Maternal Childhood Maltreatment Is Associated With Lower Infant Gray Matter Volume and Amygdala Volume During the First Two Years of Life

Supplement

Supplemental Methods and Materials

Infant participation in MRI scan by key study variables. MRI participants did not differ from MRI non-participants on any sociodemographic variable (sex, race, ethnicity, income, maternal education, p_{range} = .11 - .83), maternal depression score [$t(178) = .27$, $p = .79$], or on maternal scores on the MACE [$t(177) = -1.23$, $p = .22$] or ACE [$t(179) = -.69$, $p = .49$].

Reasons for unsuccessful scans. MRI scans were unsuccessful because infants did not fall asleep before the scan (37.10%), woke up during the transfer to the scanner or during the scan (48.39%), moved too much during the scan resulting in poor image quality (11.29%), or could not tolerate the ear protection or head coil (3.23%).

Quality control of MRI segmentations. Medical image analysis experts (YO, MS, or BA, >10, >3 and >10 years of experience) visually checked the results of the skull stripping and regional segmentation in all participants individually. We found that 2 out of 57 participants failed the automated multi-atlas skull stripping. One of the authors of this software (YO) reviewed the saved intermediate results, visually picked the atlases that successfully skull stripped each participant, and used the STAPLE algorithm to fuse those successfully computed brain masks into a final brain mask that skull stripped these 2 participants. Then, regional segmentation was re-run for these 2 participants. All participants passed the visual quality check for the regional segmentation, and the results were fed into the final analysis.

Plan of Analysis. Given prior research on MCM in associations with TBV, GMV, WMV and amygdala/hippocampal volume, there is strong rationale for examining each of these brain regions. Corrections for multiple comparisons are primarily necessary when analyses are exploratory. In this paper, analyses were targeted for specific outcomes, with a-priori hypotheses, based on prior literature. Thus, corrections for multiple comparisons are generally not considered necessary. In the applied sciences, numerous authors consider it unnecessary to adjust for multiple comparisons if analyses were planned and hypotheses were a-priori (Anderson, 2014, Glickman et al., 2014; Ha & Ha, 2012, O'Keefe, 2003, Steinfatt, 2006, Streiner, 2015).

Supplemental Results

Severity of MCM and infant cerebrospinal fluid volume (CSFV). MACE severity was not associated with CSFV (β = .056, SE =.163, 95% CI [-.264, .376]). The interaction of MACE severity with age was also not significant for CSFV (β = .614, SE = .348, 95% CI [-.069, 1.296]). Similar to MACE severity, ACE severity was not associated with CSFV (β = .023, *SE* = .140, 95% CI [-.251, .298]). There was also no significant interaction between ACE severity and infant age at scan on CSFV (β = .470, SE =.270, 95% CI [-.059,.999]).

Figure S1.

Scatterplot displaying association between infant age at scan and total brain volume