these measures correlate with episodic memory test performance.
Participants and Methods: Patients with aMCI (*n* = 25) and cognitively normal controls (CN; *n* = 74) completed brain MRI and two neuropsychological tests of episodic memory (the Rey Auditory Verbal Learning Test and the Wechsler Logical Memory Tests I & II), from which a single composite of normed scores was computed. A subset returned for follow-up (aMCI *n* = 11, CN *n* = 52) after ~15 months and completed the same procedures. T1-weighted images were segmented using FreeSurfer v6.0 and the outputs were submitted to NOMIS to generate normative morphometric estimates for AD-relevant regions (i.e., hippocampus, parahippocampus, entorhinal cortex, amygdala) and control regions (i.e., cuneus, lingual gyrus, pericalcarine gyrus), controlling for age, sex, head size, scanner manufacturer, and field strength. Baseline data were used to test for differences in ROI volumes and memory between groups and to assess the within-group associations between ROI volumes and memory performance. We also evaluated changes in ROI volumes and memory over the follow-up interval by testing the main effects of time, group, and the group X time interactions. Lastly, we tested whether change in volume was associated with declines in memory.
Results: At baseline, the aMCI group performed 2 SD below the CN group on episodic memory and exhibited smaller volumes in all AD-relevant regions (volumes 0.4 – 1.2 SD below CN group, *p*s < .041). There were no group differences in control region volumes. Memory performance was associated with volumes of the AD-relevant regions in the aMCI group (average rho = .51) but not with control regions. ROI volumes were not associated with memory in the CN group. At follow-up, the aMCI group continued to perform 2 SD below the CN group on episodic memory tests; however, change of performance over time did not differ between groups. The aMCI group continued to exhibit smaller volumes in all AD-relevant regions than the CN group, with greater declines in hippocampal volume (17% annual decline vs. 8% annual decline) and entorhinal volume (54% annual decline vs. 5% annual decline). There was a trending Group X Time interaction such that decrease in hippocampal volume was marginally associated with decline in memory for the aMCI group but not the CN group.
Conclusions: Normative morphometric values generated from freely available software demonstrated expected patterns of group differences in AD-related volumes and associations with memory. Significant effects were localized to AD-relevant brain regions and only occurred in the aMCI group. These findings support the validity of these free tools as reliable and cost-effective alternatives to proprietary software.

Categories: Neuroimaging
Keyword 1: mild cognitive impairment
Keyword 2: normative data
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53 Change in Cerebral Metabolite Concentrations Following Bariatric Surgery

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Objective: Obesity is associated with adverse effects on brain health, including increased risk for neurodegenerative diseases. Changes in cerebral metabolism may underlie or precede structural and functional brain changes. While bariatric surgery is known to be effective in inducing weight loss and improving obesity-related medical comorbidities, few studies have examined whether it may be able to improve brain metabolism. In the present study, we examined change in cerebral metabolite concentrations in participants with obesity who underwent bariatric surgery.
Participants and Methods: 35 patients with obesity (BMI ≥ 35 kg/m^2) were recruited from a bariatric surgery candidate nutrition class. They completed single voxel ^{1}H-proton magnetic resonance spectroscopy at baseline (pre-surgery) and within one year post-surgery. Spectra were obtained from a large medial frontal brain region. Tissue-corrected absolute concentrations for metabolites including choline-containing compounds (Cho), myo-inositol (mI), N-acetylaspartate (NAA), creatine (Cr), and glutamate and glutamine (Glx) were determined using Osprey. Paired t-tests were used to examine within-subject change in metabolite concentrations, and correlations were used to

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relate these changes to other health-related outcomes, including weight loss and glycemic control.
Results: Bariatric surgery was associated with a reduction in cerebral Cho (t[34] = -3.79, p < 0.001, d = -0.64) and mI (t[34] = -2.81, p < 0.01, d = -0.47) concentrations. There were no significant changes in NAA, Glx, or Cr concentrations. Reductions in Cho were associated with greater weight loss (r = 0.40, p < 0.05), and reductions in mI were associated with greater reductions in HbA_{1c} (r = 0.44, p < 0.05).
Conclusions: Participants who underwent bariatric surgery exhibited reductions in cerebral Cho and mI concentrations, which were associated with improvements in weight loss and glycemic control. Given that elevated levels of Cho and mI have been implicated in neuroinflammation, reduction in these metabolites after bariatric surgery may reflect amelioration of obesity-related neuroinflammatory processes. As such, our results provide evidence that bariatric surgery may improve brain health and metabolism in individuals with obesity.

Categories: Neuroimaging
Keyword 1: magnetic resonance spectroscopy
Keyword 2: medical disorders/illness
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54 Exploring the Impact of Stria Terminalis Connectivity and Family Income on Depressive Symptoms Throughout Development

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Objective: The stria terminalis (ST) is a white matter tract with connections to limbic and autonomic brain structures that is implicated in affective functioning. Recent works suggests that ST functional integrity and connectivity is associated with faster responses to emotional cues (Dzafic et al., 2019) and may be influenced by environmental factors including socioeconomic status (SES) and childhood adversity (Banihashemi et al., 2020). The role of the ST in the experience of more daily affective experiences, such as depressive symptoms, remains unexplored. Therefore, the present study examined the role of the ST and SES, as assessed by household income, in the relationship between age and depressive symptoms in typically developing children and adolescents.
Participants and Methods: Participants include 64 typically developing children and adolescents age 8-21 (Mage=13.27, SD=3.15) who participated in an ongoing study of development of neurocognitive and social-cognitive skills. Participants completed imaging on a 3Tesla MR Siemens PRISMA scanner. Tractography was executed via ENIGMA tract-based spatial statistics to quantify WM integrity and provided values for mean fractional anisotropy (mFA) of the ST. Depressive symptoms were measured with the Behavior Assessment Scale for Children-Third Edition (BASC-3) parent report scale, and annual family income was obtained per parent report. Mediation and moderation analyses were conducted using Process version 4.1 (Hayes, 2022) in SPSS version 28. As depression symptoms are often higher in early adolescence than later, we examined the indirect effect of age on depressive symptoms through ST mFA and evaluated this relationship at different levels of family income.
Results: Age was associated with lower levels of depressive symptoms (b=-.98, t=-2.18, p<.05), whereas greater right ST mFA was associated with higher levels of depressive symptoms (b=42.05, t=2.50, p<.05). Right ST mFA explained significant variance in the relationship between age and parent-reported depression (ab=.13, 95% CI [.02, .29]). The conditional indirect effect of family income was significant for children with annual family incomes between 25-50k (effect=.16, 95% CI [.01, .38]) and 75-100k (effect=.13, 95% CI [.001, .31]), but not for 100k+ (effect=.11, 95% CI [-.05, .33]).
Conclusions: The present study revealed a significant, positive relationship between white matter integrity in the right ST and parent-reported depressive symptoms in healthy children and young adults. Finding extend on prior work implicating the ST in threat responsivity (Dzafic et al., 2019). Moreover,

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