Background

● Transition from Late Woodland to Mississippian period in the Midwest is characterized by dramatic shifts in sociocultural practices.
● Previous studies in the lower Illinois River valley (LIRV) are inconclusive as to whether these changes were the result of migration or shifts that occurred among stationary groups.

The most widely held expectation is that groups from the American Bottom (AB), and particularly from the Cahokia site, were involved in exchange networks with LIRV groups during the Mississippian period. However, population movement between regions has never been directly evaluated.

● Purpose of present study: Examine interregional biological variation in the LIRV and AB regions over the Late Woodland to Mississippian transition

Materials

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Methods

Odontometrics

● Maximum crown diameters of permanent dentitions
● Intraobserver error tested and found to be within ±0.03mm (see Thompson, 2013)

Data preparation

● Expectation-maximization algorithm used to replace missing data: 2425/2930 (83%) of data points present prior to replacement
● Sex standardized using z-scores on sex-specific pooled matrices
● Final 10 variables: UCMD, UCBL, UP1BL, UM1BL, LCMD, LM2MD, LI2BL, LCBL, LP1BL, and LM1BL

Statistical methods

● R-matrix (Relethford and Blangero, 1990)
● Census estimates made equal, making genetic distances proportional to Mahalanobis distances (Relethford, 1997)
● Distance matrices plotted using multidimensional scaling (MDS)

Limitations and Future Research

● Sample size becomes increasingly small as sex is considered, which required removal of some AB sites in the interregional analysis
● More AB sites needed to better assess regional variation
● Other forms of data (additional aDNA studies, strontium isotope, etc.) are needed to evaluate movement/relatedness

Acknowledgements

I would like to thank the following individuals for permission access to the skeletal remains used in this study: Illinois State Museum-Dr. Terrance Martin, Dawn Cobb, and Dee Ann Watt; Indiana University-Dr. Della Cook; Center for Archaeological Investigations-Dr. Heather Lapham. Special thanks to Della Cook for her input on the development of this research project.

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Andrew R. Thompson, West Virginia School of Osteopathic Medicine

Summary of Findings

● Largest distance between Schild LW and Schild Miss
● Continuity at Yokem with smallest distance between time periods
● More within group variation among Late Woodland groups

Interregional analysis

● Small distances between Cahokia and LIRV Mississippian groups
● Schild LW still an outlier
● ELSSQ more similar to Yokem than AB groups

Results

LIR only analysis

LIR only by sex

● During LW period, more between-group distance among males
● During Miss period, more between-group distance among females
● Largest between-group distance in Miss period between females

Interregional by sex

● Schild Miss females similar to individuals at Cahokia
● Schild Miss males tend to be more similar to LIRV groups
● Yokem Miss females plot away from most other groups

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