

Perceived discrimination - a risk factor for brain health



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BACKGROUND

Discrimination refers to the unfair treatment experienced by individuals based on a devalued individual attribute or group identity.¹

Discrimination associated with adverse outcomes:

- Lower psychological well-being²
- Poorer mental and physical health³
- Lower hippocampal volumes and greater white matter hyperintensities⁴mortality
- Higher odds of all-cause.⁵

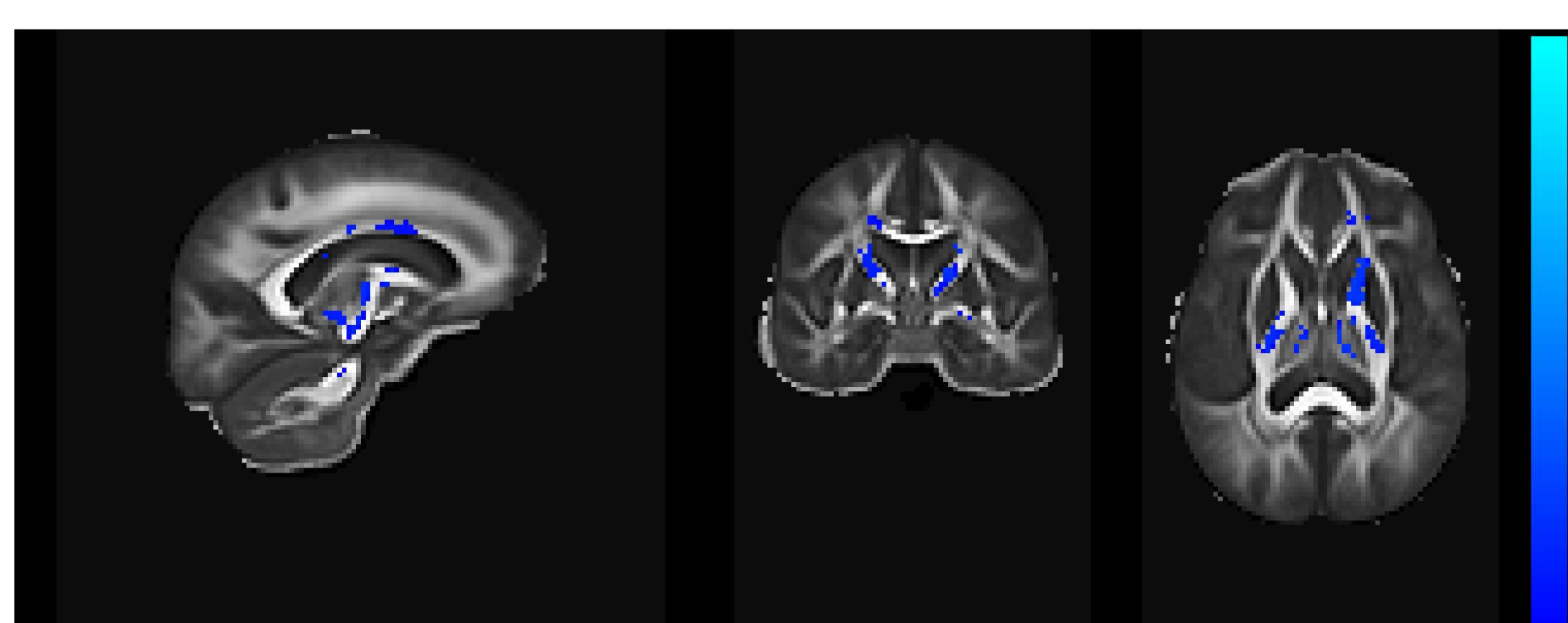
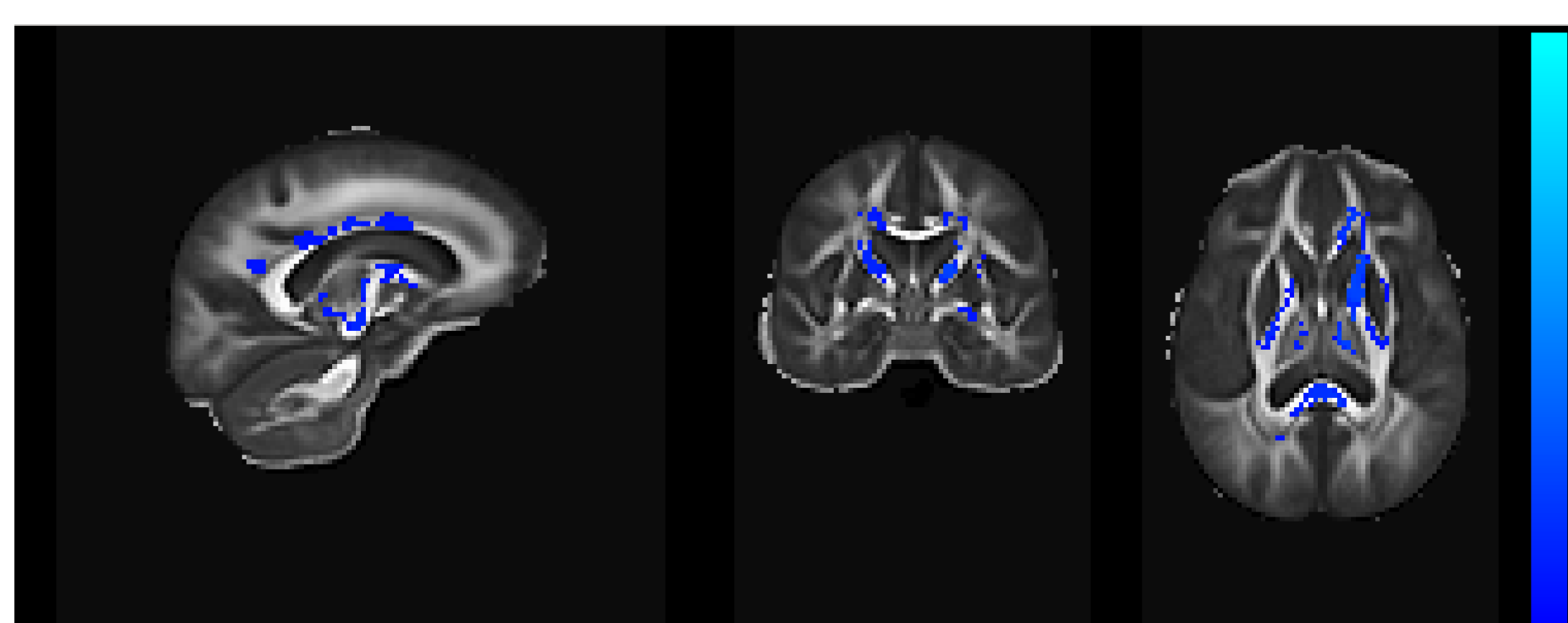
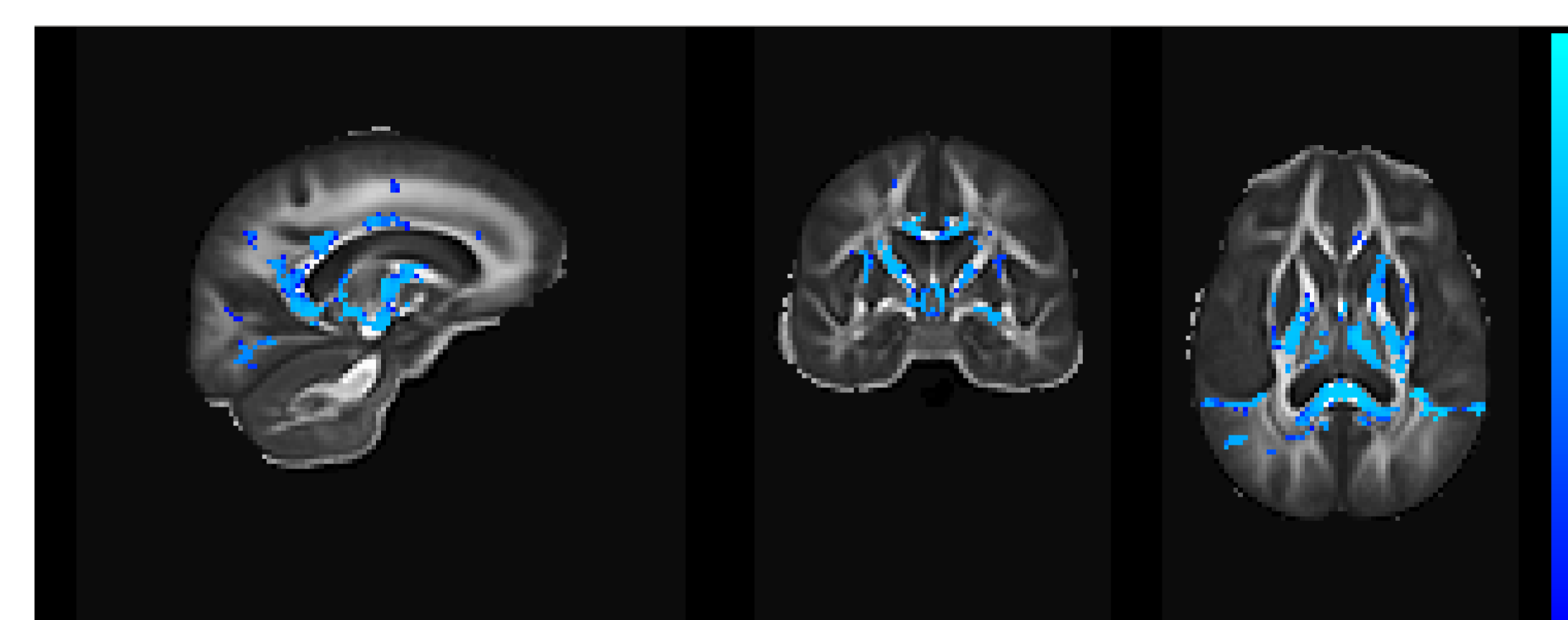
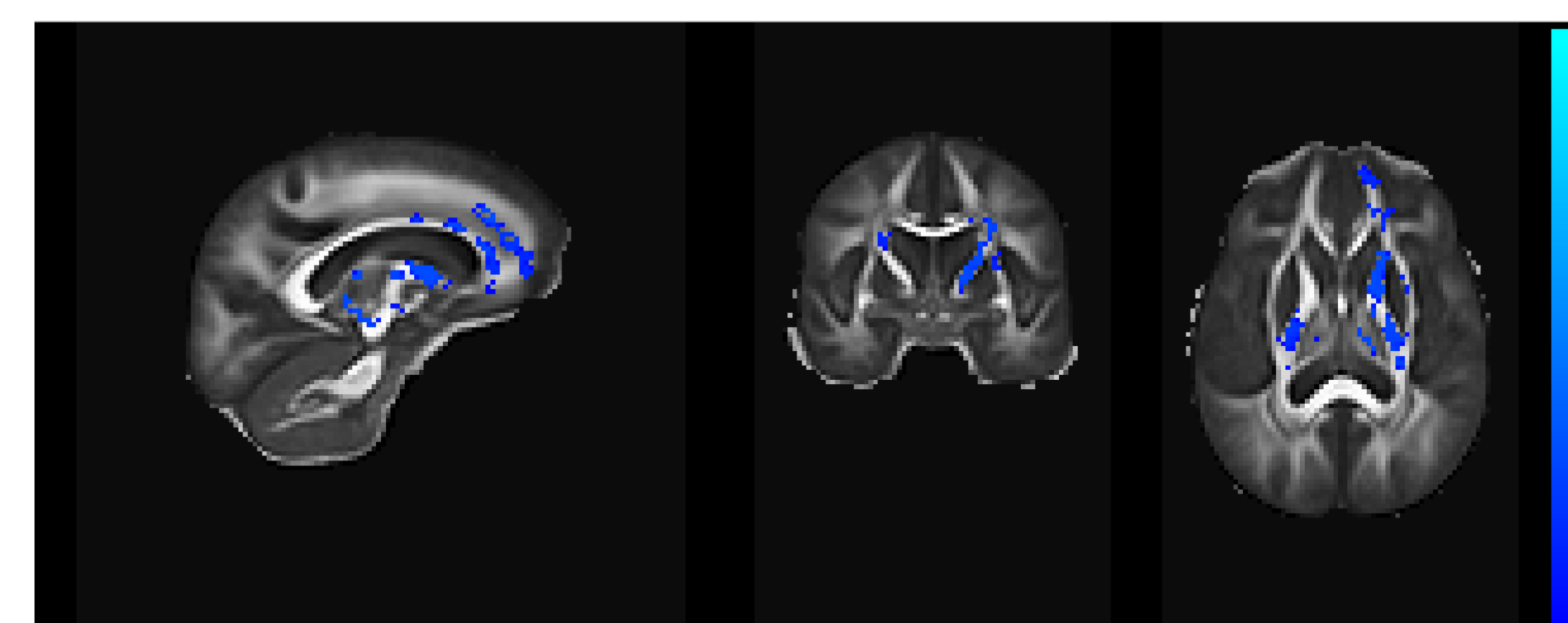
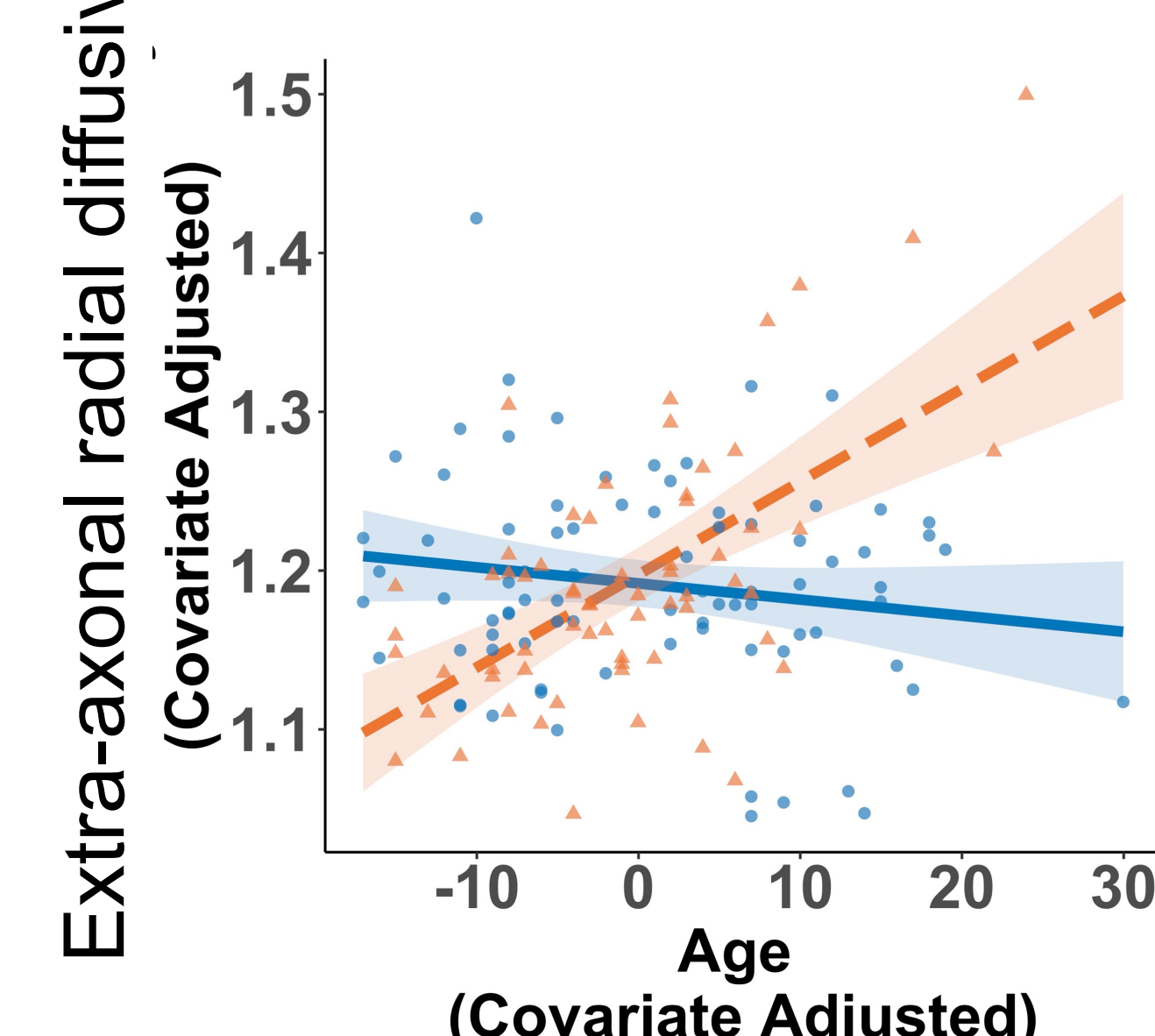
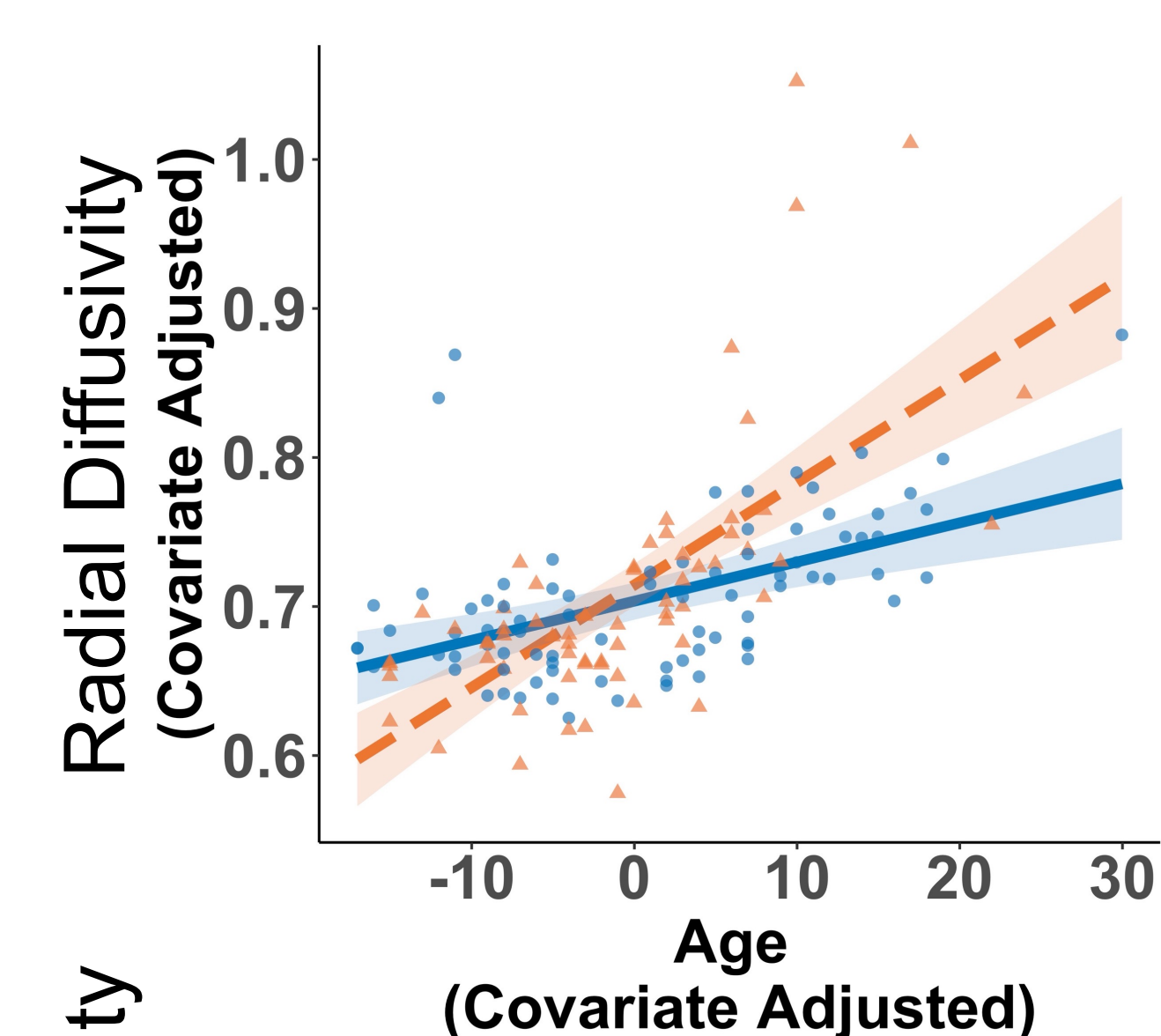
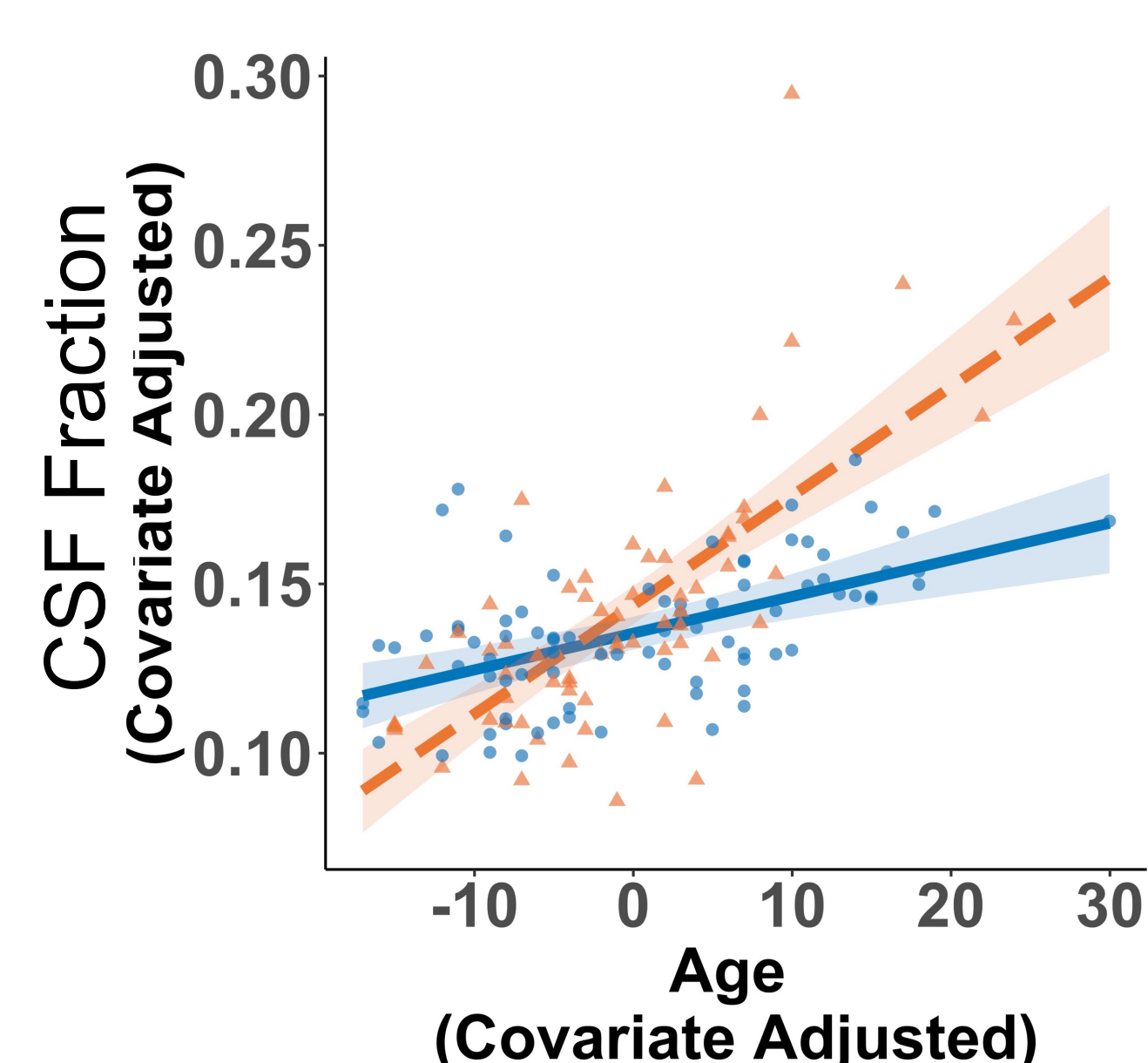
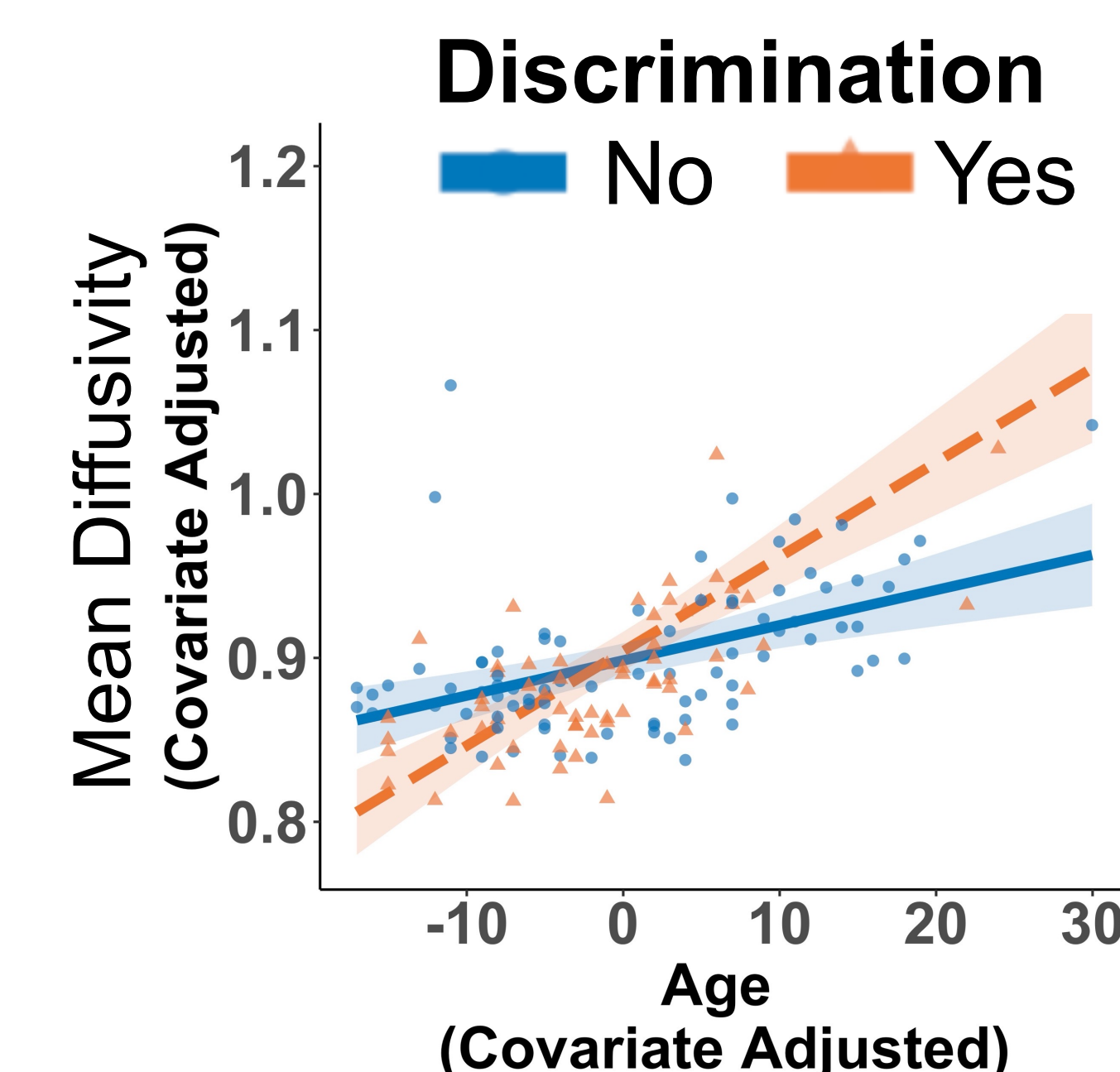
We examined how perceived discrimination is associated with multiple indices of brain microstructure.

METHODS

- Data from the Midlife in the United States (MIDUS) neuroscience project, third wave, collected between 2017-2022.
 - $n = 147$
 - Ages: 48-95 (mean 65, SD 9.44)
 - Females: 87 (59%)
 - Black, Indigenous, and People of Color (BIPOC): 40 (27.2%)
 - Education High school or less: 38 (25.8%)
- Lifetime discrimination: 11-item scale⁶.
- Microstructural indices derived for
 - Diffusion tensor imaging (DTI)
 - Diffusion kurtosis imaging (DKI)
 - White matter tract integrity (WMTI)⁷
 - Neurite orientation dispersion and density imaging (NODDI)⁸
- Voxelwise permutation analyses of linear models⁹ (FWE corrected, $P < .05$) on whole brain white matter & bilateral hippocampus.
- Models with and without sex, race, education.

RESULTS

Lifetime discrimination accelerated age-associated changes in white matter.



Brain images are shown in radiological convention (left hemisphere is on the right side in coronal and axial views).

DISCUSSION

- Higher lifetime discrimination was consistent with accelerated aging such as increased mean and radial diffusivities, higher CSF fraction and extra-axonal radial diffusivities.¹⁰
- Converging evidence found using biophysical models (NODDI, WMTI) and statistical models (DKI and DTI) suggest that age-related increase in interstitial water is amplified with discrimination.¹¹
- Findings were consistent with and without inclusion of covariates suggesting perceived discrimination is an independent risk factor.

CONCLUSIONS

- Perceived discrimination experiences may accelerate brain aging and could be considered a risk factor for brain health.
- These data add to the accumulating evidence of detrimental and widespread impact of experiencing discrimination ranging from the personal to the societal level.

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