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Association Among Personality Traits Satisfaction with Dental Aesthetic, And Maxillary Incisor Shape : A cross sectional study

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Abstract
Background: *Personality traits influence individual perceptions of aesthetics and self-image, yet their relationship with dental aesthetic satisfaction and natural tooth morphology remains underexplored. Understanding these associations may help clinicians better anticipate patient expectations and aesthetic concerns.*
Aim: *To evaluate the association among personality traits, dental aesthetic satisfaction, and maxillary central incisor morphology in adults aged 18–45 years.*
Materials and Methods: *A cross-sectional study was conducted among 269 participants. Demographic details, Big Five personality traits, dental aesthetic satisfaction scores, and maxillary central incisor morphology (ovoid, square, triangular) were recorded. Descriptive statistics summarized the data. The Chi-square test assessed the association between personality type and tooth shape. Differences in dental aesthetic satisfaction across personality types were analyzed using the Kruskal–Wallis H test. Spearman correlation evaluated relationships among personality type, dental aesthetic satisfaction, and tooth morphology. A p-value <0.05 was considered statistically significant.*

Results: *Participants had a mean age of 29.27 ± 6.51 years, with females comprising 56.88% of the sample. Openness to Experience was the most prevalent personality type (24.91%), while Neuroticism was least common (15.24%). Dental aesthetic satisfaction was generally favourable, with an overall mean score of 3.783 ± 0.81. No significant association was found between personality type and maxillary incisor morphology ($\chi^2 = 11.729$, $p = 0.164$). However, dental aesthetic satisfaction differed significantly across personality types ($H = 10.023$, $p = 0.040$), with Openness showing the highest satisfaction and Agreeableness the lowest. Correlation analysis revealed a weak but statistically significant negative correlation between personality type and tooth morphology ($r = -0.137$, $p = 0.024$), while other correlations were weak and non-significant.*
Conclusion: *Personality traits significantly influence dental aesthetic satisfaction, particularly among individuals with high Openness to Experience. In contrast, maxillary central incisor morphology shows no meaningful association with personality type, suggesting that tooth shape is primarily biologically determined. These findings highlight the importance of considering psychological factors when evaluating patient expectations in aesthetic dentistry.*

Keywords: *Personality traits, Dental esthetics, Maxillary incisors, Big Five, Tooth morphology, Patient satisfaction*

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I. INTRODUCTION

Dental aesthetics has become an increasingly important component of contemporary dental practice, with patients seeking not only functional rehabilitation but also improvements in smile appearance and facial attractiveness. The maxillary anterior teeth, particularly the central incisors, play a fundamental role in smile aesthetics because their position, proportion, shape, and relationship with the surrounding facial structures substantially influence the overall appearance of the smile. Consequently, accurate assessment of anterior tooth morphology and an understanding of individual aesthetic expectations are essential for achieving satisfactory outcomes in restorative and prosthetic treatment.

The perception of dental aesthetics is subjective and may vary considerably between individuals. Although objective parameters such as tooth dimensions, alignment, symmetry, gingival display, and tooth morphology are commonly used in smile analysis, patients and dental professionals may not always perceive dental attractiveness in the same manner [2]. Studies among Indian populations have demonstrated that variations in dental and facial parameters may be associated with differences in patients' satisfaction with their anterior dental appearance, highlighting the importance of considering individual perceptions during aesthetic treatment planning . Therefore, patient satisfaction should not be regarded solely as a consequence of achieving standardized morphological criteria, but also as an outcome influenced by individual psychological and perceptual factors.

Personality is one such factor that may contribute to differences in the perception and evaluation of dental aesthetics. Personality traits influence the manner in which individuals perceive, interpret, and respond to their physical appearance and may consequently affect their expectations and satisfaction with dental treatment. Research investigating the relationship between personality and aesthetic perception has suggested that certain personality dimensions, particularly conscientiousness and openness, may be associated with preferences for specific smile characteristics and perceptions of oral aesthetics . Similarly, personality traits have been reported to influence satisfaction with dental appearance, with differences observed in the perception of tooth colour and overall dental aesthetics among individuals with different personality characteristics . These findings suggest that psychological characteristics may represent an important, although relatively underexplored, component of patient-centred aesthetic dentistry.

Despite increasing interest in individualized aesthetic dentistry, the interrelationship among personality traits, satisfaction with dental aesthetics, and maxillary incisor morphology remains insufficiently understood. Further investigation of these factors may help clarify whether psychological characteristics are associated with patients' aesthetic preferences and satisfaction, and whether particular maxillary incisor forms are related to specific personality profiles. Such information may contribute to more individualized communication, treatment planning, and management of aesthetic expectations in restorative and prosthetic dentistry.

Despite this, no previous study has simultaneously examined personality traits, dental aesthetics, satisfaction and natural maxillary central incisors morphology in the same population, highlighting a significant gap in individualized aesthetic dentistry. Therefore, the present study aimed to investigate the association among personality traits, satisfaction with dental aesthetics, and the shape of the maxillary incisors.

II. MATERIALS AND METHODS

1. STUDY DESIGN

A cross-sectional, observational, analytical study design to evaluate the relationship between Maxillary central incisor shape, Big five personality traits, Patient satisfaction with the appearance of the maxillary anterior teeth. The study will investigate whether differences in maxillary central incisor morphology are associated with differences in personality traits and whether incisor shape is associated with participants perception and satisfaction regarding dental aesthetics.

2. STUDY POPULATION

The study population consisted of adult participants with clinically visible, natural maxillary central incisors who fulfill the predefined inclusion and exclusion criteria.

Inclusion criteria: Are 18 years of age or older, willing to participate in the study, provide written informed consent, have clinically visible natural maxillary central incisors, have sufficient tooth structure to permit assessment of the original incisor morphology, able to understand and complete the study questionnaire.

Exclusion Criteria: Missing one or both maxillary central incisors, full-coverage crowns or veneers altering the original tooth morphology, extensive restorations significantly modifying incisor shape, severe developmental anomalies affecting the maxillary anterior teeth, severe fracture or extensive caries preventing reliable

assessment of tooth shape, severe tooth wear that substantially alters the original crown morphology, major alterations of anterior tooth morphology due to previous cosmetic treatment, craniofacial developmental anomalies or syndromes affecting dental morphology, conditions preventing completion of the personality or satisfaction questionnaire.

3. SAMPLE SIZE CALCULATION

The sample size was calculated using the OpenEpi statistical software , Version 3, using the formula for estimation of a proportion.

The parameters used were:

Parameter	Value
Population size(N)	1,000,000

Hypothesized frequency(p)	77.4%
Confidence level	95%
Absolute precision(d)	5%
Design effect (DEFF)	1

The calculated sample size was approximately 268.72 , which was rounded to the next whole number.Therefore:
Final required sample size = 269 participants

Formula

$$\frac{n = DEFF \times N \times P(1-p)}{(d^2/Z^2)(N-1) + p(1-p)}$$

- n= required sample size
- N=population size = 1,000,000
- P=anticipated frequency =0.774
- d=absolute precision=0.05
- z=standard normal deviate corresponding to 95% confidence level= 1.96
- DEFF=design effect=1

Thus , the minimum sample size required for the study will be : N= 269 A total of 269 participants will be recruited for the study.

The Big Five Inventory Personality Test developed by Digman JM [1] was used for the study. The questions were asked on a five-point Likert scale i.e.,1 = Not at all 2 = Rarely 3 = Sometimes 4 = Often 5 = Very Often. With tooth appearance, smile attractiveness, tooth shape, confidence while smiling, overall dental appearance [2], desire for change, contribution to facial aesthetics, comfort showing teeth. Clinical examination classified incisor morphology into square, ovoid, triangular categories [3] .Each trait has 3 items, so each trait score ranges from 3 to 15.

Openness to Experience assesses creativity, curiosity, and willingness to engage with novelty. Conscientiousness measures organization, responsibility, and goal-directed behaviour. Extraversion evaluates sociability, assertiveness, and energy in social interactions. Agreeableness assesses empathy, cooperation, and interpersonal warmth. Neuroticism measures emotional stability and stress reactivity.

Trait	**Score Range**	**Interpretation**	**Meaning**
Openness	**3–6**	Low Openness	Prefers routine, less exploratory, conventional
	7–11	Moderate Openness	Balanced curiosity; open to new ideas but values familiarity
	12–15	High Openness	Creative, curious, imaginative
Conscientiousness	**3–6**	Low Conscientiousness	Disorganized, spontaneous, less structured
	7–11	Moderate Conscientiousness	Generally dependable; moderately structured
	12–15	High Conscientiousness	Organized, responsible, detail-oriented
Extraversion	**3–6**	Low Extraversion	Introverted, reserved
	7–11	Moderate Extraversion	Balanced social engagement
	12–15	High Extraversion	Outgoing, energetic, social
Agreeableness	**3–6**	Low Agreeableness	Competitive, less cooperative
	7–11	Moderate Agreeableness	Generally pleasant; balanced cooperation
	12–15	High Agreeableness	Empathetic, cooperative, helpful

Neuroticism	**3–6**	Low Neuroticism	Emotionally stable, calm
	7–11	Moderate Neuroticism	Occasional stress sensitivity
	12–15	High Neuroticism	Anxious, easily stressed

Dental Aesthetic Satisfaction Scoring 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree**.** Total items: **8** Score range: **8 to 40. Score Interpretation**

Total Score	Satisfaction Level	Meaning
8–20	Low Satisfaction	Dissatisfied with dental aesthetics; may desire changes
21–30	Moderate Satisfaction	Generally satisfied but may have minor concerns
31–40	High Satisfaction	Very satisfied with smile, tooth shape, and appearance

Satisfaction with anterior teeth evaluates the participant's perception of the appearance, alignment, and shape of the front teeth. Smile satisfaction assesses overall smile attractiveness, harmony, and confidence. Perceived attractiveness of tooth shape focuses on how aesthetically pleasing the participant finds their incisor morphology. Confidence while smiling measures comfort and self-assurance during smiling in social situations.
Overall dental appearance assesses general satisfaction with dental aesthetics beyond the anterior region. Desire for change evaluates whether participants wish to alter their dental appearance. Contribution to facial aesthetics measures perceived impact of teeth on overall facial attractiveness. Comfort showing teeth assesses ease of displaying teeth while talking or laughing. The clinical shape of the maxillary central incisors, which may correlate with personality traits or Aesthetic preferences .To classify incisor morphology into standardized categories for comparative analysis. Morphological categories are

Shape Type	Description
Square	Straight proximal surfaces, broad incisal edge
Ovoid	Rounded contours, balanced proportions
Triangular / Tapering	Narrow cervical region, wider incisal edge

Clinical Examination Protocol for Assessment of Maxillary Incisor Shape
Clinical Examination: All participants had to undergo a standardized intraoral clinical examination to assess the morphology of the maxillary central incisors. The examination was conducted under adequate illumination using a mouth mirror, periodontal probe, and cheek retractors. Two independent calibrated examiners evaluated the maxillary central incisors.
Examination Procedure: Participants was seated on a dental chair in an upright position. The maxillary anterior teeth was cleaned and examined under standardized lighting conditions. The outline form of both maxillary central incisors were evaluated clinically. Each examiner independently recorded the incisor shape without knowledge of the other's assessment. In cases of disagreement, a joint evaluation were performed and a consensus classification was recorded.

Statistical analysis
The collected data were entered into Microsoft Excel and analyzed using appropriate statistical methods. Descriptive statistics were used to summarize the study variables.
Continuous variables, including age and dental aesthetic satisfaction scores, were expressed as mean ± standard deviation (SD), while categorical variables such as gender, personality type, and maxillary central incisor morphology were summarized using frequencies and percentages. The distribution of maxillary central incisor shapes (ovoid, square, and triangular) across different personality types was assessed using the Chi-square test of association. Differences in dental aesthetic satisfaction scores among the five personality types were evaluated using the Kruskal–Wallis H test. Correlation analysis was performed to assess the relationship between personality type, dental aesthetic satisfaction, and maxillary central incisor morphology using Spearman correlation analysis. A p-value <0.05 was considered statistically significant.

III. Results

The study included participants aged 18–45 years, with a mean age of 29.27 ± 6.51 years and a median age of 28 years. Among the participants, 153 (56.88%) were females, while 116 (43.12%) were males, indicating a slightly higher representation of females in the study population.
With respect to personality type, Openness to Experience was the most frequently observed personality type,

comprising 67 participants (24.91%), followed by Extraversion in 59 participants (21.93%) and Agreeableness in 54 participants (20.07%). Conscientiousness was observed in 48 participants (17.84%), while Neuroticism was the least frequent personality type, accounting for 41 participants (15.24%). (Table 1)

Table 1: Descriptive characteristics of study participants

Variable	Category / Item	n / Mean	% / SD
Age (years)	Mean ± SD	**29.27**	**6.51**
	Median (Range)	**28**	**18–45**
Gender	Female	153	56.88
	Male	116	43.12
Personality type	Openness to Experience	67	24.91
	Extraversion	59	21.93
	Agreeableness	54	20.07
	Conscientiousness	48	17.84
	Neuroticism	41	15.24

Table 2: Responses of study participants to Dental aesthetic questionnaire

	Question	Mean score	SD
Dental Aesthetic Satisfaction Questionnaire	Q1. Satisfied with appearance of front teeth	3.740	0.965
	Q2. Satisfied with my smile	3.851	0.906
	Q3. Shape of front teeth is attractive	3.674	1.001
	Q4. Feel confident while smiling	3.770	0.934
	Q5. Satisfied with overall dental appearance	3.740	0.965
	Q6. Would not like to change appearance of front teeth	3.787	0.954
	Q7. Teeth contribute positively to facial appearance	3.832	0.939
	Q8. Comfortable showing teeth while talking/laughing	3.870	0.895
	Overall questionnaire mean	**3.783**	0.81

The mean scores for the individual items of the Dental Aesthetic Satisfaction Questionnaire ranged from 3.674 to 3.870, with an overall questionnaire mean of 3.783 ± 0.81. The highest mean score was observed for Q8, "comfortable showing teeth while talking/laughing" (3.870 ± 0.895), followed by satisfaction with the participant's smile (3.851 ± 0.906) and the perception that teeth contribute positively to facial appearance (3.832 ± 0.939).

The lowest mean score was observed for Q3, "shape of front teeth is attractive" (3.674 ± 1.001). Satisfaction with the appearance of front teeth and overall dental appearance both had a mean score of 3.740 ± 0.965.

Overall, participants demonstrated a relatively favourable level of dental aesthetic satisfaction. (Table 2)

Table 3: Comparison between personality types and Maxillary central incisor shape

Personality	N	Tooth shape			Chi-square	P value
		Ovoid	Square	Triangular		
Agreeableness	54	13	24	17	11.729	0.164
Conscientiousness	48	16	17	15		
Extraversion	59	15	29	15		
Neuroticism	41	16	10	15		
Openness to Experience	67	22	33	12		

There was no statistically significant association between personality type and tooth shape among the study participants ($\chi^2 = 11.729$, df = 8, p = 0.164). Although some variation in tooth-shape distribution was observed across personality groups, these differences did not reach statistical significance. Square-shaped teeth were the most frequently observed shape among participants with Openness to Experience (49.3%) and Extraversion (49.2%), whereas Neuroticism showed a relatively higher proportion of ovoid (39.0%) and triangular (36.6%) tooth shapes. (Table 3, Figure 1)

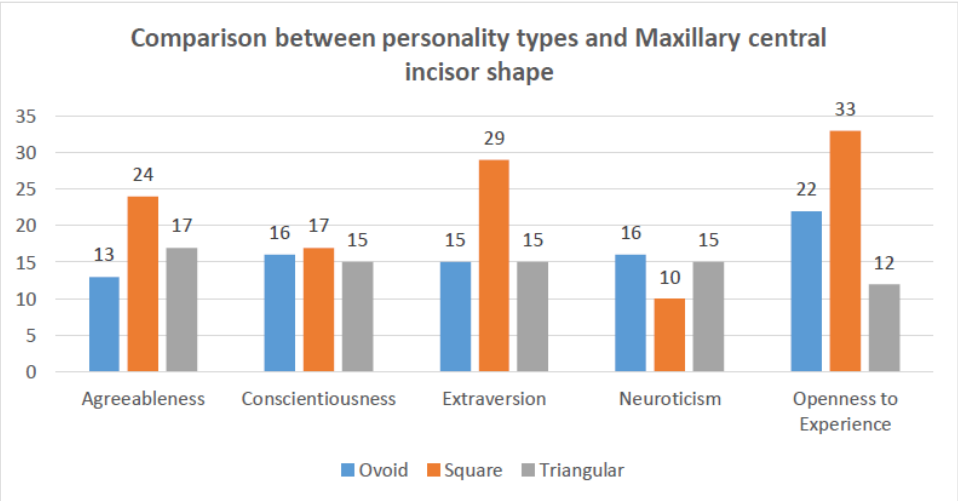

Figure 1: Comparison between personality types and Maxillary central incisor shape

Table 4: Comparison between personality types and dental aesthetic satisfaction

Personality type	n	Mean aesthetic score ± SD	H-value	P value
Agreeableness	54	3.588 ± 0.795	10.023	0.040
Conscientiousness	48	3.796 ± 0.690		
Extraversion	59	3.836 ± 0.910		
Neuroticism	41	3.668 ± 0.670		
Openness to Experience	67	3.958 ± 0.801		

Dental aesthetic satisfaction differed significantly across personality types (Kruskal–Wallis H = 10.023, p = 0.040). Participants with Openness to Experience demonstrated the highest mean aesthetic satisfaction score

(3.958 ± 0.801), whereas those with Agreeableness demonstrated the lowest score (3.588 ± 0.795). (Table 4, Figure 2)

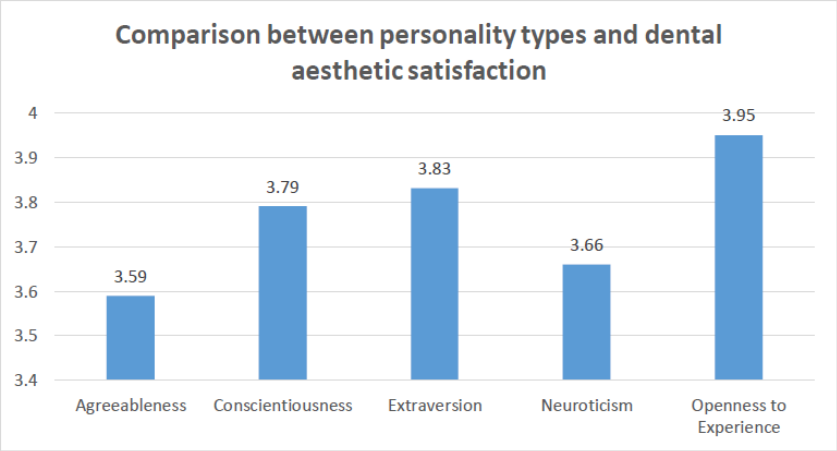

Table 5: Correlation between Personality types, Dental aesthetic satisfaction and Maxillary central incisor morphology

		Dental aesthetic satisfaction	Personality types	Maxillary central incisor morphology
Dental aesthetic satisfaction	Correlation Coefficient	1	0.086	-0.11
	p value	.	0.16	0.08
Personality types	Correlation Coefficient	0.086	1	-0.14
	p value	0.158	.	**0.02***
Maxillary central incisor morphology	Correlation Coefficient	-0.109	-.137*	1
	p value	0.075	0.024	.

The correlation analysis demonstrated that dental aesthetic satisfaction was weakly positively correlated with personality type (r = 0.086), but this correlation was not statistically significant (p = 0.158). Similarly, dental aesthetic satisfaction showed a weak negative correlation with maxillary central incisor morphology (r = −0.109, p = 0.075), which also did not reach statistical significance. A weak negative correlation was observed between personality type and maxillary central incisor morphology (r = −0.137), and this correlation was reported as statistically significant (p = 0.024). (Table 5)

IV. Discussion

The present study explored the relationship among personality traits, dental aesthetic satisfaction, and maxillary central incisor morphology in a young adult population aged 18–45 years. The demographic profile, with a mean age of 29.27 years and a slightly higher proportion of females, reflects a group typically more conscious of facial aesthetics and social appearance. The distribution of personality types revealed that Openness to Experience was the most prevalent trait, followed by Extraversion and Agreeableness. Individuals high in openness tend to appreciate aesthetics, creativity, and novelty [15] which may influence their perception of dental appearance. Extraverted individuals often place greater value on social confidence and smile attractiveness [7]. Conversely, the lower prevalence of Neuroticism may have contributed to the generally positive satisfaction scores, as individuals with high neurotic tendencies often exhibit lower satisfaction with their appearance [1]. In contrast, dental aesthetic satisfaction differed significantly across personality types. Participants with Openness to Experience demonstrated the highest satisfaction [15] those with Agreeableness reported the lowest satisfaction, possibly due to modesty, self-criticism, or lower emphasis on personal appearance [4].

The findings of the present study, which revealed no significant association between personality type and maxillary incisor morphology but a significant difference in dental aesthetic satisfaction across personality traits, are consistent with several previous investigations while contrasting with others. For instance, [8] reported that although extraversion was most frequently associated with square tooth forms, the relationship between personality traits and tooth morphology was statistically insignificant, aligning with the current study's conclusion that tooth shape is largely independent of psychological characteristics. Similarly, [9] found no

significant association between personality types and either patient-preferred or dentist-determined tooth morphologies, reinforcing the notion that morphology is biologically determined rather than psychologically influenced. However, both studies, like the present one, emphasized that patient satisfaction with dental aesthetics is shaped more by psychological and perceptual factors than by objective morphology. In contrast, earlier visagism-based studies,

[11] suggested potential links between temperament and tooth form, though these were limited by small sample sizes and methodological weaknesses. Taken together, these comparative findings highlight that while tooth morphology remains genetically and developmentally driven, personality traits—particularly Openness to Experience—play a meaningful role in shaping dental aesthetic satisfaction, underscoring the importance of integrating psychological assessment into aesthetic dentistry.

From a clinical perspective, the results reinforce the importance of prioritizing patient-centered psychological assessment over attempts to link personality traits with fixed morphological features. Similar to the conclusions of [8] [9] , the absence of a significant association between personality and tooth morphology suggests that clinicians should avoid relying on visagism-based assumptions when designing smiles. Instead, as highlighted by [9] , satisfaction is more likely when patients' preferred tooth shapes align with their actual morphology, underscoring the need for collaborative aesthetic planning. In contrast, earlier visagism-based studies [10] proposed harmonizing tooth forms with temperament, but their limited sample sizes and lack of methodological rigor reduce clinical applicability. Collectively, these comparative findings indicate that while tooth morphology is biologically determined, personality traits—particularly Openness to Experience—meaningfully shape aesthetic satisfaction. Therefore, clinicians should integrate personality-aware communication strategies, encourage patient participation in treatment planning, and employ digital morphometric tools to enhance predictability and satisfaction in aesthetic dentistry.

The present study's findings, together with those of [8] and [9] highlight the need for more robust research designs to clarify the nuanced interplay between personality traits, dental aesthetic satisfaction, and tooth morphology. While cross-sectional studies consistently demonstrate weak or insignificant associations between personality and morphology, longitudinal investigations could determine whether changes in personality traits over time influence aesthetic perceptions or treatment satisfaction. Furthermore, digital morphometric tools and three-dimensional imaging, as suggested by [3] and [19] would allow more objective classification of tooth shapes, reducing examiner bias inherent in visual assessments. Expanding samples to include diverse age groups, cultural backgrounds, and balanced gender distributions—as recommended by [9]—would improve generalizability and reveal whether sociocultural factors moderate the relationship between personality and aesthetic satisfaction. Finally, integrating additional psychological variables such as self-esteem, body image, and social confidence, as explored in studies on bleaching and smile attractiveness [10] and [12] could provide a more comprehensive understanding of patient-centered aesthetic outcomes. Collectively, these directions emphasize the importance of interdisciplinary approaches that combine psychology, digital dentistry, and clinical practice to advance individualized aesthetic care.

Limitations of the Study :

Although the present study provides valuable insights into the relationship among personality traits, dental aesthetic satisfaction, and maxillary central incisor morphology, several limitations should be acknowledged. The study employed a cross-sectional design, which restricts the ability to establish causal relationships between psychological traits and aesthetic perceptions. Longitudinal studies are recommended to determine whether changes in personality or dental aesthetics influence each other over time.

The sample consisted primarily of young adults aged 18–45 years, with a slight predominance of females. It is advisable that the demographic composition should also include older populations or groups with different gender distributions, as aesthetic perceptions and personality expressions can vary across age and cultural backgrounds.

The maxillary central incisor morphology was evaluated through visual clinical examination, which, although practical, may lack the precision so it is beneficial to use digital morphometric analysis or 3D imaging. As more advanced imaging techniques could provide a more objective classification of tooth shape. Although statistically significant differences were observed in dental aesthetic satisfaction across personality types, the correlations among variables were weak, it is encouraged that larger sample sizes may be needed to detect stronger associations. Future studies with broader and more diverse populations may help validate and expand upon these findings.

V. Recommendations

The present study highlights the importance of psychological factors, particularly personality traits, in shaping patient satisfaction with dental aesthetics. Based on the findings, several recommendations can be made for clinical practice and future research:

Clinicians should consider incorporating brief personality assessments, such as the Big Five Inventory, into patient consultations. Understanding whether a patient scores high in traits like Openness or Neuroticism may help anticipate their aesthetic expectations and guide communication strategies. Patient-centered treatment planning are recommended since satisfaction varied significantly across personality types, treatment plans should be tailored not only to clinical parameters but also to psychological profiles. Dentists should adopt communication approaches that align with personality traits. Extraverted patients may appreciate collaborative discussions, while conscientious patients may prefer detailed explanations of procedures and outcomes.

Future studies and clinical practice should employ digital imaging and morphometric analysis to classify incisor morphology more precisely. This would reduce examiner bias and improve reproducibility compared to purely visual clinical assessments. It is suggested to include older adults and diverse cultural groups as it would improve generalizability. Aesthetic perceptions and personality expressions may vary across age and cultural backgrounds, and these differences should be explored. For incorporation of additional psychological variables future research should include measures of self-esteem, body image, and social confidence, as these may interact with personality traits to influence aesthetic satisfaction.

Dental education programs should emphasize the psychological dimension of aesthetic dentistry, training students to recognize and respond to personality-driven differences in patient expectations.

VI. Conclusion

This study examined the association among personality traits, dental aesthetic satisfaction, and maxillary central incisor morphology in a young adult population. The findings revealed that personality traits significantly influence dental aesthetic satisfaction, with individuals exhibiting Openness to Experience demonstrating the highest levels of satisfaction and those with Agreeableness showing the lowest. These results highlight the psychological dimension of esthetic perception and suggest that personality characteristics may play an important role in shaping how individuals evaluate their dental appearance.

In contrast, no significant association was found between personality type and maxillary central incisor morphology, indicating that tooth shape is largely determined by biological and developmental factors rather than psychological traits. Although a weak negative correlation between personality type and tooth morphology was observed, the effect size was small and not clinically meaningful. Overall, participants reported favorable dental aesthetic satisfaction, particularly regarding social comfort and smile confidence.

The study contributes to a deeper understanding of how psychological factors interact with dental esthetics and underscores the importance of considering personality traits in esthetic dentistry, patient communication, and treatment planning. By acknowledging the influence of personality on esthetic expectations, clinicians may better tailor interventions to individual needs, ultimately enhancing patient satisfaction and treatment outcomes.

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