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The Predictive Effect of Big Five Factor Model on Social Reactivity among Adolescents in Cross River State, Nigeria: Personality Assessment and Basis for Counselling

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Abstract

The study tested a model of providing a predictive explanation of Big Five Factor on social reactivity among secondary school adolescents of Cross River State, Nigeria. A sample of 200 students randomly selected across 12 public secondary schools in the State participated in the study (120 male and 80 female). Data collected involved NEO Five Factor and social reactivity

scale, which are commonly used and have demonstrated acceptability and reliability. The data were analysed using multiple regression and path analysis in order to estimate the coefficient of structural equations of the hypothesized model. The result indicates that the predictor variables jointly contributed significantly to the prediction of social reactivity. The six-predictor variables also accounted for direct and indirect effect on social reactivity and the implications of the study were highlighted and conclusion made.

Introduction

Personality has to do specifically with behaviours, thoughts, feelings and general life adjustment that are relatively stable over time (Newman & Newman, 2003). It is one important psychological mechanism which guides the behaviour of man. Personality is that pattern of characteristics, thoughts, feeling and behaviour that distinguishes one person from another and that persists overtime and situation (Pharfes, 2001).

Personality structure is fairly stable and predictive throughout different situations and times. There are personality traits of different depths and significance. Trait theory attempts to explain personality in terms of the dynamics that underlie behaviour. Traits are characteristic patterns of behaviour or dispositions to feel and act in a certain way, which distinguishes one person from another. They are hypothesized to be consistent and stable overtime, acting as a type of template for an individual's behaviour (Mayers, 2003). Research by McCrae and Costa among others has supported this hypothesis. In a study, McCrae and Costa (2002) found that for the majority of people, personality at age thirty was predictive of personality at age eighty.

Personality states are the results of the combination of traits and situations. Persons with high emotional instability are for instance, more likely than calm and stable persons to feel anxiety in a threatening evaluation situation (Humphrey and Revelle, 2004).

Several traits theorists have proposed models of personality based on the factor analysis of traits expressed through personality inventories. For example, Hans' and Sybil Eyesenck's model of personality outlined two genetically influenced dimensions of personality, introversion and extroversion, stability-instability (Mayer, 2003). A more recent and most widely accepted trail model is the 'Big five' personality factor model, which

recognizes the frequent recurrence of five personality traits across studies (Stemberg, 2001).

Review of related literature

Neuroticism: This is characterized by nervousness, emotional instability, moodiness, tension, irritability and a tendency to worry. Neuroticism is a measure of effect and emotional control. Low levels of neuroticism indicate emotional stability whereas high levels of neuroticism increase the likelihood of experiencing negative emotions. Persons with high level of neuroticism are reactive and more easily bothered by stimuli in their environment. They more frequently become unstable, worried, temperamental and sad. A resistant person on the other hand needs strong stimuli to be provoked (Howard & Howard, 2005). The term neuroticism does not necessarily refer to any psychiatric defect. A more appropriate term could be negative affectivity or nervousness (McCrae & John, 2002).

Extroversion: This is characterized by sociability, expansiveness, liveliness, an orientation towards having fun and an interest in interacting with people. The extroversion – introversion dimension contrasts and outgoing character with a withdrawn nature. Extroverts tend to be more physically and verbally active whereas introverts are independent, reserved, steady and like being alone. The person in the middle of the dimension likes a mix between social situations and solitude (Howard & Howard, 2005).

Extroverts are adventurous, assertive, frank, sociable and talkative. Introverts may be described as quiet, reserved, shy and unsociable (Costa & McCrae 2002).

Openness: This is characterized by imagination, intelligence, curiosity and aesthetic sensitivity. Openness to experience is a measure of depth, breadth and variability in a person's imagination and urge for experiences. This factor relates to intellect, openness to new ideas, culture, interest, educational aptitude and creativity as well as an interest in varied sensory and cognitive experiences. People with a high openness to experience have broad interests, are liberal and like novelty. They preserve with low openness to experience and conventional, conservative and prefer familiarity (Howard & Howard, 2005).

Agreeableness: This is characterized by a pleasant disposition, a charitable nature, empathy towards others and friendliness. The agreeableness scale is linked to altruism, nurturance, caring and emotional support versus

competitiveness, hostility, indifference, self-centredness, spitefulness and jealousy (Howard & Howard, 2005). Agreeable people can be described as altruistic, gentle, kind, sympathetic and warm (Costa & McCrae, 2002).

Conscientiousness: This is characterized by reliability, hard work, punctuality and a concern about doing things right. Conscientiousness is a measure of goal – directed behaviour and amount of control over impulses. Conscientiousness has been linked to educational achievement and particularly to the will to achieve. The focuses person concentrates on a limited number of goals but strives hard to reach them, while the flexible person is more impulsive and easier to persuade from one task to another (Howard & Howard, 2005). The more contentious a person is, the more competent, dutiful, orderly, responsible and thorough (Costa & McCrae, 2002).

Social Reactivity: This has to do with one's emotional stage in response to situations. This emotional state could be aggressive or non-aggressive. Researchers have long compared two types of aggressors, one of which overlaps in many ways with the other.

Sometime ago, Lorenz (2006) differentiated two types of aggression in animals, which corresponded to types of aggression in human beings. First, he noted a predatory aggression, which was instrumental in meeting the individuals' needs. Second, he noted a counter offensive aggression which was accompanied by high emotional arousal and occurred in the face of threats. More recently these distinctions have been called proactive and reactive aggression, social proactive/social reactive (Crick & Dodge, 2001; Dodge & Coie, 2002).

Purpose of study

The purpose of this study was to examine whether adolescents' personality ratings on the dimensions of the Five Factor Model (FFM) – neuroticism, extroversion, openness to experience, agreeableness and conscientiousness, mediated on social reactivity during their daily social interaction.

Research questions

To actualize the main objective of this study, the following two research questions were put to provide answers to the study:

- (a) What is the combined effect of the six independent variables – neuroticism, extroversion, openness, agreeableness,

conscientiousness and gender on the dependent variable (social reactivity)?

- (b) What is the most meaningful causal model involving the independent variables and dependent variables?

Methodology

The descriptive survey research method was used. Participants in the study consisted of 200 adolescent students randomly selected across twelve public secondary schools in Cross River State (120 males and 80 females). The instruments used included the 5-point likert scale, NEO-Five Factor Inventory and the 13 item social reactivity scale of Dermoti & Apter (2000). Data for the study was obtained by the investigators directly from the adolescent's students in twelve public secondary schools involved in the research. The data were analyzed using causal modeling technique which involves multiple regression (backward solution) and path analysis used to identify the level of contribution of each of the six predictor variables to the effect and their combined effect and their combined effect on the criterion variable.

Result of testing or testing of research questions

Research question one: What is the combined effect of the six independent variables – neuroticism, extroversion, openness, agreeableness, conscientiousness and gender on the dependent variable (social reactivity)?

Table 1 shows the total contribution of all independent variables on the dependent variable correlated with all the six predictor variables. It could be observed that the correlation is moderate ($R = 0.596$).

The adjusted $R = \text{square}$ indicated that 35.5% of the variance in social reactivity is accounted for by all the six predictor variables when taken together. This implies that other variables not taken into consideration in the model have accounted for the remaining variance.

Moreso, the effectiveness of the prediction as the F-ratio 17.715 significant at $\alpha = 0.000$ implies that 35.5% variance in social reactivity which is the criterion variable is truly due to the effect of the six predictor variables taken together and are effective in predicting social reactivity in an individual, directly and indirectly.

Research question two: What is the most meaningful causal model involving the independent variables and the dependent variable? The

hypothesized model is shown in figure 1. The path coefficients are zero order correlation co-efficient written on each path-way with the correlation coefficient in brackets or parenthesis. In trimming the paths in the model, it was considered significant at 0.05 alpha levels. The paths were not less than 0.05. Based on these criteria, the new path model was obtained as shown in figure 2. In the new model only 14 hypothesized paths survived the trimming exercise.

The most meaningful causal model showing path co-efficient

From figure 2, variables 1, 2 and five have an indirect effect on social reactivity, while variables 3, 3 and 6 have direct effect on social reactivity. However, to verify the efficacy of the new model - see fig 2.

Table 2 below was used to show the correlation matrix for the model.

Discussion

The results of this study show that all the six predictors' variables contributed significantly to social reactivity. The effectiveness of the prediction as shown in the F-ratio 17.715 is significant at alpha = 0.000 implies that 35.5% variance in social reactivity which is the criterion variable is truly due to the effect of the six predictor variables taken together and are effective in predicting social reactivity in an individual. This however does not occur by chance. Thus, this result is in consonance with previous research works that personality is best described taking cognizance of the five characteristics discussed (neuroticism, extroversion, openness, agreeableness and conscientiousness). It proposes that each individual falls between the two extremes of each dimension (McCrae & John, 2002; McCrae & Costa, 2002; Costa & McCrae, 2002a, 2002b, 2000; Digman, 2000; Goldberg, 2003).

The second research question examined the most meaningful causal model involving the independent variable and dependent variable and dependent variable. From the figure, neuroticism, extroversion and conscientiousness have indirect effect on social reactivity while openness, agreeableness and have direct effect on social reactivity. This finding however contradicts previous findings. Previous studies showed that persons with high level of neuroticism are reactive and more easily bothered by stimuli in their environment. They are more likely unstable, worried, temperamental and sad. Resistant person on the other hand needs strong stimuli to be provoked (Howard & Howard 2005). Furthermore, other studies have shown that neuroticism and extroversion are associated with individual's retrospective reports of positive and negative life events. Neuroticism predicts individual's

daily ratings of stressful events, especially those linked to social activity (Magnus, Diener, Fujita & Pavot, 2003; Affleck, Tenner, Urrows & Higgins, 2004; Bolger & Schilling 2001).

This variation from previous research could be attributed to some variables beyond the control of the investigators. One could attribute this to the socio-cultural context. Most of the previous research works were conducted outside the Nigerian setting and Cross River State in particular, thus, participants in the study area quite different from other cultural settings. The belief system of the participants might have resulted in fake response to the instruments. Thus, the researchers do not generalize this finding to other settings.

Counselling implications

This study portrayed the empirical basis that the Big Five Factor actually predicts social reactivity among secondary school adolescents. It is the view of the investigators that counselling psychologists in school should mount intervention strategies to sharpen the emotional skills of secondary school adolescents so as to be proactive in their daily interaction. This will go a long way to boost their adjustment pattern and making them become better adjusted individuals.

Conclusion

Personality has to do with specific behaviours, thoughts, feelings and general life adjustments that are relatively stable overtime. The Big Five personality dimension model often called Big Five or the “Five Factor Model” (FFM) is an empirically derived model of personality based on the early work on traits by Gordon, Ailport, Raymond Cattel, Hans and Sybil Eysenck. It provides a convenient method for sum massing descriptions paired with their characteristics which depict someone rated high or low in these traits: neuroticism, extroversion, openness, agreeableness and conscientiousness. Social reactivity has to do with one’s emotional state in response to situations. As far as the personality traits are concerned an individual’s reactions fall between two extremes of each dimension and not just squarely on one dimension.

The study portrays empirical basis that the Big Five Factor actually predicts social reactivity among secondary school adolescents.

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Table 1: Multiple regression analysis of the combined effect of predictors

Model	SS	Df	X ₅	F ₁	Sign
Regression	8310.985	6	1385.164		
Residual	15091.335	193	78.193	17.715	000
Total	23402.320	199			

Predictors (constant) gender, agreeableness, conscientiousness, extroversion, openness, neuroticism

D = Dependent variable; social reactivity

$r = 0.596$

$r^2 = 0.355$

adjusted = 0.335

S.E. 8.8427

Table 2: Correlation matrix of original and computed values of the variables

		Social Reactivity	Neuroticism	Extroversion	Openness	Agreeableness	Conscientiousness	Sex
Social Reactivity	Person correlation Sig. (2-tailed) N	1.000	.092	.091	.003	.125	.020	.556**
Neuroticism	Person correlation sig. (2-tailed)	-.069	1.000	.255**	.486**	.531**	-.019	-.184**
Extraversion	Person Correlation Sig. (2-tailed) N	-.160	.34	1.000	.336**	.358**	-.211**	-.046
Openness	Person Correlation Sig. (2-tailed) N	-.163*	.248	.182*	1.00	.509**	-.098	.099
Agreeableness	Person Correlation Sig. (2-tailed) N	.193*	.398*	.247	.349*	1.000	.084	.35
Conscientiousness	Person Correlation Sig. (2-tailed) N	-.077	-.047	-.197*	-.110	.179*	1.000	145*
Sex	Person Correlation Sig. (2-tailed) N	.594	.191*	-.123	.152	-.172	.210*	1.000

Note: The upper half of the Matrix harbours original correlations while the lower half contains computed correlations.

Figure 2: Empirical Model Showing the 14 Surviving Paths

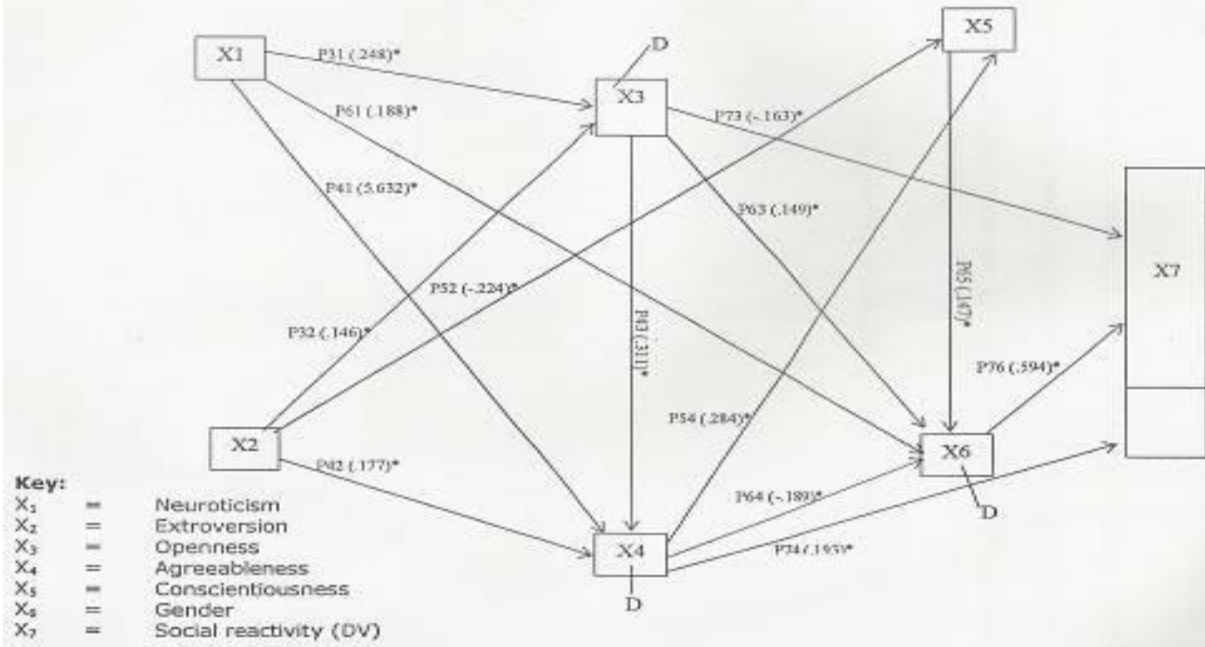


Figure 1: Hypothesised recursive path model (2) paths of a six-variable system showing path coefficient and zero order correlation

