



PSYCHOMETRIC PROPERTIES OF AKINBOYE'S EMOTIONAL INTELLIGENCE TESTS FROM CREATIVITY PARADIGM

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ABSTRACT

Various studies have been carried out on emotional intelligence. But few of these studies have been able to link emotional intelligence to creativity, innovation and entrepreneurship. Importantly, the fact that creativity, innovation and entrepreneurship are strongly driven by positive emotions cannot be ignored. This study therefore established the psychometric properties of EQ tests developed by Akinboye (2006) from creativity paradigm. The study adopted an internal methodology of validation, which includes, measure of internal consistencies (Cronbach Alpha), Split half method, convergence construct validity, discriminant validity and predictive validity. 350 workers were carefully selected for the study. The mean age of the participants was 36.02 (SD = 7.83). The findings revealed that 51.4% of the participants were males while 48.6% were females. It was also revealed that 54.3% of the participants were married, 41.4% were single while 4.3% of the participants were divorcee. The level of education of the participants ranged from secondary education to tertiary education. Five instruments developed by Akinboye: EQ Test Broad Based, Creativity EQ, Innovation EQ, Entrepreneurial EQ and Emotional Management were adopted for the study. The findings revealed that EQ test (broad based) yielded coefficient alpha of 0.94, criterion related validity (predictive type) coefficient of 0.71; Creativity EQ test yielded coefficient alpha 0.91, predictive validity coefficient 0.78; Innovation EQ test yielded coefficient alpha of 0.92, predictive validity coefficient 0.73; Entrepreneurship EQ test yielded a coefficient alpha of 0.92, predictive validity coefficient 0.77 and Management of Emotion yielded a coefficient alpha of 0.92, predictive validity coefficient 0.92. Based on the findings of this study, the test was recommended for clinical practices, organizations, individuals, academic purposes etc.

Keywords: Emotional Intelligence, Creativity Paradigm, Psychometric Properties.

INTRODUCTION

The utility of Emotional Intelligence measure including its psychometrics in organizational settings has always been somewhat controversial and the measurement of theories within emotional intelligence paradigm is no different (Matthews, Zeidner & Roberts, 2003). The construct of emotional intelligence appears to be at crossroads, while a number of investigations support the argument that there is indeed something besides cognitive intelligence (IQ) and specific job skills that account for the variance between average and superior performance (Van Rooy & Viswesveran, 2004).

There are many questions yet to be answered concerning emotional intelligence construct. Emotional intelligence is defined in a myriad of ways, but there ultimately appears to be a common orientation among researchers. No theory of emotional intelligence has been able to link creativity, innovation and entrepreneurship to the construct. However, the new approach to emotional intelligence from creativity paradigm was developed by Akinboye (2006), who defined emotional intelligence as the ability to perceive, sense, understand, and effectively apply the power and acumen of positive emotions as a source of human energy, creativity, innovation and entrepreneurship in the context of powerful people, skills, to create new designs, new products, new values, new services, new process, new perceptions and wealth for marketing (Akinboye, 2006). From this definition, it is clear that creativity, innovation and entrepreneurship are strongly provoked and driven by positive emotions.

Emotional intelligence construct was first proposed by Peter Salovey and John Mayer in 1990. Over the intervening decade, theorists have generated several distinctive emotional intelligence models, including their utility in life and workplace. Emotional intelligence was framed within a model of intelligence by Salovey and Mayer (1990; Mayer, Salovey & Caruso, 2000). They described emotional intelligence as involving the ability to perceive emotions, access and generate emotions to assist thought, understand emotions and



emotional knowledge, reflectively regulate emotions to promote emotional and intellectual growth (Mayer and Salovey, 1995). This definition combines the ideas that emotion makes thinking more intelligent and that one thinks intelligently about emotions.

However, Akinboye (2006) developed emotional intelligence tests for human effectiveness in life and workplace. These tests have five domains which include Emotional Intelligence Test (Broad based), creative emotional intelligence, innovative emotional intelligence, entrepreneurial emotional intelligence and emotional management. This study of emotional intelligence brings the idea that, if an individual is emotional intelligent, he must be creative and innovative because a study has shown that emotional intelligence is correlated significantly with creativity, innovation, entrepreneurship and emotional management (Taiwo, 2006). It has been asserted that positive emotions drive all the positive aspect of life including creativity, innovation and entrepreneurship, and make one to be emotional intelligent, which eventually leads to success in life and workplace (Akinboye, 2006).

The construct of emotional intelligent tests has its root in the creativity paradigm. Akinboye (2006) postulated that creativity is tied to strong emotions, which both give it power and make it challenging. This is probably why anytime people need creativity they tend to be in an emotional state. Thus negative emotions such as anger, worry, fear and distress can activate the limbic system and the amygdala producing destructive hormones, neurotransmitters and cortisol thereby inhibiting creativity, innovation etc. Such emotional processes naturally shut off the cerebral cortex where creativity, intuition and intelligence are based. This is called cortical inhibition. On the other hand, love, happiness and joy increase perception, intuition, creativity and intelligence. No wonder, it has been asserted that love is the antidote to fear and the wellspring of creativity and innovation (Akinboye, 2006).

The fundamental aim of all testing is the evaluation of individuals and performances on continua representing definable psychological traits and functions; taking advantage of the usefulness of rigorous mathematical thinking as a means of arriving at dependable deductions concerning test properties and test results (Akinboye, 2006). If a construct exists, it must be measurable. Development of the psychometric properties of a test is a time-consuming process. In order to demonstrate that a concept is robust, one must first show that it is actually describing what it was designed to describe. This is usually done by examining its construct validity.

Establishment of validity of the emotional intelligence tests from creativity paradigm, in this study, lies in the fact that, response of the individuals, when sampled, should be able to reflect his original behavior in life and workplace. In other words, respondents who score higher on emotional intelligence tests should be able to perform better in life and workplace than those who score lower in the tests (Akinboye, 2006). In this case, validity of emotional intelligence tests from creativity paradigm is concerned with appropriateness and adequacy of the interpretative and action inferences drawn from the data (Akinboye, 2006).

Construct validity is concerned with the relationship of the measure to the underlying attributes it is attempting to assess. The goal is to measure emotional intelligence from creativity paradigm, fully and exclusively. Construct validity of emotional intelligence tests answers questions like: to what degree is emotional intelligence (EQ) tests measuring the theoretical construct of emotional intelligence from creativity paradigm. This is an overarching type of validity, and includes face, content, criterion-related: predictive and concurrent validity, convergent and discriminant validity. Convergence validity is demonstrated by the extent to which the measure correlates with other measures designed to assess similar constructs. Discriminant validity refers to the degree to which the scale does not correlate with other measures designed to assess dissimilar constructs. Basically, by providing evidence of all these variations of construct validity, we are establishing that the tests measure what they were intended to measure.

Researchers and test developers, often, have failed to look into emotional intelligence construct from creativity paradigm. If emotional intelligence is such a powerful driving force for creativity, EQ thus describes a set of non-cognitive abilities that influence human abilities to succeed in life and workplace (Akinboye, 2003). This study on emotional intelligence



construct and development of psychometric properties was carefully developed from the paradigm of creativity. Therefore, the creativity paradigm of EQ is urgently required to serve as a frame of reference for the practical creative explanations of EQ (Akinboye, 2006).

LITERATURE REVIEW

Creativity requires a paradigm shift for its operation. If an individual cannot effect a change in his perception of how the world works, he is likely to remain permanently trapped in old habits, processes, cultures and programmes (Akinboye, 2006). For the individual to continue to produce novel ideas, concepts and percepts, he must constantly accomplish paradigm shifts (Akinboye, 2006). Paradigms of creativity describe the models, perceptions and assumptions which have been used to explain the processes of creativity. Creativity paradigm shifts are bound to generate new ideas, concepts, percepts, designs and outcomes, which are so much needed to bring about innovation, wealth and prosperity in the specific and related disciplines.

One of the earliest paradigms of creative process came from Wallas (1926) who proposed that creativity could be explained in four steps: preparation; which includes observation and creative pause to carefully study issue, incubation; which includes unconscious thinking which takes place when the issues is set aside for a time, illumination; which includes a period of insight when the individual sees a relationship between means and end, and verification; which includes the period when the ideas newly generated are evaluated and checked for feasibility, fit usefulness and applicability (Wallas, 1996, cited in Taiwo 2006).

Barron (1998) and Torrance (1998) were also of the opinion that creativity requires subconscious stages, which could be explained by a paradigm consisting of four steps including, idea conception in the focused mind, idea gestation in a coordinated mind, idea parturition or bringing forth new ideas, presence of ideas itching and ideal development – idea unfolding. The emphasis of the subconscious explanation is that the creative person has no control over the creative process which is probably considered to be mysterious and under the control of the unconscious mind (cited in Taiwo, 2006).

Perkins (1981) and Weisberg (1993), however, observed that creativity is not necessarily subconscious but a conscious process requiring deliberate determination, planned attack and conscious effort on the part of the creative person. Following the conscious paradigm approach, Osborne (1953) brought the paradigm of brainstorming and also suggested a seven step paradigm of creativity thus: orientation, preparation, analysis, ideation, incubation, synthesis and evaluation. Osborne's (1953) paradigm, particularly the brainstorming rules bring in the strategy of eliminating idea generation inhibitions. This is one of the popular paradigm, which is often misused (Akinboye, 2002).

Edward de Bono (1992) however, originated the concept of Lateral Thinking. De Bono (1992) was after serious creative thinking to design, construct and generate outcomes that is of high value. His work on effective thinking skills course seems to tie many of his contributions together. His work on effective thinking addressed three modules, which includes basic thinking tools, thinking situations and creative and lateral thinking.

Plsek (1996) developed the directed creativity paradigm which includes four steps: preparation, imagination, development and action. This paradigm asserts that creativity begins with observation of the world coupled with thoughtful analysis of how things work and fail. Such mental processes create a store of concepts in the mind. According to Plsek (1996), the concepts stored are then used to generate novel ideas to meet specific needs through active self organizing associations among concepts. Many techniques such as analogies, random word, provocations, search for alternatives, concept fan, synetics, bionics, brainstorming, mind-prompts can be used to forge associations between concepts (Akinboye, 2002).

Akinboye (1999) developed the ten steps practical creativity process including the following: creative pause, which allows individual to stop and observe an issue properly, deeply and with great interest effort; awareness and management of barriers to creativity; definitions of broad problem areas to operate; focus on appropriate domain of operation; set criteria of



success; use appropriate creativity techniques to generate opportunity areas; run creativity sessions to explore opportunity areas; harvest actionable ideas and new concepts; evaluate actionable ideas, concepts and percepts for risks, feasibility, fit, resources, fatality and effectiveness; and sell, commercialize, innovate actionable ideas, concepts and percepts for profit, success and value, develop monopolies through valufecture, surpetition and integrated values (Akinboye, 2002).

Akinboye (1999) developed a multi-dimensional confluence paradigm of creativity (MCPC) as a reaction to the Sternberg and Lubert's paradigm which was observed not to have taken care of the many peculiar African environmental characteristics affecting life in the region. MCPC consists of the intrapersonal dimension that explains the biological knowledge and cognition, thinking style, motivation, focus, cultural environmental barriers, action types, economic, interpersonal and self-concept aspects of the African that influence his life style (Akinboye, 1999). He asserted that the developmental dimension consists of aspects of the typical African, which unfold as he or she ages – these include patterns of stimulus perception, idiosyncratic, perceptual organisations, symbolization, allocentric attributes, autonomy, personal, interests, creativity awareness, knowledge, innovation, creativity productivity and creativity products (Akinboye, 1999). The two dimensions produced hundred confluences (10 X 10 matrix) of creativity in juxtaposition resulting in great values and opportunity for creativity research, techniques and programmes.

Akinboye (1999) varied the dimension into intrapersonal and developmental dimensions. The intrapersonal dimension considers: the biological process of creativity; cognitive processes; creativity or legislative thinking style; creativity and emotional intelligence; creativity focus; strategies of handling barriers to creativity due to culture and environment; creativity action steps; creativity economic values; creative interdependence; and creative self-concept.

Akinboye (1999) stated that as the growing person reaches the embryo stage of development, the neural system develops from the embryonic ectoderm layer. This develops into convoluted neural networks called the brain (Akinboye, 1999). As de Bono (1969) observed "nerve cells allow incoming information to organize itself into a sequence of temporarily stable states that succeed each other to give a sequence". Akinboye (1999) postulated that this observed behavior of neural networks is called "active organizing patterning system". He further stated that neurochemists and neurophysiologists have been studying precise enzymes involved in the process. According to Akinboye (1999), human perception, which is the basis of creativity, is the process of setting up and using these patterns to generate new designs, ideas, concepts and new perceptions. This is why this confluence of biological processes and stimulus perception is so crucial to the study and mastery of creativity. In fact this is why de Bono (2002) asserted that creativity is the behavior of information at the active self-organizing neural patterning system – that is perception.

It has been observed (cited in Taiwo, 2006) that a human heart also develops from the embryonic mesoderm. According to Akinboye (2006), the heart has recently been found to generate auto rhythmic electrical forces, which drive its auto beats. He asserted that a synchrony between the electrical forces of the brain cells and heart tissues have been observed to be highly facilitative of creativity and also a base for emotional intelligence (cited in Taiwo, 2006). Akinboye (2002) also observed that when people are anxious, depressed, or stressed, their heart rhythms become irregular and disordered. But when people adjust to their emotions and feelings and thought processes with their heart through therapy, if they remain happy and relaxed for as long as possible, their heart rhythms become ordered and regular (back to centre), that is heartbeat become neutral. He then asserted that, in the neutral stage, balance is increased and normal heart rhythms reestablished.

Akinboye (2002) postulated that human heart can move from the first stage to the second stage or order called entrainment. To entrain means to synchronize. Entrainment describes the process of moving from neutral into a higher heart feeling, such as love, care, creativity, compassion, or appreciation. Goleman (1998) has reported additional confirmation of these



findings. Akinboye (2002) asserted that while we know that love heals, it is academically reassuring that such intuitions are scientifically validated. According to Akinboye (2002), it is empirically proven that love, care and appreciation bring about balanced internal energy flow – which results in increased harmony in the physiology of the body. Negative feelings such as frustration, depression, anger, anxiety, worry and stress create disorganized and unbalanced energy flows, which result in accelerated aging and sickness.

According to Akinboye (2002), creativity is tied to strong emotions. This is probably why any time people need creativity they tend to be in an emotional state. He stated that this is why a creativity paradigm of emotional intelligence is urgently required to serve as a frame of reference for the practical creative explanations of emotional intelligence. He asserted that, with the biological framework in place, the self-organizing power is established. An individual is able to form schemata, images of events, symbols of things and concepts, which serve as building blocks for cognition, knowledge and emotion. As cited in Taiwo (2006), the individual moves from the stimulus perception aspect of cognition knowledge to active perception organization to active symbolization through geocentricism to allocentric awareness and creativity while the growing creative individual is aware of the need to interact with others he still maintains his autonomy. Later he starts to develop his focus on notable creativity, personal interests, which helps him develop sufficient knowledge base that can generate lots of novel perceptions, new designs, new ideas and concepts.

Akinboye's (2002) work on confluences of creative knowledge has really conceptualized innovation and entrepreneurship from emotional intelligence and creativity perspectives. His contribution in emotional intelligence, creativity, innovation and entrepreneurship has served as a landmark in research (Taiwo, 2006).

METHODOLOGY

Design

The study adopted the internal methodology of validation involving the establishment of coefficient alphas (internal consistency), ensuring the construct validity which includes the face validity, content validity, criterion related validity, convergence validity and discriminant validity.

Participants

The population of this study consists of civil servants in some selected Local Government areas in Ibadan metropolis. The sample for the study was 350 workers which were carefully selected for the study. The mean age of the participants was 36.02 (SD = 7.83). From observation, 51.4% of the participants were males while 48.6% were females. It was also observed that 54.3% of the participants were married, 41.4% were single while 4.3% of the participants were divorcee. The level of education of the participants ranged from secondary education to tertiary education.

Sampling Technique

Stratified random sampling was used to select the participants from the population of the study. The population of the study is homogeneous and was broken into strata according to the socio-demographic characteristics of the participants.

Instrumentation

The instrument of this study was EQ tests (creativity paradigm of EQ), developed by Akinboye (2006). The inventory consists of six sections: A to F. Section A describes the demographic characteristics of the participants. Section B describes Emotional Intelligence (EQ) Test Broad- Based, section C describes Emotional Creativity, section D describes Emotional Innovation, section E describes Emotional Entrepreneurship and section F describes Emotional Management.

EQ Test Broad-Based Scale



Items	Inter-item correlation	Mean	SD	Alpha coefficient	Guttman split-half coefficient	Convergence validity coefficient	Discriminant validity coefficient	Predictive validity coefficient
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EQ test broad-based consists of sixty one (61) items with response format ranging from “Always” (5) to “Never” (1). Construct validity was developed for the test, and this was done by establishing face validity, content validity, criterion-related validity, convergence validity, discriminant validity, internal consistency reliability and factor analysis. EQ test broad based yielded a high reliability coefficient alpha of 0.92.

Emotional Creativity Scale

This describes emotional intelligence from creativity paradigm. The test consists of 23 items. The response format ranging from “Always” (5) to “Never” (1). Each item of the rest was derived from the paradigm of creativity. This test was examined by the test experts to establish the face validity and content validity for the test. Emotional creativity yielded Cronbach Coefficient Alpha of 0.94.

Emotional Innovation Scale

This test describes emotional intelligence from innovation paradigm. This tests consists of 23 items. The response format ranges from “Always” (5) to “Never” (1). Each item was derived from the literature on innovation. This test yields Cronbach Coefficient of 0.92.

Emotional Entrepreneurship Scale

This test describes EQ of individuals from entrepreneurship. The test consists of 23 items. The response format ranges from “Always” (5) to “Never” (1). Each item was derived from the literature on entrepreneurship. This test yields Cronbach Coefficient of 0.92.

Emotional Management Scale

This test describes EQ from management of emotions (positive emotions). The test consists of 20 items derived from literature review on management of emotions. The response format ranges from “Always” (5) to “Never” (1). Emotional Management test yields Cronbach Coefficient of 0.91.

Method of Data Analysis

Method of data analysis includes Cronbach alpha, convergence construct validity, criterion related validity, convergence validity, discriminant validity, internal consistency analysis and factor analysis.

RESULTS

Table 1: Descriptive analysis, reliability and validity summary table of EQ Broad-based



1	.47	4.33	1.23	.94	.85	.87	-.03	.71
2	.40	4.21	1.24					
3	.41	4.23	1.25					
4	.44	4.65	1.63					
5	.33	4.23	1.47					
6	.44	4.24	1.25					
7	.42	4.45	1.45					
8	.42	4.23	1.24					
9	.40	3.52	1.34					
10	.51	4.21	1.24					
11	.45	3.76	1.34					
12	.41	4.21	1.23					
13	.48	4.27	1.43					
14	.42	3.53	1.24					
15	.40	4.42	1.25					
16	.41	4.14	1.57					
17	.43	4.35	1.24					
18	.44	4.21	1.53					
19	.34	3.96	1.13					
20	.40	3.87	1.21					
21	.54	4.45	1.54					
22	.39	3.96	1.24					
23	.39	3.49	1.14					
24	.36	3.57	1.16					
25	.45	4.34	1.32					
26	.47	4.35	1.65					
27	.50	4.24	1.35					
28	.31	3.75	1.64					
29	.33	3.68	1.16					
30	.35	3.78	1.14					
31	.50	4.35	1.63					
32	.44	4.75	1.53					
33	.34	3.46	1.64					
34	.40	4.23	1.68					
35	.51	4.35	1.44					
36	.41	3.95	1.12					
37	.48	3.57	1.13					
38	.53	4.33	1.53					
39	.45	3.45	1.42					
40	.49	4.34	1.56					
41	.49	4.22	1.45					
42	.48	4.23	1.64					
43	.54	3.57	1.23					
44	.58	3.86	1.34					
45	.47	3.76	1.13					
46	.42	4.36	1.44					
47	.44	4.35	1.64					
48	.43	4.57	1.43					
49	.49	4.25	1.32					
50	.48	4.32	1.53					
51	.54	4.35	1.43					
52	.48	3.96	1.23					
53	.55	4.23	1.32					
54	.54	4.42	1.43					
55	.47	4.25	1.34					
56	.45	4.85	1.53					
57	.47	4.23	1.34					
58	.50	3.76	1.13					
59	.47	3.85	1.22					
60	.55	4.35	1.64					
61	.56	4.12	1.45					

Table 1 shows that emotional intelligence (EQ) broad-based instrument is highly reliable ($r^{tt} = 0.94$) as a measure of EQ from creativity paradigm of emotional intelligence. The split-half,



method shows that the scale is highly reliable (Guttman = 0.85), Equal length Spearman Brown = 0.85, Unequal length = 0.85, Alpha for part 1 = 0.87 while Alpha for part 2 = 0.91. The internal consistency reliability indicated by $\alpha = 0.94$ is also the index of construct validity for this EQ test. The mean inter-correlation of the items are consistent and show high correlation. This attests to the reliability of EQ test Broad-based (highly reliable). This indicates that all the items of the domain are reliable and correlated positively with the construct of EQ broad-based. The contributing coefficient of each item to the coefficient alpha ranges from 0.31 to 0.58. A high validity coefficient was observed between the performance score and test score (EQ test), $r^{tt} = 0.71$. This indicates that EQ test is valid. The findings, however, revealed that there was negative low correlation between EQ test and Executive Intelligence Test; $r^{tt} = -0.03$. This means that EQ test is not measuring Executive Intelligence. The findings showed a positive significant correlation coefficient between EQ test and other similar test ($r = 0.87, p < .05$)

Table 2: Descriptive analysis, reliability and validity summary table of Emotional Creativity Scale

Items	Inter-item correlation	Mean	SD	Alpha coefficient	Guttman split-half coefficient	Convergence validity coefficient	Discriminant validity coefficient	Predictive validity coefficient
1	.62	4.35	1.23	.91	.84	.87	-.002	.78
2	.61	4.35	1.26					
3	.62	4.35	1.25					
4	.54	4.35	1.73					
5	.64	4.36	1.34					
6	.65	4.25	1.36					
7	.63	4.36	1.52					
8	.61	4.35	1.35					
9	.55	4.35	1.45					
10	.58	4.24	1.63					
11	.62	4.45	1.34					
12	.59	4.64	1.63					
13	.53	4.27	1.53					
14	.59	4.34	1.51					
15	.53	4.23	1.42					
16	.56	4.34	1.57					
17	.63	4.23	1.53					
18	.60	4.35	1.55					
19	.59	4.43	1.32					
20	.58	4.23	1.33					
21	.48	4.45	1.46					

Table 2 shows that emotional creativity instrument is highly reliable ($r^{tt} = 0.91$) as a measure of EQ from creativity paradigm of emotional intelligence. The split-half, method shows that the scale is highly reliable (Guttman = 0.84), Equal length Spearman Brown = 0.82, Unequal length = 0.81, Alpha for part 1 = 0.85 while Alpha for part 2 = 0.87. The internal consistency reliability indicated by $\alpha = 0.91$ is also the index of construct validity for this Creativity EQ test. The inter-correlation of the items are consistent and show high correlation. This attests to the reliability of Creativity EQ test (highly reliable). This indicates that all the items of the domain are reliable and correlated positively with the construct of Creativity EQ. The contributing coefficient of each item to the coefficient alpha ranges from 0.48 to 0.65. A high validity coefficient was observed between the performance score and test score (Creativity EQ test), $r^{tt} = 0.78$. This indicates that Creativity EQ test is valid. The findings, however, revealed that there was negative low correlation between EQ test and Executive Intelligence Test; $r^{tt} = -0.002$. This means that Creativity EQ test is not measuring Executive Intelligence. The findings showed a positive significant correlation coefficient between EQ test and other similar test ($r = 0.87, p < .05$)

Table 3: Descriptive analysis, reliability and validity summary table of Emotional Innovation Scale

Items	Inter-item correlation	Mean	SD	Alpha coefficient	Guttman split-half coefficient	Convergence validity coefficient	Discriminant validity coefficient	Predictive validity coefficient
1	.52	4.64	1.75	.92	.85	.80	-.012	.73
2	.53	4.75	1.64					
3	.62	4.57	1.73					
4	.64	4.65	1.73					
5	.61	4.75	1.64					
6	.62	4.56	1.86					
7	.66	4.57	1.46					
8	.55	4.75	1.86					
9	.62	4.34	1.55					
10	.57	4.45	1.63					
11	.57	4.44	1.34					
12	.57	4.64	1.63					
13	.61	4.53	1.53					
14	.62	4.45	1.51					
15	.61	4.46	1.62					
16	.60	4.64	1.54					
17	.61	4.64	1.54					
18	.63	4.75	1.65					
19	.61	4.43	1.45					
20	.64	4.23	1.75					
21	.60	4.64	1.46					
22	.64	4.75	1.68					
23	.58	4.86	1.57					

Table 3 shows that emotional innovation instrument is highly reliable ($r^{tt} = 0.92$) as a measure of EQ from creativity paradigm of emotional intelligence. The split-half method shows that the scale is highly reliable (Guttman = 0.85), Equal length Spearman Brown = 0.85, Unequal length = 0.85, Alpha for part 1 = 0.86 while Alpha for part 2 = 0.87. The internal consistency reliability indicated by $\alpha = 0.92$ is also the index of construct validity for this Innovation EQ test. The inter-correlation of the items are consistent and show high correlation. This attests to the reliability of Innovation EQ test (highly reliable). This indicates that all the items of the domain are reliable and correlated positively with the construct of Innovation EQ. The contributing coefficient of each item to the coefficient alpha ranges from 0.52 to 0.65. A high validity coefficient was observed between the performance score and test score (Innovation EQ test), $r^{tt} = 0.73$. This indicates that Innovation EQ test is valid. The findings, however, revealed that there was negative low correlation between Innovative EQ test and Executive Intelligence Test; $r^{tt} = -0.012$. This means that Innovation EQ test is not measuring Executive Intelligence. The findings showed a positive significant correlation coefficient between Innovation EQ test and other similar test ($r = 0.80, p < .05$)

**Table 4: Descriptive analysis, reliability and validity summary table of Emotional Entrepreneurship Scale**

Items	Inter-item correlation	Mean	SD	Alpha coefficient	Guttman split-half coefficient	Convergence validity coefficient	Discriminant validity coefficient	Predictive validity coefficient
1	.52	4.57	1.53	.92	.85	.91	-.09	.77
2	.59	4.75	1.54					
3	.52	4.34	1.42					
4	.54	4.45	1.35					
5	.42	4.44	1.46					
6	.54	4.64	1.65					
7	.62	4.24	1.45					
8	.63	4.45	1.44					
9	.67	4.64	1.64					
10	.68	4.27	1.43					
11	.66	4.34	1.32					
12	.63	4.23	1.53					
13	.60	4.34	1.43					
14	.66	4.64	1.23					
15	.65	4.75	1.32					
16	.68	4.57	1.43					
17	.63	4.65	1.75					
18	.58	4.75	1.64					
19	.60	4.87	1.73					
20	.63	4.76	1.73					
21	.62	4.90	1.64					
22	.59	4.72	1.86					
23	.64	4.85	1.46					

Table 4 shows that emotional entrepreneurship instrument is highly reliable ($r^{tt} = 0.92$) as a measure of EQ from creativity paradigm of emotional intelligence. The split-half method shows that the scale is highly reliable (Guttman = 0.85), Equal length Spearman Brown = 0.85, Unequal length = 0.85, Alpha for part 1 = 0.86 while Alpha for part 2 = 0.88. The internal consistency reliability indicated by $\alpha = 0.92$ is also the index of construct validity for this Entrepreneurship EQ test. The inter-correlation of the items are consistent and show high correlation. This attests to the reliability of Entrepreneurship EQ test (highly reliable). This indicates that all the items of the domain are reliable and correlated positively with the construct of Entrepreneurship EQ. The contributing coefficient of each item to the coefficient alpha ranges from 0.42 to 0.68. A high validity coefficient was observed between the performance score and test score (Entrepreneurship EQ test), $r^{tt} = 0.77$. This indicates that Entrepreneurship EQ test is valid. The findings, however, revealed that there was negative low correlation between Entrepreneurial EQ test and Executive Intelligence Test; $r^{tt} = -0.09$. This means that Entrepreneurship EQ test is not measuring Executive Intelligence. The findings showed a positive significant correlation coefficient between Entrepreneurship EQ test and other similar test ($r = 0.91, p < .05$)



Table 5: Descriptive analysis, reliability and validity summary table of Emotional Management Scale

Items	Inter-item correlation	Mean	SD	Alpha coefficient	Guttman split-half coefficient	Convergence validity coefficient	Discriminant validity coefficient	Predictive validity coefficient
1	.68	.43	1.63	.92	.87	.93	-.082	.77
2	.65	.45	1.53					
3	.64	.43	1.51					
4	.63	.42	1.62					
5	.61	.47	1.54					
6	.66	.46	1.54					
7	.55	.47	1.73					
8	.63	.49	1.53					
9	.64	.48	1.66					
10	.57	.42	1.56					
11	.61	.47	1.76					
12	.63	.48	1.53					
13	.64	.42	1.51					
14	.61	.48	1.42					
15	.62	.45	1.57					
16	.67	.47	1.53					
17	.56	.43	1.55					
18	.59	.42	1.48					
19	.52	.48	1.57					
20	.63	.45	1.85					

Table 5 shows that Emotional Management instrument is highly reliable ($r^{tt} = 0.92$) as a measure of EQ from creativity paradigm of emotional intelligence. The split-half method shows that the scale is highly reliable (Guttman = 0.87), Equal length Spearman Brown = 0.87, Unequal length = 0.87, Alpha for part 1 = 0.87 while Alpha for part 2 = 0.85. The internal consistency reliability indicated by $\alpha = 0.92$ is also the index of construct validity for this Emotional Management EQ test. The inter-correlations of the items are consistent and show high correlation. This attests to the reliability of Emotional Management EQ test (highly reliable). This indicates that all the items of the domain are reliable and correlated positively with the construct of Emotional Management. The contributing coefficient of each item to the coefficient alpha ranges from 0.51 to 0.68. A high validity coefficient was observed between the performance score and test score (Emotional Management EQ test), $r^{tt} = 0.77$. This indicates that Emotional Management EQ test is valid. The findings, however, revealed that there was negative low correlation between Emotional Management EQ test and Executive Intelligence Test; $r^{tt} = -0.082$. This means that Emotional Management EQ test is not measuring Executive Intelligence. The findings showed a positive significant correlation coefficient between Emotional Management EQ test and other similar test ($r = 0.93, p < .05$)

DISCUSSION

The findings of this study have shown that emotional intelligence constructs from creativity paradigm exist as indicated by reliability and validity analyses. It has been shown that development and validation of these tests have been rigorous, and that outcome of the process has produced a valid concept and measure of emotional intelligence from creativity paradigm. The model is capable of describing the construct it was designed to describe (emotional intelligence) because of its ability to predict various aspects of human behavior and performance in the workplace.

Coefficient Alpha (internal consistency reliability and construct validity) was employed for carrying out the reliability analysis of the EQ tests in this present study. Emotional intelligence (EQ) tests in this present study. EQ tests broad based was found to have Cronbach Coefficient Alpha (0.94), Creativity EQ test (0.91), Innovation EQ test (0.92),



Entrepreneurship EQ test (0.92) and Management of Emotion test (0.92). These coefficients exceed the 0.90 minimum for total scores suggested by Nunnally (1978) and 0.67 suggested by Cronbach (1970). This means that the five EQ tests are highly reliable as measures of EQ from creativity paradigm. The mean inter-correlation among the items of each test were also found to be consistent and contributed positively to the overall reliability coefficient.

In order to establish the validity coefficient for EQ tests, test scores were observed on EQ test broad-based, Creativity EQ test, Innovation EQ test, Innovation EQ test, Entrepreneurship EQ test, Management of Emotions test; and were compared with criterion scores (performance). EQ test broad based yielded validity coefficient of 0.71, Creativity EQ was 0.78, Innovation EQ was 0.73, Entrepreneurship was 0.77 and Management of Emotion was 0.77. This means that the above mentioned five tests of EQ are valid in predicting behavior and performance of people in the workplace. The present study corroborates several past studies. For example, in two other studies, performance in highly stressful and potentially dangerous occupations was studied by comparing EQ-i scores with externally rated performance for a sample of 335 regular combat soldiers in the Israeli Defense Forces (IDF) and for an additional sample of 240 soldiers in an elite IDF unit (Bar-On et al, 2005). Both studies clearly revealed a significant relationship between ESI and this specific type of occupational performance, the predictive validity coefficient in the former study was 0.55 and 0.51 in the latter (Bar-On, 2005).

However, emotional intelligence tests which were observed to discriminate greatly with Executive Intelligence test developed by Akinboye (2004), indicated that EQ tests was not designed to test cognitive intelligence. Evidence of this finding was found in Bar-On (2004) in an effort to examine the divergent construct validity of the Bar-On model. The EQ-i has been concomitantly administered with various measures of cognitive intelligence (including the Wechsler Adult Intelligence Scale, Progressive Raven Matrix, and the General Adult Mental Ability Scale) to a total of 4,218 individuals in six studies (Bar-On, 2004).

EQ tests were observed to converge with each other and yielded high reliability coefficient. This means that EQ tests are similar and all dimensions of emotional intelligence. Similarly, Bar-On (2004) summarized the major findings related to convergent construct validity of the EQ-i based on 13 studies in which a total of 2,417 individuals participated. These findings indicate that the degree of domain overlap between the EQ-i while other measures of ESI was about 36%, which is substantial when evaluating construct validity (Anastasi, 1988).

Conclusion

This study found a high reliability coefficient in EQ tests from creativity paradigm. The inventory was subjected to various validity techniques and was proved valid through an empirical and proper methodological approach. The tests scores were used to compare with performance scores as was given by their immediate supervisors. The tests yielded high validity coefficients. This model and the findings it has generated would more routinely make their way into the home, school and workplace. Parents and educators can benefit from this by raising and educating children to be more emotionally and creatively intelligent, effective and productive from an early age onward. Human resources personnel in organisations could also make more widespread use of this model and measure in hiring, training and succession planning in order to increase individual effectiveness and organizational productivity. Furthermore, healthcare practitioners could benefit from focusing on the above-mentioned EQ components in diagnostic, remedial and preventive work. Such an approach could be used in mapping out those emotional intelligence areas that need to be enhanced in order to increase individual effectiveness, self actualization and general well-being.

Recommendation

Based on the findings of this study, following recommendations were made:



- Emotional intelligence inventory from creativity paradigm is recommended for clinical practices by psychologists and other social scientists.
- The test is recommended for research development for individuals, organisations and other test users.
- The test is recommended for organisations for selection and recruitment purposes as it helps them to discover how emotionally intelligent they are.

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