# CORRELATION OF ORAL PARA-FUNCTIONAL HABITS WITH THE TEN-ITEM PERSONALITY INVENTORY IN GENERAL POPULATION

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## ABSTRACT

***Objectives:*** *To find the correlation between personality traits and oral para-functional habits.*

***Methods and materials:*** *A Cross-sectional descriptive study was conducted in College of Dentistry, Sharif Medical and Dental College, Lahore over a period of 5 months from July to November 2021 on 200 participants. Data was collected using medical questionnaire and ten item personality inventory scale (TIPI). SPSS 23 was used for statistical analysis. P values less than equal to 0.05 was considered significant Kendall tau b test was used to find the correlation of the personality trait scores and the parafunctional habits.*

***Results:*** *A statistically significant weak negative correlation was seen between emotional stability and teeth grinding (τb= -0.117, p=0.038), teeth clenching (τb= -0.124, p=0.026) and the parafunctional habit of biting on hard objects (τb= -0.156, p=0.005).*

***Conclusion:*** *Emotional stability was negatively correlated to tooth grinding, tooth clenching and biting on hard objects. Individuals with a high score of emotional stability did not have these parafunctional habits while those with a high score of extraversion had all the parafunctional habits except chewing gum.*

***Key words:*** *cextraversion, agreeableness, conscientiousness, openness to experience, emotional stability, oral parafunctional habits.*

## INTRODUCTION

Masticatory muscle activities can be divided into functional and para-functional activities. Functional activities include normal functions like phonation, mastication, speaking, and deglutition while para-functional habits indicates abnormal hyperactive functions of oral musculature and teeth[1].Parafunctional habits are very common among adolescents and children which can lead to damage to dentition, masticatory system, joints when they exceed beyond the tolerance level of the individual[2] .

Most common para-functional habits include bruxism, clenching, non-nutritive suckling, nail biting and lip biting, one of the most common para-functional habit is bruxism, which is further divided into sleep bruxism and awake bruxism. Bruxism is more common in females and it can be due to stress, anxiety and occlusal disorders[3]. Several complications of bruxism include dental attrition, headaches, temporomandibular joint dysfunction (TMD). Para-functional habits may lead to early loss and damage to dental restorations[4]. It can also

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shorten the survival rate and life expectancy of dental prosthesis and damage the residual dentition and denture bearing areas[5].

Another common para-functional habit is non-nutritive suckling in which patients tend to suckle thumb, any digit, any food item or pacifiers in children. This usually resolves with age[6]. Nail biting is more common in female population which can also cause various dental complications, as the nail biting force could be transferred to the root of the tooth, causing root resorption, alveolar bone resorption, malocclusion, and temporomandibular joint problems[7].

Personality traits have a major effect on individual's life, performance and decision making. One of the most widely used assessment tools for personality traits is the Five-Factor model. Five factor model describes personality in terms of five board factors: extroversion, openness to experience, agreeableness, conscientiousness, neuroticism[8]. Extroversion people have an energetic approach toward the world and they are socially active, more enthusiastic[9].

People with neuroticism are more likely to suffer from stress, anxiety, and depression. Persons with conscientiousness are very well organized, self-disciplined and devoted[10]. Openness to experience individuals are creative, imaginative, curious, and creative[11]. Agreeableness is characterized by low self-confidence, high levels of trust in others and would rather collaborate than competing with others[12]. In the present study we will find out the correlation between personality traits and para-functional habits.

## MATERIALS AND METHODS

A Cross-sectional descriptive study was conducted in College of Dentistry, Sharif Medical and Dental College, Lahore over a period of 5 months from July to November 2021. Ethical approval was obtained from Sharif Medical Research Center (SMRC) (No. SMDC/SMRC/205-21). The sampling technique used was Convenience sampling. A sample size of 200 was calculated with the help of WHO sample size determination software keeping the confidence level of 95% with anticipated population proportion of 52.86% with teeth clenching and an absolute precision of 0.07 %[13]. All individuals irrespective of their age and gender and those who reported having oral parafunctional habits were included in the study. Individuals with a history of smoking and those with any systemic illness were excluded. Data was collected using medical questionnaire and ten item personality inventory scale (TIPI). The medical questionnaire comprised of 2 sections with 11 items. The first section had six demographic statements including age, gender, marital status, occupation, educational level and medical condition. The second section consisted of a pre-validated parafunctional habits questionnaire with a Cronbach alpha value of 0.7[4]. The responses for the parafunctional habit questionnaire were recorded as "1" strongly disagree, "2" disagree, "3" neither agree nor disagree, "4" agree and "5" strongly agree". The Ten Item Personality Inventory scale consisted of a pre-validated self-reported questionnaire was used [14]. The responses in the personality scale were measured on a seven point Likert scale and scored as "1" strongly disagree, "2" disagree moderately, "3" disagree a little, "4" neither agree nor disagree, "5" agree a little, "6" agree moderately, "7" agree strongly[14]. Each of the personality factor consisted of two questions and of the questions was reverse coded.

## STATISTICS

SPSS 23 was used for statistical analysis. P values less than equal to 0.05 was considered significant. Nominal data was presented as frequency and percentages while numerical data was presented as mean and standard deviation. Kendall tau b test was used to find the correlation of the personality trait scores (extraversion, agreeableness, conscientiousness, emotional stability and openness to experience) and the parafunctional habits (nail biting, teeth grinding, teeth clenching, biting hard objects/ lips and chewing gum).

## RESULT

A cross-sectional descriptive study was conducted on 200 participants with a mean age of 24.93±6.759 years out of which 29% were males while 71% were females. Table 1 shows that the highest mean for the personality traits of extraversion and conscientiousness were seen in individuals who strongly agreed to the habit of nail biting while that for agreeableness, emotional stability and openness to experience was seen in those who disagreed to having the habit. .

Table 2 shows that the highest mean values for extraversion and conscientiousness personality traits were seen in individuals who strongly agreed to having the parafunctional habit of teeth grinding while that for agreeableness and openness to experience was seen for individuals who disagreed to the habit. A statistically significant weak negative correlation was seen between the parafunctional habit of teeth grinding and personality trait of emotional stability as shown in table 2.

Table 3 shows that the highest mean value for the personality traits of extraversion, conscientiousness and openness to experience was seen in individuals who strongly agreed to having the habit of teeth clenching. A statistically significant weak negative correlation was seen for the emotional stability and teeth clenching habit. The highest mean value for the personality trait of emotional stability was seen in individuals who strongly disagreed to having a habit of teeth clenching as shown in table 3.

Table 4 shows a statistically significant weak negative correlation between emotional stability and

**Table 1: Correlation between personality traits and nail biting**

| PERSONALITY TYPE | Nail biting habit (Mean ± standard deviation) | | | | | Kendall tau-b correlation coefficient (τb) | P value |
|---|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | | |
| **Extraversion** | 8.22±3.008 | 9.09±2.283 | 8.44±3.276 | 6.67±2.309 | 9.93±3.575 | 0.031 | 0.588 |
| **Agreeableness** | 9.98±2.272 | 10.21±2.571 | 10.11±2.055 | 10.10±2.166 | 9.07±3.369 | -0.009 | 0.867 |
| **Conscientiousness** | 10.03±2.620 | 9.64±2.219 | 10.11±2.632 | 8.81±1.861 | 10.87±2.475 | -0.042 | 0.463 |
| **Emotional stability** | 8.43±3.012 | 9.00±2.550 | 7.44±3.110 | 7.76±2.965 | 6.73±3.127 | -0.099 | 0.079 |
| **Openness to experience** | 9.87±2.551 | 10.91±1.910 | 8.89±2.246 | 9.52±2.358 | 10.60±1.805 | 0.012 | 0.833 |

**Table 2: Correlation between personality trait and teeth grinding habit**

| PERSONALITY TYPE | Teeth grinding habit (Mean ± standard deviation) | | | | | Kendall tau-b correlation coefficient (τb) | P value |
|---|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | | |
| **Extraversion** | 8.22±3.020 | 8.20±2.785 | 8.33±3.284 | 8.32±3.007 | 11.13±2.295 | 0.084 | 0.138 |
| **Agreeableness** | 9.83±2.446 | 10.86±1.959 | 8.92±2.429 | 9.39±2.149 | 9.88±3.441 | 0.000 | 0.999 |
| **Conscientiousness** | 10.05±2.675 | 9.64±2.145 | 10.17±2.517 | 9.57±2.316 | 10.50±3.117 | -0.061 | 0.285 |
| **Emotional stability** | 8.59±3.219 | 8.18±3.001 | 7.25±1.815 | 7.46±2.333 | 8.38±2.973 | -0.117 | 0.038 |
| **Openness to experience** | 9.84±2.508 | 10.50±1.854 | 8.83±3.538 | 9.86±2.353 | 10.38±1.923 | 0.020 | 0.724 |

**Table 3: Correlation between personality trait and teeth clenching habit**

| PERSONALITY TYPE | Teeth clenching habit (Mean ± standard deviation) | | | | | Kendall tau-b correlation coefficient (τb) | P value |
|---|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | | |
| **Extraversion** | 8.55±3.037 | 8.54±2.864 | 7.13±3.138 | 7.84±2.767 | 10.67±2.739 | -0.011 | 0.840 |
| **Agreeableness** | 10.04±2.391 | 10.59±2.520 | 9.44±2.097 | 9.45±2.166 | 10.56±2.920 | -0.042 | 0.454 |
| **Conscientiousness** | 10.13±2.593 | 9.39±2.578 | 9.31±2.243 | 10 ±2.254 | 10.67±2.958 | -0.030 | 0.589 |
| **Emotional stability** | 8.71±3.233 | 8.54±2.820 | 6.69±3.114 | 7.71±2.532 | 8.33±2693 | -0.124 | 0.026 |
| **Openness to experience** | 9.93±2.458 | 10.37±2.130 | 8.94±2.594 | 9.92±2.497 | 10.67±2.000 | 0.015 | 0.789 |

the habit of biting on hard objects with the highest mean value for the individuals who disagreed to the habit. The highest mean value for extraversion, agreeableness and openness to experience was seen in individuals who strongly agreed to having this habit while that for conscientiousness was those who strongly disagreed to the habit as shown in table 4.

The highest mean value for the personality traits of agreeableness and conscientiousness was for individuals who strongly agreed to having the habit of chewing gum while that for emotional stability and openness to experience was for those who neither agreed nor disagreed to having the habit. Individuals with the highest mean value for extraversion strongly disagreed to having the habit as shown in table 5.

## DISCUSSION

A cross-sectional descriptive study was conducted in College of Dentistry, Sharif Medical and Dental College, Lahore to assess the association of oral parafunctional habits with the personality traits in individuals.

Literature supports that there are innumerable factors that influence the presence or absence of oral parafunctional habits which include stress, anxiety, depression, psychological trauma[15]. Personality type can also be an important factor in the development of parafunctional habits because it can influence the way in which a person behaves and copes with mental issues and other problems[16].

One study reported that the highest percentage of nail biting habit (34.7%) was seen in extraverts followed by individuals open to experience (32.8%), conscientious personality type (32.3), agreeable personality (32.2%) and the least (28.4%) in emotional stable personality types[4]. According to our study the highest mean for the personality traits of extraversion (9.93±3.575) and conscientiousness (10.87±2.475) were seen in individuals who strongly agreed to the habit of nail biting while that for agreeableness (10.21±2.571), emotional stability (9.00±2.550) and openness to experience (10.91±1.910) was seen in those who disagreed to having the habit. The habit of nail biting has been previously associated with many psychological problems which include disorders of anxiety and depression along with obsessive compulsive disorders among many others[17].

Almutairi et al. reported that the habit of teeth

**Table 4: Correlation between personality trait and habit of biting on hard objects**

| PERSONALITY TYPE | Habit of biting on hard objects or lips (Mean ± standard deviation) | | | | | Kendall tau-b correlation coefficient (τb) | P value |
|---|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | | |
| Extraversion | 8.26±3.036 | 8.29±2.686 | 8.08±2.302 | 8.66±3.472 | 9.29±3.773 | 0.058 | 0.304 |
| Agreeableness | 10.06±2.444 | 10.76±2.095 | 9.00±2.571 | 9.20±1.891 | 11.43±2.760 | -0.059 | 2.99 |
| Conscientiousness | 10.40±2.450 | 9.32±2.196 | 9.21±2.340 | 9.83±2.854 | 9.57±2.760 | -0.110 | 0.052 |
| Emotional stability | 8.66±3.020 | 8.83±2.710 | 7.08±2.483 | 7.34±3.171 | 7.71±3.302 | -0.156 | 0.005 |
| Openness to experience | 9.95±2.660 | 9.78±2.104 | 9.83±2.200 | 10.17±2.256 | 10.86±2.193 | 0.025 | 0.654 |

**Table 5: Correlation between personality trait and habit of chewing gum**

| PERSONALITY TYPE | Habit of chewing gum (Mean ± standard deviation) | | | | | Kendall tau-b correlation coefficient (τb) | P value |
|---|---|---|---|---|---|---|---|
| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | | |
| Extraversion | 8.70±2.964 | 8.20±2.944 | 8.00±3.162 | 8.05±2.819 | 8.20±3.421 | -0.080 | 0.152 |
| Agreeableness | 10.25±2.406 | 10.04±2.479 | 9.50±2.178 | 9.35±2.346 | 11.00±2.236 | -0.074 | 0.192 |
| Conscientiousness | 9.98±2.636 | 9.36±2.308 | 10.47±2.523 | 9.85±2.277 | 10.80±2.588 | 0.020 | 0.718 |
| Emotional stability | 8.52±3.054 | 7.75±2.739 | 8.97±2.862 | 7.10±2.936 | 8.20±4.550 | -0.048 | 0.390 |
| Openness to experience | 9.98±2.460 | 9.86±2.408 | 10.34±2.147 | 9.60±2.945 | 9.80±0.837 | 0.007 | 0.897 |

grinding was seen the most (32.4%) in extraverts followed by individuals with the trait of openness to experience (29%), agreeableness (28.4%), conscientiousness (27.8%) and the least in emotionally stable individuals (24.9%)[4]. According to our study the highest mean values for extraversion (11.13±2.295) and conscientiousness (10.50±3.117) personality traits were seen in individuals who strongly agreed to having the parafunctional habit of teeth grinding while that for agreeableness (10.86±1.959) and openness to experience (10.50±1.854) was seen for individuals who disagreed to the habit. According to another study the prevalence of teeth grinding habit was higher in introverts (21.8%) as compared to extraverts (21.4%)[18]. Our study reported a statistically significant weak negative correlation was seen between the parafunctional habit of teeth grinding and personality trait of emotional stability. Grinding teeth is one parafunctional habit that has been associated with emotional stability in the past. It was reported in one study that the individuals who are more likely to suffer from depression and anxiety have been found to be engaged in the habit of bruxism in comparison to the emotionally stable individuals[19].

It was also reported in the study above[4] that among all the five personality traits majority of the extraverts (46.4%) had the habit of tooth clenching followed by openness to experience (43.2%), agreeableness (41.4%), conscientiousness (39.3%) and the least in emotionally stable individuals (35.8%)[4]. According to our study the highest mean value for the personality traits of extraversion (10.67±2.739), conscientiousness (10.67±2.958) and openness to experience (10.67±2.000) was seen in individuals who strongly agreed to having the habit of teeth clenching. It has been previously reported that the habit of tooth clenching is more prevalent in extraverts (16.4%) as compared to introverts (15.1%)[18]. According to our study a statistically significant weak negative correlation was seen for the emotional stability and teeth clenching habit. The highest mean value for the personality trait of emotional stability (8.71±3.233) was seen in individuals who strongly disagreed to having a habit of teeth clenching. It has been reported that individuals who are less neurotic, nervous or less emotionally stable are more likely to have the habit of tooth clenching in comparison to the ones who are relaxed[20,21].

Inflicting self-harm by biting one`s lips and cheek has also been classified as a parafunctional habit[22]. It has also been reported previously that the parafunctional habit of biting on hard objects or lips was most prevalent in the personality trait of extraversion (56.1%) followed by openness to experience (55.4%), conscientiousness (52.9%), agreeableness (52.5%) and the least in emotional stability (48.4%)[4]. According to our study a statistically significant weak negative correlation between emotional stability and the habit of biting on hard objects with the highest mean value (8.83±2.710) for the individuals who disagreed to the habit. The increase in the level of stress, emotional stability and development of neuroticism in individuals has been found to be associated with development of parafunctional habits as mode of relieving the stress and tension[16]. Our study reported that the highest mean value for extraversion (9.29±3.773), agreeableness (11.43±2.760) and openness to experience (10.86±2.193) was seen in individuals who strongly agreed to having this habit while that for conscientiousness (10.40±2.450) was for those who strongly disagreed to the habit.

Chewing gum has been identified as an effective mode to relieve stress and it has been reported that due to various psychosocial problems one might resort to this parafunctional habit to alleviate their stress and anxiety[23,24]. According to our study the highest mean value for the personality traits of agreeableness (11.00±2.236) and conscientiousness (10.80±2.588) was for individuals who strongly agreed to having the habit of chewing gum while that for emotional stability (8.97±2.862) and openness to experience (10.34±2.147) was for those who neither agreed nor disagreed to having the habit. Individuals with the highest mean value for extraversion (8.70±2.964) strongly disagreed to having the habit. Another study reported that the parafunctional habit of chewing gum was most prevalent in extraversion (81.4%) followed by emotional stability (80%), openness to experience (78.8%), agreeableness (78.2%) and the least in conscientiousness (78.1%)[4].

## CONCLUSION

Emotional stability was negatively correlated to tooth grinding, tooth clenching and biting on hard objects. Individuals with a high score of emotional stability did not have these parafunctional habits while those with a high score of extraversion had all the parafunctional habits except chewing gum.

## LIMITATION

A multi-center study and larger sample size would have helped us unravel more findings.

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