

The Early-Stage Development and Content Validity Examination of Ubaya Vocational Interest Inventory

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Abstract

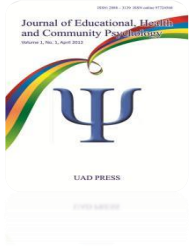
Vocational interest alignment is the key for job seekers to successfully undertake training programs. However, the assessment tool under the context of the vocational system has not been available, specifically in the Employment and Transmigration Agency of the East Java Provincial Government in Indonesia. Therefore, this research aimed to develop an online assessment to measure the vocational interest of job seekers. It generated theories and items for the Ubaya Vocational Interest Inventory (UVII) and tested the content validity. The process of developing the construct of the UVII was conducted by reviewing the descriptions of job training programs in East Java Province. The examination of content validity involved 10 panelists, and the data were analyzed by the coefficient Aiken V. Based on the categorization of all training program reviewed, the results showed that there were 20 categories of vocations encompassing 4 clusters of interests, which were services, agriculture, arts, and engineering. There were 10 items developed for each category of vocational interest. The content validity examination found that 152, 32, and 16 items at 76%, 16%, and 8% were good ($V > 0.70$), fairly good ($V = 0.50 - 0.69$), and poor ($V < 0.50$), respectively. The findings indicated that most of the developed items represented the constructs measured. However, items in the fairly good category need to be revised, and those in the poor category should be changed with the new items.

Keywords: assessment tool development, vocational interest, content validity

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Introduction

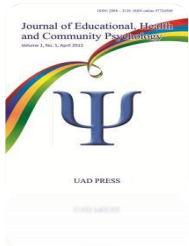
Research suggested that many factors influence human behavior in many settings, with interest as the most prominent. Behavior at work, school, and even in leisure time is heavily affected by vocational interest (Nye, 2021). Nye (2021) showed that job satisfaction and motivation are not only the direct outcomes of vocational interest but also mediate the correlation between interest and behavior at work. This research conducted by Nye (2021) indicated that vocational interest directly affected aspects such as employee performance, citizenship behavior, counterproductive behavior, and turnover. Some of this relationship is mediated by motivation and satisfaction.



Some greatest theorists have widely constructed the relationship between vocational interest fit and satisfaction. Holland (1997) proposed that the most prominent impact of vocational interest is satisfaction. An adequate amount of research examined the correlations between interests and satisfaction. Despite the disappointing findings, recent research suggested that the correlation between interest and satisfaction is higher. A meta-analysis by Hoff, Song, Wee, Ming, Phan, and Rounds (2020) indicated a correlation of 0.19. This research validated Holland's (1997) claim that vocational interests impact satisfaction. The other variable related to vocational interest is motivation. However, the correlation between interests and motivation has been studied less frequently.

Even though three prior meta-analyses did not find a statistically significant correlation between interest fit and job satisfaction (Assouline & Meir, 1987), the research conducted by Hoff (2020) found some new results. First, a statistically significant true score correlation ($\rho = 0.19$) between vocational interest fit and job satisfaction was obtained. The second finding was that interest has different relations with facets of job satisfaction. It was strongly related to satisfaction with job choice and organization. In addition, it also affects a person's achievement in the career area (Jansen, Lüdtke, & Schroeders, 2016; Li & Yang, 2016). This finding supported Holland's (1997) hexagonal model of vocational interest.

There is a large amount of vocational interest inventory, some of which had been validated in Indonesia. Even though it is very limited, inventories are also created in Indonesia. They were often generic and could not fit perfectly with the Indonesian vocational educational system. The results of existing inventories should be interpreted qualitatively into a specific job title. Further explanation of these inventory's disadvantages are explained in the next following parts. Some of the most famous vocational interest inventories are Kuder Preference Record Form C (Kuder, 1948) and The Rothwell Miller Interest Blank (RMIB) (Miller, 1958; Rothwell, 1947). Meanwhile, Kuder Preference Record Form C has some weaknesses (Kelly, 2002). The activity and occupations listed are irrelevant to the newest update of the job profile. This inventory is also limited in administration and can only be given in a paper-based form. The theoretical construct is also not linked to Holland's hexagonal model (Holland, 1997). RMIB test has weaknesses in its reliability and validity (Yudiana, 2019). The



only interest in the scientific dimension is reliability. This inventory is significantly different from the construct being measured.

Indonesia does not have a sufficient vocational interest inventory relevant to the education and work system. Therefore, this current research aims to develop the Ubaya Vocational Interest Inventory (UVII), specifically created based on the Indonesian Ministry of Labor job profile. The Ministry of Education through Culture, Research, and Technology, Matching Fund Program of Kedaireka, the Employment and Transmigration Agency of the East Java Provincial Government, and the University of Surabaya funded this research.

This interest inventory will be available on a digital platform, and the choice was made to ensure the inclusiveness of the measurement instrument. The tool can be used when UVII is available in digital form, and a bigger impact can be made on how the recruitment process is held. Furthermore, a future improvement in this measurement tool can be distributed thoroughly.

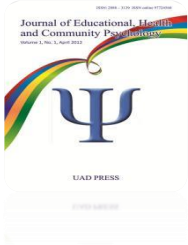
Literature Review

Holland created a model to categorize and understand individual interests. This theory is widely known as Holland's theory of vocational types, Holland's interest codes, or the RIASEC model. The model was developed by an American psychologist, John L. Holland, as part of the theory of career and vocational choice (Holland, 1958; Holland, 1959). The categories are developed based on the relationship between personality and environment. According to Holland, individuals tend to be attracted to an environment where their personality can be expressed (Deller, 1997).

This model identifies six dimensions of interest and serves as a guide to identifying individual preferences and career suitability based on vocational interests. The dimensions are Realistic (Doers), Investigative (Thinkers), Artistic (Creators), Social (Helpers), Enterprising (Persuaders), and Conventional (Organizers). Each type correlates more with the type nearby than those farther away in the hexagon (Hansen, 2019).

Holland's interest theory influenced other research to create vocational interest measurement tools. Strong blank is one of the tools created based on this model. Holland also uses the theory to create scale, the Vocational Preference Inventory (VPI), and Self-Directed Search (SDS) (Hansen, 2019). Holland (1958) developed VPI as the predecessor to SDS based on a series of theoretical and empirical reports on personality, vocational choice, and interest literature. This research identified and hypothesized factors of interest that correlated with personality, resulting in 6 dimensions. The result is seven homogeneous scales that measure Self-Control (SC) plus six types of hypotheses in Holland's theory, namely Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C). Furthermore, SDS was developed to measure these six dimensions (Hansen, 2019) available in different languages and may be utilized independently of a counselor, such as its variable readability level. The use of raw scores to calculate the total is considered inappropriate because not all parts have the same number of items, and the use of typology is inconsistent in the fourth part. There is also insufficient evidence regarding the suitability for use with minority groups such as individuals from Native American, Middle Eastern, or Asian cultures. Furthermore, no information is available on individuals with disabilities.

Another well-known vocational interest inventory is JVIS, created by American clinical psychologist Douglas N. Jackson (1929-2004). This measuring tool (published in 1977) facilitates decisions about the choice of educational and training pathways as well as other more general career planning processes. By investigating vocational interests, this measuring tool can provide a logical step for decisions leading to career choices. It is mainly used by high school, vocational (Sekolah Menengah Kejuruan), post-secondary students, and undergraduates. JVIS is intended to identify interests and offer a description of the various academic and job roles the subject may undertake. In addition, it can help adults who are looking for work and willing to change their career path. JVIS has several advantages, such as good psychometrics properties, can be administered in digital or manual form, and used in a wide variety of settings over a short period. Alongside its advantages, it has a vulnerable theoretical paradigm, and this measurement tool has a difficult and ambiguous interpretation mechanism.



Multilingual Iconographic Professional Interest Inventory (MIPII) can measure professional interest in work. It uses a graphic representation of several jobs accompanied by their names as stimuli. Male and female versions of each employment are depicted to eliminate the influence of gender prejudice. To facilitate compilation by people with different language skills, images are accompanied by job names in Arabic, German, English, Spanish, French, and Italian (Boerchi & Magnano, 2021). Furthermore, MIPII is initially targeted at children aged 8-13 but is often tested on aged 14-18. There is a possibility that these measurement tools could be used for another age group, even though it is not scientifically proven. There are 2 characteristics of users who may have benefits from MIPII, namely people from abroad and those with reading difficulties or dyslexia (Boerchi & Magnano, 2021). Some limited aspects include ambiguities of stimulus interpretation by the users. Job profiles, specifically the ones with some intellectual skill requirement, are quite arduous to illustrate.

Method

Procedure

The development of UVII was conducted in three stages. Firstly, the research team reviewed the description of the vocational program offered by the Job Training Center in East Java Province to synthesize the various clusters and categories available. This process was also conducted to determine the construct of the vocational interest test that will be developed. From this process, the research team found that there were 4 clusters and 20 vocational categories, which became the measuring construct of UVII (Table 1).

Table 1

Clusters and categories of UVII construct

Clusters	Categories	Description
Administration and Service	Language	The program is related to using foreign languages to support job functions.
	Office Administration	Office administration is a work category related to data input, reporting, and archiving activities.
	Business and management administration	Business and management are job categories related to secretarial activities, managing information, communicating, and serving customers.
	Hospitality and Tourism	Hospitality and tourism is a work category related to housekeeping service activities, making and serving food/beverages.
Agriculture	Livestock farming	Livestock farming is a job category related to breeding, maintaining, harvesting, and processing livestock farming products.
	Agricultural product processing	Agricultural product processing is a job category related to quality control, preserving, and processing agricultural products into processed consumer goods.
	Cultivation	Cultivation involves preparing planting media, watering, fertilizing, cleaning, maintaining, and accommodating plant culture products.
Art	Wicker and woodcraft	Wicker and woodcraft is a job related to woven printing patterns, operating tools, and carving wood.
	Seamstress and Batik Craft	Seamstress and batik craft work is a job category related to designing clothes, sewing, embroidery, screen printing, and batik.

Clusters	Categories	Description
Engineering	Graphic Designer	The graphic designer job category is related to designing, creating, and editing images, animation, video, and other digital works.
	Make-up artist	The make-up artist is a job category related to applying make-up, cutting and styling hair, and providing skin treatment procedures.
	Draftsman	The job category of XX relates to measuring building dimensions and constructing and designing building models.
	Electronic technician	Electronics technician is a job related to repairing and modifying electronic products such as cell phones and audio-visual products.
	Computer technician	A computer technician is a job related to developing websites and applications, repairing and maintaining computers, and installing wireless networks.
	Electricity technician	The electrical technician is a job category related to repairing, maintaining, and operating electrical equipment.
	Furniture artisan	The furniture artisan is a job category related to shaping, polishing, and painting wood on furniture products.
	Machine Operator	The machine operator is a job category related to managing, operating, or maintaining production machines.
	Welder	Welder is a job category related to connecting metal components and filling holes/indentations using welding equipment.
	Automotive Mechanic	The automotive mechanic job category is related to inspecting, maintaining, and repairing motor vehicles.
Refrigeration technician	The refrigeration technician category checks, maintains, and repairs the refrigeration system.	

The second stage in the development of UVII is creating the items derived from 20 vocational categories. The research team created 200 items in total, each category comprising 10 items. The items were created by 10 writers who understood the description of 20 vocational categories and item writing guidelines that focused on work activities.

The last stage of UVII development is to test the content validity of the 200 items compiled. The content validity test involved 50 panelists consisting of 24 undergraduate assistant lecturers, 16 postgraduate students, and 10 lecturers at the Faculty of Psychology, University of Surabaya. However, each category (10 items) was only reviewed by 10 panelists, and each panelist only reviewed 4 vocational categories (40 items). Panelists were asked to assess the items' suitability with the description of the vocational category. The options range from 1 (very inappropriate) to 5 (very appropriate). In addition, panelists can also provide suggestions for improvements to items not following the description of the vocational category. Content validity testing is calculated using the Aiken V coefficient. Based on the recommendations, the minimum acceptable coefficient range is 0.7 (Aiken, 1985). Therefore, when an item has coefficient of 0.7, then it follows the construct's description. In addition, the study also considers an item with coefficient of 0.5 – 0.69 requiring improvement and less than 0.5, which should be removed (Aiken, 1985).

Result

The results of the Aiken V coefficient found that most of the items followed the description of the vocational category. In detail, there are 152 (76%) items with Aiken coefficients above 0.7, 32 (16%) between 0.5 – 0.7, and 16 (8%) less than 0.7 (Table 2). Based on Aiken V coefficient, All items from livestock farming, agricultural product processing, plant cultivation, graphic design, and draftsman are under the description of the vocational category. On the other hand, based on Aiken V coefficient, the vocational category of office administration, business administration, management, and hospitality and tourism has only a maximum of 5 out of 10 items per the description.

Table 2
Content Validity of UVII

Clusters	Categories	Aiken V					
		< 0.5		0.5 – 0.7		> 0.7	
		f	%	f	%	f	%
Administration and service	Language	3	30%	0	0%	7	70%
	Office Administration	4	40%	2	20%	4	40%
	Business and Management Administration	0	0%	5	50%	5	50%
	Hospitality and Tourism	1	10%	5	50%	4	40%
Agriculture	Livestock Farming	0	0%	0	0%	10	100%
	Agricultural Product Processing	0	0%	0	0%	10	100%
Art	Cultivation	0	0%	0	0%	10	100%
	Wicker and WoodCraft	0	0%	3	30%	7	70%
	(Seamstress and Batik Artisan)	0	0%	2	20%	8	80%
Engineering	Graphic Designer	0	0%	0	0%	10	100%
	Make-up Artist	0	0%	1	10%	9	90%
	Draftsman	0	0%	0	0%	10	100%
	Electronic Technician	1	10%	2	20%	7	70%
	Computer Technician	0	0%	1	10%	9	90%
	Electricity Technician	1	10%	0	0%	9	90%
	Furniture Artisan	1	10%	2	20%	7	70%
	Machine Operator	0	0%	4	40%	6	60%
	Welder	2	20%	2	20%	6	60%
	Automotive Mechanic	0	0%	2	20%	8	80%
Refrigeration Technician	1	10%	2	20%	7	70%	
Total		16	8%	3	16%	15	76%
				2		2	

This finding indicated that most of the items compiled can be used to measure individual interest in a particular job profile. The content validity test ensures that the items compiled represent the construct's definition (Bandalos, 2018; Furr, 2011; Sireci & Faulkner-Bond, 2014). There are still 32 items that need to be improved in line with the description of the vocational category. In addition, 16 items need to be replaced based on the suggestions from the panelists as seen in Table 3.

Table 3
Improvement and creation of new items of UVII

Original items	Aiken V	Revised items
<i>Mampu menggunakan komputer untuk menulis laporan atau notulensi (Program Bahasa, A106)</i>	0.375	<i>Menulis laporan atau notulensi dengan bahasa yang asing</i>
<i>Menggosok pakaian (Penjahit dan Pembatik, C207)</i>	0.400	<i>Merancang pola/gambar untuk dibatik</i>
<i>Mengoperasikan program letsing (D203)</i>	0.400	<i>Menggunakan alat uji HP</i>
<i>Menebang pohon (Pengrajin Mebel, D508)</i>	0.225	<i>Mengoperasikan gergaji</i>
<i>Mengidentifikasi masalah pada logam (Juru Las, D710)</i>	0.375	<i>Memperbaiki masalah hasil pengelasan logam</i>
<i>Mengukur bahan (Pengrajin Anyaman dan Kayu, C105)</i>	0.700	<i>Mengukur bahan kayu sesuai pola</i>
<i>Memilih ingredients yang tepat untuk kulit wajah (Penata Rias, C409)</i>	0.700	<i>Memilih jenis perawatan yang tepat untuk tiap kulit wajah</i>
<i>Merancang sistem audio video (Teknisi Elektronik, D209)</i>	0.575	<i>Merakit komponen speaker pada HP</i>
<i>Menguji mesin (Operator Mesin, D605)</i>	0.625	<i>Menguji kelayakan mesin produksi</i>
<i>Membersihkan kulkas (Teknisi Refigerasi, D910)</i>	0.700	<i>Membersihkan sistem pendingin kulkas</i>

Most panelists judged items with an Aiken V coefficient of less than 0.5 that did not match the description of the vocational category. For example, the item “*menggosok pakaian* (Seamstress, C207)” was considered irrelevant to this category’s main work activity. The item “*Menebang pohon* (Furniture Artisan, D508)” is not necessarily conducted by the furniture craftsmen. In addition, some did not match the measured vocational descriptions because work activities were not emphasized under the vocational descriptions. “*Mampu menggunakan komputer untuk menulis laporan atau notulensi* (Language, A106)” was judged by several panelists as focused more on using computers than writing reports, which was not in line with the main work.

Panelists judged the items that need some improvement with an Aiken V coefficient between 0.5 – 0.7 as less specific and vaguely representing work activities in the vocational category. For example, “*Membersihkan kulkas* (Refrigeration Technician, D910)” is considered less specific to the work activities of the refrigeration technician. Several panelists also marked some items with advanced or extraneous vocabulary that prospective respondents might not understand, such as the item “*Memilih*

ingredients yang tepat untuk kulit wajah (Makeup artist, C409)". The word "ingredients" is written in a foreign language that some respondents may not understand, and should be replaced.

Discussion

The results of the Aiken V coefficient found that most of the items corresponded the description of the vocational category. Specifically, there are 152 (76%) items with Aiken coefficients above 0.7, 32 (16%) with coefficients between 0.5 – 0.7, and 16 (8%) with less than 0.7 in coefficients (Table 2). Based on Aiken V coefficient, All items from livestock farming, agricultural product processing, plant cultivation, graphic design, and draftsman corresponded the description of the vocational category. On the other hand, based on Aiken V coefficient, the vocational category of office administration, business administration, management, and hospitality and tourism has only a maximum of 5 out of 10 items per the description.

This finding indicated that most of the items compiled can be used to measure individual interest in a particular job profile. The content validity test ensures that the items compiled represent the construct's definition (Bandalos, 2018; Furr, 2011; Sireci & Faulkner-Bond, 2014). There are still 32 items that need to corresponds more with the description of the vocational category. In addition, 16 items need to be replaced based on the suggestions from the panelists.

Most panelists stated that items with an Aiken V coefficient of less than 0.5 did not match the description of the vocational category. For example, the item "*menggosok pakaian (Seamstress, C207)*" was considered irrelevant to this category's main work activity. The item "*Menebang pohon (Furniture Artisan, D508)*" is not necessarily conducted by the furniture craftsmen. In addition, some did not match the measured vocational descriptions because work activities were not emphasized under the vocational descriptions. "*Mampu menggunakan komputer untuk menulis laporan atau notulensi (Language, A106)*" was judged by several panelists as focused more on using computers than writing reports, which was not in line with the main work.

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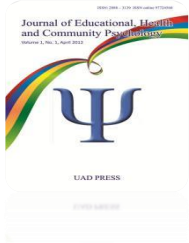
Conclusion

This research contributed to developing a vocational interest measurement tool based on Indonesian working and vocational education systems provided by East Java Department of Manpower and Transmigration. Furthermore, the development of UVII is an innovation in measuring interest. The measurement tool has focused more on the job’s general characteristics, referring to the RIASEC concept developed by Holland. This research confirmed that most items are under the description of the vocational category and can be used further.

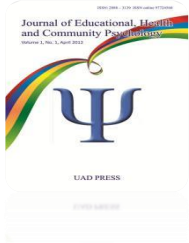
This research is still limited to the vocational category based on the programs offered at the Job Training Centers in East Java Province, and there may be many others not represented. Therefore, further research needs to be conducted to identify other vocational categories. This result is limited to testing the content validity of UVII and cannot fully describe the comprehensive validity. Further analysis is needed to test the validity based on the response process, internal structure, correlation with other variables, and assess impact. A larger scale of the interest category should also be added to obtain more representation of every vocational interest available in the Indonesian labor system.

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