



Developing the Adolescent Career Success Instrument (ACSI): A Rasch Model analysis

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Abstract

Career success is an individual's ability to achieve self and work success. There are various instruments to determine individual career success. However, there has not been a career success instrument specifically developed for adolescents. This study aims to develop and validate The Adolescent Career Success Instrument (ACSI) using the Rasch model analysis. Participants in this study consisted of 3 guidance and counseling experts for the constructed test, 4 students for the readability test, and 106 students (33 male students and 73 female students) from high school for the empirical test. ACSI reliability test results show that the item reliability is 0.90 in a good category, while the personal reliability is 0.85 in a good category. Cronbach's alpha value is 0.91 in the very good category. The results of the ACSI analysis using the Rasch model showed that 49 reliable items could be used to measure adolescent career success.

Keywords: Adolescent Career Success, Career, Development and Validation, Rasch Model

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Introduction

Career success is an interesting topic to discuss. It can be seen from research on career success, which increases every year. The definition of career success has begun to change from objective ones such as wealth and position to subjective ones such as happiness and satisfaction (Benson et al., 2013). The concept of career success starts to vary in every setting, from career success in adulthood (Abele et al., 2011), career success in workers (Zhou et al., 2013), in academia (Said, 2015), career success in the cultural side (Dries, 2011), etc. The term career covers every range of developmental tasks from children to adults (Supriatna et al., 2021).

The topic of career success is part of the guidance and counseling study (Ismira et al., 2019). Guidance and counseling have a role in providing services that can help students develop their careers and achieve success in their careers (Supriatna, 2020). It is also reinforced by the competency standards for student independence formulated by the Indonesian Guidance and Counseling Association (ABKIN). For high school students, in the aspect of career insight and readiness, students are expected to be able to develop alternative career planning by considering abilities, opportunities, and career variety (Depdiknas, 2007). Being able to plan a career is one of the indicators of career success (Spurk et al., 2015).

Instruments are tools used to measure and determine one's career success. Currently, there are career success instruments developed by researchers. *The Career Satisfaction Scale* (Greenhaus et al., 1990) is the most often used by researchers (Clark & Plano Clark, 2019; Haibo et al., 2018). *Perceived Subjective Career Success* was measured using a four-item scale developed by (Dougherty et al., 1994). Job Satisfaction Scale was developed by (Wanous et al., 1997). Perceived Career Success developed by (Eby et al., 2003). The last instrument used to determine career success was developed by (Briscoe et al., 2021), who constructed and validated a new subjective career success measure that encompassed a broad cross-section of country cultures (Briscoe et al., 2021). Various existing instruments have met the validity and reliability tests and are feasible. However, this instrument still has limitations, especially on career success, which focuses on work and adulthood. However, until now, there are still few who study career success in the setting of adolescents (Converse et al., 2014). There has not been a career success instrument specifically developed for adolescents.

Based on the background, this study aims to develop and test the validity and reliability of The Adolescent Career Success Instrument using the Rasch model analysis. The instrument construct of adolescent career success in this study is the result of the synthesis and analysis of the concept of career success by C Brooklyn Derr (Derr, 1986), Timothy A. Judge (Judge, 1995), Emma Parry (Parry et al., 2012), and Mamat Supriatna (Supriatna et al., 2021). Researchers analyzed the definition, essence, aspects, and indicators. Based on this analysis, this instrument's definition of career success is the individual's ability to achieve self and work success. Career success includes three aspects, namely cognitive, affective, and psychomotor. The cognitive aspect is characterized by (1) understanding interests and talents, (2) analysis of the type of work, and (3) planning goals. The affective aspect is characterized by (1) Satisfaction, (2) Happiness and (3) Seriousness. The psychomotor aspect is characterized by (1) Decisions, (2) Adjustment to work, (3) Balance of Activities, (4) Dare to Try and (5) Practice self-skills.

The results of this study will provide a significant contribution. First, The Adolescent Career Success Instrument (ACSI), which was developed, can be used to determine the career success of students in Indonesia. Second, this study also expands on the topic of career success in the literature, under current conditions, where the roadmap for studying career success has entered the subject of adolescence (Hoff et al., 2022). Third, this study uses the Rasch Model analysis to analyze the validity and reliability of the instrument that has not been used in the analysis of other career success instruments.

Method

The instrument developed and tested in this study was the Adolescent Career Success Instrument (ACSI). This study uses a quantitative approach. The research procedure on the development of career success instruments was carried out in 4 stages, namely: concept and item development, rational test, readability test, and empirical instrument test. First, based on the theory, the development of concepts and indicators of career success, 60 positive items of career success instruments were produced with the Guttman scale of "yes" and "no" answer choices. Second, the rational instrument test was conducted on 3 experts in career guidance and counseling. The rational weighing of this instrument aims to determine the feasibility level of the instrument in terms of construct, content, and language.

Third, the Instrument readability test, the Career success instrument that will be tested first, is a readability test for 4 students (2 male students and 2 female students) to measure how students can understand the instrument items developed. Fourth, Instrument Empirical Test. Participants in this empirical trial were 106 students (33 male students and 73 female students) at SMA Negeri 16 Bandung. The selection of participants in this study used a convenience sampling technique. Data acquisition is used via Google forms. Empirical tests were carried out to produce the psychometric properties of the instrument. Analysis of empirical test data on career success instruments using Rasch modeling with WINSTEP program version 3.73 application.

Results and Discussion

Rating Scale

The instrument uses the Guttman scale as a type of measurement scale to reveal the career success of high school students. The collection of data on career success for high school students is carried out through a questionnaire in the form of a positive (+) statement with alternative answer choices of "Yes" and "No" (Forced Choice). The scoring depends on the answer chosen, for the answer "Yes" gets a score of "1" and the answer "No" gets a score of "0". The results of the Rating Scale analysis can be seen in Table 1 as follows:

Table 1. Summary of Category Structure Model="R"

CATEGORY	OBSERVED	OBSVD	SAMPLE	INFIT	OUTFIT	COHERENCE			ESTIM		
LABEL	SCORE	COUNT	%	AVRGE	EXPECT	MNSQ	MNSQ	M->C	C->M	RMSR	DISCR
0	0	1320	21	.43	.43	1.00	.94	63%	37%	.6212	0
1	1	5040	79	2.29	2.29	1.02	1.06	84%	94%	.2351	1

The Rating Scale results analysis shows that the average value of the observations starts from logit 0.43 for choices with a score of 0 (no) and 2.29 for options with a score of 1 (Yes). The increase in the average value of this observation indicates that the validity of the scale used in the career success instrument can be very good and does not confuse the respondents (Rangka et al., 2018).

Unidimensionality

Unidimensionality is an important measure to evaluate whether the developed instrument can measure what should be measured as the construct of career success. The criteria that the test instrument developed can measure range variables or measure the subject's ability to answer question items if *Raw Variance*

Explained by Measures (>20%) with both consisting of total raw unexplained variance values (<15%) (Sumintono & Widhiarso, 2014). The results are presented in Table 2 as follows.

Table 2. Unidimensionality item test result ACSI

	Empirical		Modeled
Total raw variance in observations	80.4	100.0%	100.0%
Raw variance explained by measures	20.4	25.4%	25.7%
Raw variance explained by persons	9.8	12.2%	12.4%
Raw Variance explained by items	10.6	13.2%	13.4%
Raw unexplained variance (total)	60.0	74.6%	100.0% 74.3%
Unexplned variance in 1st contrast	4.2	5.3%	7.1%
Unexplned variance in 2nd contrast	3.6	4.5%	6.1%
Unexplned variance in 3rd contrast	3.3	4.1%	5.5%
Unexplned variance in 4th contrast	3.0	3.7%	5.0%
Unexplned variance in 5th contrast	2.7	3.4%	4.5%

From the results of Table 2. above, it can be seen that the raw variance explained by measure data obtained is 25.4%, showing that the minimum unidimensional requirement of 20% has been fulfilled based on criteria. The results of the unexplained variance total (1st to 5th) are 5.3%, 4.5%, 4.1%, 3.7%, and 3.4% that below 15%, which shows that the level of independence of items in the instrument is good (Boone et al., 2014). These results indicate that the career success instrument has met the requirements of the constructor and can measure what it should measure.

Item Validity

The validity test aims to show the instrument's validity to be used in data collection. An instrument is said to be valid if the items used to obtain the data are valid so that the instrument can be used to measure what should be measured. The criteria used to see that the items are valid or have good quality in the Rasch model are if they meet the following criteria: (a) Outfit mean square (MNSQ) value received: $0.5 < \text{MNSQ} < 1.5$, (b) Outfit Z value -standard (ZSTD) accepted: $-2.0 < \text{ZSTD} < +2.0$, and (c) Point Measure Correlation (Pt Measure Corr) value: $0.4 < \text{Point Measure Corr} < 0.85$ (Sumintono & Widhiarso, 2014).

After a trial using Rasch modeling, of the 60 items developed, 49 items were adequate and met the criteria so that they were used in the career success instrument. Meanwhile, 11 inadequate items were discarded or not included in the career success instrument, namely items numbered 1, 3, 26, 32, 41, 45, 48, 52, 54, 59, and 60. After being deleted, the item numbers were reordered. The following Table 3 are the results of the item validity test that are feasible to use using the Rasch model.

Table 3. Career Success Instrument Items Test Results

No. Item	Construct Item	Outfit MNSQ	Outfit ZSTD	PT Measure Corr
Cognitive: Understanding Potential				
1	I explain my talents when asked by others	.72	-1.0	.46
2	I know the superiority in myself	.81	-.5	.38
3	I clearly describe the interests and talents that are in me	.77	-1.1	.53
4	I compare the advantages with the disadvantages	.74	-1.1	.50
Cognitive: Job Type Analysis				
5	I outline the types of work that society enjoys today	1.36	1.7	.35
6	I group jobs based on interests in the currently selected school	1.10	.7	.49
7	I compare the majors in universities based on their specialization in science or social studies	1.05	.3	.41
8	I distinguish the characteristics of the various jobs that exist	1.20	1.1	.43
9	I chose a further education major according to the desired job	.93	-.3	.47
Cognitive: Goal Planning				
10	I make an alternative choice of majors in college according to the desired job	.77	-.1	.21
11	I compiled a list of jobs based on interests and talents	.63	-1.1	.44
12	I consider college majors based on my strengths and weaknesses	.80	-.3	.35
13	I select jobs based on the opportunities and challenges that exist	.93	-.1	.36

No. Item	Construct Item	Outfit MNSQ	Outfit ZSTD	PT Measure Corr
14	I design clear steps to achieve work goals	.72	-1.0	.49
Affective: Self satisfaction				
15	I like the current chosen specialization (Natural or Social science)	.84	-.5	.45
16	I'm relieved after finishing school exam	.74	-.6	.39
17	I enjoy the organizational activities that I participate in at school	1.18	1.0	.44
18	I am comfortable when I study with people who are experienced in the field that I am interested in	.99	.1	.44
19	I am grateful for the achievements obtained	.95	.0	.30
Affective: Self happiness				
20	I am happy with the extracurricular activities that I participate in at school	.96	.1	.35
21	I am happy with the chosen specialization at school	1.28	.9	.27
22	I am happy to carry out plans for further studies	.65	-.8	.42
23	I am happy to get new knowledge at school	.62	-.6	.37
24	I am comfortable with the extracurricular activities I participate in at school	.96	-.2	.51
25	I am comfortable with the various friends I meet at school	.96	.0	.36
26	I am comfortable facing various obstacles encountered at school	1.16	.5	.21
Affective: Seriousness				
27	I am determined to be accepted in the desired major	.80	-.5	.40
28	I prepare for the college entrance exam with totality	.74	-.5	.37
29	I have high motivation in seeking further education information	.57	-.6	.33
30	I never give up to graduate at the college I want	1.20	.5	.27
31	I'm excited to get high marks in school exams	.50	-.6	.32
Psychomotor: Career Decision				
32	I choose an existing specialization (IPA, IPS or Language) according to my future work plans	.71	-.5	.37
33	I choose a course plan that fits my strengths and weaknesses	.67	-.7	.39
34	I determine my further study plan with careful consideration	.97	.0	.35
35	I consider the opinion of parents in determining the choice of college	.98	.2	.18
36	I choose a college plan based on the opportunities and challenges that exist	.84	-.2	.37
Psychomotor: Adjustment to work				
37	I adapt to a new uncomfortable environment	.73	-.7	.36
38	I accept differences of opinion when discussing in class	.75	-.3	.34
39	I carry out organizational duties that are followed	.91	-.1	.36
Psychomotor: Activity Balance				
40	I manage my study time well	.74	-1.3	.54
41	I balance activities between study, play and make friends	.79	-.6	.41
42	I ignore notifications from my smartphone while studying	1.22	1.3	.41
43	I harmonize my obligations at home and school	1.03	.2	.26
Psychomotor: Dare to try				
44	I enrolled in training activities held at school	.85	.0	.22
45	I took part in a competition to support my talents	1.00	.1	.32
46	I ask people who are experienced in the field of interest	1.13	.7	.36
Psychomotor: Practice self-skills				
47	I participate in activities that can actively develop talent	.95	-.1	.43
48	I improve my skills	.79	-1.0	.50
49	I get used to the interests I have	.78	-.6	.42

Person & Item Measure

The person measure aims to see the level of difficulty of the respondents in answering the career success instrument items. After analyzing the person measure, it was found that respondent No. 2P got the highest career success score with 4.60 (measure). On the other hand, respondent No. 47P got the lowest career success score of -0.65 (measure). In addition to analyzing the Pearson measure, analysis is also carried out on the item

measurements to determine which items have the highest and lowest difficulty levels. The findings show that item no P52 is the most difficult item for respondents to accept 2.19 (measure). While item no P1 is the easiest for respondents to agree with a measure of -3.35.

Reliability

Reliability on Rasch modeling to measure reliability in terms of consistency of person (respondent) in choosing statements and item quality (statements). In the Rasch model, the criteria for determining the value of Item Reliability and Person Reliability are based on the view (Sumintono & Widhiarso, 2014) as follows: (a) < 0.67: Weak, (b) 0.67–0.80: Fair, (c) 0.81–0.90: Good, (d) 0.91–0.94: Excellent and (e) > 0.94: Excellent. The results of the person reliability test can be seen in Table 4. below.

Table 4. Person Reliability Test Results

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	46.8	60.0	1.88	.43	1.00	.1	.97	.1
S.D.	8.8	.0	1.27	.21	.12	.8	.43	.9
MAX.	59.0	60.0	4.60	1.02	1.31	2.5	2.55	2.7
MIN.	22.0	60.0	-.65	.29	.69	-2.7	.20	-1.8
REAL	RMSE .49	TRUE SD	1.18	SEPARATION 2.42	Person RELIABILITY .85			
MODEL	RMSE .48	TRUE SD	1.18	SEPARATION 2.46	Person RELIABILITY .86			

S.E. Of Person MEAN= .13

Based on Table 4, obtained 0.85 person reliability with a good interpretation. It can be concluded that the consistency of the respondents' answers is good. Next is testing the item aspect through the Rasch model. The analysis results are obtained in Table 5.

Table 5. Item Reliability Test Results

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT		OUTFIT	
					MNSQ	ZSTD	MNSQ	ZSTD
MEAN	84.0	106.0	.00	.32	1.00	.1	.97	.1
S.D.	13.5	.0	1.13	.14	.11	.9	.41	1.0
MAX.	105.0	106.0	2.19	1.02	1.30	2.8	3.12	3.5
MIN.	46.0	106.0	-3.35	.23	.83	-1.8	.45	-1.3
REAL	RMSE .35	TRUE SD	1.07	SEPARATION 3.06	Item RELIABILITY .90			
MODEL	RMSE .35	TRUE SD	1.08	SEPARATION 3.12	Item RELIABILITY .91			

S.E. Of Item MEAN= .15

Based on Table 5. The item reliability is 0.90 with a good interpretation. It can be concluded that the quality of the items from the instrument is good.

Mean Measure

The mean measure is the average logit person (respondent) and item (statement) value to determine the average value of respondents in the Career Success Instrument for High School Students. The average value or mean measure for persons (respondents) that is more than logit 0.00 indicates a tendency for respondents to answer more agree on the statement in each item (Sumintono & Widhiarso, 2014). The Mean Measure person on the results of the analysis of the Rach model is 1.88 (Table 4), and the Mean Measure of the item is 0.00 (Table 5).

Separation

Separation is a grouping of persons (respondents) and items (statements). The greater the value of separation, the better the quality of the instrument in terms of the whole person (respondent) and item (statement) because it can identify the respondent group and the statement group (Sumintono & Widhiarso, 2014). The results of the separation of persons are 2.42 (Table 4), while the results of the separation of items are 3.06 (Table 5).

Alpha Cronbach

Alpha Cronbach is to measure the reliability of the interaction between the person (respondent) and the item (statement) as a whole (Sumintono & Widhiarso, 2014). The criteria for Cronbach's alpha values are as follows Table 6

Table 6. Cronbach's Alpha Score Criteria

No	Criteria	Range
1	Very bad	< 0,5
2	Bad	0,5-0,6
3	Enough	0,6-0,7
4	Good	0,7-0,8
5	Very good	>0,8

Based on the reliability test on the career success instrument, Cronbach's Alpha value of 0.91 was obtained in the Very Good category. Based on these results, it can be understood that the instrument shows a very good score and is consistent in use. The following are the results of the reliability test of the career success instrument for high school students. Therefore, the results of the Summary of Reliability Test Results can be seen in Table 7.

Table 7. Cronbach's Alpha Score Criteria

	Mean Measure	Separation	Reliability	Alpha Cronbach
Person	1.88	2.42	0.85	0.91
Item	0.00	3.06	0.90	

Based on table 7 above, the results of the reliability test of the career success instrument show the reliability of the instrument item (statement) is 0.90 in a good category. Meaning that the quality of the items in the instrument is good so that it can and is feasible to use in career success research and can reveal career success in respondents. At the same time, the person's reliability (respondent) is 0.85 in a good category. Meaning that the consistency of the respondent in choosing a good statement. The separation value for the person (respondent) is 2.42; by entering the separation formula, the result is 3.56, meaning that there are 4 groups of respondents. Meanwhile, the separation value for items is 3.06; by entering the separation formula, the results are 4.41, meaning there are 4 groups of objects. Then the Cronbach's alpha value is 0.91.

Conclusion

This study produced 49 valid and reliable The Adolescent Career Success Instrument (ACSI) items based on the analysis of the Rach Model. The Cronbach instrument's alpha value is 0.91, which means it is in the very good category for measuring career success in adolescents. This career success instrument can be used by guidance and counseling practitioners in schools to determine the ability of students to achieve career success. Therefore, The Adolescent Career Success Instrument (ACSI) can be used as a reference and an assessment to develop students' career skills. For future researchers, this instrument can determine the prevalence of students' career success and be used as a reference for developing career guidance programs.

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