PSYCHOMETRIKA—VOL. 78, NO. 3, 554–555
JULY 2013
DOI: 10.1007/S11336-013-9345-1

ERRATUM TO: USING THE CRITERION-PREDICTOR FACTOR MODEL TO COMPUTE THE PROBABILITY OF DETECTING PREDICTION BIAS WITH ORDINARY LEAST SQUARES REGRESSION

STEVEN ANDREW CULPEPPER

DEPARTMENT OF STATISTICS, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Errata to: PSYCHOMETRIKA, 2012, 77, 561–580
DOI 10.1007/s11336-012-9270-8

The Errata includes a corrected figure on the effect of group differences in common factor means and latent slopes on Type I error rates for ordinary least squares tests of intercept differences.

1. Correction to Figure 2

Culpepper (2012) examined the performance of ordinary least squares (OLS) as a method for assessing the presence of prediction bias (Millsap, 1997, 1998, 2007; Olivera-Aguilar & Millsap, 2013). A seminar student at the University of Minnesota kindly pointed out an error in Figure 2 of Culpepper (2012). The error was clerical and the equations in the paper remain unchanged and correct. The purpose of this note is to correct Figure 2 in Culpepper related to the effect of group differences in common factor means (i.e., $\Delta\kappa$) and latent slopes (i.e., $\Delta\Gamma$) on Type I error rates of OLS tests of group intercept differences.

Recall from Culpepper (2012) that Z and Y represented the observed predictor and criterion, respectively, the number of applicants was indicated by n, the proportion in the focal group by p, and $P(Z > z^\star)$ was the percent of applicants selected in a top-down fashion. Furthermore, the latent measurement model parameters included $\Delta\phi$ as the difference in group common factor variances, $\Delta\xi$ as the difference in latent prediction error variance, θ_z and θ_y were the unique factor variances for the predictor and criterion, and the latent measurement intercept and loading was denoted by τ_z and λ_z for the predictor and τ_y and λ_y criterion. Figure 1 presents the corrected analytic (and Monte Carlo) Type I errors of tests for intercept differences across values of $\Delta\kappa$ and $\Delta\Gamma$ under the assumption of strict invariance with an $n = 5{,}000$, $p = .8$, $P(Z > z^\star) = .5$, $\Delta\phi = 0$, $\Delta\xi = 0$, $\tau_z = \tau_y = .1$, $\lambda_z = \lambda_y = .8$, and $\Theta_z = \Theta_y = .2$. The dots around each of the Type I error curves in Figure 1 are the Monte Carlo estimates using 5,000 replications.

Figure 1 demonstrates the results pertaining to Millsap (1997, 1998, 2007) and Equation (30) of Culpepper (2012). Figure 1 shows that Type I error rates for intercept tests are larger than the real rejection level of .05 as $\Delta\kappa$ increases. For example, the probability of rejecting a true null hypothesis is approximately 50 % when $\Delta\kappa = 1$. In this case, larger latent subgroup slope

The online version of the original article can be found under doi:10.1007/s11336-012-9270-8.
Requests for reprints should be sent to Steven Andrew Culpepper, Department of Statistics, University of Illinois at Urbana-Champaign, 101 Illini Hall, MC-374, 725 South Wright Street, Champaign, IL 61820, USA. E-mail: sculpepp@illinois.edu

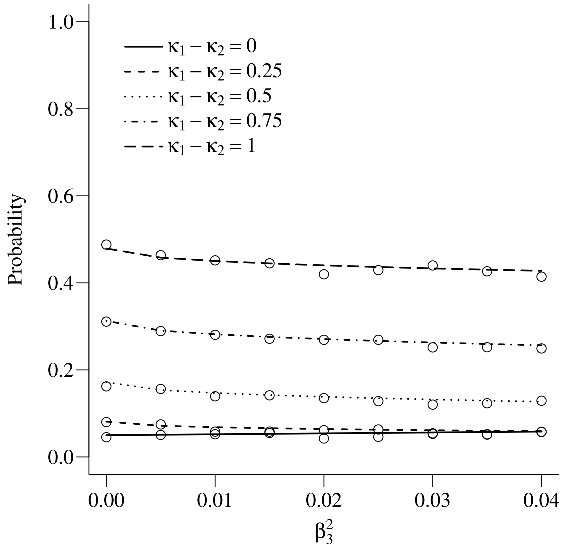

FIGURE 1.
Impact of $\Delta\kappa$ and latent slope differences (β_3^2) on Type I error rates for tests of intercept differences. *Note*. The dots around each curve are Monte Carlo estimates using 5,000 replications.

differences (i.e., β_3^2) slightly reduces intercept Type I error rates. In short, Figure 1 demonstrates that OLS is an inadequate method for testing the presence of subgroup intercept differences whenever groups differ in common factor means.

References

Culpepper, S.A. (2012). Using the criterion-predictor factor model to compute the probability of detecting prediction bias with ordinary least squares regression. *Psychometrika*, *77*, 561–580.

Millsap, R.E. (1997). Invariance in measurement and prediction: Their relationship in the single-factor case. *Psychological Methods*, *2*, 248–260.

Millsap, R.E. (1998). Group differences in regression intercepts: Implications for factorial invariance. *Multivariate Behavioral Research*, *33*, 403–424.

Millsap, R.E. (2007). Invariance in measurement and prediction revisited. *Psychometrika*, *72*, 461–473.

Olivera-Aguilar, M., & Millsap, R. (2013). Statistical power for a simultaneous test of factorial and predictive invariance. *Multivariate Behavioral Research*, *48*, 96–116.

Published Online Date: 5 JUN 2013