Abstracts

Poster Session B

Thursday, October 26, 6:00pm - 7:00pm

DEVELOPMENTAL AND PEDIATRIC: OTHER

B - 11
Early Life Traumatic Brain Injury Constrains the Benefits of High Socioeconomic Status on White Matter Microstructure and Language
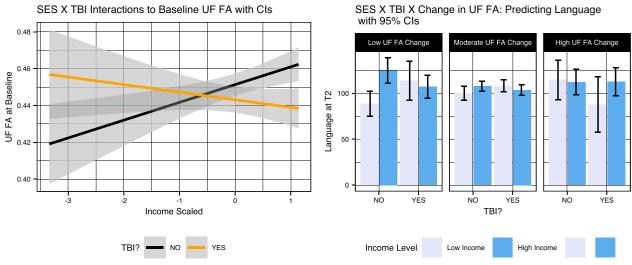*Nourhan M Elsayed, Deanna M Barch*

Objective: We examined contributions of socioeconomic status (SES) and Traumatic Brain Injury (TBI) to change in language and white matter microstructure (WMM) during adolescence.
Method: Data are from 11,876 youth with baseline assessment (T1) and 24-month follow-up (T2) in the Adolescent Brain Cognitive Development study (general community sample). TBI data were from the parent-reported Ohio State TBI Identification Method. Language was measured using the NIH-toolbox picture-vocabulary test. TBI cases, with complete data, were nearest-neighbor propensity score matched with non-TBI cases considering handedness, income, race, age, sex, and diffusion tensor imaging quality (N-analyses = 141). WMM in the uncinate fasciculus (UF) was assessed using fractional anisotropy (FA). Analyses were conducted using nested linear models accounting for dependencies, age, sex, and handedness.
Results: TBI was not independently associated with language or WMM at T1 (mean age in months (MA) = 118.8) or T2 (MA = 142.8) (all $p > 0.05$). TBI and SES interacted in association with T1 UF-FA ($p = 0.03$, CI = -0.05, −0.02). Low SES youth did not differ in T1 UF-FA. Among high SES youth, those without TBI had higher UF-FA ($p = 0.04$). A 3-way interaction between SES, TBI and change in UF-FA between T1 and T2 in predicting language emerged ($p = 0.01$, CI = 0.12, 1.06). Youth with moderate-to-high levels of UF change did not differ in language. For youth with low increases in UF, SES and language were positively associated only in youth without TBI ($p = 0.0003$).
Conclusion(s): TBI does not have a direct effect on adolescent WMM or language but interacts with SES and WMM to blunt benefit of SES on language.

SES X TBI Interactions to Baseline UF FA with CIs

SES X TBI X Change in UF FA: Predicting Language with 95% CIs