

HC NASA perceived workload scores. Within the TBI group, there was a significant anxiety by depression interaction ($b = -.015$, $p < .001$). Simple slopes analyses revealed that for TBI participants reporting low depression, perceived workload increased with increased anxiety ($b = .093$, $p < .001$). For TBI participants reporting high depression, perceived workload decreased as anxiety increased ($b = -.38$, $p = .03$). While there was also significant anxiety by depression interaction in the healthy control group ($b = .033$, $p = .04$), simple slopes analyses revealed that there were no significant associations for healthy controls.

Conclusions: These results demonstrate that in TBI, level of depression moderates the relationship between anxiety and workload perception. The pattern observed in the TBI group was unique from controls. The present findings suggest that post-TBI, higher depression may temper the influence of anxiety on stressful cognitive task performance and workload rating. The tempering effect of high depression in TBI may represent a biased reporting style or impaired assessment of task difficulty, which may ultimately affect the individual's capacity to accomplish a task well.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)

Keyword 1: cognitive functioning

Keyword 2: depression

Keyword 3: traumatic brain injury

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12 AppReminders – A pilot feasibility randomised controlled trial of a memory aid app for people with acquired brain injury

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Objective: Mobile phone reminding apps can be used by people with acquired brain injury (ABI)

to compensate for their memory impairments. However off-the-shelf apps may be difficult to use. ApplTree has been developed to be accessible to this group, compared to off-the-shelf reminding apps such as Google Calendar. This pilot feasibility trial aimed to establish the feasibility of running (and issues that should be addressed to complete) a randomised controlled trial comparing ApplTree to Google Calendar in an ABI community treatment setting.

Participants and Methods: Adults with self or other reported memory difficulty after an ABI were enrolled ($n=39$). Those who completed the baseline phase were randomised ($n=29$) and randomly allocated to the Google Calendar or ApplTree intervention. They were shown a 30 minute video tutorial of the app and an assessment on their ability to use it. Timely completion of everyday memory tasks were measured for a 3 week pre-intervention baseline and 3 week post-intervention follow-up phase. Participants also completed neuropsychological tests assessing memory, attention and executive function and gave qualitative feedback on the app and their experience in the trial.

Results: Recruitment rate was 58% of the target (29 were randomised, $n=50$ was the target in 2 years). Retention rate was 65.5% and adherence rate was 57.9%. While the feasibility trial was not powered to calculate efficacy, there was a 13% increase in everyday memory tasks completed on time for those in the ApplTree group ($n=10$) compared to baseline and no change for the Google Calendar group ($n=9$). Feasibility results indicate 72 participants would need to fully complete a trial to detect the minimum clinically important difference (12.5% increase in successful performance of everyday memory tasks) in the efficacy of ApplTree compared to Google Calendar, should such a difference exist.

Conclusions: The challenges with recruitment of people receiving community care for ABI are highlighted in this trial and discussed along with the impact of the Covid-19 pandemic. Methodological considerations for researchers or clinicians looking to measure everyday memory ability are discussed. The majority (19 of 21) of participants who were given an app were capable of learning to use it during an hour-long session. This indicates it is a feasible intervention that community ABI services could offer. Participant feedback highlighted the merits of design features implemented in ApplTree that can improve the uptake and utility of reminding apps.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
Keyword 1: memory: prospective
Keyword 2: technology
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13 Reduced Left Orbitofrontal Volume Correlates with Semantic Verbal Fluency Performance Among Veterans with TBI

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Objective: Semantic verbal fluency (SVF) has traditionally been correlated with activity in the left anterior temporal lobe. Damage to the anterior temporal lobe, such as from a traumatic brain injury (TBI) or neurodegenerative disease, can result in impairments in semantic fluency and language expression. Although the orbitofrontal cortex (OFC) is not well studied as being correlated to this process, its functional connectivity to language-related brain regions, such as the inferior frontal gyrus (Broca's area), suggests it may also play a role in SVF. In fact, preliminary research has shown that lesions in the OFC are associated with semantic fluency deficits (Almairac et al. 2015). As such, the goal of this study was to investigate whether OFC volume correlates with SVF in a population of Veterans with a prior TBI.

Participants and Methods: Thirty-five Veterans who sustained TBIs were included in this study (11% female, age $M = 41.77$, $SD = 11.27$; years of education $M = 14.94$, $SD = 1.62$). All participants underwent a magnetic resonance imaging (MRI) and regional normative volumes were standardized to account for differences in brain size (volume of brain area/total brain volume). Participants were given the Delis Kaplan Executive Function System (D-KEFS) verbal fluency subtest to measure verbal generativity. A Pearson correlation was conducted to investigate the relationship between OFC volume and SVF performance. Post hoc analysis was conducted with Veterans who met the criteria for a TBI sustained by a blast to the head ($n = 25$).

Results: A significant positive correlation emerged between left OFC volume and semantic fluency (category subtest; $p = .03$, $r =$

$.35$). Additional analyses with Veterans with blast-related TBIs indicated a significant correlation between the volume of the OFC and performance on the category ($p = .02$, $r = .45$), and switching ($p = .02$, $r = .43$) subtests of the D-KEFS verbal fluency test.

Conclusions: These findings demonstrate a correlation between the volume of the left OFC and SVF performance. Specifically, Veterans with TBIs had decreased volume of the OFC which correlated with deficits on a SVF task. Among Veterans with blast-related TBIs, both category and category switching subtests correlated with OFC volume. Given the functional connectivity between the OFC and language areas of the brain, this study highlights the importance of analyzing associated cortical regions beyond the anterior temporal lobe when studying SVF performance.

Categories: Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
Keyword 1: traumatic brain injury
Keyword 2: verbal abilities
Keyword 3: neuroimaging: structural
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14 fMRI Investigation of Metacognitive Processing in Moderate to Severe Traumatic Brain Injury

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Objective: Metacognition refers to one's ability to make online, in-the-moment judgments regarding their own cognitive performance, and has significant implications for one's abilities to function in daily life. It has been documented that individuals with TBI often present with metacognitive deficits, and are slower than neurotypical peers in making such judgments. Preliminary attempts have been made to determine how neural contributions to metacognitive functioning differ after injury. Studies thus far have found unique roles of prefrontal gray matter volume and inter-network connectivity in metacognitive functioning after