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13 Reduced Left Orbitofrontal Volume Correlates with Semantic Verbal Fluency Performance Among Veterans with TBI

Kathleen M Hodges
VA Palo Alto Heath Care System, Palo Alto, CA, USA

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.

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14 FMRI Investigation of Metacognitive Processing in Moderate to Severe Traumatic Brain Injury

Kathy S. Chiou[1], Michael J Walsh[1], Jeremy A Feiger[1], Erica Weber[2], Ekaterina Dobryakova[2]
[1]University of Nebraska-Lincoln, Lincoln, NE, USA. [2]Kessler Foundation, East Hanover, NJ, USA

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