The Effect of Dental Restoration on Judgments of Social Interaction and Self-Esteem

There is a long established precedent of research that shows dental restoration is prevalent in western civilization and how it positively affects self-esteem and social interaction. The focus of this research will examine the perceived effect of dental restoration on self-esteem and social interaction. The rationale given for performing this study is to provide dental surgeons and dental offices with valuable information regarding their efforts to specialize in dental restoration. This knowledge can further increase office revenues and widen the list of clientele, while also expanding the access of dental restoration to lower economic sectors of the population.

In a research study on esthetic concerns and acceptability of treatment modalities in primary teeth, Sharat, Abdulrahman, Sultan, Fares, Al Bara & Mohammad (2016), have designed a study to examine the knowledge base of the children's aesthetic perception as relevant to the pediatric dentists. The participants were 321 parents and their children from the ages of 5 to 8 years old and were asked as to their opinion on the changes regarding the effects on appearance of their teeth due to dental caries and the materials used to restore them. A total of 107 children and both of their parents (321 total participants) who were seeking dental restoration or treatments were included in this study. The researchers developed a customized tool that comprised of a "picture" based questionnaire in order to show carious lesions and their treatments arranged in the form of a presentation. The tool was thoroughly validated and tested on 20 children and their parents in a pilot study. Sharat, et al (2016), noted that there was no difference noted between the children's responses and those of the parents. A post hoc sample power calculation was done using the G-power sample power calculator (University of Kiel, Kiel, Germany). The post hoc sample power calculation of the participant group presented with an effective size of 0.8 was determined to be 0.957 with a Cronbach's alpha of 0.05, using the variables esthetics, self-esteem and improved ability for enhanced social interaction. Less than 3% of the parents sampled had no previous experience with dental restoration and greater that 90% of the sample showed concern for the esthetics of the children's teeth, with mothers having the highest concerns, greater than 95% of mother's. Past dental relationships for the parents were greater than 94% for both parents in the category of previous dental

visits, but only 22% of mothers and 5% of fathers had orthodontic treatment, with less than 1% of the children having had treatment. Most of the treatment work had been posterior restoration or tooth removal for the parents with a minimum percentage of 65% for the fathers and 71% for the mothers, while only 27% of the children had posterior restoration treatment. When the researchers asked about esthetic anterior restoration treatment the percentages had reported lower to 32% for the fathers, and 40% for the mothers and only 8% for the children. Three categories were presented for potential repair options, for deep anterior caries the treatment options of an open (resin) faced stainless steel crown, or strip crown, or zirconia crown, were evaluated by the responding participants. The zirconia option was usually reserved for the most serious of restoration efforts, such as complete loss of teeth to the level of the gums. The limitations of this study sought only parents who were seeking treatment only for anterior decayed teeth. The study only focused on a limited set of treatment options, which were felt to be most commonly used choices in the study population. Tooth extraction was not given as an option to any of the participants in the study in order to limit potential options. Lastly, it must be considered that the validity of the statistics tool for the children is not as good as that for the parents because of possible child bias. The findings herein are a basis for encouraging dental restoration to improve self-esteem.

The research conducted by Zaleckiene, Peciuliene, Brukiene and Drukteinis (2014) aimed at discovering an overview for the etiology, prevalence and the possible outcomes of dental trauma. The researchers looked at the statistic that not all dental traumas are reported and that local behavioral and cultural diversities of countries could have an influence on the results as reported. While it is not merely a routine procedure to repair dental injuries most parents are not aware of the treatment procedure options, or even the prognosis severity. The researchers did uncover the fact that most of the peak dental traumatic injuries in permanent dentition did occur between the ages of 10-12 years of age. The consequences of dental traumas may have a lifelong impact on a person's quality of life and that is the reason why the treatment plans should be considered from different disciplines of dentistry. The participants were evaluated from a table of prevalence of traumatic injuries that spanned across 4 years, with sample sizes from 453 in Jerusalem in 2008 to 891 in Brazil in 2012, in all cases of the research, almost 10,000 participants comprised this multiyear study of traumatic injuries and how dental treatment supported the outcome of the patients. An interesting discovery of the researchers' study was

that an increase of just 3 millimeters of the dental overjet could increase the risk of dental traumatic injury by 5.4 times. Studies have shown that males receive traumatic dental injuries twice as often as females. Unfortunately, for the researchers, they report on a biased view of males, mildly discriminating toward them insinuating immature behavior leading to injury because they participate in activities which the researchers can only speculate are a typical causation of the dental injuries, and the researchers fail to properly identify that males merely participate in gender role sports, or that males are generally inclined to injury themselves because they are more aggressive in sports than females, nor because they are in anyway less mature than females and also that participation might be culturally driven and not a individual choice on the part of the male participant.

Zaleckiene, et al. make abrupt conclusions about reporting the costs, but they assemble the breakdown emphasizing focus on the costs and frequency of the dental injuries, and then re-focus their attention onto the dental pulp to expound the discussion. The researchers have listed a substantial amount of references in their paper, that being 85 reference articles and their section on the outcome of the traumatic dental injuries focuses on the dental pulp and the health of it. The reason they provide this additional relationship in the traumatic dental injury research is because they want to focus on the healing of the dental pulp and its ability fight infection as an added necessity in dental restoration. Certain factors can cause complications to the dental pulp, such as pulp necrosis, apical periodontitis and eventual discoloration of the tooth crown and fistulas. The concern the researchers have is for the death of the tooth pulp called necrosis causing poor restoration. The researchers do in fact mention the normal American method for pulp damage is pulpotomy, or pulp removal, or the tooth root extraction, i.e. root canal. The researchers could have been better served if they had a larger sample size, this limitation could be understood that the researchers used a large amount of emphasis on the literature review to seek answers from empirical experiments in the past that could have been duplicated in the present study even if only on a limited scale. The study validates the hypothesis in the current study that dental trauma diminishes self-esteem and that the restoration of oral deficiency can restore a positive image of one self.

The article by Capote (2015) approaches the issue of Epidemiology of sport related traumatic dental injury among United States high school student athletes from a very unique direction because the researcher cites a preventative approach in addition to a restorative option. The author uses

reported injuries as cited in a national sample from participating athletic trainers primarily at the high school level. The researcher has written on at least 10 years of cited reports from the sample of athletic trainers, from 2005 thru 2014 with the publication of the report in 2015, thus consisting of a year of publication in the research process. Of the sample of athletes and athletic trainers, the researcher focused on 20 sports that contained enough data to compile the research data. Of this data, the researcher then separated the data into 4 control groups related to sports injuries. The breakdown called case-control design groups, among these was the category of oral soft tissue injury. The incidence rate found by the researcher was 6.3 per million incidents that required immediate surgery, with 32% of the population size having the highest unique statistic of all sports injuries. A significant outcome of this research showed that wearing a mouth guard significantly reduced oral soft tissue injury among dental injuries. The researcher notes that dental trauma can result in esthetic defects, i.e. crown fractures and functional alterations, as well as life long mobility and pain. The research shows that children who reach adulthood without having had dental restoration have a 20 times higher incidence of poor quality of life function, compared to those who received dental restoration procedures. In the United States the replacement costs for even a single avulsed tooth ranges from $5,000 to $20,000. In addition to the basic cost, many adults and students reported that school and work time was lost due to the lack of treating the avulsion. Initially since 1962 when mouth guards were introduced to high school sports as mandatory it was initially surmised to be based upon a miniscule data sample that oral injuries were reduced by 48%, but the research has shown that this evidence and the data to support such a claim is lacking in both the national reports on oral injuries, as well as in the National Federation of High School Sports (NFHS) associations to support this claim. Likewise, even the American Dental Association (ADA) lacks any reported evidence in their yearly reports that mouth guards have shown a reduction in oral cavity injuries, as this report contains data on 29 related athletic activities nationwide annually. Trainers typically are only required to indicate whether the student athlete was wearing a mouth guard or not, and what type of guard was it, either, “boil-and-bite”, or professionally fitted custom appliance. A total of 300 reportable oral injuries were identified through the assessment system that the researcher used and covered over 9 years of reporting injuries. These injuries comprised of equal numbers of traumatic dental injuries compared to soft tissue injuries. Tooth fractures accounted for almost half the dental injuries, while

over 70% of soft tissue injuries resulted in lacerations. A limitation of the researcher's study was likely underreporting of the dental injuries potentially due to the lack of relative importance given to non-time loss injuries. As a result, most likely the researchers study reports only the more severe injury types. Therefore, the conclusions regarding the relative injury rates are likely higher in all categories due to underreporting of incidences, even though statistically they correspond to a Kappa = .86 there is no solid reason to believe that the mouth guard policy is an acceptable surrogate for the data measured. A strong conclusion of this literature that supports the hypothesis of the current study is that dental injury has a life long effect on the victim and dental restoration can benefit social interaction by reducing visual reminders of the injury.

In a research article written by David Locker (2005) regarding oral injuries in adults with ages ranging from 18 to 50, the researcher undertakes the task of compiling information on dental injuries in most adults, specifically in Ontario Canada. The objective of his study was to assess the prevalence of injuries to the mouth among adults. The researcher discovered that over 15% of subjects in the study reported a history of injuries to the oral cavity, both soft tissue and teeth. His discovery unveiled that over two thirds of the injuries happened before the age of 18 and were only reported afterward. Males were more likely to have these oral cavity injuries and also more likely to report them or have them fixed, through dental restoration procedures. He also discovered that the poorly educated and highly educated were the most likely subset in the population to have dental repairs, but unfortunately, he discovered that the middle class of the population, were the least likely to have dental repairs performed. During the course of his studies, he discovered that in 85% of the population studied, that over 38% of them reported chipped teeth and that over 26% broke one or more teeth. Additionally, the report indicates that over 25% of the injuries were avulsions and over 6% were luxations. Most disturbingly the researcher discovered that over 20% of the dental injuries had never been repaired by a health professional and the correlation had to do with the lower and middle levels of education which lacked the information to seek medical attention and dental repair services. Although not part of this present study, the following correlation is also interesting as well as disturbing, that along with dental injuries many of the patients also had related bodily injuries associated with the dental cavity trauma, and vis-versa, those who experienced primarily bodily injuries also reported having an associated dental cavity injury, but the author does not elaborate onto the specifics of the

associations. Embedded in the report though the author does cite that 10% of the dental cavity injuries were associated external to sports injuries and were highly related to various forms of violence which accounted for the injuries reported, but the relativity of the injuries are more strongly tied to sports injuries accounting for a relationship of more than two to one (OR = 1.99, relationship of sports injuries to non sports injuries) compared to non-sports related oral cavity injuries. Though the immediate causes of the injuries related to sports can vary widely, the primary cause of the injuries to the oral cavity associated with high-probability related to collisions in the bodily region that caused the injury, either from helmets, or sports objects such as hockey sticks, baseball bats, hard balls and of course bodily appendages, such as arms, legs and feet, as well as head-butt injuries to the face. The results of the self-report study conducted by the author indicates that dental trauma constitutes a significant health concern among adults, especially those in the lower age ranges that engage in sports or other life-styles which may involve various levels of violence. The author cites his conclusions to prevent or reduce such dental injuries starting with health programs that facilitate the education of dental protection from injuries, the usage of mouth guards and the safe participation in sports. The author notes that as these programs have grown since 2005, that new studies have revealed a decrease in dental injuries and the increase in the distribution of dental protective gear to prevent dental and oral cavity exposure to injuries.

The author notes the limitations of his study in the non-reported 20% of the injuries and makes mention of the need to address those 20% (one fifth) of the population that underreported. One fifth of the population in the study is a statistically significant proportion that could portray a substantial amount of additional information to a follow-on study and could reveal more about dental injury prevention and well as dental restoration. Likewise, understanding the severity of the dental injuries and the relationship to the socio-economic aspect of the injuries could help health professionals in understanding the best course of actions to take in such categories, giving support to the hypothesis of the current study.

The no dental restoration will receive lower ratings of self-esteem compared to the dental restoration. The female participants will give lower self-esteem ratings compared to the male participants. The female participants who view the no dental restoration stimulus will give the lowest ratings of attractiveness compared to the other three conditions.

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Method

Participants

The students were from a Psychology Research Methods course at California State University, Fullerton, and a Research Methods course at Fullerton College. The study included 14 males and 36 females. The participant's ages ranging from 18 to 53 (M = 22.28, SD = 5.81)

Procedure & Measures

A Qualtrics survey assessing social relationships relating to dental restoration was emailed to students in a Psychology Research Methods course at California State University, Fullerton, and a Research Methods course at Fullerton College. The links were sent via email and answered online.

Design

The current study used a 2 x 2 (IV x SV) design between subjects factorial. The participants were asked to respond to a picture stimulus and respond to statements relating to approachability, self-consciousness, attractiveness, self-esteem and social interaction using a standard 5-item Likert scale response system, with choices that ranged from Strongly Disagree to Strongly Agree.

Results

There was a difference between the dental restoration stimulus (M = 3.63, SD = .79) and the no dental restoration stimulus (M = 3.78, SD = 1.38) on ratings of social interaction, $F(1, 46) = .41$, $p = .523$. The male participants (M = 3.29, SD = 1.33.) rated the stimulus lower than the females (M = 3.86, SD = .96.) on social interaction, $F(1, 46) = 3.10$, $p = .085$. The was no dental restoration by gender interaction effect on social interaction, $F(1, 46) = .00$, $p = .966$, (see Figure 1).

A two-way ANOVA was used to analyze the effects of dental restoration and gender on social interaction and self-esteem. There was a difference between the dental restoration stimulus (M = 3.52, SD = .75) and the no dental restoration stimulus (M = 3.83, SD = 1.37) on ratings of self-esteem, $F(1, 46) = 2.78$, $p = .102$. The male participants (M = 3.86, SD = 1.29.) rated the stimulus higher than the females (M = 3.58, SD = .99.) on self-esteem, $F(1, 46) = .33$, $p = .566$.

The was a dental restoration by gender interaction effect on self-esteem, $F(1, 46) = 3.69$, $p = .061$, (see Figure 2).

Discussion

The results from the current study indicated that dental restoration did not have a positive outcome on judgements of the patient's self-esteem and social interaction based upon the statistical analysis of the current experiment and the supporting research. After analyzing the results, the current findings did not support the hypothesis. The findings on self-esteem with no dental restoration had higher ratings rather than with dental restoration. We also found that male participants rated the no dental restoration slightly higher in self-esteem than the female participants. These two results were unexpected since we concluded that having dental restoration would have higher ratings of self-esteem. Additionally, statistical analysis concluded that for higher ratings on social interaction for no dental restoration compared to having dental restoration. The one result that aligned with the original hypothesis confirmed our supposition that male participants did give a lower rating on social interaction than the female participants. We surmise that these findings may be due to the inequality of participants for both stimuli, as well as the fact that we compiled a small sample to survey. An enhancement of this study for future research would compile a larger sample group to get more statistical relevance. One option would be to expand this survey to more college students and even a sample that is other than enrolled in college. Judgements on partial dental restoration can also be studied, in a larger sample, for latter research to compare results.

References

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