



## Research paper

# Maternal depression and personality traits in association with child neuropsychological and behavioral development in preschool years: Mother-child cohort (Rhea Study) in Crete, Greece



Katerina Koutra<sup>a,b,\*</sup>, Theano Roumeliotaki<sup>a</sup>, Andriani Kyriklaki<sup>a</sup>, Mariza Kampouri<sup>a</sup>, Katerina Sarri<sup>a</sup>, Maria Vassilaki<sup>c</sup>, Panos Bitsios<sup>b</sup>, Manolis Kogevas<sup>d,e,f,g</sup>, Leda Chatzi<sup>a</sup>

<sup>a</sup> Department of Social Medicine, Faculty of Medicine, University of Crete, Heraklion, Greece

<sup>b</sup> Department of Psychiatry and Behavioral Sciences, Faculty of Medicine, University of Crete, Heraklion, Greece

<sup>c</sup> Department of Health Sciences Research, Mayo Clinic, Rochester, MN, USA

<sup>d</sup> National School of Public Health, Athens, Greece

<sup>e</sup> Centre for Research in Environmental Epidemiology (CREAL), Barcelona, Spain

<sup>f</sup> Municipal Institute of Medical Research, Barcelona, Spain

<sup>g</sup> CIBER Epidemiología y Salud Pública (CIBERESP), Spain

## ARTICLE INFO

## Keywords:

Depression  
Personality traits  
Neurodevelopment  
Behavior  
Preschool years

## ABSTRACT

**Background:** Poor perinatal maternal mental health has been linked with negative outcomes on early child development; however, the importance of maternal personality has been neglected thus far. We aimed to examine the effects of antenatal and postnatal maternal mental health, including assessment of maternal personality characteristics, on child neuropsychological and behavioral development at preschool years in a population based mother-child cohort (Rhea Study) in Crete, Greece.

**Method:** Self-reported measures of maternal depression (EPDS), trait anxiety (STAI-Trait) and personality traits (EPQ-R) were assessed in a sample of 288 women at 28–32 weeks of gestation. A larger sample of 642 mothers completed the EPDS scale at 8 weeks postpartum. Children's neuropsychological (MSCA) and behavioral (ADHDT and SDQ) development were assessed at 4 years of age. Linear regression analyses were used to estimate the associations between the exposures and outcomes of interest after adjustment for potential confounders.

**Results:** Regarding child neuropsychological development, increased postnatal depressive symptoms were associated with child's perceptual performance, whereas increased maternal psychoticism was linked with child's motor ability at 4 years of age. Furthermore, elevated levels of maternal depression during pregnancy and postpartum, and the predisposing personality characteristics of trait anxiety and neuroticism, were associated with children's behavioral difficulties.

**Limitations:** A clinical diagnostic instrument for maternal mental health was not used and assessment of children's behavior was based on maternal report.

**Conclusion:** These findings suggest that poor perinatal maternal mental health and an adverse personality profile may be associated with impaired child neuropsychological and behavioral development at preschool years.

## 1. Introduction

Maternal mental health during pregnancy and postpartum is a public health priority due to its impact on child development across the life span. Evidence for the adverse effects of antenatal and postnatal maternal psychological distress on children development is unequivocal, with systematic reviews reporting increased risks of poorer

cognitive functioning, speech and language problems, and internalizing and externalizing behavior problems from infancy to late adolescence (Kingston et al., 2012; Stein et al., 2014). Mechanisms underlying the aforementioned associations are complex and include a range of biological and environmental pathways.

Poor maternal mental health in pregnancy often continues at the postpartum period, thus raising questions about the extent to which the

**Abbreviations:** STAI, State-Trait Anxiety Inventory; EPDS, Edinburgh Postnatal Depression Scale; EPQ-R, Eysenck Personality Questionnaire – Revised; MSCA, McCarthy Scales of Children's Abilities; ADHDT, Attention Deficit Hyperactivity Disorder Test; ADQ, Strengths and Difficulties Questionnaire; ADHD, Attention Deficit Hyperactivity Disorder

\* Corresponding author at: Department of Social Medicine, Faculty of Medicine, University of Crete, PO Box 2208, Heraklion, 71003 Crete, Greece.

E-mail address: [koutra.k@gmail.com](mailto:koutra.k@gmail.com) (K. Koutra).

<http://dx.doi.org/10.1016/j.jad.2017.04.002>

Received 12 December 2016; Received in revised form 22 February 2017; Accepted 2 April 2017

Available online 04 April 2017

0165-0327/ © 2017 Elsevier B.V. All rights reserved.

contribution of antenatal and postnatal psychosocial exposure is distinct, interactive, or cumulative (Stein et al., 2014). An estimated 10–20% of mothers will present depressive symptoms at some time during their lives (Kessler et al., 2003). Postnatal depression is often a continuation of antenatal depressive symptoms and is associated with closely related symptoms of anxiety during pregnancy (Evans et al., 2001; Josefsson et al., 2001; Koutra et al., 2014). The contribution of personality in the etiology of perinatal disorders has long been recognized. Trait anxiety is one central element of wider personality, which refers to the stable tendency to attend to, experience, and report negative emotions such as fears, worries, and anxiety across many situations (Gidron, 2013). This is part of the personality dimension of neuroticism versus emotional stability. Neuroticism refers to how a person deals with stress and negative emotions and examines emotional stability, anxiety and impulse control. Previous research has established a relationship between neuroticism and higher risk of internalizing psychiatric conditions, such as anxiety and depression, or emotional instability (Ellenbogen and Hodgins, 2004; Ploubidis and Frangou, 2011).

While there is an extensive literature on how antenatal and postnatal maternal psychological distress affects children's neuropsychological development and behavior, most of these studies focused on infants and toddlers (Cornish et al., 2005; Deave et al., 2008; DiPietro et al., 2006; Huizink et al., 2003; Koutra et al., 2013), school-age children (Fihrer et al., 2009; Hay et al., 2001; O'Connor et al., 2003) or adolescents (Hay et al., 2008; Murray et al., 2010). Only few epidemiological studies have examined the effects of maternal mental health during pregnancy and postpartum on child outcomes at preschool age, with inconclusive results regarding child cognition (Hay and Kumar, 1995; Sharp et al., 1995; Slykerman et al., 2005) and behavior (Josefsson et al., 2001; O'Connor et al., 2002; Philipps and O'Hara, 1991; Van Batenburg-Eddes et al., 2013; Velders et al., 2011). The preschool years represent a time of great cognitive and behavioral growth with the initial expression of many psychological abilities that will continue to be refined into young adulthood (Brown and Jernigan, 2012).

Concerning the antenatal period, in the study of Slykerman et al. (2005), maternal stress and lack of social support appeared to be associated with lower intelligence test scores of preschool children. In addition, O'Connor et al. (2002) found strong significant links between antenatal depression and children's behavioral/emotional problems at age 4 years. In a similar vein, Van Batenburg-Eddes et al. (2013) compared associations of parental depression and anxiety during pregnancy with attention problems in early childhood using data from two large cohort studies; ALSPAC and Generation R. This study produced conflicting findings as the Generation R cohort demonstrated no increased association with maternal or paternal stress, whereas the ALSPAC cohort showed an association between maternal depression and anxiety during pregnancy with the onset of attention problems in early childhood but not with paternal antenatal depression and anxiety. Another recent study by Velders et al. (2011), embedded in Generation R cohort, demonstrated that child externalizing difficulties at age 3 years were associated with antenatal depressive symptoms of mothers and fathers, but these associations were no longer significant when antenatal parental hostility was added to the analysis.

Two studies (Hay and Kumar, 1995; Sharp et al., 1995) reported cognitive impairments in the 4-year-old children of women with postnatal depression. Furthermore, postnatal depressive symptoms were related to children's behavior. Specifically, Josefsson et al. (2001) found that women who showed depressive symptoms both postpartum and when the child was 4 years old appeared to rate their child's behavior as problematic to a higher extent, and this effect was stronger for boys than girls. On the contrary, Philipps and O'Hara (1991) reported that postnatal depression was directly related to subsequent depression but not with child problems at 4½ years.

A growing body of evidence links poor perinatal maternal mental

health with negative outcomes on early child development, albeit with an inconclusive pattern of developmental deviations. However, given that the majority of the studies included only assessments of maternal depression and anxiety, the importance of maternal personality has been neglected thus far. Only one other group reported that maternal negative emotionality was associated with behavioral problems at 3 years of children's age, whereas maternal socialization was linked with better child outcomes (Kochanska et al., 1997). In our cohort, maternal personality characteristics have been previously implicated in both birth outcomes (Chatzi et al., 2013) and infant neuropsychological development (Koutra et al., 2013). Specifically, we found an association of maternal neuroticism with fetal weight growth restriction and fetal head circumference growth restriction at birth (Chatzi et al., 2013). Furthermore, antenatal and postnatal depression was associated with decrease in cognitive and motor development whereas high trait anxiety and neuroticism had a positive effect on infants' expressive communication (Koutra et al., 2013).

Understanding the association between poor maternal mental health and children's impaired neuropsychological and behavioral development is critical in formulating effective interventions. Instead of focusing on a single dimension, antenatal or postnatal anxiety or depression, an approach which embraces a broader view of maternal mental health encompassing maternal personality characteristics, would appear more useful. To our knowledge, no published study has examined the effects of both antenatal and postnatal maternal mental health, including assessment of stable maternal personality characteristics, on neuropsychological and behavioral outcomes of preschool age children. The present study aims to extend preexisting work (Koutra et al., 2013) by evaluating the associations between maternal mental health during pregnancy and postpartum and child neuropsychological and behavioral development at age 4 years in a population-based mother-child cohort study in Crete, Greece (Rhea Study). We hypothesized that higher maternal depression during pregnancy and postpartum, and an adverse personality profile (i.e. high neuroticism or psychoticism, or low extraversion) would be associated with impaired neuropsychological and behavioral development at 4 years of age.

## 2. Method

### 2.1. Participants

The present study is part of the Rhea Study, a prospective mother-child cohort examining a population sample of pregnant women and their children at the prefecture of Heraklion, Crete, Greece (Chatzi et al., 2009). Female residents (Greek and immigrants) who had become pregnant during the twelve-month period starting in February 2007 have been contacted at four maternity clinics in Heraklion and asked to participate in the study. To be eligible for inclusion in the study, women had to have a good understanding of the Greek language and be older than 16 years of age. The first contact was made at the time of the first major ultrasound examination, before week 15 of gestation. Women were informed about the study protocol by trained nurses and midwives and asked to participate in the study. Women were then contacted again at the third trimester of pregnancy, at birth, at 8 weeks, six and 18 months postpartum, and at 4 years of age. Face-to-face structured interviews, together with self-administered questionnaires and medical records, were used to obtain information on several psychosocial, dietary, and environmental exposures during pregnancy and early childhood. The study was approved by the Ethical Committee of the University Hospital in Heraklion, Crete, Greece. Written informed consent was obtained from all participants.

Detailed characteristics of the study population have been described elsewhere (Chatzi et al., 2009). Out of 1363 singleton live births, 879 children participated at the neurodevelopmental assessment follow-up at 4 years of age from October 2011 until January 2013. Children with a diagnosed neurodevelopmental condition following intervention

Download English Version:

<https://daneshyari.com/en/article/5722186>

Download Persian Version:

<https://daneshyari.com/article/5722186>

[Daneshyari.com](https://daneshyari.com)