VALIDATION OF THE INVENTORY OF CALLOUS-UNEMOTIONAL TRAITS IN THE NIGERIAN SAMPLE

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Abstract

The focus of the research was to revalidate the Inventory of Callous-unemotional Traits (ICU) by Frick (2004) in Nigeria so that meaningful research on the construct can be done using the instrument. Two hundred and ninety five adolescents drawn from secondary schools in Nsukka, Enugu state who were between 13 to 18 years participated in the study. Construct validation of the questionnaire was done by means of Exploratory Factor Analyses, Confirmatory Factor Analyses (CFA), calculations of Cronbach alpha, split–half reliability and correlations of within construct. Also ICU was correlated with other constructs such as aggression, bullying and pro-social behavior. The results showed that the Kaiser-Meyer-Olkin (KMO) for the exploratory factor analysis is .79 and the scree plot showed three significant factors. The fit indices for the Confirmatory Factor Analyses (CFA) reached acceptable ranges, RMSEA =.03, CFI = .96 and NNFI =.96. The Cronbach's alpha for the total scale was .75 and the alphas for the subscales were .71, .71 & .56 for Uncaring, Callous, and Unemotional respectively. The split-half reliability result was good r = .60. The correlations of within construct and between constructs showed that ICU has convergent, discriminant and predictive validity in the Nigeria sample. The research shows that the questionnaire has sound psychometric properties.

Keywords: *Construct validation, Adolescence, Callous, Uncaring, Unemotional.*

INTRODUCTION

Understanding the processes that are involved in the developmental patterns of human behaviors are the major concern of developmental psychology and other allied psychological specialties. Psychologists, among other things, have sort to understand how different behavioral patterns are developed, their causes and effects, and possible remedies to any undesirable behavioral patterns. Antisocial behavior pattern is one of the psychopathological behavior patterns that have aroused a lot of research interest in the past and present time (Essau, Sasagawa, and Frick, 2006).

Many methods have been adopted to fully understand how the antisocial behavior patterns develop (Frick, Cornell, Barry, Bodin and Dane, 2003) and various factors identified as key components of antisocial behaviors. One of such key factors or components is Callous–Unemotional traits (CU) (Kimonis, Frick, Skeem, Marsee, Cruise, Munoz, Aucoin and Morris, 2008).

Callous–Unemotional traits refer to a specific affective (e.g., absent of guilt, poverty in emotional expression) and deficit interpersonal relationship (e.g. , failure to show empathy, use of others for one's own gain), which are relatively stable across childhood into adolescence at least compared to other measures of childhood personality and psychopathology (Frick, kimonis, Dandreaux and Farrell, 2003). Researchers (Frick, 2006; Frick and Dickens, 2006) found evidence from research and review of published studies that there are substantial evidences that callous – unemotional traits designate an important subgroup of antisocial and delinquent behaviours. Study by Frick et al. (2003) showed that callous-unemotional traits significantly meditated conduct problem severity and aggression in an American sample. Again Frick and Dickens (2006) showed that children and adolescence with CU traits were related to poorer treatment response among antisocial youths. Children and adolescents with CU traits show low level of fearful inhibitions and anxiety and decreased sensitivity to punishment cues (Essau et al. 2006).

As noted by Kimonis et al. (2008), the prior studies in the utilities of CU traits in modern research are consistent and are important theoretically. This is because they are consistent with developmental theories (such as moral development, psychoanalysis, learning and social learning, traits and humanistic theories) which have linked problems in conscience development to temperaments, low fearfulness, reward dominance and lack of emotional responsivity to negative emotional stimuli (Blair, 1995 cited in Kimonis et al., 2008). CU traits are one component of the constellation of affective, interpersonal, and behavioral feature considered indicative of psychopath among adults (Skeem, Mulvey, & Grisso, 2003).

The main theory that purports the conceptualization of callous-unemotional traits is the trait theory. Trait theory asserts that individual personalities are composed of broad dispositions which are thought of as a relatively stable characteristic that causes individuals to behave in certain ways (Boeree, 2006). Unlike many other theories of personality, trait approach to personality is focused on differences between individuals. The combination and interaction of various traits combine to form a personality that is unique to each individual. Allport and Odbert (1936) categorized the traits into three levels, viz: Cardinal traits; which are traits that dominate an individual's whole life often to the point that the person becomes known specifically for these traits. Central traits, these traits are not as dominating as cardinal traits but they form the basic foundation and characteristics that might describe an individual. Secondary traits; these traits are sometimes related to attitudes or preferences and often appear only in certain situations or under specific circumstances.

There are other proponents of traits theory like Cattell (1936) and Eysenck (1992). However, one major advantage of traits theory is that they are always measurable. In concordance with this, Frick (2004) identified callous-unemotional traits as a cardinal trait with three factors in some children and adolescents. He also observed that these traits are stable and can predict behavior. Frick (2004) designed a quantifiable technique for assessing the Callous-Unemotional traits. After assessing the utilities of CU traits in understanding and mediating other psychopathological factors in pupils, Essau et al. (2006), Kimonis, et al. (2008), validated the Inventory of Callous-Unemotional (ICU) traits.

This is a further improvement on the prior Anti-social process screening device by Frick and Hare (2001). which was used to measure anti-social behaviors, but had callous-unemotional traits as a subscale. The ICU after validation has 22 items with three factors (uncaring, callous and unemotional). Essau et al (2006) and Kimonis et al. (2008) conducted exploratory, confirmatory factor analysis and different psychometric assessments for the inventory using both normal and abnormal population.

Noteworthy is the fact that the validation and most of the research conducted with the inventory were done in America and Germany. One of the requirements for using foreign developed measures is re-validating such measure to make sure that it fits the new population the researcher intended to assess. Although callous–unemotional trait is not a new concept, it has not been well researched in Nigeria. Hence, this paper that aims to validate the inventory of callous–unemotional traits in a Nigerian sample using different psychometric methods including confirmatory factor analysis to test whether the inventory will show a good model fit for Nigerian sample.

The outcome of this paper will open a new gateway to understanding Nigerian youths and violence through various research that will follow the outcome of the present re-validation. This will further ensure adequate design of prevention and treatment models. Importantly, it will further authenticate the utility of the inventory in Nigerian samples.

The major advantages of the inventory of callous-unemotional traits include:
- It creates opportunities for researchers interested in the co morbidity of callous-unemotional traits with other developmental behavioral problems to have a standardized instrument to conduct such studies.
- It is the first inventory designed to assess the possible potent sub-factors (uncaring, callousness, and unemotional) implicated in callous-unemotional traits.

The major contributions of this concept and measure in developmental psychology include;
- It has been used to predict the severity of behavior problems (aggression, ADHD,

conduct problems etc) in children and adolescent and those who may possibly develop adulthood psychopaths.

- It has added to literature on factors significant in predicting treatment responses among anti-social youths.
- It has created awareness on the importance of callous-unemotional traits and awakens researches in to the possible developmental causes, implications and remedies for affected youths.

The significance of the inventory in developmental psychology studies include

- It has shown to be in line with developmental psychology quest to better understand each developmental stage and it's challenges, thus it focuses on the understanding of the challenges in childhood and adolescent stage.
- It creates opportunity for better understanding of childhood and adolescence behavioral pattern. This is shown in its discriminative validity between normal and abnormal subjects (Frick et.al, 2003).
- It has shown to be a significant factor in developmental researches and practices, following its potent correlations with other developmental issues.
- Theoretical inquiries into the causes or development of callous-unemotional traits do not only point to biological predisposition but also to environmental influence which are in line with prior investigation in developmental psychology.

METHOD
Participants
The participants for this study included two hundred and ninety five (295) school pupils from Nsukka High School and St Cyprians Girls Secondary School Nsukka who are within junior secondary school (JSS3), senior secondary school (SSS2) and senior secondary school (SSS3). These participants were randomly selected using simple random sampling (table of random numbers) described by Bordens and Abbot (2008). And they included boys (152) and girls (143) within the age of 13 to 18 years and an average age of 15.7 years, standard deviation of 1.3. This is because the original validation of the inventory was done with participants between these age brackets.

Instruments
Three instruments were used in this study they are;
Inventory of Callous–Unemotional traits: The inventory was originally developed by Frick, 2004 but was validated by (Essau et al., 2006, Kimonis et al., 2008). It has 24 items but after the validation 22 items were retained. They are rated on a four-point likert scale from 0 (Not at all true) to 3 (Definitely true) and 12 items are reversed during scoring (items: 1,2,4,7,11,13,14,15,17,21,22). The inventory has three factors (Uncaring, Callousness and Unemotional). The measure of internal consistency show a total alpha of the 22 items to be

α=.81 and for the three subscales were α =.81, .80 and.53 for uncaring, callousness and unemotional, respectively. The results of the Confirmatory Factor Analysis(CFA) using 3-factor Bi-factor model showed the Root Mean Square Error of Approximation(RMSEA) =.06 and the comparative fit indices(CFA)=.87. Correlations within the subscales were significant at r= .29; p<.001 and r= .23; P<.001, between uncaring and callousness and uncaring and unemotional respectively and r=.17; p<.01 for callousness and unemotional.

Aggression Scale (AS): This scale was developed by Orpinas and Frankowski (2001), as a self-report measure for aggression among youths. It has two subscales physical/verbal and anger scales. AS contains 11 items arranged in a 7-points scale from 0 (Times) to 6 (times). The internal consistency of the scale is α =.88. The result of CFA showed a good fit of Goodness of fix indices of .96 and a significant chi square.

Peer Relation Questionnaire: This questionnaire was developed by Rigley & Slee (1993). It is a self-report measure with three subscales (bullying, victimization & pro-social) and contains 20 items which are scored on a 4-point scale ranging from 1= never to 4 = very often. The interna' consi:tency of the scale showed alpha of α = .76 and α = .78 for bullying, α = .76 for victimization and α = .61 for pro-social subscales.

Procedure
The researcher employed the help of two research assistants who helped the researcher to administer the questionnaire forms to randomly selected samples at various secondary schools in Nsukka. The researchers firstly sought the consent of the school authorities, and then proceeded to the fore-teachers of the selected sample classes to obtain information from the class registers which were used for random sampling (using table of random numbers). Two classes were sampled from each level (the classes were selected because they have free lesson period within the time allotted by the school authorities for the research). Thereafter, the three questionnaires forms were administered simultaneously and instructions on how to fill the questionnaires were explained to the participants. The questionnaires were collected immediately upc.: completion foi scu.i. and analysi.. Ou. of 300 group of fu.ms administered, only 295 were properly filled and were used for further analysis

Design and Statistics
The design for the study was a Cross sectional survey design. This was because the data were collected at a particular point in time from the participants.

The statistics for the analyses include
Exploratory factor analysis : This is a factor analysis procedure which allows the researcher to explore the data to determine the number or the nature of factors that accounted for the co-variation between variables, if the researcher does not have a prior sufficient evidence to

form a hypothesis about the number of factors underlying the data Harrington (2009). It is thought of as more a theory generating procedure as opposed to a theory testing procedure (Stevens, 1996); Confirmatory Factor Analysis; this is a theory testing model as opposed to a theory generating method and specifies which variables will be correlated with which factor and which factors are correlated (Stevens 1996).

Other statistical analyses include, internal consistency and construct validity. These analyses were done using SPSS and LISREL (Linear Structural Relations model) statistical software.

RESULTS
Table1. *Exploratory factor analysis showing the items factor loading are shown in table 1 above.*
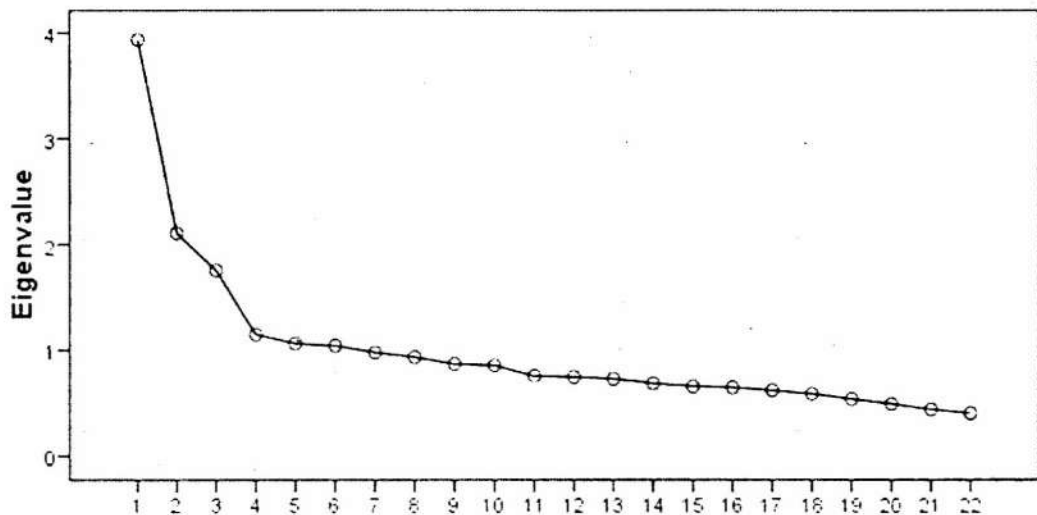

figure 1 Scree Plot showing the three factors model of Inventory of Callous-unemotional Traits

The scree plot in figure 1 showed that the three factors model give a better explanation for the construct.

Table 2: summary of the fit indices of the different model indices assessed by CFA

Model	Chi-square(x^2)	df	RMSEA	CFI	NNFI
3-factor model	260*	206	.03	.96	.96

*=P<.05, RMSEA= root mean square error of approximation, CFI= comparative fit index, NNFI= non-normed fit index

Confirmatory Factor Analysis assesses the model fit through the followings;

- Absolute Fit Indices measures whether the predicted variance-covariance matrix is equal to the sample variance-covariance (Harrington, 2009). It was tested using chi-square(X^2) which tests whether the model fit exactly in the population (Harrington, 2009). The x^2 value was significant (df/206, x^2 =260,p<.001).

- Parsimony correction indices: This incorporates a penalty for poor parsimony and was assessed with Root Mean Square Error of Approximation (RMSEA). RMSEA tests the extent to which the model fits reasonably well in the population (Harrington, 2009). RMSEA less than .06 indicates a close and good fit (Brown, 2006) and RMSEA between .06 and .08 is just reasonable but does not show a close and good fit. The calculated RMSEA for ICU is .03 which shows a good close and significant fit.

- Comparative Fit Indices (CFI) and Non-Normed Fit Index (NNFI): These compares the existing model fit with a null model which assumes that the latent variable in the model are uncorrelated (the independence model) (Hu & Bentler, 1999). It measures the improvement of fit by comparing the hypothesized model with a more restricted baseline model. The baseline model commonly used is a null or independent model where the observed variables with variances to be estimated are mutually uncorrelated (Bentler & Bonett,1980). The calculated Comparative Fit Index (CFI) and non-normed fit index (NNFI) for Inventory of Callous-Unemotional traits are .96 and .96 respectively. These are good close fits as indicated by the rule of thumb according to Kline (2005), that indices of CFI and NNFI greater than .90 are reasonably good close fit of the researcher model.

Internal consistency

The coefficient Cronbachs alpha for the total ICU 22 items is .75 and for the three subscales were .71, .71 & .56 for Uncaring, Callous, and Unemotional respectively. The calculated split-half reliability was r=.60. And the subscales were weakly correlated with one another, correlation coefficients "r", p < .05   for uncaring and callousness =.31;   uncaring and unemotional = .19; callous and unemotional = .13

Construct validity:

The Inventory of Callous-Unemotional Traits showed significant positive correlation with measures of aggression; r= .24, p<.001; bullying subscale of peer relation questionnaire (PRQ); r= .25, p<.001, and negatively correlated with the pro-social subscale of PRQ; r=-.40, p<.001.

The result of ANOVA did not show any significant difference between male and female participants on overall score in callous-unemotional traits F(1,294)=.00,P>.05.

DISCUSSION

The current paper is based on an empirical study of the Inventory of Callous-Unemotional trait to assess the psychometric properties and the possible utility of the inventory in Nigeria. Firstly, the exploratory factor analysis was conducted to determine if the same three factors proposed by Essau et al. (2006) and kimonos et al. (2008) will be maintained in the Nigerian sample. As shown in table 1 and figure 1 the three sub-factors were maintained as most of the items loaded significantly within the three factors. The result is in line with the findings of kimonos et al. (2008) who found three factors using pathological sample. It is also in concordance with the finding of Essau et al. (2006) using a normal population.

Furthermore, the fact that the Inventory of Callous-Unemotional traits have three sub-factors was further assessed using a theory testing procedure, Confirmatory Factor Analysis (CFA). The result as shown in table 2 proved that the inventory of callous-unemotional traits has very good fits indices. The chi-square which measured the absolute fit indices in frequently influence by size and a significant chi-square do not also mean that the model did not fit well as there are other better parameter that are not influenced by size. The RMSEA showed a very good fit, indicating that the inventory fit reasonably well in the population and the three factor model is simple and less complex in explaining the model of Callous-Unemotional traits. The Comparative Fit Indices (CFI) and Non-Normed Fit Index (NNFI) compared the existing model fit with a null model which assumed the latent variable in the model are uncorrelated. It compares the null hypothesis model with a more restricted baseline model. As shown in table 2, the CFI and NNFI are reasonable close good fit and meet the requirement of a good fit according to Hu & Bentler (1999) and Kline (2005). The CFA results implied that the null hypothesis that assumed that the three factor model of the inventory of callous-unemotional traits will not fit the present sample population was rejected. The result agreed with the finding of Essau et al. (2006) cited earlier in the paper.

The finding of the internal consistency showed that the coefficient alpha for the 22 items was significant. Also the sub-factors of the inventory, uncaring and callousness were significant. But the unemotional sub-factor did not show a clear significant alpha. The poor alpha of unemotional trait was also found in the previous studies by Essau et al. (2006) and Kimonis et al. (2008) where it was explained by the fact that the items were small compared with the items in the other sub-factors.

The weak correlations among the three latent factors further showed the divergent validity of the inventory. The split-half reliability result was good $r = .60$.
Construct validity of the inventory was assessed by correlating the total score of ICU with some similar instruments. The result showed that the correlation of ICU with an aggression

scale yielded .24, p<.001 and the correlation of the ICU with the sub-scales of Peer Relation Questionnaire (PRQ) showed .25, p<.001 for bullying and -.40, p<.001, for pro-social. These further showed that CU meditates some other factors. Gender was not significant factor that determines CU traits.

The importance of validating the ICU traits in a Nigeria sample cannot be over emphasized. Firstly it has added to the limited inventory available for assessing children and adolescence in Nigeria. It is a self-report inventory thus it make data gathering about the traits of the research participants easy.

Secondly, CU traits is an important premeditating factor which can determine the severity of certain behavioral disorders in children and adolescents, like; delinquency, aggression, bullying, attitude to learning, responses to therapeutic treatment etc. Therefore, with this validated inventory, researchers can investigate the prevalence of CU among clinical and non-clinical sample, obtain standardized norms and test different therapy that can be useful in helping pupils with CU traits.

Finally, the technique adopted in validating the instrument depicts the state of art in instrument validation in most social science disciplines (and in most international psychology journals) and should be encouraged among Nigerian scholars.

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