

# Psychosocial impact of dental esthetics regulates motivation to seek orthodontic treatment

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**Introduction:** The aim of this study was to evaluate the psychosocial impact of dental esthetics for adults seeking orthodontic treatment. **Methods:** The Chinese version of the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) was administered to 393 adults, aged 18 to 30 years. The participants were divided into 2 groups: an intervention group (received orthodontic treatment) and a control group (rejected orthodontic treatment). Baseline malocclusion severity was assessed using the Index of Orthodontic Treatment Need (IOTN). **Results:** The Wilcoxon signed rank test showed no statistically significant difference between the groups for the dental health component (DHC) of the IOTN ( $P = 0.134$ ). Total and subscale PIDAQ scores of the intervention group were higher than those of the control group and differed significantly in each group among the 4 IOTN-DHC grades; self-confidence scores in the control group ( $F = 1.802$ ;  $P > 0.05$ ) were the exception. Correlations between the PIDAQ scores and the IOTN-DHC grades were strong in each group. DHC grades, psychological impact, social impact, and aesthetic concern had significant impacts on patients accepting orthodontic treatment. **Conclusions:** The psychosocial impact of dental esthetics played an important role in the decision-making process of adults seeking orthodontic treatment. Importantly, participants with low self-awareness of the potential psychosocial impact rejected orthodontic treatment, despite the need for severe normative treatment. (Am J Orthod Dentofacial Orthop 2016;150:476-82)

Malocclusion is a misalignment or incorrect relationship between the teeth of the dental arches, a condition that has stimulated demand for orthodontic treatment for many decades.<sup>1-3</sup> Historically, patients have sought orthodontic treatment primarily to improve dental and oral health, and for esthetic

reasons. However, recent research has shown that patients are motivated to receive orthodontic treatment mainly because of their awareness of their dentofacial appearance and other psychosocial factors.<sup>4-6</sup> It is widely believed that malocclusion can have a significant negative impact on physical and psychosocial well-being. Therefore, orthodontic treatment can improve a person's appearance, oral function, psychosocial well-being, and quality of life.<sup>7-10</sup>

To objectively assess orthodontic treatment needs and outcomes, standard indexes have been developed. They are practical and efficient, and thus widely used.<sup>11,12</sup> One disadvantage of these traditional indexes, however, is that they do not assess the impact of a malocclusion on a patient's quality of life in terms of limited function and psychosocial well-being.<sup>13</sup> Orthodontic patients expect their treatment to positively influence their social and mental status, as well as improve their dental health.<sup>10,14,15</sup> Thus, patients' expectations may not coincide with their clinical evaluations. Discrepancies have been observed between professional assessments and patients' subjective evaluations.<sup>16,17</sup> By ignoring the subjective needs of their patients, orthodontists can negatively influence patients' satisfaction with their treatments.

Over the past few decades, interest in the subjective aspects of dentistry has increased considerably.

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Researchers developed Oral Health–Related Quality of Life (OHRQoL) questionnaire, a multidimensional construct to evaluate orthodontic treatment needs and outcomes.<sup>7,8,10,18,19</sup> Few of its indexes were specifically developed for malocclusion. The Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ), designed and developed at the University of Mainz, Germany, specifically for orthodontics, is a specialized tool for the evaluation of the psychosocial impacts of dental esthetics in young adults.<sup>20</sup> Previous studies have supported its validity and reliability in various countries and languages, including Chinese.<sup>21–25</sup>

Many patients who need orthodontic treatment according to the Index of Orthodontic Treatment Need (IOTN) reject clinical treatment. It is possible that these patients believe that the benefits of orthodontic treatment are not balanced against their associated risks and costs, or perhaps they think that the psychosocial impact of malocclusion (particularly dental esthetics) is not severe. The purpose of this study was to investigate the self-perceptions of dental esthetics in adults who sought orthodontic treatment and thus to assess the role of the psychosocial impact of dental esthetics on treatment-seeking motivations. This was achieved by comparing these adults with matched peers who rejected orthodontic treatment.

## MATERIAL AND METHODS

This study was designed as a prospective trial. Participants were recruited for this pilot study between February 2014 and May 2014, based on the following inclusion criteria: 18 to 30 years old; wearing a fixed dental appliance; expressing dental complaints, including those relating to dental esthetics; and willing to answer the questionnaire. Exclusion criteria were art professional or oral science major, learning difficulties, craniofacial syndromes, having received adjunctive orthodontic therapy for another type of dental treatment, cleft lip or palate, previous orthodontic patient, or needing orthognathic surgery. In total, 748 adult patients visited the Department of Orthodontics at Wenzhou Medical University in Wenzhou, Zhejiang, China, of whom 247 accepted orthodontic treatment. Of those, 202 participated in the intervention group; 45 who did not meet the inclusion criteria or declined to participate were excluded. The control group contained 202 matched peers who had also visited the university clinic to consult with an orthodontist but refused orthodontic treatment. Ethical approval was obtained from the health research ethics board at Wenzhou Medical University (WYKQ2014013). Each patient was given oral and written information, and signed the consent form before acceptance into the study.

**Table I.** Demographics of the adult patients

Demographic	Intervention group	Control group	P value (chi-square test)
Age (y)			
18–24	124	124	>0.05
25–30	73	72	
Sex (n)			
Male	65	63	>0.05
Female	132	133	
Level of education (n)			
Secondary school or less	46	50	>0.05
Tertiary	151	146	
Employment (n)			
Student	40	42	>0.05
Unemployed	26	30	
Employee	131	124	
Marital status (n)			
Single	142	135	>0.05
Married	55	61	
Region (n)			
Urban	95	97	>0.05
Suburban	102	99	
Malocclusion (n)			
Class I	100	109	>0.05
Class II	78	72	
Class III	19	15	
Income (per month, CNY)			
<4000	68	74	>0.05
4000–8000	75	74	
>8000	54	48	
Total	197	196	

CNY, Chinese Yuan Renminbi.

The sample size was sufficient to accommodate 1 SD (SD = 6) of PIDAQ scores and a tolerable error of 1 in 2 groups, with type II error at 0.20 (80% power) at the 5% significance level. To enhance reliability, participants in the control group were matched with participants in the intervention group based on similar sociodemographic variables, including age, sex, and educational level (Table I).

Interviews were conducted first, in which the participants provided demographic information. Next, the Chinese version of the PIDAQ was administered to measure the participants' perceptions of the psychosocial impacts of malocclusion.<sup>21</sup> The 4 subscales of the PIDAQ are Dental Self-Confidence (DSC, 6 items), Psychological Impact (PI, 6 items), Social Impact (SI, 8 items), and Aesthetic Concern (AC, 3 items) (Appendix). Each item was scored on a 5-point Likert scale with response options of 0, not at all; 1, a little; 2, somewhat; 3, strongly; and 4, very strongly. Each subscale score was calculated separately and obtained by summing the item scores. To ensure the same direction of scoring for all questionnaire items and to produce a consistent measure of impacts, the items in the DSC were reverse scored. Once the

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