

Review of: "Intersections of Statistical and Substantive Significance Under a True and False Null Hypothesis"

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Potential competing interests: No potential competing interests to declare.

Cohen's d is defined in the abstract as "standardized mean differences, known as Cohen's d (effect size)". This suggests (correctly or incorrectly) that Cohen's d is the difference between the sample means divided by the estimate of the standard deviation of this difference. If this is the correct interpretation, then it is the t -statistic, and the conclusions provide no information. There should be a definition of Cohen's d and its relationship when observations are from a normal distribution (if this interpretation is correct).

In the section entitled "Statistical Significance", "the null hypothesis is false: $\mu_T - \mu_C = 0$ " is unclear; it would be clearer without specifying $\mu_T - \mu_C$. The x-axis for Figure 1 should be two decimal places; Figures 2 and 3 use two decimal places, so Figure 1 should also, for consistency. For "N = 500 Per Group", "Table 3" should be labelled as such. For "Statistical Significance Under a False Null Hypothesis with N = 64 Per Group", the null hypothesis erroneously includes the difference in the sample means, whereas it should only be that the difference in the population means is zero. As above, including a true null hypothesis to specify that it is false is confusing, and it would be clearer without this specification. The alternative hypothesis $\mu_T - \mu_C = 0.5$ does not require $\mu_T = 0.5$ and $\mu_C = 0.0$. The latter is just an example of this alternative hypothesis, which is a line in the two-dimensional parameter space, whereas $(\mu_T = 0.5, \mu_C = 0.0)$ is a point on this line. It should be noted that the latter is just an example of this alternative hypothesis.