

DEVELOPMENT AND VALIDATION OF THE GROWTH MINDSET SCALE AMONG HIGH SCHOOL STUDENTS USING A RASCH MODEL APPROACH

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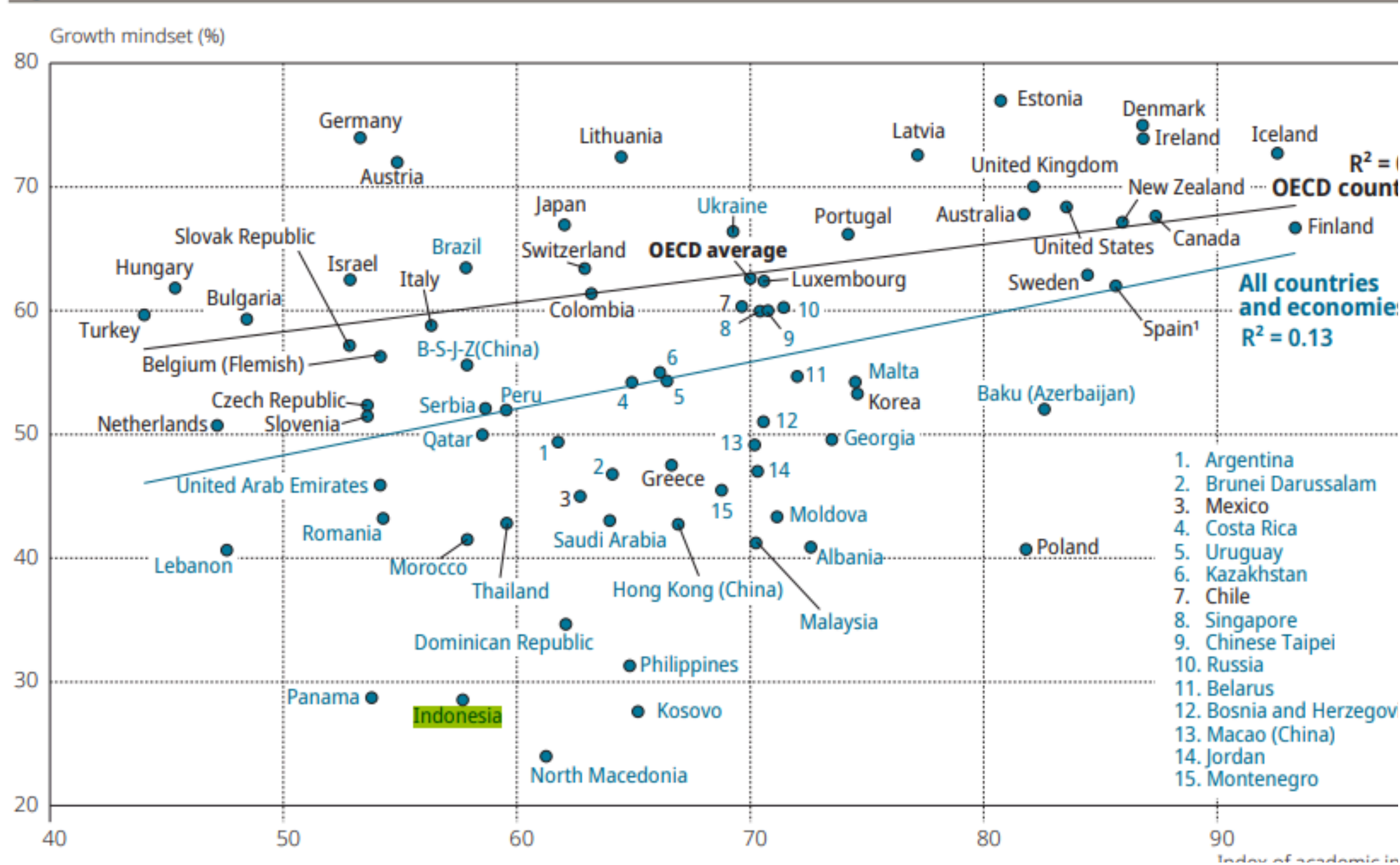
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INTRODUCTION

Figure 17. Growth mindset and academic inclusion



PISA 2018 found that more than two-thirds of students in Indonesia show a fixed mindset, so attention is needed to improve this (OECD, 2021).

(PISA, 2018).



INTRODUCTION

1

PISA 2018 data also found that growth mindset students scored 31.5 points higher in reading performance, 27 points higher in science, and 23 points higher in mathematics compared to fixed mindset students (OECD, 2021).

2

Growth mindset also plays an important role in the depression experienced by students, whereas in Carol Dweck's research, it was found that fixed mindset students had higher levels of depression than growth mindset students. (Dweck, 2006)

3

The research of Rahmania, Triwahyuni, and Kadiyano (2022) which found that the 8-item growth mindset instrument developed by Carol S. the item is still measuring something else.

4

Research by Rahmania, Triwahyuni, and Kadiyano (2022) also recommends further research to increase the number of expert reviews and cognitive reviews; repairing defective items; and testing is carried out using the Rasch model analysis technique because current testing still uses classical test theory which is still limited,



Growth Mindset

Incremental Theory of Intelligence dan Entity Theory of Intelligence

Growth mindset dan Fixed Mindset

Definisi *Growth Mindset*

Aspek *Growth Mindset*

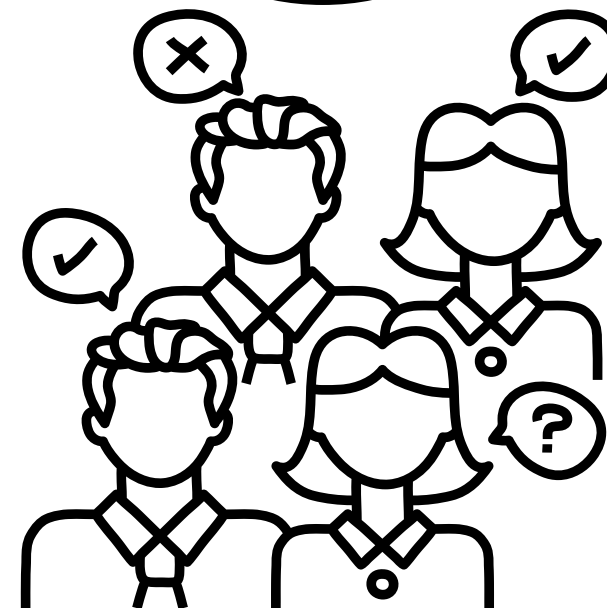


METHODS

1

- **Postpositivist** paradigm
- **Quantitative** approach
- **Descriptive** design
- **Survei** method

2



Participants

576 class X students from two high schools in Bandung City

3

Pemilihan Sampel
Convenience Sampling



METHODS

4

Instrument Growth Mindset constructs from research by Chen et al. (2021) consist of **6 aspects of growth mindset** that have been validated, namely: 1) Motivation; 2). Attitude; 3). Grit; 4). Challenges; 5). Adversity; 6). Positive Mindset.

5

Data analysis was carried out using the Rasch model through the Winstep 5.7.3 application



UNIDIMENSIONALITY

Table of STANDARDIZED RESIDUAL variance in Eigenvalue units = Item information units

	=	Eigenvalue	Observed	Expected
Total raw variance in observations	=	112.0323	100.0%	100.0%
Raw variance explained by measures	=	44.0323	39.3%	38.9%
Raw variance explained by persons	=	22.2831	19.9%	19.7%
Raw Variance explained by items	=	21.7493	19.4%	19.2%
Raw unexplained variance (total)	=	68.0000	60.7%	100.0%
Unexplnd variance in 1st contrast	=	8.2697	7.4%	12.2%
Unexplnd variance in 2nd contrast	=	3.6570	3.3%	5.4%
Unexplnd variance in 3rd contrast	=	2.9652	2.6%	4.4%
Unexplnd variance in 4th contrast	=	2.4271	2.2%	3.6%
Unexplnd variance in 5th contrast	=	2.2302	2.0%	3.3%



RATING SCALE

```
TABLE 3.2 E:\DATA AZKA\SEMESTER 8\SKRIPSI\OLAH D ZOU406WS.TXTL Jul 10 2024
13:08P 5.7.3\IN
INPUT: 381 Person 68 Item REPORTED: 381 Person 68 Item 4 CATS WINSTEPS
5.7.3.0
```

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY	OBSERVED	OBSVD	SAMPLE	INFIT	OUTFIT	ANDRICH	CATEGORY		
LABEL	SCORE	COUNT	%	AVRGE	EXPECT	MNSQ	MNSQ	THRESHOLD	MEASURE
1	1	893	3	-.19	-.49	1.20	1.21	NONE	(-3.33)
2	2	7484	29	.29	.36	.92	.95	-2.18	-.87
3	3	8842	34	1.18	1.16	.94	.92	.60	1.13
4	4	8689	34	2.03	2.02	1.01	1.02	1.59	(2.90)

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



ITEM FIT ORDER

Based on the data that has been presented, there are **53 items displayed as a result of item fit order data processing** in the Winstep 5.7.3 application and were found to be completely valid so they can be used to measure growth mindset because they meet the minimum requirements, namely falling into at least two of the three specified criteria.



SUMMARY STATISTICS PERSON

SUMMARY OF 381 MEASURED Person

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	202.5	68.0	1.16	.18	1.02	-.36	1.00	-.43
SEM	1.4	.0	.05	.00	.02	.15	.02	.14
P.SD	26.4	.0	.90	.04	.45	2.90	.45	2.77
S.SD	26.5	.0	.90	.04	.46	2.90	.45	2.77
MAX.	269.0	68.0	5.02	.58	3.45	9.90	3.42	9.53
MIN.	115.0	68.0	-1.79	.17	.24	-7.70	.24	-7.43
REAL RMSE	.21	TRUE SD	.87	SEPARATION	4.19	Person RELIABILITY	.95	
MODEL RMSE	.19	TRUE SD	.88	SEPARATION	4.68	Person RELIABILITY	.96	
S.E. OF Person MEAN = .05								

Person RAW SCORE-TO-MEASURE CORRELATION = .98

CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .95 SEM = 5.69

STANDARDIZED (50 ITEM) RELIABILITY = .94



SUMMARY STATISTICS ITEM

SUMMARY OF 68 MEASURED Item

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD
MEAN	1134.5	381.0	.00	.08	.99	-.41	1.00	-.06
SEM	17.5	.0	.10	.00	.03	.37	.03	.32
P.SD	143.0	.0	.78	.00	.21	3.05	.21	2.65
S.SD	144.1	.0	.79	.00	.21	3.07	.21	2.67
MAX.	1370.0	381.0	2.11	.09	1.50	6.25	1.59	5.94
MIN.	763.0	381.0	-1.42	.07	.62	-7.18	.64	-5.81
REAL RMSE	.08	TRUE SD	.78	SEPARATION	9.93	Item	RELIABILITY	.99
MODEL RMSE	.08	TRUE SD	.78	SEPARATION	10.32	Item	RELIABILITY	.99
S.E. OF Item MEAN = .10								

Item RAW SCORE-TO-MEASURE CORRELATION = -1.00
 Global statistics: please see Table 44.
 UMEAN=.0000 USCALE=1.0000



CONCLUSION & RECOMMENDATION

Based on the results of validity and reliability tests, **the growth mindset instrument consists of 53 statements with 29 favorable statements and 24 unfavorable statements** representing the six aspects of growth mindset. The instrument uses a Likert-type scale with four answer choices, namely 1=very unsuitable; 2=not suitable; 3=suitable; 4=very suitable. **Recommendations for future researchers to be able to retest the growth mindset instrument that has been developed with a wider population coverage**, both in classes 10 and 12 of high school or outside the city of Bandung.

Thank

YOU!