Division of Statistics

Master's Thesis Defense

Ann Abbott

Monday, April 15
9:30 a.m.

BEL 118

Finite Sample Properties of Estimators of Genetic Variance from Human Twin Data

ABSTRACT

In order to compare three different ANOVA-based estimators and four likelihood-based estimators of additive genetic variance from human twin data, a simulation study was conducted. Phenotypic variance was divided into additive genetic effects (s^2_a), environmental effects common to cotwins (s^2_c), and environmental variance unique to individuals (s^2_e). In the simulations, amounts of s^2_a, s^2_c, s^2_e and the numbers of monozygotic (MZ), and dizygotic (DZ) twins were varied. The performance of the estimators was compared in terms of bias and mean squared error (MSE). Two of the ANOVA estimators were consistently poor performers, while the other ANOVA estimator was not a uniformly good or poor performer. All four of the likelihood estimators performed similarly to each other at each of the combinations examined, and were consistently better than the ANOVA estimators.