

Sibling Similarities in Dental Caries

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Although dental caries experience clearly follows family line, information on sibling resemblance in the DMFT is surprisingly scarce. The most extensive sibling comparisons involve a limited number of boys and girls analyzed with respect to parental DMFT (RINGELBERG, MATONSKI, and KIMBALL, *J Public Health Dent* 34: 174-180, 1974).

In the present study, we have examined DMFT data from the Ten-State Survey of 1968-1970 (ROWE ET AL, *Pediatr* 57: 457-461, 1976). These new comparisons involved exactly 16,000 pairs of siblings, 8,674 of them black (American Negro, of largely African ancestry) and 7,326 white (of European derivation). For each age, DMFT correlations were calculated for boys and girls separately, for blacks and whites separately, and for the three types of sibling correlations (brother-brother, sister-sister, and brother-sister). Tabulations and correlations were arranged according to the midpoint age of the earlier born (older) sibling for each pair.

As shown in the table, sibling correlations for the DMFT are systematically positive and statistically significant overall, approximating 0.26 for white siblings and 0.40 for black siblings. As might be expected, sibling correlations for the DMFT increase through the earlier

years. Comparing the brother-brother, sister-sister, and brother-sister DMFT correlations, there is no evidence either for X-linkage or Y-linkage nor for like-sex correlations to exceed cross-sex correlations. However, the tendency for black boys and girls toward higher DMFT correlations is both statistically significant overall (mean $r = 0.34$; $P < 0.0001$) and by sign test as well ($\chi^2 = 21.78$). Correction for socioeconomic status through the use of per capita income did not alter these correlations by more than 0.02 overall.

Although the sibling correlations for DMFT in the present study ($r = 0.23$ to 0.41) are of an order of magnitude comparable to that for many genetically determined traits, an exclusively genetic explanation is not suggested here. The DMFT correlations resemble those for fatness in the same sibling pairs (GARN, CLARK, and ULLMAN, *Ecol Food Nutr* 4: 57-59, 1975) and for serum and urinary vitamins and intakes of specific foods in the same group. Moreover, these brother-brother, sister-sister, and brother-sister similarities in dental caries experience are not dramatically greater than husband-wife DMFT correlations which approximate 0.20 from the third to the seventh decades (GARN, ROWE, and COLE, *J Dent Res*, to be published). Since husbands and wives constitute genetically unrelated individuals living together, only part of the 0.23 to 0.41 sibling DMFT resemblance may have a purely genetic basis.

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SIBLING CORRELATIONS FOR DMFT

Age Midpoint	Brother - Brother		Sister - Sister		Brother - Sister	
	N	r	N	r	N	r
White						
7	142	0.24	124	0.09	316	0.25
8	185	0.20	157	0.19	338	0.23
9	196	0.25	147	0.23	347	0.17
10	207	0.28	189	0.18	313	0.14
11	250	0.21	218	0.31	334	0.16
12	259	0.24	225	0.36	364	0.22
13	225	0.34	192	0.38	331	0.28
14	188	0.41	173	0.32	245	0.28
15	165	0.37	210	0.36	181	0.32
16	162	0.26	154	0.42	161	0.19
17	131	0.24	139	0.27	111	0.30
18	74	0.36	79	0.08	94	0.22
All ages		0.28		0.29		0.23
Black						
7	152	0.14	151	0.15	301	0.21
8	172	0.24	175	0.18	347	0.40
9	210	0.32	196	0.35	382	0.40
10	210	0.34	209	0.41	324	0.44
11	204	0.17	247	0.53	347	0.38
12	259	0.38	255	0.45	375	0.43
13	246	0.36	274	0.41	305	0.43
14	293	0.47	266	0.38	349	0.46
15	213	0.40	290	0.38	283	0.42
16	183	0.54	261	0.48	227	0.43
17	171	0.46	214	0.49	170	0.41
18	126	0.40	151	0.43	136	0.50
All ages		0.36		0.40		0.41

Note: All values of r calculated as age-specific, sex-specific, and race-specific.