Supplementary Tables S1–S3, Figure S1 and File S1

Supplementary Table S1. DESI item-level frequencies and associations by age and gender

DESI item	Category	n (%)	Age p-value	Sex p-value
Gingival contour	Ideal	69 (17.2)	0.653	0.620
	1 tooth deviating	45 (13.1)		
	2 teeth deviating	109 (31.7)		
	3 teeth deviating	71 (20.6)		
	≥4 teeth deviating	60 (17.4)		
Interdental papilla	Filled	32 (9.3)	0.668	**0.007**
	1 Not filled	27 (7.8)		
	2 Not filled	72 (20.9)		
	3 Not filled	80 (23.3)		
	≥4 Not filled	133 (38.7)		
Arch continuity	Continuous	43 (12.5)	0.078	**<0.001**
	1 gap	37 (10.8)		
	2 gaps	72 (20.9)		
	3 gaps	81 (23.5)		
	≥4 gaps	111 (32.3)		
Angulation upper teeth	Ideal /	40 (11.6)	0.483	0.107
	1 tooth deviating	79 (23.0)		
	2 teeth deviating	83 (24.1)		
	3 teeth deviating	72 (20.9)		
	≥4 teeth deviating	70 (20.3)		
Proximal contacts (PC)	Ideal /	29 (8.4)	0.498	0.860
	1 PC deviating	44 (12.8)		
	2 teeth deviating	74 (21.5)		
	3 teeth deviating	72 (20.9)		
	≥4 teeth deviating	125 (36.3)		
Tooth/restoration color	Harmonious	104 (30.2)	**0.042**	**0.020**
	1 tooth deviating	58 (16.9)		
	2 teeth deviating	115 (33.4)		
	3 teeth deviating	38 (11.0)		
	≥4 teeth deviating	29 (8.4)		
Central incisor W/H ratio	Ideal	40 (11.6)	0.099	**<0.001**
	±0.05	128 (37.2)		
	±0.1	100 (29.1)		
	±0.15	31 (9.0)		
	≥±0.2	45 (13.1)		
Incisor–facial midline angle	Parallel	163 (47.4)	0.150	**0.044**
	±5°	99 (28.8)		
	±10°	56 (16.3)		
	±15°	17 (4.9)		
	≥20°	9 (2.6)		
Exposure of Upper Teeth by Upper lip line	Ideal	213 (61.9)	0.510	0.159
	±2mm	72 (20.9)		
	±4mm	45 (13.1)		
	±6mm	13 (3.8)		
	≥8mm	1 (0.3)		
Lower lip line parallelism to	Convex-Parallel	161 (46.8)	0.913	**0.007**

smile line	Straight	61 (17.7)
	Oblique	79 (23.0)
	Minimally concave /	18 (5.2)
	Distinctively concave	25 (7.3)

Note: Percentages are based on the total sample (n = 344). Age and sex *p*-values are from χ^2 tests comparing category distributions across age group and sex. Numbers in bold font are statistically significant.

Supplementary Table S2. PIDAQ item frequencies (overall, n=344)

Panel A. Dental Self-confidence subscale (order: Very strongly, Strongly, Somewhat, A little, Not at all)

Item	VS	S	SW	AL	NA
1. Proud of my teeth	49	69	119	60	47
2. Like to show teeth when smiling	55	55	81	94	59
3. Satisfied with teeth in mirror	44	56	97	83	64
4. Teeth attractive to others	32	28	77	79	128
5. Satisfied with appearance of teeth	60	52	82	76	74
6. Like arrangement/regularity	54	46	70	75	99

Panel B. Social impact subscale (order: Not at all, A little, Somewhat, Strongly, Very strongly)

Item	NA	AL	SW	S	VS
7. Back up when smiling	138	97	61	29	19
8. Worried about unknowns' opinion	164	77	67	11	25
9. Afraid of bad comments	172	83	34	31	24
10. Decrease social contact	243	56	20	12	13
11. Hand in front to hide teeth	211	73	29	12	19
12. Feel people stare at teeth	200	71	32	24	17
13. Comments bother me	186	71	33	33	21
14. Worry about opposite gender opinion	197	67	40	19	21
15. Others have more beautiful teeth	109	91	62	36	46

Panel C. Esthetic attitude subscale (order: Not at all, A little, Somewhat, Strongly, Very strongly)

Item	NA	AL	SW	S	VS
16. Envy people with beautiful teeth	239	48	25	14	18
17. Frustrated when seeing others' teeth	214	80	23	13	14
18. Unhappy with appearance of teeth	139	102	49	29	25
19. Feel bad when thinking about teeth	167	91	41	21	24
20. Wish teeth looked better	52	50	36	52	154
21. Don't like to see teeth in mirror	181	88	38	18	19
22. Don't like to see teeth in pictures	163	70	53	24	34
23. Don't like to see teeth in videos	181	66	46	21	30

Supplementary Table S3. PIDAQ item-level group comparisons (χ^2 p-values)

Item	Age (≤16 vs >16)	Gender (M vs F)	Note
5. Satisfied with appearance of teeth	ns	0.036	Higher dissatisfaction in males
11. Hand in front to hide teeth	ns	0.003	Higher in males
12. Feel people stare at teeth	0.003	ns	Higher in older adolescents
17. Frustrated when seeing others' teeth	0.017	ns	Higher in older adolescents

Note: All other PIDAQ items: no significant differences by age or gender at α=0.05.

Supplementary Figure S1. Example of the Series of Photographs of the Participants



Supplementary File S1. Protocol for Using DESI Smile Analysis Tool

- In case of asymmetrical discrepancy is present between left and right side, the more deviating side will be considered in the analysis.
- Photos to be adjusted (by rotation) to make the facial midline vertical which determined by the eyes or eye shadows, nose, and chin.
- Intraoral:
  - 1. Gingival contour:
    - Each group of central, lateral and canine on either side is scored separately.
    - Canines' zenith points to be higher than centrals' zenith points by **maximum** 1 mm or at zenith of centrals is accepted, more than 1 mm is considered deviating.
    - Canines' zenith points lower than centrals by **more than 1 mm** considered deviating.
    - Zenith of laterals to be lower than centrals' zenith points by between 0.5 and 1 mm, less than 0.5 mm or more than 1 mm, the tooth considered deviating.
    - If the zeniths of the central incisors are on different levels, 1 tooth deviance is counted.
    - Score 1= ideal, score 2= 1 tooth deviating, score 3= 2 teeth deviating, score 4= 3 teeth deviating, score 5= 4 or more teeth deviating.
  - 2. Interdental space (IS):
    - Presence of black triangles in between the teeth even if extremely small, the space is considered not filled.
    - Presence of gap considered not filled.
    - Score 1= IS completely filled, score 2= 1 IS not filled, score 3= 2 IS not filled, score 4= 3 IS not filled, score 5= 4 or more IS not filled.
  - 3. Continuity of upper arch:
    - For crowding, each case to be assessed mesially and distally, 1 tooth could be scored as 2.
    - Score 1= continuous dental arch (no gaps or crowding), score 2= 1 gap or crowding, score 3= 2 gaps and/or crowdings, score 4= 3 gaps and/or crowdings, score 5= 4 or more gaps and/or crowdings.
  - 4. Angulation of upper teeth:
    - Parallel or slight mesial inclination of crowns of centrals is accepted. **Distal inclination** is considered deviating.
    - Mesial inclination for lateral and canines is ideal. **Parallel and distal** inclination are considered deviating.
    - Facial midline is to be used for reference.
    - Score 1= ideal relation, score 2= 1 tooth deviating, score 3= 2 teeth deviating, score 4= 3 teeth deviating, score 5= 4 or more teeth deviating.
  - 5. Position of proximal contacts (PC):
    - The middle point from beginning of teeth touching to the first point of inter dental papilla between the teeth is to be considered the point of contact PC.
    - Beginning with the PC of centrals and continuing distally, the contact points to be elevating apically as going distally considered ideal.
    - **PCs missing or going coronally or on a straight line to the mesial PC,** are considered deviating.
    - Score 1= PCs ideal, score 2= 1 PC deviating/missing, score 3= 2 PCs deviating/missing, score 4= 3 PCs deviating/missing, score 5= 4 or PCs deviating/missing.
  - 6. Tooth color and color of restorations harmony:
    - First the dominant color among the 6 front teeth (incisors and canines) is identified and considered as the normal color. Then teeth with colors that deviate from this dominant color are counted.
    - If a single tooth has multiple distinct colors (due to fluorosis, plaque, caries, or stains), that tooth is considered deviating.
    - Score based on number of deviating teeth: 0 teeth=score 1 (perfect color harmony), 1 tooth=score 2 (minor variations), 2 teeth=score 3 (moderate variations), 3 teeth=score 4 (significant variations), 4+ teeth=score 5 (severe disharmony). If all 6 teeth each have multiple distinct colors, all are considered deviating, resulting in score 5.
  - 7. Width-to-Height Ratio of Upper Central Incisor:
    - Ideal Condition: Width-to-height ratio of 0.8 (80%)
    - Measure width and height of the most deviated central incisor
    - Calculate width-to-height ratio (Width/height).

- Scoring: Score 1: Ratio of 0.8 (ideal), Score 2: Ratio of 0.75 or 0.85, Score 3: Ratio of 0.7 or 0.9, Score 4: Ratio of 0.65 or 0.95, Score 5: Ratio of ≤0.6 or ≥1.0.

- Extra-oral:
  - 1. Relation Between Angulation of Upper Central Incisors and Facial Midline:
    - Most extreme rotated central incisor is to be considered if any is rotated.
    - Score 1 = central incisors are parallel to the facial midline; Score 2 = one of them (centrals) is at least 5 degrees rotated to the facial midline; Score 3 = one of them is at least 10 degrees rotated to the facial midline; Score 4 = one of them is at least 15 degrees rotated to the facial midline; Score 5 = one of them is at least 20 degrees rotated to the facial midline. Always use the most deviating central incisor for scoring.
  - 2. Exposure of upper front teeth by the upper lip during smiling (upper lip line):
    - The most extreme point from **any of the 4 incisors** deviating either positive or negative to be used for the measurement.
    - If all teeth are shown and some of the gingiva then the gingiva to the lip will be measured and if the numbers are in positive 0 to <2mm score 1, ≥2mm score 2, ≥4mm score 3, ≥6mm score 4 and ≥8mm score 5.
    - If zenith points of any of the 4 incisors are covered by the upper lip then the measurement will be by subtraction of what length is shown during smile from the full length of the incisor taken from the photo with the retractors, and if what is show is < 70% of the full length (full length in mm is multiplied by 0.7) by < 2mm then considered in score 1, ≥ 2mm is score 2, ≥ 4mm then score 3 is given, ≥ 6mm then score 4 is given, ≥ 8mm then score 5 is given.
  - 3. Parallelism lower lip line to the dental arch of upper teeth (Smile line):
    - **Tips of canine** are the points for the measurement of curvature.
    - If NOT shown, consider **Laterals, or what is shown**.
    - If no teeth edges are shown, then score 5 (extremely deviated) is given.
    - If the canines or laterals or the most separated teeth shown (priority to canines, then laterals then centrals) are connected by a line and the centrals' edges are below it then convex, if centrals are above the line then concave, if above it by 2 or more mm then distinctively concave, if on the line then straight, if the most separated teeth shown are not on the same line (and other teeth showing convex or straight pattern) one of them is deviated then oblique to be chosen.