

# RESEARCH CONNECTION

## Identifying childhood experiences in the past through skeletal remains

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### Why this research is important

While it is generally well understood that growth is compromised when under environmental stress, whether or not growth differences between individuals or between populations are due to socioeconomic status, or expectations and treatment based on age and gender, or a combination of all three, is not well understood. The ability to use growth disruption as an indicator of social and cultural adversity in past populations is hampered by the lack of data linking growth disruption to known social and cultural variables. By comparing skeletal and dental evidence of growth disruption in relation to social circumstances, it will be possible to identify the various ways in which growth disruption can inform on the social environment of children.

### How the research will be conducted

The study will examine the 20th-century skeletal remains of children and adolescents from the Luis Lopes Collection,

### What you need to know

Skeletal growth is a dynamic energy demanding process. When interrupted due to environmental stressors such as malnutrition and disease, growth will slow down or even stop to devote energy to life-sustaining functions. Evidence of growth halting persists in the skeleton, providing a window into someone's experience of childhood health long after death. Through a detailed analysis of an individual's skeletal remains, it is possible to reconstruct his/her growth experience and use it to interpret their experience of childhood. Pairing information from skeletal remains with historical documentation allows us to investigate the effect of social and cultural variables such as gender, age, and socioeconomic status on individual growth and ultimately an individual's experience of childhood, thereby enriching our understanding of past societies.

curated at the National Museum of Natural History and Science Lisbon, Portugal and the Bologna Documented Collection curated at the Museum of Anthropology at Bologna University, Bologna, Italy. These skeletal collections are unique as each individual is associated with important biographical information such as age at death, address, sex, cause of death, marital status and occupation.

In order to ensure the best picture of childhood experiences is developed, multiple indicators of growth disruption will be

assessed. Skeletal growth indicators include the length of the arm and leg bones, the stage of skeletal maturity (the fusion of bony sections) and the size of the spinal canal (the vertebral canal). These different sections of the skeleton grow at different rates and finish growing at different times, and therefore provide a chronological record of an individual's growth—and health—throughout life. Dental growth indicators (tooth development and enamel defects) provide an additional way to track nutritional or disease stress. Further, because enamel forms in layers and does not remodel, it is possible to determine how old the individual was at the time their enamel growth was affected, thereby allowing a comparison of when individuals experienced health stress.

The indicators of growth disruption will be used in conjunction with the biographical information to assess whether gender biased cultural practices differentially exposed children to growth stressors. Age-specific growth disruptions across the life cycle (infancy through adolescence) will also be assessed to determine if there is a particular age at which individuals are exposed to health stress. Finally, the effects of whether or not the social environment mediates or increases risk of exposure for each sex will be investigated.

### How this research can be used

Not only will this research help establish a novel approach to investigating childhood experiences in the past, and identify gendered differences in growth, but it will illuminate an important theoretical issue in biological anthropology. Ultimately, biological anthropologists are limited in their ability to investigate 'childhood health' in past societies because they work with the skeletal remains of the dead or those who did not survive. They are therefore trying to reconstruct health by assessing the least healthy members of the population. By understanding the differences in skeletal and dental growth between the sexes and over the life course we can better understand how ill health is manifest in skeletal remains and how it relates to social and economic factors. Such an understanding will help us understand how children are

able to adapt to, or fail to adapt to various stressors associated with different socioeconomic situations and if there are sex-specific differences in survival.

### About the researchers

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### Keywords

biocultural approach; children and childhood; growth and development; cultural stress; social inequalities; gender; life cycle; child labour

### Acknowledgements

Social Sciences and Humanities Research Council of Canada Insight Development Grant.

Research Connection is a periodical publication intended to provide information about the impact of Brandon University's academic research, creative activities, and expertise. This summary is supported by the Office of Research Services and by the Centre for Aboriginal and Rural Education Studies, Faculty of Education.

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