

PROGRAM OF THE
**87TH ANNUAL MEETING OF THE
AMERICAN ASSOCIATION OF PHYSICAL
ANTHROPOLOGISTS**
APRIL 11 – 14, 2018

To be held at the

Hyatt Regency Austin

208 Barton Springs • Austin, Texas 78704

JW Marriott Austin

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Surveys collected between 2003 and 2015, which include over 800,000 participants to examine these questions. Several possible mediators of the paths of both wealth and education on fertility outcomes are examined including: local mortality rates (a proxy for risk management), local birth rates (a proxy for cultural transmission), and women's labor-force participation. Our results show that the associations between wealth and fertility differ substantially across contexts, with wealth being positively correlated with fertility in the highest-fertility countries. In contrast, women's education has a consistent negative correlation with fertility outcomes. Our path analyses show that: local mortality rates do not significantly predict fertility outcomes in the vast majority of countries; women's labor force participation has a negative association with fertility outcomes in low-fertility countries, but the association varies dramatically in high-fertility countries; and local birth rates are positively correlated with fertility outcomes in every country examined. The similarities across countries suggest there are some common elements in reproductive decision-making, but the differences suggest that local socioecologies are important to understand demographic transitions across the world.

The Efficacy of 3D Models for Sex-Scoring Crania from Archaeological Contexts in Southern Peru

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This study compares the reliability of scoring sexually dimorphic cranial traits using digital 3D models versus observing the crania in person. The archaeological crania (N=45) are from the sites of La Real Beringa (600–1000 CE) and Quilcapampa (1000–1400 CE), all located in or near the Majes Valley in southern Peru. We compare the digital and in-person scores of the nuchal crest, mastoid process, supraorbital margin, and glabella. We also compared intra and inter-observer reliability a student and a professor to highlight the role experience plays in assigning cranial trait scores and estimating sex.

Cranial traits were ranked on a scale of 1 to 5, with 1 being most gracile and 5 the most robust, following Buikstra and Ubelaker (1994). Intra-class correlation coefficients (ICC) and Cohen's weighted kappas were used to test rater reliability. For scorer 1, an undergraduate with little experience in skeletal biology, ICC and Cohen's kappa showed acceptable agreement for the nuchal crest (.73, .39), low for mastoid processes (.53, .13) and supraorbital margin (0.34, .10), and good/moderate for glabella (.82, .53). For scorer 2, with 10 years of experience, nuchal crest (.91,

.73), mastoid process (.87, .58), supra orbital margin (.88, .48), and glabella (.98, .92) ranged from excellent to moderate agreement. These data suggest that 3D models may be useful for estimating sex when the osteologist is experienced; however, they not be a viable replacement for students learning osteological techniques. The ability to palpate certain cranial features is crucial for students learning these methods.

NSF and The Program of Classical and Mediterranean Studies at Vanderbilt University.

Testing a Novel Method of Metric Cranial Sex Estimation

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Sex estimation for adults is one of the major parts of the biological profile. Traditionally, sex estimation methods from the skull are based on visual assessment of discrete cranial features. However, a recent trend in forensic anthropology has preferred metric-based analyses due to their objectivity. Here, we test Casado (2017), a method that applies metrics to six sexually dimorphic cranial features. The sample analyzed in this study consists of 45 modern adult male and female crania that are primarily being studied for a project involving ballistic trauma. All individuals are between 55 and 95 years. The six cranial features were measured using coordinate calipers following the methods outlined by Casado (2017). While Casado (2017) excluded individuals with trauma to develop the method, the individuals here have been subjected to cranial trauma. Due to the nature of the remains recovered in forensic contexts, it is important to test novel methods on individuals that may have trauma or taphonomic damage. Preliminary data analysis suggests that this method can be used to reliably estimate sex on individuals presenting with traumatic damage. Using discriminant function analysis, 86.7% of the pilot sample were correctly classified. These results are consistent with those of Casado (2017) and are encouraging for future research involving metric sex estimation of the cranium.

This research is supported by NIJ-DN-BX-0155.

The shape of the hominin talus: Evolutionary timing and relationships of the talar facets

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The human talus occupies a pivotal position between the leg and foot and is adapted to bipedal locomotion. Great debate surrounds interpretation of hominin talar functional morphology and influences of locomotor diversity. Here we analyze hominin whole talar morphology, using individual and combined talar facets to assess timing of the emergence of a human-like talus. A template of 251 (semi)landmarks was used to analyze 200 hominoid tali: 94 *H. sapiens*, 86 great apes, and 20 fossil hominins (*A. afarensis*, *A. sediba*, *P. robustus*, *H. habilis*, early *Homo*, *H. erectus sensu lato*, *H. floresiensis*, *H. neanderthalensis*). Digital reconstructions were used to estimate missing (semi)landmarks on partially damaged fossils with cracks and/or gaps. Incomplete tali were only analyzed for complete facets. Shape variation was evaluated through Generalized Procrustes superimposition and PCA. Talar shape separates *H. sapiens* from other apes, with australopiths plotting closer to great apes and all *Homo* fossils closer to modern humans. Analyses of individual facets showed the navicular facet to have the most discriminatory power, with other facets showing overlap in PCA scores within the extant sample. When combining articular surfaces, the combined head, trochlea and posterior calcaneal facet perform the best, clearly separating australopiths from *Homo*. Our results suggest that the relationship of talar facets is notable in recognizing a human-like talus, suggesting that to discriminate between groups the relative shape (size, orientation and position) of facets should be considered. This approach can contribute to the assignment

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(taxonomic and functional) of fragmented fossil tali.

This project has been funded by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 724046 - SUCCESS).

Baby carrying positions change walking speed

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Methods of infant carrying vary among different cultural groups, and potentially even within a group based on what other tasks the carrier is trying to accomplish. Here we investigate how the position of babies and toddlers influences aspects of the walkers' gait.

Kinematic measures and walking speed of adult male and female participants (n=6) were collected along a forested trail in the Pacific Northwest. Participants, while carrying their own infants (≤ 2 years), were asked to walk along a designated trail under three loaded conditions—front, back, and side—as well as without their infant in an unloaded control. Kinematic measurements, including stride length, were taken over a pre-measured portion of the route that included both flat and inclined terrain. Speed was collected across the entire path, as well as for the portions of the terrain where kinematics were monitored. Unsurprisingly, inclined terrain significantly reduced stride length ($p=0.022$), though interestingly, the babies' different positions did not initiate deviations from this general pattern. Baby carrying position did significantly change overall walking speed ($p=0.031$), in that front and side loading significantly slowed walking speed, whereas back carrying allowed participants to walk at speeds indistinguishable from their unloaded walking speed. Back carrying seemed particularly helpful in maintaining walking speed on the inclines, whereas on the level, back carrying decreased walking speed in a similar way to the other carrying conditions. This interaction did not quite reach significance ($p=0.09$) but deserves further attention.

Evaluating the appropriateness of the Maresh long bone data for age estimation of juvenile skeletal remains in forensic contexts

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In recent years, some have argued that the Maresh data is no longer appropriate for forensic use due to secular changes in growth. However, individuals who die in childhood, particularly homicide victims, tend to be of lower socioeconomic

status, which is linked to delayed growth. Thus, children who become subjects of forensic anthropological evaluation are likely to be smaller for age than their peers. To evaluate the relevance of the Maresh data to recent forensically recovered juvenile remains, long bone lengths of the humerus, radius, femur, and tibia were gathered from 10 juveniles born between 1964 and 1994 included in the Forensic Data Bank (4 females and 4 males) and the Maxwell Museum (1 female and 1 male). Since ages were bimodally distributed, analysis was conducted for individuals ≤ 3 and ≥ 10 years of age. Individuals were compared to the Maresh long bone length 5th-95th percentile range using scatter plots and inclusion rates. All individuals fell within or below the 5th-95th percentiles, save for one ≥ 10 female individual. The ≤ 3 group all fell at or below the 50th percentile, with some individuals below the 5th percentile. The ≥ 10 group fell evenly above and below the 50th percentile and within the 5th-95th percentiles. In this group of children born as late as the 1990s, the Maresh data was still appropriate. Applicability to contemporary casework should be verified using more recent cases, however the Maresh data may still be relevant, particularly where younger (≤ 3 years of age) children are concerned.

Untangling the relationship between paleopathology and funerary behavior in the Italian Neolithic: new data from Arma dell'Aquila (Finale Ligure, Liguria region, northwestern Italy)

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Numerous caves in the Finalese area (Liguria region, northwestern Italy) yielded some of the most important Neolithic sites in the Mediterranean, but it is unclear whether those were cemeteries, or places were only a sub-section of the population was buried. Excavations date back to the late 19th/early 20th centuries, resulting in poorly documented and chrono-culturally defined skeletal collections.

Our reassessment of the nine burials from Arma dell'Aquila (excavated in the 1930s) dated one in a lithic cyst to 4730-4550 calBCE 2 σ (Square-Mouth-Pottery chrono-cultural phase; SMP), five to an earlier phase (5360-4840 calBCE 2 σ), and one to 5650-5540 calBCE 2 σ , well within the Impresso-Cardial-complex timeframe. The scattered human remains yielded a MNI of nine additional individuals. The five burials are aligned NE-SW, crouched on the left side, without lithic cyst or grave goods, and oriented feet-against-feet, head-against-head. They constitute the earliest evidence of an apparently organized funerary space in the Neolithic of northern Italy. Two adults from this alignment show lesions suggestive of osteoarticular tuberculosis, and skeletal alterations (periostitis, arthritis, maxillary abscesses, cranial lesions) that are present in other individuals. This adds to the SMP burial, which was previously diagnosed with tuberculous spondylitis. Tuberculosis leaves skeletal traces in 2-5% of cases, and is rare in the archaeological record. Therefore, either the prevalence of this disease was exceptionally high throughout the Ligurian Neolithic, or selective burial practices may have been in place. The joint analysis of paleodemographic and paleopathological data in the Ligurian Neolithic offers a unique opportunity to untangle this issue.

This study has received financial support from the French State in the framework of the "Investments for the future" Program, IdEx Bordeaux, reference ANR-10-IDEX-03-02

Parallel evolution of suspensory locomotion in tree sloths and implications for understanding homoplasy in hominoids

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Hominoids share many traits traditionally thought to be associated with forelimb dominated, suspensory locomotion, such as long arms and a modified shoulder joint. Many researchers now believe that at least some of these similarities are due to parallel evolution, based on previously unexpected mosaics of primitive and derived traits in fossil crown hominoids and the observation that suspensory atelines share many postcranial traits with hominoids. An independent comparative investigation of parallel evolution of suspensory adaptations in sister families unrelated to hominoids has not been previously attempted. To make this comparison, we used three-dimensional geometric morphometric and traditional analyses to examine convergence in the forelimb skeleton of sloths, which are thought to have independently developed inverted suspensory locomotion at least twice. Relative to their nearest living outgroup, sloths exhibited a mosaic of functional adaptations and