
Name *	Colleen Kummet
Email *	Colleen-kummet@uiowa.edu
Educational Level *	Masters Candidate
If Selected Other	
College *	College of Public Health
Department *	Biostatistics
Title of Research *	Estimating Multivariate Intraclass Correlation in Familial Root Length Data
Other Authors *	Colleen M. Kummet, MS (UI Biostatistics Department), Deborah V. Dawson, PhD (UI Department of Pediatric Dentistry and Dows Institute for Dental Research), Corey S. Jones BS (UI College of Dentistry), Robert N. Staley DDS, MS (UI College of Dentistry)
Introduction & Purpose *	Multivariate measures of intraclass correlation coefficients (ICCs) have been widely applied in the fields of psychology, epidemiology, and genetics to assess the familial resemblance with respect to multiple characteristics. These methods allow for the estimation of the overall intraclass correlation coefficient and the interrelationships between multiple characteristics within family groups. The purpose of this project was to adapt and apply methods of estimating the ICC in the context of multivariate familial root length.
Experimental Design *	Familial root length data including mesial and distal mandibular first premolar root length measures were collected for 30 adult individuals representing 15 sibships. Non-iterative methods for unbiased estimation of the multivariate ICC and variance due to Konishi et.al, Donner and Koval, and others were programmed into R statistical computing software. A multivariate (overall) measure of agreement across all measures was computed for mandibular first premolar root length. Multivariate root length was adjusted for gender effects using a linear model, and the adjusted data were used to compute the ICC estimation matrix and the overall multivariate ICC.
Results *	A moderate degree of resemblance existed (ICC=0.4272) between sibling measures of tooth 21 distal root length. The multivariate ICC estimation matrix provides estimates of interrelationships among measures, and an ICC=0.3957 was found to exist between sibling measures of distal root length (tooth 21 and tooth 28). Lower ICCs (0.20-0.33) existed for mesial root lengths. The multivariate coefficient of the degree of familial resemblance across all measures was ICC=0.4737.
Conclusions *	These results indicate moderate sibling correlations and interrelationships exist in mandibular first premolar root lengths. Methods for estimating multivariate ICC and matrices can be used to assess the degree of resemblance between dental measures with respect to multiple characteristics (a generalization of the current ICC methods) and interrelationships among the various characteristics.

Created
18 Apr 2011
10:39:36 AM

128.255.170.90
IP Address

PUBLIC