Preliminary Results

Template used:

* MNI Pediatric Asym -- cohort 3 (Ages 7 – 11)

Criteria used to censor volumes:

* First or second volume (“dummy scans”)
* Framewise displacement of volume > 1
* Framewise displacement on the next volume > 1
* Volume was detected by fmriprep as a steady state outlier

First-level regressors:

* 6 rigid-body motion parameters (3 translation, 3 rotation) and their derivatives, csf signal, white matter signal, global signal

Motion cleaning criteria used:

* runs with >20% of TRs censored across the 4 food blocks were excluded from analyses

Sample:

* Children with at least 2 runs (N = 64)
  + High Risk = 24
  + Low Risk = 36
* Children with at least 3 runs (N = 55)
  + High Risk = 18
  + Low Risk = 33

Analyses

\*\* NOTE: regions identified using visual inspection at voxel-wise threshold of p<.001. Need to convert coordinates from pediatric to adult template to more accurately define location of clusters \*\*

* 1 sample T
  + Main effect: Energy density contrast (High vs. Low) across portion size
    - High > Low
      * Medial PFC
      * Subgenual ACC into
    - Low > High
      * Bilateral Temporal lobe
  + Main effect: Portion size contrast (Large vs. Small) across energy density
    - Large > Small
      * Bilateral visual cortex
      * Bilateral thalamus
* 2 sample paired T
  + Portion size x Energy Density
    - Prefrontal – SMA
    - Visual cortex
* 2 sample T
  + NOTE: in general clusters are small, need to correct for multiple comparisons to see what survives. Results are inconsistent between the 2 samples (2 vs. 3 runs)
  + Risk x ED contrast
    - High risk > Low risk: hippocampus (3 run sample only)
    - Low risk > High risk: temporal lobe (2 run sample only)
  + Risk x Portion size contrast
    - High risk > Low risk: Bilateral temporal lobe (3 run sample only)
    - Low risk > High risk: cerebellum (2 run sample only)

To do:

* Convert coordinates between the pediatric template and MNI to define location of clusters
  + <http://nist.mni.mcgill.ca/pediatric-atlases-4-5-18-5y/> see “Comparing different ages”
* Rerun first-level analyses with 1s onset adjustment to account for going from fMRIprep to AFNI
* Run AFNI’s 3dREMLfit for REML estimation of the temporal auto-correlation structure
  + necessary for running Mixed Effects Meta Analysis (3dMEMA) and Linear Mixed-Effects Modeling (3dlme) in AFNI
* Run Risk\*ED\*PS analyses with 3dMEMA
* Examine relationships between neural responses and portion size effect
  + Estimate fixed effects individual slopes (Alaina)
  + Whole-brain analyses
    - <https://afni.nimh.nih.gov/pub/dist/edu/latest/afni_handouts/afni24_GroupAna.pdf>
* Control for motion in group analyses? – motion might differ between risk groups
* Look at objects
  + Large vs. small – to compare for the food

As klk write up prelim data for the grant

Main effects, esp in the PFC

Risk x ED contrast

Risk x PS contrast