



Physical Anthropology Section – 2004

H35 Non-Metric Indicators of Ancestry: Making Non-Metric Traits More User Friendly in Racial Assessments

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Attendees at this presentation will be able to assess the utility of racial assessment of skeletal remains primarily between Caucasoid and Negroid ancestries. They will learn the accuracy of radiographic technique on cranial remains and which infracranial non-metric traits are best suited for accurate racial assessment. Finally, they will have an appreciation of the most productive infracranial traits used in discriminating between Negroid and Caucasoid ancestry in skeletal forensic cases or cases involving human rights violations.

The addition of techniques, procedures and methodology in the estimation of racial ancestry in difficult forensic cases—either current legal cases or cases of human rights violations.

During the last 25 years, a number of techniques have been employed to use non-metric traits, either singularly or in various sets, as an indicator of skeletal ancestry. Works by Finnegan and Schuller-Ellis, 1978; Coopriider et al., 1980; Finnegan and Rubison 1984; and Finnegan 1994, have addressed the usefulness of a variety of radiographic and observational non-metric trait techniques in assessing the racial affiliation of earlier human crania and infracranial skeletons and the more applied assessment of single skeletal remains to their parent racial group using various non-metric traits. While classification accuracy of pairwise comparisons ranges from 85% to 95% in infracranial archaeological and cadaver dissection room materials samples and specific cranial pairwise comparisons approach 98% accuracy between Caucasoid and Negroid cranial samples. However, a number of the necessary techniques are either quite time consuming or statistically tedious and therefore not in general use. A general, less cumbersome discriminant analysis is needed if non-metric infracranial traits can be employed in current and future case work in forensic anthropology.

To these ends, the data on thirty infracranial traits were taken on 356 individuals from three earlier archaeological samples; Aleuts, Coast Eskimo and Yukon River Eskimo, and two cadaver dissection room samples, Americans with predominately Caucasoid ancestry, and Americans with predominately Negroid ancestry. All samples were housed at the Department of Anthropology at the Smithsonian Institution. The sex of the skeletons was known in the dissection room samples. In the archaeological samples, sex was estimated on the basis of pelvic morphology. While infracranial non-metric traits are rarely significantly different from side to side in population samples, they are often asymmetric from side to side within the individual. Therefore, for the purpose of racial differences, each side was considered a data set, thus allowing 2N for our sample, or 712 items. Since all individuals did not have all or complete elements, the number of observations per skeleton varied slightly. As well, those elements showing pathology or trauma, either antemortem or postmortem, were also excluded. As a result, the final sample sizes were slightly reduced.

The criteria for scoring the non-metric traits was taken from Finnegan (1978). To eliminate inter-observer error, all observations and data recordings were made by the author. Skeletal elements read early in the day were reread late in the day to control any evolution in the reading criteria.

The results of pairwise comparisons and the accuracy of individual assignments varied considerably between population groups (68% to 92%). None of the individual comparisons met the accuracy suggested by reported cranial or infracranial non-metric population studies! However, some selection of particular infracranial non-metric traits did produce more consistent classification assignments (78% to 96%), but an a priori selection limiting the number of non-metric traits and population samples was necessary. This a priori selection may not distract from the usefulness of using infracranial non-metric traits in the assessment of ancestry in skeletal forensic cases or cases involving human rights violations.

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Finnegan M, Schuller-Ellis FP. The tympanic plate in forensic discrimination between American Blacks and Whites. *J Forensic Sciences*, 1978;23(4):771-777.

Race, Skeletal Remains, Ancestry