GENDER AND CAREER CHOICE DIFFERENCES ON BAKARE VOCATIONAL INTEREST INVENTORY: IMPLICATIONS FOR VOCATIONAL COUNSELING IN NIGERIA

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Abstract

The study examined gender and aspired occupational differences on Bakare Vocational Interest Inventory (BVII). Two hundred and twenty (56 males and 164 females) undergraduate students participated in the study. Their ages ranged between 16-30 years with a M age of 21.79 and SD age of 2.61. The BVII by Bakare (1977) was used to gather information on the participantsô interest areas. A survey research design involving MANOVA statistical analysis was used in data analysis. The result of the findings showed significant gender differences on the Outdoor F(1,890) = 11.74, Mechanical F(1,189) = 8.28 and Computational F(1,189) = 1.47 interest areas of BVII. Similarly, aspired occupational choices differed significantly on Outdoor, F(5,189) = 3.24, Computational F(5,189) = 7.77, Artistic F(5,189) = 6.16, Musical F(5,189) = 3.25 and Clerical, F(5,189) = 2.28. Conversely, significant gender and aspired occupation interactions were found on the Outdoor F(5,189) =2.29 interest area of BVII all at $p \leq .05$ level. The discussions centered on the import of gender item bias, gender and occupational influences as well as societal influences on vocational interests.

Keywords: Career choice differences, Gender, BVII, Vocational counseling, Nigeria

Introduction

Vocational Interest Inventories are psychological tools constructed on the Trait Factor Model (TFM) of career development. The TFM is based on the meaning of traits as enduring personality characteristics that describe or determine an individual behavior across a range of situations (VandenBos, 2007). The Vocational Interest Inventories (VII) could as

such be used to assess participantsô suitability for various fields of occupations. This is so because every field of occupation is believed to have certain traits that mark successful job career. In other words, individuals will enjoy their work most and probably be optimally productive at it, if the demands of the job reasonably match their own unique needs, abilities, interests and aptitudes (Cohen, Swerdlik, and Smith, 1992; Anastasi and Urbina, 1997). Individuals are very much likely to differ on vocational interests based on their traits.

The present study investigated therefore such differences of gender and career choice respectively on vocational interests. The desire to investigate into the occupational choice differences arose on the need to study the predictive value of Bakare Vocational Interest Inventory (BVII). Additionally, the study of Lippa (1998) on the contributions of gender related individual differences (eg. personality, choice) on vocational interests had also furthered this study. There is still need in Nigeria to review the import of such individual differences like occupational choices and their interactions on gender in bringing about Vocational Interest scores.

The issue of gender in occupational interest has been studied by very many vocational counselors (Betz and Fitzgerald, 1987; Hackett and Lonborg, 1994). Their major interests of study were on why the gender differences in vocational interests. Many scholars have raised reasons as to why such differences had existed. Girls have been found typically to explore careers from a narrower set of career options than boys (Gottfredson, 1981). Gottfredson demonstrated how this trend occurs based on occupational sex role socialization. Girls and boys learn early which occupations that are suitable for them and which ones are not. This supported the contention that gender barriers and opportunities in the world of work were possibly internalized through socialization as sex role stereotypes (Betz, 2005). A lot of Psychological theories including Gender Schema theory, Psychoanalytic as well as Social Learning theories have been used to explain such gender differences in vocational interests (Fagbemi, 1997).

Other reason why gender differences occur in VII was that of item bias based on gender. The concept of exploration validity based on the extent to which an interest inventory stimulates the person to explore career options that might otherwise not be explored is relevant to the gender issues on VII differences (Farmer, 1995). Current evidences in western societies truly affirm that the majority of gender differences on Vocational Interest Inventories (VII) are accounted mostly through item bias (Einarsdottir and Round, 2009), and a common agreement on how to best resolve gender bias in interest measurement has not been reached (Donnay, Morris, Schaubhut and Thompson, 2005; Harmon, Hansen, Borgen and Hammer; 1994; Holland, Powell, Fritzsche, 1994 and Swaney, 1995). The lack of consensus about how to deal with gender differences is not surprising because it has not yet been adequately explained why measured interests are different for men and women (Einarsdottir and Pound, 2009). It is possible that these differences may be partly explained by item bias in interest inventories and the influence of construct ï irrelevant factors (Messick, 1989) on the scales used in counseling. Fouad and walker (2005) suggested that perceived barriers and opportunities may be such a factor influencing the assessment of interests of ethnically diverse clients. They examined racial / ethnic group differences in the Strong Interest Inventory (SII) using differential item functioning (DIF). Large racial / ethnic DIF was detected, implying that the items were influenced by other constructs in addition to the traits the Holland Scales were designed to measure. Einarsdottir and Rounds (2009) studied the gender bias and construct validity in

Strong Vocational Interest measurement using differential item functioning. A sample of 1860 women and 1105 men were used. Item response theory was used to address gender bias in interest measurement. Differential item functioning (DIF) technique, SIBTEST and DIMTEST for dimensionality were applied to the items of the Six General Occupational Theme (GOT) and 25 Basic Interests (BI) scales in Strong Interest Inventory. The results of the study showed multidimensionality of the scales and which also contain both primary and minor dimensions. Gender related DIF was detected in two thirds of the items. Item type (ie. occupations, activities, school subjects, types of people) did not differ in DIF. A sex type dimension was found to influence the responses of men and women differently. When the biased items were removed from the GOT scales, gender differences favouring men were reduced in the R and I scales but gender differences favouring women remained in the A and S scales. Their studies showed that women tended to score higher on the Social, Artistic and Conventional Scales and men tended to score higher on the Realistic and Investigative scales. Their results were also largely similar to those found in other studies including Betz and Fitzgerald (1987), Fouad, (2002), and Hackett and Lonborg (1994). Men have also been found to differ from women on other basic interests as mechanical activities and athletics with men scoring higher while women scoring higher on social services, Art, Culinary and Office services (Harmon, Hansen, Borgen and Hammer 1994; Einarsdottir and Round, 2009). However using DIF analysis, Smith (2002) showed multidimensionality of the scales showing that the scales contain factors other than the trait they are intended to measure, which may in turn lead to gender relate DIF. Anderson, Tracey and Rounds (1997) examined the structural invariance of Hollandôs (1973, 1985) Vocational Interest Model across gender. Evidence of gender differences in the fit of Hollandôs model was sought by submitting 14 previously published General Occupational Themes (GOT) scales correction matrices, from responses to the Strong Interest Inventory by 7 Male and 7 Female samples, to multiple structural analytic technique. Results indicated a moderate to strong correspondence between GOT data and Hollandôs circular order and circumplex models. Randomization tests of differences in the 2 versions of Hollandôs model across gender indicated that these models are a no more or less accurate representation of the observed data for men than for women. Additional analysis aimed at identifying gender differences in the misfit of specific aspects of Hollandôs model also yielded no evidence of differential fit.

On a similar note, Lippa (1998) studied gender related individual differences and the structure of vocational interest. In 3 studies (respective NS =289,394, and 1678), males and females were assessed on Big Five Traits, Muscular Instrumentality (M), Feminine expressiveness (F), Gender diagnosticity (GD) and RIASEC (Realistic, Investigative, Artistic, Social, Enterprising, Conventional) vocational interest scales. Factor analysis of RIASEC scores consistently showed evidence for Predigerôs (1977) people ï things and Ideas ï Data dimensions, and participantsô factor scores on these dimensions were computed. In all studies, Big Five openness was related to ideas ï data but not to People ï Things. Gender was strongly related to People ï Things but not to ideas ï Data. Within each sex, GD correlated strongly with People ï Things, but not with Ideas ï Data. M,F, and Big Five measures other than openness tended not to correlate strongly with RIASEC scales or dimensions. The results suggested that gender and gender related individual differences within the sexes are strongly linked to the people-things dimensions of vocational interests.

Akinleye (1997) using the Bakare Vocational Interest Inventory on 200 secondary school students studied the inter-patterns of vocational interests of senior secondary

students. The result of the studies showed that boys had higher scores than girls on outdoor, mechanical and computational interests while girls had higher scores on persuasive, literary and social services. However, the interest of boys and girls are similar in scientific, artistic, musical and clerical areas. The results of the findings were similar to those found in Nigeria over twenty decades ago by Adejumo (1983) and Olayinka (1976). From the foregoing discussions, there are evidences of gender differences on VII both in the Western studies and our local Nigeria studies. To the extent to which these differences are the outcome of socialization or item bias still needed to be diagnosed. Furthermore, the extent over which these differences must have changed over the years in Nigeria is of importance for the counselors.

Statement of the Problem

Knowledge as well as information is subject to update and improvement. There is increased need to update our knowledge on the gender differences in vocational interest among Nigerian students. Due to increased technological and social revolution being encountered in Nigeria since over 10 decades now, there is need for us to reexamine gender issues on vocational interests. Our updated knowledge will equip Nigerian counselors with greater skills and competence for their profession. Counseling is a social science and as such need to follow the current trend of social and societal changes. Similarly, there is need to study within our culture other contributions of individual differences (eg career choice differences) as well as their interactions with gender on the scores obtained with or from VII. Career choice has been known for long as an individualôs choice of life long occupation. However, to the authorsô best of knowledge no research on individual differences based on career choice had been conducted as per how it could predict vocational interest in Nigeria.

It is as well believed that the present study will help in reducing the paucity of literature on vocational counseling outside the post primary school settings in Nigeria.

Purpose of the st*udy*

The study has three major aims,

a. To determine the present extent of gender differences on BakareôVocational Interest Inventory
b. To find out the extent to which the participantsôoccupational choices differ on BVII .
c. To determine the amount of interaction between participantsô gender and occupational choice on BVII.

Research question

a. To what extent do the participantsôgender still differ on BVII?
b. How do the participantsôoccupational choices vary on BVII?
c. What is the amount of interaction between the gender and occupational choices of the participantsôon BVII?

Hypotheses

1. The participantsô will still manifest significant gender differences on BVII.
2. The occupational choices of the participants will not vary significantly on BVII.
3. There will be no significant interaction effects of gender and occupational choices of the participants on BVII.

Method

Participants

Two hundred and twenty participants were used in the study. They included 56 males and 164 female undergraduate students of Madonna University Okija, Anambra state. The participants were drawn from the faculties of Law, Arts, Social Sciences and Management. Their ages ranged between 16 ï 30 years with *M* age of 21.79 and *SD* age of 2.61. They were sampled from various years of study. None of the participants as at the time of study was engaged in any occupation other than studentship.

Instrument

The Bakare Vocational Interest Inventory (BVII) designed by Bakare (1977) was used for the study. The VII was constructed to meet the needs of the local counselors in Nigeria who may find it difficult based on the knowledge of psychometrics and time factor to administer the Kuder Preference Record Vocational Form (KPRVF) 1951 and other western vocational interest inventories. Another reason for the construction of this inventory was to ensure the suitability and utility of a vocational inventory for African clients. The BVII was constructed by adopting the 10 categories of interests used by Kuder in KPRVF. The categories included outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service and clerical. The present instrument is made up of the above 10 categories with 10 items making up each category. The BVII was constructed on a five point likert scale. Bakare (1977) showed that BVII is highly reliable with reliability estimate of 0.62 (outdoor) to 0.63 (clerical).

Similarly strong evidence of divergent validity of BVII was provided by Bakare (1977) . As would be expected there were low inter correlations between such interest areas as persuasive and mechanical, artistic and scientific. Likewise there were substantial inter correlations between literary and persuasive and between computational and mechanical interest areas. Such inter correlations according to Bakare (1977) testify to the construct validity of BVII.

Procedure

The researcher with the help of two research Assistants administered the instrument. The consent of the Deputy Vice Chancellor Academic (DVCA) as well as those of the students were got before the administrations of the questionnaire. They were briefed on what the research was all about and as well were asked of their willingness to participate. The students that agreed to participate were allowed to go home with the questionnaire. The instructions on how to respond to the questionnaire were given to them. They were also asked to write the most preferred occupation of their choice they would most like to engage in after their graduations. From their preferred occupations, six major occupational choices were extracted. They included the human service (like psychologists, social workers, human resource managers, nurses), financial/business occupations (like bankers, accountants,

business, and other related economic jobs), legal profession, artists (like actors, musicians, advertisement artists), political/ leadership careers (like ministers, ambassadors, CEOs) and communications (mostly broadcasters). The students were asked to submit the responded questionnaire to the DVCAôs office after response. It took the researcher one month to collect the filled questionnaires.

Design and Statistics

A survey research design was employed in the study while the multiple analysis of variance was used for analysis.

Result

The result of the study showed significant gender differences on the Outdoor, F(1,890) = 11.74, Mechanical , F(1,189) = 8.28 and Computational, F(1,189) =6.47 interest areas of BVII. Similarly aspired occupational interests differed significantly on the outdoor, F(5,189) = 3.24, Computational, F(5,189) = 7.77, artistic, F(5,189) = 6.10, Musical, F(5,189) = 3.25 and Clerical, F(5,189) = 2.28 interest areas. Conversely significant gender and aspired occupation interactions were found on the outdoor F(5,189) = 2.29 interest area of BVII all at $p \leq .05$ level of testing.

Table 1: Summary Table of Mean Gender Differences of Outdoor, Mechanical and Computational Areas of BVII

Dependent variable	Sex	Mean
Outdoor	1	31.90
	2	28.17
Mechanical	1	31.77
	2	27.75
Computational	1	33.19
	2	29.55

The mean difference is significant at the .05 level

Table 2: Summary Table of MANONA Statistics on Sex and Occupation (with Age as Covariate) on 10 Interest Areas of BVII

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	outdoor	1712.669(a)	12	142.722	3.813	.000
	Mech	1884.037(b)	12	157.003	2.546	.004
	comput	4064.914(c)	12	338.743	5.224	.000
	Scient	1201.880(d)	12	100.157	1.794	.052
	persuasive	434.440(e)	12	36.203	1.221	.272
	artistic	1907.980(f)	12	158.998	3.049	.001
	literary	1242.424(g)	12	103.535	2.074	.021
	musical	1969.585(h)	12	164.132	2.395	.007
	Social	550.582(i)	12	45.882	.910	.538
	clerical	1308.122(j)	12	109.010	2.310	.009

Intercept	outdoor	3797.557	1	3797.557	101.460	.000
	Mech	3391.095	1	3391.095	54.998	.000
	comput	3420.044	1	3420.044	52.745	.000
	Scient	2271.762	1	2271.762	40.696	.000
	persuasive	4094.283	1	4094.283	138.062	.000
	artistic	4355.270	1	4355.270	83.505	.000
	literary	4151.341	1	4151.341	83.151	.000
	musical	4550.845	1	4550.845	66.407	.000
	Social	2792.022	1	2792.022	55.390	.000
	clerical	4089.871	1	4089.871	86.667	.000
VAR00003	outdoor	207.164	1	207.164	5.535	.020
	Mech	129.807	1	129.807	2.105	.149
	comput	82.389	1	82.389	1.271	.261
	Scient	.028	1	.028	.001	.982
	persuasive	2.328	1	2.328	.079	.780
	artistic	142.514	1	142.514	2.732	.100
	literary	39.919	1	39.919	.800	.372
	musical	169.110	1	169.110	2.468	.118
	Social	2.368	1	2.368	.047	.829
	clerical	214.891	1	214.891	4.554	.034
VAR00001	outdoor	439.489	1	439.489	11.742	.001
	Mech	510.919	1	510.919	8.286	.004
	comput	420.082	1	420.082	6.479	.012
	Scient	74.826	1	74.826	1.340	.249
	persuasive	4.262	1	4.262	.144	.705
	artistic	1.226	1	1.226	.024	.878
	literary	79.114	1	79.114	1.585	.210
	musical	47.157	1	47.157	.688	.408
	Social	111.874	1	111.874	2.219	.138
	clerical	19.427	1	19.427	.412	.522
VAR00002	outdoor	607.023	5	121.405	3.244	.008
	Mech	345.745	5	69.149	1.121	.351
	comput	2499.948	5	499.990	7.711	.000
	Scient	424.570	5	84.914	1.521	.185
	persuasive	186.921	5	37.384	1.261	.283
	artistic	1591.764	5	318.353	6.104	.000
	literary	455.544	5	91.109	1.825	.110
	musical	1116.838	5	223.368	3.259	.008
	Social	147.899	5	29.580	.587	.710
	clerical	538.091	5	107.618	2.281	.049
VAR00001 * VAR00002	outdoor	429.376	5	85.875	2.294	.047
	Mech	615.066	5	123.013	1.995	.082
	comput	556.391	5	111.278	1.716	.133
	Scient	386.667	5	77.333	1.385	.232
	persuasive	322.535	5	64.507	2.175	.059
	artistic	529.469	5	105.894	2.030	.077

	literary	355.139	5	71.028	1.423	.218
	musical	207.440	5	41.488	.605	.696
	Social	285.696	5	57.139	1.134	.344
	clerical	461.248	5	92.250	1.955	.088
Error	outdoor	6624.931	177	37.429		
	Mech	10913.542	177	61.658		
	comput	11476.797	177	64.841		
	Scient	9880.563	177	55.822		
	persuasive	5249.013	177	29.655		
	artistic	9231.599	177	52.156		
	literary	8836.739	177	49.925		
	musical	12129.789	177	68.530		
	Social	8922.029	177	50.407		
	clerical	8352.720	177	47.191		
Total	outdoor	174808.000	190			
	Mech	170276.000	190			
	comput	208505.000	190			
	Scient	178264.000	190			
	persuasive	302368.000	190			
	artistic	228068.000	190			
	literary	258267.000	190			
	musical	225455.000	190			
	Social	239988.000	190			
	clerical	201034.000	190			
Corrected Total	outdoor	8337.600	189			
	Mech	12797.579	189			
	comput	15541.711	189			
	Scient	11082.442	189			
	persuasive	5683.453	189			
	artistic	11139.579	189			
	literary	10079.163	189			
	musical	14099.374	189			
	Social	9472.611	189			
	clerical	9660.842	189			

Table 3: Summary Table of Aspired Occupational Mean Differences on Outdoor, Computational, Artistic, Musical and Clerical Areas of BVII

Dependent variable	Occupation	Mean
Outdoor	1 (Human service)	32.50
	2 (Financial/Buisness)	30.71
	3 (Legal Career)	29.71
	4 (Artists)	31.00
	5 (Politics/leadership)	31.82
	6 (Communication)	24.46

Computational	1	31.24
	2	38.32
	3	27.30
	4	31.15
	5	33.29
	6	26.94
Artistic	1	33.68
	2	32.49
	3	34.20
	4	43.22
	5	33.98
	6	29.48
Musical	1	34.89
	2	31.68
	3	32.78
	4	41.54
	5	33.36
	6	33.36
Clerical	1	31.25
	2	34.50
	3	30.18
	4	31.13
	5	32.67
	6	28.31

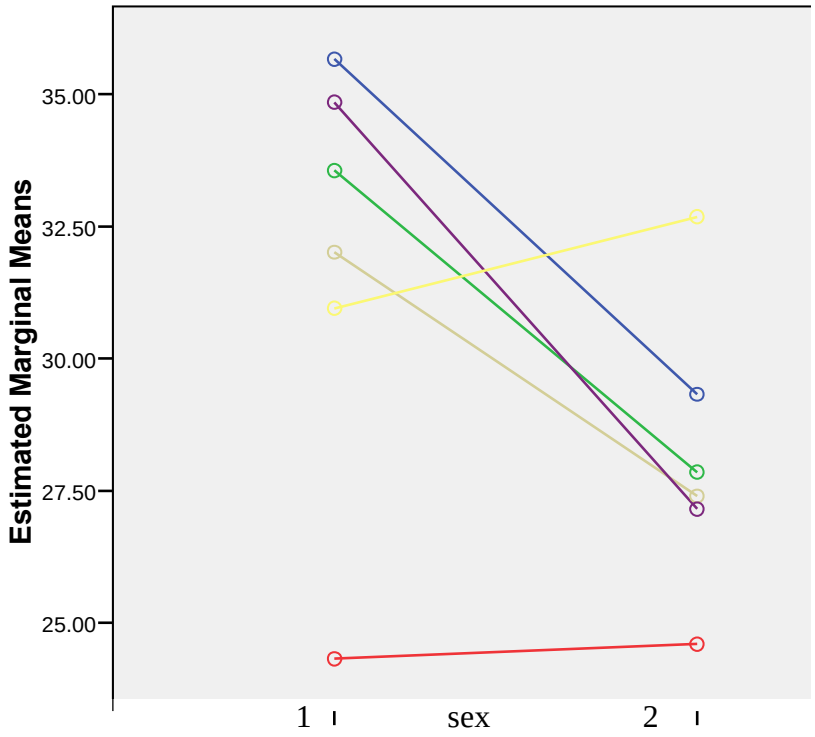
Table 4: Pairwise Comparison of Significant Occupational Differences on BVII

Dependent Variable	**(1) occ**	**(j) occ**	**Mean differences**	**Sig.**
Outdoor	1	6	8.04	.001
	2	6	6.24	.002
	3	6	5.25	0.010
	4	6	6.54	.007
	5	6	7.36	.001

Computational	1	2	-7.08	.001
	2	1	7.08	.001
		3	11.02	.001
		4	7.17	.004
		5	5.03	.009
		6	11.38	.001
	3	5	-5.98	.006

	5	6	6.34	0.23
Artistic	1	4	-9.54	.001
	2	4	-10.73	.001
	3	4	-9.02	.001
	5	4	-10.24	.001
	6	4	-13.73	.001
Musical	4	1	6.65	.013
	4	2	9.86	.001
	4	3	8.77	.002
	4	5	8.18	.002
	4	6	8.18	.013
Clerical	2	3	4.32	.015
	2	6	6.18	.007

Fig.I Estimated Marginal Means of Interaction of Gender and Occupation on Outdoor Interest of BVII



Human service-blue,
Financial/Buisness-green,
Legal career-ash,
Artists-purple
Politics/ leadership-yellow,
Communication-red

Discussion

The findings of the study showed gender differences on outdoor, mechanical and computational interest areas. The males were more prominent on these areas than the females. The result was in line with the previous literatures reviewed in Nigeria (Akinleye, 1997; Adejumo, 1983; and Olayinka, 1976) and those of western studies on gender differences in VII (Betz,1995; Fouad, 2002). Gender differences in vocational interests have not improved over the years in Nigeria.

Conversely, two things might account for these differences. The occupational sex role socialization of many traditional societies might explain for one (Goftfredson, 1981; and Betz, 2005). Girls and boys learn early which occupations are suitable for them and which ones are not, and they are more likely to focus their interests on such societal accepted occupations. As such, the findings of the study showed that our society reinforces outdoor, mechanical and computational occupational interests for men than for women. However, women showed no significant interest area than men in all the interest areas examined. One would expect that females would show more clerical, musical and artistic interest than men as previous local studies had expressed (Akinleye, 1997) but it did not turn out to be so. This could be explained on the basis of the participants used. The participants being undergraduates may not have much interest on clerical duties which may be adjudged as a low level occupation relative to university degree. Similarly, the non significant difference on musical and artistic interest areas might be suggesting that Nigerian males are closing up more on the occupations formerly designated as female careers.

Furthermore, the findings of the study showed that gender gaps on occupations formerly designated for males still exist in Nigeria. This is so because interest is a major determinant for occupational choice than abilities. If females had lesser interest on outdoor, mechanical and computational occupations, they are very less likely to take occupations such as engineering, statistics, offshore, geology, mining and advanced computer programming. Conversely, to increase female choices in such occupations, their interests must be changed towards those interests that are likely to lead to those occupations. Vocational counselors in their daily jobs may encounter clients whose interests varied from their aptitudes. They may also meet clients whose interests varied from their occupational choices. Such clients needed to be realigned so as to eliminate conflict and achieve desired consistency for a realistic vocational programme. Many a times, vocational counselors may counsel people based on their interests. Such counseling may affect gender involvement in many occupations. There is need therefore for counselors to probe into the interests of their clients and to see the extent to which gender and other factors had shaped their interests towards vocations. Ideally, interest should correlate significantly with abilities and aptitudes not gender and socialization.

The second reason why gender differences may have occurred on Bakare Vocational Interests was the issue of item bias on gender. Studies have pointed out the contributions of gender biased items on gender differences in VII (Farmer, 1995; Einarsdottir & Rounds, 2009). There is need to review critically using differential item functioning (DIF) the meanings of BVII items for both males and females. Such studies will help distill out the contributions of socialization and those of item bias on gender differences on BVII. Because BVII is one of major vocal VII in use in Nigeria, there is a clarion call for such studies.

On the other hand, aspired occupational choice differences were found on outdoor, computational, artistic, musical and clerical interests of BVII. The pair wise comparison showed that communication occupation differed from others on outdoor interest. Similarly, those aspiring to financial/business occupations differed significantly from others on computational interest. Conversely, artists differed on artistic and musical interest than others respectively. Overall, the findings showed that occupational differences exist on vocational interests. People tend to navigate towards the occupations they have interests in. As such BVII can serve not only as a criterion referenced test but also a predictive reference test. However, the result of these findings is not enough to conclude on the predictive value of BVII.

In addition, significant interaction of gender and occupation was found on the outdoor interest of BVII. The interaction showed that males irrespective of their occupations had higher outdoor interests than females. However, male on human services had higher outdoor interest than others. Subsequently no other gender and occupational interactions were found in the study. Thus, the potential effect of gender and occupations respectively on interest choice still remains valid aside the outdoor interest.

Recommendations

- It is recommended that counselors should put into consideration during vocational counseling gender implications on interest differences. Counselors should discuss alongside the clients how their societal influences were guiding their interest instead of aptitudes and abilities. The counselor should also bring into the awareness of the client how cultural ingrained interest could affect ones effort to develop abilities for one occupation or the other. For example, the female girl may see computation / mathematics as difficult things belonging to males. The males in our society are known for facing difficult tasks. As such, the female girls may lose interest in computation and as well fail to develop the abilities to passing mathematics. Such failures could as well affect occupational choices like engineering.
- There is need to remove items that may bring about bias. For example some items on Mechanical interest that included ódesign and build a new machineô, ódesign the bridge across a larger riverô, órepair a car that has broken downô showed male societal duties. It appears that the mechanical interest did not include items that are female oriented. There is need for DIF to discriminate these items and to make BVII gender bias free.
- Bakare Vocational Interest Inventory is a good inventory for differentiating various occupational choices and as well good for vocational counseling. However, the need to combine interest areas together with abilities and aptitudes in vocational guidance is highly essential.

- There is need to intensify research on BVII in terms of item response theory (IRT) and DIF. This will help remove item bias and strengthen the construct validity of the BVII.

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