Quarterly Journal Fides et Ratio
Issue 62(2)2025, ISSN 2082-7067, Pages 76-85

Maternal attachment styles and maternal-fetal attachment: The serial mediation role of alexithymia and depressive symptoms[1]

https://doi.org/10.34766/1pb4hw72

Piotr Nowicki [a] ✉

[a] *Piotr Nowicki, https://orcid.org/0000-0001-6661-4724, School of Human Sciences, VIZJA University in Warsaw, Poland*
✉ *Corresponding author: p.nowicki@vizja.pl*

Abstract: Maternal-fetal attachment refers to the emotional and cognitive bond a pregnant woman develops with her unborn child. This bond plays a significant role in prenatal care behaviors and the later formation of the mother-infant relationship. The aim of the present study was to identify the psychological mechanisms underlying maternal-fetal attachment, with particular emphasis on maternal attachment styles, alexithymia, and depressive symptoms, using a serial mediation model. The study sample consisted of 173 women in their second and third trimesters of pregnancy. The findings indicated that maternal attachment styles – secure, anxious, and avoidant – significantly influenced emotional bonding with the unborn child. Alexithymia and depressive symptoms functioned as successive mediators in this process. A secure attachment style was associated with lower levels of alexithymia and depressive symptoms, which in turn facilitated stronger maternal-fetal attachment. Conversely, anxious and avoidant attachment styles were linked to higher levels of alexithymia and depressive symptoms, which weakened maternal-fetal attachment.
Keywords: maternal-fetal attachment, maternal attachment styles, alexithymia, depressive symptoms

Introduction

Maternal-fetal attachment refers to the emotional bond that develops between a mother and her unborn child during pregnancy. It is a dynamic process that gradually evolves as the pregnancy progresses, encompassing both conscious and unconscious aspects of the maternal relationship with the fetus during the prenatal stage (Walsh, 2010). Maternal-fetal attachment is expressed through various behaviors exhibited by pregnant women, such as talking to the baby, touching or stroking the belly, imagining life with the child, and responding to fetal movements (Abasi, 2021). This concept has been widely explored in developmental psychology, where it is recognized as a crucial factor influencing maternal well-being (McNamara et al., 2019). The emotional bond a mother feels toward the fetus can shape prenatal behaviors, including attending medical check-ups, following health recommendations, and avoiding harmful substances (Rahimi et al., 2025). Strong maternal-fetal attachment has been associated with positive outcomes during both the prenatal and postnatal periods (Branjerdporn et al., 2021). Studies have shown that maternal-fetal attachment is linked to later caregiving behaviors, including maternal sensitivity, responsiveness, and emotional engagement in the postnatal relationship with the child (Sacchi et al., 2021). The development of maternal-fetal attachment is influenced by numerous factors, including biological (e.g., hormonal changes, fetal activity), psychological (e.g., maternal emotional state, anxiety levels, maladaptive coping mechanisms), and social factors (e.g., partner and community support, life circumstances) (Lutkiewicz & Bidzan, 2023; Pisoni et al., 2014).

1 Article in Polish language: https://stowarzyszeniefidesetratio.pl/fer/62P_now2.pdf

One of the most significant psychological factors influencing maternal-fetal attachment is the mother's attachment style, which reflects her own early attachment experiences (Kucharska, 2021). Attachment theory, originally proposed by John Bowlby (1979), posits that early relationships with primary caregivers form the foundation of internal working models of attachment. These models shape expectations and behavioral patterns in future emotional relationships, including the relationship between a mother and her unborn child. According to Hazan and Shaver (1987), the consistency and quality of early caregiving experiences lead to the development of specific attachment styles-secure, anxious, avoidant, or disorganized. These styles tend to remain relatively stable throughout life and influence how individuals perceive and form emotional bonds (Shaver et al., 2016). Mothers with a secure attachment style typically hold a positive view of themselves as caregivers and possess a strong sense of trust in their partners, which facilitates the formation of strong, emotionally attuned bonds with the unborn child (Zdolska-Wawrzkiewicz et al., 2018). In contrast, mothers with insecure attachment styles often encounter relational difficulties during pregnancy, which can hinder the development of a deep prenatal bond with the fetus. Research findings indicate that higher levels of attachment insecurity are associated with lower levels of maternal-fetal attachment (Zhang, 2021; Damri et al., 2024).

The concept of alexithymia was first introduced by Sifneos (1970) as an emotional disturbance used to describe a cluster of symptoms observed in patients with psychosomatic illnesses (e.g., skin rashes, insomnia, fatigue, gastric ulcers), who exhibited difficulties in distinguishing between emotional and bodily sensations. Contemporary research defines alexithymia as a multidimensional personality trait encompassing difficulties in identifying one's own emotions (limited emotional awareness), difficulties in describing emotions (an inability to verbally express feelings), and an externally oriented thinking style (a tendency to avoid introspection), often accompanied by restricted imaginative capacity (Preece & Gross, 2023). Individuals with high levels of alexithymia struggle to recognize others' emotions, which hampers their ability to form close interpersonal relationships (Koppelberg et al., 2023). Studies have demonstrated a link between alexithymia and insecure attachment styles, suggesting that early relational experiences may influence the development of emotional awareness and emotion regulation capacity (Montebarocci et al., 2004). Furthermore, alexithymia has been identified as a mediator between insecure attachment styles and the severity of psychopathological symptoms (Barberis et al., 2023; Ferraro & Taylor, 2021). Several studies (Ierardi et al., 2022; Satil et al., 2023; Mangialavori et al., 2024) highlight the negative impact of alexithymia on maternal-fetal attachment, indicating that mothers with higher levels of alexithymia tend to form weaker emotional bonds with their unborn children.

In light of the findings discussed above, increasing attention is being paid to the emotional functioning of pregnant women and its role in shaping the relationship with the unborn child. In addition to alexithymia, a significant risk factor for the quality of maternal-fetal attachment is the presence of perinatal depressive symptoms. Notably, a positive correlation has been identified between alexithymia and the severity of depressive symptoms during pregnancy (Mangialavori et al., 2024). Perinatal depression – which includes both the prenatal period (during pregnancy) and the postpartum period (up to 12 months after childbirth) – is characterized by depressive symptoms of varying intensity, which can have serious consequences for both mother and child (Rollè et al., 2020). Depression during pregnancy is among the most common psychiatric disorders in pregnant women, with an estimated prevalence ranging from 10% to 30% (Sánchez-Polán et al., 2021). Symptoms of perinatal depression- persistent sadness, anxiety, loss of interest in daily activities, sleep disturbances, confusion, and emotional instability-pose a serious threat to maternal mental well-being (Dias & Figueiredo, 2020). Research has shown that antenatal depression is a strong predictor of postpartum depression (Borchers et al., 2021). When left untreated, perinatal depression can impair mother-infant interactions, manifesting in behaviors such as less frequent breastfeeding, reduced responsiveness to the infant's needs, and limited emotional stimulation- all

of which are crucial for healthy infant development (Bernard-Bonnin & Canadian Paediatric Society, 2004; Rodriguez et al., 2021). Therefore, perinatal depression represents a serious risk not only to the mother's quality of life but also to the early development of the child (Dadi et al., 2020). Moreover, the presence of depression during pregnancy significantly disrupts the emotional bond between mother and fetus (Lutkiewicz & Bidzan, 2022).

The aim of the present study is to empirically test a serial mediation model hypothesizing that alexithymia and depressive symptoms mediate the relationship between pregnant women's attachment styles and the level of maternal-fetal attachment. It is assumed that women with insecure attachment styles will exhibit higher levels of alexithymia, manifested in difficulties identifying and verbalizing emotional states. Elevated levels of alexithymia may, in turn, predispose individuals to develop depressive symptoms, which- according to the proposed model- may further interfere with the formation of a healthy bond with the unborn child. The study seeks to determine whether the effect of attachment style on the quality of the maternal-fetal relationship is sequentially mediated by two variables: alexithymia and depressive symptoms.

1. Methodology

1.1. Procedure

The study was conducted online using a secure survey platform. Participants were recruited via social media and pregnancy support groups. Inclusion criteria were: being in the second or third trimester of pregnancy, being at least 18 years old, and proficiency in Polish. Women with a history of severe psychiatric disorders or high-risk pregnancy complications were excluded. Interested individuals accessed an online informed consent form, which outlined the study's aims, procedures, and participants' rights. Upon providing electronic consent, participants completed a questionnaire assessing romantic attachment style, levels of alexithymia, depressive symptoms, and maternal-fetal attachment. Completing the survey took approximately20 minutes. All data were collected anonymously. The study received approval from the Ethics Committee of the Academy of Economics and Humanities in Warsaw on November 20, 2024.

1.2. Participants

The final sample consisted of 173 pregnant women, with 90 in the second trimester and 83 in the third trimester. Participants ranged in age from 20 to 42 years (M = 29.7, SD = 4.6). The majority were in marital or committed relationships (87%), held a higher education degree (68%), and reported a medium socioeconomic status (76%).

1.3. Measures

1.3.1. Attachment Styles Questionnaire (ASQ; Plopa, 2008)

The ASQ is a tool designed to assess adult attachment styles in the context of romantic relationships, applicable to both women and men. Developed by Plopa (2008) and based on the attachment theory of Hazan and Shaver (1987), the questionnaire distinguishes three attachment styles: secure, avoidant, and anxious – ambivalent. It consists of 24 items divided into respective subscales. Responses are given on a 7-point scale, and raw scores are converted into standardized sten scores for analysis. Reliability coefficients are high: 0.90 for the secure style, 0.84 for the anxious style, and 0.83 for the avoidant style. The Cronbach's alpha for the full scale is 0.89.

1.3.2. Toronto Alexithymia Scale (TAS-20; Parker et al., 1993)

The TAS-20 is a widely used, standardized self-report instrument for assessing alexithymia-a personality trait characterized by difficulties in identifying and describing emotions and a tendency toward externally oriented thinking. It includes three components: difficulty identifying feelings, difficulty describing feelings to others, and externally oriented thinking. The scale consists of 20 items rated on a 5-point Likert scale (from 1 – strongly disagree to 5 – strongly agree).

Total scores range from 20 to 100, with higher scores indicating greater alexithymia. The Polish adaptation by Ścigała et al. (2020) confirms its linguistic and cultural validity. In the current study, the TAS-20 demonstrated high reliability, with a Cronbach's alpha of 0.81.

1.3.3. Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)

The EPDS is a widely used screening tool for detecting depressive symptoms in the perinatal period, including both prenatal and postpartum phases. This self-report scale consists of 10 items specifically designed to detect depressive symptoms in women experiencing mood disturbances during pregnancy or early motherhood. The study employed the Polish version developed by Kossakowska (2013), ensuring linguistic and cultural accuracy. Participants rated each item on a 4-point Likert scale (from 0 – no symptoms to 3 – severe symptoms). Total scores range from 0 to 30, with scores of 10 or above indicating mild symptoms and scores of 12 or above suggesting clinically significant depression. The EPDS demonstrated solid reliability in this study, with a Cronbach's alpha of 0.79.

1.3.4. Maternal-fetal Attachment Scale (MFAS; Cranley, 1981)

The MFAS is a self-report measure assessing the emotional bond between a pregnant woman and her unborn child. It consists of 24 items grouped into five dimensions: acceptance of the maternal role, viewing the fetus as a separate entity, interaction with the fetus, attribution of characteristics to the fetus, and orientation toward the fetus's needs. Each item is rated on a 5-point Likert scale (from A – definitely yes to E – definitely no). The MFAS is commonly used in both research and clinical practice to assess prenatal bonding. Stronger attachment is associated with a positive pregnancy experience and higher quality postnatal bonding, while lower scores may indicate a need for psychological support. The Polish adaptation by Bielawska-Batorowicz (1995) confirmed the tool's reliability, with a Cronbach's alpha of 0.83, making it a valuable instrument for assessing the emotional aspects of pregnancy and early mother-child bonding.

2. Data analysis

Data were analyzed using IBM SPSS Statistics version 26. In the initial stage, descriptive statistics were calculated for all study variables. Pearson correlation coefficients were also computed to examine the relationships between the variables included in the study.

In the next step, to test the theoretical model, a mediation analysis was conducted to assess the role of alexithymia (mediator 1) and depressive symptoms (mediator 2), as well as their combined effect on the relationship between maternal attachment styles (independent variables) and maternal-fetal attachment (dependent variable). Given the assumed interdependence between the mediators, a serial multiple mediation model was applied using the PROCESS macro for SPSS, Model 6 (Hayes, 2018). This model accounts for correlations between mediators, reflecting the nature of the studied relationships, and allows for the estimation of both the unique and combined effects of the mediators on the link between the independent and dependent variables. This approach enabled the examination of indirect effects of maternal attachment styles on maternal-fetal attachment through alexithymia and depressive symptoms.

3. Results

3.1. Descriptive statistics and correlations

Tables 1 and 2 present the means, standard deviations, Shapiro-Wilk test results, and Pearson correlation coefficients for the analyzed variables. The analysis revealed significant correlations among maternal attachment styles, alexithymia, depressive symptoms, and maternal-fetal attachment. As hypothesized, alexithymia was negatively correlated with a secure attachment style and with maternal-fetal attachment, and positively correlated with depressive symptoms and insecure attachment styles (anxious and avoidant). Moreover, depressive symptoms showed positive correlations with alexithymia and insecure attachment styles, and negative correlations with secure attachment and maternal-fetal attachment.

Table 1. Pearson correlation matrix between variables: alexithymia, attachment styles, prenatal depressive symptoms, and maternal-fetal attachment, along with means, standard deviations, and Shapiro–Wilk test results

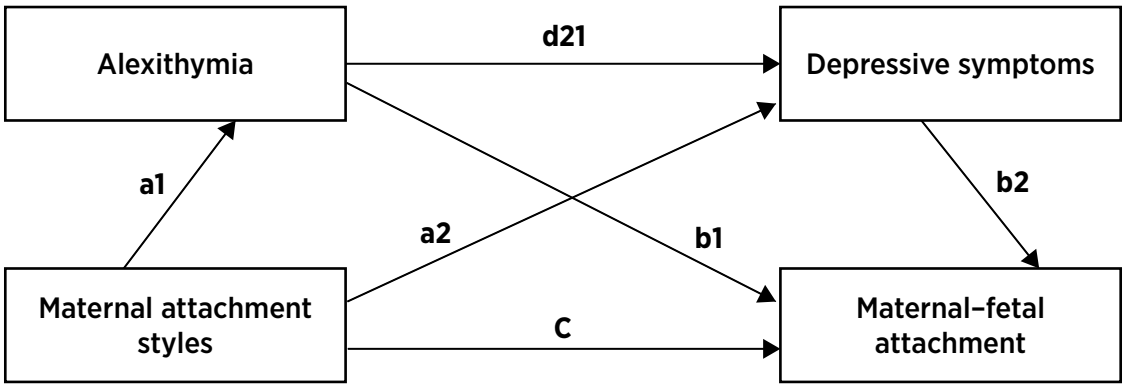
Variables	*1*	*2*	*3*	*4*	*5*	*6*
1. Alexithymia	-					
2. Secure attachment	-0.21***	-				
3. Avoidant attachment	0.34**	-0.22*	-			
4. Anxious attachment	0.29**	-0.18*	0.15	-		
5. Depressive symptoms	0.45***	-0.31**	0.38**	0.32***	-	
6. Maternal-fetal attachment	-0.38**	0.29***	-0.22**	-0.21**	-0.38***	-

p – level of statistical significance, *p < 0.05, ***p < 0.01

Table 2. Means, standard deviations, and Shapiro–Wilk test results

Variables	*M*	*SD*	*W*	*P*
1. Alexithymia	41.34	11.52	0.98	0.32
2. Secure attachment	23.25	5.55	0.96	0.08
3. Avoidant attachment	22.56	3.67	0.99	0.14
4. Anxious attachment	25.54	6.12	0.97	0.22
5. Depressive symptoms	19.78	4.18	0.98	0.56
6. Maternal-fetal attachment	81.22	10.15	0.99	0.33

Figure 1. Graphical representation of the serial mediation model, in which alexithymia and depressive symptoms mediate the relationship between maternal attachment styles and maternal-fetal attachment



Theoretical model of serial mediation in the relationship between maternal attachment styles and maternal-fetal attachment, with alexithymia and depressive symptoms as mediators. (c) Direct effect of maternal attachment styles on maternal-fetal attachment. (a_1, b_1) Indirect effect of maternal attachment styles on maternal-fetal attachment through alexithymia as a single mediator. (a_2, b_2) Indirect effect of maternal attachment styles on maternal-fetal attachment through depressive symptoms as a single mediator. (a_1, d_{21}, b_2) Indirect effect of maternal attachment styles on maternal-fetal attachment through alexithymia and depressive symptoms as sequential mediators. (c') Direct effect of maternal attachment styles on maternal-fetal attachment after accounting for both mediators.

3.2. Serial Mediation Models

3.2.1. Secure Attachment Style as the independent variable

The first serial mediation model examined the relationship between a secure attachment style and maternal-fetal attachment, with alexithymia and depressive symptoms as mediators. The overall model was statistically significant, $F(3, 250) = 48.76$, $p < .001$, explaining 23% of the variance in maternal-fetal attachment ($R^2 = .23$). The total effect of secure attachment on maternal-fetal attachment was significant ($c = 0.47$; $SE = 0.09$; $t = 5.24$; $p < .001$). Secure attachment significantly predicted lower levels of alexithymia ($a_1 = -0.38$; $SE = 0.07$; $t = -5.43$; $p < .001$). Alexithymia was a significant positive predictor of depressive symptoms ($d_{21} = 0.52$; $SE = 0.06$; $t = 8.67$; $p < .001$), and negatively predicted maternal-fetal attachment ($b_1 = -0.30$; $SE = 0.06$; $t = -5.00$; $p < .001$). In addition, depressive symptoms had a significant negative effect on maternal-fetal attachment ($b_2 = -0.29$; $SE = 0.05$; $t = -5.61$; $p < .001$). After accounting for the mediators, the direct effect of secure attachment on maternal-fetal attachment was no longer significant ($c' = 0.12$; $SE = 0.07$; $t = 1.69$; $p = .09$), indicating full mediation. The indirect effect through alexithymia and depressive symptoms was statistically significant (point estimate = 0.12; 95% BCa CI [0.06, 0.19]).

3.2.2. Anxious Attachment Style as the independent variable

The second model investigated the mediating role of alexithymia and depressive symptoms in the relationship between an anxious attachment style and maternal-fetal attachment. The model was significant, $F(3, 250) = 51.29$, $p < .001$, accounting for 45% of the variance in maternal-fetal attachment ($R^2 = .45$). The total effect of anxious attachment on maternal-fetal attachment was significant ($c = -0.55$; $SE = 0.08$; $t = -6.87$; $p < .001$). Anxious attachment significantly predicted higher alexithymia levels ($a_1 = 0.44$; $SE = 0.08$; $t = 5.63$; $p < .001$). Alexithymia was positively associated with depressive symptoms ($d_{21} = 0.50$; $SE = 0.07$; $t = 7.39$; $p < .001$) and negatively associated with maternal-fetal attachment ($b_1 = -0.31$; $SE = 0.05$; $t = -5.44$; $p < .001$). Depressive symptoms also negatively affected maternal-fetal attachment ($b_2 = -0.28$; $SE = 0.06$; $t = -4.91$; $p < .001$). After including the mediators, the direct effect of anxious attachment was no longer statistically significant ($c' = -0.13$; $SE = 0.07$; $t = -1.81$; $p = .07$), indicating full mediation. The indirect effect through alexithymia and depressive symptoms was statistically significant (point estimate = -0.15; 95% BCa CI [-0.23, -0.08]).

3.2.3. Avoidant Attachment Style as the independent variable

The third model tested the mediating effect of alexithymia and depressive symptoms in the relationship between an avoidant attachment style and maternal-fetal attachment. This model was statistically significant, $F(3, 250) = 49.32$, $p < .001$, explaining 34% of the variance in maternal-fetal attachment ($R^2 = .34$). The total effect of avoidant attachment was significant ($c = -0.51$; $SE = 0.08$; $t = -6.38$; $p < .001$). Avoidant attachment significantly predicted higher alexithymia ($a_1 = 0.37$; $SE = 0.09$; $t = 4.23$; $p < .001$). Alexithymia positively predicted depressive symptoms ($d_{21} = 0.51$; $SE = 0.06$; $t = 7.39$; $p < .001$) and negatively predicted maternal-fetal attachment ($b_1 = -0.32$; $SE = 0.05$; $t = -4.96$; $p < .001$). Depressive symptoms also had a significant negative impact on maternal-fetal attachment ($b_2 = -0.26$; $SE = 0.05$; $t = -5.08$; $p < .001$). After including the mediators, the direct effect of avoidant attachment style was no longer significant ($c' = -0.14$; $SE = 0.07$; $t = -1.99$; $p = .05$), indicating full mediation. The indirect effect through alexithymia and depressive symptoms was statistically significant (point estimate = -0.14; 95% BCa CI [-0.21, -0.07]).

Discussion

The aim of the present study was to explore a model in which maternal attachment styles function as predictors of maternal-fetal attachment, with alexithy-

mia and depressive symptoms serving as mediators. The results indicate that attachment styles – secure, anxious, and avoidant – shape prenatal attachment, and their effects are mediated by alexithymia and depressive symptoms.

Research on attachment styles highlights their importance for the development of the maternal-fetal bond and more broadly, for the transition into motherhood. In this study, insecure attachment styles (anxious and avoidant) were negatively associated with maternal-fetal attachment, whereas the secure style acted as a protective factor, facilitating the formation of a strong emotional bond with the unborn child. These findings are consistent with previous research showing that a secure attachment style is linked to better emotional functioning and regulation, which supports prenatal bonding (McDonald, 2021; Matthies et al., 2020).

One possible explanation for these findings is that women with a secure attachment style draw on internalized representations of safe and supportive caregivers, fostering a sense of emotional security that enables connection with the fetus. Their ability to mentally simulate a responsive and nurturing caregiver may reinforce positive expectations about their future maternal role. In contrast, women with an anxious attachment style often experience heightened fears about the stability of their romantic relationships and seek constant reassurance from their partners (Simpson et al., 2003). This preoccupation with interpersonal concerns may drain emotional resources away from the fetus, hindering the development of a deep prenatal bond. Similarly, women with an avoidant attachment style, who typically suppress emotional needs and avoid closeness, may struggle to emotionally engage with pregnancy. Their tendency to minimize dependency and emotional expression may lead to a distanced attitude toward pregnancy and limited emotional involvement with the unborn child. This detachment may also impair postnatal sensitivity and responsiveness, which are crucial for early mother-infant interactions (Walsh et al., 2014; Zhang, 2021).

The results also revealed strong associations between attachment styles and levels of alexithymia. Mothers with a secure attachment style exhibited lower levels of alexithymia, suggesting better emotional recognition and expression. This aligns with previous studies showing that securely attached individuals are more emotionally aware and better able to manage affective states (Ferraro & Taylor, 2021), thus enabling greater emotional involvement during pregnancy. In contrast, women with insecure attachment styles – both anxious and avoidant-displayed higher levels of alexithymia, indicating difficulties in identifying, understanding, and expressing emotions. These findings are consistent with prior research linking insecure attachment to heightened alexithymic traits (Zhang et al., 2024). Such emotional difficulties may limit emotional expression and disrupt interpersonal connections, negatively affecting maternal-fetal attachment.

Consistent with earlier findings (Mangialavori et al., 2024; Ierardi et al., 2022), the present results confirm a negative association between high alexithymia and maternal-fetal attachment. Difficulties in recognizing and expressing emotions may hinder a mother's ability to form a mental representation of the baby and experience the affective states necessary for bonding. Alexithymia may function as a secondary defense mechanism, protecting against overwhelming emotional experiences while simultaneously limiting the ability to process them constructively (Messina et al., 2014). During pregnancy, this mechanism may operate as an „emotional shield," dampening unpleasant feelings but also weakening the ability to form a connection with the fetus. In this context, alexithymia reflects not only deficits in emotional processing but also a barrier to psychological adaptation to pregnancy. In the current study, alexithymia served as a mediator weakening maternal-fetal attachment, especially among mothers with insecure attachment styles.

The study also revealed strong links between attachment styles and depressive symptoms. Mothers with anxious and avoidant attachment styles exhibited higher levels of depressive symptoms, consistent with literature showing that insecure styles increase vulnerability to depression (Dagan et al., 2018; Muris et al., 2001). For women with an anxious style, chronic stress related to concerns about relationship stability may heighten depressive symptoms (Zhang, 2021). Similarly, avoidantly attached mothers are vulnerable to depression, likely due to their tendency

toward emotional withdrawal and avoidance of intimacy (Jones et al., 2015). The emotional distancing characteristic of avoidant attachment may prevent full engagement in the prenatal relationship, deepening depressive symptoms and increasing emotional distance from the fetus.

Perinatal depression is often associated with sadness, exhaustion, and lack of energy, which can obstruct the development of an emotional bond with the fetus. Low motivation and reduced emotional engagement may hinder bonding behaviors such as imagining life with the baby or responding to fetal movements (Lutkiewicz & Bidzan, 2022). Women experiencing perinatal depression may also hold negative beliefs about their parenting abilities, their future with the child, and their capacity to provide care. These self-perceptions, driven by low self-esteem, can lead to emotional withdrawal and intensify the distance from the unborn child. In this framework, depression functions as an additional mediator, amplifying the negative impact of emotional difficulties.

The finding of full serial mediation suggests that alexithymia and depressive symptoms are key variables explaining the impact of attachment styles on maternal-fetal attachment. Once both mediators are accounted for, the direct effect of attachment style becomes non-significant. This means that women with insecure attachment styles struggle to form prenatal bonds primarily due to limited emotional awareness and regulation, which in turn increases depressive symptoms. These two factors act as successive links in a chain weakening maternal-fetal attachment.

For secure attachment styles, mediation through alexithymia and depressive symptoms was also observed. However, mothers with a secure attachment style exhibited significantly lower levels of emotional difficulties. This mediation suggests that although emotional processes still play a role in shaping prenatal bonding, these women are less likely to experience problems in emotional processing and are less susceptible to depression, which facilitates stronger attachment. This highlights the protective role of psychological mechanisms such as emotional recognition and regulation in securely attached women.

These findings carry important implications for clinical practice and the organization of psychological care for pregnant women. They point to the need for early identification of women with insecure attachment styles, alexithymic traits, and depressive symptoms, as these factors pose a significant risk to the development of maternal-fetal bonding. Incorporating screening for attachment styles and emotional competencies into routine prenatal care may enable more accurate identification of women in need of psychological support. Furthermore, the development and implementation of preventive and interventional programs aimed at enhancing emotional awareness, emotion recognition and expression skills, and mood regulation may help strengthen prenatal attachment. Such interventions, delivered by trained psychologists or midwives, can be integrated into prenatal education. Additionally, considering attachment style in working with pregnant women may help healthcare providers adopt a more personalized approach, fostering trust and enhancing emotional safety during pregnancy. Thus, the findings support the integration of psychological components into perinatal care as an essential element in promoting maternal and infant health.

Bibliography

Abasi, E., Keramat, A., Borghei, N.S., Goli, S., & Farjamfar, M. (2021). Evaluating the effect of prenatal interventions on maternal–foetal attachment: A systematic review and meta-analysis. *Nursing Open*, *8*(1), 4-16. https://doi.org/10.1002/nop2.648

Barberis, N., Cannavò, M., Calaresi, D., & Verrastro, V. (2023). Reflective functioning and Alexithymia as mediators between attachment and psychopathology symptoms: Cross-sectional evidence in a community sample. *Psychology, Health & Medicine, 28*(5), 1251-1262. https://doi.org/10.1080/13548506.2022.2045331

Bernard-Bonnin, A.C., Canadian Paediatric Society, & Mental Health and Developmental Disabilities Committee. (2004). Maternal depression and child development. *Paediatrics & Child Health, 9*(8), 575-583. https://doi.org/10.1093/pch/9.8.575

Bielawska-Batorowicz, E. (1995). *Determinanty spostrzegania dziecka przez rodziców w okresie poporodowym.* Wydawnictwo Uniwersytetu Łódzkiego.

Borchers, L.R., Dennis, E.L., King, L.S., Humphreys, K.L., & Gotlib, I.H. (2021). Prenatal and postnatal depressive symptoms, infant white matter, and toddler behavioral problems. *Journal of Affective Disorders, 282,* 465-471. https://doi.org/10.1016/j.jad.2020.12.075

Bowlby, J. (1979). The Bowlby-Ainsworth attachment theory. *Behavioral and Brain Sciences, 2*(4), 637-638. https://doi.org/10.1017/S0140525X00064955

Branjerdporn, G., Meredith, P., Wilson, T., & Strong, J. (2021). Maternal-fetal attachment: Associations with maternal sensory processing, adult attachment, distress and perinatal loss. *Journal of Child and Family Studies, 30,* 528-541. https://doi.org/10.1007/s10826-020-01876-1

Cox, J.L., Holden, J.M., & Sagovsky, R. (1987). Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *The British Journal of Psychiatry, 150*(6), 782-786. https://doi.org/10.1192/bjp.150.6.782

Cranley, M.S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research, 30,* 281-284. https://doi.org/10.1097/00006199-198109000-00008

Dagan, O., Facompré, C.R., & Bernard, K. (2018). Adult attachment representations and depressive symptoms: A meta-analysis. *Journal of Affective Disorders, 236,* 274-290. https://doi.org/10.1016/j.jad.2018.04.091

Dadi, A.F., Miller, E.R., Bisetegn, T.A., & Mwanri, L. (2020). Global burden of antenatal depression and its association with adverse birth outcomes: An umbrella review. *BMC Public Health, 20,* 1-16. https://doi.org/10.1186/s12889-020-8293-9

Dias, C.C., & Figueiredo, B. (2020). Mother's prenatal and postpartum depression symptoms and infant's sleep problems at 6 months. *Infant Mental Health Journal, 41*(5), 614-627. https://doi.org/10.1002/imhj.21869

Ferraro, I.K., & Taylor, A.M. (2021). Adult attachment styles and emotional regulation: The role of interoceptive awareness and alexithymia. *Personality and Individual Differences, 173,* 110641. https://doi.org/10.1016/j.paid.2021.110641

Hayes, A.F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. Communication Monographs, *85*(1), 4-40. https://doi.org/10.1080/03637751.2017.1352100

Ierardi, E., Bottini, M., Facchinetti, M., & Crugnola, C.R. (2022). Maternal anxiety, depression, alexithymia, and social support: Association with maternal-fetal attachment in pregnancy. *International Journal of Childbirth, 12*(2). https://doi.org/10.1891/IJC-2021-0047

Jones, J.D., Cassidy, J., & Shaver, P.R. (2015). Parents' self-reported attachment styles: A review of links with parenting behaviors, emotions, and cognitions. *Personality and Social Psychology Review, 19*(1), 44-76. https://doi.org/10.1177/1088868314541858

Koppelberg, P., Kersting, A., & Suslow, T. (2023). Alexithymia and interpersonal problems in healthy young individuals. *BMC Psychiatry, 23*(1), 688. https://doi.org/10.1186/s12888-023-05191-z

Kossakowska, K. (2013). Edynburska Skala Depresji Poporodowej – właściwości psychometryczne i charakterystyka. *Acta Universitatis Lodziensis. Folia Psychologica, 17,* 39-50. https://doi.org/10.18778/1427-969X.17.03

Kucharska, M. (2021). Selected predictors of maternal-fetal attachment in pregnancies with congenital disorders, other complications, and in healthy pregnancies. *Health Psychology Report*, *9*(3), 193-206.

Lutkiewicz, K., & Bidzan, M. (2022). Maternal adult attachment and maternal-fetal attachment in the context of romantic relationship quality after premature birth – a cross sectional study. *Frontiers in Psychiatry, 13,* 935871. https://doi.org/10.3389/fpsyt.2022.935871

Mangialavori, S., Fontana, A., Terrone, G., Topino, E., Trani, L., Trincia, V., & Cacioppo, M. (2024). Maternal Perinatal Depression, Alexithymia, and Couple Functioning: Which Relationship Exists with Prenatal Attachment. *Behavioral Sciences, 14*(9), 773. https://doi.org/10.3390/bs14090773

Matthies, L.M., Müller, M., Doster, A., Sohn, C., Wallwiener, M., Reck, C., & Wallwiener, S. (2020). Maternal-fetal attachment protects against postpartum anxiety: The mediating role of postpartum bonding and partnership satisfaction. *Archives of Gynecology and Obstetrics, 301,* 107-117. https://doi.org/10.1007/s00404-019-05402-7

McDonald, H. (2021). *Mindful awareness, emotion regulation, and attachment style in the experience of psychological distress during pregnancy and the postpartum.* (Doctoral dissertation, Macquarie University).

McFarland, J., Salisbury, A.L., Battle, C.L., Hawes, K., Halloran, K., & Lester, B.M. (2011). Major depressive disorder during pregnancy and emotional attachment to the fetus. *Archives of Women's Mental Health, 14,* 425-434. https://doi.org/10.1007/s00737-011-0237-z

McNamara, J., Townsend, M.L., & Herbert, J.S. (2019). A systemic review of maternal wellbeing and its relationship with maternal-fetal attachment and early postpartum bonding. *PloS One, 14*(7). https://doi.org/10.1371/journal.pone.0220032

Messina, A., Beadle, J.N., & Paradiso, S. (2014). Towards a classification of alexithymia: Primary, secondary and organic. *Journal of Psychopathology*, *20*, 38-49.

Montebarocci, O., Codispoti, M., Baldaro, B., & Rossi, N. (2004). Adult attachment style and alexithymia. *Personality and Individual Differences, 36*(3), 499-507. https://doi.org/10.1016/S0191-8869(03)00110-7

Muris, P., Meesters, C., Van Melick, M., & Zwambag, L. (2001). Self-reported attachment style, attachment quality, and symptoms of anxiety and depression in young adolescents. *Personality and Individual Differences, 30*(5), 809-818. https://doi.org/10.1016/S0191-8869(00)00074-X

Parker, J.D., Michael Bagby, R., Taylor, G.J., Endler, N.S., & Schmitz, P. (1993). Factorial validity of the 20-item Toronto Alexithymia Scale. *European Journal of Personality, 7*(4), 221-232.

Pisoni, C., Garofoli, F., Tzialla, C., Orcesi, S., Spinillo, A., Politi, P., ... & Stronati, M. (2014). Risk and protective factors in maternal-fetal attachment development. *Early Human Development, 90,* S45-S46? https://doi.org/10.1016/S0378-3782(14)50012-6

Plopa, M. (2008). *Więzi w małżeństwie i rodzinie. Metody badań.* Kraków: Oficyna Wydawnicza Impuls.

Preece, D.A., Mehta, A., Becerra, R., Chen, W., Allan, A., Robinson, K., & Gross, J.J. (2022). Why is alexithymia a risk factor for affective disorder symptoms? The role of emotion regulation. *Journal of Affective Disorders, 296,* 337-341. https://doi.org/10.1016/j.jad.2021.09.085

Preece, D.A., & Gross, J.J. (2023). Conceptualizing alexithymia. *Personality and Individual Differences, 215,* 112375. https://doi.org/10.1016/j.paid.2023.112375

Quinto, R.M., De Vincenzo, F., Graceffa, D., Bonifati, C., Innamorati, M., & Iani, L. (2022). The relationship between alexithymia and mental health is fully mediated by anxiety and depression in patients with psoriasis. *International Journal of Environmental Research and Public Health, 19*(6), 3649.

Rahimi, T., Sedghi, R., Yousefi, S., & Sarikhani, Y. (2025). The association between maternal-fetal attachment and adherence to health behaviors among pregnant women. *BMC Research Notes, 18*(1), 16. https://doi.org/10.1186/s13104-024-07071-5

Rodriguez, N., Tun, H.M., Field, C.J., Mandhane, P.J., Scott, J.A., & Kozyrskyj, A.L. (2021). Prenatal depression, breastfeeding, and infant gut microbiota. *Frontiers in Microbiology, 12,* 664257. https://doi.org/10.3389/fmicb.2021.664257

Rollè, L., Giordano, M., Santoniccolo, F., & Trombetta, T. (2020). Prenatal attachment and perinatal depression: A systematic review. *International Journal of Environmental Research and Public Health, 17*(8), 2644. https://doi.org/10.3390/ijerph17082644

Sacchi, C., Miscioscia, M., Visentin, S., & Simonelli, A. (2021). Maternal-fetal attachment in pregnant Italian women: Multidimensional influences and the association with maternal caregiving in the infant's first year of life. *BMC Pregnancy and Childbirth, 21,* 1-8. https://doi.org/10.1186/s12884-021-03964-6

Sánchez-Polán, M., Franco, E., Silva-José, C., Gil-Ares, J., Pérez-Tejero, J., Barakat, R., & Refoyo, I. (2021). Exercise during pregnancy and prenatal depression: A systematic review and meta-analysis. *Frontiers in Physiology, 12,* 640024. https://doi.org/10.3389/fphys.2021.640024

Shaver, P.R., Mikulincer, M., Sahdra, B., & Gross, J. (2016). Attachment security as a foundation for kindness toward self and others. *The Oxford Handbook of Hypo-Egoic Phenomena,* 10. https://doi.org/10.1093/oxfordhb/9780199328079.013.15

Sifneos, P.E. (1973). The prevalence of 'alexithymic' characteristics in psychosomatic patients. *Psychotherapy and Psychosomatics, 22*(2-6), 255-262. https://doi.org/10.1159/000286529

Simpson, J.A., Rholes, W.S., Campbell, L., Tran, S., & Wilson, C.L. (2003). Adult attachment, the transition to parenthood, and depressive symptoms. *Journal of Personality and Social Psychology*, *84*(6), 1172. https://doi.org/https://doi.org/10.1037/0022-3514.84.6.1172

Ścigała, D.K., Zdankiewicz-Ścigała, E., Bedyńska, S., & Kokoszka, A. (2020). Psychometric properties and configural invariance of the Polish – Language Version of the 20-Item Toronto Alexithymia Scale in non-clinical and alcohol addict persons. *Frontiers in Psychology*, *11*, 1241. https://doi.org/10.3389/fpsyg.2020.01241

Walsh, J., Hepper, E.G., & Marshall, B.J. (2014). Investigating attachment, caregiving, and mental health: A model of maternal-fetal relationships. *BMC pregnancy and childbirth, 14,* 1-9. https://doi.org/10.1186/s12884-014-0383-1

Walsh, J. (2010). Definitions matter: If maternal-fetal relationships are not attachment, what are they?. *Archives of Women's Mental Health*, *13*, 449-451. https://doi.org/10.1007/s00737-010-0152-8

Zdolska-Wawrzkiewicz, A., Chrzan-Dętkoś, M., & Bidzan, M. (2018). Maternal attachment style during pregnancy and becoming a mother in Poland. *Journal of Reproductive and Infant Psychology*, *36*(1), 4-14. https://doi.org/10.1080/02646838.2017.1395400

Zhang, J., Zhang, Y., Mao, Y., & Wang, Y. (2024). The relationship between insecure attachment and alexithymia: A meta-analysis. *Current Psychology, 43*(7), 5804-5825. https://doi.org/10.1007/s12144-023-04749-0

Zhang, L., Wang, L., Yuan, Q., Huang, C., Cui, S., Zhang, K., & Zhou, X. (2021). The mediating role of prenatal depression in adult attachment and maternal-fetal attachment in primigravida in the third trimester. *BMC Pregnancy and Childbirth, 21,* 1-9. https://doi.org/10.1186/s12884-021-03779-5