

# **A Confirmatory Linking Procedure for Evaluating the Scale of CAT Pools**

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Over the life of a CAT pool, items within the pool may exhibit parameter drift to some degree. Items may also come from different calibration samples, both within pools and across pools, which is a potential source of scale differences. When pools are used operationally, it is important to be able to evaluate whether items within and across pools are on the same scale. This paper presents a method for computing marginal maximum likelihood estimates of transformation constants that place item parameters from one source onto the scale of item parameters from another source. The maximization is conducted with respect to the transformation constants and the population mean and variance. For within-pool evaluations, the method can be applied to a single group design, where some common items are shared across examinees. For across-pool evaluations, the method can be applied to separate, randomly equivalent groups where there are no common items across groups. The accuracy of the procedure is assessed using a CAT simulation, where items are selected and scored using modified “true” parameters that are manipulated by transformation constants (representing misspecified parameters), and the item responses are generated using the true parameters. The recovery of the transformation constants is then measured. A variety of sample sizes are considered, and sampling error is evaluated.