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LETTER TO THE EDITOR

Reliable Change Formula Query: Temkin et al. reply

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Hinton-Bayre (2000) raises a point that may occur to many readers who are familiar with the Reliable Change Index (RCI). In our previous paper comparing four models for detecting significant change in neuropsychological performance (Temkin et al., 1999), we used a formula for calculating S_{diff}, the measure of variability for the test–retest difference, that differs from the one Hinton-Bayre has seen employed in other studies of the RCI. In fact, there are two ways of calculating S_{diff}—a direct method and an approximate method. As stated by Jacobson and Truax (1991, p. 14), the direct method is to compute "the standard error of the difference between the two test scores" or equivalently $\sqrt{(s_1^2 + s_2^2 - 2s_1 s_2 r_{xx'})}$ where s_i is the standard deviation at time i and $r_{xx'}$ is the test–retest correlation or reliability coefficient. Jacobson and Truax also provide a formula for the approximation of S_{diff} when one does not have access to retest data on the population of interest, but does have a test–retest reliability coefficient and an estimate of the cross-sectional standard deviation, i.e., the standard deviation at a single point in time. This approximation assumes that the standard deviations at Time 1 and Time 2 are equal, which may be close to true in many cases. Since we had the longitudinal data to directly calculate the standard error of the difference between scores at Time 1 and Time 2, we used the direct method. Which method is preferable? When the needed data are available, it is the one we used. It computes the variability of the difference based on the actual test–retest differences and avoids making the assumption that the variability at Times 1 and 2 are the same. Finally, it should be noted that, in our study, the results obtained by the two methods are quite similar and the differences between them are of questionable importance (Hinton-Bayre, 2000, Table 1).

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