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**Maternal Prenatal Mood Entropy Predicts Infant Negative Affectivity and Maternal and Child Report of Internalizing Symptoms**

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Prenatal maternal mood has been linked to a range of adverse birth and developmental outcomes. The associations between heightened maternal depression and anxiety during gestation and risk of internalizing disorders in the offspring are particularly robust. However, questions remain as to the specific mechanisms or aspects of maternal mood signals that affect fetal development. Animal models suggest that patterns and sequences in maternal signals, including predictability and entropy, may be critical influences on the developing brain (Baram, 2012). Further, entropy measures are used across a range of disciplines to quantify the randomness or uncertainty associated with a series of events or observations and in strings of information. Here we develop an approach to measure entropy in reports of maternal prenatal mood to predict risk for child internalizing disorders. This association was examined in two cohorts of women and their offspring, examined prospectively beginning at 15 weeks' gestation. Maternal depressive symptoms were assessed in both cohorts with the Centers for Epidemiological Studies Depression Scale (CESD; at 15, 19, 25, 31 and 36 weeks). Entropy in CESD reports was calculated for each time point and then averaged to create a composite measure (because there did not appear to be any gestational timing effects). In Cohort 1 (n= 198) the Negative Affectivity temperament dimension of the Infant Behavior Questionnaire/CBQ (c.f. Gartstein & Rothbart, 2003), a predictor of risk for later internalizing disorders, was assessed at 6, 12, 24, months and at 5 and 6-9 years. In addition, maternal report of internalizing symptoms were assessed with the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001) at 6-9 years and child report of anxiety symptoms with the State-Trait Anxiety Index for Children (STAIC; Spielberger et al. 1973) at 9-10 years. In Cohort 2 (n = 187) maternal report of internalizing symptoms was assessed with the CBCL at 6-9 years and child report with the STAIC at 9-10 and at 11-13 years. Results indicate across all measures (temperament, maternal and child reports of internalizing) and ages, that higher levels of mood entropy predicted negative temperament and maternal and child reports of internalizing symptoms (all  $p$ 's < .05). These results remain significant after adjusting for maternal sociodemographic characteristics including IQ, income and education and also for levels of depressive symptoms during both the pre and postnatal periods. The magnitude of the associations were more pronounced among the girls. These data indicate that mood entropy represents a novel pathway through which maternal mood shapes the developing fetus.