Effect of Like-Sexed Siblings on Crown Dimensions

S. M. GARN, R. L. WAINRIGHT, *and* P. E. COLE

Center for Human Growth and Development, University of Michigan, Ann Arbor, Michigan, 48109, USA

Normative values for mesiodistal and buccolingual crown dimensions are often derived from study samples containing siblings (MOORREES et al, *J Dent Res* 36:39–47, 1957; GARN, LEWIS, and WALENGA, *Arch Oral Biol* 13:841–844, 1968). In such instances the genetic N is obviously smaller than the number of subjects, and measures of central tendency and dispersion may both be affected by the "loading" of dimensionally-extreme sibships. The effects of such loading have not been ascertained, however, so that the propriety of using sibling-containing samples is as yet unknown.

To resolve this question we have made use of mesiodistal (and buccolingual) crown-size dimensions of 208 subjects (109 boys and 99 girls) based on measurement of an average of 3 independent casts per individual (MOYERS et al, *Standards of Human Occlusal Development*, 1976), with values as given in the table. In addition, we calculated means and standard deviations on a subsample excluding 29 like-sexed sibling pairs (11 sets of 2, 4 sets of 3 and 1 set of 4). These values are also given in the table.

As shown, crown-size means and standard deviations for the total sample (including 29 pairs of siblings) do not differ significantly from the restricted sample of 153, excluding all like-sexed siblings. For all teeth considered, differences averaged 0.02 mm for the mean mesiodistal crown dimensions and 0.02 mm for the standard deviations (SD). In no instance did the means differ by more than 0.06 mm, or the standard deviations by more than 0.03 before rounding off. In similar fashion, buccolingual crown-size measurements did not differ appreciably when the subsample was compared with the total sample, including like-sexed siblings. Thus, while the inclusion of large, dimensionally-extreme sibships in a relatively small sample N may still disturb measures of central tendency and dispersion, incorporation of up to 34% of like-sexed sibling pairs does not appreciably alter the odontometric measurements in a "normative" series totaling 208 children.

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TABLE

CROWN SIZE DIMENSIONS IN THE TOTAL SAMPLE AND IN THE SIBLING-RESTRICTED SUBSAMPLE

	Boys					Girls				
		Total Sample		Subsample			Total Sample		Subsample	
Tooth	N*	Mean	SD	Mean	SD	N*	Mean	SD	Mean	SD
				Maxillary						
I^1	106/71	8.87	0.58	8.88	0.60	95/76	8.66	0.53	8.71	0.54
I^2	99/65	6.85	0.64	6.89	0.60	84/66	6.82	0.62	6.82	0.58
C	76/53	8.01	0.41	7.96	0.39	62/51	7.51	0.33	7.48	0.35
P^1	78/53	6.76	0.49	6.82	0.49	62/53	6.58	0.48	6.60	0.49
P^2	65/45	6.64	0.38	6.64	0.40	49/42	6.49	0.50	6.48	0.52
M^1	109/74	10.60	0.58	10.62	0.57	95/76	10.17	0.60	10.19	0.59
M^2	60/42	9.54	0.71	9.55	0.72	41/36	8.74	0.75	8.75	0.76
				Mandibular						
I_1	107/73	5.54	0.33	5.55	0.31	98/79	5.47	0.34	5.48	0.35
I_2	104/70	6.05	0.37	6.05	0.36	93/74	5.93	0.35	5.92	0.35
C	86/57	7.00	0.40	6.99	0.41	74/62	6.60	0.33	6.58	0.32
P_1	81/56	6.91	0.64	7.01	0.59	66/56	6.87	0.60	6.90	0.58
P_2	66/48	7.18	0.50	7.19	0.53	53/45	7.02	0.47	7.04	0.50
M_1	108/73	10.68	0.64	10.70	0.64	95/77	10.32	0.76	10.36	0.76
M_2	57/41	10.05	0.65	10.01	0.62	46/41	9.48	0.57	9.49	0.59

* Total sample and subsample excluding like-sexed siblings.