

# A Study of the Reliability and Validity of Holland's RIASEC of Vocational Personalities in Arabic

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**Abstract** There certain problems appear when using English language versions of robust psychometric instruments to identify when it comes to pinpointing Vocational Personalities, in a learning environment other than English native are usually written in English, intended to be used in a Western environment. When employed in a separate language environment, there are problems during translation, as well as cultural matters. An example of this is seen where there are linguistic inconsistencies during literal question or other item translation, meaning there are minor (or major) changes in the meaning for the translates output, which alters the validity and reliability of measurement of the estimations. A word for word translation of Holland's RIASEC of Vocational Personalities was applied to 178 students at the King Abdulaziz University; this is a study that describes validity, internal reliability, factor structure and Correlation Analysis for Holland's RIASEC in Arabic.

**Keywords:** *Holland's RIASEC types, vocational interests, personality, reliability, validity, factor analysis, Correlation Analysis*

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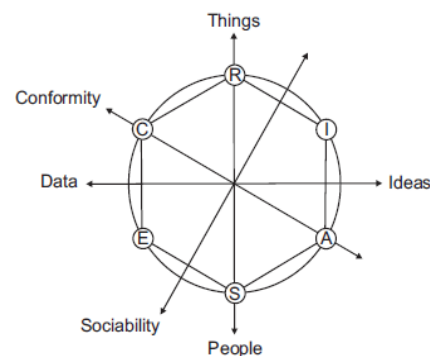
## 1. Introduction

### 1.1. Holland's Theory of Interests

Holland's [1,2] interest-based theory is split through a total of six personality types and six parallel environments: Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C)-referred to collectively as RIASEC. In the Holland model, the connection that exists amongst a human's personality and the environment they find themselves is direct: Personality is defined with regards to a person's opinions regarding work, while work environments are defined with regards to the people who are employed their and the actions they undertake. The RIASEC personality types are described through likes and dislike that affect work environments decisions, and the latter is described through common work actions and various requirements of employees. Under Holland's [1,2] theory, the six RIASEC categories are defined based on a circular ordering, with the differences amongst these being inversely proportional to how similar they are (see Figure 1).

Holland described this framework as a hexagon, but numerous other researchers have described the circular ordering and structure of the six RIASEC categories as a circumplex [3,5,6]. In most cases, research has put forward the notion that the six RIASEC interest types and work environments in the United States are, in fact, of a

circular ordering [5,6]. As a result, Holland's categorisation of interest types and parallel environments offers a collection of empirically supported reference points for describing the circumplex framework of interests.



**Figure 1.** Holland's hexagon, a circumplex model of interest structure with dimensions proposed by Hogan [3] and Prediger [7]

In Holland's RIASEC of Vocational Personalities (Arabic version), there are 106 questions, with every one needing the reader to respond with yes or no, and 18 questions can under each of the six personality types - Realistic (R), Investigative (I), Artistic (A), Social (S), and Enterprising (E). The exception is with conventional (C), being involved in sixteen questions. The questions are shown, split up, in Table 1 below. When displaying these queries to students, there were only yes or no answers provided for each question [8].

Table 1. The Questions of RIASEC

R	3	8	10	15	26	31	36	37	42	45	54	65	82
	85	96	99	100	101								
I	13	16	18	19	25	29	43	44	48	50	52	60	66
	73	76	77	93	98								
A	1	4	14	17	32	33	35	40	47	49	58	68	80
	81	90	91	102	105								
S	5	6	7	22	23	28	46	59	62	63	64	67	72
	78	84	88	94	104								
E	9	11	20	21	30	34	41	51	53	55	61	69	74
	75	89	95	97	106								
C	2	12	24	27	38	39	56	57	70	71	79	83	86
	87	92	103										

## 1.2. Reliability and Validity

Measures of reliability are employed in order to establish how consistent test scores are, and the degree to which the test results are impacted by external factors. When test reliability is greater, then there is a larger chance of there being consistency when evaluating differences amongst individuals. How reliable a tool is can be shown through correlation coefficients. A reliability coefficient is described with the letter  $r$ , and is a number between 0.00 and 1.00, where  $r=0$  denotes zero reliability, and  $r=1.00$  denoting perfect reliability. Crucially, it should be highlighted that tests are not completely reliable, so  $r=1.00$  is an impossible score to achieve. In all cases, reliability coefficients are shown as a decimal, and when this is larger, then the test scores are considered to be more reliable and consistent [9].

Validity is the second most crucial element when testing and making the decision to employ an assessment tool. Reliability concentrates on the consistency of the evaluation outcomes, whereas validity assesses usefulness. In order for a test to be considered valid, it needs to offer data that is beneficial when it comes to making decisions. Validity evidence states that conclusions and predictions are categorised through the test results.

Certain types of evidence are able to offer data based on the valid use of a test. All evidence is able to establish the level of usefulness the test will have with specific individuals and situations. It is usually the case that various validity types are examined in detail (e.g. construct validity, content validity, criterion validity), it is better to consider these as sources of evidence that assess the overall validity of the test [9].

Face validity is how much a measure is seen to be linked with a certain construct, from the perspective of the target group that the test is applied to [10]. In most cases, respondents of a scale offer feedback on scale items based on if they offer a robust and detailed depiction of the main idea. Face validity of the short version of RIASEC was appraised by fifty five females aged twenty to twenty-four years old. These individuals were all students at the King Abdul-Aziz University (Faculty of Computing and Information Technology), where twenty-eight were studying computer science majors and twenty-seven were

studying information system majors. The feedback received showed that the shorter version of RIASEC needed greater support on certain items.

As with face validity, content validity is related to the level that a scale accurately depicts the proposed construct [10]. On the other hand, instead of using the general public, experts evaluate their specialist subject area. These experts offer feedback on the meaning of scale items, and whether they are connected to the key concept accurately, as well as the construct of the general scale.

In this study, content validity has been evaluated by seven psychologist experts. According to these experts, the original RIASEC scale is widely used in Saudi Arabia for career planning, and provides correct guidance for an individual's career development. Psychological Counselor experts state that job interests are the best point from which to start when determining the right career path for a person.

## 2. Literature Review

Holland's typology received worldwide acclaim because of how straightforward it is, its ability to be empirically evaluated, its ease of use, and how easily understood the results are [11]. One of the most appropriate instruments suggested for evaluation with the RIASEC types is the Self-Direct-Search - SDS [12]. It has undergone 25 various translations, employed by over 22 million individuals from across the global, with a mixture of cultural backgrounds [13]. The main ideas in place regarding the six types of vocational personality have wider empirical support, with outcomes stemming from numerous cross-cultural and meta-analytical papers underline the associated validity [2,14,15,16,17,19].

Under the Brazilian environment, the outcomes of the empirical studies through the Questionário de Busca Auto-Dirigida [20], the title offered to the commercial side of Brazil's SDS, are in line with other worldwide results. For example, Mansão and Yoshida [21], present clear findings for the validity linked to the SDS's internal structure. Further research employing SDS uncovered evidence for validity through the RIASEC model in Brazil, and in particular as it is connected with

external variables, critical for the comprehension of certain career types, like personality [22,23,24]; career choice [4,5]; other measures of interest [20,23]; self-efficacy for occupational activities [22]; cognitive skills [22,23]; sex, school year [4] and parents' education [25].

It has been stated in the work of Goldberg [26] that there are issues surrounding copyright restrictions in personality testing. On a different note, Holland [2] has put forward the notion that the completion of the RIASEC scale is thought of as an intervention linked independently with a career, because of the number of job opportunities being given to the participants [27]. Certain individuals might have a propensity to enjoy many of the items on the scale, due to their psychological disposition. Conversely, it can also be the scale that a critical personality might make them lean towards a stronger dislike for the scale's items, or a general negative attitude towards them [18]. In addition, RIASEC scales can be confused with matters of prestige and gender [28]. Situational factors' effect on how personalities are shared can also have missing areas. Tett and Burnett [29] underline the fact that there are specific situational factors that impact trait expression which can be employed to underline the conditions which prefer personality use in selection efforts.

A Turkish research paper used a RIASEC scale made up of 41 items and changed to fit Turkish language and culture. Every RIASEC type was depicted through 6 or 7 items. The results were gathered from a sample of 364 business professionals. Survey outcomes showed that there was a satisfactory level of reliability for the scale, with a Cronbach's alpha of 0.889.

The paper's results put forward the notion that a short version of RIASEC requires significant changes in order to provide validity when it comes to vocational profiling in the Turkish environment. Out of the potential alterations shown in earlier comments, there must be extra attention given in order to not cause problems when choosing Realistic and Conventional; Enterprising and Recognition items. Moreover, Social and Conventional dimensions of RIASEC are shown to be linked with Work Values, and so reviewing the items with these limitations in mind can be of greater relevance to interests, compared to values that will significantly boost discriminant validity [30].

### 3. Methodology and Results

The robust Arabic translation consisted of a process involving a literal translation from English to Arabic, then back from Arabic to English using different Arabic language experts. Then, a group of 7 Arabic and English speaking psychologists and language experts were used to ensure consistency of meaning and concepts covering each of the 106 questions in the Arabic version of Holland's RIASEC. The Arabic version of Holland's RIASEC was applied to a selection 178 females students. All participants were students from the King Abdul-Aziz University (Faculty of Computing and Information Technology), with twenty-eight of them studying computer science majors, twenty-seven studying

information system majors, and one hundred and twenty three being preparatory year distance learning students.

#### 3.1. Internal Consistency Reliability

To estimate the internal consistency reliability of the scores, the Cronbach's alpha coefficient was calculated for each of the six Vocational Personalities of the Arabic version of Holland's RIASEC, based on the sample of 178 female students. All participants were students from the King Abdul-Aziz University (Faculty of Computing and Information Technology), with twenty-eight of them studying computer science majors, twenty-seven studying information system majors, and one hundred and twenty three being preparatory year distance learning students. The value of Cronbach's alpha is represented in Table 2.

Table 2. The value of Cronbach's alpha

RIASEC	Cronbach's alpha
Realistic (R)	.601
Investigative (I)	.628
Artistic (A)	.621
Social (S)	.600
Enterprising (E)	.699
Conventional (C)	.669

#### 3.2. Comparison of the Arabic Version of Holland's RIASEC Scores between Computer Science Majors, Information System Majors, and Preparatory Year Distance Learning Students

The comparison of students with computer science majors, information system majors, and preparatory year distance learning student's results from the Arabic version of Holland's RIASEC survey are shown in Table 3, based on Vocational Personalities frequencies as follows:

- High Vocational Personalities of student Computer science as Social (S), while there are low Vocational Personalities as Artistic (A).
- High Vocational Personalities of student Information system as Artistic (A), while there are low Vocational Personalities as Realistic (R).
- High Vocational Personalities of student Preparatory year distance learning as Social (S), while there are low Vocational Personalities as Realistic (R).

#### 3.3. Factors Analysis

Factor analysis provides evidence of construct validity for the Arabic version of Holland's RIASEC. As a final verification of the items' ability to represent the Holland interest areas appropriately, 106 items were subjected to factor analysis. A principal component analysis with a six-factor solution was rotated using a varimax procedure. Table 4 shows the rotated factor loadings for each item on each scale.

**Table 3. Comparison of student's Vocational Personalities frequencies**

Majors	Realistic (R)	Investigative (I)	Artistic (A)	Social (S)	Enterprising (E)	Conventional (C)
Computer science	61%	63%	58%	71%	61%	62%
Information system	64%	65%	80%	76%	68%	73%
Preparatory year distance learning	56%	63%	70%	74%	66%	61%

**Table 4. Principal Component Analysis.**

Realistic		Investigative		Artistic		Social		Enterprising		Conventional	
Item	Load	Item	Load	Item	Load	Item	Load	Item	Load	Item	Load
q3_R	.519	q13_I	.698	q1_A	.655	q5_S	.648	q9_E	.443	q2_C	.426
q8_R	.537	q16_I	.606	q4_A	.725	q6_S	.611	q11_E	.523	q12_C	.494
q10_R	.762	q18_I	.603	q14_A	.652	q7_S	.574	q20_E	.644	q27_C	.651
q15_R	.591	q19_I	.672	q17_A	.735	q22_S	.668	q21_E	.518	q38_C	.332
q26_R	.573	q25_I	.505	q32_A	.609	q23_S	.541	q30_E	.571	q39_C	.474
q31_R	.642	q29_I	.460	q33_A	.581	q28_S	.566	q34_E	.518	q92_C	.587
q36_R	.608	q43_I	.498	q35_A	.593	q46_S	.499	q41_E	.582	q103_C	.399
q37_R	.663	q44_I	.462	q40_A	.659	q59_S	.561	q51_E	.575	q24_C	.520
q42_R	.540	q48_I	.720	q47_A	.434	q62_S	.565	q53_E	.568	q56_C	.607
q45_R	.591	q50_I	.621	q49_A	.635	q63_S	.670	q55_E	.606	q57_C	.563
q54_R	.567	q52_I	.539	q58_A	.615	q64_S	.669	q61_E	.507	q86_C	.591
q65_R	.768	q60_I	.578	q68_A	.690	q67_S	.515	q69_E	.487	q87_C	.568
q82_R	.813	q66_I	.709	q80_A	.728	q72_S	.488	q74_E	.667	q70_C	.623
q85_R	.558	q73_I	.478	q81_A	.723	q78_S	.488	q75_E	.467	q71_C	.512
q96_R	.484	q76_I	.445	q90_A	.563	q84_S	.666	q89_E	.520	q79_C	.553
q99_R	.697	q77_I	.485	q91_A	.643	q88_S	.503	q95_E	.516	q83_C	.442
q100_R	.721	q93_I	.551	q102_A	.720	q94_S	.582	q97_E	.442		
q101_R	.590	q98_I	.617	q105_A	.695	q104_S	.564	q106_E	.636		

**3.4. Correlation Analysis**

As seen in Table 6, inter-correlations among Holland's Vocational Personalities are as follows [8]:

- Realistic which correlated positively with Artistic, Social, Enterprising, Conventional, and Investigative
- Artistic which correlated positively with Realistic, Conventional, Social, Enterprising and Investigative
- Conventional which correlated positively with Artistic, Social, Enterprising, Realistic and Investigative
- Social which correlated positively with Realistic, Artistic, Conventional, Enterprising and Investigative
- Enterprising which correlated positively with Realistic, Artistic, Conventional, Social and Investigative

- Investigative which correlated positively with Realistic, Artistic, Conventional, Social and Enterprising.

**Table 5. Descriptive Statistics**

	Mean	Std. Deviation	N
R	10.4551	2.71024	178
A	11.3820	2.83045	178
C	11.2640	2.72319	178
S	13.3202	2.65401	178
E	11.8202	3.18209	178
I	11.3146	2.99753	178

**Table 6. Correlations Matrix**

		R	A	C	S	E	I
R	Pearson Correlation	1	.474**	.310**	.412**	.378**	.486**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	178	178	178	178	178	178
A	Pearson Correlation	.474**	1	.273**	.482**	.486**	.448**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	178	178	178	178	178	178
C	Pearson Correlation	.310**	.273**	1	.564**	.567**	.586**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	178	178	178	178	178	178
S	Pearson Correlation	.412**	.482**	.564**	1	.686**	.536**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	178	178	178	178	178	178
E	Pearson Correlation	.378**	.486**	.567**	.686**	1	.565**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	178	178	178	178	178	178
I	Pearson Correlation	.486**	.448**	.586**	.536**	.565**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	178	178	178	178	178	178

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## 4. Discussion & Conclusion

A key outcome of this paper is that the use of the translated Arabic version of Holland's RIASEC of Vocational Personalities shows internal consistency. As a result, there is evidence supporting the use of the Arabic version of Holland's RIASEC of Vocational Personalities as a metric for gathering and comprehending Vocational Personalities of Arabic speaking learners.

This study looks at how reliable and valid findings from Holland's RIASEC of Vocational Personalities were. Reliability investigates how consistent the evaluation was, whereas validity is focused on the conclusions drawn from the test results. To accurately evaluate psychological traits to maximise the usefulness, there must be sufficient reliability and validity. The reliability prediction for the six Vocational Personalities of the Arabic version of Holland's RIASEC using 178 students in the Arabic translation showed that the value of Cronbach's alpha was substantial, between 0.601 and 0.699.

Factor analysis of the Holland's RIASEC identified six factors related to the six Vocational Personalities. An examination of the construct involved, together with psychologist expert discussion for every factor, showed that the variables had a clear relation to the goals of the item, offering input regarding construct validity for Holland's RIASEC, as well as inter-correlations between Holland's Vocational Personalities being shown to have a positive correlation.

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