

Center for Applied Neuroscience



University of Cyprus
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ADVANCES IN RESEARCH METHODOLOGIES IN NEUROSCIENCE

Dr. Christopher Bartlett

Title:

Ethics in pediatric research

Abstract:

The pathology of childhood developmental disorders, as a phenomenon, occurs at multiple levels of measurement spanning genetic, brain, cognitive, and behavioral domains. Successfully spanning these measurement domains is the underlying goal of many childhood development researchers though the task is difficult due to both the nature of subject matter and the challenging nature of modeling in general. Using the genetics of cognition, specifically the genetics of reading and language along with the complications that can arise with comorbid autism spectrum disorder, here we will examine alternative conceptual modeling approaches to determine relationships that are may be otherwise overlooked when using more general approaches. From defining heritable characteristics that predispose children's developmental trajectories to isolate factors that are important for treatment and remediation, the sine qua non of good models is that they are deliberate, conceptual, and clever. In this talk, we will discuss some of the challenges in childhood development through illustrative example in real datasets. Through these examples, it is hoped that a better understanding of the causes of heterogeneity and comorbidity can be gained.

Christopher Bartlett, Ph.D. is Associate Professor of Pediatrics and Mathematical Medicine at the Research Institute at Nationwide Children's Hospital at the The Ohio State University, in USA. His long-term goal is to understand the molecular neurobiology of human language. However, moreso than any other cognitive neuroscience topic, the neurobiology of language is quite resistant to use of animal models except in extremely circumscribed ways. Christopher's approach is to use "forward genetics" whereby we map language and related traits into the human genome in language impaired patient and family studies using a mix of statistics and genomics. This work entails three levels of basic research and experimentation that feed into the larger project. 1) Statistical genetics research where we develop the statistical methods necessary to directly model and thereby answer our specific research questions. This work involves both analytical and computational methods. 2) Molecular genetic methods and assay development to generate the raw data used in our analyses. 3) Studies of gene expression in the human brain using methods that are similar to those for mapping cognitive traits, but these research questions involve finding directly functional genomic elements that are active in the human brain, such polymorphisms are good candidates biomarkers and mediators of cognitive performance.



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Factors And Intervention From A Systems Approach
To Maladjustment In Children