LETTER TO THE EDITOR

Dear Sir

In his letter to the editor on page 77 of Teaching Statistics 19(3), Jonny Griffiths presents the song "The Type I/Type II Error Blues" in which the result of a trial for one defendant is a Type I error and the result of a trial for another defendant is a Type II error. This situation provides a marvellous opportunity to explore with students various possibilities of making Type I and Type II errors.

Suppose that two researchers test the same hypothesis for the same population but with different samples.

(a) Is it possible for one researcher to reject H_0 and the other researcher to fail to reject H_0?
Answer: Yes.

(b) Is it possible that the first researcher has made a Type I error and that the second researcher has made a Type II error?
Answer: No; because the same population is sampled by both researchers, either H_0 is true and a Type I error has been made by the first researcher or H_0 is not true and a Type II error has been made by the second researcher.

Now consider the situation described in the song. The same hypothesis is tested for two different defendants, Reggie Hotshot and Axel Hoffman.

(a) Is it possible for H_0 to be rejected for Reggie Hotshot but not for Axel Hoffman?
Answer: Yes, as described in the song.

(b) Is it possible that a Type I has been made for Reggie Hotshot and a Type II error for Axel Hoffman?
Answer: Yes; either both verdicts are correct or, as claimed by Reggie Hotshot, both a Type Ierror and a Type II error have been made.

The discussion of why the answer to the second question in the first scenario is "no" but to the second question in the second scenario is "yes" ought to be lively. While some students may react by implying that they "knew it all the time", other students may actually admit to having the concepts associated with Type I and Type II errors clarified for them.

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