



Threshold Levels of Patient and Parent Esthetic Concern in the Mixed Dentition

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Introduction

- In the esthetic zone, mixed dentition is characterized by the eruption of permanent maxillary central and lateral incisors prior to the eruption of canines from approximately ages 8-12.¹
- Upon eruption, incisors are flared laterally due to canines constraining roots and prominent midline diastemas present in approximately 50% of children during normal development.²
- The "Ugly Duckling Stage" is characterized by incisor flaring and maxillary midline diastemas. It reaches its maximum at approximately age 10 and 55% of mothers have rated the "Ugly Duckling" stage as esthetically unpleasant.³
- Occlusal and space anomalies in the dentition may adversely affect body image in children and may continue through adolescence and into adulthood.⁴
- The purpose of this study is to determine threshold levels of concern regarding diastema spacing and angulation of maxillary incisors during the "Ugly Duckling Stage" in pediatric patients and their parents.

Methods

Recruitment: This is a cross-sectional study distributed to patients and parents presenting to the VCU Pediatric Dental Clinic for routine dental treatment or prophylaxis. All studies were completed on an iPad pro.

The following criteria were used:

- Any non-English speaking parents or guardians were excluded.
- Patients surveyed were aged 8-12 years old.

Data Collection:

- Both surveys contained identical photographs of a sex-neutral, mixed-dentition smile extending from subnasale to mento-labial fold which was digitally altered.
- Respondents were asked to answer demographic questions. Parent participants were additionally asked the age of their oldest child.
- Besides the baseline image, each image appeared with varying midline spacings in 1mm increments (1mm, 2mm, 3mm diastemas) or incisal angulations which randomly differed in 5 or 10 degree increments (5°, 10°, 15°, 20°, 30°, 40°) tipped distally.



- All participants were asked to rate each photograph on a visual analog scale in integer values from 0 to 10.
- For parents: "0 – absolutely no concern with appearance" to "10 – absolutely concerned with appearance."
- For pediatric patients: "0 – I do not like how this looks" to "10 – I do like how this looks."
- Adult respondents were separated into two groups based on the age of their oldest child: those who have experienced a child through the mixed dentition, defined as an oldest child that was 12 years or older, and those who are new to mixed dentition, which was defined as all those whose oldest child is less than 12.
- Study data was collected and managed using REDCap

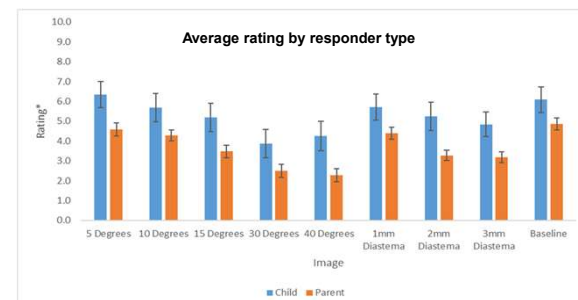


Figure 1: Survey Images. Note that images appeared in random order on the survey.

Statistical analysis: A two-way repeated measures ANOVA model with interaction term was fit to predict average approval ratings based on respondent type and image viewed, allowing for the ratings based on the image to be dependent on the respondent type. A repeated measures model was fit to estimate the effect of oldest child age on ratings of the images among the adult responses only. Post hoc pairwise comparisons were adjusted using Tukey's adjustment. The significance level was set at 0.05. SAS EG v.8.2 (SAS Institute, Cary, NC) was used for all analyses.

Results

A total of 107 parents/guardians and 25 children participated in the survey. The interaction between respondent type and image was not statistically significant. Ratings from the children were on average, 1.6 points higher than adults (p-value<0.0001). Images with 30 or 40 degree rotation were rated significantly lower than the baseline image, the images with 5 degrees of rotation, 10 degrees of rotation, and 1mm diastema. Adult ratings were significantly associated with the image viewed and the age of their oldest child. Respondents who were considered new to the mixed dentition (defined as having oldest child under 12 years old) rated images on average 0.95 points higher than those who have experienced the mixed dentition (oldest child 12 years and older). (p-value<0.0001) Note that higher ratings indicate higher acceptance.



Discussion

Overall, ratings indicated no strong acceptance of any image.

The pediatric population had significantly high approval of all the images when compared to the parent population. Children may not be as concerned about the appearance of maxillary anterior dentition as parents. No significant difference was found between boys and girls. Images with 30 or 40 degree rotation were rated significantly lower than the baseline image compared to the images with 5 degrees of rotation, 10 degrees of rotation, and 1mm diastema. Suggests that incisor angulation was a significant area of concern relative to diastema spacing. This survey is relevant to how we treatment plan and modify our relationship and thoughts with our patients and parents.

Conclusion

- Children aged 8-12 years old showed less concern with appearance of diastema and angulation variations within the anterior maxillary dentition relative to the parent population.
- Parents who have experienced a child through the mixed dentition (oldest child 12 years or older) showed significantly more concern with appearance of diastema and angulation discrepancies in the mixed dentition.
- Among all participants, images of maxillary central incisors in the mixed dentition with 30 or 40 degree rotation were rated significantly lower than the baseline image and the images with 5 degrees of rotation, 10 degrees of rotation, and 1mm diastema.

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