

# Corrections and Some Additions/Comments for *Generalizability Theory*

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The following is a list of known errors in Brennan (2001), as well as a small number of additions or comments.

- Page 45, Title of Table 2.10 should say “D Study  $I:p$  Design”
- Page 48, 17 lines from bottom of page. add “(See also Kane & Brennan, 1980.)”
- Page 49, equations in bottom third of page. These equations assume that  $n'_i$  for the total score metric is the same as  $n'_i$  for the mean score metric.
- Page 61, line 21. Change “nesting index.” to “nesting index, except for the  $i:h:p$  effect in the last design.”
- Page 69, Equation 3.15.  $\bar{X}_{pih}$  should be  $X_{pih}$
- Page 90, line 8. “random effects” should be “mixed model”
- Page 90. three lines into Sect. 3.5.4. “health (H)” should be “consumer economics (CE), health (H)”
- Page 93, Exercise 3.7 (b).  $\sigma^2(ph|M)$  should be  $\sigma^2(p|M)$
- Page 96, Equation 4.1.  $\mu_{pIH}$  should be  $\nu_{pIH}$ .
- Page 115, 19 lines into Sect. 4.2.3.  $\hat{\sigma}^2(\Delta) = .70$  should be  $\hat{\sigma}^2(\Delta) = .69$
- Page 118. The last sentence in the paragraph beginning “The G study” should read as follows: “Also, since  $\hat{\sigma}^2(t) = .003$  it appears that raters are quite similar in average stringency.”
- Page 122. In Rules 4.3.1–4.3.3,  $\tau$  is the objects of measurement index
- Page 129, line 23. “uses the G study  $p \times t \times r$  Design” should be “is associated conceptually with the G study  $p \times t \times r$  Design”
- Page 129, line 31. “effectively uses the G study  $(t:p) \times r$  Design” should be “is associated conceptually with the G study  $(t:p) \times r$  Design”
- Page 137, Exercise 4.5.  $t$  and  $r$  should be interchanged everywhere
- Page 137, Exercise 4.5 (c).  $p \times i$  should be understood as “single-facet crossed design”
- Page 137, Exercise 4.6. At the end of the fourth line, “coefficients for the sample sizes” should be “coefficients for the  $R:T:p$  design for the sample sizes”. Also, in (a) and (b),  $n'_r$  should be  $n'_t$ , and  $n'_i$  should be  $n'_r$ .
- Page 138, Exercise 4.10 (b). “four ratings. Estimate” should be “two ratings. Provide a formula for”
- Page 145, first line after Table 5.1. “tp” should be “to”
- Page 150, Table 5.4.  $\hat{\sigma}^2(pio) = .1565$  should be  $\hat{\sigma}^2(pio) = .9352$

- Page 151, line 29. “played a different musical selection” should be “played a different musical selection for the D study”
- Page 162, Equation 5.38. = should be  $\doteq$
- Page 164, Equation 5.43. = should be  $\doteq$  and + should be  $-$
- Page 169, Equation 5.49. This equation is correct, but it would be better to replace  $\sigma^2(\Delta)$  with  $\sigma^2(\delta) \leq \sigma^2(\Delta)$
- Page 177, Exercise 5.7, third line. “performance tasks ( $t$ )” should be “performance tasks ( $i$ )”
- Page 180, line 25. “on” should be “of”
- Page 181, Table 6.1, footnote  $a$ . It would be better to say “Equation 6.2” than “Equation 6.1”
- Page 189, Table 6.3, footnote  $a$ . Table 6.3 should be Table 6.2
- Page 200, last line. 845 should be .845
- Page 201, last line of first paragraph. “along” should be “alone”
- Page 207. The paragraph beginning “For all variance components” should begin “For all statistics”
- Page 211. Exercises 6.1 and 6.2 should refer to Table 6.5, not 6.2.
- Page 216, 12 lines from the bottom. “ $p \times i$ ” should be “ $p \times i$  design”
- Page 218. In the equation for  $\overline{X}_p$  there is a stray mark in the limit of the first summation in the numerator.
- Page 232, line 17. “ $I:H$  design” should be “ $i:h$  design”
- Page 251, lines 12–13. “of a raw score point” should be “on the proportion correct scale”
- Page 254, line 24. “estimated coefficient” should be “estimated generalizability coefficient”
- Page 258, line 14. “7.1 ratings per student” should be “5.2 ratings per student”
- Page 263, 17 lines from bottom. “confounding” should be “confounding of”
- Page 266, Exercise 8.7, next to last line.  $E\hat{\rho}^2$  should be  $\hat{\Phi}$
- Page 274. last row and last column of Table 9.2 should be blank; i.e., delete the  $(p \times i):(c \times v)$  “univariate counterpart”
- Page 283, 11 lines from bottom. “ $p \times i \times h$  design” should be “ $p \times (i:h)$  design”
- Page 292, Table 9.3. For person 3,  $i_5$  should be 3 not 6.
- Page 294, paragraph beginning “It is evident . . .”  $\pi(\hat{\beta})$  should be  $\pi(\hat{\alpha})$
- Page 297, two lines after Equation 9.64.  $p^\bullet \times (i^\circ:h^\bullet)$  should be  $p^\bullet \times (i^\bullet:h^\bullet)$
- Page 299, Exercise 9.3. “14 items in  $v_2$ ” should be “8 items in  $v_2$ ”
- Page 312, equation immediately preceding Equation 10.46. The term in square brackets after the  $\geq$  sign should be squared.
- Page 314, line 8.  $w_c$  should be  $w_v$
- Page 317, third line in paragraph beginning “These conditional . . .” “absolute-error variance” should be “absolute-error SEM”

- Page 323, line 10. delete “other”
- Page 340, Table 10.7. The upper off-diagonal element of  $\widehat{\Sigma}_t$  in the “Average” column should be *.692*, not *.962*
- Page 340, last line. *.682* should be *.692*
- Page 343, first two equations. The second occurrence of  $\sigma_L^2(\Delta)$  should be  $\sigma_W^2(\Delta)$
- Page 347, line 1. “multivariate generalizability” should be “multivariate generalizability theory”
- Page 387, Equation 11.57. The denominator of the second term should be  $n'_o n'_{p:d}$
- Page 413, line 15. “flatter profiles” should be “less flat profiles”
- Page 432, line 2.  $T(\mu) = \sum \sum \sum X_{pih}^2$  should be  $T(\mu) = \sum \sum \sum X_{pih}^2 / (n_p n_i n_h) = n_p n_i n_h \bar{X}^2$
- Page 433, Table A.7, last column, third line.  $T(h)$  should be  $T(p)$ .
- Page 433, Table A.8, last column, second line.  $T(h)$  should be  $T(p)$ .
- Page 437, Table B.8, second column, lines 1-3.  $\sigma^2(ih:p)$  should be  $\sigma^2(i:h:p)$ .
- Page 453, lines 10–11, “Iowa Testing Programs Website ([www.uiowa.edu/~itp](http://www.uiowa.edu/~itp))” should be “Center for Advanced Studies in Measurement and Assessment (CASMA) website (<http://www.education.uiowa.edu/casma>)”
- Page 454. In the title for Table F.1, “Genova” should be “GENOVA”
- Page 455. Add the following sentence just before Section F.2: “All control cards should be terminated using the enter key on a standard keyboard.”
- Page 455, Section F.2, second paragraph. The author almost always recommends using the option “ALGORITHM”.
- Page 472, lines 20–21, “Iowa Testing Programs Website ([www.uiowa.edu/~itp](http://www.uiowa.edu/~itp))” should be “Center for Advanced Studies in Measurement and Assessment (CASMA) website (<http://www.education.uiowa.edu/casma>)”
- Page 474, lines 24–25, “Iowa Testing Programs Website ([www.uiowa.edu/~itp](http://www.uiowa.edu/~itp))” should be “Center for Advanced Studies in Measurement and Assessment (CASMA) website (<http://www.education.uiowa.edu/casma>)”
- Page 478, Exercise 2.7. Eliminate “Since  $1.43/5 = .286$  and  $3/5 = .6$ ,”. In the denominator of the equation,  $(.286 - .6)^2$  should be  $(1.43 - 3)^2$ . Last line should be “which leads to  $n'_t \geq 1.89$ . Therefore, two tasks are required.”
- Page 478, Exercise 3.1.  $\nu_{ri:h}$  should be  $\nu_{ci:h}$
- Page 479, Exercise 3.4. In the last two lines,  $MS(pih)$  should be  $MS(pi:h)$
- Page 482, Exercise 4.7.  $S/N(\delta) \geq 2$  should be  $\widehat{S/N}(\delta) \geq 2$
- Page 483, Exercise 4.9. In  $\hat{\sigma}(\bar{X})$ , *.47* should be *.66*, and *.58* should be *.40*
- Page 483, Exercise 4.10, line 12. “estimated generalizability” should be “estimated generalizability coefficient”
- Page 485, Exercise 5.3. “In Exercise 5.6 . . .” should be “In Exercise 5.2 . . .” Also,  $.0320 + .0031 + .0351$  should be  $.0320 + .0031 = .0351$
- Page 486, Exercise 6.2. First line should say Table 6.5, not 6.2. Second line should say Exercise 6.1, not 6.6.

- Page 486, Exercise 6.6. The degrees of freedom for  $t$ ,  $r$ , and  $tr$  should be 2, 3, and 6, respectively.
- Page 487. In the formula for  $\hat{\sigma}^2(\Delta)$  in the middle of the page, the two + signs in large parentheses should be – signs.
- Page 492, line 24.  $E\rho^2$  should be  $\Phi$
- Page 493, Exercise 9.5 “3.4611/6 = .5769” should be “2.6204/6 = .4367”
- Page 494, Exercise 10.2 The numerator of  $n'_{i1}$  should be  $10\sqrt{.4286 + .5714}$ ; otherwise, the answer is correct
- Page 509. Brennan (in press) is now in print. The full reference is:  
Brennan, R. L. (2001). An essay on the history and future of reliability from the perspective of replications. *Journal of Educational Measurement*, 38, 295–317.
- Page 514. Add the following reference immediately after Kane (1996):  
Kane, M. T., & Brennan, R. L. (1980). Agreement coefficients as indices of dependability for domain-referenced tests. *Applied Psychological Measurement*, 4, 105–126.

The following is a list of known errors in the *Answers to Additional Exercises* for Brennan (2001).

- Exercise 2.4, three lines from the bottom. “her” should be “here”
- Exercise 3.6.  $t$  and  $r$  should be interchanged; i.e., the ordering of the effects is  $p, r, t, pr, pt, tr, ptr$
- Exercise 3.8 (d).  $\hat{\sigma}^2(i|M)$  should be  $\hat{\sigma}^2(i|M) = \hat{\sigma}^2(i) + \frac{\hat{\sigma}^2(ci)}{N_c} + \frac{\hat{\sigma}^2(pi:c)}{N_c N_p}$
- Exercise 4.5.  $t$  and  $r$  should be interchanged everywhere;  $T$  and  $R$  should be interchanged everywhere
- Exercise 4.8. For the  $p \times (R:T)$  design  $\hat{\sigma}^2(\Delta) = .033$ , not .031
- Exercise 4.12. .25/8 should be .05/8

## References

Brennan, R. L. (2001). *Generalizability theory*. New York: Springer-Verlag.

## Note

<http://www.education.uiowa.edu/casma/GenovaPrograms.htm> provides the GENOVA, urGENOVA, and mGENOVA programs and manuals, as well as this errata sheet and the answers to additional exercises (those that are not preceded by an asterisk).