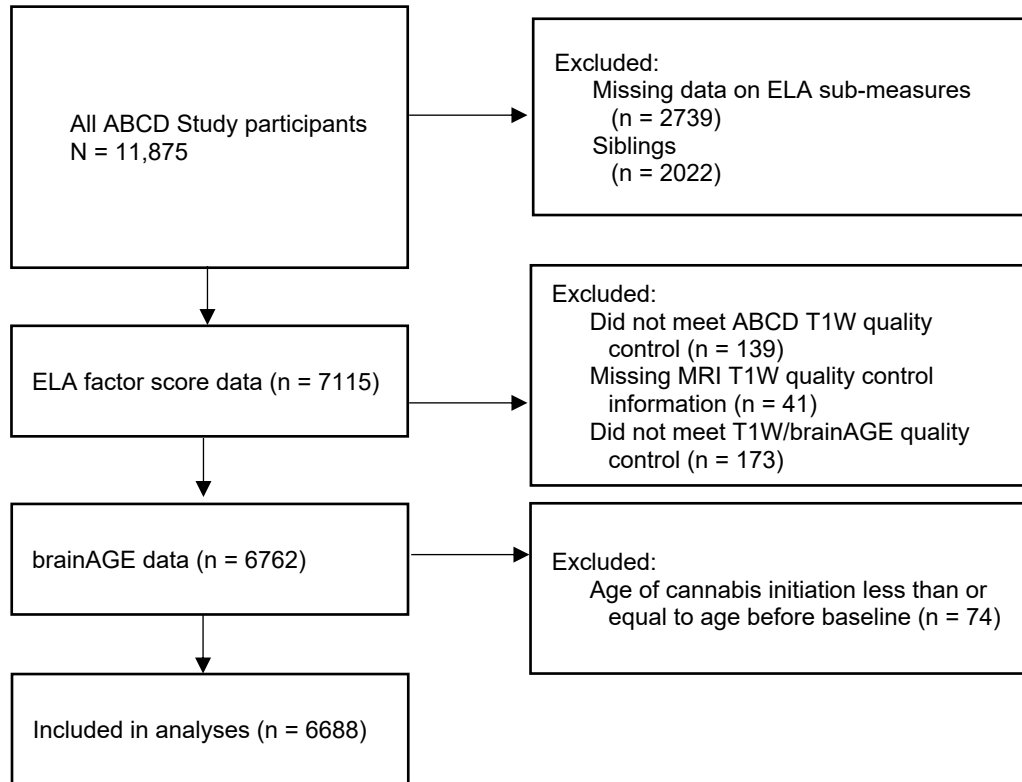


SUPPLEMENTARY MATERIALS

S1. Inclusion/Exclusion Flow Diagram



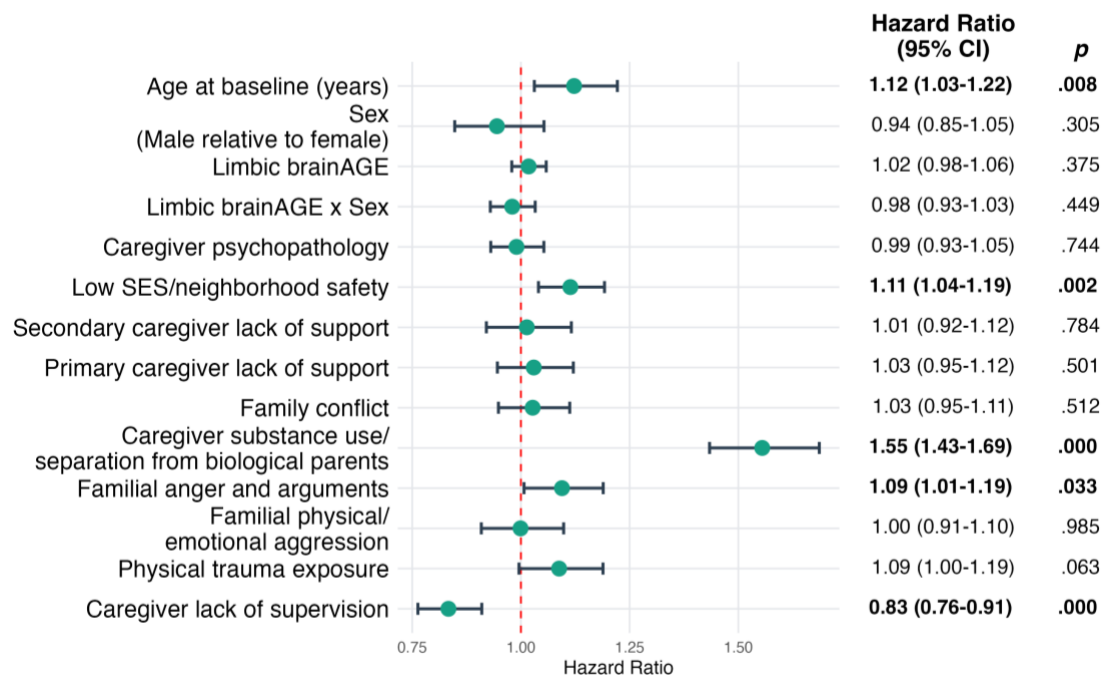
eFigure 1. Inclusion/exclusion flow diagram

S2. BrainAGE Model Development and Validation

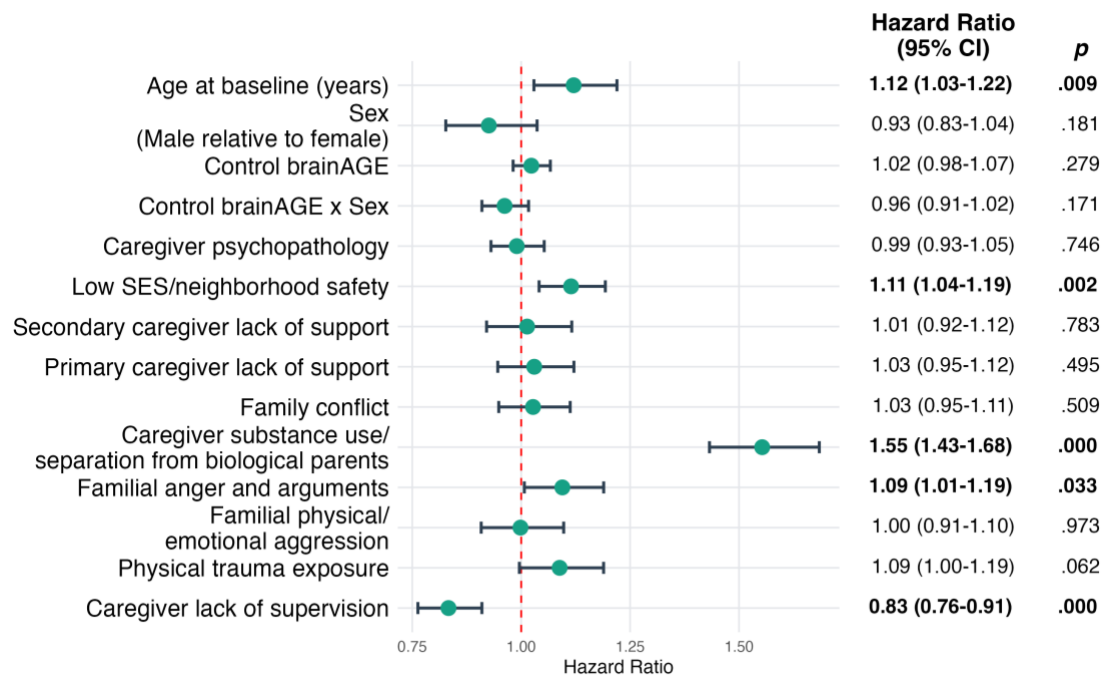
The developmental global brainAGE model available through the CentileBrain platform (<https://centilebrain.org/>) was developed using structural MRI data from 2,105 typically developing individuals aged 5 to 22 years from five cohorts²⁴. The global brainAGE model used sex-specific support vector regression with a radial basis function kernel and cortical thickness and surface area features from the Schaefer 400-parcel atlas. Pretrained model parameters were applied to the corresponding Schaefer 400-parcel cortical features extracted from the current ABCD sample.

The network brainAGE model, available through the CentileBrain platform (<https://centilebrain.org/>), was trained in 9,473 healthy individuals aged 3 to 92 years²⁹. Cortical thickness and surface area features were extracted using the Schaefer 1,000-parcel atlas. Each parcel was assigned to one of the seven Yeo functional networks³⁰— default mode, dorsal attention, ventral attention/salience, frontoparietal control, limbic, somatomotor, and visual — based on maximal spatial overlap, defined as the greatest number of shared vertices between each Schaefer parcel and the Yeo 7-network atlas. Sex-specific support vector regression models with radial basis function kernels were then applied to estimate network-specific brainAGE. For the current study, pretrained model parameters developed in individuals younger than 40 years were applied to the corresponding Schaefer 400-parcel cortical features extracted from the current ABCD sample.

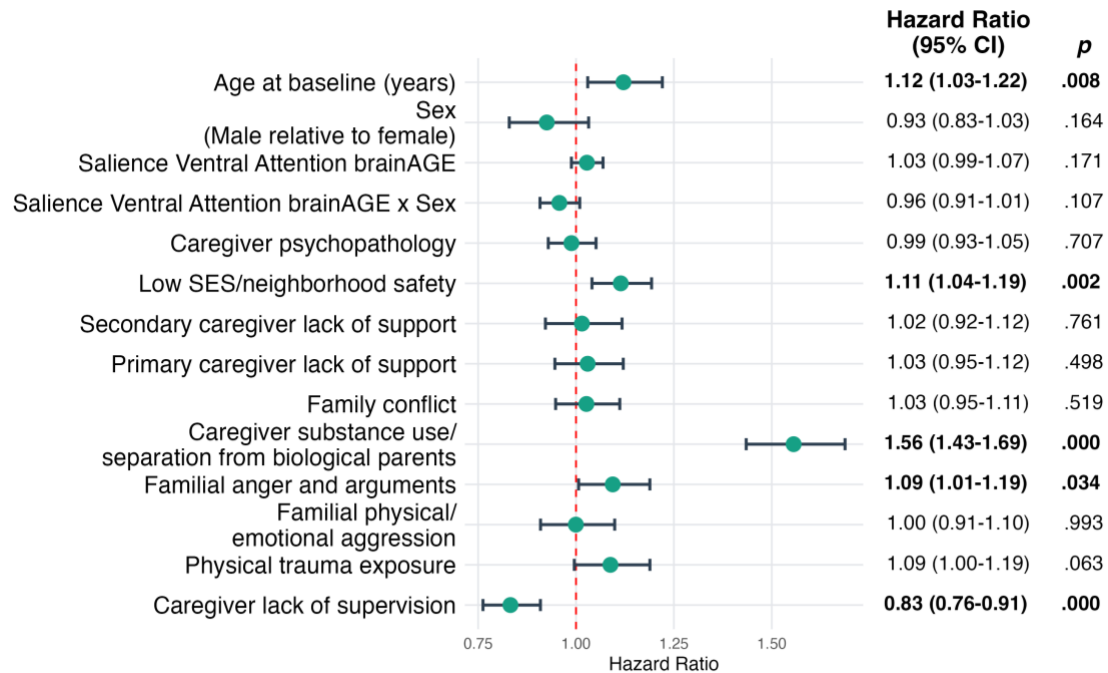
S3. Network-specific brainAGE models



eFigure 2. Cannabis initiation – limbic network brainAGE model.



eFigure 3. Cannabis initiation – control network brainAGE model.



eFigure 4. Cannabis initiation – salience/ventral attention network brainAGE model.