**Title:**

Neurofilament light chain (NfL) and cognitive performance

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**Description:**

Neurofilament light chain (NfL) as a marker of axonal integrity may index neurodegeneration and is elevated with neurological diseases such as multiple sclerosis (MS) as well as Alzheimer’s disease (AD). Higher values of NfL positively relate to the degree of damage to axonal integrity. In available studies, NfL shows individual variation among healthy early adult individuals and is correlated with tasks tapping executive function.

Work to date in CATSLife (from GSA 2020): Pilot assays for 34 CATSLife participants were conducted where samples were selected based on self-reported neuroinflammatory conditions (N = 5) or by APOE genotype (N\_nonE4 = 18, N\_E4 = 16). The NfL distribution aligns with other studies of early-mid adulthood (range = 1.3 - 22.3 pg/ml). Log-transformed NfL values were related to covariates in expected directions, where NfL was higher in cases (exp(b)=1.08 pg/ml), in males (exp(b)=1.25 pg/ml), by age (exp(b)=1.03 pg/ml per year) and in APOE E4 carriers (exp(b)=1.11 p/mg). Moreover, correlations partialed for age, sex, APOE e4 and case status suggest higher NfL may be associated with lower Full Scale IQ and general cognitive ability (r’s = -.18 and -. 28) and stronger among APOE E4 carriers (r’s = -.42 - .44, partialed for age, sex, case status). Associations with measures of processing speed were consistent. In this pilot study, NfL appears to be a salient biomarker of cognitive functioning in early- to mid- adulthood.

Plans: NfL Assays of CATSLife1 will be undertaken soon for all participants providing samples. Expansions to other cognitive domains will be undertaken.

**Sample:**

CATSLife

**Process:**

Idea formulation, Pilot

**Start:**

2020/09

**Last:**

2021/06