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Original Article

Mediation and moderation effect of the big five personality traits on the relationship between self-perceived malocclusion and psychosocial impact of dental esthetics

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ABSTRACT

Objective: To explore the mediation and moderation effects of personality traits on the relationship between self-perceived malocclusion and the psychosocial impact of dental esthetics.

Materials and Methods: The sample included 252 subjects (62% female) aged 12–39 years. Self-perceived malocclusion was estimated using the 10-point scale Aesthetic Component of the Index of Orthodontic Treatment Need. The Psychosocial Impact of Dental Aesthetics Questionnaire was used to assess the psychological impact and the Big Five Inventory for personality traits. Moderation and mediation effects were evaluated with Pearson correlations and stepwise regression analysis, respectively.

Results: Self-perceived malocclusion ranged from 1 to 8 and was the most significant predictor of psychosocial impact of dental esthetics, whose unique contribution accounted for 11%–36.4% of variability, while age and sex accounted for 1.2%–2.5%. Personality traits had no mediating effect on this relationship. The moderating effect of agreeableness was present in the relationship between self-perceived degree of malocclusion and Social Impact (SI), Psychological Impact (PI), and Aesthetic Concern (AC) ($\Delta R2 = 0.035$, 0.020, and 0.013, respectively; $P < .001$), while conscientiousness affected the relationship between perception of malocclusion and SI and PI ($\Delta R2 = 0.018$ and 0.016, respectively; $P < .05$). In people with lower agreeableness and conscientiousness, increasing the severity of self-perceived malocclusion leads to less increase in SI and PI. In people with lower agreeableness, the increase influences AC in a similar manner. Extraversion, neuroticism, and openness do not have a moderating effect.

Conclusions: The relationship between self-perceived malocclusion and the psychosocial impact of dental esthetics appears to be moderated and not mediated by personality traits. Adolescents and young adults with lower agreeableness and conscientiousness seem to be less affected by the increased severity of self-perceived malocclusion, as demonstrated in reporting some psychosocial impacts. (*Angle Orthod.* 2016;86:413–420.)

KEY WORDS: Personality traits; Malocclusion; Dental esthetics

INTRODUCTION

Malocclusion is an external factor that has a modest effect on the quality of life,[1,2] and self-reported well-being is often correlated with personality traits, that is, habitual patterns of behavior, thought, and emotion.[3,4] Personality traits are relatively stable over time because of a broad influence of heritability in the range of 40% to 55%, and sex differences in hereditability are not large since it appears that the same genes operate on all traits in both sexes.[3] Even children can provide valid, stable, and coherent self-reports on the five main personality traits,[5] and there is a developmental trend from late childhood to early

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adulthood for self-reports to become more coherent within personality domains and better differentiated across domains.[6]

There is broad acceptance of the Big Five model of personality dimensions that include the following traits: (1) openness or intellect (inventive/curious vs consistent/cautious), (2) conscientiousness (efficient/organized vs easy-going/careless), (3) extraversion (outgoing/energetic vs solitary/reserved), (4) agreeableness (friendly/compassionate vs analytical/detached), and (5) neuroticism (sensitive/nervous vs secure/confident).[7] Extraversion and neuroticism are the strongest predictors of subjective well-being, and agreeableness and conscientiousness to some extent predispose individuals toward well-being.[8,9]

The Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) is being widely used to assess self-reported quality of life related to malocclusion and altered smile esthetics.[2] It has been translated and adapted to several languages and has mainly confirmed four-dimensional structure: dental self-confidence (DSC), aesthetic concern (AC), social impact (SI), and psychological impact (PI).

Mediation and moderation are interactions that uncover underlying mechanisms affecting the correlation between two conditions that enhance or lessen the influence of one factor on another.[10] A mediator is a variable that transports information along the usual path of cause and effect, while a moderator is a variable that changes relationships in a complex system, interacting with the causality.

With the relation of self-perceived malocclusion and psychosocial impact of dental esthetics already having been demonstrated,[2] our aim was to determine whether personality traits have an effect on this relationship and whether they are mediators or moderators.

MATERIALS AND METHODS

The sample in this cross-sectional study included 252 subjects (62% female) aged 12–39 (median, 20; interquartile range, 16–22 years). Subjects had permanent dentition and were recruited among students of the university and local schools and patients of the University Dental Clinic in Rijeka, Croatia. Exclusion criteria were mental retardation, craniofacial syndromes, prosthodontic restorations, and ongoing orthodontic treatment. Estimate of the sample size was based on our previous research.[2] The lowest correlation coefficients were found for the relationship between satisfaction with tooth position and AC dimension of the PIDAQ ($r = .260$) and between the Aesthetic Component of the Index of Orthodontic Treatment Need (IOTN AC) and SI ($r = .308$), which yield effect sizes of Cohen's $f^2 = 0.073$ and 0.095, respectively. For the mediation analysis using multiple regression, taking into account eight predictors, calculated effect sizes, power ($\beta = 0.8$), and probability level ($\alpha = 0.05$, 166, and 213), the minimal sample size chosen. By adding a dropout rate of 20%, numbers of 199 and 255 were reached. Therefore, 260 subjects were initially recruited. Self-perceived malocclusion was estimated using the 10-point IOTN AC scale (1 = no malocclusion, 10 = the most severe malocclusion).[11] The reliability of the IOTN AC was checked by reassessment at 1-week intervals in a sample of 30 subjects, and the Intraclass Correlation Coefficient (ICC) was 0.848.

Croatian versions of the PIDAQ were used to assess psychological impact and the Big Five Inventory (BFI-11) to assess personality traits.[2,12,13] Correlation between long-form BFI-44 and short-form BFI-11, checked on a sample of 150 Croatian adolescents and adults, revealed a strong relationship (neuroticism, $r = .888$; extraversion, $r = .843$; conscientiousness, $r = .805$; openness, $r = .776$; agreeableness, $r = .741$). The PIDAQ was designed for adults, but recently it has been proven that it has good psychometric properties in adolescents, independently of their age.[14] The psychometric properties of the Croatian version of the PIDAQ (partially reformulated for adolescents) were checked on a sample of 131 participants aged 11–17 years, who were referred for orthodontic consultation or treatment. The internal consistency of each domain was analyzed by Cronbach α and average interitem correlations of items in each of four original domains. Convergent validity was assessed by Spearman correlations of PIDAQ domains with self-reported satisfaction with teeth appearance, self-perceived altered dental esthetics, malocclusion, and self-assessed treatment need to improve dental esthetics (each construct based on a five-point Likert-type scale from 0 = not at all to 4 = very much). For discriminant validity, the *t*-test was used to explore the ability of PIDAQ domains to discriminate adolescents with orthodontic treatment need from those with no or borderline need. Their treatment needs were assessed by the Index of Complexity, Outcome, and Need (ICON) by the authors, for which the cutoff point was ICON $\geq$ 4. The ICC for intra- and interexaminer reliability in assessing treatment need by the ICON ranged from 0.625 to 0.965.

Moderation and mediation effect of personality traits on the relationship between self-perceived malocclusion and psychosocial impact of dental esthetics were evaluated with Pearson correlations and stepwise regression analysis, respectively. Commercial statistical software IBM SPSS 22 (IBM Corp, Armonk, NY) was used for data analysis.

The research was approved by the Ethics Committees of the School of Medicine and the University Clinic (2170-29-02/1-14-3 and 2170-24-01-15-2) with informed consent provided by each participant.

RESULTS

Analysis of psychometric characteristics of the PIDAQ in Croatian adolescents confirmed properties to those of adults, demonstrating that the four original dimensions have satisfactory internal consistency (α ranging from 0.793 to 0.917; $P < .001$) and average inter-item correlations in each domain (r ranging from .470 for SI to .648 for DSC). They are measuring similar constructs such as satisfaction with dental appearance (ranging from $r = -.462$ to .758; $P < .001$) and are able to discriminate adolescents with orthodontic treatment need (ICON ≥ 4) from those with no or borderline need ($P < .005$).

Self-perceived malocclusion ranged from 1 to 8 (median, 2; interquartile range, 1–3) and in bivariate correlations was significantly related to age and all psychosocial aspects of dental esthetics, mostly with DSC, and least with SI (Table 1).

Increase in degree of self-perceived malocclusion led to increased PI, AC, and SI and to a decrease of DSC. The correlation between the psychosocial aspects of dental esthetics with personality traits and that between self-perceived esthetics with personality traits were either not significant or very low, below $r < .25$.

Multiple regression was used to explore the relationship between self-perceived malocclusion and dimensions of PIDAQ, controlling for the effects of age and sex (Table 2). Age was a significant predictor of AC and SI and the sex of AC and PI. SI and AC decreased with age and female sex and was related to increased AC and PI. The model for DSC demonstrated the highest predictive value, while that for SI demonstrated the lowest value, accounting for 43.5% and 18% of variability, respectively. By controlling for age and sex, the self-perceived level of malocclusion remained the most significant predictor of psychosocial impact of dental esthetics, whose unique contribution accounts for 11% to 36.4% variability, while age and sex account for 1.2% to 2.5% variability.

Analysis of the Mediation Effect of Personality Traits

Analysis of the effect of predictors on potential mediators by stepwise regression demonstrated that self-perceived malocclusion, with age and sex controlled, was not a significant predictor of personality traits. Age was a significant predictor of conscientiousness,

Table 1. Intercorrelations of Variables

	Age	IOTN AC	DSC	SI	PI	AC	E	A	C	N	O
Gender (1 = Male, 2 = Female)	0.017	−0.062	−0.015	−0.003	0.103	0.093	0.062	0.054	0.055	0.240**	0.175**
Age 20 (16–22); 12–39***		−0.320**	0.279**	−0.279**	−0.257**	−0.265**	0.066	−0.111	0.247**	0.149*	0.130*
Index of Orthodontic Treatment Need/Aesthetic Component (IOTN/AC) 2 (1–3); 1–8***			−0.658**	0.406**	0.505**	0.496**	−0.011	0.131*	−0.155*	−0.206**	0.110
Dental Self-Confidence (DSC) 16 (12–19); 0–24***				−0.553**	−0.712**	−0.734**	0.078	−0.017	0.147*	0.180**	0.021
Social Impact (SI) 2 (0–6); 0–29***					0.740**	0.716**	−0.077	0.066	−0.060	−0.097	0.035
Psychological Impact (PI) 6 (2–9); 0–22***						0.761**	−0.037	0.033	−0.023	−0.060	0.050
Asthetic Concern (AC) 1.5 (0–4); 0–12***							−0.091	0.071	−0.129*	−0.085	0.046
Extraversion (E) 7 (6–8); 2–10***								0.051	0.221**	−0.060	0.041
Agreeableness (A) 11 (10–12); 5–15***									0.104	−0.146*	0.179**
Conscientiousness (C) 7 (6–8); 2–10***										−0.039	0.123
Neuroticism (N) 6 (5–7); 2–10***											0.030
Openness (O) 8 (6–9); 2–10***											1.000

* Correlation is significant at the $P < .05$ level (2-tailed).

** Correlation is significant at the $P < .01$ level (2-tailed).

*** Median (interquartile range); min-max value.

Table 2. Multiple Linear Regression for Relationship Between IOTN AC and PIDAQ Controlling for the Effect of Age and Gender

		Unstandardized Coefficients		Standardized Coefficients		Correlations		
Model[a]		B	Std. Error	Beta	Sig.	Zero-order	Partial	Part
DSC	(Constant)	20.231	1.717		<.001			
	IOTN AC[b]	−2.556	0.201	−0.638	<.001	−0.658	−0.628	−0.603
	Gender (1 = m, 2 = f)	−0.663	0.561	−0.056	.238	−0.015	−0.075	−0.056
	Age	0.093	0.061	0.077	.128	0.279	0.097	0.073
SI	(Constant)	4.470	1.930		.021			
	IOTN AC	1.323	0.226	0.354	<.001	0.406	0.348	0.334
	Gender (1 = m, 2 = f)	0.241	0.630	0.022	.703	−0.003	0.024	0.022
	Age	−0.190	0.069	−0.167	.006	−0.279	−0.173	−0.158
PI	(Constant)	2.463	1.672		.142			
	IOTN AC	1.653	0.196	0.480	<.001	0.505	0.472	0.454
	Gender (1 = m, 2 = f)	1.365	0.546	0.135	.013	0.103	0.157	0.134
	Age	−0.111	0.060	−0.105	0.065	−0.257	−0.117	−0.100
AC	(Constant)	0.429	0.987		0.664			
	IOTN AC	0.943	0.116	0.467	<0.001	0.496	0.460	0.441
	Gender (1 = m, 2 = f)	0.738	0.322	0.124	0.023	0.093	0.144	0.124
	Age	−0.072	0.035	−0.117	0.041	−0.265	−0.129	−0.111

[a] Model DSC: R = 0.665; R2 = 0.442; Adjusted R2 = 0.435.
Model SI: R = 0.436; R2 = 0.190; Adjusted R2 = 0.180.
Model PI: R = 0.532; R2 = 0.283; Adjusted R2 = 0.275.
Model AC: R = 0.524; R2 = 0.274; Adjusted R2 = 0.265.

[b] IOTN AC indicates Aesthetic Component of Index of Orthodontic Treatment Need; PIDAQ, Psychosocial Impact of Dental Aesthetics Questionnaire; DSC, Dental Self-Confidence; SI, Social Impact; PI, Psychological Impact; AC, Aesthetic Concern.

accounting for 6.6% of variability (the whole model, including both sex and self-perceived malocclusion, accounted for 8.1% of variability of conscientiousness). Conscientiousness increased with age. Sex accounted for 6.3% of variability of neuroticism (the whole model for 8.9%) and for 5.4% of variability of openness (the whole model for 7%), while the female sex relateed to a higher degree of neuroticism and openness. Self-perceived malocclusion, age, and sex were not significant predictors of extraversion and agreeableness.

Personality traits did not have a mediating effect on the relationship self-perceived malocclusion–psychosocial impact of dental esthetics of which was demonstrated by multiple regression models (Table 3). The addition of personality traits in the model slightly decreased the effect of IOTN AC on DSC, SI, and AC, and increased the effect on PI, but it did not improve the explanatory power of the model ($\Delta R2 = 0.006–0.015$; $P > .05$).

Analysis of the Moderating Effect of Personality Traits

The moderating effect of agreeableness was present in the relationship between self-perceived degree of malocclusion and SI, PI, and esthetic concern ($\Delta R2 = 0.035$, 0.020, and 0.013, respectively; $P < .05$) while conscientiousness affected the relationship between perception of malocclusion and SI and PI ($\Delta R2 = 0.018$ and 0.016, respectively; $P < .05$). Extraversion, neuroticism, and openness had neither a moderating nor a mediating effect. Figure 1 demonstrates the tendency of persons with low agreeableness to show reduced increase of social and psychological impact of dental esthetics and esthetic concern with the increase of self-perceived malocclusion compared with those of high agreeableness. Examinees with low conscientiousness showed reduced increase of social and psychological impact with increase of self-perceived malocclusion compared with those of low conscientiousness.

DISCUSSION

As expected, self-perceived malocclusion was the most significant predictor of psychosocial impact of dental esthetics. Age, sex, and personality traits affected the aforementioned relationship only to a lesser extent. Self-perceived malocclusion affected mostly dental self-confidence, and its unique contribution accounted for 36% of the variability. A study of Spanish adolescents confirmed the highest impact on dental self-confidence, but with a much lower predictive value.[14]

Self-confidence is a feeling of trust in one's abilities, qualities, and judgment, and it has been previously confirmed that self-confidence is related to body satisfaction, especially satisfaction with the head area and oral health status, with subjects exhibiting gingivitis and extracted teeth particularly demonstrating low self-confidence.[16,17]

Self-perceived malocclusion was the weakest predictor of social impact of dental esthetics, accounting for 11% of variability. Social impact and esthetic

Table 3. Stepwise Regression to Evaluate Mediation Effect of Personality Traits on Relationship Between Self-Perceived Malocclusion and Psychosocial Impact of Dental Esthetics[a]

		Unstandardized Coefficients		Standardized Coefficients		Correlations		
Model		B	Std. Error	Beta	*P*	Zero-order	Partial	Part
DSC 1	(Constant)	21.165	0.532		<.001			
	IOTN AC[b]	−2.640	0.191	−0.658	<.001	−0.658	−0.658	−0.658
DSC 2	(Constant)	14.403	2.737		<.001			
	IOTN AC	−2.623	0.200	−0.654	<.001	−0.658	−0.642	−0.623
	Extraversion	0.248	0.186	0.065	.184	0.078	0.085	0.063
	Agreeableness	0.205	0.152	0.066	.181	−0.017	0.085	0.064
	Conscientiousness	0.080	0.183	0.022	.661	0.147	0.028	0.021
	Neuroticism	0.215	0.172	0.061	.211	0.180	0.080	0.059
	Openness	0.116	0.159	0.036	.467	−0.021	0.046	0.035
SI 1	(Constant)	0.728	0.604		.229			
	IOTN AC	1.518	0.216	0.406	<.001	0.406	0.406	0.406
SI 2	(Constant)	2.455	3.131		.434			
	IOTN AC	1.511	0.229	0.404	<.001	0.406	0.389	0.384
	Extraversion	−0.279	0.213	−0.078	.191	−0.077	−0.083	−0.076
	Agreeableness	0.041	0.174	0.014	.812	0.066	0.015	0.014
	Conscientiousness	0.066	0.209	0.019	.753	−0.060	0.020	0.018
	Neuroticism	−0.052	0.196	−0.016	.792	−0.097	−0.017	−0.015
	Openness	−0.037	0.182	−0.012	.841	0.035	−0.013	−0.012
PI 1	(Constant)	2.329	0.525		<.001			
	IOTN AC	1.740	0.188	0.505	<.001	0.505	0.505	0.505
PI 2	(Constant)	1.821	2.716		.503			
	IOTN AC	1.829	0.198	0.531	<.001	0.505	0.507	0.505
	Extraversion	−0.142	0.184	−0.043	.441	0.037	−0.049	−0.042
	Agreeableness	−0.093	0.151	−0.035	.541	0.033	−0.039	−0.034
	Conscientiousness	0.235	0.181	0.075	.196	−0.023	0.082	0.071
	Neuroticism	0.134	0.170	0.044	.433	−0.060	0.050	0.043
	Openness	−0.024	0.158	−0.009	.878	0.050	−0.010	−0.008
AC 1	(Constant)	0.083	0.310		.790			
	IOTN AC	1.004	0.111	0.496	<.001	0.496	0.496	0.496
AC 2	(Constant)	1.325	1.604		.409			
	IOTN AC	0.992	0.117	0.491	<.001	0.496	0.476	0.467
	Extraversion	−0.150	0.109	−0.078	.171	−0.091	−0.087	−0.076
	Agreeableness	0.026	0.089	0.017	.772	0.071	0.019	0.016
	Conscientiousness	−0.067	0.107	−0.036	.532	−0.129	−0.040	−0.034
	Neuroticism	0.022	0.101	0.012	.830	−0.085	0.014	0.012
	Openness	−0.005	0.093	−0.003	.957	0.046	−0.003	−0.003

[a] DSC 1: R = 0.658; R2 = 0.434; Adjusted R2 = 0.431; $P < .001$.
DSC 2: R = 0.670; R2 = 0.448; Adjusted R2 = 0.435; $P < .001$.
SI 1: R = 0.406; R2 = 0.164; Adjusted R2 = 0.161; $P < .001$.
SI 2: R = 0.413; R2 = 0.171; Adjusted R2 = 0.150; $P < .001$.
PI 1: R = 0.505; R2 = 0.255; Adjusted R2 = 0.252 $P < .001$.
PI 2: R = 0.514; R2 = 0.264; Adjusted R2 = 0.246; $P < .001$.
AC 1: R = 0.496; R2 = 0.246; Adjusted R2 = 0.252; $P < .001$.
AC 2: R = 0.505; R2 = 0.255; Adjusted R2 = 0.237; $P < .001$.

[b] IOTN AC = Aesthetic Component of Index of Orthodontic Treatment Need; DSC = Dental Self-Confidence; SI = Social Impact; PI = Psychological Impact; AC = Aesthetic Concern.

concern decreased with age, while the female sex was related to increased esthetic concern and psychological impact of dental esthetics. During adolescence, appearance is important to being accepted by society and getting involved in romantic relationships, though after adolescence, people seem to accept themselves the way they are. Psychological research on persons followed from 11 to 30 years of age has shown a trend of linear growth in body image satisfaction through adolescence followed by stabilizing of the latent curve in adulthood, with males being on average more satisfied than females.[18,19] This implies that adolescents who are dissatisfied with their appearance will feel more satisfied later in life, regardless of whether they correct their appearance. Women seem to regard their appearance as more important than do men, regardless of age; they think more about it, dedicate more attention to it, and are more interested in changing it than are men.[20] In addition, females are twice as likely to be dissatisfied with self-perceived

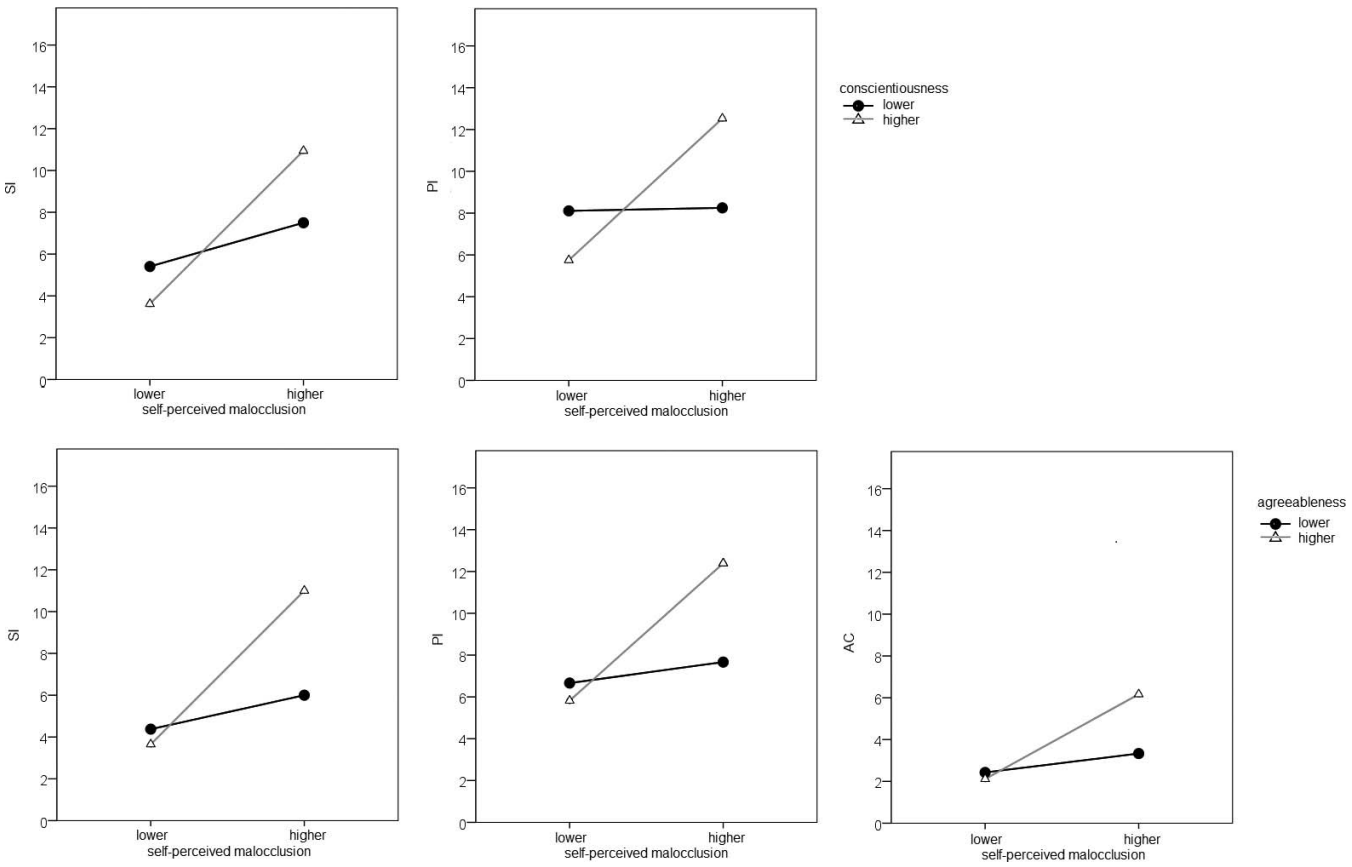

Figure 1. Moderating effect of personality traits.

malocclusion and tooth color.[21] Causes of greater dissatisfaction with appearance in women could be women's insecurity about their appearance driven by competition with other women and an attitude or opinion of being evaluated by men based on their appearance.[22]

Our previous research confirmed that malocclusions result in higher psychosocial impact than do the parameters of mini- and microesthetics of the smile.[23] Incisor inclinations also have a psychosocial effect, mostly in Class III and Class II division 1 subjects.[24] Excessive anterior tooth display and gingival display during smiling may result in a psychosocial effect of malocclusion, mostly on esthetic concern and least on self-confidence.[25]

Personality, process, and stability are widely recognized as important by researchers in the field of behavioral dentistry, as they can serve to predict patients' perception, treatment modality selection, expectations, compliance, and satisfaction with treatment outcome.[26–29]

Recent research suggests that self-perceived malocclusion is not a predictor of personality traits, meaning that there is an outside possibility that malocclusion, that is, the perception of malocclusion, is an external factor that might modify onès personality traits. However, age and sex have some effect on personality traits. Likewise, no direct relationship between personality traits and psychosocial aspects of dental esthetics has been proven. Personality traits have no mediating effect on the relationship self-perceived malocclusion–psychosocial impact of dental esthetics; however the moderating effect of agreeableness and conscientiousness was proven, although it was low. Agreeableness appears to be the most significant moderator, affecting three out of four psychosocial dimensions.

Adolescents and young adults with lower agreeableness seem to be less affected by the increasing severity of self-perceived malocclusion in reporting the social and psychological impact of dental esthetics and esthetic concern.

Agreeableness is an important predictor of social outcomes, and those scoring high in this trait are characterized by prosocial, cooperative, and altruistic behavior and the use of emotion-focused coping strategies of social support seeking, while those with low agreeableness (high hostility) are more likely to experience peer rejection and bullying.[30,31] The moderating effect of agreeableness might be explained by

hostile people showing less interest in maintaining harmonious interpersonal relations, being less in need of social support, and being accepting of other people's opinions. Agreeable people probably seek acceptance from others; therefore, a higher degree of self-perceived malocclusion results in a much higher psychosocial impact.

Conscientiousness is another mediator. People with lower conscientiousness also seem to be less affected by increased severity of self-perceived malocclusion in reporting the social and psychological impact of dental esthetics. Conscientiousness refers to the tendency of being well organized, rational, and able to complete tasks; such individuals use less emotion- and more problem-focused coping, while those low in conscientiousness are more likely to get involved in health-risk behavior and antisocial behavior.[30,31] People who score low on conscientiousness tend to be carefree and are generally unconcerned, which might explain reduced discrepancy in social and psychological impact among people with lower and higher degree of self-perceivedt malocclusion. Conscientiousness is an important positive predictor of physical and mental health, self-esteem, and subjective well-being.[30] High levels of conscientiousness and agreeableness and low levels of neuroticism are associated with higher levels of self-concept clarity.[32]

Neuroticism in the present research correlated positively, although weakly, with dental self-confidence and negatively with self-perceived malocclusion in univariate analyses. On the other hand, it was not a significant predictor, moderator, or mediator in multiple analyses. However, neuroticism, to a lesser extent, in addition to pretreatment facial satisfaction as a major factor, appears to be a predictor of posttreatment facial satisfaction following simple esthetic dental procedures.[33] Also, in adult patients with prosthodontic restorations, neuroticism is negatively related to satisfaction with appearance and quality of life.[34]

Although the present research demonstrates that extraversion, neuroticism, and openness are not related to the psychosocial impact of dental esthetics, it is reported that they may influence dental perceptions, have a significant role in forming satisfaction with dental appearance, and may serve to predict their effect on daily living.[35] Social influences, such as media, may also have a negative impact on perception of onès face in individuals who are sensitive to their appearance.[36]

Personality traits may to some extent influence the relationship between self-perceived malocclusion and the psychosocial impact of dental esthetics, which exposes the importance of considering personality traits when assessing patients' expectations of therapy. Data derived from this study may imply that subjects with low conscientiousness and agreeableness may be less affected by their malocclusion and therefore less prone to undergo orthodontic treatment. These patients could be less compliant during treatment, but also less critical in assessing treatment results. On the other hand, those with higher agreeableness and conscientiousness may be more focused on details and may more often seek orthodontic treatment, but also might be captious when assessing treatment results.

One of the limitations of this study is that several other psychological dimensions were not controlled for, such as self-concept, body image, and perfectionism. They may be potential confounding factors that could be considered in future studies. Furthermore, although the IOTN AC is broadly used to assess the patient's own esthetic perception, its reliability has been questioned recently.[37] The IOTN AC in this study was in the range of 1–8; no one gave him- or herself a score 9 or 10. Probably some other measure of self-evaluation could be used and a broader range of malocclusions included.

CONCLUSIONS

- The relationship between self-perceived malocclusion and the psychosocial impact of dental esthetics appears to be moderated and not mediated by personality traits.
- Adolescents and young adults with lower agreeableness and conscientiousnessseem to be less affected by the increased severity of self-perceived malocclusion, demonstrated in reporting some psychosocial impacts.

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