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Initial Development and Validation of the Career Readiness Cognitive Information Processing Module Among University Students

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The career development of university students is a transition process from education to career that needs them to be ready to plan, explore, make choices and make career decisions appropriate with one's interest, talent and ability. Career readiness can be enhanced through involvement of the students in suitable career development programs. Thus, the Career Readiness Cognitive Information Processing Module (CRCIPM) was developed as an intervention aimed to increase the students' career readiness. This module consists of three sub-modules, which are knowledge sub-module, decision making sub-module and information processing sub-module; and thirteen activities that were developed based on Cognitive Information Processing (CIP) theory. The research aim to analysis the content validity and reliability of CRCIPM. This research used the descriptive research design, where the expert consensus percentage value and module's content validity coefficient as well as reliability coefficient were obtained using the Alpha Cronbach coefficient internal validity. Meanwhile, a total of 28 students were used as the samples of the pilot test in order to obtain the reliability coefficient value of the modules. The questionnaire consisted of four items which were: the module content is suitable for the targeted population, the module content can be implemented successfully, the module content can increase career readiness and the module content can modify the career thoughts. The research findings showed that the value of content validity coefficient was .955 and based on the sub-modules and activities was .934. The findings of the pilot test showed that the module's Alpha Cronbach value of reliability was .945. This proves that the CRCIPM has high content validity and reliability, and therefore is suitable to be implemented on the university students that

have low or moderate level of career readiness. Further research needs to be done in order to test the effectiveness of the module on the population. This research contributes to the development of the module in career counselling for higher education students.

Key words: *Career readiness, career module, Career Readiness Cognitive Information Processing Module (CRCIPM), content validity, reliability, university students.*

Introduction

The career development of university students in the 21st century emphasises technological skills of the graduates' knowledge, skills and ability to fulfil the needs of the job market (Othman, 2016). The job market needs graduates who are competent and skilled in their respective field (Ishak et al., 2008; National Higher Education Research Institute, 2003). Thus, the graduates who are required to meet the needs of the market need to be evaluated regarding their ability to secure a job after graduation. The benchmark of universities producing competent and highly skilled graduates influences the nation's policies (Zailan, 2007; David and M 2017). Based on the current situation, it was admitted and confirmed that the produced graduates lack in knowledge and skills required by the job market (National Higher Education Research Institute, 2003). The issues regarding jobless graduates and graduates who are still looking for jobs became an obstacle for the universities and the industry players, hence they have to find a solution together (Zaini, 2009).

In the efforts of increasing the marketability of the graduates, the universities have played their roles by providing counselling and guidance services such as career guidance and counselling, career carnivals, career workshops, and other career development programs (Zalizan et al., 2014). At the same time, Malaysia is no exception to introducing related policies such as the National Graduates Employability Plan 2012 – 2017 that aims to ensure that the focus is given in the provision of trainings, knowledge and skills appropriate to the need of the job market (Ministry of Higher Education in Malaysia, 2012). Following that, the challenges faced by the universities in the 21st century are seen as the best platform to provide trainings and produce graduates who are knowledgeable, skilled and capable of fulfilling the need of a knowledge-based economy.

Career programs are able to increase the career readiness of the students especially in the aspects of career planning to fulfil the needs of the job market. The emphasis of the career programs should be on characteristics such as providing career programs suitable with the need of the students; providing substantive trainings to certain skills; the content of the programs include looking for and retaining a job; and provide supervision on related activities at the

workplace. Alternatively, Zunker (2006) suggested three types of psycho-education workshops which are (i) job searching skills; (ii) working climate and; (iii) lifestyle skills. Meanwhile, Spokane (1991) also suggested few career interventions such as individual career counselling, evaluation, career decision making and group interaction.

Literature Review

Career readiness programs

Past studies found that undergraduate students have low and moderate career readiness (Mansor & Tan, 2009; Maznizam & Abdullah, 2013; Mohd Izwan et al., 2019; Zalizan et al., 2014) Career readiness is a predicting factor of the higher education students' ability in preparing themselves with systematic career planning and explorations. Career readiness is influenced by the individual's ability to make suitable career choices by considering factors that influence career development such as family, organisation, society and economy (Reardon et al., 2012; Sampson et al., 2013; Ghosh, 2018).

The ability to make career decisions are related to the career thoughts that involve feelings, thoughts, attitudes, and expectations of beliefs (Bullock-yowell et al., 2013). Dysfunctional to career thoughts is the non-functioning of the individual's thinking that will affect their ability to solve problems and make career decisions. Thus, identifying the negative career thoughts can help in planning suitable intervention strategies (Andrews et al., 2014; Sidiropoulou-Dimakakou et al., 2012; Thrift et al., 2012). The concept of self-efficacy is defined as the individual's ability to justify their ability in order to arrange and implement needed action plan to achieve their aim. It is not only about possessing the career-related skills and knowledge, but also the ability to contemplate about what needs to be done based on the possessed knowledge and skills (Bandura, 1986). Self-efficacy functions as the regulator that involves processes like thinking, motivation, affective and physiology (Betz & Luzzo, 1996). Therefore, dysfunctional career thoughts and career self-efficacy are elements that can measure the level of career readiness in the process of career development and these elements can be learned and enhanced through a systematic method. According to Andrew et al. (2014), the career self-efficacy variable has a relationship with dysfunctional career thoughts. An individual with a high level of career self-efficacy is able to make career decisions because he/she has positive career thoughts.

Career programs intend to provide career education to related students regarding the career world awareness, wide orientation for jobs, deep exploration on selected groups, career readiness and understanding of the economic system where a job is a part of it and a place for all the students. Module is defined as a complete set and a planned free unit in the learning activities to help students achieve the established objectives (Goldschmid & Goldschmid, 1972). Meanwhile, Russell (1974) defined module as a teaching package related to a concept

of subject. Usage of the modules as an intervention in career programs is a structured and planned approach. Past studies related to development and evaluation of modules as career interventions found that it has positive effects on the students. The career program assisted by the modules that were developed based on the CIP theory aims to reduce the dysfunctional career thoughts and increase the students' ability to make career decisions (Reardon et al., 2006; Gibson, 2016). This was proven through a local research study related to module development based on CIP theory that was tested on form four students (Nur Liyana et al., 2016) and a foreign study (Bullock et al., 2014; Osborn et al., 2016; Perry, 2012; Thrift et al., 2012) that found CIP intervention was effective in reducing the dysfunctional career thoughts and increasing the ability to make career decisions. Thus, CRCIPM was designed as an intervention of implementing psycho-educational career programs aimed to assist the undergraduate students in increasing their career readiness.

Validity and reliability of the module

Past studies related to development and implementation of modules highlighted one of the suitable interventions to overcome the issue of students' career development. The study was tested for validity and reliability using the same method applied in this study. Some of the previous studies have proven to have high validity and reliability such as a Career Planning Module (Amla, Mizan & Salleh 1997); an Integrated Career Development Module (Sidek, 1992); The Advanced Program Module (Jamaludin, 2002); a Career Planning Workshop (Abd Hanid, 2007); a Career Awareness Module (Mohd Ali Jaamat, 2010); a Career Exploration Program (Lau Poh Li, 2010); a Rational Emotive Education Module (2014) and a Career Thought Adjustment Module (Nur Liyana, 2016).

Previous studies have found that the method of content validity is used to determine the percentage of students expert consensus is high at > .70 (Fraenkel et al., 2012). This research uses the survey of content module validity format adapted from Jamaludin Ahmad (2002). Meanwhile, in this research, two sets of content validity survey adapted from Jamaludin (2002) and Mohamad Aziz Shah (2015) is used.

Studies from few other researchers have also found that the content validity of this module is high from .70 to .90 (Abd Halit, 2007; Jamaludin, 2002; Jasmi Talib, 2014; Lau Poh Li, 2010; Mastura, 2011; Mohd Ali, 2010; & Nur Liyana, 2016). Besides that, the researcher also conducted a pilot study and uses Cronbach Alpha coefficient as a measure of the reliability of the module with the minimum coefficient $\alpha > .70$. The reliability survey used to collect data is the survey built based on the objective of the module. In addition, the respondents that were involved in the pilot study all possessed homogeneous properties in accordance to the experimental study. Hence, this study used the same method as previous studies in evaluating the reliability and validity of the module.

Meanwhile, previous studies focused on a population of school-aged students, compared with this study which focused on university students with age ranging from 19 to 25 years old. Another distinct feature of this study is that it employs the manner of analysing the module and activity specifically compared to previous studies that only evaluate the content validity in general. This study aims to expand new ways to produce research in building effective career modules targeted for the university students whilst exploring the application of Cognitive Information Processing theory in running a career intervention (Peterson et al., 2012). In general, this research intended to measure the content validity and reliability of CRCIPM. The specific objectives of this research were (i) to determine the content validity of CRCIPM; and (ii) to determine the reliability of CRCIPM.

Research Methodology

This research used the descriptive research design, where the expert consensus percentage value and module's content validity coefficient as well as reliability coefficient were obtained using the Alpha Cronbach coefficient for internal validity. The content validity of the module was determined through expert consensus evaluation which consisted of eight experts that were appointed based on criteria such as: having experience in module development, experience in teaching, have written articles related to module development, given lectures related to module development and developed and implemented module in the university setting. Five of the experts were appointed among lecturers of University of Malaya (UM), University of Technology Malaysia (UTM), Universiti Pendidikan Sultan Idris (UPSI) and Institut Pendidikan Guru (IPG). Meanwhile three more experts were appointed among counselling practitioners in National University of Malaysia (UKM).

The content validity questionnaire used the modified questionnaire of Jamaluddin (2002) adapted from Russell (1974). The questionnaire consisted of four items which were: the module content is suitable for targeted population, the module content can be implemented successfully, the module content can increase career readiness and the module content can modify the career thoughts. The answer choices were five point Likert scales with (5) strongly agree, (4) agree, (3) not sure, (2) disagree, and (1) strongly disagree. The content validity questionnaire for each of the sub-modules and activity used the format put forward by Mohamad Aziz Shah (2015). That questionnaire was modified according to the needs of the CRCIPM which has three sub-modules of knowledge, decision making and executive processing. All the three sub-modules were arranged based on the activities that are provisioned in each of the sub-modules. Answer choices used the semantic scales of 0 (strongly disagree) to 10 (strongly agree). A complete draft of the CRCIPM module with a copy of the content validity questionnaire and letter of appointment were given to all the appointed experts. The data were analysed descriptively to obtain the percentage value of expert consensus and the

content validity coefficient. The determination of whether the content validity is good or not was based on the opinions Sidek and Jamaludin (2005), who stated that an achievement of 70% and above is deemed a high achievement. On the contrary, if the score is below 70%, it is deemed that the content validity is not good. Apart from that, the experts also gave their opinions and comments in order to improve the content of the module.

The module reliability analysis was carried out involving 28 subjects who were first degree students in one of the university colleges in Selangor. The research subjects were involved in the career readiness program for a period of six weeks which meant six meetings and thirteen activities (refer to Table 1). The delivery method for each of the activities was implemented in large groups and carried out in a completely furnished room. The module reliability questionnaire consisted of 51 items that were developed based on the objectives of the module activities as suggested by Jamaludin (2007); Sidek & Jamaludin (2005) and Vale (1998). The answer choices were five point Likert scales with (5) strongly agree, (4) agree, (3) not sure, (2) disagree, and (1) strongly disagree. The questionnaire was analysed descriptively in order to obtain the value of reliability coefficient. The minimum value that can be used in analysis is Alpha Cronbach ($\alpha > .70$) as suggested by Fraenkel et al. (2012).

The career readiness cognitive information processing module (CRCIPM)

The assumptions of CIP theory are based on cognitive theory which emphasizes: i) the aspects of problem solving and making career decisions; ii) understanding the positive and negative effects of meta-cognition in the context of problem solving and making career decisions; and iii) the concepts of interactions and design to increase skills in solving career problems that are influenced by the disturbances of thoughts (Bertoch et al., 2013; Gisore & Were 2017) and making decisions (Peterson et al., 1996). In other words, this approach is a career development process that applies the model of career decision making (Paivandy et al., 2008). The uniqueness of this theory compared to other theories is that this theory focuses on cognitive, emotions, learning, decision making and practice (Reardon et al., 2011).

The CRCIPM was outlined and developed based on three main CIP domains known as the pyramid of information processing domain in career decision making (Peterson et al., 1996). The development of the CRCIPM was based on the three domains known as sub-module of knowledge, sub-module of decision making and sub-module of executive processing. As the result, thirteen activities have been developed based on the CIP information processing pyramid. The delivery of all the activities were categorised based on the processes that consisted of six units such as self-knowledge; occupational knowledge; engagement; understanding and identifying choices; decision making and action; reflection and termination (Mohd Izwan et al., 2016; Goral & Akgoz 2017). Each unit is related to the following unit, in

other words, all the units form a dynamic process. Table 1 shows the content of CRCIPM in a detailed summary.

Table 1: Summary of CRCIPM Module Content

Sub Modules	Unit	Activities
Knowledge	Self-Knowledge	1. Knowing Yourself
		2. SWOT Analysis
	Occupational Knowledge	3. Career Needs
		4. Career Matching
Decision Making	Engagement	5. Career Genogram
		6. Career Barriers
	Understanding and Identifying Choices	7. Career Reflection
		8. My Career Choices
	Decision Making and Action	9. Scaling
		10. My Way
Executive Processing	Reflection and Termination	11. My Promise
		12. Magic Mirror
		13. My Career Decision

Results and Discussion

Research findings discussed based on two main objectives (i) content validity of CRCIPM; and (ii) reliability of CRCIPM. The first objective was analysed using descriptive analysis of the percentage of expert consensus through content validity. The second objective was analysed using coefficient value, Alpha Cronbach $\alpha > .70$.

The content validity of CRCIPM

The expert group have done the evaluation on the overall content validity of the module using the questionnaire developed by Jamaludin (2005) adapted from Russell (1974). Table 2 presents the expert consensus findings which shows that the minimum percentage obtained was 90% for the 'module content can be implemented successfully' item and the maximum percentage obtained was 100% for the 'module content can increase career readiness of the students' item. Thus, overall score obtained for all the items was 95.5% which equals to coefficient of content validity .955 > .70 and proved that this module has high and good content validity.

The expert group have evaluated the content validity of sub-modules and activities using the questionnaire modified from Mohamad Aziz Shah (2010). Table 3 shows the content validity of sub-modules and activities. The findings showed that the content validity coefficient was

.933 which is above the minimum value of .70. The comparative analysis according to sub-categories showed that value of knowledge sub-module was .922, the decision-making sub-module was .932 and the executive processing sub-module obtained the highest coefficient value of .962. When compared based on the activities, *My Career Choices* and *Magic Mirror* acquired the highest validity coefficient of .975. In the meantime, the activity that obtained the lowest value of .90 was *Career Genogram* and *Career Barriers.* This shows that there is no existing coefficient value differences between the maximum and the minimum, the overall value of CRCIPM based on the evaluation done by the experts on each sub-modules and activities showed that the expert consensus was above the minimum value of .70 these findings showed that the CRCIPM has high and good content validity.

Table 2: Content Validity of CRCIPM based on Russell (1974) and Sidek & Jamaludin (2005).

No.	**Statement**	**Percentage (%)**	**Content Validity Coefficient**	**Expert Opinion**
1.	The module content is suitable for targeted population.	97.5%	.975	Accepted
2.	The module content can be implemented successfully.	90%	.900	Accepted
3.	The module content is appropriate with the time allocated.	92.5%	.925	Accepted
4.	The module content can increase the career readiness of students.	100%	1.00	Accepted
5.	The module content can modify the career thoughts of students.	97.5%	.975	Accepted
Total Overall Percentage		**95.5%**	**.955**	**Accepted**

Table 3: Content Validity and Reliability Coefficient Value of CRCIPM Sub Modules and Activities

Sub Modules and Activities	Percentage (%)	Content Validity Coefficient	Reliability Coefficient *Alpha Cronbach (α)* N = 28
Knowledge Sub Module	92.20	.922	.839
Activity 1: Knowing Yourself	93.75	.937	.833
Activity 2: SWOT Analysis	92.50	.925	.703
Activity 3: Career Needs	91.25	.912	.829
Activity 4: Career Matching	91.25	.912	.705
Decision Making Sub Module	93.21	.932	.919
Activity 5: Career Genogram	90.00	.900	.918
Activity 6: Career Barriers	90.00	.900	.794

Activity 7: Career Reflection	91.25	.912	.732
Activity 8: My Career Choices	97.50	.975	.881
Activity 9: Scaling	93.75	.937	.852
Activity 10: My Way	96.25	.962	.792
Activity 11: My Promise	93.75	.937	.912
Executive Processing Sub Module	96.25	.962	.897
Activity 12: Magic Mirror	97.50	.975	.822
Activity 13: My Career Decision	95.00	.950	.866
Total Value of CRCIPM	93.36	.933	.945

Reliability analysis of CRCIPM

Findings in Table 3 showed that the overall reliability coefficient value, Alpha Cronbach, for CRCIPM was α = .945. The reliability coefficient value for knowledge sub-module was .839, for decision making sub-module was .919, and for executive processing was .897. Analysing the reliability coefficient value for activities, activities that obtained the highest value were *Career Genogram* (α = .918) and *My Way* (α = .792). On the other hand, the activities that obtained the lowest reliability coefficient value were *SWOT Analysis (α = .703), Career Matching (α = .705)* and *Career Reflection (α = .732).* Thus, the reliability coefficient value of CRCIPM, sub-modules and activities are high, α > .70. This implies that the CRCIPM has high reliability and can be accepted to be used in experimental studies as an intervention to increase the career readiness of final year first degree students.

The basis of CRCIPM development were the literature analysis related to career readiness, the population of higher education and suitability of career theories. The CIP theory was among one of the appropriate theories to be used as the theoretical framework in module development because its core, concept and technique explain to the students' career readiness especially college and university students. Apart from that, this theory also put forward the concept or cluster that can be translated into implementation for the intervention (Reardon et al., 2012). There were a total of thirteen activities that were developed and this contributes towards exploration of new knowledge in the implementation of career interventions that are suitable with the population.

According to Sidek and Jamaludin (2005), a good module should measure three main aspects which are content validity, reliability and effectiveness. All these three aspects could increase the strength and quality of the module. This research found that CRCIPM, submodules and activities have high content validity value. This finding is parallel with the study done by Jamaludin (2002); Abd Halit (2007); Lau (2010); Amla et al. (2013); Jasmi et al. (2015) and Nur Liyana et al. (2014) that also utilised the similar content validity testing procedures as this research. Meanwhile, CRCIPM also have high reliability values for sub-modules all the three

sub-modules of knowledge, career decision-making and executive processing. This findings are parallel with past studies of few researchers that showed their career development modules also have high reliability value (Jamaludin, 2002; Abdul Halit, 2007; Lau, 2010; Nur Liyana, 2016; Ganesan et al., 2019).

Therefore, the content validity and reliability analysis for the overall module and sub-modules are high and accepted, which implies that the CRCIPM can be used and tested for its effectiveness on the university student population. With the establishment of this module, it can contribute towards career intervention studies at the level of Higher Education Institutions (HEI), including HEI career counsellors who can use this module in carrying out career development programs; stakeholders such as Ministries, Universities and Counselling and Career Centres; and also, university students can benefit from this module.

Conclusion

As a conclusion, this module was developed based on the concepts and cluster of CIP that can explain the measured constructs, observed and produced module activities that can be evaluated objectively. The high value of content validity and reliability showed that CRCIPM can be used in the real field to test its effectiveness through experimental research on undergraduate students that have low and moderate level of career readiness. In total, this module is able to open up opportunity for explorations of knowledge related to the application of CIP career theory in the career intervention implementation among undergraduate students.

Limitations and Suggestion

The descriptive study to determine the validity and reliability of the CRCIPM module among university students. The findings of this study cannot be generalized as they only involve a pilot study of respondents in a public university. Also, the numbers of respondents in the pilot study need to increase to ensure the quality of the CRCIPM module. Future studies need to measure the effectiveness of CRCIPM conducting true experimental study including random assignment for both experimental and control group. The experimental studies are needed to measure the effectiveness of CRCIPM to student's career readiness. In addition, it involves a variety of respondents including education level, gender, socioeconomic status and field of study. This comparison aims to ensure that the CRCIPM module is effective for different populations.

Thus, future studies should focus on experimental research design in order to evaluate the effectiveness of this module. True experimental research design could be used with random control group, pre-test and post-test that have good internal and external validity (Fraenkel et al., 2012 & Kirk, 2014). Apart from that, past studies also suggest that effectiveness of

intervention should also have follow up testing after a certain period of intervention termination. The purpose of this is to measure the stability and consistency of effectiveness of a certain intervention on the studies dependent variables (Hirschi & Läge, 2008; Jasmi et al., 2014)

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