The Modified 5-Year-Olds' Index – development and validation of a reference set

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Scientific outline

As outcomes in cleft care have improved, it has become increasingly difficult to discriminate between the outcome categories of the 5-Year-Olds' Index, and therefore difficult to demonstrate continued improvements in outcomes. Research by Mittal (2017) aimed to develop and refine the original index to better discriminate between some of the outcome categories, using models selected from the CSAG and CCUK studies.

The verbal descriptors were used to develop the Modified 5-Year-Olds' Index (shown below) with five categories created from categories 1-3 of the 5-Year-Olds' index to increase discrimination in these categories, with the last two categories remaining the same.

5-Year Olds' Category	Modified Category	Features
1	1	Good positive overjet Good positive overbite Good archform Class II or I dentoalveolar relationship
2	2	Good positive overjet Crossbite on C only Class II/2 or Class I incisors
	3	Positive overjet Crossbite on some teeth in lesser segment (but some teeth not) Edge-to-edge incisors with no crossbites
3	4	Class III incisors Reducing overbite Nearly complete unilateral crossbite
	5	Edge-to-edge incisors Reduced/tenuous overbite Marked dentoalveolar compensation Unilateral crossbite
4	6	Negative overjet, incisors may be contacting Lower arch compensation Bilateral crossbite tendency Anterior open bite developing
5	7	Large reverse overjet Bilateral crossbite Anterior open bite

The validity of the Modified 5-Year-Olds' Index is comparable with that of the original 5-Year-Olds' Index (Mittal, 2017). A much more even distribution of scores was demonstrated across all seven categories of the modified index compared with the original 5-Year-Olds' Index. The modified index was found to be a reliable method of measuring the outcome of primary cleft surgery at the age of 5 years when used by expert assessors, and the index is able to discriminate more sensitively in the good outcome categories than the original 5-Year-Olds' Index.

In order for the index to be widely used in assessing the dentoalveolar outcome of primary cleft surgery, it is important that it can be easily and reliably used by assessors with a range of experience. The aim of the project is to assess the impact of calibration and use of reference models on the reliability of using the index. Participants are a mix of consultant orthodontists, post-CCST orthodontic registrars and pre-CCST orthodontic registrars. Participants will be equally divided into the following groups:

1. Information sheet on use of the index only
2. Information sheet and set of reference models
3. Calibration course, information sheet and reference models

The participants will be scoring 50 models taken from the CCUK set, representing the spread of dentoalveolar outcomes. They will score the models on two separate occasions. Statistical analysis will then be undertaken to compare groups and levels of experience (methods yet to be determined with statistician Dr Sam Leary).

Keywords: Modified 5-Year-Olds' Index, 5-Year-Olds' Index, reliable, primary cleft surgery, 5 years of age, calibration