

The Influence of Parental Relationships on Childbirth: Results of a Longitudinal Study in Russia

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Abstract: Safe delivery is considered from the point of view of “maternal effects.” We interviewed 158 pregnant women in their third trimester of pregnancy with the help of the “Pregnant Woman Attitude Test,” and studied 116 of their births after delivery. The comparative analysis by Pearson’s chi-squared test method showed differences in these groups by the feature, “Because of pregnancy, my child’s father became more attentive and warmer to me.” The women who chose such a statement had delivery without complications in 64.5% of cases. The women who did not choose this statement had delivery without complications in 35.5% of cases. The comparative analysis by Pearson’s chi-squared test method showed that this group was comparable in a number of variables.

Key words: epigenetics, maternal effects, emotions, pregnancy, childbirth

Why do most pregnancies end in successful childbirth? Why are most prenatals accepted and protected by their mothers? Some experts in immunology pay attention to the physiological significance of maternity while considering pregnancy as the symbiosis of two different organisms. The immunological relationship between a mother and a prenatel is considered a unique phenomenon that is beneficial and caring, protective and transformational, without affecting the social and psychological relationship between the mother and the prenatel (Howes, 2007).

Meanwhile, in scientific literature we come across the term “maternal effects” (MEs) which was singled out by immunologists in relation to the effect of maternal nutrition during pregnancy on the size of mammal

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offspring. The scientists pointed out that maternal behavior changes the phenotypic characteristics (or observed characteristics) of the offspring without dependence on genetics; therefore, MEs may become the source of changes in the offspring phenotype (Bernardo, 1996). An offspring phenotype, such as size or behavior, appears as a result of gene interaction and the influence of the environment. During embryological development, the information about the environment comes into force gradually, step by step, whereas a developing organism interprets its environment. Burbano (2006) states that epigenetics, while trying to understand causal interactions, discovered that very often genetic and phenotypic variations are not related to each other.

Maternal effects can become the source of changes in an offspring phenotype (Bernardo, 1996). Maternal behavior alters the phenotypic traits of the offspring, regardless of the genetics. Evolutionary MEs appear every time when environmentally-friendly maternal behavior affects the adaptation of the baby regardless of its genes. For instance, the size and quality of the nest created by a mammal mother can influence the speed of her babies' growth. Maternal behavior affects not only body size, but also phenotypic signs such as habitat selection, food preferences, anti-predatory behavior, and socioemotional preferences (Maestripieri & Mateo, 2009).

Animals exposed to gestational stress during the last week of pregnancy show a low level of maternal care in the postpartum period, associated with a decrease in the binding of the hypothalamic oxytocin receptor in both mothers and female offspring. In the case of maternal care, there is evidence for the transmission of postpartum behavior from mothers to female offspring. Moreover, there can be transmission of these effects to subsequent generations through alterations in the reproductive behavior of offspring (Champagne, 2008).

MEs of phenotype transmission, as well as maternity, are universal and numerous. There is growing interest in whether similar relationships are present in humans because the prenatal environment may be unfavorably influenced by factors causing changes in growth and the development of the fetus, both in permanent structural and functional changes. In humans, prenatal stress is associated with pregnancy complications, developmental, cognitive, and behavioral disorders, and the possible onset of psychopathology; this can become the source of "early-life programming" (Koubovec et al., 2005, p. 274).

Forms of heredity can be transmitted through the cytoplasm, parental care, and various forms of learning (Lande & Kirkpatrick, 1990). As phenotypic traits are passed on to subsequent generations, MEs affect species modifications. Some scientists, with the help of dynamic equations, predict the degree of effect on offspring by both maternal behavior and maternal inheritance, and suggest studying the whole range of MEs as care for family and other social interactions may cause

evolutionary dynamics even more complex than those described here (Kirkpatrick & Lande, 1989).

The studies mentioned above apply to the study of mother-infant relationships in immunology as well as conclusions about the MEs of mammals. These studies are directing the attention of researchers in the field of pre- and perinatal psychology and medicine to examine how a mother's relationships affect the course of childbirth and the health of the baby. This article suggests studying "childbirth without complications," not as something physiologically given, but as something achievable, which can be done by exploring a mother's and baby's state at the intersection between physiology, psychology, and direct social relationships.

The longitudinal study of instances of childbirth without complications conducted here was made in light of a pregnant woman's relationships, meaning "a mother's attitude to a child, childbirth, maternity, a baby's father," and the effect of these attitudes on childbirth and the baby's health. My hypothesis is constituted by the supposition that there is a dynamic connection between a mother's relationships and a positive childbirth experience. The probability that maternal relationships may be useful and constructive during pregnancy and childbirth is to a significant degree ignored in the medical approach to childbirth.

Meanwhile, it has been noted that the effects of maternal behavior continue to influence an organism and personality in general. For instance, in scientific literature there is a term "prenatal trauma," reflecting the negative impact of a mother's chronic psychosocial stress during pregnancy on a developing baby's immune system (Khudaverdyan et al., 2015). While studying the pathological impact of maternal prenatal stress on pregnancy and childbirth, Zaharov (1998) discovered that the absence of confidence in marriage may contribute to a future mother's higher sensitivity in the last trimester of pregnancy, her tendency to phobias, a fear of childbirth, inner dissatisfaction, rapid fatigability, and anxiety. This chronic emotional stress in a pregnant woman impacts the baby's emotional condition after birth while keeping the high level of sensitivity at different ages, from infancy on (Zaharov, 1998). The impact of maternal behavior on an unborn child's emotional state may belong to "perinatal emotional education."

It is important to emphasize that after the 1970s, the number of births using epidural anesthetics increased, which resulted in the occurrence of a new trend in medicine, called "obstetric anesthesiology." Modern childbirth is related to active interference in the process of childbirth through such medical procedures as Caesarean section (CS), episiotomy, perineotomy, and vacuum extraction (see Table 1).

Delivery with complications	%
Caesarean operation	23.4
Poor uterine contraction strength	17.8
Intrauterine hypoxia	17.9
Preeclampsia	12.1
Episiotomy, perineotomy	43.9
Blood loss more than 250 ml	26.7
APGAR score less than 8/9	15
Total delivery with complications	73.8

Table 1. Delivery with complications

In spite of the fact that in some cases it is necessary to perform a CS, in scientific literature, there is a term “birthrape,” emphasizing that modern obstetrics may not allow a woman to choose a way of childbirth (Freeze, 2008, p.18). On the one hand, socially deprived (often traumatizing) conditions for pregnant women may be perceived by women as control over their reproductive abilities. On the other hand, it is necessary to mention that CS may negatively impact the process of a newborn’s adjustment (Sultanova, 2005); the adjustment rates of newborns with low body mass are much higher during physiological childbirth in comparison with childbirth involving the artificial stimulation by oxytocin, epidural anesthetics, etc. (Startseva, 2011).

The release of natural oxytocin, called the love hormone, depends on environmental factors (Odent, 1999), and interference in maternal instinctive behavior during childbirth may delay childbirth, simultaneously causing complications in obstetric practice (Chetvertakov et al., 1988). In connection with this fact, scientists suggest reconsidering and reevaluating some priorities formed in “industrial obstetrics,” by way of sustaining and developing caring support for a woman in childbirth that are accepted in traditional obstetrics (Kitzinger, 2006). Taking into account that a woman in childbirth should feel safe, it is helpful to avoid any stimulation of delivery with medicine without special instructions, as artificial oxytocin may result in the decrease of production of natural oxytocin in a woman’s body. Additionally, the constant presence of a supporting companion (doula) during childbirth has been shown to shorten the delivery and decrease the necessity of CS and other interferences, lower the necessity of applying oxytocin, and decrease both hospitalization of newborns and the incidence of maternal fever (Kennell et al., 1991).

This study was founded on scientific presuppositions that lifestyle during pregnancy, way of delivery, and care for a mother all help

determine a newborn's health (Malgina, 2013). The value of a father's presence during childbirth, and his interaction with and impact on the newborn has been studied less (Gettler et al., 2011). MEs are classified due to the nature of impact: "desirable or undesirable pregnancy;" "the level of adjustment to pregnancy;" "a mother's attitude to childbirth during pregnancy;" "perinatal emotional education;" "the impact of way of childbirth on health;" "healthy perinatal stimulation of a fetus: tapping, conversation, nutrition;" "family lifestyle;" and "relationships with family members and a father's child" (Rakova, 2018).

In this longitudinal study, I singled out the non-genetic MEs that were statistically significant for a newborn's health and studied one of them, "family lifestyle," including interaction between relatives, through a mother, and with each other (Maestriperi & Mateo, 2009). Fear of childbirth may be related to complex, sometimes conflicting relationships of a pregnant woman with her parents and her husband's parents (Kolesnikov, 2010). A parent may signal offspring to regulate its phenotype according to local conditions, a notion often called "adaptive transgenerational plasticity" (Uller, 2019). Some scientists confirm that both stress and chronic illness were more important explanatory variables for pregnant women's health than for their partners' health (Brown, 1986). However, there is no indication of any significant difference in the changeability of physical and emotional symptoms between future fathers and mothers.

A pregnant woman's relationship with her baby's father, especially during the third trimester of pregnancy, is considered an important factor influencing delivery. Partner support is one of the most important components in understanding the health of not only newborns and their mothers, but also fathers. Social support for mothers includes a large sphere, and social networks assist both their health and partners' support. Brown (1986) in his research demonstrates the necessity of a father's more active inclusion in prenatal care if possible, because only with the couple-centered approach, is it possible to sustain the health of an expectant family.

The transition to parenthood is a major life transition that can increase the vulnerability to parental depressive disorders, including paternal perinatal depression. Maternal depression is the strongest predictor of the development of paternal depression, anxiety, and other psychological issues (Bruno et al., 2020). Boyce et al (2007) also came to the conclusion that fathers who had insufficient information about pregnancy and childbirth were also at risk of being distressed, suggesting that more attention needs to be paid to providing information to men about their partner's pregnancy, childbirth, and issues relating to caring for a newborn infant.

For women who do not have partners, informational and communicative support by a perinatal psychologist may be especially significant. Women having babies without partners constitute a small

percentage (16.3% by selection), but they need the individual support during pregnancy most of all. Additionally, support during childbirth accentuates the necessity of reconsidering modern obstetric practice (Kennell et al., 1991).

Arshavsky (1982) suggested the concept of “gestational domination” (from Latin: *gestatio* = pregnancy, and *dominant* = prevailing) based on the theory of domination by Ukhtomsky. Gestational domination predetermines all body responses directed at the creation of optimal conditions for the development of a prelate and then a baby. It is achieved by way of forming (under the influence of external and internal factors) activation centers in the central nervous system. The term “gestational dominant” means physiological and psychological components that are predetermined by biological and psychological changes in a woman’s body and directed at carrying, birthing, and raising a child. The psychological aspect of gestational dominant (PAGD) is especially interesting for perinatal psychologists and psychotherapists. Dobryakov (2010) states:

...This combination of mechanisms of psychological self-regulation that get activated in women when they get pregnant, is directed to keep the gestation process and create conditions for the development of a future child as well as to form a woman’s attitude to her pregnancy and her behavioral stereotypes... (p. 44)

Dobryakov and his colleagues from the V.M. Bekhterev National Medical Research Center of Psychiatry and Neuroscience in St. Petersburg analyzed the clinical psychological observations of pregnant women as well as interviews with them that resulted in identifying five types of PAGD:

1. **Optimal PAGD type** is observed in those women who have a responsible attitude to their pregnancy and do not feel excessively worried. The optimal type helps form a harmonic scheme of a family-child upbringing. Such women are characterized by expressions like: “Pregnancy has not made me change my way of life completely, but now I have to spare some things. I often imagine the baby I am bearing, and I speak to it. My pregnancy has made my baby’s father more considerate and affectionate to me.”
2. **Euphoric PAGD type** (from Greek: *eu* = good, and *phero* = endure): a woman’s attitude toward pregnancy and maternity is superficial, and non-critical. When complications of pregnancy occur, a woman is thrown off balance, becomes extremely emotional, and the severity of their complications is increased. Not all recommendations of doctors are followed, or it is done formally. These dynamics are shown by women of hysterical personality, as well as those who have undergone long-term sterility treatment.

Women in this group choose a combination of statements like: “I understand the baby I am bearing, admire it, and believe that it understands and knows everything that I am thinking about. I believe that pregnancy has made me even better-looking in the eyes of my baby’s father. I am glad when people notice that I am pregnant.”

3. **Hypogestationgnostic PAGD type** (from Greek: *hypo* = ill-defined, Latin: *gestation* = pregnancy, and Greek: *gnosis* = knowledge) is often shown by women who have not finished their studies or those who are keen on their work. Such women are characterized by expressions like: “I do not feel any special emotions related to my pregnancy;” “I try not to think of pregnancy or future delivery at all;” or “I do not think of future maternity.” A woman with a hypogestationgnostic PAGD type seems to forget about her pregnancy and tries to ignore its evidence.
4. **Worried PAGD type** is characterized by a high degree of anxiety in a pregnant woman, which influences her somatic state. Such women are characterized by expressions like: “I am afraid that the changes caused by the pregnancy can turn the attitude of my baby’s father toward me for the worse.”
5. **Depressed PAGD type** is characterized by low spirits in a pregnant woman. A woman who was willing to have a baby can say that now she does not want to be pregnant anymore, that she does not believe in her ability to bear and give birth to a healthy child, and that she is afraid of dying in delivery.

PAGD type first reveals personality changes and reactions of a woman, i.e. the changes in the system of her relationships. The type of a psychological component of the gestational dominant can be established on the results of investigation into the relevant pregnancy attitudes. Based on this concept, Dobryakov (2014) created the “Pregnant Woman Attitude Test” to both identify attitudes and test the state of the emotional-motivational sphere of a pregnant woman. Both the weight of a newborn, and the frequency and time of premature termination of pregnancy appear to depend on the PAGD type. Behavioral models related to the formation of the unsuccessful variant of PAGD indicate the increase of the risk level of termination of pregnancy, preeclampsia, and unsuccessful delivery; all these, in their turn, influence a newborn’s health. It was established that babies born prematurely to mothers with the worried and depressive type of gestational dominance have a credibly lower body weight, tendency to hypoxia, and are more often incapable of living. Early infant mortality in this group is 2-3 times higher than among newborns from mothers with the physiological types of gestational dominance (Startseva, 2011).

The term “physiological type” of gestational dominance refers to the successful functioning of all systems of a mother’s body that provide the creation of necessary conditions for fetal development, sustaining its normal homeostasis that results in birth in time. However, a woman’s emotional state characteristic for a certain type of the psychological component of gestational dominance (PCGD), has a direct impact on the delivery process and a baby’s state. Lysenko (2003-2004) found:

The combination of depressive, anxious and hypogestationgnostic types present may indicate the risk of such a complication of pregnancy as gestosis. Women with the optimal type of PCGD did not have complications of pregnancy and gestosis. (p.183)

Participants

The pre-delivery study involved the voluntary participation of 158 pregnant women and 25 future fathers. After delivery, we analyzed 116 delivery clinical reports of women who participated in the first stage of the study. Our maternal clinic does not register women by their ethnic, racial, or national makeup statistically, nor is this recorded antenatally on records or birth certificates. All women spoke Russian. The average age of the pregnant women was 29 (see Table 2).

Age	Pregnant woman (%)	Fathers (%)
20-25	17.6	8.3
26-30	47.8	45.8
31-35	25.7	25
36-45	8.8	20.8

Table 2. Age of study participants

Methodology

Before childbirth, pregnant women were offered the “Pregnant Woman Attitude Test,” which consists of three sections: attitude toward pregnancy, attitude toward childbirth, and attitude toward the environment (including her husband or partner). Each section contains five statements, out of which pregnant women choose the one most suitable for their attitude. Fathers were spoken with individually, as a result of the clinical interview plan developed for this study.

After the babies were born, we studied the clinical delivery reports and conversations with local obstetrician-gynecologists between January and February, 2017. In clinical delivery reports, we studied: extragenital diseases and the indicators of delivery process, including delivery with or without complications and the quantitative and qualitative nature of complications, including CS, poor uterine contraction strength, intrauterine hypoxia, preeclampsia, episiotomy and perineotomy, blood

loss, babies' Apgar scores, and the weight and height of newborns. Then, the collected data were divided into two profiles: "Delivery without complications" and "Delivery with complications," including the Apgar score, height, and weight of newborns.

The hypothesis confirming that a pregnant woman's attitude influences both the progress of delivery and the health of a newborn was verified at the first stage with the help of Spearman's rank correlation coefficient. The correlation analysis confirmed the significant connection between the traits of "Delivery without complications" and the following sections: "Extragenital diseases," and "A pregnant woman's attitude toward the attitude of the child's father." The section "Extragenital diseases" will include quite a large number of diseases and is not described in this article. Out of all statements of the "Pregnant Woman Attitude Test," the most significant were these statements: "Because of pregnancy, my child's father became more attentive and warmer toward me" (+.261**), and "I think that pregnancy made me more beautiful in the eyes of my child's father" (-.220*). The contrary directedness of these traits was established: * -correlation is significant at the level of 0.05 (2-side), ** - correlation is significant at the level of 0.01 (2-side).

The qualitative characteristics of differences were defined with the help of comparative analysis by the Pearson's chi-squared test criterion, by a computer program. We put together a participant's answers from the "Pregnant Woman Attitude Test" and the profiles "Delivery without complications" and "Delivery with complications." As a result, we singled out one statistically significant trait: "A pregnant woman's attitude toward her husband's attitude." Therefore, both the method of Spearman's rank correlation coefficient and the Pearson's chi-squared test criterion confirmed the impact of relationship between a pregnant woman and the father of her baby on the positive progress of childbirth and a newborn's health.

Procedures

All participants of the study voluntarily attended classes at the School of Maternity and Paternity in St. Petersburg GBUZ Municipal Clinic No. 38, Prenatal Clinic No. 35, from July, 2016 until January, 2017. The classes involved groups of four to six people. Pregnant women attended two meetings with a psychologist, two meetings with an obstetrician-gynecologist and a pediatrician, and one group class with a psychologist for couples preparing for birth. Mixed groups involved 25 couples: 15.8% by selection. After birth, from January to February 2017, we studied birth certificates with regard to the state of newborns and women by psychosomatic condition, qualitative characteristics of delivery progress, and the medical parameters of newborns' health.

Limitations

This study examined mostly married couples living in Russia (83.7%). It may be limited in that the sample could be a culturally influenced, being exclusively found in one country. However, some of the participants may have migrated. Since our clinic does not ask about racial or ethnic backgrounds, this information is not provided. Additionally, birth complications were studied solely from medical charts and based on medical definitions of complications; they did not address the subjective experiences of the women and their partners. This is because our clinic does not deal with childbirth, but childbirth preparation.

Results

The results showed that the mother's attitude toward the attitude of her child's father, as well as somatic diseases, were more important factors for the positive delivery progress and the health of newborns. Therefore, we confirmed the hypothesis that a pregnant woman's attitudes influence the delivery progress and a newborn's health.

Discussion

As the statistical analysis established significant connections between the trait "Delivery without complications" and the statement "Because of pregnancy, my child's father became more attentive and warmer toward me," we made a content analysis of relations between a baby's father and the mother.

This statement corresponds to the development of relationships between a pregnant woman and her baby's father by the Optimal PAGD type. In this case, pregnancy makes spouses' (or partners') relations more caring and warmer, leading to an easier transition to parenthood. In conversations, parents noted they were trying to spend more time together, attended classes of pre-delivery preparation together, and that some husbands/partners participated in childbirth. Pregnant women reported they were grateful to their husbands/partners being interested in their pregnancies and attended medical institutions with them. Many noticed that during the last months of pregnancy they felt "awkward" and their husbands/partners helped them take off shoes, and more actively did the household chores. During pregnancy, especially before childbirth, it is important for a woman to feel safe while preparing for the delivery and care of a baby, and this information indicated these women felt safe.

Pregnancy sets in motion often contradictory physical and emotional experiences to which each expectant parent responds differently. Additionally, a pregnant woman sometimes feels she has lost her position as an equal partner. The birth of a baby skews the once-equal relationship, as all hardships of childbirth and care for a baby are usually mostly

handled by a woman. During this time, the state of a woman influences her baby’s health. However, a survey of Raphael-Leff’s twenty recent works (2018) showed that usually a person’s depression significantly correlates with their partner’s depression. All above mentioned facts accentuate the interactive nature of relations between a mother, a father, and their baby.

The comparative analysis by Pearson’s chi-squared test method showed that 49.1% of these pregnant women felt that the baby’s father started treating her in a more caring and warmer way due to pregnancy. In this group of pregnant women, delivery took place without complications in 64.5% of cases, with the babies’ Apgar scores higher than 8. Women who did not choose this statement had delivery without complications only in 35.5% of cases. (See Table 3. Picture 1, 2.)

A pregnant woman’s formed idea that a child’s father “became more attentive and warmer to me because of pregnancy”		Childbirth without complications (%)		Total (%)
		no	yes	
no	quantity	48	11	59
	childbirth without complications	56.5	35.5	50.9
yes	quantity	37	20	57
	childbirth without complications	43.5	64.5	49.1
total	quantity	85	31	116
	childbirth without complications	100	100	100

Table 3. The results of statistical analysis connections between the trait “Childbirth without complications” and the statement “Because of pregnancy, my child’s father became more attentive and warmer toward me” $p < 0.05$

Yes - "Because of pregnancy my child's father became more attentive and warmer to me"



Picture 1. Qualitative characteristics of childbirth in those women who chose this affirmation $p < 0.05$

No - "Because of pregnancy my child's father became more attentive and warmer to me"



Picture 2. Qualitative characteristics of childbirth in those women who didn't chose this affirmation $p < 0.05$

This result became the basis for performing pre-delivery preparation and consulting with expectant couples on how their relationship influenced the health of their newborn and the progress of delivery. In scientific literature, I did not come across statistic confirmations of the influence of a couple’s relationship on the progress of delivery and a baby’s health.

Meanwhile, during conversations with pregnant couples, it was noticed that sometimes fathers state they have become more caring while their pregnant partners do not experience that. In these cases, it may be that either a father’s inner worry over the health of his partner and baby are not displayed sufficiently or in a form understandable for his partner, or signs of attention do not address a pregnant woman’s true needs. In such cases, we recommend a pregnant woman and her baby’s father display their desires openly, converse more often, and devote definite time to mutual communication during the day.

Clinical practice showed that in a number of cases, a woman makes a decision to have a baby and raise the baby without the participation of the baby’s father. This group of women constituted 16.3% by selection. After delivery, they were consulted by psychologists. The women told the psychologists that they had attentively listened to advice at Maternity school and followed recommendations from the beginning contractions: “I recalled everything you told, treated childbirth philosophically, took a shower, called the ambulance and had a baby faster than girls in a ward that had come to the maternity hospital before me.” In such cases, the healthy support of a perinatal psychologist, medical staff, and close people formed the positive, caring environment for delivery.

The Spearman rank correlation method defined the negative connection (-.220*) between two features: “I think that pregnancy made me more beautiful in the eyes of my child’s father” and “Delivery without complications.” This correlative connection may indicate not only the direct interconnection between these two features, but also the direct dependence of both these features on the combination of features not considered in this research.

The statement demonstrated a pregnant woman's attitude toward the attitude of her baby's father by the Euphoric PAGD type. With the Euphoric PAGD type, pregnant women are mostly in high moods. They are characterized by the typical statement, "Nothing makes me happier than being pregnant!" Euphoria may make pregnant women insensitive to objective reality. Facing hardships during delivery, they may panic, may not be able to constructively cooperate with medical staff, and/or may demand anesthesiology (Dobryakov, 2010). The study of the Euphoric psychological component of gestational dominant should be continued with a larger number of participants. The statistical significance at the level of tendency was established.

Conclusion

This study should be considered in the context of the effect of the relationship between a pregnant woman and her baby's father on the baby's state. The parents' relationship has a dynamic and interactive nature, introducing specific dynamics into the delivery process influencing a newborn's health. This research is longitudinal in nature and will be continued with the account of issues and additions appearing in its process. The results highlighted five things:

1. If women in the third trimester of pregnancy feel the warm and caring attitude of the baby's father, the delivery more often passes without complications and impacts the health of newborns.
2. The relationship between parents, from the point of maternal effects, introduces changes into the offspring phenotype, specifically the height and weight of a baby and the baby's Apgar score, impacting a baby's well-being in the long-term.
3. In the mother-father relationship, the consequences for delivery progress and newborns' state are underestimated. There are no common recommendations for studying and assessing relations with the account of the impact of maternal effects on a child's phenotype.
4. The statistical study became a persuasive argument to support the idea that there is a great demand for psychological work with pregnant women and expectant fathers, with the purpose of overcoming psychological ignorance in relationship and understanding their long-term effects.
5. Finally, the study of the maternal effect "family lifestyle" may improve results for children immediately and in their future. It is known that fear of labor is connected with a pregnant woman's complicated, sometimes conflictual relationships with her parents and her husband's parents, or the absence of confidence in her marriage/partnership (Zaharov, 1998). The further study of

maternal effects would give way to obtaining additional knowledge about this issue. In a broad sense, a “family lifestyle” determines the lasting investment of preparation of the environment in which to grow, birth, and care for a new life.

Maternal effects are a multi-aspect theory with a conditional nature and plasticity with respect to a long-term impact on offspring. This preliminary research statistically confirmed that changes in the social environment, in particular changes in the relationship between a pregnant mother and her partner in the third trimester of pregnancy, influence a mother’s behavior, her emotional state, the impact on the process of delivery, and the newborn’s state. The development of the relationship between a pregnant woman and her baby’s father by the Optimal PAGD, where the pregnant woman considers her baby’s father to be attentive, warm, and supportive, has a positive influence on the delivery and the baby’s immediate and future outcome.

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