

Personality Characteristics of Dental Students in Relation to their Academic Performance

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Abstract

This cross sectional descriptive study was carried out to explore the relationship between the personality variables and academic performance of dental student. The study population was dental students. Study was carried out at one government and three non-government dental colleges. Sample size was 200 and sampling technique was purposive. Data was collected by self administered structured questionnaire. Academic performance data for each respondent were collected throughout the one academic year (2nd year) in dental students' files. It was measured by two term examination marks of four subjects based on 1 hour 30 minutes written exams. Personality of dental student was assessed through the Big Five Inventory (BFI). This well-established questionnaire was a 44-item measure of the Big Five personality factors: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness. The self administered items involve questions about typical behaviours or reactions, which was answered on a five-point Likert scale. This study revealed that there was no statistically significant relationship between student's personality characteristics and academic performance of dental students. Extraversion, neuroticism and openness had negative correlation with academic performance though it was not statistically significant. So, for better performance afore mention factors should be minimized as much as possible.

Key Words: Personality, Academic performance, Big Five Inventory, Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness.

Introduction

Besides cognitive abilities, a blend of personality characteristics is necessary for people to be successful in dental studies and eventually in the dental profession. Personality consists of an individual's native traits modified or accentuated by his training and environment. Personality is the result of the traits he possesses at birth plus his experiences through life¹.

Understanding the reasons for individual differences in levels of scholastic achievement has always been a concern of educational psychologists. Knowledge of the factors that influence academic success has important implications for learning and education. Many educators, for example, are interested in knowing beforehand who will perform well, and who will perform poorly, in academic programs. Other researchers are concerned with identifying the determinants of academic success in an effort to

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develop curricula aimed at improving levels of academic performance.²

Walton, (1987) stated during personality tests attitudes and values are taken into account, they have been shown to forecast better how students are likely to perform during the clinical years, than do measures of intellectual ability alone. Walton reported that he challenge at entry to medical school is for selectors to determine the best combination of personality tests and interest and attitude inventories for the investigation of professional competence at medical school and in later professional life.³ Researchers have supported and denied.⁴⁻⁹

Researchers have consistently attempted to understand the major predictors of individual academic performance of students. Previous findings suggest that specific variables of individuals such as personality and intelligence can be used to explain variance in academic performance. Among these 'non-intellectual' factors, several personality traits such as, openness to experience, extroversion and neuroticism are consistently reported to be associated with academic performance of students. Better academic performance by introverts has been attributed to their greater ability to consolidate learning, lower distractibility, and better study habits. These findings are corroborated by the fact that the extroverts under-perform academically owing to their distractibility, sociability, and impulsiveness.

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The negative relationship between academic achievement and neuroticism has usually been explained in terms of their higher stress and anxiety under examination conditions.¹⁰

The academic performances of the students are assessed by various tools and at different levels. In this study using written score of formative assessment that was term-I and term-II of student. The aim of the present study was to explore the relationship between personality and the academic performances. This study assessed the usefulness of Big Five Inventory (BFI) short phrases, 44 items¹¹ in identifying personality variables and relation to academic performance of dental students.

Methods & Material

This cross sectional descriptive study was carried out among the 200 dental students of one government and three non-government dental colleges. Sampling methods was purposive. Data was collected from the students with a self administered structured questionnaire with Bengali version. Personality characteristic data was collected from the second year student through self administered questionnaire. Academic performance data of dental students were collected from the teacher of four subjects. Only written marks were collected. Total marks were obtaining 200 marks. Collected questionnaire was edited, coded manually and entered into SPSS version 11.5 for analysis. Analysis was done by frequency table and Pearson correlation for significant test to see the relationship between academic performance and personality of the respondent and Pearson chi-square test was done to see the association of personality five factors and gender.

Result

Fig-1 shows majority percent were female 67% and Fig-2 and fig-3 showed that majority percent (57.3% in term-I and 50.5% in term-II) student was poor performer in written exam.

Table 1-5 shows frequency distribution of item of personality five factors

Table 6 shows correlation of personality types with academic performances in two terms. Negative correlations of extraversion scale ($r = - 0.107$, & $- 0.103$; $p = 0.134$ & 0.150), positive correlations of Agreeableness($r = 0.046$, 0.034 ; $p = 0.523$ & 0.639), positive correlation between Conscientiousness and their both term examination score ($r = 0.091$ & 0.112 ; $p = 0.202$ and 0.117), negative correlation between Openness and term

examination score ($r = - 0.084$ & $- 0.077$; $p = 0.236$ and 0.284)

Table7 contingency table of male and female were made then Pearson chi-square test was done

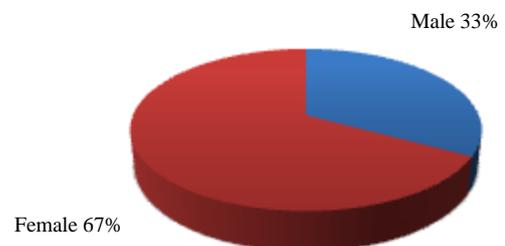


Fig-1. Gender distribution of respondent

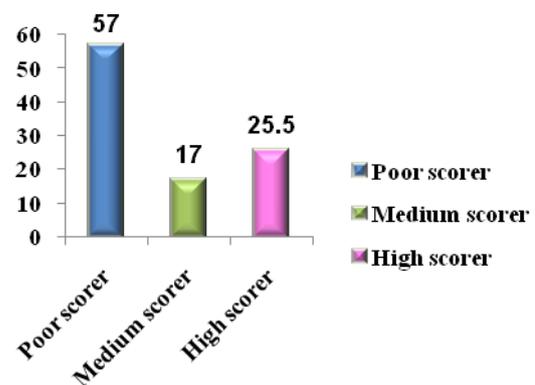


Fig-2. Distribution of respondents by their academic performance in term-I

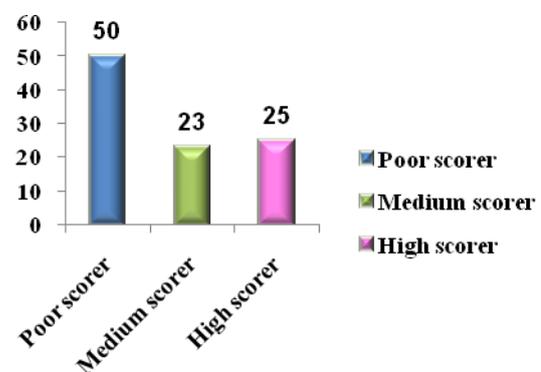


Fig-3. Distribution of respondents by their academic performance in term-II

Table-1. Distribution of respondents by their extraversion item

| Extraversion item | DS | | DL | | NAND | | AL | | AS | |
|-----------------------|----|--------|----|--------|------|--------|----|--------|----|--------|
| | n | % | n | % | n | % | n | % | n | % |
| Talkative | 40 | 20.0 | 39 | (19.5) | 25 | (12.5) | 65 | (32.5) | 31 | (15.5) |
| Reserve | 70 | (35.0) | 26 | (13.0) | 25 | (12.5) | 47 | (23.5) | 32 | (16.0) |
| Full of energy | 8 | (4.0) | 16 | (8.0) | 19 | (9.5) | 82 | (41.0) | 32 | (16.0) |
| Lot of enthusiasm | 5 | (2.5) | 22 | (11.0) | 23 | (11.5) | 71 | (35.5) | 79 | (39.5) |
| Tends to be quite | 44 | (22.0) | 30 | (15.0) | 31 | (15.5) | 47 | (23.5) | 48 | (24.0) |
| Assertive personality | 4 | (2.0) | 14 | (7.0) | 21 | (10.5) | 63 | (31.5) | 98 | (49.0) |
| Shy and inhibited | 21 | (10.5) | 23 | (11.5) | 19 | (9.5) | 89 | (44.5) | 48 | (24.0) |
| Outgoing and sociable | 11 | (5.5) | 19 | (9.5) | 28 | (14.0) | 51 | (25.5) | 91 | (45.5) |

(DS: Disagree strongly; DL: Disagree a little; NAND: Neither agree nor disagree; AL: Agree a little; AS: Agree strongly)

Table- 2. Distribution of respondents by their agreeableness item

| Agreeableness | DS | | DL | | NAND | | AL | | AS | |
|------------------------|-----|--------|----|--------|------|--------|----|--------|-----|--------|
| | n | % | n | % | n | % | n | % | n | % |
| Find fault with other | 76 | (38.0) | 56 | (28.0) | 29 | (14.5) | 27 | (13.5) | 12 | (6.0) |
| Helpful & unselfish | 6 | (3.0) | 8 | (4.0) | 18 | (9.0) | 59 | (29.5) | 109 | (54.5) |
| Quarrel with others | 127 | (63.5) | 26 | (13.0) | 20 | (10.0) | 13 | (6.5) | 14 | (7.0) |
| Forgiving nature | 2 | (1.0) | 5 | (2.5) | 14 | (7.0) | 60 | (30.0) | 119 | (59.5) |
| Generally trusting | 2 | (1.0) | 3 | (1.5) | 11 | (5.5) | 57 | (28.5) | 127 | (63.5) |
| Cold & aloof | 50 | (25.0) | 32 | (16.0) | 36 | (18.0) | 45 | (22.5) | 37 | (18.5) |
| Cooperates with others | 4 | (2.0) | 1 | (0.5) | 3 | (1.5) | 42 | (21.0) | 150 | (75.0) |
| Considerable & kind | 3 | (1.5) | 7 | (3.5) | 19 | (9.5) | 53 | (26.5) | 118 | (59.0) |

Table-3. Distribution of respondents by their conscientiousness item

| Conscientiousness item | DS | | DL | | NAND | | AL | | AS | |
|-------------------------|----|--------|----|--------|------|--------|----|--------|-----|--------|
| | n | % | n | % | n | % | n | % | n | % |
| Thorough job | 7 | (3.5) | 27 | (13.5) | 7 | (3.5) | 59 | (29.5) | 100 | (50.0) |
| Careless | 43 | (21.5) | 26 | (13.0) | 25 | (12.5) | 82 | (41.0) | 24 | (12.0) |
| Reliable worker | 7 | (3.5) | 8 | (4.0) | 26 | (13.0) | 50 | (25.0) | 109 | (54.5) |
| Disorganized | 55 | (27.5) | 41 | (20.5) | 23 | (11.5) | 49 | (24.5) | 32 | (16.0) |
| Tends to be lazy | 38 | (19.0) | 33 | (16.5) | 21 | (10.5) | 68 | (34.0) | 40 | (20.3) |
| Perseveres | 7 | (3.5) | 21 | (10.5) | 23 | (11.0) | 67 | (33.5) | 82 | (41.0) |
| Does things efficiently | 1 | (0.5) | 13 | (6.5) | 13 | (6.5) | 59 | (29.5) | 114 | (57.0) |
| Makes plan | 12 | (6.0) | 36 | (18.0) | 29 | (14.5) | 63 | (31.5) | 60 | (30.0) |
| Distracted | 56 | (28.0) | 47 | (23.5) | 32 | (16.0) | 50 | (25.0) | 15 | (7.5) |

Table-4. Distribution of respondents by their neuroticism item

| Neuroticism item | DS | | DL | | NAND | | AL | | AS | |
|--------------------|----|--------|----|--------|------|--------|----|--------|----|--------|
| | n | % | n | % | n | % | n | % | n | % |
| Depressed blue | 28 | (14.0) | 27 | (13.5) | 33 | (16.5) | 63 | (31.5) | 49 | (24.5) |
| Relaxed | 34 | (17.0) | 38 | (19.0) | 21 | (10.5) | 54 | (27.0) | 53 | (26.5) |
| Can be tense | 22 | (11.0) | 41 | (20.5) | 13 | (6.5) | 65 | (32.5) | 59 | (29.5) |
| Worries a lot | 46 | (23.0) | 32 | (16.5) | 21 | (10.5) | 64 | (32.0) | 37 | (18.5) |
| Emotionally stable | 18 | (9.0) | 41 | (20.5) | 25 | (12.5) | 52 | (26.0) | 64 | (32.0) |
| Moody | 48 | (24.0) | 39 | (19.5) | 28 | (14.0) | 59 | (29.5) | 26 | (13.0) |
| Remain calm | 33 | (16.5) | 45 | (22.5) | 18 | (9.0) | 58 | (29.0) | 46 | (23.0) |
| Easily nervous | 35 | (17.5) | 38 | (19.0) | 12 | (6.0) | 62 | (31.0) | 53 | (26.5) |

Table-5. Distribution of respondents by their openness item

| Openness item | DS | | DL | | NAND | | AL | | AS | |
|------------------------|----|--------|----|--------|------|--------|----|--------|-----|--------|
| | n | % | n | % | n | % | n | % | n | % |
| Comes up with new idea | 11 | (5.5) | 9 | (4.5) | 25 | (12.5) | 67 | (33.5) | 88 | (44.0) |
| Curious | 3 | (1.5) | 2 | (1.0) | 22 | (11.0) | 48 | (24.0) | 125 | (62.5) |
| Ingenious | 12 | (6.0) | 24 | (12.0) | 44 | (22.0) | 62 | (31.0) | 58 | (29.0) |
| Active imagination | 36 | (18.0) | 25 | (12.5) | 17 | (8.5) | 56 | (28.0) | 66 | (33.0) |
| Inventive | 13 | (6.5) | 21 | (10.5) | 59 | (29.5) | 62 | (31.0) | 45 | (22.5) |
| Artistic | 1 | (0.5) | 2 | (1.0) | 9 | (4.5) | 32 | (16.0) | 156 | (78.0) |
| Routine work | 26 | (13.0) | 39 | (19.5) | 21 | (10.5) | 54 | (27.0) | 60 | (30.0) |
| Play with idea | 6 | (3.0) | 26 | (13.0) | 41 | (20.5) | 68 | (34.0) | 59 | (29.5) |
| Few artistic interest | 63 | (31.5) | 35 | (17.5) | 35 | (17.5) | 47 | (23.5) | 20 | (10.0) |
| Sophisticated in art | 17 | (8.5) | 13 | (6.5) | 22 | (11.0) | 57 | (28.5) | 91 | (45.5) |

Table-6. Pearson coefficient Correlation between five scales of personality and the Students' Academic performance in Term-I and Term-II

| Personality type | Term-I (n=200) | | Term-II (n=200) | |
|-------------------|-------------------|-------|--------------------|-------|
| | r | p | r | p |
| Extraversion | -0.107 | 0.134 | -0.103 | 0.150 |
| Agreeableness | 0.046 | 0.523 | 0.034 | 0.639 |
| Conscientiousness | 0.091 | 0.202 | 0.112 | 0.117 |
| Neuroticism | -0.070 | 0.328 | -0.080 | 0.260 |
| Openness | -0.084 | 0.236 | -0.077 | 0.284 |

 $\alpha = 0.05$ **Table-7. Association between gender and personality types**

| Personality type | χ^2 | p |
|-------------------|----------|-------|
| Extraversion | 0.178 | 0.724 |
| Agreeableness | 0.064 | 1.00 |
| Conscientiousness | 1.108 | 0.348 |
| Neuroticism | 11.050 | 0.001 |
| Openness | 0.746 | 0.666 |

 $\alpha = 0.05$

Discussion

This cross sectional descriptive study was carried out among the second year dental student of three non-governments and one government dental college. From these study analyze the findings that was reveal were personality characteristics of dental student and their academic performance, level of academic performance of student in term-I and term-II and association between personality five factors and gender

Dental students high in extroversion appear to experience less difficulty in clinical components of their dental programs compared to introverts who experience less difficulty in the academic components of the program.¹² However, parallels can be drawn between this research and others, all were discuss about extraversion that introverts would have an advantage over extraverts with respect to the ability to consolidate learning, as well as lower distractibility and better study habits.¹³ Furthermore, it is also likely that Introversion rather than Extraversion may be advantageous for knowledge acquisition, possibly due to the fact that introverts spend more time studying alone than extraverts.¹⁴

This study shows negative correlations of extraversion scale that means those who were extraverted their result were poor but not statistically significant. This study was also consistent with the findings of Rolfhus and Ackerman who reported negative correlations between Extraversion and several knowledge tests, and suggested that these correlations may be a consequence of differences in knowledge acquisition time between introverts (spend more time studying) and extraverts (spend more time socializing).¹⁴

Chamberlain et al also found that Extroversion was not associated with any performance measure.¹⁵ Goff and Ackerman find negative correlations between Big-Five factor Extraversion and both undergraduate and high-school GPA.¹⁶

This study shows positive correlations of Agreeableness scale but not statistically significant that means those who were possess agreeableness criteria their result were good.

The association between Agreeableness and GPA was also strongest in elementary school and decreased later. As the correlations were decreasing smoothly from Grade 2 to Grade 12, there seems to be a reason to attribute this decrease to age, not just to the change of instrument. Although direct links to learning outcomes are hard to find for Agreeableness, emphasized its role in maintaining good relations with teachers and classmates, which leads to better academic adjustment over the course of development.¹⁷

Table 6. shows positive correlation between Conscientiousness and both term examination and not statistically significant. The relationship between Conscientiousness and academic performance has been the focus of several recent studies. Chamberlain et al (2005)¹⁵ their results provide strong evidence for the use of Conscientiousness and its facets in the selection of dental students. Students who score high in conscientiousness are more likely to perform better in both their clinical and academic courses and to receive higher assessments with respect to professionalism. Their regression analyses further supported the importance of Conscientiousness and its facets as predictors of dental school performance. Conscientiousness and its facet of Deliberation significantly improved upon the prediction of professional behavior that could be made from the DAT component of Perceptual Ability.

At 2007 Amanda et al studied on three academic year of one dental school and the results of their study support the use of the FFM of personality in dental admissions. Conscientiousness predicted academic or clinical performance or both in every year of dental training. These results are in line with previous research on the role of conscientiousness in predicting different aspects of job performance across many occupations their study confirms these findings for dental students. Those students who are more conscientious demonstrate higher levels of performance than students who are less conscientious both in the classroom and in the clinic and throughout their tenure in dental school.^{18, 19}

The relationship between academic performance and Neuroticism is usually understood in terms of anxiety, particularly under stressful conditions such as university examinations. Furthermore, researchers have noted that Neuroticism may also impair performance on psychometric intelligence tests.¹⁹

Studies have also shown that neurotic students have a greater tendency to be absent in examinations due to medical illness or to request, and require, "special treatment".¹⁸

From a psychological point of view, it has been shown that Neuroticism is related to low self-estimated intelligence.¹⁸

Table 6 shows negative coefficient correlation between Openness scale that means those who were possesses openness their result were poor in two term examination but score not statistically significant

In contrary of this finding previous research suggested that Openness might not be a

characteristic suited to the dental environment, which requires students to follow established procedures. This environment would not be favorable for students who were more creative; rather, students who were more comfortable using established methods and techniques would be more successful. However, recent changes in dental education have focused on more problem-based learning, and those students who are more intellectually curious may be doing much better in those environments.

Chamberlain et al. found openness to Experience did not predict any of the criterion measures, but its narrow facets of Actions ($r = 0.22$), preferring novelty to the routine, predicted first-year performance while Ideas ($r = 0.26$), being intellectually curious, predicted professional behavior.¹⁵ Smithers et al. found that Openness to Experience was negatively correlated with the coursework criteria, as was the Ideas facet. These differences with respect to Openness to Experience may reflect differences between the participants in two studies.²⁰

Reason of this poor performance might be due to their low IQ or low understanding level. They might be not grasping their concentration in the classes or unmotivated in the academic area. Nonanxious learners with low IQ and able learners who are highly anxious are equally handicapped in academic settings.

From the result regarding category of Extraversion, Agreeableness, Conscientiousness and Openness (Table 7) Pearson chi-square test was statistically not significant. But regarding category of Neuroticism analysis of the data indicates that majority of students were female who had neurotic type of personality. Pearson chi-square test was statistically significant.

From the above findings it was clear that there was no significant association between gender and personality factors except neuroticism. This may reflect characteristics of some female student who might be perceive dental college as a hostile environment. Smithers et al. found females were higher in terms of Agreeableness ($r = .14$, $p < .05$), Neuroticism ($r = .28$, $p < .01$), and Openness ($r = .17$, $p < .05$).²⁰ This finding coordinates with a study by Chamberlain et al a significant relationship between gender and neuroticism ($r = .45$) deserves comment. This correlation suggests that female students were more anxious, self-conscious, and vulnerable than their male colleagues.¹⁵

Recommendations

When possible, dental students should be offered multiple learning opportunities that promote motivation and allow for an expression of preference. Educating students on individual personality types would help them to better understand their own behavior, the behavior of others, and the most effective way to interact with others. Implications would include student/student, student/faculty, student/patient, and ultimately dentist/patient relationships. An appreciation for and application of type by both faculty and students would not only contribute to the effectiveness of any clinical curriculum, but should also produce a more competent, effective, and content practitioner. According to the findings of this study the suggestions are:

1. Extraversion, neuroticism and openness had negative correlation with academic performance though it was not statically significant so, for better performance afore mention factors should be minimize as much as possible.
2. Teacher should consider different personality trait of the student adapt teaching learning session accordingly.
3. Neuroticism among female students may be reduced by creating non-threatening teaching learning session.
4. Further studies may be carried out with larger representative samples for drawing definitive conclusion.

Conclusion

From the point of view of findings of this study it can be concluded that there was no relationship between personality characteristics of dental students and their academic performance. It might be whether an individual will excel or fail in academic settings seems to depend on his/her hard work rather than theirs personality. Furthermore it can be said that personality variables will be related to academic success when the characteristic modes of behavior of student play a role in academic performance.

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