Title: Utilizing Response Time Modeling to Inform Cancer-Related Cognitive Impairment Assessments

Over the last two decades, it has come to light how little we know about cancer-related cognitive impairment (CRCI). One of the limitations to our understanding stems from a reliance on self-report questionnaires as our measurement method. Recently, researchers have begun using more neurocognitive assessments to measure CRCI, but even these steps forward rely on mean-based assessments. As response time distributions are typically positively skewed, there is a lot of information lost when relying on means as an indicator for these neurocognitive tasks. This limitation of mean-based analyses could be a second factor behind the difficulties in measuring CRCI. While previous studies have illustrated that the cognitive domains of executive control, working memory, and attention can be impacted by CRCI, mean-based comparisons between CRCI patients and control groups have had mixed results. It is possible that using a modeling approach instead may reduce the information loss and provide us with a greater understanding of the underlying mechanisms driving CRCI. By assessing the entire distribution of response times, we can break the cognitive processes into components such as response threshold, non-decision time, and drift. We propose that utilizing a modeling approach to neurocognitive tasks will help us capture the impact of CRCI on executive control, working memory, and attention. The current project will address how shifting our methodology could improve CRCI measurements and impact future cancer research.

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