Aim 3: To test the hypothesis that adolescent vulnerability to adolescent anxiety.

Aim 2: To test the hypothesis that prenatal fragmented maternal signals contribute to susceptibility to emotional and cognitive dysfunction during infancy and childhood.

Aim 1: To test the hypothesis that adolescent vulnerability to mental illness will be predicted by infant and child behavior dysfunctions during infancy and childhood.

Results

- Mothers with higher levels of pregnancy anxiety also had higher mood entropy (or more fragmentation) of pregnancy anxiety ($r = 0.69, p < 0.001$).
- Level of pregnancy anxiety was not significantly associated with child anxiety, although a positive trend was present ($r = 0.20, p = 0.069$).
- As shown in Figure 1, fetal exposure to high mood entropy is associated with elevated child anxiety at 8 – 14 years (partial $r = 0.24, p < 0.05$), after covarying for level.

Child Report of Anxiety

- Self-report of child & adolescent anxiety was assessed using the trait-anxiety scale of the State-Trait Anxiety Inventory for Children (STAI-C; Spielberger, 1973).
- Normalized T-scores were calculated to adjust for child age and sex.
- Sample items include:
  - I worry about making mistakes.
  - I am secretly afraid.
  - I get a funny feeling in my stomach.

Measures of Fragmented Maternal Mood

- The Pregnancy-Specific Anxiety Scale (PSA: Rini et al., 1999) was administered to pregnant women at 5 time points (approx. 15, 19, 25, 31, and 36 weeks’ gestation).
- Pregnancy-specific anxiety may more accurately characterize psychological state specific to a woman during pregnancy.

- Sample items include:
  - I am fearful regarding the health of my baby.
  - I am worried the baby might not be normal.
  - I am afraid that I will be harmed during delivery.

- Mood entropy is determined by examining the sample distribution of responses across items within a scale.
- A value is calculated between 0 and 2 based on each woman’s distribution of responses: this value indicates the “uncertainty of item response.”

- Level of pregnancy anxiety was used as a covariate in analyses between mood entropy of pregnancy anxiety and child/adolescent anxiety.

Discussion

- Previously, we have shown that levels of prenatal maternal psychological distress are predictive of a range of developmental outcomes.
- Current findings indicate that fragmentation of maternal mood predicts child report of anxiety beyond the influence of levels.
- Prenatal fragmentation of maternal mood is a novel risk factor that may contribute to emotional and cognitive vulnerabilities in preadolescent and adolescent children.

Diagnostic Assessment (KSADS)

- Mental health in this cohort is being characterized using the Schedule for Affective Disorders & Schizophrenia for School Age Children (Kiddie-SADS), a semi-structured diagnostic interview. In addition to diagnostic information, we have modified the KSADs so that we can dimensionally assess:
  - Depressive disorders
  - Panic Attacks and Agoraphobia
  - Generalized Anxiety
  - Specific Phobia
  - Mania
  - Social Phobia
  - Psychosis

Dimensional scoring: ratings ($0=$ not present, $1=$ sub-threshold, $2=$ threshold) on items are summed to create a symptom score for each of the diagnostic categories described above.

Figure 2: Example of KSADS Dimensional Assessment

In the example above, Child A meets diagnostic criteria for depression while Child B does not. Neither child meets diagnostic criteria for generalized anxiety disorder (GAD). The modified KSADS captures variability even among children with subclinical symptoms.