The Development of the Curve of Spee in Australian Twins

Submitted in partial fulfilment for the degree of Doctor of Clinical Dentistry (Orthodontics)

by

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Summary

The objectives of this study were to investigate the development of the curve of Spee in Australian twins as well as to quantify the genetic contribution to the shape of the curve of Spee. The material used in the following study is part of an ongoing project at the University of Adelaide, investigating teeth and faces of twins. The sample investigated comprised pairs of Australian twins from the primary dentition stage through to the permanent dentition stage.

Dental study models of the primary (T1), mixed (T2) and permanent (T3) dentitions for each twin pair were mounted and photographed. Landmarks were then digitized and a 2-dimensional interpretation of the curve was analysed. Linear distances were then taken as a representation of the depth of the curvature. By digitizing each landmark, orthogonal polynomials were then fitted to the curve to allow a description of the shape of the curvature. To further investigate the genetic contribution on the development of the curve of Spee a classical twin model was used, broad sense heritability estimates were derived to quantify the extent of genetic contribution to the observed phenotypic variation.

The result indicated that the greatest change in the depth of the curve of Spee occurred between mixed and permanent dentitions while the primary to mixed dentitions showed a relatively flat curve. Depth changes were found to be larger in males during the transition to a permanent dentition. Heritability estimates indicated that there is a moderate to high genetic influence on the phenotypic variation of the curve of Spee.

Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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Dr Antonio Gagliardi

Dated

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