HUMAN DEVELOPMENT AND FAMILY STUDIES

DISSERTATION DEFENSE FOR

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TITLE: TIME SERIES ANALYSIS AND PERSON-SPECIFIC PSYCHOLOGICAL DEVELOPMENT: STATE SPACE MODELING APPLICATIONS IN BEHAVIOR GENETIC AND NEUROCOGNITIVE DESIGNS

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ABSTRACT

Person-specific methodology puts a rigorous statistical focus on the individual. This dissertation gives an overview of this methodological perspective and contrasts various intraindividual and interindividual analytic techniques. The importance of time series statistical methods, with a special emphasis on state space models, is discussed within the context of person-specific methods. These methods are applied in two papers within the fields of behavior genetics and cognitive decision making. The first paper outlines recent criticisms of twin research within behavior genetics regarding epigenetics and somatic mosaicism. A novel model is proposed and tested within several simulation studies in order to examine estimation accuracy. The second paper involves an application of recently developed exploratory connectivity analysis to fMRI data from an incentivized decision making task. Both of these applications exemplify the capabilities of state space modeling within a person-specific perspective.