Linking Personality Dimensions, Imprisonment Status and Type of Crime to Anxiety and Depression Among Prison Inmates

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Abstract

Objectives: This study examined how inmates’ personality, imprisonment status, and type of crime committed contribute to anxiety and depression in a sample of jail inmates in a Nigerian prison. Methods: A total of 252 (228 male and 24 female) participants were selected through stratified sampling technique at the Benin Prison. The mean age was 33.66 years (SD = 9.50). Anxiety and depression were measured by Hospital Anxiety and Depression Scale (HADS), while personality dimensions were measured using the Big Five Inventory (BFI) and a self-designed, semi-structured questionnaire to elicit various demographic variables. Descriptive analysis, regression analysis, one-way analysis of variance and t-test for independent sample were applied for statistical analysis. Results: The results show that neuroticism significantly independently predicted anxiety and all the personality factors, as predictor variables, jointly predicted anxiety. Further, openness to experience significantly independently predicted depression. The prison inmates who were on death row were significantly more anxious than the inmates serving the short-term prison sentence. Lastly, the inmates who were incarcerated based on violent crime were significantly more anxious than the inmates who were incarcerated based on non-violent crime. Conclusions: Mental health professionals involved in the psychological treatments of anxiety and depression of prison inmates in various correctional facilities should look out for these factors, so as to enhance stable mental health for the prison inmates.

Keywords: Personality Dimensions, Anxiety, Depression, Prison Inmates

Introduction

The Nigerian prisons are very overcrowded. This development has turned out to be a major worry to the prison authorities, the judiciary and the police. Over the years, inmates have outnumbered the capability of prison lockups and services and the prisons are being overstrained¹. For the 49,000 inmates in several Nigerian prisons (29,000 of whom are awaiting trial, while 806 are on death row) hell cannot be worse².

This overcrowding may well have
undesirable effects on the physical and mental health of prisoners. As there are not sufficient means to take care of inmates, undernourishment and unfortunate health facilities become predominant. This also increases the inmates’ vulnerability to physical attack among themselves. An association has been established amid crowding and the psychological effects of imprisonment. In 1988, Paulas finalised a fifteen-year study on the effects of prison crowding and revealed that swelling the number of inmates in correctional facilities considerably increased harmful psychological effects, such as, stress, anxiety, tension, depression, hostility, feelings of helplessness, and emotional distress.

Study has made it known that prison inmates display greater heights of anxiety and depression than the general population. Furthermore, the danger or insistent dread of oppression among inmates that is presented in the prison environment can lead to hypervigilance, which is the “sustained heightened cognitive and affective arousal in the service of scanning the environment for threat” and is an important constituent of anxiety-related syndromes. This condition is even most horrible for the prison inmates on death row. Inmates on death row in countries such as Belarus, Botswana and Egypt and Japan, are obscured from the forthcoming execution, establishing a deepened sense of terror and day-to-day uncertainty.

Autonomous investigations by Gunn et al. – including sentenced prisoners – and Maden et al. – including remanded prisoners – conducted in the UK in the early nineties showed a very high frequency rate (27% and 91%, respectively) of neurotic difficulties in the form of disturbed sleep, depression, worry, fatigue and irritability. Comorbidity was present in 25% of the men and in about a third of the women in remand prisons. Both surveys were point prevalence studies conducted on samples of prison inmates.

Anxiety and depression are both defined by high levels of negative affect. However, they are differentiated from each other by two definite factors: positive affects, which is low in depression, and hyper arousal, which is common in anxiety. Kjelsberg et al. approximated that 25% of inmates showed signs of clinical anxiety and 38% showed signs of depression in a Norwegian prison.

Slater devised the exact syndrome of “prison anxiety” to describe the considerable disturbance of inmates to correctional placements. He defined this syndrome as a grouping of tension, irritability, sleeplessness, nightmares, lack of ability to think clearly or concentrate and fear of imminent loss of impulse control. He hypothesized that prison anxiety (1) impairs sleep, concentration, and work; (2) inclines inmates to suicide behaviour, brief psychotic reaction, and psychophysiological reactions. He concluded that prison anxiety was frequently abandoned in psychiatric treatment.

A connection between personality and mental health has been put forward since the time of the olden Greek and psychology has continued to enlarge this belief since the first days of the field. The vulnerability model postulates that traits contribute etiologically to development of mental disorder, that is, personality score can envisage who acquires the condition among formerly stable individuals, whereas the pathology model declares that traits influence the course and severity of the disorder once it develops.
Human personality can be explained in terms of five dimensions, universally assigned as the ‘Big Five’\textsuperscript{15}. They include the following: neuroticism, which is the tendency to experience unpleasant emotions relatively easily; extraversion, which is the tendency to seek stimulation and to enjoy the company of other people; agreeableness, which is also the tendency to be compassionate towards others and not be antagonistic; conscientiousness, the tendency to show self-discipline, to be dutiful, and to strive for achievement and competence; and openness to experience, which may also be the tendency to enjoy new intellectual experiences and new ideas\textsuperscript{16}.

Neuroticism trait scores increased with the occurrence of anxiety disorders\textsuperscript{17}. This finding is in line with other studies which show that neuroticism scores predict subsequent episodes of anxiety disorder\textsuperscript{18-20}. The core of personality trait neuroticism is theorised to be sensitive to negative stimuli\textsuperscript{21}, thereby causing high trait scorers to experience a broad range of negative moods, including fear/anxiety, sad/depression, guilt, hostility and self-dissatisfaction\textsuperscript{22}. Openness to experience was shown to be significantly positively associated with depression\textsuperscript{23,24}. Studies have found neuroticism to increase and extraversion to decrease during depressive episodes, either momentarily\textsuperscript{25,26} or even perpetually in some\textsuperscript{27} but not all studies\textsuperscript{26,28}. A number of studies have found conscientiousness agreeableness and openness to be stable during a depressive occurrence\textsuperscript{29,31}.

This study examined how inmates’ personality, imprisonment status, and type of crime contribute to anxiety and depression in a sample of 252 jail inmates in a Nigerian prison. The paucity of jail mental health services has pushed many correctional facilities to adopt a triage model in which interventions are provided only to people with very severe conditions\textsuperscript{32-34}. As a result, anxiety and depression and other “milder” forms of psychopathology are basically ignored. Additionally, greater understanding of the mental health status of jail inmates under preventive detention may provide useful information for developing crime prevention measures and for successful rehabilitation programmes.

**Materials and methods**

**Study Population**

This study was carried out at Benin prison, Benin City, Edo State, Nigeria from July to August, 2013. The study size included 252 prison inmates and ranged in age from 18 to 63 years, with a mean age of 33.66 years (SD = 9.50). The selected prison inmates were made up of 224 males (90.5%) and 24 (9.5%) females. Among the prison inmates studied, 149 (59.1) were in prison owing to violent crime (such as murder, armed robbery, kidnapping, and rape), while 103 (40.9) were in prison because of non-violent crime (such as fraud, pick pocketing, burglary, and drug-related offences). Furthermore, in terms of imprisonment status, 103 (42.9%) were awaiting trials, 31 (12.3) were serving short-sentence (< 3 years), 77 (30.6%) were serving long sentence (3 year and above), 9 (3.6%) were serving life sentence, and 27 (10.7) were on death row.

**Procedure**

Participants for this study were selected from prison inmates at Benin Prison, Benin City, Edo State, Nigeria. The relevant authority at Benin Prison was approached through a detailed letter explaining the purposes of the research and requesting to allow their prison inmates to participate in the research. The request was granted and
the staffs at the Social Welfare Unit of the prison were instructed to assist in the administration of the questionnaire. Participants were selected using stratified sampling technique. The sample was stratified by the categories of imprisonment status (short-term, long-term, lifers and death row) to ensure adequate representation of all offence categories. The test administration for all participants took place in the same waiting room. Each prison inmate was given the same brief explanation of the purposes of the study and what his/her participation entailed. The participants were given the chance to refuse to participate if they felt uncomfortable in completing the measure. Subsequently, each prison inmate was asked to read an informed consent form stating his/her understanding of the investigation and his/her willingness to participate. The prison inmates who were less than 18 years, those who could not read and understand the English language and those undergoing treatment for psychiatric illness were exempted from the study.

**Measures**

The questionnaire package investigated background data, personality dimensions, levels anxiety and depression. Background variables were gender, age, type of crime and imprisonment status.

**Big Five Inventory (BFI):** Personality characteristics were measured with the Big Five Inventory (BFI)\(^{35}\). The inventory comprises 44-self descriptive statements in which respondents rate the extent to which each statement describes them using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The five dimensions of personality measured by the instrument are neuroticism, extraversion, and openness to experience, agreeableness and conscientiousness. The BFI shows high convergent validity with other self-reported scales and with peer ratings of the Big Five\(^{36}\).

**Hospital Anxiety and Depression Scale (HADS):** This instrument was originally developed by Zymond and Snaith\(^ {37}\). The HADS is a 14-item scale for the assessment of anxiety and depression. Seven of the items relate to anxiety and seven relate to depression, with each item rated on a 4-point scale. Although initially developed in a hospital setting, the HAD has been shown to be valid and useful in the general population. Bielland et al. through a systematic review of a large number of studies identified a cut-off point of 8/21 for anxiety or depression\(^ {38}\). Anxiety (HADS – A) gave a specificity of 0.78 and a sensitivity of 0.9. Depression (HADS – D) gave a specificity of 0.79 and a sensitivity of 0.83.

**Statistical analysis**

The data were analysed using Statistical package for Social Sciences (SPSS version 16.0 for Windows). Apart from descriptive statistics, the analyses included regression analyses to assess the predictive ability of Big Five personality dimensions on anxiety and depression. One-way ANOVA was used to determine the influence of imprisonment status (short-term, long-term, lifers and death row) on anxiety and depression. T-test for the independent sample was used to establish the effects of type of crime (violent crime and non-violent crime) on dependent variables. All statistical tests were considered significant at p < 0.05.

**Results**

The mean, standard deviation and correlation of variables measured with interval scales and the findings from this study are presented in this section. Table 1 shows a correlation matrix of the important
The finding shows that agreeableness had a negative relationship with anxiety among the inmates (r = -.19, p < .00). The negative relationship of agreeableness with anxiety indicates that the higher the score on agreeableness, the less anxious those prison inmates. Conscientiousness was significantly negatively related to anxiety (r = -.19, p < .00). This finding suggests that the more conscientious the prison inmates, the less their level of anxiety. Furthermore, neuroticism was significantly positively associated with anxiety (r = .25, p < .00). The positive relationship of neuroticism with anxiety indicates that the higher the neuroticism, the more the manifestation of anxiety among the prison inmates. Openness to experience had a positive relationship with depression (r = .17, p < .00). This implies that the more the prison inmates were opened to experience, the more they were depressed. As shown in Table 1, type of crime was significantly negatively related to anxiety (r = -.22, p < .01), suggesting that inmates who committed violent crime manifested increased anxiety than those who were in jail for none-violent crime.

Multiple regression statistics was used to test the independent variables that would yield an optimal predictive equation of anxiety. The independent variables selected were neuroticism, extraversion, and openness to experience, agreeableness and conscientiousness.

Table 2. Multiple Regression Analysis on Predictive Ability of Personality Dimensions on Anxiety

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>B</th>
<th>T</th>
<th>P</th>
<th>R²</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>-.04</td>
<td>-.04</td>
<td>-.63</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.07</td>
<td>-.11</td>
<td>-1.60</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.06</td>
<td>-.09</td>
<td>-1.26</td>
<td>ns</td>
<td>.09</td>
<td>4.87</td>
<td>0.00</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.17</td>
<td>.19</td>
<td>3.01</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>.01</td>
<td>.02</td>
<td>.26</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>
As shown in Table 2, neuroticism ($\beta = .17; t=3.01; p < .00$) was the only personality factor that significantly independently predicted anxiety among the prison inmates. This implies that the more neurotic the prison inmates, the greater the tendency to manifest anxiety symptoms. However, all the personality factors as predictor variables jointly predicted anxiety ($F [5, 246] = 4.87; p < .00$) with $R^2 = 0.07$. This indicates that all the predictor variables accounted for 7 percent of the proportion of variance in anxiety among the prison inmates.

Multiple regression statistics was also used to test the independent variables that would yield an optimal predictive equation of depression. The independent variables selected were neuroticism, extraversion, and openness to experience, agreeableness and conscientiousness.

Table 3. Multiple Regression Analysis on Predictive Ability of Personality Dimensions on Depression

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>$\beta$</th>
<th>T</th>
<th>P</th>
<th>$R^2$</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraversion</td>
<td>-.04</td>
<td>-.04</td>
<td>-.63</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.07</td>
<td>-.11</td>
<td>-1.60</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.17</td>
<td>.19</td>
<td>3.01</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>.01</td>
<td>.02</td>
<td>.26</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It can be seen in Table 3 that openness to experience ($\beta = .15; t = .91; p < .05$) was the only personality factor that significantly independently predicted depression among the prison inmates. All the personality factors as predictor variables did not jointly predict depression among the prison inmates ($F [5, 246] = 1.87; ns$). This suggests that the more the prison inmates were opened to experience, the greater their tendency to be depressed.

Regarding the determinants of anxiety based on imprisonment status, a One-Way Analysis of Variance was used. A summary of the test is presented in Table 4.

Table 4. Anxiety and Depression According to Categories of Inmates

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Awaiting Trials (SD)</th>
<th>Short-Term Sentence (SD)</th>
<th>Long-Term Sentence (SD)</th>
<th>Lifers (SD)</th>
<th>Death Row Inmates (SD)</th>
<th>P-value (ANOVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>10.81 (3.84)</td>
<td>9.10 (4.33)</td>
<td>11.44 (4.06)</td>
<td>11.22 (3.11)</td>
<td>12.07 (3.35)</td>
<td>0.05</td>
</tr>
<tr>
<td>Depression</td>
<td>10.99 (4.04)</td>
<td>9.10 (8.39)</td>
<td>11.24 (3.81)</td>
<td>10.22 (4.43)</td>
<td>10.33 (3.46)</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Significantly different at $p < .05$.

As shown in Table 4, the results indicate that there was a significant effect of imprisonment status (Awaiting trials, Short-term, Long-term, Lifers and Death row) on anxiety ($F [4, 247] = 2.65, p < .05$). To determine the direction of the significant effect, multiple comparisons using the Duncan test show that the inmates who were on death row ($\overline{x} = 12.07$) were significantly more anxious than the inmates serving the short-term prison sentence ($\overline{x} = 9.10$). However, other imprisonment status, such as those awaiting trial, those on long-term sentence, and those on life imprisonments, were not significantly different from one another on the measure of anxiety ($p > .05$).
Furthermore, imprisonment status did not significantly influence depression $F(4, 247) = 1.97, p > .05$. This finding suggests that the manifestation of depression among the imprisonment status were not significantly different from each other.

Lastly, the result of the t-test for the independent sample reveals that type of crime (violent and non-violent crime) significantly influenced prison inmates’ anxiety $t(250) = p < 0.01$. The result further shows that inmates who were incarcerated based on violent crime ($\bar{x} = 11.66$) were significantly more anxious than inmates who were incarcerated based on non-violent crime ($\bar{x} = 9.91$). However, type of crime did not significantly influence depression ($t = (250) = p > .05$). This finding suggests that inmates incarcerated both for violent and non-violent crimes were not statistically different on depression.

Table 5. Anxiety and Depression According to the Type of Crime

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Violent Crime(SD)</th>
<th>Non-Violent Crime(SD)</th>
<th>P-value (T-test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>11.66(3.91)*</td>
<td>9.91(3.82)*</td>
<td>0.01</td>
</tr>
<tr>
<td>Depression</td>
<td>10.96(4.05)</td>
<td>10.42(3.63)</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Significantly different at $p < .05$

Discussion

The primary aim of this study was to link personality dimensions, imprisonment status and type of crime to the emotional disturbance of inmates in a Nigerian prison. Benin Federal Prison, Nigeria can be a suitable setting to carry out prison inmates’ emotional disturbance-related studies, as inmates in this prison comprises inmates convicted from different parts of Nigeria. We found that neuroticism was the only personality factor that predicted anxiety among the prison inmates. This result buttresses previous findings about relationship between neuroticism and anxiety. According to Karsten et al., neuroticism trait scores increase with the occurrence of anxiety disorders$^{17}$. Matthew and Deary argue that individuals who score high on neuroticism are more probable to experience such feelings as anxiety and they experience this feeling more strongly than those who score lower on neuroticism$^{39}$. Neuroticism is a precise strong predictor of impending psychopathology in reaction to life stress$^{40,41}$ together with anxiety and other forms of psychopathology$^{30}$. Neuroticism is able to contribute both diathesis and stress, providing exposure by means of both reactive and evocative person-environment interactions. Persons high in neuroticism react to events with high levels of distress, anxiety and worry, providing an obvious threat for numerous forms of psychopathology, principally mood and anxiety disorders$^{42}$.

This research revealed that openness to experience was the only personality factor that significantly independently predicted depression among the prison inmates. This finding is in line with other studies$^{23,24}$. Both studies showed that openness to experience was significantly positively associated with depression. However, some studies have found openness with conscientiousness and agreeableness traits to be unwavering in the course of a depressive experience$^{29,31}$. 
The findings of this study also indicate a significant effect of imprisonment status (Awaiting trials, Short-term, Long-term, Lifers and Death row) on anxiety, with the inmates who were on death rows showing significantly greater anxiety than the inmates serving the short-term prison sentence. Research has suggested that awareness of death and mortality generates anxiety for individuals. Sharon avers that death row inmates usually undergo solitary confinement for lengthy days; this aggravates anxiety and nervousness. In addition, they have to continue to live under an ever-present sentence of death, with much of this time spent not knowing when the actual execution will take place. Death row syndrome is common among inmates on death row. Inmates living under such conditions have been seen to undergo higher-than-average rates of anxiety.

Lastly, this study revealed that the type of crime (violent and non-violent crime) significantly influenced prison inmates’ anxiety, with inmates who were incarcerated based on violent crimes manifesting significantly more anxiety than inmates who were incarcerated based on non-violent crimes. Værøy claims that quite a lot of studies have established a link between aggressive behaviour and affective disorders. Some have shown that negative affective disorders increased the probability of impulsive antisocial or aggressive behaviour. Hodgins, De Brito, Chhabra and Cote found that more of the offenders with anxiety disorders had been convicted of serious crimes involving interpersonal violence. In addition, in some people, anxiety can provoke an aggressive response. They are very real and can be challenging for those that suffer from them. An explanation given was that anxiety causes irritability and this type of irritability commonly causes people to close off or develop passive aggressive behaviour. However, the same irritation causes some people to respond more intensely and, perhaps, show aggressive behaviour.

**Conclusion**

This study shows that neuroticism and openness to experience personality dimensions are important predictors of anxiety and depression, respectively. Furthermore, being on death row and being a violent crime offender can result in the manifestation of anxiety. In the light of the established link, these findings are grounds for worry. Mental health professionals involved in the psychological treatments of anxiety and depression of prison inmates in various correctional facilities have a duty to look out for these factors. Effective management package may well reduce these risk factors, thus improving a stable mental health for the prison inmates. This research has a limitation. The participants were selected from one prison located in the metropolitan city of Benin. However, there is no confirmation that the studied prison was different from other Nigerian prisons. Despite this limitation, the appraisal is sufficient to validate promotion for new approaches of care for the population of prison inmates.

**Acknowledgements**

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