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Article

Tooth Shape as a Psychomorphological Indicator of Personality: Clinical Observations

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Abstract

Background/Objectives: Harmony between tooth morphology and facial features is a key factor in aesthetic dentistry. The sufficient smile design requires the integration of functional, biological aspects, individual identity and personality traits. The present study investigated the relationship between the shape of teeth and personality characteristics. **Methods:** A cross-sectional observational study was conducted among 142 participants. Data were collected through a standardized questionnaire, including demographic indicators, assessment of the shape of the teeth and personality characteristics according to two models: type 1 (choleric, sanguine, melancholic, phlegmatic) and type 2 (extraversion, openness, conscientiousness, focus on others, neuroticism). Pearson's χ^2 test and Cramer's coefficient (V) were applied to analyze the dependencies. **Results:** A statistically significant relationship was found between tooth shape and personality type 1 ($\chi^2(9)=61.96$, $p<0.001$; $V=0.38$), with a medium to strong effect. The oval shape was associated mainly with melancholic temperament, the triangular shape with sanguine, the rectangular shape with choleric, and the square shape with melancholic and phlegmatic types. A significant relationship was also observed between tooth shape and personality type 2 ($\chi^2(12)=41.82$, $p<0.001$; $V=0.31$), with a medium effect, with the different morphological shapes showing specific distribution profiles according to personality traits. No statistically significant relationship was found between the two personality models ($\chi^2(12)=18.10$, $p=0.113$). **Conclusions:** The shape of the frontal teeth is associated with temperament-based and trait-oriented personality characteristics, with the relationship being stronger in the classical temperament typology. This supports the hypothesis that dental morphology may reflect biologically determined aspects of personality and be relevant to individualized aesthetic dental design.

Keywords: dental morphology; visagism; aesthetic dentistry; holistic approach; psychomorphology

1. Introduction

The correspondence between the morphology of the frontal teeth and facial aesthetics has long been a major issue in aesthetic restorative dentistry. Many studies have investigated the link between proportions of the face and the dimensions of maxillary anterior teeth in order to improve the outcome of aesthetic rehabilitation and to optimize the treatment planning [1–4]. The harmony between dental morphology and facial structure is of extreme importance not only of objective aesthetic outcomes but also influences patients' psychological well-being, self-perception, and social integration [5].

Contemporary dentistry applies four principal dimensions: biology, function, structure, and aesthetics as a basic core, on which the smile rehabilitation steps on. However, working in depth, there is to be recognized a fifth dimension — the expression of individual identity through the smile [6,7]. Patients subjectively evaluate the success of the dental treatment not only by symmetry or proportion, but by whether their smile "fits" their personality. Smile design has evolved from a morphological reconstruction to a form of non-verbal communication capable of influencing psychosocial quality of life [8–11].

The branch of science that attempt to integrate psychology with dentofacial aesthetics is called visagism. Morphopsychology proposes that facial morphology reflects behavioral tendencies and personality characteristics. Visagism applies artistic and psychological principles to plan an unique smile design according to perceived personality traits [7,12]. Smile harmony is evaluated by three primary morphological parameters: tooth shape, axial inclination of anterior teeth, and the occlusal plane. The clinician's role in the concept of visagism extends far beyond anatomical reconstruction, but designing a shape that emphase or soften a psychological characteristics.

A well known type of classification of personality is the "Five Factor Model" (FFM), designed by Digman [13–15]. It devides individuality to extraversion, oppeness to experience, conscientiousness, neuroticism and agreeableness [13,16–18]. Similarly, visagism describes four classical temperaments — choleric, sanguine, melancholic, and phlegmatic — each presenting dentofacial patterns and behavioral tendencies [12,19,20]. In the scientific literature some specific tooth shapes are traditionally linked to personality characteristics. Square teeth are often associated with strength, maturity, and determination; triangular teeth with dynamism and creativity; and oval teeth with delicacy and youthfulness [12]. Although widely used in clinical aesthetic planning, these associations remain largely empirical and insufficiently investigated using contemporary personality psychology frameworks.

Therefore, the present clinical observational study is to explore whether tooth morphology may function as a psychomorphological indicator of personality traits. By comparing dental crown shape with standardized personality dimensions, this study seeks to evaluate whether commonly applied visagism principles have measurable psychological correspondence.

2. Materials and Methods

2.1. Design of the Study

A cross-sectional observational clinical study was conducted on adult patients and students, volunteerly recruited from the Depatrtrment of Operative Dentistry at Faculty of Dental Medicine, Medical University of Plovdiv between October/2025—February/2026. Participants were randomly invited to take part of the study after signing informed consent. The inclusion criterias are: age of the respondees from 20 to 60 years old, presence of intact maxillaty anterior teeth, no massive restorations (crowns, veneers, extensive composite fillings), without past or current orthodontic treatment, wothout significant tooth wear or fractures. The exclusion criterias are severe malocclusion or tooth migration, periodontal diseases affecting the morphology of the crown.

Participants were divided into two age groups: group 1: 20–40 years and group 2: 40–60 years. A total of 142 fully completed records were included in the final statistical analysis.

Intraoral photographs of the maxillary frontal teeth using mouth expander were obtained with uniform lighting and fixed head positioning on the vdental chair. The crown morphology was used as the reference for tooth shape determination. The long axis of each central incisor was digitally traced and crown contour analysis was performed according to geometric outline characteristics. The examination was performed by a single calibrated investigator. Based on the relationship between incisal and cervical width and proximal contour curvature, teeth were categorized into four morphological groups: Oval, Triangular, Rectangular, Square.

Personality characteristics were obtained using an anonymous self-administered questionnaire completed independently by each participant. The questionnaire classified participants according to two psychological models: classical temperament typology — participants were categorized into one of four temperament groups: Sanguine, Choleric, Melancholic, Phlegmatic; and five-factor personality model — Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience. Classification was based on dominant behavioral tendencies indicated by the responses for the classical scale and on the highest cumulative score for the five trait domains. The questionnaire was used as a screening instrument for personality orientation rather than a diagnostic psychological evaluation. Each volunteer received two independent personality classifications (temperament type

and dominant FFM trait). These classifications were subsequently compared with tooth morphology. The study evaluates associations between morphological characteristics and self-perceived personality orientation and does not aim to establish psychological diagnosis or causation.

2.2. Statistical Analysis

Statistical analysis was performed using standart statistical methods. Descriptive statistics were calculated for demographic variables, tooth morphology, and personality classifications.

The following associations were evaluated:

1. Tooth shape vs. temperament type
2. Tooth shape vs. Five-Factor personality traits
3. Temperament type vs. Five-Factor personality traits

Associations between categorical variables were analyzed using Pearson’s chi-square (χ^2) test of independence.

Effect size was calculated using Cramer’s V coefficient and interpreted as:

- 0.10—weak association
- 0.30—moderate association
- 0.50—strong association

A p-value < 0.05 was considered statistically significant.

2.3. Aim

Therefore, the aim of the present clinical observational study was to investigate the potential association between maxillary anterior tooth shape and self-perceived personality characteristics assessed using both classical temperament typology and the Five-Factor Model framework.

2.4. Hypothesis

The null hypothesis (H_0) was that no statistically significant relationship exists between tooth morphology and personality classification. The alternative hypothesis (H_1) was that specific tooth shapes are associated with particular personality orientations.

3. Results

Of all the analyzed questionnaires (n=142), the distribution by category is:

Demographics:

- **Age:** Group 1 (20-40 years old)—63,4% (n=92); Group 2 (40-60)—36,6% (n=53)
- **Gender:** Male—30,3% (n=44); Female—69,7% (n=101)
- **Personality type 1:** Melancholic—44,1% (n= 64), Choleric—22,1% (n= 32), Sanguine—20.7% (n= 30), Phlegmatic—13.1% (n= 19)
- **Personality type 2:** Openness—43.% (n=63), Consciousness—24.1% (n=35), Agreeableness—18.6% (n=27), Extraversion—9% (n= 13), Neuroticism—4.8% (n= 7).

A highly statistically significant association was observed between tooth shape and personality type 1 ($\chi^2(9) = 61.96$, $p < 0.001$), with moderate to strong effect size (Cramer’s $V = 0.38$).

Different distribution profiles are evident in different tooth shapes. The oval shape of the tooth is mainly associated with one personality category —melancholic, while the triangular shape of the tooth shows a contrasting dominant profile, but the largest percentage distribution for the Sanguine category. Rectangular and square tooth shapes demonstrate more heterogeneous distributions, although clear deviations from independence remain: the rectangular shape is most typical for the Choleric category, and the square shape is most characteristic for the melancholic and phlegmatic with closely presented results—35.7% and 32.1%, respectively, and a difference of 2 respondents.

On the Table 1 a detailed cross-table of tooth shape and personality type 1 is provided.

Table 1. Type 1 personality vs. toothl shape.

Dental shape	Choleric	Sanguine	Melancholic	Phlegmatic	Total
Oval	0 (0.0%)	4 (12.5%)	27 (84.4%)	1 (3.1%)	32 (100%)
Triangular	7 (31.8%)	9 (40.9%)	6 (27.3%)	0 (0.0%)	22 (100%)
Rectangular	14 (43.8%)	8 (25.0%)	10 (31.2%)	0 (0.0%)	32 (100%)
Square	10 (17.9%)	8 (14.3%)	20 (35.7%)	18 (32.1%)	58 (100%)
Total	31	29	63	19	142

The analysis proved a statistically significant relationship between tooth shape and personality type 2 ($\chi^2(12) = 41.82$, $p < 0.001$), with a moderate effect size (Cramer’s $V = 0.31$).

Different distribution patterns were observed across tooth morphologies. Triangular teeth showed the highest proportion of individuals classified as extraverted (31.8%). Oval teeth were most frequently associated with agreeableness (28.1%). Square teeth demonstrated the highest proportion of conscientious individuals (32.1%) and also represented the largest number of participants with openness (50.0%). Rectangular teeth showed a relatively higher proportion of neuroticism (15.6%) compared to other tooth

Detailed results are shown in Table. 2.

Table 2. Type 2 personality vs. tooth shape.

Tooth shape	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness	Total
Oval	0 (0.0%)	9 (28.1%)	5 (15.6%)	1 (3.1%)	17 (53.1%)	32 (100%)
Triangular	7 (31.8%)	6 (27.3%)	5 (22.7%)	0 (0.0%)	4 (18.2%)	22 (100%)
Rectangular	5 (15.6%)	3 (9.4%)	6 (18.8%)	5 (15.6%)	13 (40.6%)	32 (100%)
Square	1 (1.8%)	8 (14.3%)	18 (32.1%)	1 (1.8%)	28 (50.0%)	56 (100%)
Total	13	26	34	7	62	142

No statistically significant relationship was found between Personality Type 1 and Personality Type 2 ($\chi^2(12) = 18.10$, $p = 0.113$). The size of the effect is small (Cramer’s $V = 0.21$), indicating a limited overlap between the two personality classification systems (Table 3).

Table 3. Relationship of Personality Type 1 to Type 2.

Statistics	Value
Chi-square (χ^2)	18.1
Degrees of freedom (df)	12
p-value	0.112765
Cramer’s V	0.206
N (complete cases)	142

4. Discussion

The present study investigated the association between anterior tooth morphology and self-perceived personality characteristics using both classical temperament classification and the FFM framework. The results demonstrated statistical relationships between tooth shape and both personality classification systems, with a stronger association observed for the temperament-based model. Similar attempts to relate dentofacial characteristics to psychological temperament have been reported in the visagism literature, where dental morphology is considered part of the expressive component of facial aesthetics and smile design [20].

The stronger relationship identified with the classical temperament typology suggests that morphological dental features may correspond more closely to broad behavioral tendencies than to specific trait-based psychological constructs. Temperament classifications describe generalized behavioral styles, whereas Five-Factor traits represent more differentiated psychological dimensions influenced by cognitive, social, and environmental factors. The Five-Factor Model remains one of the most widely accepted frameworks for describing human personality structure [14]. The weaker association observed for the Five-Factor Model in the present study may be explained by both the multifactorial nature of personality traits and limited quantity of research units in the presented study.

Importantly, these findings should not be interpreted as evidence that personality can be determined from dental morphology. Rather, they indicate that certain tooth shapes may be perceived as congruent with particular behavioral characteristics. This interpretation aligns with the principles of visagism, which propose that dental forms contribute to non-verbal communication and social perception rather than biological personality determination [6]. Within aesthetic dentistry, visagism suggests that dental morphology can be designed to harmonize with facial characteristics and perceived personality traits in order to achieve individualized smile design [7]. Contemporary literature also emphasizes the psychosocial dimension of smile aesthetics and the potential role of dental morphology in social perception and self-image [7,24]. Research in social psychology has demonstrated that individuals frequently infer personality traits from facial appearance within extremely short exposure times, although these impressions do not necessarily correspond to the individual's actual personality characteristics [22,23]. Facial morphology has been shown to influence perceived attributes such as trustworthiness, dominance, and competence, highlighting the importance of visual cues in interpersonal evaluation [24]. Similarly, dental appearance has been reported to influence perceived attractiveness, professional evaluation, and social confidence, reinforcing the idea that dental morphology can affect how individuals are perceived in social contexts [21]. In addition, personality traits have been associated with the self-perception of oral health and dental aesthetics, suggesting a complex interaction between psychological and morphological factors. Studies examining oral-health-related quality of life have shown that individuals with different personality traits may evaluate dental aesthetics and malocclusion differently, which may influence their perception of smile attractiveness and treatment expectations [25].

The absence of a statistically significant association between the temperament classification and the Five-Factor Model in the present study supports the conceptual distinction between these two personality frameworks. Temperament-based models describe broader behavioral tendencies, whereas the Five-Factor Model aims to characterize personality through multiple independent trait dimensions. Consequently, the limited overlap observed between the two systems is consistent with previous psychological research indicating that different personality frameworks capture distinct aspects of human behavior [14].

From a methodological perspective, the use of categorical association analysis and effect size estimation allowed interpretation beyond simple statistical significance. The sample size provided sufficient statistical power to detect moderate associations. However, the cross-sectional design of the study limits the ability to determine causality or developmental relationships between dental morphology and personality characteristics.

Several limitations should be acknowledged. Personality indicators were obtained through self-reported questionnaires, which may introduce subjective bias. Furthermore, although participants with significant anterior dental treatment or orthodontic modifications were excluded, other clinical factors such as occlusal wear, parafunctional habits, and developmental variations may influence tooth morphology independently of personality traits. Similar limitations have been reported in studies examining relationships between dentofacial morphology and aesthetic perception [26].

Future research should incorporate validated psychometric instruments, objective morphometric analysis of dental morphology, and multivariate statistical models that account for clinical and demographic variables. Longitudinal and perception-based studies may further clarify whether the observed associations reflect shared developmental influences or social perception mechanisms related to dental appearance and personality expression.

5. Conclusions

Within the limitations of this cross-sectional observational study, tooth shape showed statistically significant associations with both classical temperament categories and dominant Five-Factor personality traits, with stronger relationships observed for the temperament-based classification. No significant association was identified between the two personality classification systems.

These findings suggest that dental morphology may be related to self-perceived behavioral tendencies and could contribute to the expression of individual characteristics in smile aesthetics. The results support the concept that tooth form may play a role in non-verbal communication rather than serving as a determinant of personality.

Further studies using validated psychometric instruments, objective morphometric measurements, and larger samples are necessary to better understand the nature and clinical relevance of these associations.

The shape of the teeth was significantly related to both the classical personality type based on temperament and the personality dimensions based on traits, with stronger effects being observed for temperament. No significant relationship has been found between the two personality classification systems. These findings suggest that dental morphology may reflect biologically based personality dimensions, not just higher-order personality traits. Further studies with expanded clinical and psychological assessments are needed.

Informed consent: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

FFM Five-Factor Model

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