

# **“Heterogeneity and Misclassification: Two Forms of Mixtures for Family-based Tests of Genetic Association”**

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## **ABSTRACT**

Heterogeneity and misclassification are two forms of mixtures that can adversely affect family-based tests of genetic association. Specifically, sample sizes needed to detect association increase in the presence of these mixtures. In this work, we derive the non-centrality parameter for the transmission disequilibrium test (TDT) in presence of these mixtures and compute sample size requirements. Sample size always increases when either heterogeneity or misclassification is present. In the presence of misclassification, sample sizes for the TDT to detect association are substantially greater than in the presence of heterogeneity. We make some recommendations based on this work.