

## EXTRAVERSION AND NEUROTICISM AS CORRELATES OF TEST ANXIETY AMONG SENIOR SECONDARY SCHOOL STUDENTS

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### ABSTRACT

This study examined extraversion and neuroticism as correlates of test anxiety among senior secondary school students. A total of 100 participants comprising 54 male and 46 female senior secondary school students were selected from Community Secondary School Amufie, Enugu-Ezike in Igboeze North LGA of Enugu State, Using of available sampling technique. The participants were within the ages of 13-20 years with a mean age of 16.5. Two sets of instrument were administrated in this study, the Big Five Inventory (BFI) by John, Donahue and Kentle, (1991) and Test-anxiety Inventory (TAI) by Spielberger (1980). Cross-sectional survey design was used while Pearson Product Moment Correlation Coefficient was applied to test the hypotheses. The findings revealed a significant correlation between Extraversion and test anxiety,  $r = .987$ ,  $P < .05$ ; and Neuroticism and test anxiety,  $r = .686$ ,  $p < .05$ . Together, extraversion and neuroticism (multiple  $R = 0.36$ ) accounted for 12% of the variation in test anxiety (adjusted  $R^2$ ); with  $F(2,97) = 7.25$  at  $p < .01$ . The findings were discussed in relation to literatures reviewed and suggestions made.

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**Keywords:** *Extraversion, Neuroticism, Test-anxiety and Students*

### INTRODUCTION

Studies have shown that parental pressure is associated with greater worry, test irrelevant thoughts, and stronger bodily symptoms relating to anxiety during a test, Putwain, Woods &, Symes, (2010). Test anxiety is a combination of physiological over-arousal, tension and somatic symptoms, along with worry, dread, fear of failure, and catastrophizing, that occur before or during test situations, Zeidner (1998). It is a physiological condition in which people experience extreme stress, anxiety, and discomfort during and/or before taking a test. This anxiety

creates significant barriers to learning and performance, *Andrews, Wilding, (2004)*. Research suggests that high levels of emotional distress have a direct correlation to reduced academic performance and higher overall student drop-out rates *Pritchard, & Wilson, (2003) and Vaez, & Laflamme, (2008)*. Test anxiety can have broader consequences, negatively affecting a student's social, emotional and behavioural development, as well as their feelings about themselves and school, *Salend, S. J. (2012)*. What is more, test anxiety can also be labeled as anticipatory anxiety, situational anxiety or evaluation anxiety. Some anxiety is normal and often helpful to stay mentally and physically alert.<sup>[13]</sup> *Parviz, & Minoo, (2010)*. When one experiences too much anxiety, however, it can result in emotional or physical distress, difficulty concentrating, and emotional worry. Inferior performance arises not because of intellectual problems or poor academic preparation, but because testing situations create a sense of threat for those experiencing test anxiety; anxiety resulting from the sense of threat then disrupts attention and memory function, *Sarason, Sarason, Pierce, (1995)*. Students who experience test anxiety tend to be easily distracted during a test, experience difficulty with comprehending relatively simple instructions, and have trouble organizing or recalling relevant information, *Zeidner (1998)*.

Researchers believe that feelings of anxiety arise to prepare a person for threats, *DePhil, Brilot, & Nettle, (2011)*. In humans, anxiety symptoms are distributed along a continuum and different symptom levels of anxiety predict outcomes. Responses consist of increased heart rate, stress hormone secretion, restlessness, vigilance, and fear of a potentially dangerous environment, *DePhil, Brilot, & Nettle, (2011)*. Anxiety prepares the body physically, cognitively, and behaviourally to detect and deal with threats to survival. During states of excitement or stress, the body releases adrenaline. Adrenaline is known to cause physical symptoms that accompany test anxiety, such as increased heart rate, sweating, and rapid breathing, *Lyness, (2012)*. In many cases having adrenaline is a good thing. It is helpful when dealing with stressful situations, ensuring alertness and preparation, *Cohen, Kozlovsky, Matar, Kaplan, Zohar, & Cohen, (2012)*. But for some people the symptoms are difficult or impossible to handle, making it impossible to focus on tests. However, test anxiety may include fear of failure, procrastination, and previous poor test performance, *ADAA, (2012)*. As well, characteristics of the test environment such as: nature of the task, difficulty, atmosphere,

time constraints, examiner characteristics, mode of administration and physical setting can affect the level of anxiousness felt by the student, *Salend,(2012)* and *sady, (2010)*. Researchers *Putwain & Best (2011)*, examined test performance among elementary children when the teacher put pressure on the students in an attempt to create a more high stress environment. Their findings showed that students performed worse in high threat situations and experienced more test anxiety and worrisome thoughts than when in a low threat environment.

Above all, test anxiety is known to develop into a vicious cycle. After experiencing test anxiety on one test, the student may become so fearful of it happening again they become more anxious and upset than they would normally, or even than they experienced on the previous test. If the cycle continues without acknowledgement, or the student seeking help, the student may begin to feel helpless in the situation, *Cherry, (2012)*. The perception of high stakes tests as threatening and visualizing the consequences of achieving low scores or failing, develops an agonized arousal in many students. Such a worry and heightened arousal has been demonstrated to impair the test performance of students. This condition is collectively called as test anxiety in psychology literature. *Sieber, O'Neil & Tobias (1977)* defined this condition as "a set of physiological, phenomenological and behavioural responses that accompany concern over possible negative consequences or failure in an exam or similar evaluative situations". This definition has possibilities to be agreed upon and considered by the majority of researchers since it simply states that test anxiety is nothing more than an ideal psychological construct. However, social and educational perspectives have labeled test anxiety as a crisis prevailing among students. Thus, research in test anxiety is a complicated task and equally a promising one which helps to explore and predict the behavioural well-being of students (*Zeidner, 1998*).

Test anxiety is considered to be a perfect vehicle to explore the roots of anxiety there by predicting the behaviour of individuals which has been studied since 1950's and researchers have been investigating the nature, components, origins, determinants, effects, and treatments of test anxiety and proposed promising models (*Zeidner, 1998*). *Friedman and Bendas Jacob (1997)* proposed three dimensions of test anxiety such as social derogation, cognitive obstruction and tenseness. Social derogation refers to the worries of being socially belittled and deprecated by significant others following failure on a test where as cognitive obstruction indicates a

poor concentration, failure to recall, difficulties in effective problem solving, before or during a test and tenseness reflects to the bodily and emotional discomfort. Existing literature in test anxiety research revealed that the parental pressure, achievement motivation, emotional intelligence etc. are some of the factors determining the construct (Chen, 2012; Rouhani, 2008; Peleg-Pepko, 2002). Among all these, Individuals' personality are considered to be a major factor, being a dynamic organization, it determines the behaviour of individuals in general as well as specific situations.

Identifying an appropriate model to explore test anxiety of students in relation to their personality is a critical task. Hence, Chamorro-Premuzic et al (2008) stated that test anxiety among students can be well explored for their dispositional nature and personality determinants with use of Big Five Factors. The big five factor theory is considered to be the most prominent to explore the personality of students in academic settings (O'Connor & Pounonen, 2007). Ozer and Benet-Martinez (2005) also revealed that psychological researches aiming the student population should consider the big five traits since it has been associated to an extensive array of behaviours. Hence, big five factors of personality is considered to correlate with test anxiety among students in the present study.

### **Personality Characteristics and Test Anxiety**

Although there have been many studies on test anxiety to determine its components, as well as to find beneficial treatment plans for assisting students who are suffering, very little has been done to determine what personality characteristics are associated with individuals high in test anxiety. Three personality dimensions that have been found to have a relationship with test anxiety are locus of control, neuroticism, and extraversion but in this study however we are going to focus on neuroticism and extraversion. (Butterfield, 1964; Allen, Giat, & Cherney, 1974; Watson, 1967; Dobson, 2000; Khosravi & Bgdeli, 2008; Schmidt & Riniolo, 1999).

### **Neuroticism and Extraversion**

Two other aspects of personality that have been shown to be related to test anxiety are neuroticism and, to a lesser degree, extraversion. (Costa & McCrae, 1992; Eysenck & Eysenck, 1975). Both neuroticism and extraversion are personality facets that are seen as two of the five major

components of personality by Costa and McCrae (1992). People who are high in neuroticism have, according to Costa and McCrae (1992), low self-esteem, irrational perfectionistic beliefs, and pessimistic attitudes. In addition, Eysenck and Eysenck (1975) define a typical neurotic as an anxious worrying individual, moody and frequently depressed. He is overly emotional, reacting too strongly to all sorts of stimuli. Based upon these definitions of neuroticism, it is not surprising that the personality trait of neuroticism has been shown to be significantly related to test anxiety, with most of the studies showing that students who have a high level of neuroticism are also high in test anxiety. Although the number of studies is limited on the link between neuroticism and test anxiety, the results have been consistent (Dobson, 2000). According to Dobson, Previous research has repeatedly shown that neuroticism or anxiety (as defined by Dobson) is associated with lower performance across a range of testing situations. Further, Schmidt and Riniolo (1999) found that, the analyses revealed that neuroticism was significantly related to test anxiety,  $r = .27$ .  $p = .03$ ...". Schmidt and Riniolo (1999) also found, Adults who tended to report high amounts of neuroticism reported a high degree of anxiety in response to tests in general. In addition, a study by Akbari, Bakht, Khaledi, Bajvar, and Hovayzaee (2012) investigated the relationship between the traits represented by the NEO-FFI (Costa & McCrae, 1992) and test anxiety to determine if there was a significant relationship. This study found that neuroticism and extraversion correlated positively with test anxiety at the  $p < .001$  level. The authors found no significant correlation between openness to experience, agreeableness, or conscientiousness and test anxiety. Another study by Khosravi and Bgdeli (2008) used the Eysenck Personality Scale (Eysenck & Eysenck, 1975) to examine correlations between neuroticism and extraversion in relation to test anxiety. They found that neuroticism had a positive correlation with test anxiety but found no significant relationship between extraversion and test anxiety.

Because of the nature of extraversion, results of studies on extraversion and test anxiety have been mixed (Dobson, 2000; Khosravi & Bgdeli, 2008; Schmidt & Riniolo, 1999). A student who is high on extraversion may not worry as much as an introverted student, but he/she might also not spend as much time studying, which can lead to anxiety and poor performance at test time. An introverted student may be more prone to anxiety than an extraverted student, but he/she may also be more diligent in his/her study habits. Studies by Dobson (2000) and Khosravi and

Bgdeli (2008) found that, whereas the correlations between neuroticism and test anxiety were significant, the predicted outcome of significance between students with low scores on extraversion and students who tested high in test anxiety was not found. In addition, Schmidt and Riniolo (1999) found that there was not a statistically significant relationship between extraversion and test anxiety; however, they did find a significant relationship between shyness and introversion. However, a study by Liu, Meng, and Xu (2006) showed that, the prevalence of test anxiety in introverted students (72.3%) was higher than in the extroverted students (53.2%) ( $p < .05$ ) (p. 50). Another study by Akbari, Bakht, Khaledi, Bajvar, and Hovayzaee (2012) investigated the relationship between personality factors, emotional intelligence, and test anxiety and found a positive relationship between extraversion and test anxiety.

## **THEORETICAL FRAMEWORK**

### **Eysenck's Theory (Eysenck, 1975)**

There are many theories postulated to explain test anxiety but for this study Eysenck appears most appropriate. This theory postulates that heredity played a large role in determining personality. The theory states that individuals inherit a type of nervous system that affects their ability to learn and adapt to the environment. Eysenck, (1975) found that behaviour could be represented by three dimensions: extroversion, neuroticism and psychoticism. He called these personality traits second-order sufficient to explain human personality furthermore, he stated that where a person falls on these three dimensions give a clear picture on how to ascertain the individual's personality. For instance, the dimension of neuroticism measures a person's level of stability/ or instability. According to Eysenck, stable people are calm, even-tempered and reliable, while unstable persons are moody, anxious and unreliable. The dimension of psychoticism gives account of an individual's degree of toughness or tenderness. Tough minded individuals are hostile, ruthless and insensitive, whereas tender minded individuals are friendly, emphatic and cooperative while the dimension of extraversion accounts for people degree of extroversion and introversion. Extroverted individual is associated with happiness, while introverted individual is associated with sadness. One major limitation of this theory is that the factors here are too simple to explain personality.

## STATEMENT OF THE PROBLEM

The researchers observed that some students under test conditions are restless, anxious looking, and display some behaviour or bodily reactions such as knocking on their seats with pen, bite the pen, move excessively on their seats, sweat profusely, shiver, go out several times to urinate, giraffe and ask many questions on the test instructions during examination or test taking. These students find it difficult to concentrate on their papers to write, probably because they cannot remember what they have read.

However, some students do not display any signs of anxiety, restlessness or agitation during examinations. They remain calm and well comported during examination or test taking. Based on the above observations, the researchers wonder why some students have these problems while some others do not have them. But surprisingly some of those students who displayed signs of anxiety at long run come out with good results and the question is how manage? Despite the problem they have, students have devised various means to succeed in examinations, even when they are not academically competent. And unfortunately, the system has buckled under the pressure. It is increasingly becoming difficult to evaluate competence of students with supposed academic performance as represented in their certificates. Many students are unable to defend the exams they have taken or passed. And of course this has consistently led to inability to compete effectively in the job which has become a serious issue. Several factors have been researched into in the past as to the cause of this social malaise, but there seems to be indications that some hidden factors may be responsible that needs unraveling. The desire to see the problem curbed gave rise to the study. Based on this, the researcher would like to verify whether extraversion and neuroticism as personality traits can relate to test anxiety among students. Hence, the study intends to address the problem stated below:

- Would extraversion significantly correlate with test anxiety among students?
- Would neuroticism significantly correlate with test anxiety among students?
- Would Extraversion and Neuroticism jointly correlate with test anxiety among students?



The purpose of this study was to investigate whether extraversion would significantly correlate with test-anxiety among students. Again to investigate whether neuroticism would significantly correlate with test-anxiety among students, and also to investigate whether extraversion and neuroticism would jointly correlate with test-anxiety among students. It was **hypothesized** as follows:

1. That extraversion would not significantly correlate with test-anxiety among students.
2. That neuroticism would not significantly correlate with test-anxiety among students.
3. That extraversion and neuroticism would not jointly correlate with test-anxiety among students.

## **METHOD**

### **Participants**

A total of 100 participants comprising (54) males and (46) females senior secondary school students from Community Secondary School Amufie, Enugu-Ezike in Igboeze North were selected for this study. The participants are within the ages of 13-20 years with mean age of 16.5 and standard deviation of 1.79. They were selected making use of available sampling technique.

### **Instrument**

Two sets of instrument were used. The Big Five Inventory by John, Donahue & Kentle, (1991) and Test-Anxiety Inventory by Spielberger, (1980)

### **Big Five Inventory**

The BFI inventory was developed by John, Donahue and Kentle, (1991) designed to measure the five personality dimensions which are; Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness. The original psychometric properties were provided (John, Donahue & Kentle, 1991) and Umeh, (2004) validated the instrument for Nigeria sample. It has direct scoring pattern, with 5-point likert response format. The scale response format ranges disagree strongly to agree strongly. The coefficients of reliability provided by John et al, (1991) are; Cronbach-alpha of .80 and 3-month test re-test of .85 while Umeh (2004) obtained a Cronbach Alpha Coefficient of .82 for extraversion and .81 neuroticism.



### **Test Anxiety Inventory (TAI)**

The test anxiety inventory (TAI) developed by Spielberger, (1980) designed to measure anxiety proneness to tests, examinations and evaluative situations. The scale consists of 20-items with a 4-point likert response format. Its scoring pattern is that of the direct and reverse scoring. Omoluabi, (1993) validated the instrument and provided the psychometric properties for Nigerian sample. However, the instruments were subjected to a pilot study using 25 participants drawn from Ozalla High School Ozalla in Nkanu of Enugu State. A split half reliability coefficient of 0.41 was obtained using Pearson Moment Correlation Coefficient, and a corrected value of 0.58 using Spearman Brown in comparison to a critical value of 0.40 at  $P < .05$  level of significance.

### **Procedure**

The permission and cooperation of the principal and some teachers were solicited and obtained. 130 copies of the questionnaire were produced and distributed to the participants within three weeks. The questionnaire was completed by the students after the purpose of the study was logically explained. Confidentiality was assured by informing the respondents not to write their names on the questionnaire rather their age. Out of these, only 100 were completed correctly, 17 were poorly completed and 13 copies were not recovered. 3 research assistants 1 from each class assisted the researcher to collect the data. Those students below the age of 13 were excluded. Participants were told that participating in the study was voluntary and they received no financial or monetary reward for their participation in the study.

### **Design and Statistics**

A cross-sectional survey design was adopted while Pearson Product Moment Correlation statistics was used for data collection and analysis.

## RESULTS

**Table I: Summary table of the Correlation on extraversion and neuroticism as correlates of test anxiety among students.**

Correlations		State	Traits	Test anxiety
Extraversion	Pearson Correlation	1	.554	.987
	Sig. (2-tailed)		.000**	.000**
	N	100	100	100
Neuroticism	Pearson Correlation	.554	1	.686
	Sig. (2-tailed)	.000**		.000**
	N	100	100	100
test anxiety	Pearson Correlation	.987	.686	1
	Sig. (2-tailed)	.000**	.000**	
	N	100	100	100

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

Table I above, indicates a positive correlation between extraversion and test anxiety among students is obtained,  $r = .987$ ,  $P < .05$ . This shows that a significant relationship exist between extraversion and test anxiety among students. Thus, the first hypothesis which stated that extraversion would not significantly correlate with test anxiety among students was rejected.

Also a positive correlation between neuroticism and test anxiety among students is obtained,  $r = .686$ ,  $P < .05$ . This shows that a significant relationship exist between neuroticism and test anxiety among students. Thus, the second hypothesis which stated that neuroticism would not significantly correlate with test anxiety among students was hereby rejected.

**Table II: Table of model summary on extraversion and neuroticism as correlates of test anxiety among students.**

Model	R	R square	Adjusted square	R	Std. Error of the Estimate
1	.361 <sup>a</sup>	.130	.112		6.074

a. Predictors:( constant), neuroticism, extraversion

Results as shown indicated the association between dependent variable (test anxiety) and independent variables (extraversion and neuroticism) was moderately strong (multiple  $R = 0.36$ ). Together extraversion and neuroticism accounted for 12% of variation in test anxiety ( adjusted  $R^2$  )

**Table I11: Summary table of ANOVA on extraversion and neuroticism as correlates of test anxiety among students**

ANOVA <sup>a</sup>					
Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	534.793	2	267.396	7.247	.001
Residual	3579.207	97	36.899		
Total	4114.000	99			

a. Dependent Variable: Test Anxiety

b. Predictors: (Constant), Extraversion and Neuroticism

Table III above indicated a statistical significant relationship between extraversion, neuroticism and test anxiety.  $F = 7.25, P < .05$ . Hence, the third hypothesis which stated that, extraversion and neuroticism would not jointly predict test anxiety rather, a significant outcome was obtained showing that the two variables jointly predicted test anxiety. This means that both extraversion and neuroticism significantly predicted test anxiety. Hence, the third hypothesis of the study was hereby rejected.

## DISCUSSION

The outcome of the study revealed that the hypotheses tested were disconfirmed. The first hypothesis tested which stated that Extraversion would not significantly correlate with test anxiety among students was rejected. This means that there is a significant positive correlation between extraversion and test anxiety. This indicates that extraversion was found to correlate positively in relation to test anxiety among students. That is, as the scores on extraversion increased the scores on test-anxiety also increased and vice versa. This study aligned with Ozor, & Mgbenkemdi, (2019) and Jonah and Hans (2014). However, the findings were also supported by other studies. For instance, Lampard, (2015) showed that relationship between personality traits and assertive behavior revealed a positive significant relationship between extraversion and assertiveness.

The second hypothesis tested which stated that Neuroticism would not significantly correlate with test anxiety among students was rejected. This indicates that there is a significant positive correlation between neuroticism and test anxiety. However, it showed that neuroticism was found to correlate positively in relation to test anxiety among students. This study was in tandem with Justus (2017). A significant positive

relationship was found between the trait of neuroticism and the trait of test anxiety. The main finding was that the personality trait of neuroticism was found to be significantly correlated with test anxiety. This finding is not surprising since numerous studies have found this link between high levels of neuroticism and high test anxiety (Costa & McCrae 1985; Akbari, Bakht, Khaledi, Bajvar, & Hovayzaee, 2012; Khosravi & Bgdeli, 2008; Schmidt & Riniolo, 1999). In fact, there were no studies this researcher could find that explored the relationship between neuroticism and test anxiety that did not find a significant positive correlation between the two traits. The link between neuroticism and test anxiety makes sense when one examines the facets that are contained in the trait of neuroticism: anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability (Costa & McCrae 1992). This finding demonstrates that the general anxiety component of neuroticism strongly correlates with the more specific anxiety surrounding test performance.

The third hypothesis tested which stated that extraversion and neuroticism would not jointly correlate with test-anxiety among students was also rejected. The finding was that the personality trait of extraversion and neuroticism was found to be significantly correlated with test anxiety. The findings in the study were that those with higher levels of extraversion and neuroticism also had higher levels of facilitating achievement anxiety. This may be because facilitating anxiety is supposed to be a form of anxiety that is helpful to performance; it is perplexing as to why these results would be found. The results surrounding facilitating anxiety should be interpreted with caution. May be Culture and environmental factors contributed efficiently in this study. The finding was supported by Akbari, Bakht, Khaledi, Bajvar, & Hovayzaee, (2012) and Ormel, Jeronimus, Kotov, Riese, Bos & Hankin, (2013). According to Costa & McCrae 1992 the link between neuroticism and test anxiety makes sense when one examines the facets that are contained in the trait of neuroticism: anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability.

### **Implications of the Findings**

In view of the findings of the study, one may observe that extraversion and neuroticism only did correlate with test anxiety. There may be other factors like self-esteem, gender and openness to experience that have caused the outcome of the finding. Although, dimensions of personality traits are clearly important to the test anxiety of students. The finding of this study indicates that students with extraversion and neuroticism

personality traits tend to be more satisfied with current life situation. On the other hand the finding of this study contributed to the body of knowledge in the area of extraversion, neuroticism and test anxiety.

### **Limitations of the Study**

It is also possible that the students in this sample could be misrepresenting and inflating their age. Many studies have demonstrated that students will sometimes inflate their age as a way to appear more suitable to partake in the survey than they actually are (Caskie, Sutton, & Eckhardt, 2014; Schwartz & Beaver, 2015). This could mean that the students in the present study do actually represent average senior secondary school students in terms of age. If not, the consequence of this is that these particular students may have lower test anxiety on average than students in general; therefore, the results may not be generalizable to the entire student population.

Similarly, whereas some students certainly may struggle with test anxiety, we cannot be sure whether those highest in test anxiety are, in fact, part of the current study. This is because; it is certainly possible that by not using elder participants, such as those in the university, this may lead to a skewed sample. By using senior secondary school students instead of university students, we may be excluding those with higher levels of test anxiety, since those high in test anxiety may choose not to continue their education and in Universities we often have cases of carryover courses and mop up examinations. If this is true, then waiting until students are in University to determine what personality constructs is related to test anxiety may make this task more difficult.

### **CONCLUSION**

Test anxiety can be problematic for students throughout their academic careers, it could be beneficial to know what personality traits are significantly related to it so that students high in test anxiety can be helped to better manage their academic nervousness. Test anxiety is a major factor which impacts academic performance. Previous researches in the field of test anxiety indicated the importance of exploring the distal antecedent factors and proximal personal consequences of test anxiety. From findings of this study, a significant positive correlation was observed between extraversion and test anxiety among students. Also a significant positive correlation was observed between neuroticism and test anxiety among students. In addition extraversion and neuroticism were observed

to jointly predict test anxiety among students. Based on the outcome of the study the researcher hereby concludes that extraversion and neuroticism are strong predictors of test anxiety among students. While this study is not exhaustive, it does shed light on an under investigated topic and found some interesting results.

Furthermore, it is suggested that the future directions of the present study include (i) in-depth analysis of interaction between big five factors and test anxiety dimensions using complex predictive, factorial and path analytic designs, (ii) Developing an educational cum intervention program for alleviating test anxiety via manipulating the big five factors of personality and testing its efficacy, and (iii) identification of other latent dimensions of test anxiety and testing their relationship with big five factors in order to propose a newfangled measurement model.

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