

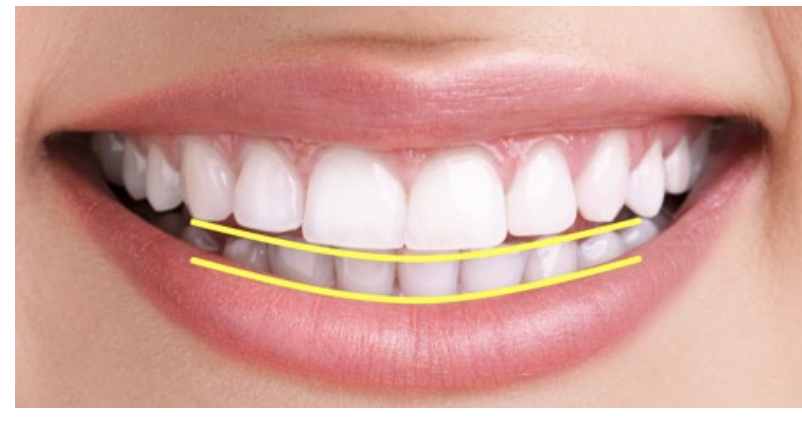


INTRODUCTION

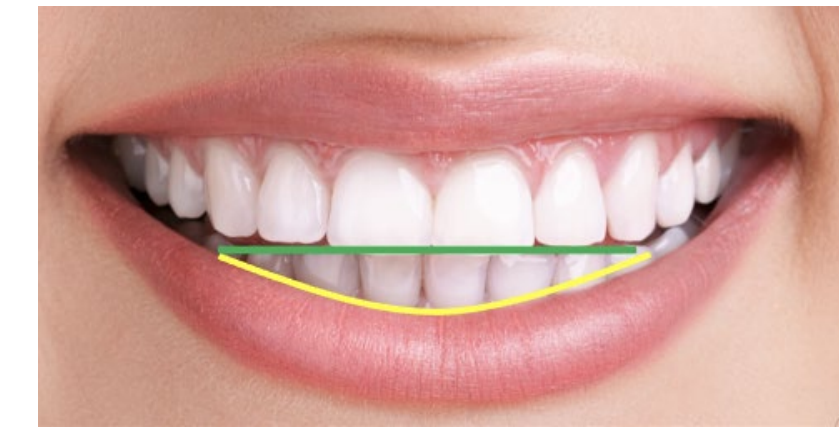
The progressive orthodontist is placing an emphasis on bracketing for **Smile Arc Protection (SAP)**, this esthetic technique aims to establish a smile arc where upper incisal edges follow the curvature of the lower lip in a posed smile, also known as a **consonant smile**.



SAP Approach



Consonant smile: maxillary incisal edges follow curve of lower lip



Non-consonant smile: maxillary incisal edges do not follow curve of lower lip

While studies have shown that the consonant smile is ideal for attractiveness, smile arc esthetics must be studied further. Many studies have shown that the lower lip curvature is important when treatment planning the final position of the maxillary incisal in an esthetic smile, however **the curvature of the upper lip to the position of the maxillary incisal edges has been mostly ignored**. This is important as the upper lip plays a vital role in framing the smile.

OBJECTIVES

This study will evaluate the upper lip curvature and its esthetic effects when it comes to the attractiveness of different smile arcs. We hope to show that while a consonant smile is attractive, in certain situations, **“straight” smile arc (Non-Consonant Smile)** may be equally or more attractive when the upper lip curvature is taken into consideration.

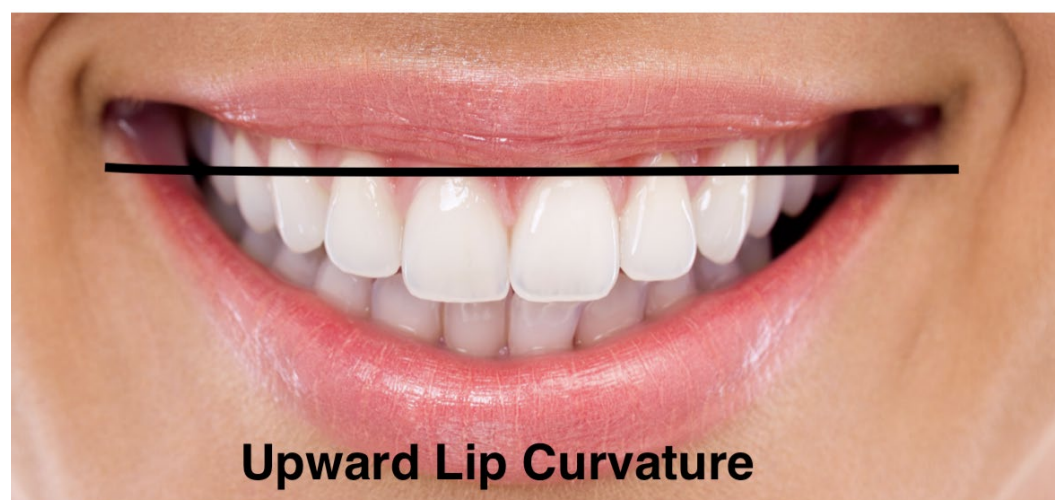
MATERIALS & METHODS

Stock images of 6 peoples smiles will be intentionally altered using Adobe Photoshop 2023. A control variable in this study will be an average smile line (this smile line is optimal when the upper lip reaches the gingival margins, displaying the the total cervico incisal length of the central incisors) amongst all the images. The sample of smiles will consist of 3 different types of upper lip curvatures.

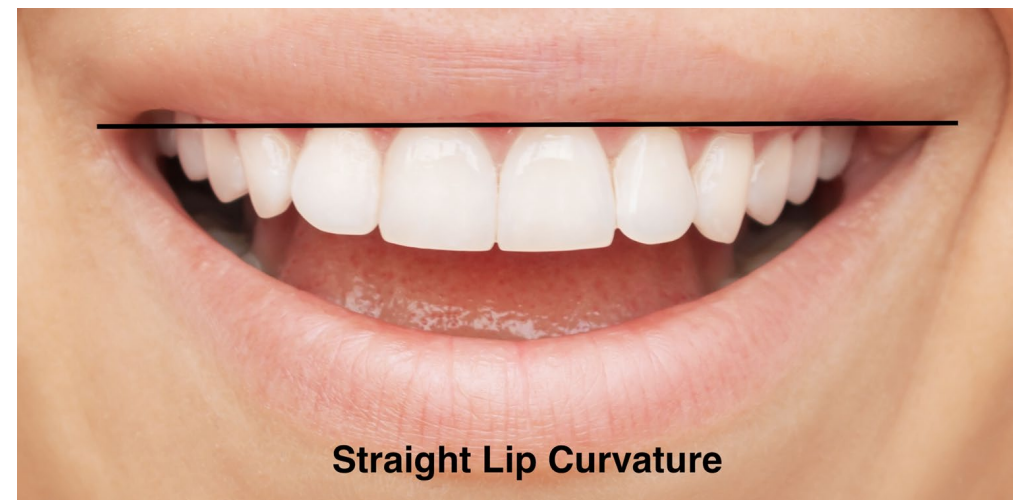
Upper lip curvature is determined by drawing a straight, horizontal line through the midpoint of the inferior border of the upper lip and evaluating its relationship with the corners of mouth.

Three types of upper lip curvatures are identified:

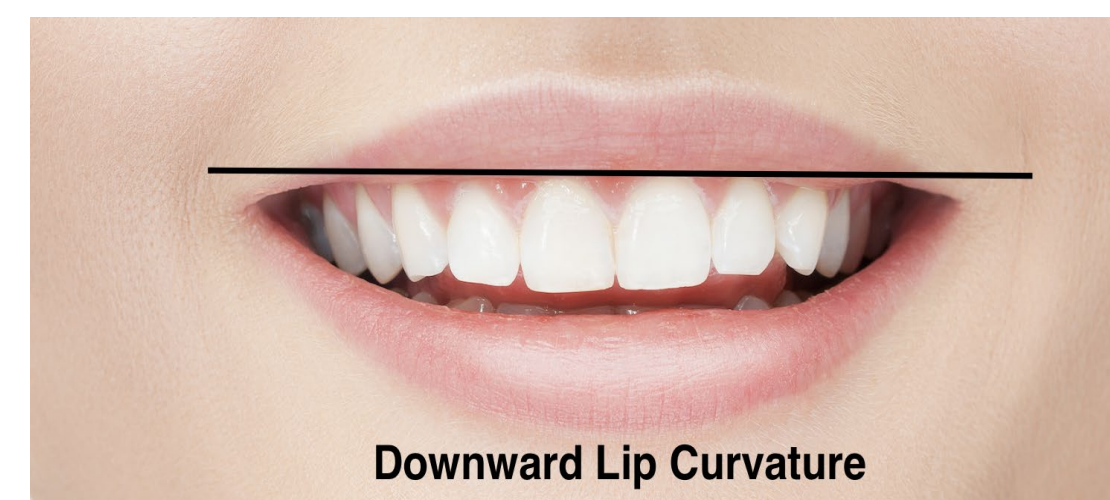
- **upward** (the corners of the mouth lie above the line),
- **straight** (the corners of the mouth lie even with or within 1 - 2 mm of the line)
- **downward** (the corners of the mouth lie below the line).



Upward Lip Curvature



Straight Lip Curvature

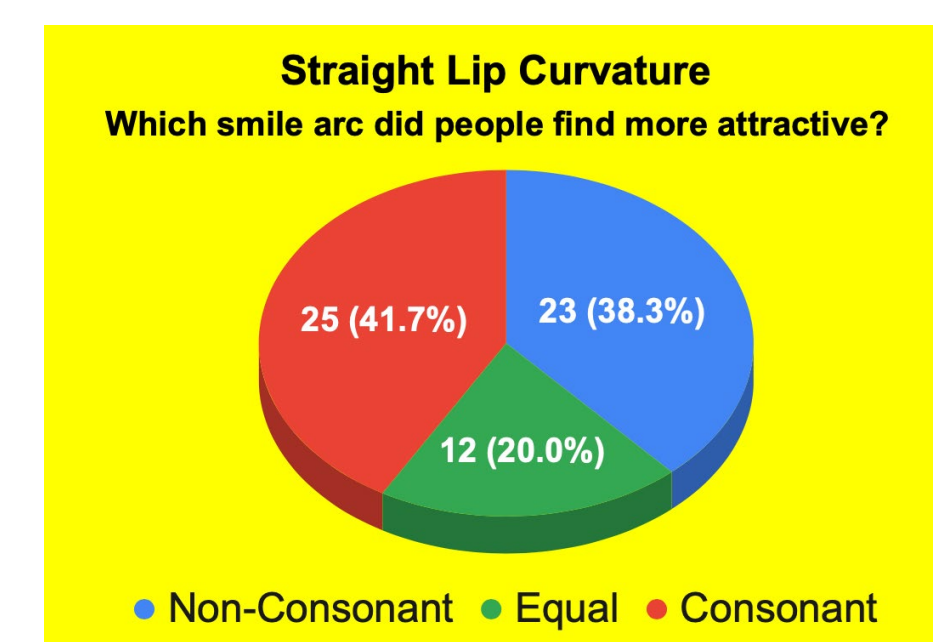
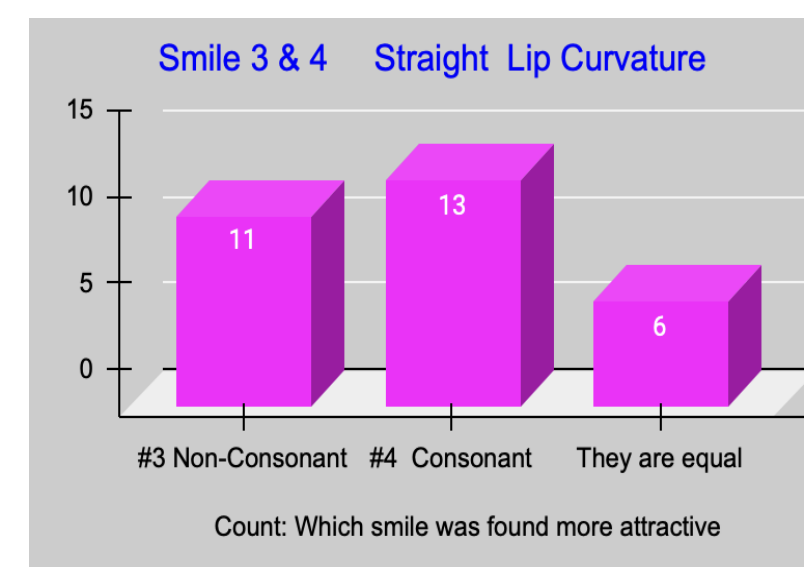
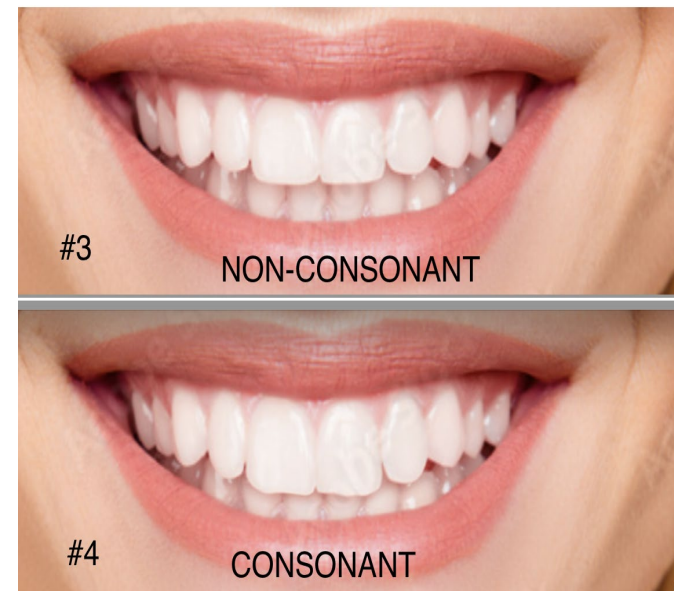
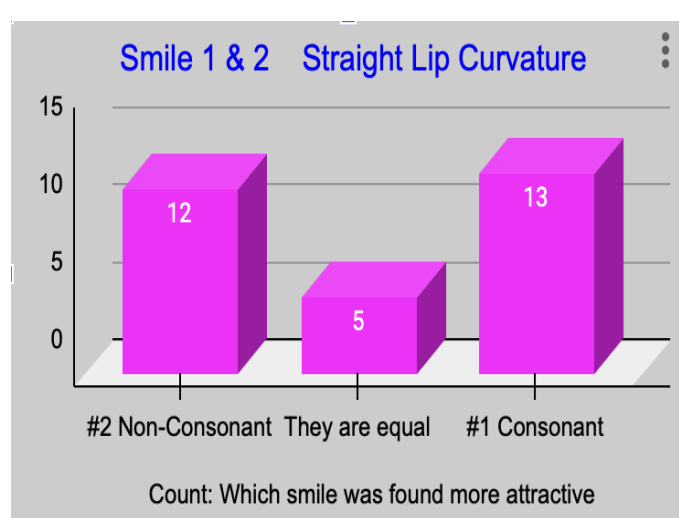
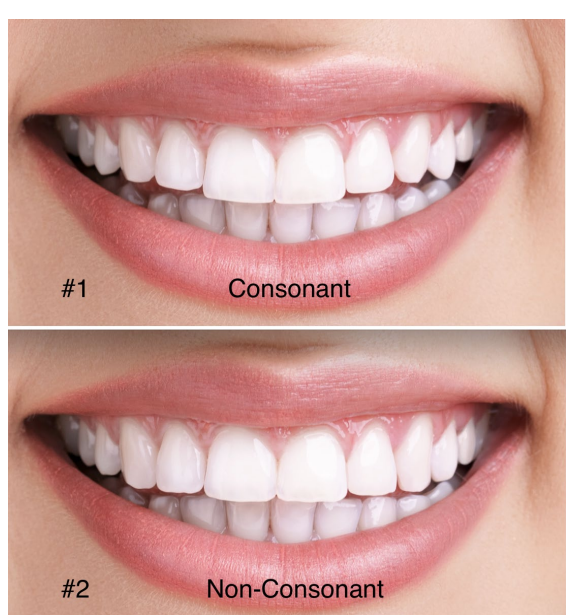


Downward Lip Curvature

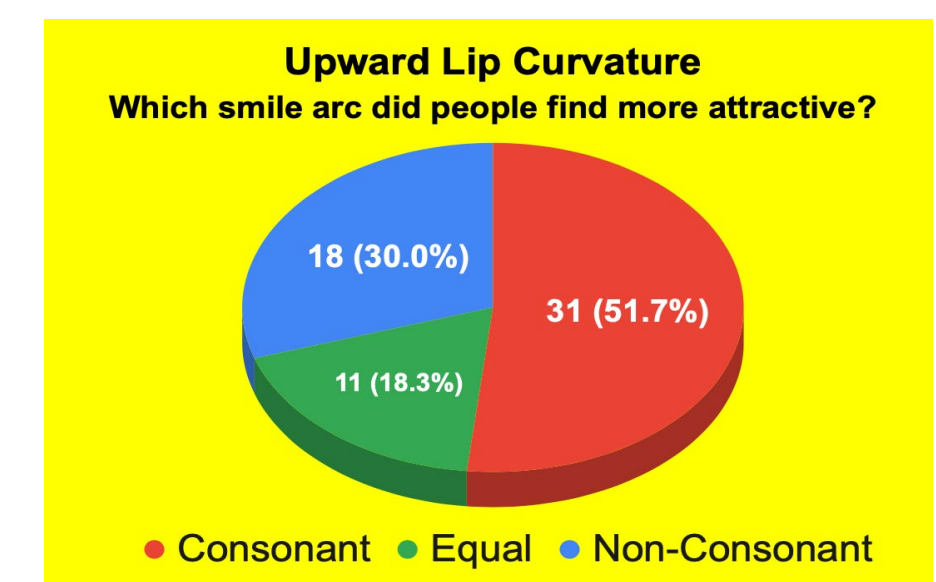
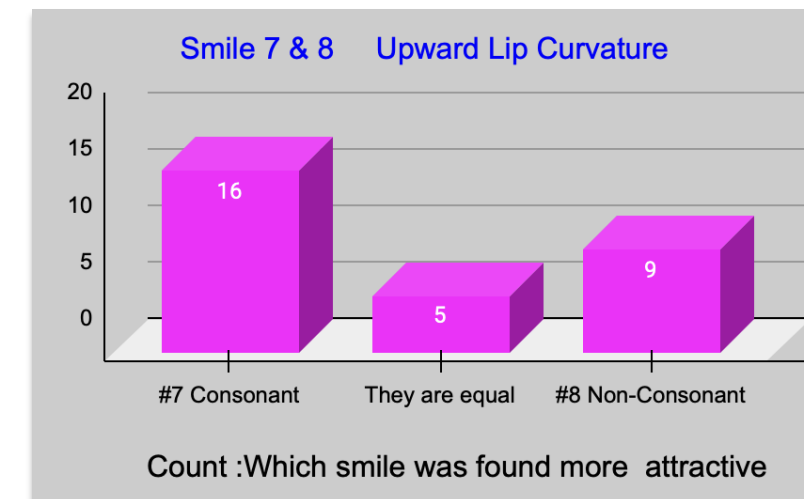
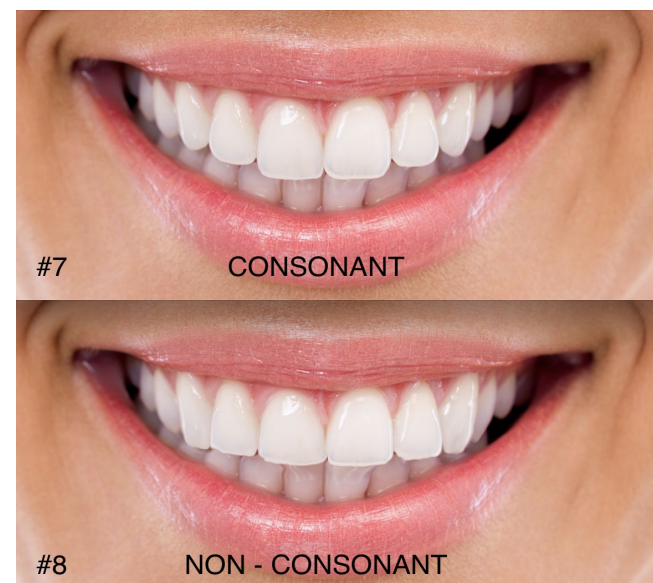
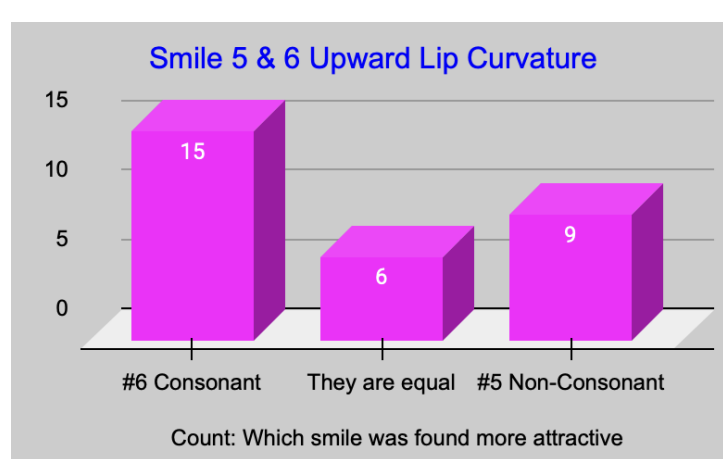
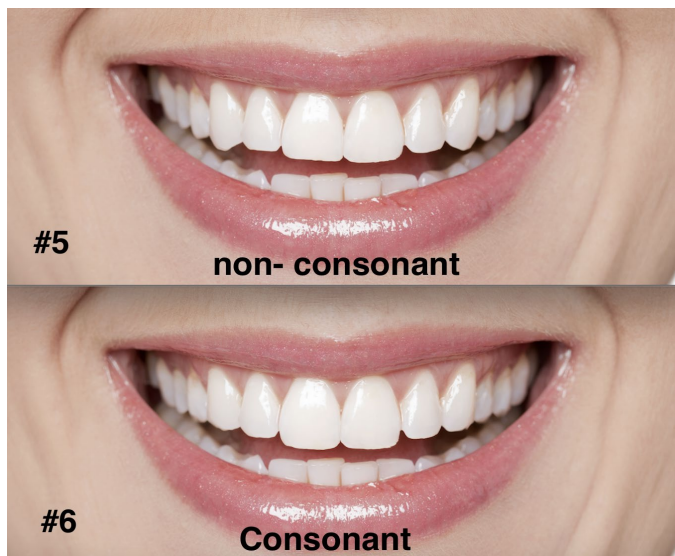
The alterations involve the position of the incisal edges of the maxillary anterior teeth so that each person will display two different smiles: one with a **consonant smile** and another with a **straight smile arc (non-consonant)**. A preliminary study was performed in which a panel of 30 laypersons, identified by gender participated in a survey where they compared each person’s altered smiles in terms of perceived attractiveness. A frequency distribution analysis of the responses was performed.

RESULTS

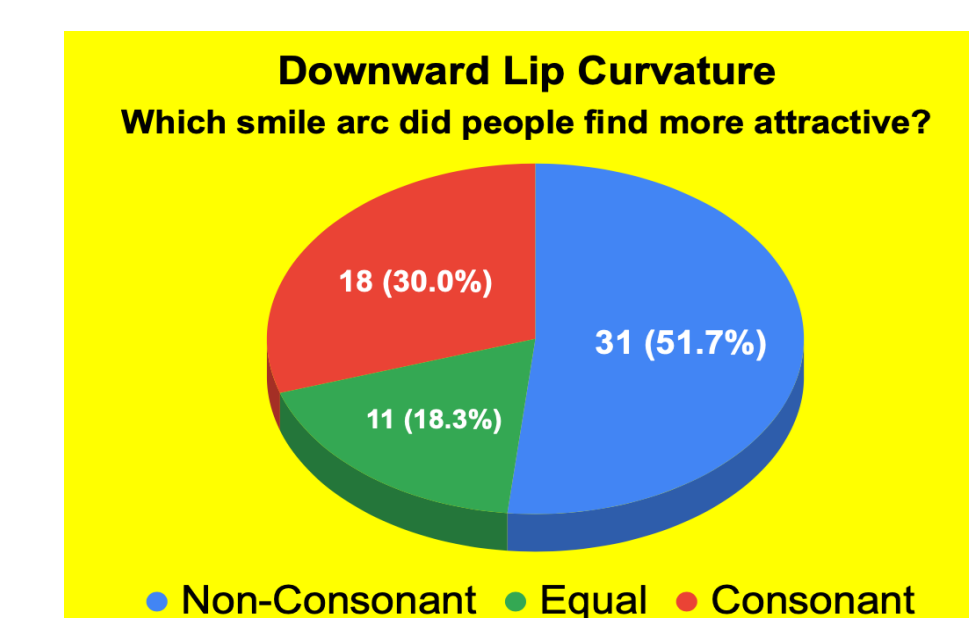
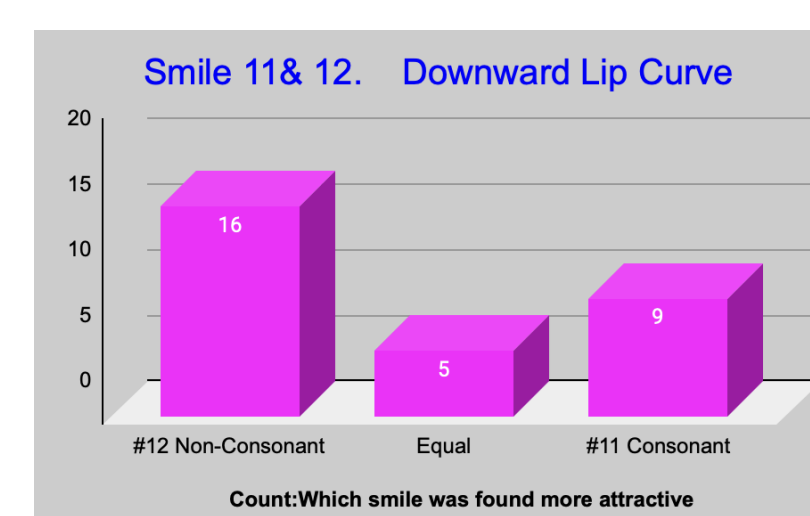
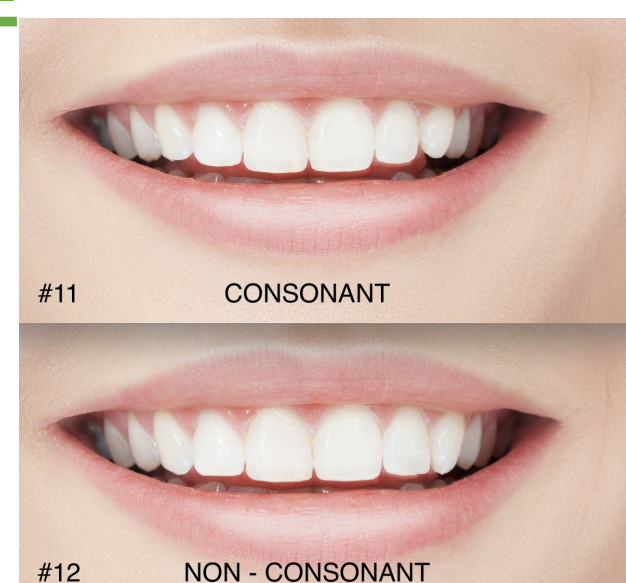
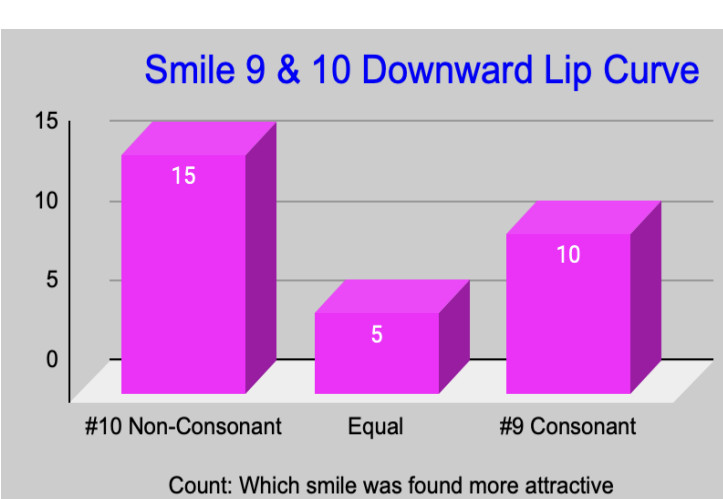
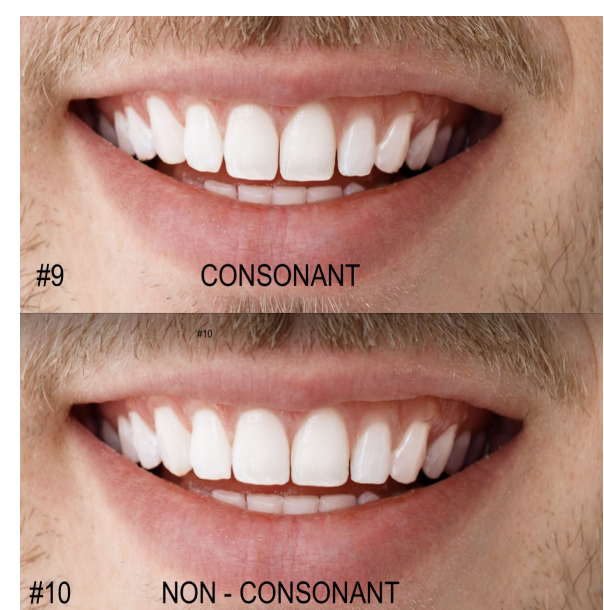
STRAIGHT LIP CURVATURE



UPWARD LIP CURVATURE



DOWNWARD LIP CURVATURE



CONCLUSION

The curvature of the upper lip can affect the esthetics and attractiveness of the ideal smile arc. When the upper lip curved upwards, the consonant smile, where upper incisal edges follow the curvature of the lower lip in a posed smile, was seen as most attractive. The straight upper lip curvature showed no significant difference in choice of attractiveness when presented with altered smile arcs. Lastly, when the upper lip curved downward, most people voted for the straight or non-consonant smile arc as most desirable. So while most articles have shown that the ideal smile arc should have the upper incisors following the curve of the lower lip, this study found that the upper lip can have a significant effect on what is more attractive and that not everyone will look better with a consonant smile. A detailed examination of the upper lip curve to the maxillary incisors should be included in treatment planning for the orthodontic outcomes and can be useful to the restorative dentist when involving anterior esthetics.