

# Quick Review of Model System Research

### Uncorrected Versus Demographically-Corrected Scores on the NIH Toolbox Cognition Battery in Persons With Traumatic Brain Injury and Stroke

### What is the study about?

This study addressed an important question with respect to how best to measure changes in thinking and memory function after brain injury, (traumatic brain injury and stroke). It is often difficult to separate the effect of the injury from a person’s pre-existing state and his/her personal characteristics (demographic information) such as age, gender, native language education etc. There is a well described link between these personal characteristics and measures of cognitive performance. Clinicians, at times, have trouble deciding whether and when to use corrections of this demographic information. The investigators asked whether correcting for the demographic information of people with brain injury improved the sensitivity of the data. Using the National Institutes of Health Toolbox – Cognition Battery (NIHTB-CB), this study compared uncorrected versus demographically corrected score types in individuals with traumatic brain injury (TBI) and stroke.

### What did the study find?

In the TBI group, corrected scores were more responsive to neurocognitive impairments. Corrected scores have the benefit of controlling for discrepancies associated with premorbid factors rather than only changes in neurological functioning. This study also found that corrected scores are more helpful in distinguishing acquired neurocognitive changes than uncorrected scores and can help in the interpretation of test performance. The correction increased the sensitivity, hence the accuracy and precision in assessing the severity of the injury. However, uncorrected scores may be more useful for determining overall levels of functioning.

### Who participated in the study?

Participants included adults with TBI or stroke (n= 395) and the matched, uninjured control group (n=394).

### How was the study conducted?

TBI and stroke participants were demographically matched to the control. Both groups were administered the NIHTB-CB. Corrected scores were adjusted for age, education, sex, and race/ethnicity. Uncorrected scores were created using census data to represent the average adult in the U.S. population.

### [How can people use the results?](file:///C%3A%5C%5CUsers%5C%5Cccai%5C%5CAppData%5C%5CLocal%5C%5CMicrosoft%5C%5CWindows%5C%5CTemporary%20Internet%20Files%5C%5CContent.Outlook%5C%5C4WHR71C4%5C%5CBogner_CER-1403-13476_DFRR_Professional%20and%20Public%20Abstract_SME%20Review_102918%20ccai.docx%22%20%5Cl%20%22Note%22%20%5Co%20%22Describe%20who%20could%20use%20the%20results%20and%20how.%20Could%20be%20patient%2C%20doctor%2C%20administration%2C%20centers.%20Should%20make%20sense%20given%20findings%20and%20study%20design.%20Do%20not%20overreach.)

Clinicians can use the results of this study to help them understand when to use uncorrected versus demographically corrected scores. Individuals with TBI and their family members can use these results to better understand the approaches clinicians take when developing treatment plans.

### Authorship

### Nitsch, K. P., Casaletto, K. B., Carlozzi, N. E., Tulsky, D. S., Heinemann, A. W., & Heaton, R. K. (2017). Uncorrected versus demographically-corrected scores on the NIH Toolbox Cognition Battery in persons with traumatic brain injury and stroke. Rehabilitation Psychology, 62(4), 485-495. doi:10.1037/rep0000122

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