

# Maternal serum screening and psychosocial attachment to pregnancy

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## Abstract

**Objective:** The purpose of this study was to examine whether maternal serum screening (MSS) is associated with lower maternal attachment to pregnancy. **Methods:** One hundred one pregnant women identified as at risk for fetal anomaly due to advanced maternal age completed a survey targeting their decisions regarding prenatal testing and their psychological attachment to their pregnancy. Of these women, 38 opted for no prenatal testing, 32 underwent MSS, and 31 had amniocentesis in their current pregnancy. **Results:** The results indicate that, throughout their

pregnancy, the women who underwent MSS reported lower bonding levels as compared with those who chose either amniocentesis or no testing procedures. **Conclusion:** The results suggest that MSS may disrupt the developmental trajectory of the maternal–fetal bond even after favorable results are known. This may be due in part to the fact that the probabilistic nature of MSS results creates feelings of confusion rather than reassurance for many women following receipt of favorable results.

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## Introduction

The attachment theory was first proposed by Bowlby [1,2] to account for the bond that develops between children and their caregivers, usually their mothers. Specifically, the attachment theory proposes that infants and young children engage in specific behaviors that function to ensure that a caregiver remains in close proximity and thus able to provide assistance and/or comfort when necessary. It is through these reciprocal interactions with a caregiver that a child develops inner representations or models of the self and others in relationships that form the basis of future attachments with others [1].

The concept of prenatal attachment or bonding, although qualitatively different from the construct of attachment as presented by Bowlby [1,2] in that the interactions between a pregnant woman and her fetus cannot be strictly defined as reciprocal [3], recognizes that salient aspects of the mother–child relationship may begin even before birth. There is a

wide body of literature supporting the contention that women form concrete inner representational models of their unborn child [4,5] and that these working models are related to a woman's own attachment history [4,6]. Pregnant women develop varying degrees of connectedness to their unborn child, their pregnancy, and their impending role as a mother. The term *prenatal attachment* was coined to capture this experience of emotional affiliation.

In essence, prenatal bonding, or attachment, is the affectionate bond that a woman develops toward her pregnancy and her fetus [7]. This bond initially forms when she begins to develop a mental image of her unborn baby [8,9] and represents both the knowledge and feelings that she develops as her fetus makes its presence known to her throughout the pregnancy [7]. Feelings of attachment begin early in pregnancy [10] and increase rapidly beginning at approximately 16 gestational weeks [11]. It is well established that maternal attachment to pregnancy increases significantly across time [10–15], with peak levels of attachment being reported in the second trimester [8].

The importance of prenatal attachment extends beyond the psychological benefits of aiding women in adapting to

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pregnancy and preparing for motherhood. Attachment has also been found to correlate with pregnancy-related health practices, such as receiving prenatal care and adhering to prenatal care regimens [15] and reducing alcohol consumption during pregnancy [16]. There are also evidence that prenatal maternal representations of a child and attachment are predictive of postnatal maternal behavior and attitudes [17,18], postnatal maternal attachment to the infant [7,19], and mother–infant interaction and attachment patterns after the child is born [20–23].

Given the significant implications of maternal prenatal bonding, physicians and researchers recognized the importance of identifying prenatal care practices that may hinder its development. One specific practice that has been examined in detail is the use of amniocentesis, a prenatal diagnostic testing procedure that detects fetal anomaly. Identifying fetal anomaly allows prospective parents more reproductive control in that they have the option of terminating the pregnancy in the event of a diagnosis. Although amniocentesis can provide information that would enable parents to prepare in advance for the birth of a child with a disability, most women who receive a diagnosis do decide to terminate their pregnancy [24,25]. It is very likely that women who would not contemplate termination would choose not to undergo amniocentesis, thus resulting in the consistent finding that unfavorable attitudes toward abortion predict a decreased likelihood of using amniocentesis [26–28]. Reproductive history has also been found to predict willingness to use prenatal diagnostic tests, with more previous births being associated with decreased willingness [29,30]. The roles of a woman's general anxiety level and her specific worries about fetal health in testing decisions are less clear. Although they appear to be linked with an increased likelihood of maternal serum screening (MSS) use among women younger than 35 years [31,32], they are not predictive of the testing decisions of women medically identified to be at elevated risk for fetal abnormality due to advanced maternal age (i.e., >35 years) [32].

Amniocentesis results are not available until well into the second trimester [33]; therefore, women undergoing this testing method are faced with the situation of contemplating the possibility of pregnancy termination at the same time that maternal bonding to the pregnancy normally is undergoing a rapid increase. This creates heightened anxiety for women that can disrupt the trajectory of the developing bond a woman is forming toward her fetus. According to Katz-Rothman [34], women using amniocentesis experience a phase of *tentative pregnancy* in that they strive to maintain an emotional distance and to avoid attaching to the pregnancy until the health of their fetus is confirmed. She states, "...only after the fetus is deemed worthy of keeping, is attachment to begin" (p. 114).

As a result of her interviews with women, Katz-Rothman [34] concluded that many women undergoing amniocentesis delay making either a private (e.g., acknowledging fetal

movement) or a public (e.g., telling others of their pregnancy) commitment to their pregnancy until after receiving favorable test results. This emotional distancing is a psychologically defensive strategy that allows a woman to cope with the fact that, although she is pregnant, she may not give birth to a baby as the future of her pregnancy may rest on the outcome of her amniocentesis. Basically, a woman in this situation must acknowledge not only that she is pregnant but also that there is a possibility that there is something genetically wrong with her fetus that could result in her deciding to abort the pregnancy. Under these circumstances, it is not surprising that women develop a tentative or cautious relationship to the pregnancy until after they are assured of their unborn child's genetic status.

Several studies have substantiated the position that the use of amniocentesis does negatively impact prenatal attachment, delaying bonding until definitive favorable results are received [10,35,36]. Heidrichs and Cranley [35] found that women undergoing amniocentesis reported lower levels of attachment to their fetus as compared with those who opted against the procedure prior to receiving results. However, there was no significant difference between the groups in prenatal attachment following the receipt of favorable results in the amniocentesis group, indicating that attachment levels quickly accelerate once the health of a fetus is confirmed. Similarly, Caccia et al. [10] found that attachment levels significantly increased following the receipt of favorable results for women undergoing both amniocentesis and chorionic villus sampling (CVS). This increase in bonding occurred approximately 5 weeks earlier in women undergoing CVS than in those undergoing amniocentesis, which is consistent with the difference in gestational age at which these diagnostic procedures are performed. These findings suggest that favorable diagnostic results are sufficiently reassuring to women to allow them to move beyond the tentative pregnancy stage and experience a rapid increase in bonding.

The impact of prenatal screening methods on maternal bonding has not been examined. Although diagnostic methods are only recommended for women in high-risk pregnancies due to the associated risk of miscarriage, the noninvasive procedure of MSS has become an option for all pregnant women. Through MSS, the risk of specific abnormalities (e.g., Down syndrome) is calculated using a complex formula that compares the levels of specific proteins and hormones in a woman's blood against the median for women in the same week of pregnancy, taking maternal age, gestational age, diabetic status, race, and maternal weight into account [37]. The resulting risk ratio, which is a more accurate estimate of fetal anomaly than age alone [37], is used to screen for pregnancies in which the more invasive diagnostic procedure of amniocentesis is warranted. Women with elevated MSS risk ratios (i.e., higher than the risk of fetal anomaly associated with their age alone) are presented with the option of amniocentesis to reach a definitive diagnostic result, whereas those with low

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