



Physical Anthropology Section – 2003

H5 A Test of the Auricular Surface Ageing Method Using a Modern Sample: The Effect of Observer Experience

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This poster will present findings of a study to determine whether low accuracy rates using the auricular surface morphology ageing method are the result of observer error or methodological deficiencies.

The validity of ordinal estimation methods such as ageing techniques rely both on the inherent accuracy of the method as well as the proficiency and experience of the observer. When poor accuracy rates are obtained, the difficulty lies in differentiating whether the fault lies with the method or the observer. This study utilizes a modern forensic collection and observers ranging from experienced faculty to novice undergraduates to evaluate the accuracy of the auricular surface morphology ageing technique developed by Meindl and Lovejoy (1985, 1989). The technique requires observers to classify the auricular surface of an individual according to eight phases. Written descriptions and photographs provide users of the method with criteria for each phase. The research sample used in this study consisted of 146 individuals from the documented collection at the Maxwell Museum of Anthropology at the University of New Mexico. The sample contained only individuals who died recently (1984 to present) and whose demographic information was thoroughly documented, thereby providing accurate age and sex information. Age at death ranged from 18 to 101 years and both males and females were represented. The observers included a junior faculty member (DK) with over a decade of experience using this ageing method in hundred of forensic and archeological analyses; a Ph.D. candidate (TP) with four years of training and practical experience and two undergraduates (SS, BM) with solid backgrounds in anatomy but no prior experience or training in this ageing technique. Overall accuracy rates for the auricular surface method ranged from 25% correct for the junior observers, to 40% for the graduate student, and 84% correct for the faculty member. Intraobserver tests (using the Kappa statistic) were conducted to evaluate how consistent each researcher was in their observations. Results ranged from 75% (junior authors) to 100% (faculty member), indicating a fair to excellent degree of consistency based largely on experience. Interobserver tests (again utilizing the Kappa statistic) revealed poor agreement among the observers. Researchers with less experience noted that, despite the descriptions and photographs, the method was difficult to understand and use. Poorly defined or overlapping phases and vague descriptions were among the chief complaints. For example, the written description differentiating phases one and two states "changes from the previous phase are not marked and are mostly reflected in slight to moderate loss of billowing." Phase 3 instructs the observer to "note smoothing of surface by replacement of billows with fine striae, but distinct retention of slight billowing." Even for observers familiar with the definitions and features of the technique, such standards are often confusing and insufficient. Overall, the results indicate that the accuracy rates obtained with the auricular surface method do rely on the experience and training of the observer. However, tests of a similar ageing method (the Suchey-Brooks pubic symphysis morphology technique) by the two senior authors resulted in accuracy rates of 98% (DK) and 93% (TP) using the same collection. The Suchey-Brooks method requires observers to score the pubic symphysis of an individual as one of six distinct phases using written descriptions, illustrations, and casts. The results using the Suchey-Brooks method, combined with the high intraobserver scores of the senior authors, suggests that the poor accuracy rates obtained using the auricular surface method may not be exclusively the result of observer error. Several factors warrant consideration. First, the use of casts, well-defined phases with clear written descriptions, and separate standards for males and females seen in the Suchey-Brooks method render the method more "user friendly." Second, the auricular surface method was originally created using the Hamman-Todd collection at the Cleveland Museum of Natural History, which contains individuals who died prior to 1940. The SucheyBrooks method was developed on a modern forensic collection. Temporal changes as well as the application of standards developed on one population to alternate populations may constrain the successful use of the auricular surface method.

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