH model itself, the level of item difficulty is based on the Measure logit and the Standard Deviation value of the logit item which is then divided into four categories as follows (Sumintono & Widhiarso, 2015).

Table 5.
Item Difficulty Criteria

Rate	Criteria
Measure logit > SD logit	Very Difficult
0 ≤ Measure logit ≤ SD l	Difficult
– SD logit ≤ Measure logit ≤ 0	Medium
Measure logit < – SD logit	Easy

The following presents the logit measure value and standard deviation of the test results of the difficulty level of the emotional regulation instrument items with a Standard Deviation of 0.4.

Table 6.
Results Of The Difficulty Test

Item Number	Measure Logit	Criteria
5	0.71	Very Difficult
4	0.39	Difficult
6	0.33	Difficult
2	0.08	Difficult
9	-0.03	Medium
8	-0.1	Medium
7	-0.12	Easy
10	-0.13	Easy
3	-0.3	Medium
1	-0.82	Easy

Based on the data from table 6 which is compared with table 5, it is found that in the emotional regulation instrument there are 1 item in the very difficult category, 3 items in the difficult category, 3 items in the medium category and 3 items in the easy category to be answered by respondents.

Distinguishing Power

Distinguishing power is the ability of items to distinguish the ability of respondents to answer each item in an instrument Abharani et al., 2023). When viewed from the RASCH MODEL itself, the differentiation power of items can use the respondent separation index. The following equation is to group in detail using the strata equation (H) (Sumintono & Widhiarso, 2015):

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

SUMMARY OF 339 MEASURED (EXTREME AND NON-EXTREME) Person

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	35.7	10.0	.74	.41				
S.D.	5.8	.0	1.02	.14				
MAX.	50.0	10.0	5.60	1.84				
MIN.	16.0	10.0	-2.02	.35	.08	-3.9	.08	-3.9

REAL RMSE	.49	TRUE SD	.89	SEPARATION 1.84	Person RELIABILITY	.77
MODEL RMSE	.44	TRUE SD	.92	SEPARATION 2.10	Person RELIABILITY	.82
S.E. OF Person MEAN = .06						

Person RAW SCORE-TO-MEASURE CORRELATION = .96
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .79

SUMMARY OF 10 MEASURED (NON-EXTREME) Item

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	1208.7	339.0	.00	.07	.99	-.3	1.00	-.2
S.D.	86.8	.0	.40	.00	.23	3.2	.25	3.3
MAX.	1376.0	339.0	.71	.08	1.32	3.9	1.38	4.5
MIN.	1043.0	339.0	-.82	.06	.64	-5.3	.65	-5.2

REAL RMSE	.07	TRUE SD	.39	SEPARATION 5.51	Item RELIABILITY	.97
MODEL RMSE	.07	TRUE SD	.39	SEPARATION 5.78	Item RELIABILITY	.97
S.E. OF Item MEAN = .13						

Figure 1. Item Separation Results

Based on the results of item separation and strata equations, the results show that the SE value of the item is known to be 5.51, the value of H = 7.68 is rounded to 8 which indicates that there are 8 groups of items identified and the SE value of the respondent is

1.84 with a value of H = 2.78 rounded to 3 which indicates that there are 3 groups of respondents who express the ability of the respondent himself. This is in line with the interpretation criteria of the SE value that if the item separation value is greater, the overall instrument quality is better because it can identify groups of items and respondents (Sumintono & Widhiarso, 2015).

CONCLUSION

Testing the validity and reliability of the emotion regulation instrument is considered a crucial step in the research process to ensure that the data collected is accurate, consistent, and reliable, which in turn can have a positive impact on research quality, confidence in results, decision making, efficient use of resources, and the ability to replicate research. Based on the results of the RASCH Model analysis of the emotion regulation instrument translated into Indonesian, it was found that based on the validity analysis, there were 8 items that were valid and could be used directly. Meanwhile, there are also 2 items that need to be revised. The results of the reliability analysis of the emotion regulation instrument using Cronbach's Alpha obtained a value of 0.79 which is in the Good category. Meanwhile, the item reliability of the emotion regulation instrument gets a value of 0.97 which is in the Special category. The results of the difficulty test illustrate that in the emotional regulation instrument there are 1 item that is in the very difficult category, 3 items in the difficult category, 3 items in the medium category and 3 items in the easy category to be answered by respondents. Finally, based on the results of the difference test, it was found that there were 8 groups of items identified and there were 3 groups of respondents who stated the ability of the respondents themselves. By looking at these results, it can be concluded that this emotional regulation instrument meets the measurement criteria and can be used to reveal the level of students' emotional regulation abilities.

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