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Indigenous Emotional Intelligence Scale: Development and Validation

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Abstract

In Nigeria, it seems there is sparse of indigenous measure of emotional intelligence. Therefore, this research fills a gap in literature by developing a valid and reliable indigenous scale. To achieve this, the author combined the Bar-On and Goleman's models of emotional intelligence. In Study 1, 255 items were generated and were reduced to 198 based on expert advice. At the end of several analyses, 52 items were retained. These items were put in a questionnaire form and administered to 850 students in a university. The author determined the factorial validity of the scale using a sample of 834 participants who returned the scale. The scale (using varimax rotation method) was then subjected to principal component analysis and 40 items were retained in a 7 well defined factor structure. The factors/dimensions include interpersonal skill (r = .77), empathetic response (r = .73), stress tolerance (r = .69), optimism (r = .75), assertiveness (r = .78), problem solving (r = .74) and flexibility (r = .80). The scale has convergent validity because of its positive relationship with empathy (r = .67) and social intelligence (r = .79) and negative relationships with aggression (r = -.41) and impulsiveness (r = -.32). A test re-test reliability of . 79 was also established for the scale.

Keywords: emotional intelligence, age, gender, self-report, students

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The widespread and growing interest in the theoretical development and measurement of emotional intelligence over the years has stimulated various interests from researchers in social sciences (Batool & Khalid, 2011; Carlson, Carlson, & Birkenmeier, 2000). These researchers have recognized and attempted to understand the various aspects of emotional intelligence in a bid to establish whether there exists any variance among individuals which has not been unraveled by experts in cognitive intelligence. According to Jonker and Vosloo (2008); Perez, Petrides, and Furnham (2005) emotional intelligence has raised concerns at both management, social and academic levels. It is only recently that results from empirical studies have provided explanations to underlying questions bothering around emotional intelligence. Fundamental issues of this concept that has been the bane of most researchers in this area have often been in the area of assessment and measurement of emotional intelligence.

Although there are many methods and techniques of assessing emotional intelligence (Afolabi, 2004; Brackett, Mayer, & Warner, 2004), however, the strengths and limitations of these methods need to be re-assessed

(Fernandez-Berrocal & Extremera, 2006b). For now, discussions on emotional intelligence focus on the important contribution of the concept to the study and explanation of human behaviour and its benefits to the study of individual differences (Geher, 2004).

For the purpose/focus of this investigation, the author defined emotional intelligence as the ability of an individual to adapt and provide feedback effectively and constructively in managing novel situations and understanding the emotions of self and significant others in the face of frustration. It is therefore expected that individuals who show high levels of emotional intelligence exhibit behaviours that tend to delay gratification, by exercising self-control in the face of immediate gratification in an attempt to maximize gratification over an extended period of time.

Goleman (1995) also claimed that emotionally intelligent individuals exhibit a high sense of self-interest through activities that are beneficial to the individuals themselves and the society in general. In group situations, individuals with high emotional intelligence tend to find it easier to sustain relationships. Also, individuals who show high emotional intelligence tend to exhibit high self-awareness, that incorporates healthy life styles and prosociality.

The findings of a number of studies (like Batool & Khalid, 2011; Carlson, Carlson, & Birkenmeier, 2000; Pugh, 2002) have concluded that participants who are involved in self-destructive behaviours are found to have lower emotional intelligence whereas those with higher emotional intelligence were involved in positive outcomes like prosocial behaviour, parental warmth with good peer and family relations (for example, Afolabi, 2013; Brackett & Mayer, 2003; Brackett, Mayer, & Warner, 2004). According to Findley and Cooper (1983), emotional intelligence influences individual academic performance and such individuals in this group are said to be more of extrovert, sociable, friendly, easy going and talkative than introvert. However, in a rather negative form, people with low emotional intelligence tend to find it difficult to transit from high school to university, even those that eventually transit become very lonely, reclusive, some drop out of school, while others just get by.

Other researchers (like Afolabi, 2004; Mayer, Salovey, & Caruso, 2000) were of the opinion that emotional intelligence could not be a single trait or ability but a composite of specialized reasoning abilities. Thus, an individual perceives emotions as consisting of recognizing and interpreting the importance of emotional states including their relations to other sensory experiences. This suggests that understanding one's emotions and that of others is an important aspect of understanding emotional development and management. This is why Afolabi, Awosola, and Omole (2010, p. 147) concluded that "an individual's emotional intelligence is an indicator of how he or she perceives, understands and regulates emotions". In this research, Salovey and Mayer's (1990) original model of emotional intelligence was used as a basis for the development of this self-report measure of emotional intelligence as an encompassing model that is expected to provide a reliable basis for a measure of individual's actual level of emotional intelligence.

Reasons for This Study

Emotional intelligence is so important in everyday life to the extent that it cannot be over-emphasized. The dearth witnessed in the field of emotional intelligence in Nigeria owes largely, to the non-availability of cultural-sensitive scales of its measurement (Afolabi, 2004).

This development of an indigenous scale to measure emotional intelligence intends to fill an existing gap. Besides, the existing measures of emotional intelligence were either developed in Europe, America, Asia, etc.,

so they are not culturally relevant/culture fair and thus, they have limited application. The appropriateness of administering these measures outside their areas of origin could be questionable. Although the psychometric properties of the existing emotional intelligence measures are well established, but most of the scales were not designed for Nigerian samples. Thus, the cultural validity of these scales is questionable outside these cultures. This viewpoint is supported by many researchers (e.g. Barchard & Russell, 2006; MacCann, Matthews, Zeidner, & Roberts, 2004; Stys & Brown, 2004).

Therefore, the bane of this research is to design a culturally sensitive and dependable measure of perceptions in all domains of emotional intelligence. This measure provides professionals and other interested individuals with facilitating techniques that increase the propensity of emotional intelligence. Also, this attempt will generate new research efforts. Besides, the scale will serve as an indigenous measure of emotional intelligence in Nigeria which can be used by professionals and interested individuals to investigate the average level of emotional intelligence of the Nigerian sample. It will also be used to establish national norms, such as age and gender discrepancies across the domains of emotional intelligence.

Overview

This research was carried out in two studies that run concurrently (i.e. one after the other) with three basic steps. For the first study which comprised of two steps; items were generated in Step 1 while the generated items were factor-analyzed in Step 2 to explore the hypothetical structure of the scale. Therefore, in Study 2, the scale was evaluated (to ascertain the reliability and validity coefficients of scale items). The author described the fundamental process of developing a measurement scale in line with the recommendations of Batool and Khalid (2011).

Study 1: Creating a Measure of Emotional Intelligence

Method

Step 1: Item Generation

A rational strategy was adopted in the construction of items. Firstly, items were generated by consulting relevant literature on emotional intelligence. These are majorly from the positions of Bar-On (1997, 2000) which stated that emotional intelligence has 15 dimensions and Goleman (1995) which supports 5 factors only. However, 5 out of all the 20 dimensions (put together) are similar. Thus, the 15 dimensions of emotional intelligence by Bar-On include emotional self-awareness, stress tolerance, flexibility, impulse control, interpersonal skill, problem solving, self-regard, optimism, empathy and assertiveness. On the other hand, Goleman's 5 factors include interpersonal skills, mood regulation, self-awareness, empathetic response and internal motivation. From the initial analyses of the dimensions from the 2 positions, and merging the 5 similar dimensions suggested by 10 social psychology experts (from 5 universities in Nigeria), the following factors were combined. They are interpersonal skills, empathy/empathetic response, mood regulation/impulse control, self-awareness/emotional self-awareness.

The development of items for the emotional intelligence scale relied on a combination of two techniques: literature review, and content analysis (just like Akinfala, Akinbode, & Ayodeji, 2014). Using rational criteria method, the literature review generated the first set of items that were included in the emotional intelligence scale. Secondly, the content of responses from 50 graduating students interviewed was analyzed. Examples of

the questions asked during the interview include: “What do you think emotional intelligence entails?”, “How do you determine an emotionally intelligent individual?”, “What are the attributes of an intelligent person?” and so on. The responses were analyzed for content pertaining to emotional intelligence. Thus, using empirical criteria with an in-depth interview method, a preliminary investigation was carried out that took between thirty and forty minutes. At the end of the interaction which took place at the laboratory of the department of psychology in a Nigerian university, 76 items were generated. Questions in the typical in-depth interaction sessions were based on the concept, adjectives and factors (as defined by Bar-On, 1997; Bar-On, 2000; Goleman, 1995) that are considered relevant to define emotional intelligence. Some of the respondents were asked detailed questions on their experience with their room/classmates.

Finally, based on the operational definitions provided by Bar-On and Goleman, 9 well-defined dimensions were retrieved. These include interpersonal skill (social ability to interact with others easily), self-regard (ability to understand and respect oneself), assertiveness (ability to exhibit one’s mood in a fair way without self-destruction), empathetic response (the ability to understand others’ feelings), flexibility (ability to adjust and adapt to a new situation), problem solving (ability to cope and forge ahead under life challenges), stress tolerance/mood regulation (ability to manage emotions in such a way that problems are avoided), optimism (despite frustrations, the ability of an individual to maintain a positive attitude) and internal motivation (the ability of an individual to be reinforced or delay gratification in pursuit of a goal).

Based on the 9 factors/dimensions, the author generated other 84 items in addition to the initial 76 items. The 160 negatively and positively worded items represent all the factors. In addition, another 95 set of items were generated by some selected postgraduate students of psychology at the same University. These 255 total items were then assessed for clarity and meaningfulness before they were sorted back into the 9 dimensions. These sets of items were first given to 5 doctoral students in the area of social and industrial psychology to assess its face validity. At this point 33 items were deleted leaving 222 items.

To assess the content validity of the 222 items, they were given to 10 university lecturers (who were on the professorial cadre) in the area of social, industrial and clinical psychology. Before then, the judges/experts were presented the definition of emotional intelligence (which is the ability of an individual to adapt and provide feedback effectively and constructively in managing novel situations and understanding the emotions of self and significant others in the face of frustration). The items were included in the instrument if considered relevant to the construct, essential, clear/meaningful, and properly worded by the experts. This technique was utilized because of its justification derived from Nunnally (1978)’s position that content validity of an instrument can be established using expert ratings. This is the reason why expert ratings were used to establish content validity and all items that received 70% (7 out of 10 judges’) support were retained.

This process led to the removal of other 20 items that were either considered too similar, confusing or meaningless. To ensure the simplicity and psychometric relevance of the items, Kolmogorov-Smirnov test of normality was used after which 12 of the items were also removed due to their non-normality characteristics. The Kolmogorov-Smirnov (K-S) test was used based on the empirical distribution function. In addition, the test does not depend on the underlying cumulative distribution function being tested. It was after the analysis, the dimensions were trimmed back to 22 items each, retaining the items that were evaluated to best represent the dimension. The rest items were then individually assessed to examine if they load cleanly on the 9 theoretical dimensions of emotional intelligence (Carlson et al., 2000). This indicated the items to be retained and those to

be deleted from the item pool. This method finds support in the position of the American Psychological Association (1985) which recommends establishing content validity, criterion-related validity, construct validity, internal consistency, or reliability of measures of a psychological construct.

Step 2: Factor Analysis/Scale Development

Participants — Based on the items generated, all the 198 items was put in a questionnaire format and administered in a pilot study comprising of 850 students from a National University situated in Nigeria's most populous city. The participants included 407 (47.9%) males and 443 (52.1%) females. The sample also contained 517 (60.8%) undergraduates and 333 (39.2%) postgraduate students. Convenient sampling technique was employed in selecting the respondents and their ages ranged between 17 and 48 years (M = 34.50, SD = 7.98).

Procedure — The 198-item scale was administered to the carefully selected participants who were requested to fill it as honestly as possible since it's not an examination. Those who were not ready to be part of the study were not forced and those who seemed too eager to take part were excluded to reduce biases. The copies of the scale were distributed immediately after their mid-day classes. They were also allowed to take the scale home while those who could fill them immediately did. And it was so returned to the researcher. It took about 2 weeks to retrieve 834 out of the 850 copies administered. Some respondents did not return the scale while some returned it unfilled.

In order to make the participants' response classified (just like Afolabi, 2013), on the research instrument, they were told not to identify themselves in anyway and they were also informed that the exercise was for research purpose only and the results/outcome of the study would not be disclosed in any individually identifiable way.

Data Analyses — All the data collected were subjected to analyses using version 21 (IBM 0.21) of Statistical Package for Social Sciences (SPSS).

To determine the structure of factors, principal factor extraction with varimax rotation was done on the measuring instrument. Before then, principal component extraction was utilized to determine the number of factors, factorability of the correlation matrices and any inclusion of outliers. The eigen values were also estimated to determine the number of factors embedded in the measuring instrument. Using Clark and Watson's (1995) position, Cronbach alpha coefficients were employed to establish the unidimensionality, homogeneity and internal consistency of the instrument. This is important because of its relevant information on the percentage of the scale items' variance.

Means, standard deviation, etc were also established using descriptive statistics while Pearson product moment correlation coefficients were used to establish the relationship between the study variables. Using the position of Cohen (1988), a cut-off point of .30 was followed for the purpose of correlation coefficients. In addition, the effect size (according to Jonker & Vosloo, 2008; Steyn, 1999) was employed to take decision on the practical significance of the findings.

Results

After the criteria of sample size, normality and linearity (according to Field, 2005) was fulfilled, the scale items were then subjected to item analysis procedure to ascertain the psychometric properties of the scale and improve on the construct validity of the test instrument. Only the items with a wide distribution of response

alternatives (each of the five responses of the item was given by at least 5% of the participants) and a significant item–total correlation of .40 and above (Rust & Golombok, 1995) were selected. From the analysis, some of the items were removed thus leaving 40 items used for the final scale. Just like the initial one, the 40-item scale was constructed on a 5-point Likert type scale ranging from strongly disagree (1) to strongly agree (5).

Exploratory factor analysis carried out supported only 7 out of the 9 dimensions of emotional intelligence earlier identified. These 7 factors included interpersonal skill (P1-6); empathetic response (E7-11); stress tolerance (S12-17); optimism (T18-21); assertiveness (A22-26); problem solving (B27-33) and flexibility (F34-40). The item loadings on factor one ranged from .65 to .74, on factor two ranged from .57 to .81; on factor three from .67 to .81; on factor four from .66 to .81; on factor five ranged from .65 to .81; on factor six ranged from .59 to .79, and on factor seven ranged from .59 to .85 (Table 1). The 40-item scale had an alpha reliability of .89 and a split-half reliability using the Spearman–Brown formula yielded .78 coefficient. The 7 factors loaded with Eigen values exceeded 1.00. The least item loading of .57 on the factors satisfies the criterion of .30 for accepting the structure coefficient (Pedhazur, 1982). The reason why factor analysis was done in the construction of the scale is to examine the stability of the factor structure and provide information that will facilitate the refinement of the new measure. See Table 1.

In order to establish the internal consistency of the total scale and its sub-scales, reliability analysis was run on the normative sample. The reliabilities for interpersonal skill, empathy, stress tolerance, optimism, assertiveness, problem solving and flexibility were .77, .73, .69, .75, .78, .74 and .80 accordingly. Reliability for the overall measure was .77. This showed that the overall measure and its dimensions are reliable. The results are presented in Table 2.

To test the gender and age differences on emotional intelligence, the characteristics of the sample were analysed based on their total emotional intelligence (Table 3). The table showed that participants between the ages 31 to 35 had the highest mean score (M = 163). This group is closely followed by the age group 26 to 30 years (M = 156), then with 16 to 20 years having the lowest mean score (M = 142). Based on gender, females scored higher on total emotional intelligence (M = 167; SD = 4.77) than male participants (M = 157; SD = 5.21).

Table 1

Factor Analysis of the 40 Items: Seven-Factor Solution

Item		Factor							
		1	2	3	4	5	6	7	ITL
P1	I am good at reading peoples' feelings	**.69**	.14	.21	.10	.11	.17	.09	.72
P2*	I find it difficult relating with other people	**.74**	.05	.07	.13	.07	.12	.08	.58
P3	I can tolerate negative social interactions form another person	**.65**	.02	.11	.08	.10	.13	.04	.61
P4	I have the social skills to handle interpersonal discomfort	**.71**	.11	.06	.05	.10	.13	.09	.68
P5	I am consciously aware of both positive and negative feelings from other people	**.69**	.16	.01	.14	.12	.08	.02	.81
P6	I enjoy the company of my friends	**.69**	.08	.08	.11	.13	.07	.05	.72
E7	I always try to create positive relationship with people every time	.08	**.65**	.10	.11	.09	.12	.07	.77
E8	I care about others	.02	**.76**	.11	.07	.03	.01	.09	.60
E9	I always identify myself with those in need	.08	**.57**	.10	.12	.07	.06	.04	.70
E10	I am usually enthusiastic when I communicate my feelings to others	.03	**.67**	.09	.07	.02	.01	.06	.75
E11	I prefer face to face discussion of disagreement to sending messages	.07	**.81**	.11	.06	.04	.09	.02	.69
S12	I do not allow nervousness to take charge of me	.01	.09	**.78**	.11	.10	.09	.07	.75
S13	I know how to control my anxiety in the public	.13	.09	**.72**	.06	.04	.02	.11	.66
S14	I am always calm at every situation	.07	.05	**.81**	.04	.09	.07	.01	.58
S15	I am easily irritated when people I don't know call me on phone	.09	.12	**.80**	.09	.07	.07	.13	.78
S16*	Occasionally, I worry about little things	.10	.03	**.67**	.06	.07	.05	.02	.63
S17*	I am easily disturbed when I hear negative comments about my person	.10	.09	**.81**	.07	.10	.01	.08	.69
T18*	I do not believe one can achieve all things	-.06	.11	.01	**.72**	.07	.08	-.05	.71
T19	Everything is working well for me	.01	.01	.08	**.66**	.07	.06	.07	.66
T20	I can see positive aspects of any problem	.02	.08	.11	**.69**	.10	.03	.07	.67
T21	I believe I can achieve any goal I set for myself	.11	-.02	.04	**.81**	.05	.05	.02	.77
A22	I take time to listen to every opinion	.12	.09	.05	.04	**.72**	.08	-.05	.79
A23	I can complain without making it an issue	.06	-.03	.02	.07	**.81**	.05	.06	.81
A24	I express myself easily whenever I feel marginalized	.08	-.14	.07	.15	**.77**	-.10	.12	.67
A25	I asked people reasons for their actions without offending them	.09	.07	.10	.09	**.65**	.07	.11	.66
A26*	I find it difficult to complain about things that bother me so as not to offend others	.02	.05	.04	.09	**.78**	.13	.10	.69
B27	I try to find solutions to my life challenges	.07	.06	.04	.18	.16	**.79**	.07	.70
B28	I always plan before I embark on anything	.11	.13	.04	.09	.14	**.72**	.04	.65
B29	I try to solve my problems as well as that of my neighbours	.13	.08	.06	.05	.13	**.68**	.06	.59
B30	When I am in a fix, I look for a way out of it	.01	.05	.05	.10	.07	**.59**	.08	.64
B31	Whatever I do I prepare for any outcome either positive/negative	.07	.14	.04	.06	.11	**.61**	.01	.78
B32	Under adverse circumstance, I avoid conflict with anyone	.05	.09	.13	.03	.02	**.70**	.12	.71
B33	I resolve my challenges easily	.08	.08	-.17	.07	.03	**.72**	.06	.57
F34	I relate with anyone	.05	.07	.04	.01	.06	.01	**.77**	.61
F35	I explore all situations to make it enjoyable	.14	.08	.03	.07	.12	.09	**.85**	.68
F36	When changes come I adapt easily	.01	.05	.04	.07	.02	.09	**.64**	.77
F37	I am open to new ideas	.08	.02	.03	.11	.07	.01	**.59**	.62
F38	I am easygoing and make friends easily	.02	.07	.15	.09	.17	.08	**.61**	.59
F39*	I am rigid and do not accept changes	.08	.04	.01	.11	.03	.13	**.71**	.61
F40	I am ready to learn new ideas	.19	.07	.11	.13	.07	.09	**.68**	.71
Eigen values		5.2	3.7	2.9	4.5	3.9	4.1	3.7	3.1
% of item variance explained		12.8	7.2	4.1	9.8	8.0	9.2	7.7	4.5

Note. *Reversed items; ITL = Item total loading on the factors; *P* = interpersonal skill; *E* = empathy; *S* = stress tolerance; *T* = optimism; *A* = assertiveness; *B* = problem solving; *F* = flexibility. Boldface indicates highest factor loadings.

Table 2

Descriptive Statistics and Correlation Matrix With Students

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Emotional Intelligence (EI)	147.00	31.20	(.77)										
2. Interpersonal Skill (IPS)	27.32	4.21	.72	(.77)									
3. Empathetic Response (EMT)	18.99	4.89	.61	.51	(.73)								
4. Stress Tolerance (SRT)	21.64	5.12	.56	.23	-.18	(.69)							
5. Optimism (OPT)	14.87	3.66	.68	.31	-.07	.17	(.75)						
6. Assertiveness (AST)	19.34	5.13	.63	.42	.24	.16	.21	(.78)					
7. Problem Solving (PSL)	28.77	5.98	.59	.37	-.09	.07	.15	-.11	(.74)				
8. Flexibility (FLX)	22.17	3.21	.69	.33	.12	-.09	.21	.33	.17	(.80)			
9. Age (Chronological)	37.47	6.21	.29	.06	.24	-.13	.14	.27	.03	-.05			
10. Gender[a]	1.32	0.50	.13	-.01	.03	.011	-.06	.04	.03	-.02	.01		
11. Level of Study[b]	1.21	0.50	.18	.09	.13	.11	.04	.07	.14	.09	.11	.07	
12. Lecture Hours per Week	27.23	13.71	.09	-.03	.01	.06	-.02	.03	-.02	.02	.03	.09	.10

Note. *N* = 834. Reliability coefficients are presented in parantheses along the diagonal.

[a]Male = 1, Female = 2. [b]Undergraduate = 1, Postgraduate = 2.

Table 3

Total Score of the EI Measure of the Sub-Groups of Participants

Item	Category	Mean	*SD*	Frequency
Age (yrs)	16-20	142.21	2.65	215 (25.2%)
	21-25	149.17	3.21	245 (28.8%)
	26-30	156.21	3.33	182 (21.4%)
	31-35	163.03	2.87	101 (11.9%)
	35 & above	152.26	3.88	107 (12.6%)
Gender	Male	157.00	4.77	407 (47.9%)
	Female	167.18	5.21	443 (52.1%)
Level of Study	Undergraduate	132.31	6.98	517 (60.8%)
	Postgraduate	145.09	5.69	333 (39.2%)
Faculty	Arts	133.23	3.11	140 (16.4%)
	Education	135.31	3.28	128 (15.0%)
	Law	140.12	4.76	202 (23.7%)
	Science	138.07	4.17	113 (13.3%)
	Social Sciences	141.03	5.22	147 (17.3%)
	Mgt Sciences	136.11	5.01	120 (14.1%)

Study 2: Scale Validity

According to Clark and Watson (1995), construct validity refers to evaluating the construct of interest only. Thus, to determine the construct validity of a newly developed scale like this, it is important to examine both its convergent and divergent properties. Study 2 was thus conducted to examine the dimensions and relationships of the instrument with other well-known constructs.

Method

Sample

One hundred and twenty (120) postgraduate students of the most populated state University in Nigeria completed the scale in study 2. Though one hundred and thirty (130) copies of the scale were administered but those returned and found usable (some were not completely filled) were 120, a response rate of 92.3%. Of these respondents, 69 (57.5%) were males while 51 (42.5%) were females. Seventy-nine (79) of them were married while 41 (34.2%) were singles and their average age was 34 years with a standard deviation of 5.45.

Procedure

The scale was administered to 130 postgraduate students of a Nigerian University. In the selection of the participants, purposive random sampling technique was employed. Part of the instructions on the scale is that it should be filled independently and honestly. It is neither a test nor examination and that there is no right/wrong answer. It is only for research/academic purposes. In addition, the confidentiality of their responses is also guaranteed.

The filled scale was collected by hand. Some of the respondents filled and submitted immediately while a few other ones requested that they be allowed to fill it at their convenience. Out of the 130 copies of the scale administered, 120 copies were correctly and completely filled and returned for analysis. The analysis was done after the assumptions of normality and linearity had been fulfilled.

Measures

To assess the *construct validity* of the scale, both the convergent and divergent validities were established. The convergent validity of the emotional intelligence measure was established by correlating it with Tromsø's social intelligence (by Silvera, Martinussen, & Dahl (2001) and Hogan's (1969) empathy scales while its divergent validity was established by comparing emotional intelligence scale with Barratt's (1965) impulsiveness and Buss and Perry's (1992) aggression scales. These scales have adequate validity evidences and are reliable in Nigerian context, as indicated in the works of Ezeokana, Obi-Nwosu, and Okoye, 2014; Igbo and Nwaka, 2013; Nwachukwu, 2001; Nwankwo, Aboh, Agu, and Chikwendu, 2014; Ome, 2012; Ome, Okorie, and Azubuike, 2014; and that of Onukwufor, 2013; Roopa and Joseph, 2007.

Results

Emotional Intelligence

This reliability of the scale was established using the 120 postgraduate students of a Nigerian University earlier selected with (α = .88). The Cronbach alpha reliabilities of the dimension for the sample were (a) interpersonal skills: α = .88, (b) empathy: α = .77, (c) stress tolerance: α = .81, (d) optimism: α = .80, (e) assertiveness: α = . 77, (f) problem solving: α = .83 and (g) flexibility: α = .85.

Empathy Scale (α = .82) was measured with the 64-item scale developed by Hogan in (1969). Sample items from the scale include: "I enjoy the company of strong-willed people", "I have seen some things so sad that I almost felt like crying". To establish the convergent validity of the emotional intelligence scale, it was correlated with the 64-item empathy scale. It was found that there was a significant relationship between the scales with $r(118) = 0.67$, $p < .001$.

Social Intelligence (α = .77) was a 21 item measure from Tromsø Social Intelligence Scale by Silvera et al. (2001). Sample items include: "I am good at getting on good terms with new people", "I can often understand what others are trying to accomplish without the need for them to say anything". Also, convergent validity was supported when social intelligence scale was correlated with the emotional intelligence scale among the postgraduate students. It was found that there was a significant positive correlation, $r(118) = 0.79$, $p < .001$.

Aggression Scale (α = .86) was a 30-item aggression scale by Buss and Perry (1992). Sample items include: "If somebody hits me, I hit back", "I sometimes feel like a powder keg ready to explode". To establish the discriminant validity of the emotional intelligence scale, it was correlated with the scores from the aggression scale by Buss and Perry. It was found that a significant (but negative) relationship existed between the 2 scales with $r(118) = -0.41$, $p < .001$.

Impulsiveness Scale (α = .72) this was a 30-item impulsiveness scale by Barratt (1965). Sample items from the scale include: "I often have extraneous thoughts when thinking", "I act on the spur of the moment", etc. Correlating impulsiveness scale with the emotional intelligence scale, it further established the discriminant validity with a negative relationship between the 2 scales, $r(118) = -.32$, $p < .001$.

Predictive Validity

Goleman (1995) confirms that emotional intelligence is an important factor in determining how dedicated and successful an individual would be after entering an organization. Therefore, to establish whether this scale will predict the success of an individual in an establishment, a longitudinal study was carried out among a sample of first year students (50 of them) in the Department of Psychology in a Nigerian University (where the author teaches). At the end of the first year examination, the students' official cumulative point average was obtained. At the end of the analysis, it was established that the students' scores on the emotional intelligence scale at the beginning of the academic year significantly and positively associated with the students' academic success through their grade point average at the end of the academic session, $r(48) = .71$, $p < .001$.

Concurrent Validity

To establish the concurrent validity of the emotional intelligence scale, 45 graduating students in a Department in the Faculty of Social and Management Sciences of a Nigerian University were randomly selected using accidental sampling method. Then research instrument administered to them were labeled. This was done to be able to reconcile their scores on the emotional intelligence scale with their academic records from their department. The administration of the scale was done during their last lecture in the session. The students filled the scale immediately and returned to the Researcher. After the collection of the scales, they were told that the reason for the research was to correlate their cumulative point average with their scores on the scale to establish if there is any relationship between the two. Many of the students became interested in the outcome and they requested the Researcher to let them know the result. This was made available to those who requested for it. The result of the analysis showed that respondents who had high cumulative point average also scored high on emotional intelligence scale with $r(43) = .66$, $p < .001$. This shows that the emotional intelligence scale also has concurrent validity.

Looking at Table 4, it is evident that the convergent validity of the scale was supported because there was a positive relationship between empathy and emotional intelligence, interpersonal skill, stress tolerance, optimism, assertiveness, problem solving, and flexibility. More so, there was a positive relationship between

social intelligence and emotional intelligence, interpersonal skills, empathy, stress tolerance, optimism, assertiveness, problem solving, and flexibility.

Table 4

Establishing the Validity of the Emotional Intelligence Scale

Factor	EI (α = .88)	IPS (α = .65)	EMT (α = .71)	SRT (α = .65)	OPT (α = .81)	AST (α = .78)	PSL (α = .66)	FLX (α = .49)
1. Empathy (α = .82)	.57**	.62**	.47**	.52**	.51**	.68**	.72**	.49**
2. Social intelligence (α = .77)	.66**	.47**	.61**	.67**	.39**	.48**	.66**	.73**
3. Aggression (α = .86)	-.61**	-.18*	-.21*	-.19*	-.42**	-.45**	-.72**	-.58**
4. Impulsiveness (α = .72)	-.61**	-.51**	-.19*	-.67**	-.47**	-.61**	-.28**	-.35**
5. Marital Status[a]	.13	.11	.09	-.13	-.07	.11	-.08	-.14
6. Age (years)	.41**	.27**	.13	.18*	-.09	.10	.39**	.07
7. Gender[b]	-.09	.10	-.06	.12	.08	.11	.02	.07
8. Level of study[c]	.08	.14*	.09	.11	.21*	.18*	.08	.06

[a]Single, others = 1, Married = 2. [b]Male = 1, Female = 2. [c]Undergraduate = 1, Postgraduate = 2.

*p < .05. **p < .001.

In addition, the divergent validity of the scale was supported with a negative relationship between aggression and emotional intelligence, interpersonal skill, stress tolerance, optimism, assertiveness, problem solving, and flexibility. Also, a negative relationship was established between impulsiveness and emotional intelligence interpersonal skill, empathy, stress tolerance, optimism, assertiveness, problem solving, and flexibility. See Table 4.

Establishing the Reliability of the Scale

Test Re-Test Reliability. This was done by administering the scale to the same 120 postgraduate students (in Study 2). This was done exactly 2 weeks after the first administration. The reliability value after 2 weeks was . 79.

Discussion

The main purpose of this study is to develop a reliable and valid measure of individual's abilities to understand the true state of their emotional intelligence. It is also the interest of the researcher to make the scale the type that professionals can use in assessing their interventions on how to increase emotional intelligence. To achieve this and based on Bar-On's 15 dimensions and Goleman's 5 factors of emotional intelligence, a pool of items was generated. The items were subjected to content analysis using experts. At the end of the exercise, 9 well defined factors were put together. Based on the factors a set of items generated was factor-analysed and this supported a 7-dimension solution of emotional intelligence with 40 items.

These factors include interpersonal skills, empathetic response, stress tolerance, optimism, assertiveness, problem solving and flexibility. These factors correlated well with flexibility having the highest, $r(118) = .80$, $p < .001$, while stress tolerance has the lowest, $r(118) = .69$, $p < .001$. Thus, the relationship between the 40 items ranged from .69 to .80. The outcome of the factor analysis of the 40 items showed relationship between $r = .59$ and $r = .85$ with item total ranging from $r = .57$ to $r = .81$.

In addition, correlation between the factors revealed that the factors correlated significantly with the whole scale with interpersonal skill having r = .72, empathy r = .61, stress tolerance r = .56, optimism r = .68, assertiveness r = .63, problem solving r = .59 and flexibility r = .69. This indicates that the factors are highly correlated and the overall measure was reliable with r = .77 (Table 2). It also implies that though each factor has its specific variance but all the scales are similar to each other. Thus, the scales support the positions of Bar-On (1997, 2000) and Goleman (1995).

Based on the demographic variables, respondents between the ages 31 to 35 had the highest mean level of emotional intelligence (163) while ages 16 to 20 had the lowest mean score on emotional intelligence (142). Reasons for this could be from the fact that ages 31 to 35 are the most productive age in which emotional intelligence is highly needed to succeed while 16 to 20 years are the ages in which individuals are just starting adult life with many of the group just entering the University. This is in line with the positions of Batool and Khalid (2011), and Day (2004). It should also be noted that many of the respondents in this group are postgraduate students. It is therefore not surprising to find out that postgraduate students in this sample also had higher mean score (145) than the undergraduate group (132).

The result also indicated that females had higher mean score (167) on emotional intelligence that males (157). This is probably because women are better in expressing emotions whereas men have difficulties in expressing their emotions. Women (according to Brackett & Salovey, 2004, p. 39) develop higher emotional intelligence because of early parent-child interactions which makes women “speak more to daughters than to their sons about feelings”. They “also display a wider range of feelings to their daughters” (Batool & Khalid, 2011, p. 71). This also finds support in the works of Brackett, Warner, and Bosco (2005) and Pugh (2002) that gender differences appear in emotional intelligence.

This is also in line with the findings of Tapia and Marsh (2006a, 2006b) among secondary school students (as reported by Fernandez-Berrocal & Extremera, 2006a). They found that girls scored higher than boys in empathy and that students with the highest Grade point Average (GPA) scored higher on self-control than students with a lower GPA.

The most astonishing result is that based on Faculties of the respondents. Students from the Faculty of Social Sciences were found to have the highest mean score (141), followed by Law (140), Science (138), Management Sciences (136), Education (135) and lastly Arts (133). Ordinarily, it is expected that students from the Faculties of Science and Law to have higher emotional intelligence because they take care of other people and contact a lot of people. However, the findings could be as a result of the common biases from self-report method of gathering data.

The evidence that the scale has sufficient convergent validity was established based on its high positive correlations with empathy and emotional intelligence scales. For its divergent validity, the scale correlated negatively with aggression and impulsiveness scales.

Limitations and Suggestions for Further Studies

Certain limitations are generally recognizable in this study, and they are pertinent to be addressed. In generalizing results accrued from this scale, the Researcher needs to take caution. This is because participants in this research are made up of only students. Thus, a more representative sample including workers (e.g. professionals, security personnel, teachers, chief executive of organizations) from all over the country may be

necessary in future research studies. The number of participants is also low. Besides, measures used in the study were self-report, so it is susceptible to faking good and the issue of common method variance cannot be ignored.

Also, the items used in the scale are limited and self-reported. Using alternative methods of assessment different from self-report are expected to reveal other specific factors. In addition, comprehensive details in results could be assessable in future by developing and applying a performance-based ability measure of emotional intelligence. This may be useful for studying the role of EI in different spheres of life in Nigeria.

Despite the limitations, the new scale has high validity and reliability and it has practical implications for scale development process in Nigeria and the whole world.

Conclusion

In conclusion, this emotional intelligence measure is related to a number of behavioural issues like social interactions and adaptation, effectiveness at school and academic performances. We can then conclude that individuals who have good interpersonal skill and those who scored high on empathy, stress tolerance, optimism, assertiveness, problem solving and flexibility tend to have higher emotional intelligence. The scale can also be used to help individuals who are just trying to settle down for academic activities. This is because, according to some researchers (like Chew, Zain, & Hassan, 2013; Romanelli, Cain, & Smith, 2006; and Walsh-Portillo, 2011), emotional intelligence scale scores is related to first-year college grades which confirms the possibility that the scale could help identify those that might have problems with academic work. These categories of students can then be assisted through special guidance, training and support.

Finally, the findings indicate that the 40-item scale is a valid and reliable measure of emotional intelligence as conceptualized by Bar-On and Goleman. Thus, the scale would be useful in the study of the importance of emotional intelligence in many spheres of individuals' lives in Nigeria.

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Competing Interests

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References

Afolabi, O. A. (2004). *Influence of five-factor personality attributes, need for achievement and emotional intelligence on work team interaction processes* (Unpublished doctoral thesis). University of Ibadan, Ibadan, Nigeria.

Afolabi, O. A. (2013). Roles of personality types, emotional intelligence and gender differences on prosocial behaviour. *Psychological Thought, 6*(1), 124-139. doi:10.5964/psyct.v6i1.53

Afolabi, O. A., Awosola, R. K. A., & Omole, S. O. (2010). Influence of emotional intelligence and gender on job performance and job satisfaction among Nigerian policemen. *Current Research Journal of Social Sciences, 2*(3), 147-154. Retrieved from www.maxwellsci.com/print/crjss/v2-147-154.pdf

Akinfala, F. F., Akinbode, G. A., & Ayodeji, F. (2014). Extravagant Life Style Assessment Scale (ELAS): Development and validation. *International Journal of Business and Management, 9*(9), 213-222. doi:10.5539/ijbm.v9n9p213

American Psychological Association. (1985). *Standards for educational and psychological testing*. Washington, DC, USA: Author.

Barchard, K. A., & Russell, J. A. (2006). Bias in consensus scoring with examples from ability emotional intelligence tests. *Psicothema, 18*(Suppl.), 49-54.

Bar-On, R. (1997). *Bar-On emotional quotient inventory*. Toronto, Canada: Multi-health systems.

Bar-On, R. (2000). Emotional and social intelligence: Insights from the Emotional Quotient Inventory (EQ-i). In R. Bar-On & J. D. A. Parker (Eds.), *Handbook of emotional intelligence*: *Theory, development, assessment and application at home, school and in the workplace* (pp. 363-388). San Francisco, CA, USA: Jossey-Bass.

Barratt, E. S. (1965). Factor analysis of some psychometric measures of impulsiveness and anxiety. *Psychological Reports, 16*, 547-554. doi:10.2466/pr0.1965.16.2.547

Batool, S. S., & Khalid, R. K. (2011). Development of indigenous scale of emotional intelligence and evaluation of its psychometric properties. *Pakistan Journal of Social and Clinical Psychology, 9*(1), 66-72.

Brackett, M. A., & Mayer, J. D. (2003). Convergent, discriminant, and incremental validity of competing measures of emotional intelligence. *Personality and Social Psychology Bulletin, 29*(9), 1147-1158. doi:10.1177/0146167203254596

Brackett, M., Mayer, J. D., & Warner, R. M. (2004). Emotional intelligence and its relation to everyday behaviour. *Personality and Individual Differences, 36*(6), 1387-1402. doi:10.1016/S0191-8869(03)00236-8

Brackett, M. A., & Salovey, P. (2004). Measuring emotional intelligence with the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy* (pp. 181-196). Hauppauge, NY, USA: Nova Science Publishers.

Brackett, M. A., Warner, R. M., & Bosco, J. S. (2005). Emotional intelligence and relationship quality among couples. *Personal Relationships, 12*(2), 197-212. doi:10.1111/j.1350-4126.2005.00111.x

Buss, A. H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*(3), 452-459. https://psychology-tools.com/buss-perry-aggression-questionnaire. doi:10.1037/0022-3514.63.3.452

Carlson, K. D., Carlson, P. P., & Birkenmeier, B. J. (2000). Measuring emotional intelligence: Development and validation of an instrument. *Journal of Behavioral and Applied Management, 2*(1), 32-45.

Chew, B. H., Zain, A. M., & Hassan, F. (2013). Emotional intelligence and academic performance in first and final year medical students: A cross-sectional study. *BMC Medical Education, 13*, Article 44. doi:10.1186/1472-6920-13-44

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309-319. doi:10.1037/1040-3590.7.3.309

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (Rev. ed.). Orlando, FL, USA: Academic Press.

Day, A. L. (2004). The measurement of emotional intelligence: The good, the bad and the ugly. In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy* (pp. 245-270). Hauppauge, NY, USA: Nova Science Publishers.

Ezeokana, J. O., Obi-Nwosu, H., & Okoye, C. A. F. (2014). Influence of street life and gender on aggression and self-esteem in a sample of Nigerian children. *International Review of Management and Business Research, 3*(2), 949-959.

Fernandez-Berrocal, P., & Extremera, N. (2006a). Special issue on emotional intelligence: An overview. *Psicothema, 18*(Suppl.), 1-6.

Fernandez-Berrocal, P., & Extremera, N. (2006b). Emotional intelligence: A theoretical and empirical review of its first 15 years of history. *Psicothema, 18*(Suppl.), 7-12.

Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). London, United Kingdom: Sage.

Findley, M. J., & Cooper, H. M. (1983). Locus of control and academic achievement: A literature review. *Journal of Personality and Social Psychology, 44*(2), 419-427. doi:10.1037/0022-3514.44.2.419

Geher, G. (Ed.). (2004). *Measuring emotional intelligence*: *Common ground and controversy*. Hauppauge, NY, USA: Nova Science Publishers.

Goleman, D. (1995). *Emotional intelligence*. New York, NY, USA: Bantam.

Hogan, R. (1969). Development of an empathy scale. *Journal of Consulting and Clinical Psychology, 33*(3), 307-316. doi:10.1037/h0027580

Igbo, J. N., & Nwaka, R. N. (2013). Gender, popularity, social competence and academic achievement of in-school adolescents in Nigeria. *Developing Country Studies, 3*(9), 91-98.

Jonker, C. S., & Vosloo, C. (2008). The psychometric properties of the Schutte emotional intelligence scale. *SA Journal of Industrial Psychology, 34*(2), 21-30. doi:10.4102/sajip.v34i2.689

MacCann, C., Matthews, G., Zeidner, M., & Roberts, R. D. (2004). Psychological assessment of emotional intelligence: A review of self-report and performance-based testing. *The International Journal of Organizational Analysis, 11*(3), 247-274. doi:10.1108/eb028975

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Models of emotional intelligence. In R. J. Sternberg (Ed.), *Handbook of human intelligence* (pp. 396-420). New York, NY, USA: Cambridge University Press.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed). New York, NY, USA: Mc Graw-Hill.

Nwachukwu, O. S. (2001). *Roles of the five-factor personality and impulsiveness on teamwork among bank workers in Nigeria* (Unpublished master's thesis). Ahmadu Bello University, Zaria, Nigeria.

Nwankwo, B. E., Aboh, J. U., Agu, S. A., & Chikwendu, C. E. (2014). Influence of trait aggression and religiosity on inclination towards terrorism in Nigeria. *International Journal of Applied Psychology, 4*(6), 240-245.

Ome, B. N. (2012). *Assertiveness, social intelligence and anchoring as predictors of preferred conflict resolution styles* (Doctoral thesis, University of Nigeria, Nsukka, Nigeria). Retrieved from http://www.unn.edu.ng/publications/files/images/Ome,%20Blessing%20Nneka%20Project.pdf

Ome, B. N., Okorie, N. A., & Azubuike, E. E. (2014). Assertiveness, self-esteem and locus of control as predictors of aggression in a Nigerian sample. *International Journal of Research in Arts and Social Sciences, 7*(2), 217-229.

Onukwufor, J. N. (2013). Physical and verbal aggression among adolescent secondary school students in Rivers State of Nigeria. *International Journal of Education, Learning and Development, 1*(2), 73-84.

Pedhazur, E. J. (1982). *Multiple regression in behavioural research: Exploratory and prediction*. New York, NY, USA: Host, Rinehart & Winston.

Perez, J. C., Petrides, K. V., & Furnham, A. (2005). Measuring trait intelligence. In R. Schulze & R. D. Roberts (Eds.), *International handbook of emotional intelligence* (pp. 123-143). Cambridge, United Kingdom: Hogrefe & Huber. Retrieved from https://pdfs.semanticscholar.org/bf00/1eefee3e0967fbebcafbfb75130f5597bfde.pdf

Pugh, S. D. (2002). Emotional regulation in individuals and dyads: Causes, costs and consequences. In R. G. Lord, R. J. Klimoski, & R. Kanfer (Eds.), *Emotions in the work place* (pp. 147-182). San Francisco, CA, USA: Jossey-Bass.

Romanelli, F., Cain, J., & Smith, K. M. (2006). Emotional intelligence as a predictor of academic and/or professional success. *American Journal of Pharmaceutical Education, 70*(3), Article 69. Retrieved from http://www.ajpe.org/doi/full/10.5688/aj700369. doi:10.5688/aj700369

Roopa, C. G., & Joseph, C. (2007). A preliminary study on empathy and personality in military medical officers. *Indian Journal of Aerospace Medicine, 51*(2), 28-39. http://medind.nic.in/iab/t07/i2/iabt07i2p28.pdf

Rust, J., & Golombok, S. (1995). *Modern psychometrics: The science of psychological assessment.* New York, NY, USA: Routledge.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality, 9*(3), 185-211. doi:10.2190/DUGG-P24E-52WK-6CDG

Silvera, D. H., Martinussen, M., & Dahl, T. I. (2001). The Tromsø Social Intelligence Scale, a self-report measure of social intelligence. *Scandinavian Journal of Psychology, 42*(4), 313-319. doi:10.1111/1467-9450.00242

Steyn, H. S. (1999). Praktiese beduidendheid: Die gebruik van effekgroottes [Practical significance: The use of effect sizes]. *Wetenskaplike bydraes* [scientific contributions], *Reeks B: Natuurwetenskappe*, nr. 117 [Series B: Natural Sciences No. 117]. Potchefstroomse Universiteit vir CHO, Potchefstroom [Potchefstroom University for Christian Higher Education, Potchefstroom]: Publikasiebeheerkomitee.

Stys, Y., & Brown, S. (2004). *A review of the emotional intelligence literature and implications for corrections* (Research report, Research Branch Correctional Service of Canada). Retrieved from http://www.csc-scc.gc.ca/research/r150-eng.shtml

Tapia, M., & Marsh, G. E., II. (2006a). A validation of the emotional intelligence inventory. *Psicothema, 18*(Suppl.), 55-58.

Tapia, M., & Marsh, G. E., II. (2006b). The effects of sex and grade-point average on emotional intelligence. *Psicothema, 18*(Suppl.), 108-111.

Walsh-Portillo, J. G. (2011). *The role of emotional intelligence in college students' success* (Doctoral dissertation, Florida International University, Miami, Florida). Retrieved from http://digitalcommons.fiu.edu/etd/491 on March 25, 2017

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