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Carolina Camacho
Dominican University of California

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**Self Perception of Dental Esthetics and Its Impact Among Adults Self Esteem in Sonoma
and Marin County
Carolina Camacho
Dominican University of California**

Author's Note

**This research paper was prepared for Senior Capstone, taught by Dr. Michaela George, as
an integral component to the graduation process.**

Abstract

Background

One out of four American adults refrain from smiling attributable to the condition of their dentofacial area. The aim of this study was to analyze the relationship between self-perception of dental esthetics and individual self-esteem among Sonoma and Marin County adults. Analytical concepts and processes were utilized to determine and describe the statistical significance of this plausible association.

Methods

In order to assess the interconnection of this relationship from an analytical approach, an observational study design method was utilized consisting of both a quantitative and qualitative analysis. A total of 163 participants consensually responded to an online questionnaire containing questions and statements from the Rosenberg Self Esteem Scale (RSES), and Psychosocial Impact of Dental Esthetics Questionnaire (PIDAQ). Each respondent was verified to be over the age of 18 using an age-specific demographic question, among a few other demographic variables. Smile satisfaction was assessed with a single question on the survey. The Rosenberg Self Esteem Scale was computed through SPSS and calculated to determine high and low self-esteem categories. Questions from the PIDAQ were utilized in the survey in addition to other questions regarding self perception of dental esthetics to compute both the Dental Esthetic Scale (DES), and Self-Perception of Dental Appearance Score (SPDAS). An opt-in was voluntary in the survey to provide email for further contact to continue participating in the study. These participants were contacted via email for interview scheduling, and themes were gathered from each individual interview for qualitative analysis.

Results

Bivariate analysis was performed and results showed that age, gender, and orthodontic history were found to be statistically related to individual self esteem measured using the Rosenberg Self Esteem Scale. By using Binary Logistic regression it was concluded that there was a statistical association found between Smile satisfaction and self-esteem among this population. Smile satisfaction accounted for 15.3% of the variation in this analysis with an R2 value of 0.153. There was no statistical association found between the computed Dental Esthetic Score and individual self-esteem, showing only a 2.5% variation after adjusting for all variables. By performing a secondary binary logistic regression it was concluded that there was a significant relationship found between self-perception of dental appearance (SPDAS) and individual self esteem while taking into account all other variables. For this analysis all variables accounted for 18.4% of the variation between this exposure and outcome with an R2 value of 0.184. A few dominant themes between dental esthetics and appearance that were mentioned

during the interviews was the impact on confidence, the importance of the contribution to appearance, and the influential factors of dental esthetic standards.

Discussion

Within Sonoma and Marin County, there was a positive association found between self esteem and smile satisfaction. Furthermore, there was an association between self esteem and SPDAS score. On average, the higher the self perception of dental esthetics, the higher the self esteem after controlling for confounders. Although functionality of our oral region is significant to well-being, so is our individual self-esteem, and dental esthetics contribute to physical attributes which can impact self-perception of appearance and have an influence on health.

INTRODUCTION

The progression of oral health over the years has resulted in a better understanding of the strong connection between oral health, general health, and wellbeing. As a protective mechanism, the oral cavity is efficient in functioning against fighting infections a majority of the time, but alongside it can also be an entryway for many bacterial infections that can lead to disease and affect the health of an individual, or even damage the appearance of dental esthetics (World Health Organization et al., 2018, Colgate et al., 2019, Mayo Clinic et al., 2019). In addition, the mouth serves as an overall detector of certain diseases for medical professionals, including, diabetes, HIV/AIDS, and often can contain certain cancer markers (World Health Organization et al., 2018, Colgate et al., 2019, Mayo Clinic et al., 2019, National Institute of Dental and Craniofacial Research et al., 2014).

Over time, and the importance of esthetics has become more valued by individuals as molded by modern society beauty standards, leading to a shift in the demands of dental treatments (Gilbert et al 1988., Liebler et al. 2004). Prior dental demands essentially surrounded treatments relating to the operational restoration of damaged teeth caused from dental caries (cavities), but has now transitioned to increased demands for esthetic improvement (Beltran et al., 2015).

Facial constructs are essentially the most powerful components of overall appearance, with the eyes and mouth holding the most significance due to both these areas being primary sources of interaction and communication (Thompson et al., 2004). Therefore, an individual's dental esthetics are essential for expression, and are a major component of the appearance of the face (Huff, Kinion, Kendra, & Klecan, 2006). Satisfaction with one's own smile contributes

greatly to the way they are perceived by not only themselves but others as well. Appearance and a sense of attractiveness are important contributors in the psychosocial functioning of human entities, therefore personal oral health status may disrupt communication and interaction between individuals (Lindeberg et al., 2019). Within the United States, 22% of younger adults decrease personal engagement in interpersonal communication, therefore reducing social interactions due to the status of their oral health (American Dental Association et al., 2015).

In general, appearance can be a basis or foundation for the influence of an individual's perception of themselves, directly having an impact on the status of self-esteem (Dion et al., 1972). Not only does the dentofacial region serve as a general reference point for overall health, but this area appears to be a major contributing factor to the development of one's personality through self-perception of appearance and social experiences, therefore possibly influencing self-esteem (Kenealy et al., 1984, Theunissen et al., 2014, Dion, et al., 1972, Patzer et al., 1997). Appearance is highly correlated with attractiveness, and overall attractiveness is composed mainly of facial and bodily components. Dental appearance is a prominent construct of facial beauty, consequently, esthetics can become a burden on an individual's perception of self-worth, self-confidence, body image, and social interactions (Taibah et al., 2017). Oral health appearance plays a key role in appearance, and interpersonal communication, suggesting that it is a factor in influencing self-esteem (Thompson et al., 2004, Gazit et al., 2010).

Arguably, there is a wide range of evidence supporting the significance of an esthetically pleasing smile, but the demand for more cosmetic dentistry has only created an ethical dilemma (Gilbert 1988; Liebler et al., 2004). Esthetic dentistry is not a specified discipline in the dental field, but it reflects the ending result of the vast majority of dental treatments that are provided

(Blatz et al., 2019). Controversies surround the idea that esthetic dentistry has created a service that was not viewed before, as necessary for health. Self-perception has an overall psychological impact, however there is an ongoing conflict between the clinician and individual opinion considering the importance of dental esthetics to general well-being (Brisman 1980; Parrini et al. 2016). In addition, a majority of the literature surrounding dental appearance and its impact on self esteem has been conducted among children and adolescents, but has not targeted the adult population. Overall, many external factors can influence self-esteem both negatively and positively, but primary contributions to development include previous social experiences, and general appearance/attractiveness (Kenealy et al., 1984, Theunissen et al., 2014, Dion, et al., 1972).

This study will assess the association between self-perception of dental esthetics, and self-esteem levels amongst an adult population, considering most of the previous research has been conducted with minors, and the results have shown to be inconsistent (Alkhatib et al., 2005, Karasneh et al., 2009). Dentistry is composed of a variety of practices including: orthodontics, reconstructive, general, and cosmetic/esthetic, but an interdisciplinary approach for this aspect of medicine/health is needed. A mixed methods approach utilized questionnaires and focus groups to determine the importance of self-esteem and self-perception of dental esthetics in adults in Northern California.

METHODS

Population Recruitment/Data Collection

The primary data collection method of the research study was a questionnaire, and was distributed among a variety of adults (18 and older), within Sonoma and Marin County. For distribution of the survey 'Qualtrics' online survey generator and distributor program was utilized, and a survey link was provided on social media platforms including: snapchat, facebook, and instagram (Smith et al., 2002, Spiegel et al., 2012, Systrom et al., 2010, Zuckerberg et al., 2004). Faculty members at Dominican University participated by displaying a virtual QR code during class periods that directed students to the survey by using the camera feature on any phone. Smile Marin, a private practice for dentistry, was responsive in support with recruitment, and presented a QR code in their monthly newsletter. Follow-up emails/posts were formulated and sent out a total of three times for both the survey and individual interviews to engage more participation, and for participant scheduling in the interviews.

For qualitative analysis and the recruitment process it was optional in the survey to provide email for further contact to continue participating in the study. The 'Doodle' scheduling platform was used to coordinate meeting times (Brecht et al., 2007). Several times and dates were provided for organizational/accommodating purposes. Interviews were conducted via Zoom Video Communication Program, or by phone call (Yuan et al., 2011). Technical support during this process consisted of multiple apple devices for recording, and the voice memo application on each device was utilized simultaneously during the time of interview.

Subject Consent Process

On behalf of the Dominican University of California Institutional Review Board for the protection of human participants, this research study was issued IRBPHP approval (IRBPHP application #10809). The subject consent process consisted of two separate consent forms for both the assessment questionnaire and focus group interviews. Prior to the beginning of the online questionnaire, participants were presented with an online consent form, and were asked for virtual approval to participate and proceed in the research process. At the end of the questionnaire, an opt-in for the interview was included, and those that provided an email volunteered for further contact in regards to participation in the interviews. Prior to the individual interviews occurring participants were asked if they consent to the conversation and information being collected for analysis and confidentiality purposes.

Study Design/Survey Development

A survey constructed with qualtrics was distributed and labeled, *Dental Esthetics and Self-Esteem*, and was utilized to select the sample population of individuals over the age of 18 within Sonoma and Marin County, which included a total of 163 respondents. This was an observational study design that was composed of a descriptive health survey together with individual interviews. Analysis was conducted by applying a mixed methods approach with a quantitative aspect that included the Dental Esthetic and Self Esteem survey, and a qualitative aspect that included the individual interviews. The development of this survey was constructed using two models of assessment for self-esteem and self-perception of dental esthetics. The first

section of the survey included the Rosenberg Self-esteem Scale (RSES), which is a validated global measurement of the general self-esteem that one has in themselves (Rosenberg et al., 1965) The following section included a self-reported measurement of individual perception of dental appearance using the Psychosocial Impact of Dental Esthetics Questionnaire (PIDAQ), along with other questions used to analyze individual self-perception of dental appearance. Both these tools for evaluation asked or contained statements regarding specific areas of study that were inclusive of demographic information (gender, ethnicity, other), current sense of self-worth and self-esteem, orthodontic treatment status, current feelings towards dental appearance and self-reflection of one's smile.

Statistical Analysis

Statistical analysis was completed using IBM SPSS Statistics Data Editor Version 22 software (Hie et al., 1968). Bivariate analysis was utilized in order to determine associations between the outcome of interest of individual self esteem using the RSES scale (high self-esteem vs. low self-esteem) and all potential confounders including age, gender, location in Sonoma/Marin County, and prior orthodontic history (*Refer to Table 1*).

The three scales used to measure the exposure of self-perception of dental esthetics consisted of smile satisfaction, the Dental Esthetic Score (DES), and Self Perception of Dental Esthetics Score (SPDAS). Smile satisfaction was examined using a single question regarding how satisfied one is with their smile appearance. Originally, it was a four-point scale with a range from 'very satisfied' to 'very dissatisfied,' but was dichotomized into satisfied and dissatisfied for the purpose of analysis. Binary analysis was performed in order to determine if

smile satisfaction and self esteem were statistically significant (*Refer to Table 2*). For further analysis, the relationship between dental esthetic changes and individual self esteem was observed by separating a question on the survey involving lip shape/size, gingival(gum) color, teeth shape/size, teeth arrangement, teeth color into five separate questions and examining them individually by performing a Chi Square statistical test for each (*Refer to Table 3*). The alpha level utilized for statistical analyses was $p < 0.200$, or anything trending towards significance, and participants that failed to complete the survey or a question used to compute any of the variables were considered missing data, but were not accounted for during this analysis.

The DES scale or Dental Esthetic Score was created using a question on the assessment that involved oral features most unhappy with including all aspects of dental esthetics (lip shape/size, gingival(gum) color, teeth shape/size, teeth arrangement, teeth color). For analysis, this was separated into five separate ‘yes/no’ questions, and a computed sum was finalized for the DES score variable. The SPDAS Scale or Self-Perception of Dental Appearance Score included a series of questions regarding how one views and feels about their oral appearance. Each of the questions was ‘yes/no,’ and a computed sum was finalized for this score as well. By categorization of the DES and SPDAS variables independently from each other in association with self esteem, a Parametric Independent Samples T-Test was used after fulfillment of all assumptions (*Refer to Table 4 and Table 5*). Following these results, a binary logistic regression was conducted for this analysis to determine the statistical relationship between smile satisfaction (satisfied/dissatisfied) and self-esteem while accounting for confounders (*Refer to Table 6*). Multivariate logistic regression was also performed using the DES and SPDAS variable, while accounting for all baseline characteristic variables. These tests were performed

separately from each other (*Refer to Table 7 and Table 8*).

RESULTS

Quantitative Analysis

A total of 163 respondents participated in completing the Dental Esthetics and Self Esteem assessment, and a total of five continued with the research process by participating in a recorded discussion. *Table 1* describes a binary analysis of the relationship between baseline demographic and characteristics that were accounted for in this analysis. All the variables accounted for that may have been influential on the outcome of interest included age, gender, living in Sonoma/Marin County, and race/ethnicity, and prior orthodontic history. Age, gender, and orthodontic history were found to be statistically related to individual self esteem measured using the Rosenberg Self Esteem Scale. P-values were less than the alpha level of 0.200 for this analysis or trending towards significance, meaning rejection of the null hypothesis can be concluded, and confirming an association with these variables and self esteem. Age consisted of the lowest p-value ($p= 0.076$), resulting in 80.3% of young adults aged 18-35 with low self esteem, and 19.7% of older adults aged 36 or over with low self esteem. After conducting a Fisher's Exact parametric test, it was determined that smile satisfaction and the RSES (self-esteem) scale were statistically related (*Refer to Table 2*). The analysis of smile satisfaction and individual self esteem, while taking into account all of the baseline variables was examined by using binary logistic regression. It was concluded that there was a statistical association found between smile satisfaction and self-esteem among this population. Smile satisfaction accounted for 15.3% of the variation in this analysis with an R^2 value of 0.153 (*Refer to Table 6*).

In regards to *Table 4* and *Table 7*, the statistical association between the computed Dental Esthetic Score (DES), and Rosenberg Self Esteem Scale (RSES) was studied. These results did not show a statistically significant relationship with a p-value exceeding the alpha level ($p=0.251$), and logistic regression testing being inclusive of the null hypothesis during [OR=1.187 (95% CI, 0.847-1.663), $R^2=0.047$].

After performing an Independent Samples T-test, shown in *Table 5*, for the relationship between the SPDAS score and individual self esteem results showed a statistically significant relationship ($t=4.569$ (df=156), $p<0.001$). By performing a multivariate logistic regression for this analysis it was concluded that there was a significant relationship found between self-perception of dental appearance and individual self esteem while taking into account all other variables (*Refer to Table 8*). For this analysis all variables accounted for 18.4% of the variation between this exposure and outcome with an R^2 value of 0.184.

Analysis of personal dental esthetic change and individual self esteem determined that lip shape/size ($\chi^2=3.336$ (df= 1), $p=0.068$), arrangement of teeth ($\chi^2=7.265$ (df= 1), $p=0.007$), and shape of teeth ($\chi^2=5.889$ (df= 1), $p=0.015$), were statistically correlated with self-worth as independent variables. Statistical significance was inferred based on these results in association with a $p\text{-value}<0.200$.

Tables/Results
Study Sample

Variable	N(%)
Survey Respondents	163 (100.00%)

Table 1. Relationship Between Baseline Characteristics or Demographics and Individual Self Esteem (RSES Computed)			
Variables	Low Self Esteem	High Self Esteem	X2 (df), P-value
<i>Age</i>			
Young Adults 18-35	61 (80.3%)	74 (90.2%)	3.159 (1), p= 0.076*
Older Adults 36 and older	15 (19.7%)	8 (9.8%)	
<i>Gender</i>			
Male	16 (21.1%)	12 (14.6%)	1.114 (1), p= 0.291*
Female	60 (78.9%)	70 (85.4%)	
<i>Location (Sonoma/Other)</i>			
Sonoma/Marin (Yes)	44 (57.9%)	49 (59.8%)	0.056 (1), p= 0.812
Other (No)	32 (42.1%)	33 (40.2%)	
<i>Race/Ethnicity</i>			
White/Caucasian	35 (46.1%)	41 (50.0%)	0.703 (2), p= 0.704
Hispanic	23 (30.3%)	26 (31.7%)	
Other	18 (23.7%)	15 (18.3%)	
<i>Orthodontic History</i>			
Braces (Yes)	41 (53.9%)	54 (65.9%)	2.332 (1), p= 0.127*
Braces (No)	35 (46.1%)	28 (34.1%)	

*= Statistically Significant or Trending Towards Significance (p<0.200)

Table 2: Relationship Between Smile Satisfaction and Individual Self Esteem (RSES Computed)

<i>Smile Satisfaction</i>			
Variables	Low Self Esteem	High Self Esteem	X2 (df), P-value
Satisfied	66 (86.8%)	62 (75.6%)	3.235 (1), p= 0.072* Trending
Dissatisfied	10 (13.2%)	20 (24.4%)	

Table 3: Relationship Between Personal Dental Esthetic Change and Individual Self Esteem (RSES Computed)

Variables	Low Self Esteem	High Self Esteem	X2 (df), P-value
<i>Dental Esthetic Change</i>			
Gingival (gum) Color (Yes)	3 (4.2%)	1 (1.2%)	p= 0.343 (Fisher's exact test)
Lip Shape/Size (Yes)	8 (11.1%)	18 (22.2%)	3.336 (1), p= 0.068*
Arrangement of Teeth (Yes)	24 (33.3%)	12 (14.8%)	7.265 (1), p= 0.007*
Shape of Teeth (Yes)	4 (5.6%)	15 (18.5%)	5.889 (1), p= 0.015*
Color of Teeth (Yes)	33 (45.8%)	35 (43.2%)	0.106 (1), p= 0.744

*= Statistically Significant or Trending Towards Significance (p<0.200)

Table 4: Comparison Between Dental Esthetics Score (DES) and Rosenberg Self Esteem Score (RSES)

<i>Dental Esthetics Score (DES)</i>		
Variable	Mean(SD)	t(df), p-value
High Self Esteem	1.58 (0.997)	-1.151 (156), p= 0.251
Low Self Esteem	1.76 (0.937)	

Table 5: Comparison Between Self Perception Dental Appearance Score (SPDAS) and Rosenberg Self Esteem Score (RSES)

<i>Self Perception Dental Appearance Score (SPDAS)</i>		
Variable	Mean (SD)	t(df), p-value
High Self Esteem	3.49 (0.808)	4.569 (156), p<0.001*
Low Self Esteem	2.78 (1.101)	

Table 6: Binary Logistic Regression Model For Smile Satisfaction and Individual Self Esteem (RSES Calculated)

<i>Smile Satisfaction</i>			
Variable	B(SE)	OR (95%)	Model Fit
Smile Satisfaction (Yes)	1.601 (0.383)	4.957 (2.341-10.494)*	R ² = 0.153
Age	-0.903 (0.505)	0.405 (0.151-1.090)	
Gender	0.264 (0.456)	1.302 (0.532-3.184)	
Orthodontic History	-0.673 (0.363)	0.510 (0.250-1.039)	
Constant	-0.586 (1.154)	--	

*= Statistically Significant or Trending Towards Significance (p<0.200)

Table 7: Multivariate Logistic Regression Model For Dental Esthetic Score (DES) and Individual Self Esteem (RSES Calculated)

<i>Dental Esthetics Score (DES)</i>			
Variable	B(SE)	OR (95%)	Model Fit
Dental Esthetic Score (DES)	0.172 (0.172)	1.187 (0.847-1.663)	$R^2 = 0.047$
Age	-0.824 (0.478)	0.439 (0.172-1.120)	
Gender	0.444 (0.430)	1.560 (0.671-3.626)	
Orthodontic History	-0.470 (0.335)	0.625 (0.324-1.205)	
Constant	-0.244 (0.983)	--	

Table 8: Multivariate Logistic Regression Regression Between Self Perception Dental Appearance Score (SPDAS) and Individual Self Esteem (RSES Calculated)

<i>Self Perception Dental Appearance Score (SPDAS)</i>			
Variable	B(SE)	OR (95%)	Model Fit
Self Perception Dental Appearance Score (SPDAS)	0.929 (0.206)	0.395 (0.264-0.592)*	$R^2 = 0.184$
Age	-1.132 (0.523)	0.322 (0.116-0.899)*	
Gender	0.419 (0.466)	1.520 (0.610-3.789)	
Orthodontic History	-0.932 (0.385)	0.394 (0.185-0.837)*	
Constant	3.722 (1.326)	41.332	

*= Statistically Significant or Trending Towards Significance (p<0.200)

Qualitative Analysis

Qualitative analysis was conducted with the recording of individual interviews, and consisted of five dialogues from five separate participants. By organizing the conversations into common themes based on similar comparisons communicated during the interviews, there were significant concepts that were interconnected with dental esthetics and self-esteem. A dominant theme between dental esthetics and appearance that was mentioned was the impact on confidence, as well as the importance of the contribution to appearance. In support of the findings for this analysis, a constructed word cloud (*Refer to Figure 1*) depicts a summary of words that were common in all interviews, and many surrounded the importance of dental to overall health, and how it contributes appearance or what factors influence dental esthetic standards surrounding primarily cultural and societal aspects.

Figure 1: Word Cloud Representative of Qualitative Analysis From Individual Interviews.



DISCUSSION/CONCLUSION

By using the SPSS software and performing a statistical analysis of the Dental Esthetics and Self-Esteem dataset for Sonoma and Marin County adults, there were conclusions derived from examining statistical associations between demographics, self perception of smile satisfaction, self perception of dental esthetics, and self perception of dental appearance in connection with individual self-esteem. These variables were used for an in-depth analysis of this sample population in regards to their self-perception of dental esthetics and individual self-esteem, while adjusting for confounders. Previous studies focused on various ages have proposed significant findings in the relationship between dental esthetics and individual's psychological and social well-being, which is reflective in this study (Newton et al., 2003, Davis et al., 1998, Ulrich et al., 2007).

In conclusion, by examining the statistical significance between self perception of dental esthetics and individual self-esteem in Sonoma and Marin County adults over the age of eighteen, many conclusions could be drawn, and each research question was attainable. Within Sonoma and Marin County, there was a positive association found between self esteem and smile satisfaction. On average, the more satisfaction a person reported with their smile, the higher their self esteem after controlling for confounders. Additionally, there was an association between self esteem and SPDAS score. On average, the higher the self perception of dental esthetics, the higher the self esteem after controlling for confounders. These conclusions indicate similar findings to a study conducted on a cohort of young subjects, with results showing that self-perceived appearance of dental esthetics can be impactful on self-confidence, consequently affecting self-esteem (Afroz et al., 2013).

RSES and PIDAQ assessments are used around the globe to measure individual self esteem and self perception of dental esthetics (Rosenberg et al., 1965, Ulrich et al., 2007). Choosing to use these assessment tools, and creating scores based off of these measurements for analysis allowed for more reliability and accuracy of results. A mixed method study design for collection of data provides both efficiency in recruitment, along with context that can support measurements of statistical analysis that were found. The population was considered representative of the adult community in Sonoma/Marin therefore it can be generalized to the greater population based on sampling techniques, eligibility requirements, and derived demographics from data. Considering a mixed methods approach is efficient in data collection, along with other advantages, there are still limitations in this study design. Sample size of survey participants was not sufficient in size, and interview data was rich, but limited. Further, self-esteem is a generally complicated variable to measure, therefore there was likely bias and unmeasured confounding factors that were not adjusted for in the course of this analysis.

Oral health includes the aspects of both functionality, and esthetic influence on overall health, but this is overlooked in many aspects, and many practices focus mainly on functionality. Although functionality of our oral region is significant to well-being, so is our individual self-esteem, and dental esthetics contribute to physical attributes which can impact self-perception of appearance and have an influence on health.

Interventions and collaborative efforts of all aspects of dentistry are necessary to improve the overall health and well-being of individuals. Combining Cosmetic Dentistry, and General Dentistry practices by implementing new workforce training and modes of application could be beneficial to individual welfare, as well as expand the skill levels of those in the dental industry.

Dentistry is an interdisciplinary practice, and the regard to esthetics has become more demanding, and must be taken into consideration with patients for function and personal purposes (Spear et al., 2007). Additional studies are needed to analyze the magnitude of the impact of Self Perception of Dental Esthetics on individual self-esteem, especially targeting the adult population.

REFERENCES

- Afroz, S., Rathi, S., Rajput, G., & Rahman, S. A. (2013, December). Dental esthetics and its impact on psycho-social well-being and dental self confidence: a campus based survey of north Indian university students. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3792334/#CR2>
- Alkhatib MN, Holt R, Bedi R (2005) Age and perception of dental appearance and tooth colour. *Gerodontology* 22: 32-36. 16.
- American Dental Association, ADA. (2015). Oral health and well being in the US. Retrieved from <https://www.ada.org/~media/ADA/Science%20and%20Research/HPI/OralHealthWell-Being-StateFacts/US-Oral-Health-Well-Being.pdf?la=en>
- Blatz MB, Chiche G, Bahat O, Roblee R, Coachman C, and Heymann HO
Journal of Dental Research 2019 98:12, 1294-1304
- Brecht , M. (2007). Doodle. Retrieved from <https://doodle.com/en/>
- Brisman AS. 1980. Esthetics: a comparison of dentists' and patients' concepts. *J Am Dent Assoc.* 100(3):345–352. Crossref. PubMed.
- Colgate-Palmolive Company. (2019). Oral health and overall health: Why A healthy mouth is good for your body. Retrieved from <https://www.colgateprofessional.com/education/patient-education/topics/systemic/why-a-healthy-mouth-is-good-for-your-body>
- Dion K K, Berscheid E, Walster E. (1972) What is beautiful is good. *Journal of personality and Social Psychology* 24:285-290
- Dumitrescu, A. L., Dogaru, C. B., Duță, C., Zetu, I., & Zetu, L. (2014). The inter-relationships between body dissatisfaction, body image disturbance and oral health. *Procedia - Social and Behavioral Sciences*, 127, 368-372. doi:10.1016/j.sbspro.2014.03.273
- Gavric, A., Mirceta, D., Jakobovic, M., Pavlic, A., Zrinski, M. T., & Spalj, S. (2015, May 30). Craniodentofacial characteristics, dental esthetics–related quality of life, and self-esteem. Retrieved from https://www.sciencedirect.com/science/article/pii/S0889540615001985?casa_token=FL89ZUU_UeoAAAAA:7hAU9Dti18XKveCHSNV6QtixhLaj-tOXrlSKL06tUP150mf2jq3nu7di3wp7ggKGphPbjHcE1A
- Gilbert JA. 1988. Ethics and esthetics. *J Am Dent Assoc.* 117(3):490. Crossref. PubMed.
- Hie , N. (1968). Retrieved from https://www.ibm.com/products/spss-statistics?p1=Search&p4=p50715561164&p5=e&cm_mmc=Search_Google-_-1S_1S-_-WW_NA-_-spss_e&cm_mmca7=71700000060951760&c

- [m_mmca8=kwd-98310549&cm_mmca9=EAIAIQobChMIxMzUnIGj6QIVYSCtBh2TfQ09EAAYASAAEgKhGfD_BwE&cm_mmca10=407020396692&cm_mmca11=e&gclid=EAIAIQobChMIxMzUnIGj6QIVYSCtBh2TfQ09EAAYASAAEgKhGfD_BwE&gclsrc=aw.ds](https://pubmed.ncbi.nlm.nih.gov/150549/)
Liebler M, Devigus A, Randall RC, Burke FJ, Pallesen U, Cerutti A, Putignano A, Cauchie D, Kanzler R, Koskinen KP, et al. 2004. Ethics of esthetic dentistry. *Quintessence Int.* 35(6):456–465. PubMed
- Karasneh J, Al-Omiri MK, Al-Hamad KQ, Al Quran FA (2009) Relationship between patients’ oral health-related quality of life, satisfaction with dentition, and personality profiles. *J Contemp Dent Pract* 10: E049-56.
- Kenealy, P., Frude, N., & Shaw, W. (1989). An evaluation of the psychological and social effects of malocclusion: Some implications for dental policy making. *Social Science & Medicine*, 28(6), 583-591. doi:10.1016/0277-9536(89)90253-0
- Mayo Clinic Staff. (2019). Oral health: A window to your overall health. Retrieved from <https://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/dental/art-20047475>
- Newton JT, Prabhu N, Robinson PG *Int J Prosthodont.* 2003 Jul-Aug; The impact of dental appearance on the appraisal of personal characteristics. doi: 16(4):429-34.
- Parrini S, Rossini G, Castroflorio T, Fortini A, Deregibus A, Debernardi C. 2016. Laypeople’s perception of frontal smile esthetics: a systematic review. *Am J Orthod Dentofacial Orthop.* 150(5):740–750. Crossref. PubMed.
- Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press.
- Smith , R. (2002). Qualtrics. Retrieved from <https://www.qualtrics.com/>
- Spiegel, E. (2012). Snapchat. Retrieved from <https://accounts.snapchat.com/accounts/login?continue=https://accounts.snapchat.com/accounts/Welcome>
- Spear , F. (2007). A Multidisciplinary Approach to Esthetic Dentistry . *A Multidisciplinary Approach to Esthetic Dentistry*. Retrieved From https://go.digitalsmiledesign.com/hubfs/DSD%20Articles/Articles%20by%20others/Spear_Kokich_07.pdf doi: 10.1016/j.cden.2006.12.007
- Systemrom , K., & Krieger, M. (2010). Instagram. Retrieved from <https://www.instagram.com/?hl=en>
- Theunissen, Stephanie C P M, Rieffe, C., Netten, A. P., Briaire, J. J., Soede, W., Kouwenberg, M., & Frijns, J. H. M. (2014). Self-esteem in hearing-impaired children: The influence of

communication, education, and audiological characteristics. *PloS One*, 9(4), e94521.
doi:10.1371/journal.pone.0094521

Ulrich Klages, Nadine Claus, Heinrich Wehrbein, Andrej Zentner, Development of a questionnaire for assessment of the psychosocial impact of dental aesthetics in young adults, *European Journal of Orthodontics*, Volume 28, Issue 2, April 2006, Pages 103–111, <https://doi.org/10.1093/ejo/cji083>

World Health Organization, WHO. (2018). Oral health. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/oral-health>

Yuan , E. (2011, April 21). Retrieved from <https://zoom.us/>

Zuckerberg, M. Facebook. (2004, February 4). Retrieved from https://www.facebook.com/?styp=lo&jlou=AffW9wg2U_YsoZk2SZS1gd9Npl_aNINU7-OwLnZ4ppngGBb1dO8ESR6SpkOCdEKwZsnIDsSVBE3Buz7b-Ni_a_qL&smuh=17658&lh=Ac9II4O2CzGZZeye

SUPPLEMENTAL MATERIAL

TECHNICAL APPENDIX

Appendix A- Copy of Survey Questions

Part A: RSES Evaluation (4-point Likert scale)

1. I feel that I am a person of worth, at least on an equal plane with others
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
2. I feel that I have a number of good qualities.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
3. All in all, I am inclined to feel that I am a failure.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
4. I am able to do things as well as most other people.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
5. I feel I do not have much to be proud of.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
6. I take a positive attitude towards myself.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
7. On the whole, I am satisfied with myself.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
8. I wish I could have more respect for myself.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree

- d. Strongly Disagree
- 9. I certainly feel useless at times.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree
- 10. At times I think I am no good at all.
 - a. Strongly Agree
 - b. Agree
 - c. Disagree
 - d. Strongly Disagree

Part B: Dental Esthetics Questionnaire

- 11. What gender do you identify with?
 - a. male
 - b. female
- 12. What is your age? (fill in)
- 13. Do you currently live in Sonoma or Marin County?
 - a. yes/no
- 14. What is your ethnicity/race you identify with?
 - a. Caucasian
 - b. Hispanic/Latino
 - c. Phillipino/Asian
 - d. African American
 - e. Other (please list)
- 15. Have you had orthodontic treatment (braces) in the past or currently?
 - a. yes/no
- 16. How satisfied are you with your smile?
 - a. very satisfied
 - b. satisfied
 - c. dissatisfied
 - d. very dissatisfied
- 17. Reflecting on your own smile, what are the features you are most unhappy with? (select all that apply)
 - a. Gingival(gum) color
 - b. Lip shape/size
 - c. Arrangement of teeth
 - d. Shape of Teeth
 - e. Color of teeth
- 18. Do you refrain from showing your teeth when smiling?
 - a. yes/no
- 19. Do you feel comfortable with the appearance of your teeth when smiling?
 - a. yes/no
- 20. Are you satisfied with your smile in photographs, or when looking at yourself?
 - a. yes/no

21. Do you think others are satisfied with the appearance of your smile?
 - a. yes/no
22. Do you think the appearance of your teeth and smile impact your overall appearance?
 - a. yes/no
23. If there was something you wish to change about your dental appearance, which would it be?
 - a. Gingival(gum) color
 - b. Lip shape/size
 - c. Arrangement of teeth
 - d. Shape of Teeth
 - e. Color of teeth
24. If you are interested and willing to continue to participate in this study, please provide your email below to be contacted for further participation in a focus group interview. This email will be kept confidential with the personal investigator and will only be used for contact regarding this research study.

Appendix B - Copy of IRBPHP Approval Letter



November 14, 2019

Carolina Camacho
50 Acacia Avenue
San Rafael, CA 94901

Dear Carolina,

On behalf of the Dominican University of California Institutional Review Board for the Protection of Human Participants, I am pleased to inform you that your proposal entitled *Self Perception of Dental Esthetics and Its Impact among Adults Self Esteem in Sonoma and Marin County* (IRBPHP application #10809) has been approved.

In your final report or paper please indicate that your project was approved by the IRBPHP and indicate the identification number.

I wish you well in your very interesting research effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Carlos Molina".

Carlos Molina, Ed.D., LMFT
Chair, IRBPHP

Institutional Review Board for the Protection of Human Participants
Office of Academic Affairs | 50 Acacia Avenue, San Rafael, California 94901-2298 | www.dominican.edu