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**Objective:** Individuals with Autism Spectrum Disorder (ASD) or Early-Onset Psychosis (EOP) both experience substantial difficulties with social cognition (Spek et al. 2012; Lanillos et al. 2020); however, the impact of therapy and medication use on their social cognition has not yet been examined (Lai et al. 2014; Schiffman et al. 2018). This project will explore the effects of the history of therapy and medication use as moderating variables between neural architecture and social cognition performance.

**Participants and Methods:** T1-weighted imaging data were acquired on a 3T Siemens scanner for 51 ASD and EOP participants (Mean Age = 16.33), with 41 individuals endorsing history of therapy and 23 endorsing history of medication use across groups. Cortical thickness was calculated using FreeSurfer imaging analysis software (v5.3; Fischel et al., 2002) for social brain regions including inferior parietal lobe (IPL), middle temporal lobe (MPL), caudal anterior cingulate cortex (cACC), rostral anterior cingulate cortex (rACC), fusiform gyrus, precuneus cortex, and insular cortex. The Awareness of Social Inference Test (TASIT; McDonald et al., 2006) was administered to assess social cognition performance. After controlling for individuals that had a history of both therapy and medication use, Pearson's correlations were utilized to examine the relationship between cortical thickness and social cognition performance in ASD and EOP patients. The PROCESS Procedure moderation analysis in SPSS was utilized to determine if history of therapy or medication use moderated the relationship between cortical thickness and social cognition performance (Hayes, 2018).

**Results:** Across groups, there was a negative association between an individual's cACC thickness and TASIT Do score ( $r = -.415$ ,  $p = .005$ ) as well as the total TASIT score ( $r = -.325$ ,  $p = .031$ ). Additionally, there was a positive association between an individual's precuneus cortical thickness and their TASIT Say score ( $r = .440$ ,  $p = .003$ ). Results of the moderation analyses revealed that lack of medication use was associated with greater rACC thickness and higher TASIT Say score ( $R^2$  Change = .1281 mm,  $p = .0191$ ). Additionally, lack of past

therapy experience was associated with greater insular thickness and higher TASIT Think scores ( $R^2$  Change = .1957 mm,  $p = .0033$ ).

Conversely, past therapy history was associated with greater fusiform gyrus thickness and higher TASIT Say score ( $R^2$  Change = .1115 mm,  $p = .0262$ ).

**Conclusions:** Our results suggest that for individuals without a history of therapy or medication use, higher cortical thickness of the rACC and insula support better social cognition performance; whereas for individuals with past therapy experience, higher cortical thickness of the fusiform cortex underlies better social cognition performance. Collectively, these findings suggest that an individual's history of therapy or medication use may be relevant variables to consider when examining the relationship between neural cortical thickness and social cognition performance in these neuropsychiatric conditions.

**Categories:** Neuroimaging

**Keyword 1:** neuroimaging: structural

**Keyword 2:** autism spectrum disorder

**Keyword 3:** psychosis

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## 51 Optimizing the Mapping out of Neurocognitive Functioning in Glioblastomas in the Era of Intraoperative Mapping in Surgical Resection

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**Objective:** Glioblastomas, Grade 4 astrocytomas, comprise about 60% of all astrocytomas and have a median survival rate between 14 and 16 months. The extent of resection impacts the prognosis, with an eloquent balance of preserving the patient's functional status. As preoperative imaging and intraoperative techniques improve to maximize safe operative resection, thorough

neuropsychological evaluation can aid in assessing cognitive decline and quality of life pre- and post-treatment. In light of the tumors' progressive nature and potential presence in precarious brain locations, it is imperative that the functional burden of the various presentations of glioblastomas be understood. Given the limited data on cognitive presentations of glioblastomas, we present a case study describing a neuropsychological and neuroradiologic profile of a Grade 4 astrocytoma in a patient with a left temporal glioblastoma.

**Participants and Methods:** The patient signed consent for clinical evaluation and research. At the time of evaluation, he was 68 years old with a master's degree and was working at multiple start-up companies. He began noticing subtle cognitive functioning changes approximately two months prior with difficulty understanding information. His challenges progressed to difficulty composing emails, word-finding issues, and some slurring and mispronunciations. He was diagnosed with a brain tumor after an emergency MRI was performed. He participated in a neuropsychological evaluation just prior to surgery. The evaluation included a battery of neuropsychological tests examining attention, processing speed, executive functioning, learning and memory, language functioning, visuospatial functioning, motor functioning, and mood.

**Results:** The imaging results revealed a non-enhancing intra-axial mass in the left superior temporal lobe with surrounding edema. Also noted were rare scattered nonspecific T2 hyperintensities. The scores showed variable motor functioning and deficits within attention for complex information, executive functioning abilities (i.e., motor planning and sequencing, phonemic fluency), language functioning, visuospatial functioning, and learning and memory of information relative to his premonitory level of functioning, indicating total brain involvement consistent with imaging findings of edema.

**Conclusions:** Taken together, the results of the evaluation and imaging were suggestive of a level of cognitive decline that is more than expected with normal aging. Moreover, there was a lack of evidence representative of a lateralized profile. Notably, the evaluation was conducted before resection surgery, and therefore, the patient continued to experience significant brain edema due to the tumor. Although medication may have contributed to dysfunction, particularly with motor and cognitive

slowing, it is not likely that it explained his presentation entirely. As such, the evaluation results were suggestive of neurocognitive dysfunction, which was partially attributable to the tumor and edema displacing neuronal tissue. Given the potential for improvement following tumor resection and secondary decline resulting from recurrence or treatment, it is crucial to have a baseline and the ability to map out higher order functioning, including frontal and temporal lobe functioning. Ultimately, as the field continues to look toward long-term survival for patients with currently lethal brain tumors, the goal is to achieve maximum resection with minimal neurocognitive loss.

**Categories:** Neuroimaging

**Keyword 1:** brain tumor

**Keyword 2:** neuroimaging: structural

**Keyword 3:** quality of life

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## 52 Open Access, Normative Morphometric Software Indicate Neurodegeneration Associated with Episodic Memory Dysfunction in Amnesic MCI

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**Objective:** Neurodegeneration in Alzheimer's disease (AD) is typically assessed through brain MRI, and proprietary software can provide normative quantification of regional atrophy. However, proprietary software can be cost-prohibitive for research settings. Thus, we used the freely available software NORMative Morphometry Image Statistics (NOMIS) which generates normative z-scores of segmented T1-weighted images from FreeSurfer to determine if these scores replicate established patterns of neurodegeneration in the context of amnesic mild cognitive impairment (aMCI), and whether