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The Role of Psychosocial Risk Factors and Anxiety in Predicting Maternal and Paternal Depressive Symptomatology during Pregnancy

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Abstract:	The aim of the present study was to investigate the role of several psychosocial risk factors in predicting depressive symptomatology during pregnancy in mothers and fathers, respectively. A total of 146 primiparous mothers and 105 primiparous fathers reporting a psychosocial risk condition were recruited independently from maternity and child health services, during the second trimester of pregnancy. All parents were evaluated for depressive symptomatology, anxiety and perceived social support. Two hierarchical multiple regression analyses were performed to determine the role of psychosocial factors in predicting antenatal depressive symptomatology, in mothers and fathers. Marital dissatisfaction, personal history of depression and trait anxiety were identified as significant predictors of depressive symptomatology, both in mothers and in fathers. Family history of substance abuse, conflictual relationship with the parents in the past year, and bereavement in the past year were identified as significant factors contributing to elevated depressive symptoms in mothers but not fathers. In this study, several psychosocial risk factors were consistently related to an increase in maternal and paternal depressive symptoms during pregnancy: some of these factors seem to be specifically related to maternal depressive mood.

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Abstract

The aim of the present study was to investigate the role of several psychosocial risk factors in predicting depressive symptomatology during pregnancy in mothers and fathers, respectively. A total of 146 primiparous mothers and 105 primiparous fathers reporting a psychosocial risk condition were recruited independently from maternity and child health services, during the second trimester of pregnancy. All parents were evaluated for depressive symptomatology, anxiety and perceived social support. Two hierarchical multiple regression analyses were performed to determine the role of psychosocial factors in predicting antenatal depressive symptomatology, in mothers and fathers. Marital dissatisfaction, personal history of depression and trait anxiety were identified as significant predictors of depressive symptomatology, both in mothers and in fathers. Family history of substance abuse, conflictual relationship with the parents in the past year, and bereavement in the past year were identified as significant factors contributing to elevated depressive symptoms in mothers but not fathers. In this study, several psychosocial risk factors were consistently related to an increase in maternal and paternal depressive symptoms during pregnancy: some of these factors seem to be specifically related to maternal depressive mood.

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The Role of Psychosocial Risk Factors and Anxiety in Predicting Maternal and Paternal

Depressive Symptomatology during Pregnancy

Depression is the most prevalent psychopathological disorder during pregnancy

(Alipour, Lamyian, & Hajizadeh, 2012; Bennett, Einarson, Taddio, Koren, & Einarson,

2004), affecting from 4 to 25% of women (Teixeira, Figueiredo, Conde, Pacheco, & Costa,

2009; Pereira, Lovisi, Pilowsky, Lima, & Legay, 2009). Depressive symptoms are more

common and more severe during pregnancy compared to the postpartum period (Evans,

Heron, Francomb, Oke, & Golding, 2001; Sidebottom, Hellerstedt, Harrison, & Hennrikus,

2014), and occur more frequently during the first and third trimester of pregnancy, when

women are facing the deep reorganising processes related to the new task of becoming

mothers and when they are about to deliver (Bunevicius et al., 2009; Field, 2011; Gavin et al.,

2005; Lee et al., 2007; Marchesi, Bertoni, & Maggini, 2009; Yanikkerem, Ay, Mutlu, &

Goker, 2013). Several studies have found that antenatal depression tends to persist after

childbirth with about half of postpartum depression cases continuing from pregnancy (Heron,

O'Connor, Evans, Golding, & Glover, 2004; Lee & Chung, 2007; Leigh & Milgrom, 2008;

Marino, Battaglia, Massimino, & Aguglia, 2012).

During the last decades, a large body of research has widely investigated maternal

perinatal depression, documenting its detrimental effects on developing children, families,

and long-term maternal mental health (Brennan et al., 2000; Glover, 2014; O'Connor, Heron,

Golding, Beveridge, & Glover, 2002; Previti, Pawlby, Chowdhury, Aguglia, & Pariante,

2014; Pawlby, Hay, Sharp, Waters, & Pariante, 2011; Plant, Pariante, Sharp, & Pawlby,

2015; Stein et al., 2014; Van den Bergh et al., 2005).

The emerging research suggests that pregnancy is a time of increased vulnerability for

the development of depression not only in women but likewise in men. Studies in this field

indicate that approximately 5–10% of fathers suffer from perinatal depression (Escribà-

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Agüir, Gonzalez-Galarzo, Barona-Vilar, & Artazcoz, 2008; Paulson & Bazemore, 2010),

about half the rate recorded in mothers (Bennett et al., 2004). Research has also documented

that there is an increased risk for men of developing depression when their partners are in the

early stages of the third trimester of pregnancy (Boyce, Condon, Barton, & Corkindale, 2007;

Condon, Boyce, & Corkindale, 2004). With regard to the course of paternal depressive

symptoms during the perinatal period, some studies have suggested that the prevalence of

paternal depression decreases in the early postpartum period and then gradually increases

over the child's first year (Cox, 2005; Matthey, Barnett, Ungerer, & Waters, 2000), whereas

other investigations have documented a stability of paternal depressive symptoms throughout

the perinatal period (Deater-Deckard, Pickering, Dunn, & Golding, 1998; Paulson, Bazemore,

Goodman, & Leiferman, 2016; Raskin, Richman, & Gaines, 1990). Moreover, coherently

with the literature on maternal depression, evidence on paternal depression points to increases

in risks for impairments in parenting (Davis, Davis, Freed, & Clark, 2011; Paulson, Keefe, &

Leiferman, 2009) and long-term functioning in children (Ramchandani et al., 2008).

During recent years, many studies have been carried out to identify the main risk

factors involved in the development of maternal depression during pregnancy. In contrast,

risk factors associated to antenatal paternal depression have received little attention from

researchers.

In a systematic literature review, Lancaster and colleagues (2010) found that maternal

anxiety showed one of the strongest associations with antenatal depressive symptoms.

Indeed, maladaptive personality traits, such as chronic anxiety, has been proved to be a

relevant risk factor for antenatal depression (Bunevicius et al., 2009; Da Costa, Larouche,

Dritsa, & Brender, 2000; Kleanthi, 2015; Moss, Skouteris, Wertheim, Paxton, & Milgrom,

2009) and to predict pregnancy-specific anxiety across pregnancy itself (Huizink et al.,

2014). In addition to maternal anxiety, Lancaster and colleagues (2010) found other relevant

risk factors consistently related to an increased risk of antenatal depressive symptoms that were: negative life events, history of depression, lack of social support (particularly, lack of intimate partner support), domestic violence and unintended pregnancy. Inconsistent results were found for smoking, alcohol use, illicit drug use, parity, maternal race/ethnicity, and maternal age. No significant association was found with composite SES measures (such as the Hollingshead Index; Hollingshead, 1957) and obstetric history (i.e., spontaneous abortions, elective abortions, and foetal deaths in utero). Contrary to Lancaster and colleagues, a more recent review has identified obstetric history as a strong predictor for both depression and anxiety during pregnancy (Biaggi, Conroy, Pawlby, & Pariante, 2016). Such review included a wider range of low-, middle- and high-income countries compared with those considered by Lancaster and colleagues (2010).

In addition, a meta-analysis of paternal depression found elevated depressive symptomatology in one partner to be significantly associated with corresponding increases in the other's (Paulson & Bazemore, 2010). With respect to this, a very recent study has shown that mothers with prenatally depressed partners were 4.2 times more likely to have worsened depressive symptoms at 6 months postpartum than were those with prenatally non-depressed partners (Paulson et al., 2016). Contrary to the results of other studies that have identified maternal depression as a possible causal factor for paternal depression (Dudley, Roy, Kelk, & Bernard, 2001; Schumacher, Zubaran, & White, 2008), this study found that maternal antenatal depression did not predict changes in paternal depressive symptoms over time. In a relatively recent investigation, depressive symptomatology during pregnancy was found to be higher both in mothers and fathers who reported marital dissatisfaction and a previous history of depression (Escribà-Agüir et al., 2008). In this study, unintended pregnancy did not increase the risk of antenatal depression either in women or men; moreover, perceived low

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social support and partner depression were found to be associated with depression in fathers but not in mothers.

Research has also identified some relevant protective factors that mediate the impact of negative life events on maternal wellbeing during pregnancy. Among these factors, perceived social support and marital satisfaction have a significant protective role since they help the woman to face negative emotions associated with pregnancy and to prepare positively for the birth as well as the postpartum period (Evans et al., 2001; Goyal, Gay, & Lee, 2010; Jeong et al., 2013; Lancaster et al., 2010; Lee et al., 2007; Zeng, Cui, & Li, 2015). Moreover, active coping, high self-esteem and high self-efficacy (Edwards, Galletly, Semmler-Booth, & Dekker, 2008; Zeng et al., 2015) have been identified as factors mediating the relationship between adverse events in life and depression (Ginsburg et al., 2008), while education has been found to contribute in reducing antenatal depression and anxiety, through the enhancement of feelings of self-worth (Nasreen, Kabir, Forsell, & Edhborg, 2011).

While there is a growing body of scientific literature about the role of risk factors in predicting maternal depressive symptoms during pregnancy, less is known about the risk factors associated to antenatal depression in fathers. Accordingly, the aim of the present study was to investigate the psychosocial risk factors in predicting depressive symptomatology during pregnancy in mothers and fathers, respectively.

Method

Participants and procedure

Initially, 200 primiparous mothers and 179 primiparous fathers were recruited independently from maternity and child health services, during the second trimester of pregnancy: of them, only parents who reported a psychosocial risk condition were included in the study.

Thus, the final sample was constituted by 146 mothers, aged between 20 and 45 years (M=32.76; ±4.97) and 105 fathers, aged between 20 and 51 years (M=35.59; ±5.97). The majority of parents came from middle socioeconomic status backgrounds (Hollingshead, 1957), as shown in Table 1.

Prior to data collection, parents received complete information about the study, and gave written informed consent for their participation.

TABLE 1 ABOUT HERE

Measures

Firstly, parents were interviewed using the *Psychosocial Risk Interview* (Ammaniti et al., 2006). This interview includes a set of questions, aimed to detect psychosocial risk factors within four main domains: *risk in pregnancy*, *social support*, *parents' and family psychiatric history*, and *negative life events* (Table 2). Items have dichotomous form ("yes" or "no"), indicating the presence or the absence of the specific risk factors. A number of psychosocial risk factors ≥3 indicates psychosocial risk conditions.

TABLE 2 ABOUT HERE

Then, parents were asked to complete the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987; Italian validation by Benvenuti, Ferrara, Niccolai, Valoriani, & Cox, 1999), a 10-item self-report questionnaire that is widely used to screen for depressive symptoms during pregnancy and in the post-partum period. Each item is scored on a four-point scale (ranging from 0 to 3) and rates the intensity of depressive symptoms during the previous 7 days. Scores higher than 9 indicate "possible depression" and this cut-off score has been proved to be useful in the community screening.

Parents also completed the trait form of the State-Trait Anxiety Inventory (STAI; Spielberger, 1983; Italian validation by Pedrabissi & Santinello, 1989), a 20-item self-report questionnaire that is applied to detect trait anxiety symptoms. Each item is scored on a four-

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point Likert scale (ranging from 1 to 4). Scores ≥ 41 indicate clinically significant symptoms

for the trait anxiety.

Finally, parents completed the Multidimensional Scale of Perceived Social Support

(MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988; Italian Validation by Di Fabio & Busoni,

2008), a 12-item scale that assesses the perceived availability of social support. Each item is

scored on a seven-point scale (ranging from 1 to 7), with higher scores indicating greater

levels of perceived social support. This scale provides an overall score of perceived social

support as well as three subscale scores that provide measures of perceived social support

from three different sources (a significant other, family, and friends). In this study, only the

global measure of perceived social support was used.

Data analysis

30.87% of mothers (N=45) and 17.1% of fathers (N=18) reported scores on the EPDS

of ≥ 9, thus indicating the presence of depressive symptomatology. The mean score for EPDS

was 12.22 ($\pm$3.02; range 9-21) in mothers and 10.94 ($\pm$2.16, range 9-15) in fathers,

respectively.

Chi-square and Pearson correlations were performed in order to explore the

relationships between individual demographic and psychosocial independent variables

(categorical and continuous) and the dependent variable (that is, depressive

symptomatology).

Two hierarchical multiple linear regressions (for mothers and fathers, respectively)

were performed to test the relationships between the independent variables that were

significant at a 0.05 significance level and the dependent variable.

Results

Chi square analyses evidenced that the following psychosocial variables were more

represented in mothers suffering from depressive symptoms: *risk in pregnancy* (unplanned or

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unwanted pregnancy); *social support* (marital dissatisfaction); *psychiatric history* (personal

history of depression, and family history of substance abuse); *negative life events* (conflictual

relationship with parents in the past year, parental separation during childhood; bereavement

in the past year) (Table 3).

<div align="center">TABLE 3 ABOUT HERE</div>

In fathers, Chi square analyses evidenced a significant relationship between a restricted

set of psychosocial independent (categorical) variables and depressive symptomatology:

specifically, marital dissatisfaction (for the domain *social support*); personal history of

depression, partner's history of depression, and partner's history of anxiety (for the domain

psychiatric history); conflictual relationship with parents in the last year (for the domain

negative life events) (Table 4).

<div align="center">TABLE 4 ABOUT HERE</div>

Correlational analyses were performed in order to explore the relationship between

psychosocial independent (continuous) variables and depressive symptomatology, both in

mothers and in fathers. As shown in Table 5, both mothers and fathers with higher scores on

EPDS perceived a lower social support and had a higher level of trait anxiety. With respect to

sociodemographic variables, in mothers, depressive symptomatology and age were negatively

related (with younger mothers reporting higher scores on EPDS); while neither mothers nor

fathers reported significant correlations between scores on EPDS and the Hollingshead Two

Factor Index of Social Position.

<div align="center">TABLE 5 ABOUT HERE</div>

Two hierarchical multiple regression analyses (for mothers and fathers, respectively)

were performed to determine the role of the antenatal psychosocial factors that were

significant in bivariate analyses at a 0.05 significance level in predicting depressive

symptomatology during pregnancy, in mothers and fathers, respectively.

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Five steps were conducted in the first hierarchical multiple regression analyses,

entering: age (first block); variables related to *pregnancy risk factors* (second block);

variables related to *social support* (third block); variables related to *psychiatric history*

(fourth block); variables related to *negative life events* (fifth block) (Table 6).

TABLE 6 ABOUT HERE

In the first step, the model R^2 was equal to 0.05, thus suggesting that only 5% of the

variance in depressive symptomatology was explained by this demographic variable [$F_{(1, 144)}$

= 8.004; p = .005]. When the additional factor (Unplanned or unwanted pregnancy) was

added, the model explained 10% of the variance [$F_{(2, 143)}$ = 7.649; p = .001]. In this stage both

age (β = -.19, p = .024) and Unplanned or unwanted pregnancy (β = .21, p = .009) were

identified as significant predictors of depressive symptomatology in mothers. When variables

related to *social support* were added, the model was improved significantly [$F_{(4, 141)}$ = 12.734;

p = .000] and an additional 17% of the variance in depressive symptomatology was

explained. Specifically, age (β = -.17, p = .022), marital dissatisfaction (β = -.32, p = .000),

and perceived social support (β = -.22, p = .003) were identified as significant in predicting

maternal depressive symptoms during pregnancy. The addition of the variables related to

social support rendered unplanned or unwanted pregnancy non-significant. In the fourth step,

the introduction of *psychiatric history variables* significantly improved the model [$F_{(7, 138)}$ =

23.150; p = .000] and a further 28% of the variance was explained. Marital dissatisfaction (β

= .28; p = .000), personal history of depression (β = .16; p = .011), trait anxiety (β = .46, p =

.000), and family history of substance abuse (β = .16, p = .011) were identified as significant

predictors of maternal depressive symptomatology. The added psychopathological variables

rendered age and perceived social support non-significant. In the fifth step, the inclusion of

negative life events significantly improved the model [$F_{(10, 135)}$ = 19.928; p = .000], even

though these variables explained only an additional 5% of the variance. In this step, marital

dissatisfaction (β = .23; p = .000), personal history of depression (β = .13; p = .033), trait anxiety (β = .45, p = .000), family history of substance abuse (β = .15, p = .015), conflictual relationship with parents in the past year (β = .17, p = .005), and bereavement in the past year (β = .12, p = .032) were identified as significant predictors of depressive symptomatology in mothers, and explained 59% of variance in EPDS scores.

Table 7 shows the output of the hierarchical multiple regression analysis that was performed in order to explore the role of psychosocial risk factors in predicting depressive symptomatology in fathers.

TABLE 7 ABOUT HERE

In the first step, marital dissatisfaction and perceived social support were entered. In the second step, psychopathological variables were added to the model (personal history of depression, trait anxiety, partners' history of depression, and partners' history of anxiety).

The first step explained 19% of variance in EPDS scores [$F_{(2, 103)}$ = 11.721; p = .000]. Specifically, both marital dissatisfaction (β = .29; p = .003) and perceived social support (β = -.22; p = .025) were identified as significant predictors of depressive symptoms in fathers. When all predictors were included in the model (including psychiatric variables), an additional 23% of variance in paternal depressive symptomatology was explained [$F_{6, 99)}$ = 11.808; p = .000]. In this second step, marital dissatisfaction (β = .19; p = .035), personal history of depression (β = .17; p = .038), and trait anxiety (β = .37; p = .000) were identified as significant factors contributing to elevated depressed symptoms in fathers, while perceived social support could no longer be identified as a significant predictor. All the independent variables explained 42% of the variations in EPDS scores in fathers.

Discussion

During pregnancy, mothers and fathers have to face deep reorganising processes related to the new task of becoming parents; such significant processes are aimed to form an

emotional bond with the child which provides scaffolding for his/her subsequent

development (Ammaniti, Trentini, Menozzi, & Tambelli, 2014). By virtue of these complex

transformations, pregnancy represents a relevant developmental transition with significant

implications for both parents. The complex interpersonal adjustments associated with the new

responsibilities and demands that occur during pregnancy can negatively affect the

individuals' functioning, putting the parents at risk for a wide range of psychopathological

disorders, among which depression is the most represented (Alipour et al., 2012; Bennett et

al., 2004; Boyce et al., 2007).

Despite the large body of research focused on investigating the main risk factors

involved in the development of maternal depressive symptomatology during pregnancy,

much less is known about the risk factors associated to antenatal paternal depressive mood.

In line with these premises, this study aimed to explore the psychosocial risk factors

that predict antenatal depressive symptomatology in mothers and fathers, respectively.

First of all, in line with previous investigations, we found that depressive

symptomatology during pregnancy was higher in mothers than in fathers (Bennett et al.,

2004; Escribà-Agüir et al., 2008; Paulson & Bazemore, 2010). It has been suggested that

these gender differences may be due to a possible underestimation of paternal depressive

conditions. Indeed, men display different depressive symptoms from women: such

peculiarities are often unrecognised since most of the studies on antenatal paternal depression

have been carried out by using self-report questionnaires or diagnostic interviews developed

for assessing depressive symptomatology in mothers (Kim & Swain, 2007; Matthey et al.,

2000).

In this study, while risk factors related to lack of intimate support and psychopathology

were found to be consistently related to an increase in antenatal depressive symptoms both in

mothers and fathers, negative life events were found to predict only maternal depressive mood during pregnancy.

Coherently with previous findings (Escribà-Aguir et al., 2008), marital dissatisfaction was strongly associated with antenatal depressive mood, both in mothers and in fathers. This result is particularly relevant if we consider the role of marital intimate relationship in mediating the impact of negative life events on parental wellbeing during pregnancy and in preparing positively for childbirth as well as the postpartum period (Evans et al., 2001; Goyal et al., 2010; Jeong et al., 2013; Lancaster et al., 2010; Lee et al., 2007; Zeng et al., 2015).

Among psychopathological risk factors, antenatal depressive symptomatology was predicted by trait anxiety and personal history of depression, both in mothers and in fathers. These findings are consistent with those of previous research studies in which a strong association between trait anxiety (as a stable personality trait) and antenatal depression has been documented (Bunevicius et al., 2009; Da Costa et al., 2000; Kleanthi, 2015; Moss et al., 2009).

An interesting result was found in relation to family history of substance abuse, which predicted antenatal depressive symptomatology in mothers but not in fathers. A large body of research has documented the effects of parental high risk behaviours on individuals' development. Substance (alcohol and drug) abuse is thought to be a major risk factor for the perpetration (Dubowitz et al., 2011; Ondersma, 2002) and recurrence (Jonson-Reid, Chung, Way, & Jolley, 2010) of child maltreatment and emotional neglect. Parents with substance use disorders often fail in regulating emotions and controlling anger and impulsivity; they do not respond sensitively to the child's cues and needs and expose the child to a chaotic and unpredictable living environment (Chaplin & Sinha, 2013; Dube et al., 2001; Hanson et al., 2006). The association between the experience of child maltreatment and the later development of depression has been largely documented (Comijs et al., 2007; Green et al.,

2010; Nanni, Uher, & Danese, 2012; Norman et al., 2012; Staton-Tindall, Sprang, Clark, Walker, & Craig, 2013; Widom, DuMont, & Czaja, 2007). It has been suggested that childhood adversities (such as exposure to parental substance abuse) increase a stress sensitivity that persists into adulthood, making individuals especially vulnerable to mental disorders triggered by adult stressors (Hammen, Henry, & Daley, 2000; Kendler, Kuhn, & Prescott, 2004). It has been evidenced that women with early exposure to adversities are more likely to become depressed following stress than women without such early negative experiences (Hammen et al., 2000): this aspect is particularly relevant during pregnancy, when women have to cope with the stress coming from the dramatic reorganisation of personal identity.

Some interesting differences were found between psychosocial risk factors associated to depressive condition in mothers and fathers.

In this study, relevant negative life events experienced during the past year (specifically, conflictual relationship with parents in the past year and bereavement) were identified as significant predictors of depressive symptomatology in mothers but not in fathers. These results may confirm that, compared to men, women who had early relational adversities, are more vulnerable to depressive symptoms when faced with negative life experiences (Hammen et al., 2000; Kendler et al., 2004).

It is important to underline that during pregnancy the woman has to reorganise her internal representational world, facing and elaborating her relationship with her own parents (especially the mother), because she is not only a daughter in relation to them, but she is experiencing the chance to become a parent too, giving way to an identification with them (in particular, with the mother) (Pines, 1972). Pregnancy may be characterised by conflicts and ambivalence, especially if the woman is experiencing an emotional unavailability or rejection from her own parents. In line with this, research has largely documented that women who

perceive their families as emotionally unavailable and unsupportive appear more likely to experience depression during pregnancy as well as in the postpartum period (Robertson, Grace, Wallington, & Stewart, 2004). Interestingly, there is some evidence to suggest that family support is more important than intimate partner support among women who experience depressive symptomatology during the perinatal period (Haslam, Pakenham, & Smith, 2006).

In this study, no association has been found between maternal age, unplanned or unwanted pregnancy and antenatal depressive mood. These results are in line with those evidenced by Lancaster and colleagues (2010) and by Escribà-Agüir and colleagues (2008), that have evidenced the inconsistent findings concerning the role of these variables in predicting depressive symptomatology during pregnancy, especially with respect to unintended pregnancy (Biaggi et al., 2016).

The major limitation of this study is its observational design which leaves inferences about the causal direction of the effect of psychosocial and psychopathological factors on maternal and paternal depressive symptomatology during pregnancy. Indeed, it is not possible to establish whether depressed symptomatology was present prior to pregnancy and for how long, or whether onset was actually during pregnancy. Moreover, it is not known whether the factors associated with pregnancy depressive mood (particularly marital dissatisfaction) occurred before or after the depressive period. Considering the detrimental consequences of maternal and paternal perinatal depressive condition on parenting and child development, a follow-up study should be implemented to monitor the stability of maternal and paternal depressive symptomatology across time. Results coming from such investigations may be efficiently used in the field of early intervention programmes, aimed to promote functional parenting and to empower positive relational experiences within the family.

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A further constraint of this study is the absence of information about women's and men's expectations and fears related to childbirth and postpartum period adjustment. These aspects could have provided a wider knowledge of the factors that are implicated in antenatal depressive mood and (through a prospective investigation) of their possible association with postpartum depressive symptomatology.

Moreover, in this study, pregnant mothers and fathers were recruited independently from maternity and child health services. This excluded the possibility to assess whether depressive symptomatology in one partner was associated with corresponding increases in the other's. Considering the evidenced association between partners' depressive symptoms (Paulson & Bazemore, 2010), further investigations are needed to examine maternal and paternal depressive symptomatology during the perinatal period by including measures of both partners.

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Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Table 1. *Index of social position*

Psychosocial variables		Mothers	Fathers
Demographics	*Hollingshead's Two Factor* Index of Social Position	*33.14 (±7.82;* range 15.50-48)	*22.89 (±6.43;* range 8.50-40.50)
	− *Low social position*	*37(25.3%)*	*28(26.7%)*
	− *Middle social position*	*71(48.6%)*	*63(60%)*
	− *High social position*	*38(26%)*	*14(13.3%)*

Table 2. *Domains investigated by the Psychosocial Risk Interview*

Psychosocial risk factors		
Risk in pregnancy		Unplanned or unwanted pregnancy
		Drug treatment used to induce pregnancy
		Fertility treatment
		Pregancy complications
Social support		**Marital dissatisfaction**
		Lack of emotional support from parents during childhood
Psychiatric history	Mother or father	Depression
		Eating disorders
		Substance abuse
		Psychosis
	Partner	Depression
		Anxiety
		Eating disorders
		Substance abuse
		Psychosis
	Family of origin	Depression
		Anxiety
		Eating disorders
		Substance abuse
		Psychosis

Negative life events	Previous abortions
	Childhood history of witnessed abuse
	Childhood history of experienced abuse
	Conflictual relationship with parents in the past year
	Conflictual relationship with parents during childhood
	Previous separations or divorces
	Parental separations or divorces during childhood
	Bereavement in the past year
	Bereavement over lifetime
	Physical illness in the past year
	Physical illness over lifetime
	Family physical illness in the past year
	Family physical illness over lifetime
	Accidents in the past year
	Accidents over lifetime
	Financial problems in the past year
	Financial problems over lifetime

Table 3. *Chi square analysis to explore the relationship between psychosocial independent (categorical) variables and depressive symptomatology, in mothers*

Psychosocial risk factors	Depressive symptomatology				Without depressive symptomatology				Chi^2	p
	Yes		No		Yes		No			
	N(%)	Sr	N(%)	Sr	N(%)	sr	N(%)	Sr		
Risk in pregnancy										
Unplanned or unwanted pregnancy	8(17.8%)	2.2	37(82.2%)	-.7	4(4%)	-1.5	97(96%)	.4	7.879	.008
Social support										
Marital dissatisfaction	22(48.9%)	4.9	23(51.1%)	-2.3	4(4%)	-3.3	97(96%)	1.5	42.931	.000
Psychiatric history										
Personal history of depression	14(31.1%)	2.3	31(37.3%)	-1	11(10.9%)	-1.5	90(89.1%)	.7	8.969	.003
Family history of substance abuse	7(15.6%)	2	38(84.4%)	-.6	4(4%)	-1.3	97(96%)	.4	6.008	.014
Negative life events										

Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Conflictual relationship with parents in the past year	16(35.6%)	1.3	29(64.4%)	-1.2	8(7.9%)	-2.1	93(92.1%)	.9	17.307	.000
Parental separation during childhood	14(31.1%)	1.8	31(68.9%)	-.9	14(13.9%)	-1.2	87(86.1%)	.6	5.976	.015
Bereavement in the past year	11(24.4%9	1.9	34(75.6%)	-.8	9(8.9%)	-1.3	92(91.1%)	.5	6.354	.012

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Table 4. *Chi square analysis to explore the relationship between psychosocial independent (categorical) variables and depressive symptomatology, in fathers*

Psychosocial risk factors	Depressive symptomatology				Without depressive symptomatology				Chi^2	p
	Yes		No		Yes		No			
	N(%)	Sr	N(%)	Sr	N(%)	Sr	N(%)	Sr		
Social support										
Marital dissatisfaction	7(38.9%)	1.9	11(61.1%)	.4	13(14.9%)	-1	74(85.1%)	.4	5.546	.027
Psychiatric history										
Personal history of depression	6(33.3%)	2.1	12(66.7%)	-.9	9(10.3)	-1	78(89.7%)	.4	6.437	.011
Partner's history of depression	6(33.3%)	3.6	12(66.7%)	-1.1	3(3.4%)	-1.6	84(96.6%)	.5	16.997	.001
Partner's history of anxiety	7(38.9%)	1.9	11(61.1%)	-.9	13(14.9%)	-.9	74(85.1%)	.4	5.546	.019

Table 5. *Correlation between psychosocial independent (continuous) variables and depressive symptomatology, in mothers and in fathers*

Independent variables	EPDS	
	Mothers	Fathers
Demographics		
Age	-.229[**]	-.025
Hollingshead's Two Factor Index of Social Position	-.055	.089
Perceived social support		
MPSS	-.308[**]	-.339**
Personal trait anxiety		
STAI	.610[**]	.541**

  **p< 0.01

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Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Table 6. *Hierarchical regression for predictors of antenatal depressive **symptomatology**, in mothers*

Predictors		B	SE	β	T	p
Model 1						
Demographics	Age	-.20	.07	-.23	-2.829	**.005**
$R^2 = .05$; *Adjusted* $R^2 = .05$; $F_{(1, 144)} = 8.004$; $p = .005$.						
Model 2						
Demographics	Age	-.16	.07	-.19	-2.278	**.024**
Pregnancy risk factors	Unplanned or unwanted pregnancy	3.37	1.28	.21	2.639	**.009**
$R^2 = .10$; *Adjusted* $R^2 = .10$; R^2 *change* $= .04$; $F_{(2, 143)} = 7.649$; $p = .001$.						
Model 3						
Demographics	Age	-.15	.07	-.17	-2.314	**.022**
Pregnancy risk factors	Unplanned or unwanted pregnancy	1.40	1.22	.09	1.145	.254
Social support	**Marital dissatisfaction**	3.58	.89	.32	4.030	**.000**
	Perceived social support (MPSS)	-.92	.31	-.22	-2.972	**.003**
$R^2 = .27$; *Adjusted* $R^2 = .25$; R^2 *change* $= .17$; $F_{(4, 141)} = 12.734$; $p = .000$.						
Model 4						

Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Demographics	Age	-.07	.05	-.08	-1.395	.165
Pregnancy risk factors	Unplanned or unwanted pregnancy	-.28	.99	-.02	-.278	.781
Social support	**Marital dissatisfaction**	3.14	.72	.28	4.389	**.000**
	Perceived social support (MPSS)	-.33	.26	-.08	-1.274	.205
Psychopathology	Personal history of depression	1.79	.70	.16	2.573	**.011**
	Personal trait anxiety (STAI)	.27	.04	.46	7.238	**.000**
	Family history of substance abuse	2.54	.99	.16	2.572	**.011**

$R^2 = .54$; Adjusted $R^2 = .52$; R^2 change $=.28$; $F_{(7, 138)} = 23.150$; $p = .000$.

Model 5

Demographics	Age	-.07	.05	-.08	-1.365	.174
Pregnancy risk factors	Unplanned or unwanted pregnancy	-.12	.96	-.01	-.126	.900
Social support	**Marital dissatisfaction**	2.62	.70	.23	3.758	**.000**
	Perceived social support (MPSS)	-.31	.25	-.08	-1.238	.218
Psychopathology	Personal history of depression	1.47	.68	.13	2.159	**.033**
	Personal trait anxiety (STAI)	.26	.04	.45	7.314	**.000**
	Family history of substance abuse	2.37	.96	.15	2.461	**.015**

Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Negative life events	Conflictual relationship with parents in the past year	1.94	.68	.17	2.852	**.005**
	Parental separation during childhood	.67	.65	.06	1.041	.300
	Loss in the past year	1.53	.70	.12	2.169	**.032**

$R^2 = .59$; Adjusted $R^2 = .56$; R^2 change $= .05$; $F_{(10, 135)} = 19.928$; $p = .000$.

Running head: PSYCHOSOCIAL RISK, ANXIETY, ANTENATAL DEPRESSION

Table 7. *Hierarchical regression for predictors of antenatal depressive* **symptomatology**, *in fathers*

Predictors		B	SE	β	T	p
Model 1						
Social support	**Marital dissatisfaction**	2.75	.92	.29	3.001	**.003**
	Perceived social support (MPSS)	-.73	.32	-.22	-2.272	**.025**
$R^2 = .19$; Adjusted $R^2 = .17$; $F_{(2, 103)} = 11.721$; $p = .000$.						
Model 2						
Social support	**Marital dissatisfaction**	1.75	.82	.19	2.143	**.035**
	Perceived social support (MPSS)	-.29	.30	-.09	-.988	.325
Psychiatric history	Personal history of depression	1.83	.87	.17	2.108	**.038**
	Personal trait anxiety (STAI)	.21	.05	.37	4.324	**.000**
	Partner's history of depression	1.80	1.11	.14	1.620	.108
	Partner's history of anxiety	.60	.80	.06	.752	.454
$R^2 = .42$; Adjusted $R^2 = .38$; R^2 change $= .23$; $F_{(6, 99)} = 11.808$; $p = .000$.						

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