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The development and validation of student career planning inventory (SCPI)

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Abstract

The fluctuating, dynamic and unpredictable development of the work setting Emphasizes the significance of career planning. However, there is still no measurement tool for planning skills based on career construction theory. The objective of this research is to develop and validate an inventory that can measure the level of students' career planning skills based on career construction theory. This research used the ADDIE research design with five development stages including analysis, design, development, implementation, and evaluation. The resulting items amounted to 29 statement items developed from three indicators that are crystallization of vocational preferences, specification of occupational choice and actualization of occupational choice. 112 vocational students were involved in the process of analyzing the instrument validity and reliability. The results of the analysis with the Pearson Product Moment Correlation test resulted in an r-count value above 0.5 with an r-table of 0.195 so that the instrument has high validity. The reliability test with Cronbach's Alpha resulted in a value of 0.972 so that the instrument is highly reliable. Exploratory factor analysis also resulted in the finding that the inventory items developed were formed by three factors namely crystallization of vocational preferences, specification of occupational choices, and actualization of occupational choices.

Keywords: *career planning skill, career construction theory, vocational student*

Introduction

The world of work has undergone transformations due to technological advancements, globalization, and the impact of the pandemic (Lazarova, 2023). This transformation has an impact on the emergence of demands from job seekers to have various skills (Karaca-Atik et al., 2023). Individuals are required to create, invent, deal with complex problems, manage time, have a great team work, as well as a good communication directly and indirectly(Cyphert et al., 2019; Jackson, 2021), therefore they have to develop multicultural skills and other social competencies to build a collaboration effectively with people from diverse cultural backgrounds (Peter & Simatupang, 2019). But on the other hand, the high demands of the digital era are not

accompanied by good preparation for individuals to deal with it. So that the lack of knowledge and information on individuals causes less than optimal early stages of career development (Mockaitis et al., 2022). Uncertainty about the world of work and lack of career skills cause individuals to feel unprepared, which is expressed as a deficiency in practical skills, including conversational abilities, disorganization, or even lack of information about the workplace (Tham & Lynch 2019). This leads to greater competition when individuals enter the workforce. The competition causes individuals to experience changes in position, conditions, and salaries that are often less favorable (Duarte et al., 2019) which has an impact on the increasing number of youth unemployment in Indonesia.

The rapid and disruptive development of technology requires Generation Z to pay more attention to their career goals. Generation Z are individuals who are currently aged 18-29 years old or belong to the age group of teenagers and adults (Darmawani & Suryahadikusumah, 2021). According to career construction theory (Savickas, 2013; Duarte, et al., 2019; Bilon-Piórko & Rhomsen, 2022), individuals in adolescence and adulthood are in the exploration stage of career development (Savickas, 2002). Individuals have a developmental task to be able to develop successful career planning by achieving good crystallization of vocational preferences, choosing clear job specifications, and actualizing the chosen occupation (Arastaman, 2018; Savickas, 2002; Savickas et al., 2018). Counselees are helped to make career choices and build successful career plans through career construction theory, (Zacher et al., 2019). Students who lack knowledge and capabilities to plan their future career might struggle to create informed options aligned with their interests and strengths regarding their studies or future careers (Shen, 2021).

Individual career planning is interpreted as an ability to be able to plan their careers independently through various information and resources owned by individuals. From the standpoint of career construction theory, individuals not only focus on making decisions and developing career plans but also realizing individuals that career plans can change and be redesigned when facing a series of challenges and changes in their lives (Maree, 2022). Individuals who have good career planning will help individuals to adapt well, not only have a successful transition into the workplace, but also be able to attain their dream job (Valls et al., 2020). Conversely, individuals who cannot plan their careers well have an impact on the lack of maximum career decisions made, career confusion that hinders goal achievement, and the inability to adjust to various changes in the situation and conditions of the world of work (Fahmi & Ali, 2022; Jackson & Tomlinson, 2020; Kinayung et al., 2020; Nurlela & Surtiyoni, 2020). Therefore, individuals need to be helped to develop a good career plan with an approach that is in line with current developments in the work setting and economy.

One career theory that is able to cope with transformation in the work setting and current economy is career construction theory (Maree, 2022; Wehrle, et al., 2019; Savickas, 2013). In contrast to previous career theories, career construction theory incorporates several traditional career theories that take into account the changes and dynamics of today's work (Reysen et al., 2017). Career construction theory not only matches individuals to specific jobs based on their skills and interests but also helps individuals to construct a new career life including developing the capability to adjust to the work dynamic and recent economy (Arastaman, 2018; Briddick et al., 2018; Savickas, 2002, 2013). Therefore, career planning developed in accordance with the career construction theory is an adaptable career plan.

While career construction theory offers such a detailed explanation of responsive and proactive career advancement process, research related to this theory has not been able to fully measure the suitability and effectiveness of this theory (Rudolph, et al., 2019). Furthermore, to address counselors' needs regarding valid and reliable measurement tools to be able to measure developmental tasks in career construction theory (Savickas et al., 2018). Therefore, current career construction theory focuses on developing measurement instruments that can assess the proportions proposed by the theory (Rudolph, et al., 2019). However, previously developed instruments such as the Career Adapt-Ability Scale are used to assess adaptability of an individual

(Savickas & Porfeli, 2012), additionally, the Student Career Construction Inventory aims to measure adaptation response of the individual to their career exploration stage (Savickas et al., 2018). However, until now there has not been found a career planning measurement tool based on career construction theory. Therefore, this study aims to develop and validate an instrument that can measure individual career planning skills in accordance with career construction theory.

Method

The objective of this research is to formulate the Student Career Planning Inventory (SCPI) instrument, as well as test its validity and reliability and test the number of dimensions that make up the SCPI items. To achieve these objectives, various procedures were carried out including, (1) developing instrument items; (2) conducting construct validity tests on 2 career guidance and counseling experts; (3) distributing the SCPI instrument; (4) testing the SCPI instrument validity and reliability utilizing SPSS 25; and (5) conducting factoring analysis using SPSS 25.

In this research, the sample involved 112 students of class XI at SMK Diponegoro Tumpang Malang, involving 57 male students and 55 female students. In order to obtain a randomly selected sample, the SCPI instrument was distributed online. Based on their majors, 24 participants came from Computer and Network Engineering Major, 9 participants came from Visual Communication Design Major, 31 participants came from Automotive Engineering Major, 21 participants came from Health Services Major, and 27 participants came from Hospitality Major.

The SCPI instrument development process begins with developing indicators, descriptors, and statement items based on individual career development tasks in the exploration stage according to career construction theory. The answer options on the SCPI instrument use a Likert scale with 4 answer options, namely, (1) Strongly Disagree / Never, (2) Disagree / Rarely, (3) Agree / Often, and (4) Strongly Agree / Always. The second stage is to distribute the SCPI instrument online to the subject, namely students of SMK Diponegoro Tumpang Malang. In the third stage, an expert test of the SCPI instrument was conducted to career guidance and counseling experts whose results were analyzed by the interrater agreement model (Gregory, 2015). The interrater agreement model assesses the overall content by looking at the agreement of 2 or more experts. The formula is presented below and the guidelines for interpreting the results of the analysis of expert testing in career guidance and counseling are presented in Table 2.

Table 1. Expert Judgement

		Expert Judgement 1	
		Low Relevance (1-2)	High Relevance (3-4)
Expert Judgement 2	Low Relevance (1-2)	A	B
	High Relevance (3-4)	C	D

Table 2. Interpretation of Career Counseling Expert Judgement Analysis Result

No.	Expert Index Level	Category
1.	$0.80 < rxy \leq 1.00$	Very High
2.	$0.60 < rxy \leq 0.80$	High
3.	$0.40 < rxy \leq 0.60$	Fair
4.	$0.20 < rxy \leq 0.40$	Low
5.	$0.80 < rxy \leq 0.20$	Very Low
6.	$rxy \leq 0.00$	Invalid

The fourth stage is to test the validity and reliability of the SCPI instrument items. The instrument validity test was carried out with the Pearson Product Moment Correlation test. If the Sig value. (2-tailed) <0.05 then the instrument item is considered valid. Concurrently, the Cronbach Alpha test is utilized to test the reliability of the data. In this context, on the condition that the significance is> 0.7 compared to the instrument item, it is said to be reliable. In the fifth stage, factoring analysis is carried out using the EFA test. If the KMO-MSA (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) value is > 0.5, the sample is considered sufficient and if the Bartlett's Test significance value is < 0.5, the instruments are considered correlated. Then we can see the grouping of items based on their factors through the Rotated Factor Matrix results

Findings

The development of SCPI instrument items begins with developing an instrument lattice which includes 3 indicators and 5 descriptors in table 3.

Table 3. Student Career Planning Inventory Instrument Grid

Indicator	Descriptors
Crystallization of vocational preferences	Knowing the concept of self and work
	Have the skills to connect self-concept and occupation through the stages of matching, planning and problem solving
Specification of occupational choice	Determine an occupational choice based on in-depth exploration of various occupational options
Actualization of occupational choice	Develop skills that support the desired occupation
	Trying out different types of related occupations leading to a process of elimination

Based on the lattice, instrument items totaling 29 statements were developed. The next stage is to test the construct validity to 2 experts in career guidance and counseling, the findings are presented in table 4.

Table 4. Expert Judgement on the Suitability of Items with Indicators and Descriptors

Item	Assessment		Description
	Expert 1	Expert 2	
1	4	4	D
2	4	4	D
3	4	4	D
4	4	4	D
5	4	4	D
6	4	4	D
7	3	4	D
8	3	4	D
9	4	4	D
10	4	4	D
11	3	4	D
12	3	4	D
13	4	4	D
14	4	4	D
15	4	4	D
16	3	4	D
17	4	4	D
18	3	4	D
19	3	4	D
20	4	4	D
21	4	3	D
22	4	4	D
23	4	4	D
24	4	3	D
25	4	3	D
26	4	3	D
27	4	3	D
28	4	3	D
29	4	3	D

The data was then analyzed using the expert judgement agreement index as follows in Figure 1.

$$\text{Indeks Uji Ahli} = \frac{29}{0+0+0+29} = \frac{29}{29} = 1$$

Figure 1. Expert Judgement Result

The expert test index value gets a result of 1, meaning that the two career guidance and counseling experts are highly valid. Therefore, it can be inferred that the SCPI instrument constructed has very high acceptability.

The fourth stage is to assess the instrument validity and reliability. The Pearson Product Moment Correlation test results are identified through comparing r-count with r-table in table 5.

Table 5. Correlation value of SCPI item

Item	r-table	r-count	Description
1	0.195	0.658	Valid
2	0.195	0.676	Valid
3	0.195	0.678	Valid
4	0.195	0.752	Valid
5	0.195	0.698	Valid
6	0.195	0.753	Valid
7	0.195	0.775	Valid
8	0.195	0.642	Valid
9	0.195	0.792	Valid
10	0.195	0.739	Valid
11	0.195	0.798	Valid
12	0.195	0.824	Valid
13	0.195	0.825	Valid
14	0.195	0.756	Valid
15	0.195	0.766	Valid
16	0.195	0.712	Valid
17	0.195	0.752	Valid
18	0.195	0.605	Valid
19	0.195	0.501	Valid
20	0.195	0.723	Valid
21	0.195	0.647	Valid
22	0.195	0.844	Valid
23	0.195	0.797	Valid
24	0.195	0.519	Valid
25	0.195	0.820	Valid
26	0.195	0.772	Valid
27	0.195	0.721	Valid
28	0.195	0.746	Valid
29	0.195	0.736	Valid

In table 5, it is known that r-calculated exceeds the r-table, there it is affirmed that the SCPI instrument developed have very high validity. While the Cronbach Alpha test results show the results in Table 5.

The result of The Cronbach's Alpha shows that the reliability test shows a score of 0.972, so it can be concluded that the SCPI instrument is highly reliable. The fifth stage conducts exploratory factor analysis using the EFA test (Retnawati, et al., 2015). The KMO-MSA value shows the result of 0.937 and the Bartlett's Test significance value is at 0.000. This shows that the instrument items developed as a whole are very valid and interconnected items. Furthermore, the Rotated Factor Matrix shows the following results.

Table 6. Rotated Factor Matrix Result

Rotatad Factor Matrix			
	Factor		
	1	2	3
Item 22	.837		
Item 23	.726		
Item 26	.714		
Item 25	.709		
Item 20	.704		
Item 13	.680		
Item 29	.664		
Item 6	.640		
Item 12	.610		
Item 17	.593		
Item 28	.585		
Item 1	.544		
Item 21	.468		
Item 19	.417		
Item 9		.793	
Item 11		.710	
Item 8		.631	
Item 10		.585	
Item 14		.583	
Item 16		.578	
Item 3		.541	
Item 7		.536	
Item 15		.533	
Item 24		.376	
Item 4			.815
Item 5			.714
Item 2			.629
Item 18			.547
Item 27			.516

The table shows that the EFA test can group 29 SCPI items into three dimensions/factor groups. Item numbers 22, 23, 26, 25, 20, 13, 29, 6, 12, 17, 28, 1, 21, and 19 cluster in the first factor group. Item numbers 9, 11, 8, 10, 14, 16, 3, 7, 15, and 24 cluster on the second factor group. While item numbers 4, 5, 2, 18, and 27 clustered in the third factor group.

Discussion

The objective of this research is to formulate a Students Career Planning Inventory that has been tested for validity and reliability. The results showed that this instrument has good validity and reliability as a whole and each item. The findings of this research answer the demand to develop the instruments that specifically measure individual ability to plan their career. The outputs of the SCPI instrument expert test to career guidance and counseling experts resulted in the finding that it has an index value of 1, which means that the SCPI instrument has very high acceptability. Furthermore, the validation testing was conducted utilizing the Pearson Product Moment Correlation test. It compares the r-count with the r-table obtained. If r-count has a higher value than r-table, then the instrument item is considered valid (Puspasari & Puspita, 2022). The results of the validity test indicate that the r-calculated values for all SCPI items exceed the corresponding r-table values. Therefore, it can be inferred that all SCPI items have a very high validity value. While in the reliability test using the Cronbach Alpha test, it is known that the reliability test shows a score of 0.972. Instrument items are said to be highly reliable if they have an Alpha Cronbach value of more than 0.70 (Streiner, 2003). Considering this, it can be asserted that the SCPI instrument items created are highly reliable.

This study also produced one important finding, namely in the Rotated Factor Matrix table, it is known that SCPI items cluster into three factors. The SCPI itself was developed on three

factors, namely crystallization of vocational preferences, specification of occupational choices, and actualization of occupational choices (Savickas, 2002). The first factor, the crystallization of vocational preferences, is interpreted as the task of exploring extensively the work environment that suits the individual (Arastaman, 2018). In this developmental task, individuals are required to be able to understand and connect self-concept with work (Savickas et al., 2018). In the second factor, namely the specification of job choices, individuals are required to have the readiness to make career decisions based on previously formed self-concepts and occupations (Savickas, 2002). In the third factor, individuals are required to be able to develop plans to achieve career choices that have been made previously (Arastaman, 2018). The findings of these three factors also distinguish previously developed instruments from career construction theory such as the Career Adapt-Ability Scale (CAAS) and the Student Career Construction Inventory (SCCI). The CAAS instrument was developed based on four main dimensions, namely curiosity, concern, confidence, and control (Savickas & Porfeli, 2012). Meanwhile, the SCCI instrument was developed based on several dimensions, including crystallizing dimension, exploring dimension, deciding dimension, and preparing dimension (Savickas et al., 2018).

This study has several limitations and shortcomings, namely (1) the research sample only includes vocational students from one school with Computer and Network Engineering, Visual Communication Design, Automotive Engineering, Health Services, and Hospitality majors so that the results of this study cannot be widely generalized; and (2) the development of instrument items is based on 3 factors found by researchers so that further research is needed to prove whether there are other factors that build career planning skills constructs according to career construction theory.

Conclusion

In accordance with the previous discussion, it is apparent that the SCPI instrument that has been developed is a highly reliable and valid instrument. The 29 SCPI items are clustered on three factors namely crystallization of vocational preferences, specification of career choices, and actualization of occupational choices. However, this study also has weaknesses and limitations that need to be refined in future studies such as trial samples that are limited to vocational students and the possibility that there are other factors that can divide the instrument items that have been developed.

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