THE ROLE OF SOCIAL SUPPORT AND EMOTIONAL INTELLIGENCE ON NEGATIVE MOOD STATES AMONG COUPLES DURING PREGNANCY: AN ACTOR-PARTNER INTERDEPENDENCE MODEL APPROACH

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Abstract

Objective: In the field of perinatal psychology, the majority of studies focused on mothers' psychological and behavioral states during pregnancy, neglecting the role of their partners. This study used an Actor-Partner Interdependence Model approach to evaluate the role of social support and emotional intelligence in both members of marital couples who were expecting a baby.

Method: Forty couples who were waiting for their first child were asked to complete questionnaires on social support, trait emotional intelligence, anxiety, and depression.

Results: Paternal emotional intelligence was related to paternal depression and anxiety, and maternal emotional intelligence was related to maternal depression and anxiety. Anxiety and depression were not predicted by the other partner's social support and emotional intelligence. However, emotional intelligence in fathers was linked to perceived social support in mothers.

Conclusions: Anxiety and depression are serious problems during pregnancy, and high emotional intelligence in fathers can represent an important variable that might indirectly reduce negative mood states in mothers. This consideration may help in the definition of better preventative actions and psychological interventions during pregnancy.

Key words: emotional intelligence; social support; pregnancy; actor-partner interdependence model; anxiety; depression

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Introduction

Pregnancy is a period of particular psychological vulnerability for future parents, who must cope with the intense emotional experiences linked to the transition to parenthood (Milgrom and Gemmill 2015, Silva 2012). In fact, the transition to parenthood modifies the life of the couple, because the two partners need to develop adequate parenting skills, have to adjust their life according to the baby's needs, and also have to renegotiate their roles in the family (Beck 1996, Pellerone et al. 2017a, Wandersman et al. 1980).

In literature, a child's birth is considered as a critical event that initiates a new developmental phase of the family life cycle (Iacolino et al. 2016, Silva et al. 2012). As far as the "family life cycle" is concerned, critical events lead to the restructuring of the family and its relationships, and, if these events are processed and integrated, they support the development and relational growth of the family itself; otherwise, the result is the relational dysfunction of the family (Letornau et al.

2012, Pellerone et al. 2017b).

Given the fact that the birth of a child is a critical life event that has important effects on the family life, sometimes pregnancy is accompanied by psychological symptoms in one or both partners, and anxiety and depression are the most common of these symptoms (Gaynes et al. 2005, Leach et al. 2015, Trotta et al. 2013). In fact, pregnancy can sometimes result in an identity crisis, because changes in the woman's body and life activities can affect the woman's identity. This potential crisis requires a reorganization of the mother's psychic world (Besser and Priel 2003, Delassus 1995, Laney et al. 2015, Manzano et al. 1999). The psychological acquisition of a maternal role implies the creation of a new mental state in the woman, which has been defined in terms of "maternal constellation" (Stern 1995). The maternal constellation starts its structuring during pregnancy, leading the woman to reorganize her life, to redefine her priorities, values and interests, and to develop new emotional skills. Therefore, becoming a mother can be very difficult, but generally ends with a positive adjustment in the woman's identity. However, in the presence of some psychosocial or psychological risk factors, maternal difficulties may result in states of psychological distress or even psychopathology (Brock et al. 2015, Gaynes et al. 2005).

Also, transition to parenthood has important psychological effects on men. Research shows that some men display emotional problems during their partner's pregnancy that could negatively affect the couple's life, and later in life the mother-child relationship, and even the child's psychological and physical development (Fletcher et al. 2011, Leach et al. 2015, Wee et al. 2011).

These problems in men are often underestimated and not recognized (Letourneau et al. 2011). Previous studies (Giallo et al. 2012, O'Brien et al. 2016, Paulson & Bazemore 2010) have shown a prevalence of about 10% of paternal perinatal depression in general population, with paternal depression correlated with an increased risk for continued or worsened maternal postpartum depressive symptoms (Paulson et al. 2016). Paternal postpartum depression has also been linked to internalizing (e.g., negative affetivity) and externalizing symptoms (e.g. gambling, alcoholism) or escape activities (e.g. overwork, extramarital affairs) in fathers (Condonet al. 2004, Perez et al. 2017, Veskrna 2013).

Perinatal depression and anxiety

One of the psychopathological frameworks most closely related to the psychological and emotional suffering experienced by parents during pregnancy and the puerperium period is the perinatal depression. Actually, the *Diagnostic and Statistical Manual of Mental Disorders* - Fifth Edition (APA 2013) includes the Major Depressive Disorder (MDD) among the depressive disorders. The MDD includes a variety of cognitive, somatic, and behavioral symptoms such as depressed mood, decreased interest or pleasure for activity, weight loss or gain, insomnia or hypersomnia, psychomotor agitation or retardation, asthenia, fatigue, self-blame, reduction of concentration, thoughts of death, and even attempted suicide. If such symptoms occur during the period from the beginning of pregnancy to the first year after birth, they define a condition of perinatal depression (Milgrom and Gemmill 2015).

Perinatal depression does not only occur in women (Wee et al. 2011). For some vulnerable parents, regardless of their sex, pregnancy and the birth of a child may represent a potentially traumatic experience, to the point that the post-partum period has been associated with increased risk for post-traumatic stress disorder symptoms, sometimes fostered by a whole series of concerns about the unborn child (Czarnocka and Slade 2000). Moreover, there is a high risk of comorbid anxiety and depressive symptoms during the perinatal period, including sleep disorders, difficulties in concentration, fear of the future, and feelings of helplessness (Beck et al. 1985, Wijma et al. 1997). In the perinatal period, thoughts, expectations, desires and doubts concerning the child usually arise in both partners, and a lack of adequate social support may increase the anxieties associated with the new role of parents and the processes of redefinition of identity (Woolhouse et al. 2009). Therefore, anxiety symptoms in the perinatal period are often co-occurring with depressive symptoms, so perinatal anxiety could be even more frequent than depression (Austin et al. 2007, Faisa-Cury and Rossi-Menezes 2007, Heron et al. 2004, Lee at al. 2007, Reck et al. 2008).

Social support

Extensive research has explored the psychosocial risk factors such as stressful events, marital difficulties, and low social support, which may lead to the development of perinatal depression (Goodman and Brand 2009, Milgrom et al. 2008, Paulden et al. 2009, Pignone et al. 2002, Swendsen and Mazure 2000, Verdoux et al. 2002). Specifically, social support has been considered as a fundamental protective factor for perinatal depression, as social support seems to promote the mother's mental health. Social support consists of help and aid that an individual receives from people who are in a close relationship to that person (Barrera and Ainlay 1983). This construct is multi-dimensional and includes three typologies of support: emotional, instrumental, and informational (Schaefer et al. 1981). Emotional support indicates the possibility to discuss one's own feelings with other people and to perceive their acceptance about such feelings. Instrumental support indicates that other people are available to provide material aid, e.g. in terms of time, money, and general assistance with daily activities. Informational support indicates that others provide understanding, suggestions, and advice to cope with problematic events on the basis of available information.

Some empirical studies attempted to examine which type of social support might better promote mental and physical health in people. Research findings show that emotional support is often recognized as the most important variable among the three domains of social support (Collins et al. 1993, Uchino 2009). Empirical studies also drew attention to the protective role of social support in the development of post-partum depression. For example, it seems that suitable support from the mother's parents reduces the odds of post-partum depression, thanks to the positive effects of the support itself on the mother's perception of her self-efficacy (Haslam et al. 2006). Even the presence of a supportive partner has been proved to be essential, because it reduces the negative experiences related to the impact of childbirth on the woman's wellness (Lemola et al. 2007, Silva et al. 2012). Furthermore, the discrepancy between social support received and social support expected can predict the level of post-partum depression more than the actual level of support (Shu-Shya Heh 2003). The absence of social support also resulted to be a risk factor in the development of perinatal depression in men (Castle et al. 2008, Letourneau et al. 2001).

Emotional intelligence

Other psychological features (including self-esteem and adequate coping strategies) might have a positive influence on the process of adjustment to becoming parents. Among these, emotional intelligence (EI) is an extensively studied construct that could represent an important factor in the couple's adjustment to parenthood. Surprisingly, current research has barely examined the relationship between EI and perinatal depression.

El regards the way the individual perceives the emotional world. It can be defined in general terms as the capacity to identify one's emotions and those of others, to differentiate them and to use this information to drive thinking and actions (Salovey and Mayer 1989). The idea comes from the Multiple Intelligences Theory developed by Gardner in 1983. Gardner distinguished between two forms of EI: intrapersonal intelligence, which is the capacity to consciously access the inner emotional life; and interpersonal intelligence, which consists in understanding others' moods, intentions and desires. The basic idea of Gardner's theory is that the human emotional system works by processing information and perceptions. To summarize, in Gardner's theory there are individual differences linked to the capacity of using and elaborating emotional information, and those differences depend on the EI level of a person. In line with this reasoning, EI is formally operationalized in research as a constellation of emotional perceptions located at the lower levels of personality hierarchies that can be measured via questionnaires and rating scales (Perez-Gonzalez and Sanchez-Ruiz 2014, Petrides et al. 2007).

Individuals with high levels of EI are able to identify and describe their own feelings and those of others easily enough, in order to regulate their own states of emotional activation. They are also able to use emotions in an adaptive way (Salovey and Mayer 1989). Moreover, individuals with high EI levels have more social relationships compared to others who have low EI levels (Lopes et al. 2004). This probably happens because high levels of EI help individuals to understand how to behave in order to increase the probability of reaching personal and social goals (Zeidner et al. 2008). In fact, understanding one's own emotional world and how to relate with the emotional world of other people is essential for an effective and functional adaptation. Reduced levels of EI, instead, could increase the risk of problems in interpersonal relationships (Petrides et al. 2017)

Furthermore, high levels of EI have been linked with several positive outcomes in many important life domains, such as positive health conditions (Costa et al. 2014), adequate parenting (Gugliandolo et al. 2015), and school achievement (Nikooyeh et al. 2017).

Aims of the study

The main objective of this study was to investigate if emotional intelligence and social support affected the level of anxiety and depression in couples who were expecting their first baby.

In accordance with the literature, in this study we hypothesized that emotional intelligence and social support could represent protective factors for the development of perinatal depression. In particular, we hypothsized that emotional intelligence and social support could reduce symptoms of anxiety and depression in the members of the couple during the pregnancy. Therefore, it was hypothesized that high levels of emotional intelligence and social support could positively affect the mood of the partners during the pregnancy, reducing the risk of developing anxiety or depressive states. Another way in which this study aimed to contribute to extant research was by examining the relative contribution of emotional intelligence and social support of both future parents (mothers and fathers) in predicting maternal and paternal anxiety and depression, using the actor partner interdependence model (APIM; Kenny et al. 2006). We expected to found same-parent relationships between social support, trait EI, anxiety and depression; however, we also expected that emotional intelligence and social support in one partner could predict anxiety and depression in the other partner.

Materials and methods

Participants

Forty couples expecting their first child from Calabria, Italy, participated in this study. The men were aged between 25 and 43 years old (M = 32.16, SD = 5.25). Among them, 33% worked as freelance professionals, 57% were employees and 10% were unemployed. Sixty-five percent of men had a bachelor degree, 33% had a high school diploma and 2% had a middle school diploma.

The women were aged between 20 and 40 years old (M = 29.28, SD = 4.13), 10% worked as freelance professionals, 55% were employees, 10% were housewives, 10% were unemployed and 15% were students. Sixty-three percent of women had a bachelor degree, 34% had a high school diploma and 3% had a middle school diploma. All the women completed the measures used in this study between the seventeenth and twenty-third week of pregnancy.

Procedures

Participation was voluntary. The couples recruited were acquaintances of the researchers. Inclusion criteria were: not having had previous pregnancies; being at least in the fourth month of pregnancy; prospective parents had to live together; both parents must agree to participate in the research. The questionnaires were administered separately to the fathers and mothers at their homes. Before filling in the questionnaires, the parents signed an informed consent. Researchers collected data during a fellowship research program, which was conducted between 2015 and 2016. The research procedures described in this article were performed in compliance with the American Psychological Association and the Italian Psychological Association ethical guidelines for research.

Measures

For the measurement of the variables, participants completed the Italian versions of the following instruments: the *Trait Emotional Intelligence Questionnaire-Short Form* (TEIQ-SF), the *MOS Social Support Survey* (MOS-SSS), the *Center for Epidemiologic Studies Depression Scale* (CES-D) and the *State-Trait Anxiety Inventory-Y Form* (STAI-Y).

The Trait Emotional Intelligence Questionnaire-Short Form (Petrides and Furnham 2006) is a 30 item self-reported measure used to assess global trait EI. Participants are required to rate, their level of agreement with each item, on a 7-point scale. Higher total scores indicate higher EI. The Italian version of the Trait Emotional Intelligence Questionnaire-Short Form (Di Fabio 2013) was used in this study.

The MOS Social Support Survey (Sherborne and Stewart 1991) is a 19 item self-reported measure used to assess social support. The response format is on 5-point Likert scale, from 1 to 5. Higher scores indicate higher social support. The Italian version of MOS Social Support Survey (Giangrasso and Casale 2014) was used in this study.

The Center for Épidemiologic Studies Depression Scale (Radloff 1977) is a 21 item self-reported measure used to assess symptoms of depression measured on a 4-point Likert scale, ranging from 0 to 3. Higher scores indicate higher depression. The Italian version of Center for Epidemiologic Studies Depression Scale (Fava 1982) was used in this study, showing good level of reliability (table 1). To have a direct measure of depression, without the contamination of the assessment of absence of positive affect (i.e. anhedonia), in according with previous studies (Carleton et al. 2013, Stansbury et al. 2006) we used the reduced version by eliminating the reverse item.

The State-Trait Anxiety Inventory-Y Form (Spielberger et al. 1970) is a 40 item self-reported measure used to asses state anxiety and trait anxiety. In our study, only the scale which assesses the trait anxiety was used. The response system is on 4-point Likert scale, from 1 to 4. Higher scores indicate higher anxiety. The Italian version of the State-Trait Anxiety Inventory-Y Form (Pedrabissi and Santinello 1989) was used in this study.

Statistical analysis

An Actor–Partner Interdependence Model (APIM, Kashy and Kenny 2000, Kenny 1996) was used to test the interdependence of both partners and the effect of the dyadic relationships on anxiety and depressive symptoms in the couple. APIM measures the reciprocal influence that emotions, cognition and/or the behavior of one partner have on those of the other partner. This approach focuses on both the actor's and the partner's effects concurrently and also to test their reciprocal effects (Cook and Kenny 2005).

Results

Descriptive statistics are presented in **table 1**. Furthermore, **table 1** shows the internal consistency of each scale (alpha value) and the Pearson's r correlations among the study variables. In the group of fathers, the paternal trait EI showed a negative correlation with paternal depression and anxiety, while paternal social support was negatively related to paternal anxiety. In the group of mothers, maternal trait EI showed a negative correlation with maternal depression and anxiety; furthermore, maternal social support was positively associated with maternal trait EI and negatively associated with maternal depression and anxiety. The paternal trait EI was positively associated with maternal social support and negatively associated with maternal anxiety. Trait EI in mothers and fathers were independent nature of dyadic data, and uncovers interpersonal as well as intrapersonal associations between variables in distinguishable dyads. Analysis of covariance matrices was conducted using EQS 6.2, and solutions were generated on the basis of maximumlikelihood estimation. Mardia's coefficient in this study was 7.84 with a normalized value of 1.60, suggesting a multivariate normality of the distributions. In this model, paternal and maternal age were included as control variables, adding a path from paternal and maternal age to all the other variables. This estimation concerned a saturated model, and therefore no fit indices are reported. The analysis showed significant and negative paths from paternal emotional intelligence to paternal depression ($\beta = -.42$; p < .05) and paternal anxiety ($\beta = -.44$; p < .05). The paths from paternal trait EI to maternal anxiety ($\beta = -.21$; p > .05) and maternal depression ($\beta = -.15$; p > .05), and the paths from paternal social support to paternal anxiety ($\beta = -.28$; p > .05), paternal depression (β = -.16; p > .05), maternal anxiety ($\beta = -.01$; p > .05), and maternal depression (β =.14; p > .05), were not significant.

Furthermore, maternal emotional intelligence was negatively related to maternal depression ($\beta = -.30$; p < .05) and anxiety ($\beta = -.44$; p < .05). The paths from maternal trait EI to paternal anxiety ($\beta = -.14$; p > .05) and depression ($\beta = .28$; p > .05), as well as the paths from maternal social support to paternal anxiety ($\beta = .05$; p > .05) and paternal depression ($\beta = -.24$; p > .05) and maternal depression ($\beta = -.23$; p > .05) and maternal depression ($\beta = -.23$; p > .05) were not significant. Finally, a significant and positive relation was found between age of father and maternal depression ($\beta = .44$; p < .05), while the other relationships among the age of the members of the couple and the investigated constructs were not significant.

In accordance with common procedure to test the saturated model, a trimming process was conducted (Kline 2011), and all non significant paths were removed. Goodness-of-fit indices indicated that the data adequately fit the final model (see Figure 1): $\chi 2(35) = 42.54$; p = .18, CFI = .93, RMSEA = .07 (90% CI = .00 –

Table 1. Descriptive Analyses and Correlations

		α	Μ	SD	Skewness	Kurtosis	1	2	3	4	5	6	7
1	Trait EI Father	.85	5.34	.51	20	.27							
2	Support Father	.95	4.44	.56	94	.63	.35*						
3	Depression Father	.74	.04	.09	.20	29	45**	30					
4	Anxiety Father	.68	1.48	.23	2.07	2.90	52**	44**	.27				
5	Trait EI Mother	.88	5.52	.56	74	.74	.23	.27	.05	28			
6	Support Mother	.94	3.88	.62	.10	.30	.63**	.18	24	35*	.43**		
7	Depression Mother	.91	.59	.39	.23	.14	32*	13	.13	.10	45**	34*	
8	Anxiety Mother	.76	1.70	.28	1.04	2.54	45**	27	.24	.41**	62**	55**	.62**

Note: * *p* < .05, ** *p* < .01

not associated between them, as it happened with social support in mothers and fathers. However, paternal and maternal anxiety were positively associated between them.

To examine whether emotional intelligence and social support of both partners could predict anxiety and depression symptoms in each members of the couple, a Structural Equation Modeling (SEM) within the Actor-Partner Interdependence Model (APIM) was used. The APIM takes into account the non.14). In this model, paternal emotional intelligence was negatively related to paternal depression ($\beta = -.45$; p < .05) and paternal anxiety ($\beta = -.52$; p < .05). Moreover, similarly to the saturated model, maternal emotional intelligence was negatively related to maternal depression ($\beta = -.40$; p < .05) and maternal anxiety ($\beta = -.62$; p < .05). Paternal age was positively related with maternal depression ($\beta = .38$; p < .05). Paternal trait EI was also correlated with perceived paternal social support ($\beta = .30$; p < .05), while maternal trait EI was



Figure 1. Actor -Partner Interdependence Model of depression and anxiety in couples

Note: Standardized path coefficients are shown in the figure

correlated with perceived maternal social support ($\beta = .55$; p < .05). Finally, positive correlations were found between maternal anxiety and maternal depression ($\beta = .53$; p < .05) and between maternal age and paternal age ($\beta = .56$; p < .05). Another important finding of the SEM analysis concerned the significant and positive association between paternal trait EI and perceived maternal social support (= .35; p < .05). The results of APIM analysis are summarized in **figure 1**.

Discussion

The aim of the present study was to examine the role of emotional intelligence and social support in the development of anxiety and depression symptoms during pregnancy.

As largely evidenced by literature, pregnancy represents a critical event that may interact with other psychological vulnerabilities in future parents and that may trigger emotional problems, such as symptoms of depression and anxiety (Milgrom and Gemmill 2015). However, there are psychological and psychosocial factors that can be protective for future parents and can help them to overcome the emotional problems linked to the pregnancy period. Among such factors, our research suggests that emotional intelligence and social support may play a pivotal role in protecting the pregnant mother and her partner from psychopathology, in line with previous research (Castle et al. 2008, Goleman 2005, Haslam et al. 2006, Lemola et al. 2007, Letourneau et al. 2011).

In detail, the current study examined the relationship between EI, social support, depression and anxiety in couples expecting their first baby, to test our hypothesis that reduced EI and low social support could be linked to maternal and paternal depression and anxiety during pregnancy. In accordance with literature, social support in our study was moderately and inversely correlated with levels of anxiety and depression in both fathers and mothers. Therefore, more social support during pregnancy could reduce the probability of developing emotional problems for future parents (Aktan 2012). Furthermore, in accordance with our hypothesis, we found that trait EI was directly and negatively linked to anxiety and depression in the same parent. However, we did not find evidence in the APIM analysis that EI in one parent affected anxiety and depression in the other parent, even though a moderate and negative association between paternal trait EI and maternal anxiety was found in correlational analyses. Therefore, it is possible that the relationship between EI in fathers and perinatal symptoms of depression and anxiety in mothers is indirect, and is modulated by perceived social support in mothers. In fact, our results seem to confirm those of previous studies demonstrating the importance of the partner's support (Lemola et al. 2007) to avoid the development of depression and anxiety during pregnancy.

In fact, the APIM analysis showed that lower levels of EI in fathers were associated with lower levels of perceived social support in mothers. In turn, perceived social support in mothers was linked to her emotional intelligence, which predicted the levels of anxiety and depression symptoms. This finding supports the view that high levels of emotional intelligence in fathers can promote the perception of adequate social support in mothers, so that mothers can better focus their own emotional intelligence in order to cope properly with stress and negative affects, thus reducing the risk of developing anxiety or depression. In contrast, when fathers show low EI, some mothers may be less likely to perceive adequate social support or even ask their partners in order to receive it. In such conditions, mothers appear less likely to use social support for fostering their own emotional intelligence and for increasing positive affects that may act as a buffer against anxiety and depression. Therefore, high levels of EI allow the father to be more supportive with his partner, who in turn can cope with the difficulties of pregnancy with lower levels of anxiety and depression.

Conclusions

The findings of our study confirm that EI is an important feature for the development of effective interpersonal relationships. In fact, high levels of EI make an individual more capable in social relationships, and positive relationships can lead in turn to adequate social support during critical life events, such as pregnancy.

The use of an Actor-Partner Interdependence Model analysis showed that EI predicted same-parent, but not other-parent, anxiety and depression in our study. This suggests that EI has an important direct effect on the individual's emotional states, and is not directly related to the other partner's states. However, we also found that paternal EI was linked to maternal perceived social support. So, the presence of high levels of EI in fathers can increase the perception of a sense of safety and support in mothers. Such feeling of safety in a close relationship can reduce the risk of developing psychopathology (Schimmenti 2017a, b), including perinatal depression or anxiety, and can help mothers to cope better with physical and psychological problems that may occur during pregnancy.

However, as with every research, our study comes with a number of limitations. The sample size was relatively small, thus our results are not generalizable to other samples. Moreover, the cross-sectional nature of the data prevents us from drawing conclusions about causal direction, even though the relationships between variables in our study were invoked on a strong theoretical base, since emotional intelligence as a trait is thought to precede current anxiety or depressive states. Hence, longitudinal studies and experimental designs with large samples are greatly needed to advance this field of research. It could also be critical in future studies to integrate a post-partum assessment of mood states in the couples, to examine the impact of EI and social support on potential clinical outcomes.

However, even considering its limitations, the current study supports the conception that EI and social support can affect the emotional states of future parents. Furthermore, the study suggests the importance of promoting psychoeducational courses and programs for the development of emotional intelligence skills and social support with future parents, e.g. psychoeducational programs during pregnancy that involve both partners and that are aimed to promote attunement with the partner's needs and mentalizing attitudes in the two partners. The study also suggests that when clinical intervention for perinatal depression or anxiety is needed, both partners should be involved in the treatment, because of the interdependence of the two partners and the complex relationship linking anxiety and depression symptoms with a mother's and father's capacity for emotional intelligence and perceived social support.

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