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REVALIDATION OF THE REYNOLDS ADAPTABLE INTELLIGENCE TESTS-NONVERBAL (RAIT-NV)

Magnus-Arewa Eseose Anthonia
Department of Educational Psychology, Guidance & Counselling, Faculty of Education, University of Port Harcourt, PMB 5323, Choba, Rivers State, Nigeria.

Dr. A, Amadioha
Department of Educational Psychology, Guidance & Counselling, Faculty of Education, University of Port Harcourt, PMB 5323, Choba, Rivers State, Nigeria.

ABSTRACT: *The study focused on the Revalidation of Reynolds Adaptable Intelligence Test (RAIT-NV) in Nigeria. The study used the triangulation research design. Four research questions guided the study. A sample of 2120 students was randomly drawn using multistage sampling techniques from a population of 14,107,456 of all the undergraduate, secondary and upper primary students in Nigeria. The instrument for the data collection is Reynolds Adaptable Intelligence Test (RAIT-NV). RAIT-NV reliability coefficient was 0.92 using Cronbach Alpha and the construct validity was 0.88. To answer the four research questions, data generated were analyzed using The X-Calibre 4.2, EIRT, SPSS, Microsoft excel. Result showed that RAIT-NV item difficulty graduates from very easy to very difficult. RAIT-NV items were able to discriminate between examinee high and those low on the trait been measured. RAIT-NV had satisfactory factor structure. Classification and Description of RAIT-NV scale was established in Nigeria. The finding of the study showed that using CTT in revalidation of instrument provide reliable and valid instrument for measuring intelligence. Based on the findings, it was recommended among others that relevant educational agencies, should always determine the factor structures of any instrument they are revalidating for measuring intelligence.*

KEYWORDS; intelligence test, Reynolds adaptable intelligence test-nonverbal (RAIT-NV)

INTRODUCTION

The Revalidation of the Reynolds Adaptable Intelligence Test-Nonverbal (RAIT-NV) in Nigeria is the subject of this study. Cecil R. Reynolds created the Reynolds Adaptable Intelligence Test-Nonverbal (RAIT-NV), which was published by PAR in the United States in 2016. The exam is widely used in industrialized nations to assess intellect; it does not need any verbal or vocal expression and only requires modest motor skills. There are no reading or visual-motor skills necessary (Reynolds, 2014). The RAIT-NV is a quick, reliable, and valid test of nonverbal intelligence adapted from the Reynolds Adaptable Intelligence Test RAIT. The RAIT-NV can be given to a person or a group of people. Sequences and the RAIT-NV Nonverbal Analogies Subtest

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Subtests use eye-catching, vivid graphics that keep examinees interested. The RAIT-NV Intelligence Index is derived from these two subtests, which assess fluid intelligence. (NVII) It is intended to maintain consistency throughout a large age range.

Despite differences and arguments about the real nature of psychological constructs, there is agreement that their assessment must be limited to particular indicators that indicate the observation and documentation of such constructs. This shaky consensus has influenced and continues to influence psychometrics, a branch of psychology. The need for the measurement and assessment of abstract constructs within the field of psychology, as well as across related disciplines such as education, economics, sociology, political science, and management sciences, has not only become timely, but pressing, especially with the advanced pace of globalization and involving trend of digital, economic, and social evolution. To meet these demands, new tools, thinking, paradigms, and frameworks are needed, which will not only question old assumptions, but also establish new fields of knowledge for the ever-changing world of the twenty-first century. Individuals, groups, and nations must thus build a solid educational system that not only prepares them for future possibilities, but also identifies their areas of strength and weakness.

Within the general research paradigm, it is obviously essential that a section for data collecting methods, which frequently includes the use of valid and trustworthy instruments, be included in the presentation of research output. Emekene (2017) echoed this sentiment, stating that it is a well-known fact that no successful research can succeed without accurate, valid, and trustworthy instruments. This perspective implies that successful educational policy may emerge when it is founded on empirically verifiable and scientifically accurate and trustworthy measures, such as IQ.

There is a glut of diverse instruments meant to measure the intellectual capacities of persons in general and pupils in particular, following the legacy of Binet and other academics of the empirical study of intelligence. While this may seem unnecessary, the process of scientific growth, including that of education, necessitates the acceptance of no practice as sacred. Rather, there should be a need for a frequent assessment of the methods and assumptions that guide educational policy and practice. As a result, the creation and standardization of a valid and trustworthy instrument for assessing intellect has become a must for educational progress (Kpolovie & Emekene, 2016). However, if the usual technique is followed, it is critical that the concept of intelligence be operationally located before any useful instrument can be derived from it.

As previously said, there has been a lot of conjecture about what intelligence is and how it relates to various domains of human effort. As a result, Sternberg noted in Gregory (1998), "there appear to be virtually as many definitions of intelligence as there were specialists asked to describe it." The problem of giving a general definition of intelligence remains to this day, more than two decades after that astute comment. As a result, many intelligence theorists have come to the conclusion that intelligence can only be characterized, not completely defined. However, as Legg

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and Hutter (2006) suggest, this viewpoint will stifle further discussion of the ideas, making the scientific debate over the nature and relevance of intelligence unhealthy. While no universal definition of intelligence exists, they claim that a review of the various definitions presented reveals a common thread of content similarities but word variations. With this in mind, it's critical to offer some particular definitions of intelligence that are pertinent to this research.

Intelligence, as defined by the Merriam-Webster Online Dictionary (2006), is the capacity to utilize information to control one's surroundings or to think abstractly as assessed by objective standards. Kpolovie (2017) defined intelligence as the capacity to learn fast, solve new issues, deduce relationships, digest information accurately quickly, think rationally, act intentionally, and most effectively adapt to one's surroundings. Orluwene (2012) proposed three types of intelligence, dubbed intelligences A, B, and C, after researching several definitions of intelligence in the literature. The genetic reason for why a person behaves in a certain way is referred to as intelligence A. The quality of the interaction between the individual and the environment in addressing practical challenges is referred to as intelligence B. What intelligence metric is Intelligence C based on? The first is based on luck, the second on observation, and the third is based on the creation of legitimate and trustworthy tools to measure the underlying construct, according to Orluwene's three types of intelligence. Many people use the product of intelligence testing, typically referred to as intelligence quotient, interchangeably with intelligence, on the basis of this third idea.

The nature of intelligence is often thought to be made up of one, two, or more than two factors (s). The one factor model of intelligence proposes that an individual's behavior is governed by a single factor intelligence known as the simple manifold. This belief in a single component of intelligence may be traced back to Spearman, who used the term "g-factor" to describe general intelligence. Cartell (2017) said in Kpolovie (2017) that human intelligence is made up of two general factors: fluid intelligence (gf) and crystallized intelligence (ci) (gc). While fluid intelligence is applicable to a wide range of areas and is used to adapt to new situations, crystallized intelligence is limited to certain fields of study and is used to preserve established habits.

The RAIT (Rapid Assessment of Intelligence Test) was created in response to several shortcomings in previously utilized intelligence tests. Although Reynolds and Kamphaus (2003) identified eight major aims for the creation of RAIT, two stand out as particularly relevant to the current study's context. To begin with, the instrument aims to measure components of general intelligence, verbal intelligence, and nonverbal intelligence, a flaw that has limited the use of intelligence tests on a large scale. The literature has long recognized that most IQ tests are riddled with culturally laden items as a result of an overemphasis on linguistic inputs (Ford, 2004). The RAIT's differentiation between general, verbal, and non-verbal intelligences has significant support for the enhancement of psychological-based instruments, both from a factor-analytical and neurological standpoint (Kaufman,1994) (Reynolds,,Castillo, & Horton, 2008). After the instrument was administered and scored, the second aim was to considerably integrate items or assessment stimuli that were

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recognizable, common, and easy to understand. The majority of IQ tests are based on Binet-type activities that are over a century old and use outdated materials. Many responders may be unfamiliar with the activities or objects, which can make IQ testing difficult. Because of the sophisticated mental functioning of the test for reaching a right end, RAIT is simple to administer and yields correct results. Furthermore, by eliminating problems that need lengthy responses, this enhances objective scoring. Measurement mistakes are more likely to be reduced when items and tasks have easy administrations and objective scoring procedures (Longjohn & Ajala, 2019).

The original RAIT was created as an intelligence test that could be administered to individuals as well as groups. It has been standardized for use with examinees ranging in age from ten to seventy-five years old. It has seven subtests that evaluate crystalized, fluid, and quantitative intelligences. A total of 50 minutes is required to test the whole battery, with each subset having a time constraint. However, RAIT was susceptible to some of the same issues that plagued previous tests, such as the difficulty of giving it to people with speech, vision, or learning disabilities. Furthermore, it was suspected that the various subgroups of the original RAIT had a confusing influence on students' overall performance. With the launch of the RAIT-NV, there was a demand for a shorter or reduced version of the instrument.

The RAIT-NV was created to give an option to testing users for the evaluation of nonverbal intelligences utilizing a paper-and-pencil format that allows for both solo and group assessment. Other advantages of the RAIT-NV include the fact that it needs far less visual-motor coordination than other nonverbal intelligence tests. Furthermore, the RAIT-NV allows test takers to assess only a single domain of intelligence, reducing the confusing effects that come with assessing many types of intelligence. Because of these benefits, the test can analyze a larger number of possible examinees. Finally, because the RAIT-NV does not rely on verbal stimuli for assessment, it is a viable option for assessing people with “speech, language, or hearing impairments, for those who are unable or unwilling to communicate verbally, or with people from different cultural, economic, or linguistic backgrounds” (Reynolds, 2016). As a result of these advantages, the RAIT-NV is well suited for use in a variety of settings, including schools for the assessment of learning disabilities and giftedness, the criminal justice system, adult education, clinical practice for the assessment of hearing, visual, physical, and neurological impairments, industrial resource and human resource environments, and clinical practice for the assessment of hearing, visual, physical, and neurological impairments.

The scarcity of a locally validated intelligence test in Nigeria has severely affected educational decisions on people's ability to assess human intellectual capacity, identification of differences and similarities of human intellectual capacity, which includes problem solving, analytical reasoning, logical reasoning and rational thinking. In order to fill the existing large knowledge gap, this study was designed to revalidate the Reynolds Adaptable Intelligence Test – Nonverbal for possible suitability in Nigeria, Hence, the best instrument developed for a particular purpose in one place may be as good as nothing if such instrument is not revalidated for similar purpose elsewhere.

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Instances abound whereby best instrument constructed cannot yield same or similar result in another locality. Hence, there have been observed misinformation as a result of these variations in cultures and well as environments. It has also been observed that many test users or researchers pay less attention to the importance of revalidation of an instrument, especially those developed in other culture. This unfortunately has yielded results which are celebrated erroneously instead of being questioned. It is also observed that majority of local researchers that lack the knowledge, pace and capacity to revalidate the psychometric properties of such instrument for use locally, adopts an existing instrument and use them, these abnormalities consciously or unconsciously exhibited by local researchers forms the gap through which the present study is based. Therefore considering the inherent challenges of intelligence testing in Nigeria and the serious implications involved in making decision based on intelligence testing in multiple domains, as well as expert recommendations on cross-cultural testing, this present study seeks to empirically Revalidation the Reynolds Adaptable Intelligence Test – Nonverbal for possible suitability, adaptability and utility within Nigerian

Research Questions

To help guide the study's conduct, the following research questions will be answered:

1. What are the factor structures of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV) using Exploratory Factor Analysis?
2. What are the item difficulty and item discrimination indices of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV) in Nigeria?
3. Using the subtest-total correlation technique, what is the construct validity of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV)?
4. How is the NVA and SEQ subset of the RAIT-NV scale classified and described in Nigeria?

METHODOLOGY

Triangulation research design was used for the study. It allows for a multi-method approach to studying related or intertwined phenomena. Reynolds Adaptable Intelligence Tests – Nonverbal were revalidated and using a multi-method approach using the multiple triangulations research design (RAIT-NV). The study was carried out in Nigeria across four geo-political zones. The study's population included all university undergraduates (1,794,989) in Nigeria's 92 public universities, as well as all students (4,758,739) in Nigeria's (upper primary) and secondary schools, for a total population of 7,553,728, bringing the total population to 14,107,456. (FRN: National Population Commission, 2019; Federal Ministry of Education, 2019). The sample size of 2200 undergraduates, upper primary and secondary school students, males and females, whose ages ranged from ten to forty years old were spread across four main cultural groups (Hausa, Igbo, Yoruba, and Minorities), were used for the study. The current study's instrument is based on the Reynolds Adaptable Intelligence Examination (RAIT), which is a quick, accurate, and reliable test of nonverbal intelligence. It was developed utilizing the RAIT's two nonverbal subtests to provide a reliable assessment of fluid intelligence. Despite the fact that the RAIT-NV has a time limit, it is

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still a power test, not a timed test. Individuals with hearing problems, minimal language skills or no reading skills, motor coordination, or no visual-motor abilities can use the RAIT-NV, which reduces the confounds that might occur when manipulated items are used to test nonverbal intelligence. The RAIT-NV can be given to a person or a group. It can be employed in human resource and associated industrial settings, as well as in schools, juvenile and adult justice systems, and clinical settings. The exam is intended to demonstrate consistency across a broad age range. Gender and ethnic bias were carefully tested, minimizing gender and ethnicity as confounds, which is especially essential for use with English as a second language (ESL) students and adults. Fluid intelligence is assessed using two subtests. The Nonverbal Analogies and Sequences subtests feature vivid, enticing images to keep examinees interested. The RAIT Nonverbal Intelligence Index (NVII), which is scaled to the common IQ metric, is created by adding the two subtests together. You can use the Score Summary Form to keep track of examinees' scores over administrations, generate reliable change indexes, and calculate discrepancy scores. Each subtest includes an example item that can be read by the examinee, read aloud to the examinee, or conveyed by hand gestures to aid comprehension, as well as alternate instructions and supplementary sample items for particular groups. The RAIT-NV is based on a sample of 2,124 people who were matched to 2010 Census data. Z scores, normal curve equivalents, stanines, percentiles, and age equivalents are among the scores available. Individuals with intellectual disability, traumatic brain injury, stroke, dementia, learning disability, hearing impairment, and ADHD were used to test the validity of RAIT-NV. The link between RAIT-NV scores and examinees' occupational industries and work complexity levels exhibited predictable patterns. Individuals between the ages of 10 and 75 should take the exam if they can understand the written or demonstrated subtest guidelines and formulate the necessary responses. It's worth noting that people who have serious visual impairments may struggle on the RAIT-NV. This means that the test can only be given to people who have severe fine-motor deficits. The RAIT-NV is divided into two subtests, each of which is timed separately. The two subtests take a total of 17 minutes. Except when employing specified alternate administration instructions, the proctor must use a timer to keep track of the time restrictions for each subtest. The examinee's demographic and background details are recorded on the first page of the RAIT-NV score summary form.

The validity of the above-mentioned instrument is well-known and widely acknowledged. The RAIT-NV was standardized using a population-proportionate, stratified random sampling plan based on 2010 U.S. Census population statistics on a sample of 2,124 people from 39 states. The test has a construct validity of 0.75 to 0.95 based on correlation with other tests (RAIT), (WISC-IV), (WAIS-IV), (RIAS), Wonderlic, (Beta III), (WRAT), and others (TIWRE). (Please double-check with the manual and enter the correct test and figures.)

According to Reynold (2016), test retest reliability ranges from 0.74 to 0.99 from ages 10 to 75, Cronbach alpha reliability ranges from 0.87 to 0.94 from ages 10 to 75, and alternate form reliability ranges from 0.85 to 0.94. Fifty pupils were used in a pilot test to ensure the instrument's dependability. The test retest reliability approach was used to determine the instrument's reliability.

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The test retest coefficients for RAIT-NV were r =.872, which was significant at the 0.05 level. This demonstrates that the RAIT-NV has a consistent test score. The 50 respondents' RAIT-NV scores were also exposed to Cronbach's Alpha, yielding a reliability coefficient of.794, indicating that the RAIT-NV has a high coefficient of stability and internal consistency.

Mean, standard deviation, Factor analysis, correlations (Pearson), and qualitative descriptions were used to analyze the data and answer research questions using statistical software packages such as X-Calibre, Statistical Package for Social Science (SPSS), and Microsoft EXCEL.

RESULTS

Research Question 1; What are the factor structures of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV) using Exploratory Factor Analysis in Nigeria?

Table 1 Factor Structures RAIT-NV in Nigeria.

ITEM	Component 1	Component 2
1	**.340**	-.393
2	**.343**	-.340
3	**.429**	-.310
4	**.340**	-.367
5	**.437**	-.077
6	**.335**	-.234
7	**.415**	-.058
8	**.370**	-.168
9	**.342**	.006
10	**.451**	-.045
11	**.539**	-.237
12	**.529**	-.045
13	**.429**	-.018
14	**.478**	-.012
15	**.507**	.092
16	**.470**	-.118
17	**.391**	.050
18	**.584**	-.062
19	**.512**	-.066
20	**.552**	-.196
21	**.468**	.047
22	**.386**	.210

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23	**.375**	.171
24	**.312**	.150
25	**.347**	.257
26	**.370**	.117
27	**.359**	.363
28	**.356**	.162
29	**.391**	.079
30	**.358**	.032
31	**.335**	.222
32	**.314**	.331
33	**.369**	.398
34	**.372**	.383
35	**.391**	.346
36	**.391**	.383
37	**.330**	.450
38	**.308**	.582
39	**.325**	.562
40	**.374**	.327
41	**.336**	.446
42	**.301**	.299
43	**.334**	.329
44	**-.319**	.486
45	**-.350**	.376
46	**.308**	.379
47	**-.312**	.261
48	**.323**	.343
49	**-.389**	.375
50	**-.376**	.390
51	**-.378**	.303
52	**-.349**	.329
53	.102	**.537**
54	.092	**.508**
55	.154	**.428**
56	.086	**.593**
57	-.054	**.572**
58	-.034	**.621**
59	.070	**.624**
60	-.085	**.535**
61	.152	**.599**
62	-.126	**.585**
63	.198	**.533**

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64	-.054	**.454**
65	.168	**.595**
66	-.041	**.330**
67	.158	**.437**
68	.243	**.319**
69	.204	**.426**
70	.221	**.520**
71	.326	**.337**
72	.282	**.505**
73	.208	**.367**
74	.139	**.386**
75	.287	**.371**
76	.202	**.379**
77	.192	**.371**
78	.265	**.368**
79	.191	**.365**
80	.218	**.428**
81	.108	**.488**
82	.081	**.460**
83	.037	**.464**
84	.072	**.399**
85	.194	**.112**
86	.019	**.371**
87	.033	**.555**
88	.038	**.492**
89	.012	**.494**
90	.038	**.454**
91	.030	**.547**
92	.077	**.425**
93	-.040	**.527**
94	-.061	**.441**
95	-.149	**.339**

N/B The numbers in bold shows the factor or structure that an item loads into using a cut off of .300 as factors that are significant.

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Table 1.1 Dimensions/factor structures of the (RAIT-NV) using Factor Analysis

Factors	Dimension/Domain measured by factor	Items loaded	Items Loaded Value Ranges
1	Nonverbal Analogies	Items 1-52(total of 52)	.31 - .58
2	Sequences	Items53-95(total of 43)	.31 - .59

Tables 1 show the numbers of factors of RAIT-NV. It shows that the 95 RAIT-NV items loaded on two (2) factors or components. It shows that 52 items loaded on factor or component one (1), that 43 items loaded on factor or component two (2). It show that the values ranged from .31 to .59 for the RAIT-NV

Table 1.1 further show that all the 52 items that had their values ranging from .31 to.58 that loaded on factor/component one measured a similar domain or dimension of Non Verbal while all the 43 items that had their values ranging from .31 to.59 loaded on factor/component two measured a similar domain or dimension of Sequential. This shows that RAIT-NV has Nonverbal Analogies and Sequences as its factor structures.

Research Question 2; What is the item difficulty and item discrimination indexes of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV) using the Classical Test Theory in Nigeria?

Table 2: Item difficulty and item discrimination indexes of RAIT-NV within the CTT framework.

NVA Item	P	R	SEQ Items	P	R
1	0.629	0.061	1	0.548	0.629
2	0.555	0.180	2	0.611	0.590
3	0.576	0.204	3	0.616	0.570
4	0.612	0.222	4	0.542	0.631
5	0.693	0.434	5	0.555	0.559
6	0.543	0.250	6	0.450	0.612
7	0.807	0.346	7	0.498	0.488
8	0.610	0.116	8	0.613	0.543
9	0.758	0.384	9	0.571	0.484
10	0.735	0.453	10	0.572	0.535
11	0.677	0.388	11	0.447	0.402
12	0.772	0.474	12	0.447	0.354

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13	0.746	0.473	13	0.350	0.531
14	0.744	0.430	14	0.283	0.310
15	0.707	0.540	15	0.368	0.412
16	0.600	0.338	16	0.382	0.453
17	0.718	0.399	17	0.431	0.564
18	0.722	0.382	18	0.533	0.494
19	0.618	0.561	19	0.384	0.360
20	0.571	0.321	20	0.465	0.477
21	0.493	0.348	21	0.498	0.549
22	0.267	0.223	22	0.367	0.250
23	0.569	0.342	23	0.372	0.409
24	0.608	0.324	24	0.238	0.325
25	0.291	0.083	25	0.267	0.213
26	0.443	0.378	26	0.259	0.315
27	0.638	0.556	27	0.302	0.199
28	0.668	0.570	28	0.293	0.246
29	0.703	0.493	29	0.333	0.356
30	0.344	0.216	30	0.206	0.329
31	0.484	0.176	31	0.424	0.291
32	0.393	0.264	32	0.324	0.210
33	0.462	0.377	33	0.246	0.122
34	0.443	0.302	34	0.285	0.139
35	0.389	0.402	35	0.296	0.328
36	0.266	0.272	36	0.221	0.225
37	0.508	0.373	37	0.147	0.021
38	0.369	0.370	38	0.355	0.083
39	0.492	0.450	39	0.354	0.405
40	0.470	0.328	40	0.246	0.139
41	0.453	0.377	41	0.271	0.331
42	0.183	0.239	42	0.230	0.091
43	0.275	0.393	43	0.260	0.144
44	0.187	-0.061			
45	0.193	0.093			
46	0.277	0.285			

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47	0.208	0.122			
48	0.348	0.161			
49	0.358	0.182			
50	0.344	0.131			
51	0.290	0.253			
52	0.627	0.062			

The p-value, which indicates the difficulty indexes for the RAIT-NV items, is shown in Table 2 within the CTT framework (52 items for NVA and 43 items for SEQ). Higher p values (> 1.0) indicate that the item is very easy, while a value less than -1.0 indicates that the item is extremely difficult. The table shows that item difficulty for both the NVA and SEQ subtests of the RAIT-NV ranges from very easy to very difficult, reflecting the test's constructor's design. P-values obtained in the NVA subset ranged from.80 to.18, while P-values obtained in the SEQ subset ranged from.61 to.14. The discrimination index within the CTT framework, as indicated by item total correlation, is shown again in table 2. The item-total correlation is a metric for the item's discriminating power. Negative values are poor discriminators, while positive values are good discriminators, according to the set criteria for item discrimination, rpbs 0.2. It shows that items in the NVA and SEQ subsets of the RAIT-NV all discriminated between people in Nigeria who were high in the ability being measured and those who were low in the ability intelligence. So the p value representing the difficulty index and the r value representing the discrimination index clearly show that the RAIT-NV has adequate p and r values.

Research Question 3; what is the construct validity of the Reynolds Adaptable Intelligence Tests – Nonverbal (RAIT-NV) using the subtest-total correlation method in Nigeria?

Table 3. RAIT-NV Construct Validity

		NVA	SEQ	RAIT
NVA	Pearson Correlation	1	.619**	.885**
	Sig. (2-tailed)		.000	.000
	N	2120	2120	2120
SEQ	Pearson Correlation	.619**	1	.877**
	Sig. (2-tailed)	.000		.000
	N	2120	2120	2120
RAIT	Pearson Correlation	.885**	.877**	1
	Sig. (2-tailed)	.000	.000	
	N	2120	2120	2120

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

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The table 1.3 shows the subtest total correlation of the RAIT-NV. It reveals that the NVA subtest had high positive correlation coefficient of .885 with the RAIT-NV which was significant at 0.000,($p<0.005$). The SEQ subtest total when correlated with the RAIT-NV total, had a correlation coefficient of .887 which is a very high correlational coefficient which was also significant at 0.000,($p<0.005$). This shows that the RAIT-NV has items that are internally consistent and as such reliable.

Research Question 4: What is the Classification and Description of the NVA and SEQ subtest of RAIT-NV scale in Nigeria.

Table 1.4. Classification and Description of the NVA and SEQ

NVA-NII and Population %	SEQ and Population %	Brief description
129 and above(0.03	129 and above(0.9	Significantly above average
120 -129 (0.04%)	120 -129(5.2%)	Moderately above average
110 -119 (5.01%)	110 -119(18.5%)	Above Average
90-109(46.1%)	90-109(53.2%)	Average
80-89 (22.1%)	80-89(10.23%)	Below Average
70-79 (13.1%)	70-79(8.25%)	Moderately below average
69 and below(14.09)	69 and below (5.18%)	Significantly below average

From table 1.4 Examinees with a Nonverbal intelligence index of 130 or higher on both the NVA and SEQ subtests have significantly above average intelligence, while those with an NVII of 120-129 have moderately above average intelligence, 110-119 are above average, 90-109 have average intelligence, 80-89 have below average intelligence, 70-79 have moderately below average intelligence, and those with an NVII of 69 or less have significantly below average intelligence. The percentage of the population in each of these groups is also shown in the table. Examinees with a Nonverbal Intelligence Index of 130 and above occupy 0.03 percent under NVA, 120-129 NVII has moderately above average intelligence with examinees constituting 0.04 percent, 110-119 are above average with examinees constituting 5.01 percent, 90-109 have average intelligence with examinees constituting 46.1 percent representing the highest, 80-89 have average intelligence with examinees constituting 46.1 percent representing the highest,

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The percentage of the population in each of these groups is also shown in the table. Examinees with a Nonverbal intelligence index of 130 and above occupy 0.94 percent of the SEQ population, 120-129 SEQ has moderately above average intelligence with examinees constituting 5.23 percent, 110-119 are above average with examinees constituting 18.53 percent, and 90-109 have average intelligence with examinees constituting 53.20 percent representing the highest.

DISCUSSION OF FINDINGS

Establishment of the Factor Structure of Reynolds Adaptable Intelligence Test- Nonverbal (RAIT-NV) in Nigeria.

The 95 RAIT-NV components stacked on two (2) elements or segments, as per the aftereffects of study question one. It uncovers that 52 items are stacked on factor or part one (1), and 43 items are stacked on factor or segment two (2). (2). It shows that the RAIT-NV esteems ran from.31 to.59. Table 4.1.1 additionally shows that each of the 52 items stacked on factor/segment one with values going from.31 to.58 estimated a comparative space or measurement of Non Verbal, while every one of the 43 items stacked on factor/segment two with values going from.31 to.59 estimated a comparative area or measurement of Sequential. RAIT-NV has Nonverbal Analogies and Sequences as its factor structures, in light of the assessed cutoff of.300 as critical components. This is reliable with the test designer Reynolds 2014's factor structure, demonstrating that RAIT-factor NV's constructions are Nonverbal Analogies and Sequences. Subsequently, this examination had the option to exactly set up the Dimensions, areas, and parts of the RAIT-NV test, which is a critical finding. This result is reliable with Yang, Li, & Li (2008) .'s automated number sense scale (CNST), which was observationally and hypothetically checked through corroborative factor analysis. This outcome obviously shows that the RAIT NV's factor construction might be used to assessment in Nigeria.

Item Difficulty and Item discrimination index under the Classical Test Theory(CTT) framework of Reynolds Adaptable Intelligence Test –Nonverbal (RAIT-NV) in Nigeria.

Findings from the study showed that for both Nonverbal analogies (NVA) and the Nonverbal Sequence (SEQ) subtest of the RAIT-NV, had an item difficulty that graduates from very easy to very difficult which reflects the design of the test by its constructor. In the NVA subtest P- values obtained ranged from .80 to .18 while in the SEQ subtest, P- values obtained ranged from .61 to .14. Higher *p* values (> 1.0) indicate that the item is very easy and a value below -1.0 indicates that the item is very difficult. It shows that items in the NVA and SEQ subtest of the RAIT-NV, all discriminated between persons high in intelligence ability measured and those low in the intelligence ability in Nigeria. So the p value representing the difficulty index and the r value representing the discrimination index within the CTT Framework clearly shows that the RAIT-NV possesses adequate p and r values. difficulty and item discrimination of the RAIT-NV items under CTT framework. the table presents the assessment of the RAIT-NV using the set criteria for item difficulty. Using these criteria, items The table presents the assessment of the RAIT-NV using the set criteria for item discrimination. Reynolds (2014) This also in line with. Ojerinde 2013. Petrillo,

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J., Cano, S. J., McLeod, L. D., & Coon, C. D. (2005)

Item Difficulty and Item discrimination index of Reynolds Adaptable Intelligence Test – Nonverbal (RAIT-NV) in Nigeria.

A careful examination of the *a* parameter column both for the NVA and SEQ subtest reveals that most of the test items discriminated well. The a values ranged from 0.1 to 1,4 for NVA and 0,1 to .1.9 for SEQ. Higher *b* parameters (> 1.0) indicate that the item is more difficult; a value below -1.0 indicates that the item is very easy. A closes scrutiny of the *b* parameter column shows that the values of *b* for the NVA ranged from -2. 12 to 3.00 and same for SEQ. The b parameter kept graduating in difficulty for the whole test. This study has been able to sufficiently establish the qualities of RAIT-NV Test in Nigeria which is a first. This comparable result obtained when both CTT and IRT was used is in line with the result of Ojerinde, Popoola, Ojo, & Ariyo, (2014), Petrillo, Cano, McLeod & Coon, (2005)and Emekene (2017)

Establishment of Validity of Reynolds Adaptable Intelligence Test-Nonverbal (RAIT-NV) in Nigeria.

The subtest total correlation of the RAIT-NV. It reveals that the RAIT-NV for the whole items was, 887 which is a very high correlational coefficient which was also significant at 0.000,($p<0.005$) while the NVA subtest had high positive correlation coefficient of .885 with the RAIT-NV which was significant at 0.000,($p<0.005$). The SEQ subset total when correlated with the RAIT-NV total, had a correlation coefficient of .887. According to Abdalgadr (2009) who worked on "Standardization of Raven's standard progressive matrices test for a Libyan sample"**.** Quantitative research designs (descriptive and comparative survey, correlational and cross-sectional) were used. The aim of this study was to standardize the SPM test to a Libyan setting to develop norms for the classic form of the SPM test to identify the distribution of IQ scores within Libyan students. . The result of the findings indicated that SPM had 0.85 validity and item analysis indicated that the SPM test may be considered as an appropriate measure of mental ability for Libyan students. This shows that the RAIT-NV has items that are constructly valid and as such reliable. In a related study carried out by Miron (2014) on validation study of a transferred group intelligence test. The purpose of the research was to conduct a validation study of a transferred group intelligence test. The Lorge-Thorndike Intelligence Test, Level A, Form 1 was translated to Hebrew and administered to an Israeli sample comparable to the original norming group. The results obtained were concerned with variability, reliability, validity, item analysis, inter-correlations among subtests, and factor analysis. The showed a validity 0.91 and as such was measure was recommended for use. These results obtain from various study is in line with the validity coefficient of RAIT-NV in Nigeria.

The Classification and Qualitative Description of performance level on the Nonverbal Analogies (NVA) and Sequence (SEQ) subtest of RAIT-NV scale in Nigeria.

Findings showed that in Table 1.4 and 1.4.1, examinees are classify into groups base on the score obtained from the test. Nonverbal intelligence index of 130 and above both under the NVA and SEQ subtest have significant above average intelligence, 120 -129 NVII has moderately above

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average intelligence, 110 -119 are above average, 90-109 have average intelligence, 80-89 ha below average intelligence, 70-79 has moderately below average intelligence while 69 below has significantly below average intelligence

Table 1.4 showed the percentage of population under these categories. It shows that under NVA, examinees with Nonverbal intelligence index of 130 and above occupy 0.03% , 120 -129 NVII has moderately above average intelligence with examinees there constituting 0.04% , 110 -119 are above average with examinees there constituting 5.01%, 90-109 have average intelligence with examinees there constituting 46.1% representing the highest, 80-89 ha below average intelligence with examinees there constituting 22.1%, 70-79 has moderately below average intelligence with examinees there constituting 13.1% while 69 below has significantly below average intelligence having 14.09%

Table 1.4.1 showed the percentage of population under these categories. It shows that under SEQ, examinees are classified into groups base on their score in the RAIT-NV test, With Nonverbal intelligence index of 130 and above occupy 0.94% , 120 -129 SEQ has moderately above average intelligence with examinees there constituting 5.23% , 110 -119 are above average with examinees there constituting 18.53%, 90-109 have average intelligence with examinees there constituting 53.20% representing the highest, 80-89 has below average intelligence with examinees there constituting 10.23%, 70-79 has moderately below average intelligence with examinees there constituting 8.24% while 69 below has significantly below average intelligence having 5.18%.. In the same vein Kpolovie and Emekene 2016 developed scale for the study carried of Advanced Progressive Matrices (APM) scale.

Implications of the study

1. Determining the factor structure of RAIT-NV was of great relevance in the study, as it ensures that RAIT-NV is measuring one construct, which is intelligence. A good instrument is unidimensional in nature.
2. Teachers, test developers, psychologist, researchers and relevant educational agencies, should ensure that they establish the classification and qualitative description of performance level of any instrument they are revalidating and standardizing for measuring intelligence. This is recommended to in order to classify examinees effectively into their relative groups.

CONCLUSION

1. In conclusion RAIT-NV had two factors structure that measures the dimensions of RAIT Nonverbal Analogies(RAIT-NVA) and RAIT Nonverbal Sequences (RAIT-NV SEQ).
2. In conclusion, the RAIT-NV had item difficulty ranging from very easy to very difficult while RAIT-NV was able discriminate between those that have high and low intelligence ability.
3. In conclusion the RAIT-NV items had a construct validity of 0.885 and RAIT-NV SEQ was found to be 0.887. The validity coefficient was significant at 0.000, ($p<0.005$).

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4. The classification and qualitative description of performance level of the RAIT-NV scale in Nigeria was concluded, Examinees were classify into their various groups.

Suggestions For Further Research

Development of Reynolds Adaptable Intelligence Test- Nonverbal Short form (RAIT-NV-SF) for psychological measurement in Nigeria.

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