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RESEARCH ARTICLE

REVISED Translation, cultural adaptation, and validation of a smile aesthetics scale for Peruvian stomatology students

[version 2; peer review: 1 approved, 2 approved with reservations]

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Abstract

Background

The absence of a culturally adapted and validated Smile Aesthetics Scale for Peruvian stomatology students reveals a significant gap in aesthetic dentistry and public health research. Addressing this gap is essential for accurately assessing smile aesthetic perception based on standardized photographic stimuli within this demographic, ensuring the scale's relevance and effectiveness across Spanish-speaking cultures. The aim of the study was to translate, culturally adapt, and validate the Smile Aesthetics Satisfaction Scale for Peruvian university students.

Methods

This research was applied, with an instrumental, cross-sectional, and descriptive design. Face validity was conducted with 10 students through unstructured interviews. Content validity was carried out by three experts. The validation of psychometric properties was performed on 190 students recruited through university dentistry social networks using simple random probability sampling. The Aiken test was used for face and content validity. Construct validity and internal consistency were examined through principal component and exploratory factor analysis, using promax and varimax rotations, and internal consistency was assessed with Cronbach's Alpha.

Results

Face and content validity confirmed that the items were relevant and applicable, highlighting the significance of the construct evaluated

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within the specific cultural context of the research. The adapted scale reflected high content validity, with a global Aiken's V of 0.83, emphasizing the clarity, coherence, and relevance of the items according to expert evaluation. The psychometric properties of the adapted scale were exceptional among the student population, evidenced by a Cronbach's Alpha of 0.889.

Conclusions

The translation and cultural adaptation process of the Smile Aesthetics Satisfaction Scale has proven to be successful not only in terms of coherence and fidelity with the original instrument but also in its applicability and relevance within the context of university dental students.

Keywords
Adolescent Health, Adolescent, Indicators of Quality of Life, Quality of Life, Health Related Quality Of Life

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REVISED **Amendments from Version 1**

The revised version of this article includes several methodological and conceptual clarifications in response to peer review comments. First, the description of the instrument has been expanded to provide a clearer explanation of its original conceptual structure, including the four theoretical domains (dentolabial, dentogingival, dental, and dental arch features) and their correspondence with the photographic items analyzed. The construct measured by the scale has also been clarified, emphasizing that it assesses smile aesthetic perception based on standardized photographic stimuli rather than personal satisfaction with one's own smile.

Second, the translation and cultural adaptation process has been described in greater detail, including forward translation, back-translation, and expert reconciliation procedures to ensure semantic and conceptual equivalence. Third, the statistical analysis section has been strengthened by incorporating confirmatory factor analysis (CFA) to test the four-factor model suggested by exploratory analyses, with model fit indices reported to support construct validity. Additionally, terminology regarding the study population and sampling approach has been refined to accurately reflect the inclusion of stomatology students and the nature of participant recruitment.

Finally, the Discussion section has been expanded to acknowledge methodological limitations, including the absence of test–retest reliability and convergent validity assessments, and to clarify the scope of generalizability. These revisions improve the conceptual precision, methodological transparency, and psychometric robustness of the study.

Any further responses from the reviewers can be found at the end of the article

Introduction

Research underscores the vital role of effective public health policies in improving global quality of life and longevity, emphasizing the growing significance of university students within the young adult population. Notably, in Peru, this demographic represents a substantial portion of the youth, marking a demographic shift towards a more educated society with heightened aspirations for improved quality of life, including oral health.[1,2] The focus on the well-being of university students, particularly regarding their self-perception of dental aesthetics, has become increasingly prominent in public health due to its impact on self-esteem and social interactions.[3–5] The development of the Smile Aesthetics Satisfaction Scale for accurately evaluating smile aesthetics satisfaction underscores the necessity of its cultural adaptation and validation for use in Peru, a country with unique cultural, social, and educational characteristics.[6–8] Although termed a "satisfaction" scale, the instrument assesses aesthetic perception through the evaluation of standardized smile photographs rather than self-reported satisfaction with one's own smile. While adaptations exist for diverse populations, there remains a significant research gap concerning the Peruvian stomatology student demographic. This highlights the imperative for a linguistically and culturally pertinent version of the scale, requiring an in-depth revision of its items to ensure they resonate with the local population's perceptions, values, and aesthetic standards.[9,10] The validation process ensures the scale's reliability and validity, addressing an urgent need for precise, culturally sensitive psychometric tools to effectively measure dental aesthetics satisfaction among Peruvian university students.[11–13] The aim of the research was to translate, culturally adapt, and validate the Smile Aesthetics Satisfaction Scale as a measure of smile aesthetic perception based on photographic evaluation for Peruvian stomatology students.

Methods

Type and design study

The study was classified as applied research with an instrumental design. Our study has adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies. The study was approved with Official Letter from the Research Ethics Committee of the School of Stomatology N° 0119-2024-/UCV/P dated March 26, 2024. We adhered to the principles of the Declaration of Helsinki.

Participants

The study involved 250 university stomatology students over 18 years old, recruited through university dentistry social networks using simple random probability sampling, proficient in Spanish, and who consented to participate. Exclusion criteria included sensory impairments or cognitive conditions that might affect their study comprehension. Sampling varied across validation phases, utilizing three dental experts for content validity and ten students for face validity, with a sample size of 190 for psychometric validation, selected through simple random sampling. The face validity was carried out on March 30, 2024. The participants included in the study were recruited between April 6 and April 20, 2024.

Instrument

The study utilized a survey method and structured interview technique with the Smile Aesthetics Satisfaction Scale translated, culturally adapted, and validated from its original English version proposed by Armalaite.[14] This instrument aims to identify the determinants of smile aesthetics as perceived by stomatology students and to examine

factors that may alter the perception of smile characteristics. It comprises three sections: sociodemographic data, closed-ended questions on facial aesthetic traits, and responses to standardized photographs of 17 different human smiles. In the original study, the photographs represent distinct smile aesthetic characteristics grouped into four conceptual domains: dentolabial, dentogingival, dental, and dental arch features. In the present adaptation, the 17 photo-items were retained and coded into four domains (D1–D4) consistent with these conceptual groupings; each domain comprises specific photo-items representing a single aesthetic characteristic per image. The chosen image for the questionnaire was a frontal view showing the anterior teeth, surrounding gingival tissues, and lips. This image was specifically cropped to minimize any confounding factors that could affect smile perception,[15] adhering to the diagnostic principles outlined by Fradeani.[16] According to these principles, the image must be standardized to ensure consistency across evaluations and to control for potential sources of variability. The instrument evaluates aesthetic perception through participants' ratings of standardized photographic images rather than assessing subjective satisfaction with their own smile. Thus, the construct measured corresponds to smile aesthetic evaluation based on visual appraisal of specific dentolabial, dentogingival, dental, and dental arch characteristics. The images were taken under standardized lighting conditions using a Canon EOS Rebel T7 digital camera at a fixed distance of 50 cm from the subject, with settings adjusted to ensure uniform exposure and focus. To control for bias and variability, all photographs were taken by the same operator, and the subjects were instructed to maintain a neutral facial expression. The images were then reviewed by an independent examiner to ensure compliance with the criteria before being included in the questionnaire. Students rated each photo aesthetically using a 5-point numerical rating scale (NRS), where 1 represented the best aesthetics and 5 the worst. A score of NRS $\geq$ 3.5 was considered the threshold for an aesthetically unacceptable smile, as recommended by Armalaite.[14] This threshold was established based on previous studies that identified it as a critical point for distinguishing between acceptable and unacceptable aesthetic outcomes.

Procedures

The study applied survey methods and structured interviews, incorporating four main validation phases: translation and cultural adaptation, face validity testing, and validation of psychometric properties, including content and construct validity, and internal consistency assessment using Cronbach's Alpha. Translation followed a forward–backward procedure. Two independent forward translations (English to Spanish) were produced and reconciled into a single version. An independent bilingual translator, blinded to the original instrument, performed the back-translation (Spanish to English). The back-translated version was compared with the original to assess semantic and conceptual equivalence, and discrepancies were resolved by consensus among the research team and a bilingual dental professional. A pilot face-validity assessment was then conducted with 10 stomatology students to evaluate clarity and comprehension prior to psychometric testing.

Statistical analysis

Data from surveys were first recorded and then transferred to an Excel spreadsheet for analysis with Google Sheets. A descriptive analysis including measures of central tendency for quantitative variables and frequencies for qualitative ones was conducted using JASP 0.18.3. The Aiken test, with a threshold above 0.7 and 95% confidence intervals, was employed for face and content validity, using Aiken's V Calculator. Construct validity was assessed through principal component analysis and exploratory factor analysis, utilizing the Promax and Varimax rotation methods respectively, to identify underlying factors and ensure data simplicity. Internal consistency was evaluated with Cronbach's Alpha, indicating good consistency with a minimum value of 0.70, using JASP 0.18.3 software.

Results

The translation and cultural adaptation phase began with the translation of Armalaite's study from English to Spanish by a professional translator. The translator and researcher worked together to reach a consensus, ensuring the translation's coherence with the original. A dental surgeon with certified English skills then reviewed the translated instrument, identifying areas for improvement and confirming its linguistic and cultural suitability.

Aiken's V coefficient analysis demonstrated high clarity (0.87 overall) and comprehension (0.86 overall) across the questionnaire's sections among stomatology students, indicating the instrument's strong face validity for the target population. Section 1 showed exceptional clarity with perfect scores for initial items, underscoring effective communication and understanding.

Demographic data revealed an average participant age of 23.7 years, balanced gender distribution (49.5% female, 50.5% male), and varied study years, providing a representative sample essential for interpreting the dental aesthetic satisfaction scale's validity and applicability. Study findings emphasize the smile as universally deemed a critical aesthetic trait in social interactions, with significant gender differences in facial feature focus but no variation by academic year, underscoring the study's relevance in evaluating smile aesthetics satisfaction among stomatology students.

The content validity of the psychometric instrument, as shown across tables, is affirmed by an overall Aiken's V coefficient of 0.83, indicating clarity, coherence, and relevance of the scale items. Section 1 achieved perfect scores for clarity and coherence, reflecting unanimous expert agreement. Sections 2 and 3 also demonstrated high levels of clarity and relevance, with notable items indicating strong expert consensus on their significance to the construct. These results underscore the instrument's robustness and its applicability in assessing dental aesthetic satisfaction, confirming its suitability for the research objectives and the target population's evaluation.

The overall Measure of Sampling Adequacy (MSA) for the study was 0.824, indicating a very good fit for factor analysis, with item-specific MSAs ranging from acceptable to excellent, especially for items assessing detailed dental aesthetic perceptions. Bartlett's Test showed a highly significant Chi-square value, supporting the suitability of data for factor analysis and highlighting the scale's internal cohesion. These results affirm the robustness of the adapted Smile Aesthetics Satisfaction Scale and its effectiveness in assessing dental aesthetic satisfaction in the specific educational and cultural context.

Principal Component Analysis revealed a Chi-square value of 303.582, indicating an excellent fit for the model with significant inter-item relationships. The analysis identified four main components that contribute significantly to understanding dental aesthetic satisfaction among stomatology students, highlighting specific dimensions like alignment and symmetry. Promax rotation facilitated the interpretation of these components, underscoring the multidimensional nature of smile aesthetics satisfaction. Correlations between components suggest a complex interplay of perceptions, each providing unique insights into aesthetic evaluation (Table 1).

The Exploratory Factor Analysis showed a significant Chi-square value, suggesting the factorial model fits well with the empirical data, effectively capturing the underlying dimensions of dental aesthetic satisfaction among stomatology students. The 17 photographic items were conceptually organized into four domains based on Fradeani's aesthetic diagnostic principles and the structure of the original instrument. These domains include dentolabial features (reflecting the relationship between teeth and lips during smiling), dentogingival features (addressing the harmony between teeth and gingival display), dental features (focusing on tooth-related characteristics such as shape, alignment, and proportions), and dental arch features (related to the overall curvature and symmetry of the arch). Varimax rotation clarified the distribution of items across four main factors, each representing specific aspects of smile aesthetics. This multidimensional structure was further elucidated through both unrotated and rotated solutions, highlighting the complexity

Table 1. Factor-based parallel component analysis.

	RC1	RC2	RC3	RC4	Uniqueness
D1 – I1			0.981		0.050
D1 – I2			0.974		0.056
D1 – I3			0.930		0.114
D2 – I1				0.896	0.176
D2 – I2				0.781	0.291
D2 – I3				0.890	0.269
D3 – I1	0.710				0.472
D3 – I2	0.804				0.395
D3 – I3	0.748				0.485
D3 – I4	0.759				0.422
D3 – I5	0.612				0.481
D3 – I6	0.710				0.441
D3 – I7	0.775				0.392
D4 – I1		0.996			0.042
D4 – I2		0.878			0.110
D4 – I3		0.971			0.073
D4 – I4		0.929			0.092

Note. The rotation method is promax.

Table 2. Exploratory factor analysis: Factor loading.

	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
D1 – I1			0.968		0.041
D1 – I2			0.955		0.061
D1 – I3			0.874		0.200
D2 – I1				0.886	0.140
D2 – I2				0.670	0.419
D2 – I3				0.686	0.478
D3 – I1	0.642				0.550
D3 – I2	0.709				0.481
D3 – I3	0.629				0.591
D3 – I4	0.687				0.498
D3 – I5	0.582				0.566
D3 – I6	0.661				0.511
D3 – I7	0.712				0.457
D4 – I1		0.920			0.032
D4 – I2		0.814			0.157
D4 – I3		0.886			0.096
D4 – I4		0.853			0.129

Note. The rotation method is varimax.

and relevance of each dimension in assessing dental aesthetics. The analysis confirms the scale's robustness and suitability for evaluating aesthetic satisfaction in the cultural context evaluated (Table 2).

The initial steep decline in the scree plot suggests a dominant first factor significantly explaining data variance, with diminishing returns from subsequent factors—indicating a strong single factor might sufficiently represent the factorial structure in stomatology student population (Figure 1).

The path diagram visually demonstrates the factorial structure, showing items' associations with identified factors through line thickness, which indicates the strength of their factorial loadings, thus revealing the dimensions measured by the Smile Aesthetics Satisfaction Scale in the stomatology student population (Figure 2).

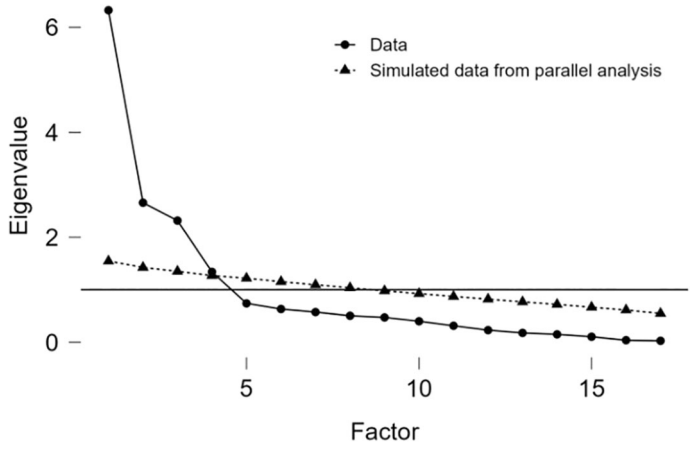


Figure 1. Scree plot.

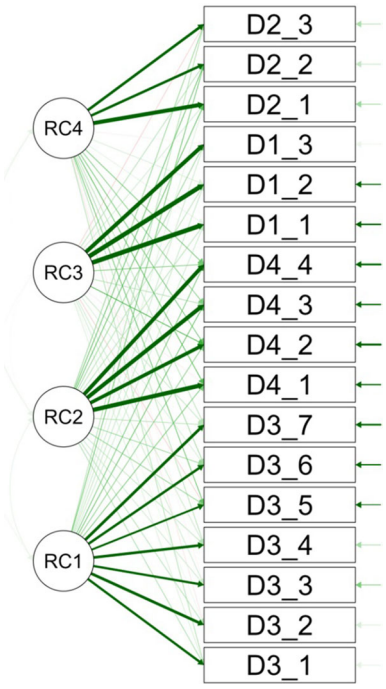


Figure 2. Path diagram.

The Smile Aesthetics Satisfaction Scale showed high internal consistency in our study, with Cronbach's Alpha of 0.889, indicating that the scale items reliably measure a common dimension of smile aesthetic satisfaction among stomatology students in Moquegua. This level of reliability, supported by a 95% confidence interval ranging from 0.863 to 0.910, highlights the scale's psychometric robustness and ensures its suitability for assessing dental aesthetic satisfaction accurately.

Our item reliability analysis highlighted variations in Cronbach's Alpha upon item removal and item-total correlations, revealing that while D4 domain items significantly contribute to the scale's overall reliability, the Smile Aesthetics Satisfaction Scale maintains high internal consistency across all items, ensuring effective capture of key dimensions in dental aesthetic satisfaction (Table 3).

Table 3. Frequentist individual item reliability statistics.

Item	If item dropped	Item-rest correlation
	Cronbach's α	
D1 – I1	0.714	0.417
D1 – I2	0.729	0.437
D1 – I3	0.833	0.387
D2 – I1	0.780	0.531
D2 – I2	0.870	0.591
D2 – I3	0.819	0.407
D3 – I1	0.864	0.485
D3 – I2	0.840	0.421
D3 – I3	0.864	0.389
D3 – I4	0.884	0.489
D3 – I5	0.842	0.480
D3 – I6	0.878	0.521
D3 – I7	0.891	0.512

Table 3. *Continued*

Item	If item dropped	Item-rest correlation
	Cronbach's α	
D4 – I1	0.759	0.689
D4 – I2	0.851	0.756
D4 – I3	0.783	0.736
D4 – I4	0.917	0.753

Discussion

The translation and cultural adaptation process of the Smile Aesthetics Satisfaction Scale in Peruvian stomatology and cultural context has proven to be successful, maintaining coherence and fidelity with the original instrument while ensuring its applicability and relevance. The adaptation achieved conceptual precision, making the scale a reliable and understandable tool for the target population. It is important to note that the scale measures aesthetic perception based on photographic stimuli rather than personal satisfaction with one's own smile, which distinguishes it from broader oral health-related quality of life instruments.

Face and content validity, indicated by an overall Aiken's V of 0.83, highlighted the items' clarity, relevance, and cultural fit. This adaptation process, reflecting a consensus on the scale's applicability in the Peruvian environment, emphasizes the necessity of considering specific cultural characteristics in psychometric instrument adaptation. The scale's reliability, indicated by a Cronbach's Alpha of 0.889, significantly exceeds the acceptability threshold, affirming its utility as a measure of smile aesthetic satisfaction.[9,17]

Exploratory factor analysis revealed a cohesive and multidimensional structure, enriching our understanding of dental aesthetic perception. This high level of translation coherence and fidelity, akin to efforts by Bela Andela S. et al.,[18] underscores the effectiveness of collaboration between professional translators and bilingual experts. The item clarity and relevance, evaluated through face and content validity, confirmed the scale's appropriateness and significance for university students, aligning with dental aesthetics perceptions by Pattanik S et al.[19]

The study also noted the importance of considering individual dental dimensions variations, reflecting the cultural relevance and precision of the scale in measuring smile aesthetic satisfaction, resonating with the psychometric efficacy observed by Golshah A et al.[20] The exceptional internal consistency of our scale, similar to findings by Saltovic E et al.,[17] showcases the multidimensionality and cohesion of our factorial structure, supporting the scale's use for accurate and reliable dental aesthetic satisfaction assessment.

Our findings, alongside previous studies, underscore the importance of accurate and culturally adapted evaluation tools in dental aesthetics. The successful validation and adaptation of our scale affirms its potential as a concise alternative to longer instruments, facilitating its application in practice and research.

Despite limitations like the sample's limited geographic scope and the homogeneity of clinical experience among participants, the study's methodological rigor and internal consistency attest to its validity. The careful cultural adaptation of the scale, coupled with a thorough methodological implementation, highlights our work's significance in advancing knowledge in this area. By emphasizing the need for culturally sensitive and accurate psychometric tools for dental aesthetic satisfaction assessment, our research contributes significantly to understanding dental aesthetic satisfaction in a specific context, setting a valuable precedent for future research. The sample comprised stomatology students only; therefore, the results should not be generalized to students from other academic programs.

The translation and cultural adaptation process of the Smile Aesthetics Satisfaction Scale was validated in Spanish not only in terms of coherence and fidelity with the original instrument but also in its applicability and relevance within the university dental student's context.

Conclusively, this study underscores the validity and reliability of the Smile Aesthetics Satisfaction Scale as an assessment tool for dental aesthetic satisfaction. It recommends further studies to assess the scale's applicability in broader and more diverse populations, exploring its relevance and applicability across various demographic and clinical groups. Future actions should include the scale's implementation in clinical and educational practices and its utility in interventions aimed at enhancing aesthetic satisfaction and patients' psychosocial well-being.

Ethical approval and consent

The study was approved with Official Letter from the Research Ethics Committee of the School of Stomatology of Universidad César Vallejo N° 0119-2024-/UCV/P dated March 26, 2024. We adhered to the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants.

Data availability

Underlying data

Figshare: Dataset smile, https://doi.org/10.6084/m9.figshare.25962646.v2.[21]

This project contains the following underlying data:

- BD Smile scale.csv

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

Extended data

Figshare:Smile Aesthetics Satisfaction Scale, https://doi.org/10.6084/m9.figshare.26240450.v3.[22]

This project contains the following extended data:

- Smile Aesthetics Satisfaction Scale.odt

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

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The manuscript details the translation, cultural adaptation, and psychometric validation of the "Smile Aesthetics Satisfaction Scale" for use among Peruvian stomatology (dentistry) students. This observational, cross-sectional study employed a forward-backward translation process and evaluated the instrument's face and content validity using a panel of experts and a student pilot group. Psychometric properties were assessed using data from 190 participants, utilizing Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Cronbach's Alpha to determine internal consistency. The authors conclude that the scale is a reliable and culturally relevant tool for assessing dental aesthetic perception in this specific demographic.

- The manuscript identifies a specific research gap regarding culturally sensitive tools for dental aesthetics in Peru. The revised version (v2) has successfully addressed previous concerns regarding the description of the instrument's original conceptual structure and the four theoretical domains. The work cites relevant and contemporary literature from both global and local Peruvian contexts
- While the core methodology (cross-sectional validation) is appropriate for the stated aims, the work lacks certain standard psychometric validation steps. Specifically, in the "REVISED Amendments from Version 1"'section, the authors acknowledge the absence of test–retest reliability and convergent validity assessments but I'm unable to find those in the actual Discussion section. Without evaluating the stability of the instrument over time or its correlation with established related measures, the technical soundness is incomplete regarding full scale validation. Therefore, authors must include a limitation regarding this aspect.
- As another positive aspect, the manuscript provides a comprehensive description of the forward–backward translation procedure and the expert reconciliation process. The statistical methods, including the use of JASP software and specific rotation methods (Promax and Varimax), are explicitly stated. Following the STROBE guidelines further enhances the transparency of the reporting.
- No statistical alterations are in need, as the inclusion of Confirmatory Factor Analysis (CFA) in the manuscript provides the necessary statistical rigour to support the four-factor model suggested by the EFA. The reported Cronbach's Alpha (0.889) and Aiken's V (0.83) are correctly interpreted as

indicators of high internal consistency and content validity, respectively.
- - The conclusions regarding the scale's applicability and reliability are well-supported by the high Aiken's V scores for clarity and the significant factor loadings identified in the statistical analysis. The authors also correctly limit the scope of their conclusions, noting that results should not be generalised beyond stomatology students
- Some details are, however, in need:
Limitation: Stability Assessment - The absence of test–retest reliability is a significant limitation for a validation study. To confirm the instrument's reliability, the authors should ideally conduct a follow-up assessment with a sub-sample to calculate the Intra-class Correlation Coefficient (ICC). As you cannot include this calculation, a limitation has to be included in the discussion section
Another limitation for the study: Validity Testing - The manuscript lacks convergent and discriminant validity. The authors should ideally compare their scale results with an established measure of oral health-related quality of life or a similar aesthetic scale to confirm it measures the intended construct.
Reporting and Transparency (STROBE adherence):
Study Size Justification: Following STROBE item 10, the manuscript should explicitly explain how the study size of 190 (or the initial 250) was arrived at. Was a power analysis conducted for the EFA/CFA requirements? If not, include a statement regarding it.
Addressing Bias: Per STROBE item 9, more detail is needed on the "efforts made to address potential sources of bias". While the use of a single operator for photography is mentioned, other selection biases related to recruitment via "social networks" should be discussed.
Generalisability: The discussion of limitations regarding the "limited geographic scope" (Moquegua) and the "homogeneity of clinical experience" is excellent. However, the authors should further elaborate on the direction and magnitude of potential biases introduced by these factors, as required by STROBE item 19.
Minor Technical Revision:
Abstract Consistency: The abstract mentions a sample of 190 students, while the Methods section mentions 250 students were "involved". Ensure consistent terminology between "recruited," "eligible," and "analysed" populations to satisfy STROBE item 13a.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Biostatistics, Methodology, Epidemiology

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Version 1

Reviewer Report 06 September 2024

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Stjepan Spalj
Clinical Hospital Center Rijeka, J. J. Strossmayer University of Osijek, University of Rijeka, Kresimirova, Rijeka, Croatia

The manuscript presents results of process of validation of one instrument.
A lot of effort is visible, and I congratulate authors, still there is a room for improvements.
The instrument is not sufficiently described - how many dimensions does it have in original, what are the names of the dimensions? Anex contains some important information's that should be in text. If it does not have the same factor structure as original confirmatory factor analysis should be employed.
Some steps in validation are missing. Back-translation is usual step in and comparison of original and back-translated instrument. Additionally test-retest, responsiveness, convergent and discriminant analysis.
Sample included only dental student, but title implies that it included students of different programs. So findings can not be generalized to all students.

Is the work clearly and accurately presented and does it cite the current literature?
Partly

Is the study design appropriate and is the work technically sound?
Partly

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: validation of PROMs, quality of life instruments, orthodontics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 29 August 2024

https://doi.org/10.5256/f1000research.167524.r314555

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Ruchi Saini
Department of Orthodontics and Dentofacial Orthopedics, Subharti Dental College, Subharti University, Meerut, Uttar Pradesh, India

The article provides a comprehensive and methodologically rigorous exploration into the cultural adaptation and validation of the Smile Aesthetics Satisfaction Scale for Peruvian university students. The research underscores the growing importance of public health policies, especially in regions like Peru, where the demographic shift towards a more educated youth is becoming increasingly prominent. The focus on university students' self-perception of dental aesthetics is timely, given its significant impact on self-esteem and social interactions.
This article is an exemplary piece of research, offering valuable insights into the adaptation of psychometric tools for specific cultural contexts. Its meticulous approach, from the initial translation to the final validation, ensures that the Smile Aesthetics Satisfaction Scale is a reliable and culturally relevant instrument, making a significant contribution to the field of dental aesthetics and public health.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
I cannot comment. A qualified statistician is required.

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: orthodontics, class II correctors, obstructive sleep apnea, smile aesthetics, implants, orthognathic surgeries, aligners, artificial intelligence, self ligation etc.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Comments on this article

Version 1

Reader Comment 05 Aug 2024

Sandeep Singh, Management, Dr D Y Patil Vidyapeeth University, Pune, India

The practical implications of this research are profound. By offering a validated smile aesthetics scale specifically designed for Peruvian university students, the authors have given researchers, clinicians, and educators a dependable tool to evaluate smile aesthetics in this demographic. This scale has versatile applications, ranging from academic research and clinical assessments to the realm of cosmetic dentistry. Additionally, the detailed methodology presented in this paper provides a solid framework for future efforts in cross-cultural adaptation and validation studies.
The use of Varimax rotation to clarify the distribution of items across four main factors is particularly commendable. This technique not only enhances the interpretability of the factors but also ensures that each factor represents specific aspects of smile aesthetics. The detailed explanation of both unrotated and rotated solutions highlights the complexity and importance of each dimension, providing a comprehensive understanding of the multidimensional structure of the scale.
IT is an outstanding piece of scholarly work. It showcases a meticulous approach to translation and cultural adaptation, a rigorous validation process, and a keen sensitivity to cultural nuances. This paper not only contributes to the field of cross-cultural psychology and aesthetics but also provides a practical tool that can have a lasting impact on research and practice in Peru and beyond.

Competing Interests: No competing interests were disclosed.

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