## FLORIDA STATE UNIVERSITY COLLEGE OF ARTS AND SCIENCES

## BAYESIAN HIERARCHICAL MODELS WITH LATENT CONJUGATE MULTIVARIATE ${\bf RANDOM~EFFECTS}$

Ву

HELI GAO

A Dissertation submitted to the Department of Statistics in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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| Heli Gao defended this dissertation on May 26, 2020.<br>The members of the supervisory committee were: |   |
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