

## Parents' personality and maternal experiences in childcare as predictors of postpartum depression in couples in transition to parenthood

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### Summary

**Aim.** Analysis of interrelationships between the five global personality dimensions of both parents and mothers' experiences regarding feeding the baby/childcare, as well as determining their role as predictors of postpartum depression.

**Method.** 223 first-time expectant couples participated in the study (I stage), and 143 couples from this group were examined about five months after the childbirth (II stage). The following questionnaires were used: the NEO Five-Factor Inventory (NEO-FFI), the Edinburgh Postnatal Depression Scale (EPDS), and the Mother and Baby Scale (MBAS).

**Results.** EPDS scores were interrelated in couples. Both parents' Neuroticism measured before the childbirth was associated with higher levels of self-assessed and partner's postpartum depression. Mothers' Neuroticism negatively correlated with global confidence regarding childcare and the child's positive alertness during feeding (which was also associated with a higher female Extraversion). Maternal global confidence in childcare negatively correlated with postpartum depression in both partners. Perceived child's alertness and mother's global confidence significantly mediated the relationship between mothers' Neuroticism (and their Extraversion in the case of child's alertness), and the EPDS score in women. Partners' similarity in Neuroticism was associated with worse functioning of mothers (higher EPDS scores, lack of confidence), whereas similarity in Openness to experience negatively correlated with fathers' EPDS score, and positively with mothers' global confidence.

**Conclusions.** Complex associations between postpartum depression scores and personality dimensions of men and women, and mother's experiences indicate the need to include fathers and couples in studies. Offering the possibility to meet with lactation consultants might be an essential element of support system for new parents.

**Key words:** Postpartum Depression, Breast Feeding, Parents' Personality

## Introduction

The transition to parenthood is associated with many changes and is perceived as a stressful life event [1]. Postpartum depression is conceptualized as one of psychiatric disorders that can be experienced by both women and men in the perinatal period [2, 3], affecting 10–20% of mothers [4], and about 10% of fathers [3]. Symptoms of postpartum depression are typical of each depressive episode, but they are related to the birth of the child [5]. This disorder can have many consequences for the psychological and social functioning of both parents, their immediate family and for the baby [3, 6]. The risk factors for the onset of symptoms of postpartum depression include experiences related to stay in the obstetric ward, family history of mental disorders, low level of social support, socio-demographic factors as well as personality resources [7–9].

In the context of postpartum depression prevalence, researchers emphasize the role of personality as a decisive factor in coping with life difficulties [10]. The five-factor personality model is currently the most popular and it includes the following dimensions: (1) Neuroticism (N), (2) Extraversion (E), (3) Openness to experience (O), (4) Agreeableness (A), (5) Conscientiousness (C) [10]. This concept has become the basis for the research presented in this article – as the concept's authors prove that it is complete and accurate in describing the structure of personality. They distinguish between basic tendencies (including the five abovementioned dimensions) from characteristic adaptations, and hence from person-specific and context-dependent adaptation to life situations [10]. The way of adaptation to the parental role is placed within the area of characteristic adaptations. Adaptation itself involves dealing with stressors in the process of defining own parental identity and building relationships with the child [11].

The situation of feeding the baby and its perception, especially by the mother, constitutes an important element of adapting to parenthood and may influence the development of the child. The mother's attitude towards breastfeeding, the perception of herself (e.g., as an effective mother) and the child (e.g., his/her temperamental sensitivity) shape the emotional bond between the mother and the child, affecting their ability to regulate their emotions [12, 13]. Referring to the assumptions of the five-factor model and prenatal psychology [14], perception of breastfeeding may also be influenced by, among others, the mother's personality and shape her further adaptation to motherhood, including her emotional functioning and her relationship with the child [15, 16].

High Neuroticism and low scores in other dimensions of the five-factor model as well as problems related to breastfeeding (absence of breastfeeding or failure in its continuation) have been defined as predictors of postpartum depression [17–19], still, in the longer term of the development of the relationship between a mother and a child those associations might become more complex and be bidirectional [20]. However,

the relationship between personality traits of mothers as defined in the five-factor model and the perception of breastfeeding after the birth of the child has rarely been analyzed [15].

The research has indicated that low Neuroticism (a stronger effect) and Extraversion enhance the breastfeeding intention and its duration. Additionally, more extroverted and less neurotic mothers believed that breastfeeding is easy, and those more conscientious but also neurotic deemed breastfeeding to be healthy for the child [15]. Other studies have indicated that low self-efficacy, concerns and negative feelings about breastfeeding were associated with the risk of postpartum depression [21]. However, psychological factors such as plans to breastfeed were important as well, and such factors may modify the strength and importance of the relationship between feeding of the baby and postpartum depression [22].

Polish studies have confirmed the significant and negative role of Neuroticism as a risk factor for postpartum depression [23–25]. In the studies by Podolska et al. [23, 24], personality factors analyzed in pregnancy such as higher Neuroticism and lower: Extraversion, Openness to experience, Agreeableness and Conscientiousness increased the risk of prenatal depression. Women who had higher rates of depression before or after childbirth displayed a more negative image of themselves in terms of their mental needs and personality dimensions. In conclusion, the results obtained by Podolska et al. [23, 24] indicated, on the one hand, the utility of using psychological measures such as the NEO-FFI in screening programs for perinatal depression. On the other hand, the authors noticed the frequent neglect of the importance of personality factors as predictors of emotional problems during pregnancy and after childbirth in the programs of perinatal depression prevention.

In the research on perinatal depression, the fathers of the child are rarely included [2]. It is worth to take into account the personality traits of both partners in analyses, because of the continuing debate about the role of personality similarity – homogamy – for the functioning of the relationship as well as for each partner [20, 26, 27]. Theoretical approaches indicate that similarity in a relationship is conducive to the acceptance of a partner whose responses can be more understandable and predictable, as well as supportive of their own behavior and emotions, thereby increasing the sense of competence in the valued areas [27]. It is worth to emphasize the so-called differential similarity in personality traits, assuming that the levels of individual traits of both partners can be benevolent (e.g., high empathy) or destructive (e.g., high Neuroticism) to their functioning [28]. The research conducted in this area often involves relational satisfaction, and researchers point to a moderate personality similarity of men and women in their relationships [26], and its role might be greater among young couples [29]. The first stages of family life require the development of rules of living together, while preserving emotional intimacy and a close relationship, which are also crucial in the transition to parenthood [30]. It is therefore necessary to further investigate the

importance of the personality of both partners in this crucial moment of their life and in anticipating the risk of postpartum depression [20].

Therefore, the aim of the presented research was to answer the question of whether the five global personality dimensions of both parents and mothers' experiences regarding feeding of the baby and childcare are predictors of the tendency to experience symptoms of postpartum depression. The five-factor personality model allows, as mentioned, to distinguish between relatively stable basic tendencies (N, E, O, A, C) and the characteristic adaptation, which in the presented study is the emotional response to the developmental crisis – having the first child. The mother's perception of breastfeeding is an important part of creating a bond between her and her baby. It is associated with the mother's personality and her functioning in a new life role [31]. It was expected that this factor would mediate the relation between maternal personality traits and her tendency to experience symptoms of postpartum depression [17, 32].

The additional aim of the study was to examine the effect of the similarity of the partners' personalities for the variables included in the research model. It was expected that, according to the thesis about the so-called differential similarity in personality traits, homogamy in Neuroticism will correlate positively, and in the other traits – negatively with the tendency to experience symptoms of postpartum depression. The purpose of the analysis was to determine the strength and significance of the above effects for both partners, as well as for the experience of mothers regarding feeding and caring for the child.

A particular advantage of the study was the inclusion of a large sample of couples and not just women. In addition, the study design was complex and included two measurements at two time points – personality was analyzed before childbirth, and other variables in the postpartum period.

### Material

This study, with the use of the described research measures, included 223 first-time expectant couples. The study was conducted in two stages, with 143 couples returning for the second stage. Permission to carry out the research, which was part of a wider research project, was granted by the Independent Bioethics Commission for Research of the Medical University of Gdansk (No. NKEBN/400-2008/2009). Couples were recruited in the antenatal classes, women were on average at 31 weeks of gestation ( $SD = 3.57$ ). Then the couples participated in the study together with the child at the Department of Obstetrics, Medical University of Gdansk, on average five months after the child's birth. Mean age of the mothers was 28 years ( $M = 28.13$ ;  $SD = 3.54$ ), and mean age of the fathers was 30 years ( $M = 30.24$ ;  $SD = 4.58$ ). At both stages of the study, women declared overall good health. Parents positively assessed the general health of their children.

## Method

The NEO-FFI Personality Inventory [33] was used to measure personality traits. The NEO-FFI questionnaire contains 60 statements with a 5-point response scale. The questionnaire measures five basic dimensions of personality – Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. Higher scores indicate greater Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. Reliability coefficients for particular subscales ranged from 0.71 to 0.85, and confirmed a good level of internal consistency for the described measure.

The Edinburgh Postnatal Depression Scale (EPDS) [12, 34] was used to measure the prevalence and severity of the symptoms of perinatal depression. The EPDS consists of 10 items with a 4-point response scale (from 0 to 3). Thus, a score from 0 to 30 points can be obtained, participants scoring over 12 are likely to be suffering from depression [34]. In addition, the higher the score, the higher the severity of symptoms of postpartum depression (in this study the tendency for postpartum depression was treated as a quantitative variable). The Cronbach's alpha coefficient for the scale was 0.76. Based on the analysis of the EPDS results and the clinical interview conducted by two psychologists, none of the participants was identified as depressed nor did they mention receiving such diagnosis or any other diagnosis of a psychiatric disorder.

The mother's experiences during feeding the baby and childcare were measured by the Mother and Baby Scale (MBAS) [35]. The scale contains 27 items, of which 21 items (response scale from 0 to 5) allow the mother to evaluate the behavior of the child during feeding (positive dimension – the child's alertness during feeding (5 items) and negative dimensions – the child's irritability during feeding (8 items), as well as the mother's lack of confidence in feeding (8 items)), and 6 consecutive items (response scale from 1 to 5) provide an assessment of the overall experience of the mother regarding childcare (the assessment of how easy it is to take care of a child (3 items) and mother's global confidence regarding childcare (3 items)). The Cronbach's alpha coefficients for each subscale were satisfactory, i.e., taking into account the number of items included in the dimension (0.60; 0.80; 0.76; 0.60; 0.67, respectively).

The interview questionnaire was used to collect sociodemographic data. In addition, mothers provided information on the feeding method.

Statistical analyzes were performed using SPSS 24 PL. The relationships between the examined variables were tested by Spearman's rho correlation. For the analysis of multiple mediation models the procedure proposed by Hayes and Preacher [36] was used. The analyses were carried out in PROCESS macro for SPSS, using the bootstrap procedure ( $n$  boots = 5000). Cohen's  $rc$  was used as a measure of similarity of parental personality traits [37]. The probability of  $p < 0.05$  was considered significant, but the marginally significant differences (statistical trend,  $p < 0.1$ ) were reported and discussed as well.

## Results

In the first step, the analysis of intercorrelations between the variables included in the study was conducted (Table 1). Spearman's rho correlation coefficients indicate that there are positive associations between the three dimensions of mothers' and fathers' personality – their Neuroticism and Openness to experience as well as between mother's Conscientiousness and father's Extraversion. Postpartum depression in women and men positively correlates with Neuroticism of both partners, and in the case of women it is also associated with their Extraversion. In addition, postpartum depression in women is positively associated with postpartum depression in men. The different experiences of the mother regarding feeding of the baby and childcare are interrelated and associated with other variables as follows: the perceived child's alertness during feeding negatively correlates with mother's Neuroticism and positively with her Extraversion. The child's irritability during feeding is positively associated with the mother's lack of confidence in feeding, and negatively with perceived easiness of childcare and mother's global confidence regarding childcare. Furthermore, the mother's global confidence regarding childcare is negatively associated with Neuroticism, postpartum depression in mothers and fathers, the lack of confidence in feeding, and positively with perceived easiness of childcare.

Table 1. Means, standard deviations and correlations among study variables

Variable	M ± SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
Mother's N	19.57 ± 7.00	□																
Mother's E	28.55 ± 5.85	-0.36***	□															
Mother's O	26.74 ± 5.56	-0.20**	0.29***	□														
Mother's A	31.36 ± 5.21	-0.17**	0.14*	□	□													
Mother's C	34.26 ± 5.93	-0.24***	0.20*	0.06	0.08	□												
Father's N	16.91 ± 7.64	0.20**	-0.02	-0.13	0.003	-0.12	□											
Father's E	28.83 ± 5.85	-0.03	0.05	0.01	0.05	0.16*	-0.38***	□										
Father's O	26.34 ± 6.11	-0.08	0.03	0.25***	0.04	-0.08	-0.16*	0.08	□									
Father's A	28.91 ± 5.40	-0.08	0.06	0.04	0.11	<0.01	-0.18**	0.18**	0.09	□								
Father's C	32.22 ± 7.06	-0.06	0.07	-0.01	<-0.01	0.04	-0.37***	0.41***	-0.06	0.09	□							
Mother's EPDS	6.69 ± 3.51	0.46***	-0.21*	-0.13	-0.08	-0.14	0.18*	-0.12	-0.15	-0.03	-0.09	□						
Father's EPDS	5.55 ± 3.61	0.21*	-0.07	-0.13	-0.05	-0.02	0.38***	-0.13	-0.04	-0.12	-0.16	0.23**	□					
ADF	14.76 ± 4.89	-0.21*	0.23***	-0.02	0.06	0.13	-0.07	0.14	0.14	-0.06	-0.12	-0.15	-0.07	□				
IDF	10.15 ± 8.35	0.11	-0.07	-0.16	0.07	-0.03	0.08	-0.07	<0.01	0.03	<0.01	0.07	0.01	-0.03	□			
LCF	9.54 ± 8.50	0.11	-0.03	-0.10	-0.07	<0.01	0.02	-0.03	0.07	-0.01	0.08	0.12	0.09	0.03	0.53***	□		
EC	15.81 ± 2.16	-0.03	0.13	0.11	0.02	-0.03	-0.16	0.07	0.05	0.08	0.01	-0.06	-0.07	0.02	-0.23**	-0.04	□	
GC	12.38 ± 1.95	-0.31***	0.10	0.14	-0.07	0.01	-0.10	0.03	0.05	0.06	0.06	-0.26***	-0.22**	-0.01	-0.20*	-0.16*	0.43***	□

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; N – Neuroticism; E – Extraversion; O – Openness to experience; A – Agreeableness; C – Conscientiousness; EPDS – postpartum depression; ADF – alertness during feeding; IDF – irritable during feeding; LCF – lack of confidence in Feeding; EC – easiness of childcare; GC – global confidence of mothers regarding childcare

In the next step we conducted the mediation analysis of the indirect effect of mother's experiences associated with feeding the baby and childcare (i.e., the child's alertness during feeding, the child's irritability during feeding, the mother's lack of confidence in feeding, the perceived easiness of taking care of a child, and the mother's global confidence regarding childcare) in relation between maternal Neuroticism (model I) and Extraversion (model II), and the severity of postpartum depression symptoms. Full models were tested and statistically insignificant results were removed from the analysis. Therefore, the final models include those associations that were statistically significant. Figure 1 shows the final model for the independent variable – Neuroticism of the mother, and Figure 2 shows the model for mother's Extraversion.

The obtained results for the first model (Figure 1) indicate that the child's alertness during feeding perceived by mothers and the mother's global confidence regarding childcare are significant partial mediators (the direct effect is statistically significant, and after the inclusion of mediators remains statistically significant) of the relationship between Neuroticism of the mother and the severity of symptoms of maternal postpartum depression (the confidence intervals for both mediators do not contain zero: ADF – 95% CI from 0.02 to 0.12; GC – 95% CI from 0.003 to 0.06).

In the second model (Figure 2), the perceived child's alertness during feeding was found to be a significant mediator (the confidence interval does not contain zero: 95% CI from – 0.09 to – 0.01; the relationship between mother's Extroversion and the symptoms of postpartum depression reached statistical significance only in the presence of the mediator) of the relationship between Extraversion of the mother and the prevalence of symptoms of maternal postpartum depression.

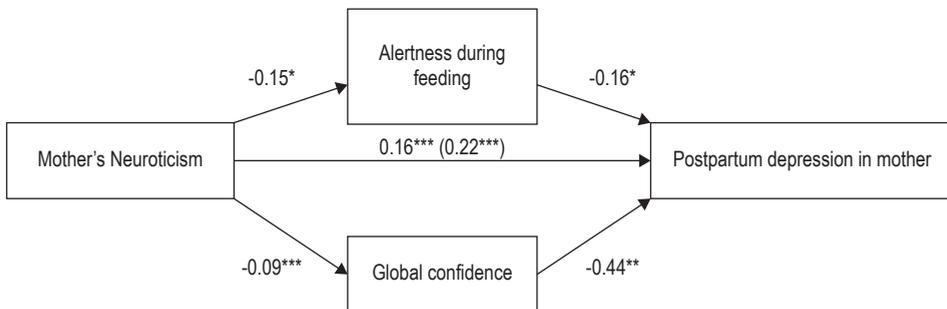


Figure 1. Mediation model for relationship between mother's Neuroticism and intensity of occurrence of maternal postpartum depression symptoms with mother's experiences regarding child feeding as a mediator (effect with mediator is presented in brackets)

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

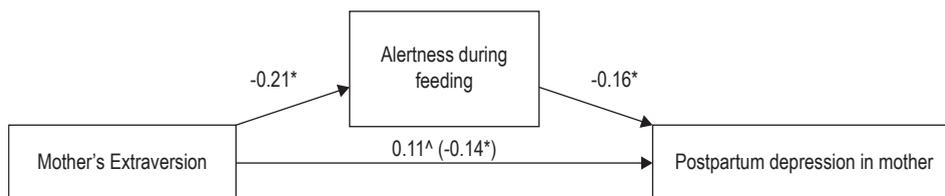


Figure 2. Mediation model for relationship between mother's Extraversion and intensity of occurrence of maternal postpartum depression symptoms with mother's experiences regarding child feeding as a mediator (effect with mediator is presented in brackets)

\*  $p < 0.05$ ; ^  $p < 0.1$

Next, in order to determine whether the similarity of partners' personality traits is related to the severity of symptoms of postpartum depression in both men and women, and the mother's experiences regarding child feeding and childcare, Cohen's *rc* coefficient of similarity [37] was first calculated for the five personality traits. Then, Spearman's rho correlation analysis was performed (Table 2). The results show that the similarity of partners in Neuroticism is positively correlated with the severity of postpartum depression in women and the mother's lack of confidence in feeding. The similarity of partners in Openness to experience negatively correlates with the severity of postpartum depression in men, and positively with the mother's global confidence regarding childcare.

Table 2. Similarity of parental personality traits and postpartum depression in women and men and mother's experiences regarding child feeding and childcare (Spearman's rho)

	Mother's EPDS	Father's EPDS	ADF	IDF	LCF	EC	GC
SN	0.16^	-0.09	-0.12	0.10	0.21*	0.13	-0.07
SE	0.06	0.03	0.05	-0.05	0.01	0.03	-0.06
SO	-0.10	-0.19*	0.08	-0.10	0.05	0.07	0.20*
SA	<-0.01	<-0.01	<-0.01	0.03	0.07	0.04	0.10
SC	-0.11	0.04	0.18	-0.05	-0.01	0.04	0.15

\*  $p < 0.05$ ; ^  $p < 0.1$ . SN – similarity of parents in terms of Neuroticism; SE – similarity of parents in terms of Extraversion; SO – similarity of parents in terms of Openness to experience; SA – similarity of parents in terms of Agreeableness; SC – similarity of parents in terms of Conscientiousness; EPDS – postpartum depression; ADF – alertness during feeding; IDF – irritable during feeding; LCF – lack of confidence in Feeding; EC – easiness of childcare; GC – global confidence of mothers regarding childcare

## Discussion

Although the transition to motherhood and fatherhood is seen as a developmental crisis, adaptation to a new situation which implies constructive coping with fears natural for that period of life, lack of self-efficacy or control, is also an opportunity for personal development [11, 38]. This development might be hindered by Neuroticism, which is associated with a greater sensitivity to stimuli and lower abilities to regulate stimulation, as well as with anxiety and failure to cope with stressful situations [10, 33, 39]. The relationship between higher own and, to some extent, partner's Neuroticism, and greater susceptibility to postnatal depression symptoms might indicate a psychological mechanism that goes beyond the specificity of the perinatal situation of women [40]. Both neurotic mothers and fathers might face poorer self-perception of being a parent and problems in bonding with unborn or newborn child [38].

Previous research in this area concerned mainly women and indicated that Neuroticism might be a predictor of poorer adaptation to maternal perinatal situation, increasing anxiety, including fear of labor, and sleep problems [41, 42], complications during labor [43], stress during pregnancy and postpartum [44], or abovementioned more negative feelings about feeding a baby [15]. The presented results indicated that the relationship between Neuroticism of mothers and their tendency to experience lowered mood after childbirth can be partially explained by their perception of their incompetence in feeding the baby and childcare. As a consequence, creating a positive image of the maternal role and mother-child bonding might be impeded [45].

Recent studies also show that in non-clinical samples and in the absence of clinical depression diagnosis, Neuroticism is a predictor of the risk of postnatal depression in women and men [20]. The presented correlation analyses confirmed that in neurotic men, but also those with more neurotic partners and partners with lower global confidence regarding childcare, the abovementioned poorer adaptation was manifested by higher results in postpartum depression scale. The role of female partners (their emotional functioning or the quality of the relationship) in adaptation to fatherhood has already been confirmed in earlier studies [2, 46], although causal effects of mutual influences in the couple should be hypothesized with caution. For this reason, we focused on the importance of partners' personality similarity for their functioning in the postpartum period.

The conducted analyses showed that the more similar partners were in terms of Neuroticism, the stronger the lack of global confidence in feeding and childcare, and stronger inclinations to experience symptoms of depression in mothers. Such a result may indicate particular risk of emotional and relational disturbances in family systems created by partners with similarly high level of Neuroticism. They are more likely to experience lack of mutual support or lack of positive evaluations and feelings towards self, a partner and a relationship, also in the context of parenting [11]. The obtained result might have been weakened by the smaller similarity effects among emotionally

stable partners. In addition, there was no effect of similarity in Neuroticism in explaining the risk of depressive symptoms in men, which may support previous findings indicating a smaller role of this personality trait for the emotional state of young fathers as compared with mothers [2].

The traits associated with stimuli-seeking, risk-taking or novelty-seeking [33, 39] seemed to improve emotional functioning of the examined mothers and fathers. Extraversion has already been defined as a factor that improves the quality of mothers' functioning in labor and in perinatal period [15, 23, 24, 43]. More neurotic and introverted female participants could subjectively and objectively experience greater difficulties in feeding their child, which was associated with poorer adaptation (psychological and biological) to the new situation and with a reduced emotional functioning. The more similar in terms of Openness to experience the partners were, the more confident were young mothers during feeding of the baby and taking care of him/her. The lack of similarity in this personality factor has, in turn, favored lowered mood of young fathers. Openness to experience has been linked to a better and a more flexible coping with new situations [33], thus when a couple reacts differently to the challenges of a new parental role, it might constitute a risk factor for a reduced emotional functioning or problems in relations with the child. It might be especially true in light of earlier research that has indicated greater involvement in the physical childcare of fathers who were open to experience, and stronger tendencies to mutual support in parenting in couples with high scores on this personality dimension [47].

Certainly, these results provide the basis for further research into the protective role of selected dimensions of personality against the risk of depressive symptoms that might be experienced by both parents after the birth of the child. The results might also be useful in the development of psychoeducational and perinatal psychological interventions [24], particularly by including the assessment of personality traits of both parents in the perinatal depression screening programs [23]. In addition, the above results may be used to identify the specific parents' needs stemming from their personality profiles. In consequence, such results justify the requirement of individual modifications of the interventions promoting the adaptation to parenthood based on personal needs, mainly by supporting breastfeeding skills [48], thereby reducing the risk of postpartum depression.

### **Limitations**

The present study is not free from limitations. Using the self-assessment scales is related to subjectivity in the measurement of the studied dimensions. Therefore, future research should use additional methods of data collection, for example, observation of the mother-child dyad or interview with a partner. Although the proportion of the couples taking part in the second stage of the study (i.e., 64%) is considered to be satisfactory (especially in studies involving couples with a young child [49]) and

does not affect the results [50, 51], in the further studies the appropriate methods for increasing the retention rates [49, 52, 53] could be used to improve the generalization of the results. For this reason, in the future studies it is also worthwhile to increase the size of the sample and its heterogeneity.

### Conclusions

The results confirmed the clearly negative role of Neuroticism of not only mothers but also fathers for their emotional functioning after childbirth. Moreover, by taking into consideration the experience of mothers in feeding the baby and childcare, the negative impact of Neuroticism has been shown in a broader context. In addition, the results of the Edinburgh Postnatal Depression Scale were interrelated in couples. The presented results indicate the need to create an integrated model of psychological support for young parents including meetings with lactation consultants as an important element of the support system.

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