

# Level of Oxytocin in Pregnant Women Predicts Mother-Child Bond

November 01, 2007

Humans are hard-wired to form enduring bonds with others. One of the primary bonds across the mammalian species is the mother-infant bond. Evolutionarily speaking, it is in a mother's best interest to foster the well-being of her child; however, some mothers just seem a bit more maternal than do others. But why? New research points to a hormone that predicts the level of bonding between mother and child.

In animals, oxytocin, dubbed "the hormone of love and bonding," is critically important for the development of parenting. It is elicited during sexual intercourse and is involved in maintaining close relationships. Animals with no oxytocin exhibit slower pup retrieval and less licking and self-grooming. These findings implicate oxytocin in the bonding process, but little research has been done on this relationship in humans.

Ruth Feldman, Bar-Ilan University, conducted the first study to demonstrate the links between oxytocin and bonding in human mothers. Feldman and colleagues measured plasma oxytocin from 62 pregnant women during their first trimester, third trimester, and the first postpartum month.

They also observed mother-child interaction, defining the level of attachment along four aspects: gaze, affect, touch, and vocalization. Stronger attachment would mean that the mother focused her gaze mostly on the child, exhibited a positive energy toward the child, maintained constant affectionate and stimulating touch with the child, used a "motherese" speech with the child, and adapted these species-typical maternal behaviors to the infant's alert state.

After the mothers completed an extensive survey and an interview on their bond-related thoughts, feelings, and behaviors, the researchers computed the link between levels of oxytocin and bonding.

The results are fascinating. Initial levels of oxytocin in the first trimester predicted bonding behavior. Therefore, mothers with a high level of the hormone at the beginning of the pregnancy engaged in more of the aforementioned bonding behaviors after birth. Additionally, mothers who had higher levels of oxytocin across the pregnancy and the postpartum month also reported more behaviors that support the formation of an exclusive relationship (i.e. singing a special song to the infant, or bathing and feeding in a special way). These mothers were also more preoccupied with checking on their infants, ensuring the infants' safety when they were apart, and securing the infants' future.

This study, appearing in the November issue of *Psychological Science* (R. Feldman, A. Weller, O. Zagoory-Sharon, & A. Levine. "Evidence for a Neuroendocrinological Foundation of Human Affiliation: Plasma Oxytocin Levels Across Pregnancy and the Postpartum Period Predict Mother-Infant Bonding"), suggests that women with higher levels of oxytocin during their first trimester are primed to

form exclusive bonds with their infants. Oxytocin seems to be preparing mothers to engage in bonding behaviors. The findings also show that oxytocin is related to the mental, as well as the behavioral, aspect of bonding. More generally, this research confirms that there is a cross-species continuity in mechanisms that underlie species-specific expressions of bonding.