Author’s response to reviews

Title: Monitoring Neurocognitive Functioning in Childhood Cancer Survivors: Evaluation of CogState Computerized Assessment and the Behavior Rating Inventory of Executive Function

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Author’s response to reviews:

March 27, 2019

Dear Dr. Pertl,

Thank you again for the opportunity to revise our manuscript, PSYO-D-18-00198 Monitoring Neurocognitive Functioning in Childhood Cancer Survivors: Evaluation of CogState Computerized Assessment and the Behavior Rating Inventory of Executive Function (Lyn Balsamo, Ph.D.; Hannah-Rose Mitchell, MPH; Wilhelmenia Ross, MPH; Catherine Metayer, MD, PhD; Kristina K. Hardy, PhD; Nina S. Kadan-Lottick, MD, MSPH). We appreciate the reviewers’ time and helpful comments. We have elaborated upon our initial responses and edited the manuscript to address the reviewers’ comments as described in the point-by-point response below. Please also find the attached, revised copy of our manuscript with changes tracked. We hope that with these changes you will find the manuscript suitable for publication.

Sincerely,

Lyn Balsamo, PhD
Authors’ Responses

Editor Comments:

Most of the reviewers’ and my comments were addressed well in the revision and the manuscript has been improved; however, I think others could have been addressed a little more comprehensively (see below).

1. Table 1 note ** refers to “patients” rather than participants. I would suggest rephrasing to “These included rhabdomyosarcoma…”

Thank you for this suggestion. The change has been made to Table 1.

2. Reviewer 2’s comments #2: the authors did little to “explicitly state how measures such as the CogState differ from standard neuropsychological tests” and how they reduce practice effects, other than adding a different citation.

We agree that we should have better described the differences with computerized testing and, in particular, in relation to practice effects. We edited the manuscript to elaborate on how computerized platforms differ from standard neuropsychological tests (page 4, first paragraph).

“Computerized testing is poised to be an excellent monitoring tool given its efficiency, reduced practice effects that allow more frequent evaluation and lower level of required clinical expertise for administration. In comparison to traditional neuropsychological testing, computer batteries are considerably shorter in duration, e.g., minutes versus hours, and can be more standardized in delivery. For tests of attention and processing speed, a multitude of precisely measured data can be acquired in short periods of time as stimuli can be presented rapidly and responses recorded to the millisecond, also increasing the sensitivity of the measure. Further, the data are computer-scored, thus reducing error, and administration does not usually require a doctoral-level clinician but a technician familiar with the system.(14) Computerized tests that are quick to deliver, contain multiple forms, and do not require rule learning can minimize practice effects. Some computer platforms, like CogState, were designed with the goal of repeated assessment to detect accurately change over time and have been demonstrated to effectively minimize practice effects.(15-17)”

3. Reviewer 2 also highlighted in comment #3 that “recent work has highlighted discordance between objective and subjective measures of cognition after cancer. What are the implications
of this in paediatric cancer survivors specifically?” This was not addressed in the revision, other than to state that questions regarding academic performance can also be put to patients, families, and teachers.

Thank you for allowing us the opportunity to more fully elaborate on our response to this comment. We added the following to page 12, first full paragraph:

“It is noted, however, that there is often low concordance between teacher- and parent-report and performance-based measures among pediatric cancer survivors. Brain tumor survivors are also more likely to under-report problems. This is concerning as cognitive problems may go undetected in this high-risk population if we rely solely on self- or proxy-report to prompt comprehensive testing, which ultimately can delay intervention.”

4. Reviewer 1’s comment regarding the use of these measures in smaller institutions with less resources could also be more comprehensively addressed in the revision. How do computerised tests (and the CogState in particular) compare with alternative measures in terms of resource intensiveness? What resources would this test require for implementation e.g. computers, staff training for implementation and scoring (“trained research assistants” in the Methods); is it freely available for clinical use?

Again, thank you for providing us with the opportunity to address the issue of resources more comprehensively. We edited page 11, second paragraph as follows:

“These results indicate that it will be important to identify other monitoring tools with good sensitivity to identify those patients with neurocognitive difficulties. There is ongoing work to create and validate standardized computerized assessments of cognition, given their portability, reduced administration time, and ease of administration. Computerized tests, including CogState, require a computer, internet access, and qualified staff (several hours of training). There is a cost to CogState (https://www.cogstate.com), like many other computer platforms; however, this is substantially less than the cost of a neuropsychological evaluation or the time of a neuropsychologist. Psychological expertise is not required to administer these tests, but interpretation of the data should be completed by a specialist. Overall, however, there is potentially a savings in professional time and cost that can be advantageous in smaller institutions with less resources. (33-35)”