



## Research paper

# Adult attachment's unique contribution in the prediction of postpartum depressive symptoms, beyond personality traits



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## ABSTRACT

**Background:** Personality traits such as neuroticism can help identify pregnant women at risk of postpartum depressive symptoms (PPDS). However, it is unclear whether attachment style could have an additional contribution to this risk elevation. This study aimed to examine the overlap of adult attachment insecurity and neuroticism/trait anxiety as PPDS predictors, taking into account baseline depressive symptoms.

**Methods:** A Swedish population-based sample of pregnant women reported on adult attachment and either neuroticism (n = 1063) or trait anxiety (n = 555). Depressive symptoms were assessed at baseline, and at six weeks and six months postpartum. Correlations between attachment and neuroticism/trait anxiety were calculated. Generalized linear models of PPDS tested the effect of attachment anxiety and avoidance, adjusting for neuroticism/trait anxiety and baseline depression. Logistic regression models with combined high attachment anxiety and neuroticism/trait anxiety visualized their value as risk factors beyond antenatal depression.

**Results:** Attachment and neuroticism/trait anxiety were highly correlated (r = .55–.77). Attachment anxiety exerted a partially independent effect on PPDS at six weeks (p < .05) and at six months (p < .05) adjusting for neuroticism. Among antenatally non-depressed, combined high attachment anxiety and high neuroticism or trait anxiety was predictive of PPDS at both assessment points.

**Limitations:** Low acceptance rate, exclusive use of self-reports.

**Conclusions:** Beyond personality, attachment anxiety had a small independent effect on the risk of PPDS. Combining items of adult attachment and neuroticism/trait anxiety could prove useful in antenatal screening for high risk of PPDS.

## 1. Introduction

As many as one in five mothers bringing home a newborn infant may experience a depressive episode in the next few months (Gavin et al., 2005). The condition often has a chronic course (Josefsson and Sydsjo, 2007) and the associated impairment may have long-term consequences for the mental development of the child (Verbeek et al., 2012). Screening is recommended by the American College of Obstetricians and Gynecologists (2015) at least once during the peripartum period using a validated tool such as the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987). However, screening would be more efficient if other risk determinants were added to the EPDS (Austin and Lumley, 2003). Personality factors have the potential to ameliorate the depression screening process during pregnancy, given their ease of assessment and their possibility to guide intervention

strategies (Klein et al., 2011).

Personality features specifically relevant to adult close relationships are operationalized in the concept of adult attachment style (Hazan and Shaver, 1987; Mikulincer and Shaver, 2003) as part of Bowlby's and Ainsworth's attachment theory (Ainsworth and Bowlby, 1991; Bowlby, 1969). Its two primary dimensions (Brennan et al., 1998) are attachment anxiety, describing a need for closeness and chronic relationship concern, and avoidance, describing a discomfort with closeness and a keeping of emotional distance (Mikulincer and Shaver, 2003). High levels of either or both of these traits implicate insecure attachment.

Evidence that women with high attachment insecurity often have depressive symptoms is found in cross-sectional studies in pregnancy (Figueiredo et al., 2006) as well as at points between one week and two years after childbirth (Akman et al., 2008; Alhusen et al., 2013; Kang et al., 2014; Kohlhoff and Barnett, 2013; Kuscu et al., 2008; Lee and

**Abbreviations:** ASQ-SF, Attachment Style Questionnaire-Short Form; EPDS, Edinburgh Postnatal Depression Scale; PPDS, Postpartum depressive symptoms; SSP, Swedish Universities Scales of Personality; STAI, State-Trait Anxiety Inventory for Adults

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Koo, 2015; Meredith and Noller, 2003; Pesonen et al., 2004; Sabuncuoğlu and Berkem, 2006; Wilkinson and Mulcahy, 2010; Wilkinson and Scherl, 2006). Furthermore, a handful of investigations find a prospective association between adult attachment and postpartum depression, yet results differ as to which aspect of insecurity constitutes a risk, and some report null findings (Flykt et al., 2010; van Bussel et al., 2009). Analogues of attachment anxiety (Bifulco et al., 2004; Feeney et al., 2003; Scharfe, 2007; Simpson et al., 2003) or insecure attachment without specification of subtype or several subtypes (Besser et al., 2002; Conde et al., 2011; Ikeda et al., 2014; Monk et al., 2008; Robakis et al., 2016) are reported as risk factors. It is conceptualized that pregnancy and infant care cause not only general stress, but specific concerns with close relationships (Feeney et al., 2003; Monk et al., 2008; Robakis et al., 2016), which render insecurely attached individuals vulnerable to depression development.

Another approach to personality is described in trait models (Eysenck, 1991; Gustavsson et al., 2000), which put more focus on genetic and biological origins. A core dimension in several models is the disposition to experience negative emotions such as anxiety, fear, sadness, irritability and anger, alternately named neuroticism, negative emotionality or trait anxiety (Barlow et al., 2014). Neuroticism has a widely confirmed prospective connection with depression (for review e.g. Hengartner, 2015; Ormel et al., 2013). Viewing pregnancy and childbirth as generalized life stressors, pre-existing neuroticism is proposed to increase the risk of postpartum depression (O'Hara et al., 1982). Martín-Santos et al. (2012) find a link between neuroticism and depression in the postnatal period in most of the studies reviewed, besides their own prospective data. The few subsequent investigations have yielded similar results (Iliadis et al., 2015; Peñacoba-Puente et al., 2016).

Adult attachment insecurity, and especially attachment anxiety, correlates moderately to strongly with neuroticism (Nofle and Shaver, 2006; Picardi et al., 2005). Researchers have therefore tried to examine whether the concepts are redundant, representing a common dimension of general distress. In prospective research on postpartum depression, few studies assess attachment and neuroticism/trait anxiety in pregnancy and use both constructs in the same multivariate model, including control for baseline depression. Those which exist come to different conclusions (Feeney et al., 2003; van Bussel et al., 2009), possibly due to different instruments and time span.

### 1.1. Study aim

This study aimed to investigate the degree of overlap of adult attachment and neuroticism/trait anxiety in pregnancy as predictors of postpartum depressive symptoms (PPDS), taking into account baseline depressive symptoms. Guided by background research, our hypotheses were: (i) there will be a certain degree of overlap between attachment insecurity and neuroticism/trait anxiety; (ii) insecure attachment in pregnancy will influence the risk of PPDS even after taking into account neuroticism/trait anxiety, baseline depressive symptoms and previous depression; and (iii) among those without antenatal depressive symptoms, the combination of high attachment insecurity and high neuroticism/trait anxiety will best identify women with the highest risk of PPDS.

## 2. Materials and methods

### 2.1. Study sample

The study was conducted between September 2009 and July 2012 as a part of the “Biology, Affect, Stress, Imaging and Cognition during Pregnancy and the Puerperium” (BASIC) study (Iliadis et al., 2015), a population-based prospective investigation of perinatal depression in the county of Uppsala, Sweden. All Swedish-speaking pregnant women with a minimum age of 18 years received a study invitation around the

time of their routine ultrasound examination. Women with a pathological pregnancy or protected personal data were excluded.

Out of 10,276 pregnant women, 2160 (21.0%) accepted. Excluded from the study were women who did not answer the follow-up ( $n = 403$ ); gave incomplete data for main study variables (adult attachment, neuroticism, trait anxiety and depressive symptoms in late pregnancy and six weeks postpartum) ( $n = 32$ ); responded very late ( $n = 59$ ); or participated twice ( $n = 48$ ). A total of 1618 individuals (74.9%) participated. Another 92 participants dropped out before the six-month follow-up, but were not excluded from other analyses.

The prevalence of PPDS in our sample was comparable with other Swedish findings (Rubertsson et al., 2005), although the level of depressive symptoms in pregnancy was somewhat lower than previously presented (Fransson et al., 2011; Rubertsson et al., 2005). The studied sample reported lower attachment insecurity (Andersson et al., 2002) and lower neuroticism (Gustavsson et al., 2000) than the general female population. Nonetheless, the levels of attachment (Feeney et al., 2003) and trait anxiety (Aktan, 2012; Grant et al., 2008) were equivalent to those found in other pregnant samples.

### 2.2. Procedure

Approval was obtained from the Uppsala Ethics Committee (Reg. no. 2009/171) and the study protocol was in accordance with the Declaration of Helsinki. Before inclusion, oral and written study information was given to all participants and their written consent was received. Women reporting severe symptoms of depression during the study were contacted and offered a referral to a psychologist or psychiatrist.

A prospective longitudinal design with four internet-based surveys was used. Following inclusion (mean pregnancy week = 20.5, standard deviation (SD) = 2.8, range 14–38), sociodemographic information was obtained. In late pregnancy (mean pregnancy week = 32.1, SD = 1.2, range 19–40), participants assessed their adult attachment and depressive symptoms. At the same point, women who enrolled before June 2011 reported on neuroticism, whereas those who enrolled after June 2011 reported on trait anxiety. At six weeks postpartum (mean postpartum week = 6.1, SD = 1.2, range 4–12) and at six months postpartum (mean postpartum week = 27.2, SD = 3.6, range 23–59), participants assessed their depressive symptoms again. A maximum of two e-mail reminders and a postal version of the survey were sent if a person did not answer the follow-up.

### 2.3. Instruments

#### 2.3.1. Adult attachment

The Attachment Style Questionnaire-Short Form (ASQ-SF) (Feeney et al., 1994; Karantzas et al., 2010) is a 29-item self-report questionnaire on global adult attachment. It has the advantage of incorporating not only partner attachment, but also other close relationships with a probable importance for an expecting mother, and has been applied to the study of postpartum depression (Feeney et al., 2003; Robakis et al., 2016). The continuous dimensions of anxiety and avoidance (Alexander et al., 2001; Karantzas et al., 2010) include items such as “I worry that others won't care about me as much as I care about them” and “I find it difficult to depend on others” which are answered on a six-point scale from “totally disagree” to “strongly agree”. The dimensions have adequate internal consistency (Cronbach's  $\alpha$  .84–.85) and the short form has better psychometric properties than the original (Karantzas et al., 2010). The Swedish version (Hakanson and Tengstrom, 1996) of the original instrument has been validated in healthy Swedish subjects (Andersson et al., 2002) and the anxiety and avoidance dimensions of the short form had satisfying reliability in the current cohort: Cronbach's  $\alpha$  .87–.89; test-retest correlations .74–.84 in a subgroup (Axfors et al., 2017).

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