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ERRATUM

Erratum to: SPSS and SAS programs for comparing Pearson correlations and OLS regression coefficients

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We thank Ray Koopman (personal communication) for noticing that there is a problem with our computation of the *t*-test for comparing two independent ordinary least squares (OLS) regression coefficients. The method we used to compute the standard error of the difference between b_1 and b_2 (equation 12 in the original article) does not assume equal variances. Therefore, we should have used Satterthwaite degrees of freedom (see Eq. 1 in this document), just as one does when using the unequal variances version of the independent groups *t*-test (see Howell, 2013, for example).

$$\text{Satterthwaite}\, df = \frac{\left(s_{b_1}^2 + s_{b_2}^2\right)^2}{\frac{\left(s_{b_1}^2\right)^2}{n_1-m-1} + \frac{\left(s_{b_2}^2\right)^2}{n_2-m-1}} \quad (1)$$

We have now revised our SPSS and SAS programs to correct this problem. The revised programs also compute the *pooled variance* version of this *t*-test. Users can indicate which version of the test they want by setting an indicator variable called *Pool* (set *Pool* = 1 for the pooled variance test, or *Pool* = 0 for the unequal variances test). For the pooled variance test, the standard error is computed as shown in Eq. 2 (in this document), and the degrees of freedom are equal to n_1+n_2-2m-2 (where n_1 and n_2 are the two sample sizes and m is the common number of predictor variables, not including the constant). MSE_1 and MSE_2 are the MS_{error} (or $MS_{residual}$) terms from the two regression models, and MSE_{pooled} is computed as shown in Eq. 3.

$$s_{b_1-b_2} = \sqrt{MSE_{pooled}\left(\frac{s_{b_1}^2}{MSE_1} + \frac{s_{b_2}^2}{MSE_2}\right)} \quad (2)$$

$$MSE_{pooled} = \frac{(n_1-m-1)MSE_1 + (n_2-m-1)MSE_2}{n_1+n_2-2m-2} \quad (3)$$

Note that it is the *pooled variances* version of this *t*-test that corresponds to Potthoff (1966) analysis carried out using the raw data. In the original article, we compared the results of the *t*-test for comparing two independent OLS regression coefficients to results from Potthoff analysis, and reported that the two sets of results were very similar, differing only because of rounding error. In hindsight, they differed because of rounding error *and* because we were not using the *pooled variance* estimate of the standard error. When we repeat those comparisons now using the correct pooled variance *t*-test, the results match more closely, and do differ only because of rounding error.

Koopman also suggested that we could have used Steiger's (1980) modification of the *PF* and *ZPF* tests for comparing two non-independent correlations with no variables in common (equations 18 and 19 in the original article). When computing the standard errors for those tests, Steiger suggests replacing r_{12} and r_{34}, the correlations that are assumed to be equal under the null hypothesis, with their average. (Note that this is also done when computing *k*, which is used

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in both equations 18 and 19.) According to Steiger, this method yields "improvement in Type I error rate control" (p. 247). Accordingly, we have modified our programs to compute Steiger's modified tests in addition to the original versions. Users can choose the version they wish by setting an indicator variable called *Steiger* (*Steiger* = 0 for the original versions of the *PF* and *ZPF* tests, *Steiger* = 1 for Steiger's modified versions).

Finally, Koopman noted that it is not necessary to take the absolute value in Eq. 2 of the original article, as $(1 + r)/(1 - r)$ cannot be negative. Therefore, Eq. 2 should have read as follows:

$$r' = (0.5)\log_e\left(\frac{1+r}{1-r}\right) \quad (4)$$

Corrected versions of the relevant programs can be downloaded from the authors' websites (https://sites.google.com/a/lakeheadu.ca/bweaver/Home/statistics/spss/my-spss-page/weaver_wuensch for SPSS syntax files, and http://core.ecu.edu/psyc/wuenschk/W&W/W&W-SAS.htm for SAS code).

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