**Conclusions:** Patients with infratentorial and supratentorial stroke may experience a similar degree of poststroke depression. Despite differences in suspected pathophysiologic mechanisms, infratentorial and supratentorial stroke appear to influence depressive symptoms to a similar extent. While future analyses with larger sample sizes are indicated, the current study indicates that patients with infratentorial and supratentorial stroke should be evaluated for depressive symptoms during the acute phases of recovery to inform treatment and potentially improve outcomes.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
**Keyword 1:** depression
**Keyword 2:** stroke
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## 25 Associations between Diffusion Kurtosis Imaging, Tau, and Cognitive Outcomes in TBI

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**Objective:** Determine associations between cognitive outcomes in remote TBI (i.e., at least 6 months post injury), a blood marker of neural degeneration (i.e., Tau), and diffusion kurtosis imaging (DKI) measures (e.g., mean or radial kurtosis). Because DKI imaging is sensitive to the environmental complexity of the imaged area, we sought to investigate regions known to be associated with the cognitive and emotional sequalae of TBI, such as the anterior thalamic radiations, uncinate fasciculus, and the corpus callosum.
**Participants and Methods:** 41 individuals with mild-to-moderate TBI and a mean age(SD) of 36.1(10.4) years underwent DKI, a blood draw, and neuropsychological assessments. 23 healthy controls (HC) with a mean age(SD) of 35.2(15.2) years underwent the blood draw and assessments, but no imaging. Higher diffusion kurtosis indicates more restricted diffusion, possibly due to greater complexity within the imaged region. Thus, in the context of TBI, DKI can be used as a proxy measurement for biological processes that alter the complexity of imaged environments, such as reactive gliosis. Some people show cognitive deficits long after TBI and this could be associated with increased inflammation and membrane protein aggregates in damaged brain regions. We used bivariate correlations and general linear models to investigate the association of mean kurtosis (MK) in long white matter tracts and Tau (total or phosphorylated) to color-word Stroop scores; a measure of fronto-subcortical function.
**Results:** In patients with TBI, MK was significantly associated with serum total Tau (TTau) in the right (r=-0.396) and left (r=-0.555) uncinate fasciculus (UF), right (r=-0.402) and left (r=-0.504) anterior thalamic radiations (ATR), and the genu (r=-0.526) and body (r=-0.404) of the corpus callosum (CC). TTau had a significant association with word Stroop scores, $F(1,63)=-2.546$, $p=0.013$. However, there was no significant effect of group (i.e., TBI or HC), $F(2,63)=-0.426$, $p=0.672$, on cognitive performance. When models were implemented that included both TTau and MK in either the UF or ATR as explanatory variables to predict word Stroop scores, TTau levels and MK in the right UF explained a significant amount of the variance in Stroop performance, $F(1,29)=2.215$, $p=0.025$. Further, there was also a significant association between radial kurtosis in the right UF and Stroop word scores (r= 0.366).
**Conclusions:** Our results show that an indicator of biological complexity (DKI) in cognitively important brain regions is associated with cognitive performance and Tau in patients with remote mild-to-moderate TBI. The UF is a critical fronto-temporal/subcortical pathway that has previously been implicated in the manifestation of executive dysfunction and mood dysregulation in TBI. Tau is an important marker of neurodegeneration implicated in Alzheimer's disease, Parkinson's disease, and chronic traumatic encephalopathy (CTE), and DKI is potentially sensitive to markers of neurodegeneration. The association of Tau and DKI measures is novel and shows concordance between blood and brain imaging markers and cognitive performance in patients with mild to moderate TBI.

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**Keyword 2:** neurophysiology
**Keyword 3:** cognitive functioning
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## 26 Alexithymia Predicts Affect Recognition after Acquired Brain Injury

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**Objective:** Alexithymia is characterized by difficulty identifying and describing one's emotions. Alexithymia is more prevalent and severe after acquired brain injury (ABI; Fynn et al., 2021). Additionally, studies have shown frequent impairment of affect recognition after ABI (Neumann et. al, 2014). Research examining the relationship between the subjective experience of alexithymia and the objective ability to recognize emotion in others has been limited, especially among individuals with ABI. Some research indicates that alexithymia is more common following traumatic brain injury (TBI) than non-traumatic brain injury such as stroke; however, no previous research has examined the relationship between alexithymia and affect perception comparing adults with TBI and stroke. Accordingly, this study aimed to fill that gap.
**Participants and Methods:** Participants were 218 adults in three groups: healthy adults (HA; n = 99), TBI (n = 63), and stroke (n = 56). Participants completed a neuropsychological battery that included the Toronto Alexithymia Scale-20 (TAS; Bagby et al., 1994), and a multicultural Face Emotion Perception Test (MFEPT). The MFEPT used images from the Montreal Set of Facial Displays of Emotion (Beaupré et al., 2000) to assess recognition accuracy for anger, sadness, fear, disgust, and neutral expressions. The Recognition Memory Test (RMT; Warrington, 1984) was included to account for variance in facial affect recognition associated with face recognition only.
**Results:** Analysis of variance indicated a significant difference among the means on TAS ($p < .001$, $\eta 2 = .09$. Tukey post hoc tests indicated lower TAS among HA than Stroke ($d = -0.73$, $p = .001$) and TBI ($d = -0.56$, $p = .002$) groups; however, TBI and Stroke did not differ significantly ($d = -0.15$, $p = .667$). Chi-square tests indicated that the percent of HA with clinically-elevated alexithymia (7.1%) was lower than Stroke (21.4%, $p = .009$) and TBI (25.8%, $p = .001$), who did not differ significantly ($p = .610$). Pearson correlations indicated medium inverse correlations between alexithymia and affect recognition for Stroke ($r = -.39$, $p = .002$) and TBI ($r = -.36$, $p = .002$). For HA, who showed low alexithymia, the relationship was not significant ($r = -.15$, $p = .070$). Examination of the TAS subscales indicated that TAS-Total correlations with MFEPT were driven primarily by Difficulty Identifying Feelings (DIF), as compared to Difficulty Describing Feelings or Externally-oriented Thinking. Partial correlations between TAS-DIF and MFEPT accounting for RMT remained significant for both TBI ($rp = -.23$, $p = .036$) and Stroke ($rp = -.39$ $p = .002$).
**Conclusions:** Consistent with prior research, alexithymia was more prevalent and severe among adults with TBI and stroke as compared to healthy adults. Adults with TBI and stroke showed similar levels of alexithymia, and the pattern of associations is consistent with the theory that alexithymia disrupts recognition of emotion displayed by others. This link may partly explain the robust findings of diminished and impaired social and interpersonal outcomes after ABI. Future research should test these links directly, to support the development of interventions to maximize social and interpersonal well-being after ABI.

**Categories:** Acquired Brain Injury (TBI/Cerebrovascular Injury & Disease - Adult)
**Keyword 1:** stroke
**Keyword 2:** traumatic brain injury
**Keyword 3:** affective processing (normal)
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## 27 Apathy Associated with Cognition in Older Adults with Chronic Moderate to Severe Traumatic Brain Injury

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