

# Does your voice share your fertility with others?

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(PhysOrg.com) -- Unlike members of other animal species, human females do not have obvious physical signs to show the opposite sex that they are ovulating. But research over the years have found subtle changes in women such as dressing, acting or even smelling more alluring during the times when they are most likely to conceive.

A new study published in *PLoS One* looked at the different and subtle changes in a woman's [voice](#) throughout her menstrual cycle. Led by vocalization researcher Julia Fischer from the German Primate Center, the researchers gathered data from 23 German-speaking [women](#). They gathered a urine sample from each woman every day in order to measure hormonal changes and the precise time of ovulation. The researchers had the women record their voices daily and these were analyzed for changes in pitch, harmonics, breathiness and hoarseness.

In analyzing the voices, the researchers found that the women showed a higher voice three days before and three days after ovulation, with a lower tone being present during ovulation.

The researchers then presented a group of non-German speaking men with the recordings of the women and asked them to rate their preference of voice. They discovered no real pattern for preference and determined that what one man finds appealing is different to that of another.

One thing the researchers did discover that was consistent across the

board was a voice change during menstruation. During this time in a woman's cycle, their voice tends to become heavier and hoarser. The researchers contribute this to an increase in water retention and its effects on the vocal chords.

While many evolutionary biologists have long believed that human females hide their ovulation in an attempt to encourage faithfulness in their partners, the evidence of these subtle changes, in other studies, have shown that men may, in some way, be able to subconsciously detect when a woman is most fertile. Other studies have shown that lap dancers receive higher tips just before ovulation and reports from women in committed relationships show that their partners tend to be more attentive just before ovulation.

While the voice changes are subtle and may not even really be detectable, they may just be enough to trigger a different reaction from a male partner, even if he doesn't know why.

**More information:** Fischer J, Semple S, Fickenscher G, Jürgens R, Kruse E, et al. (2011) Do Women's Voices Provide Cues of the Likelihood of Ovulation? The Importance of Sampling Regime. *PLoS ONE* 6(9): e24490. [doi:10.1371/journal.pone.0024490](https://doi.org/10.1371/journal.pone.0024490)

## **Abstract**

The human voice provides a rich source of information about individual attributes such as body size, developmental stability and emotional state. Moreover, there is evidence that female voice characteristics change across the menstrual cycle. A previous study reported that women speak with higher fundamental frequency (F0) in the high-fertility compared to the low-fertility phase. To gain further insights into the mechanisms underlying this variation in perceived attractiveness and the relationship between vocal quality and the timing of ovulation, we combined hormone measurements and acoustic analyses, to characterize voice

changes on a day-to-day basis throughout the menstrual cycle. Voice characteristics were measured from free speech as well as sustained vowels. In addition, we asked men to rate vocal attractiveness from selected samples. The free speech samples revealed marginally significant variation in F0 with an increase prior to and a distinct drop during ovulation. Overall variation throughout the cycle, however, precluded unequivocal identification of the period with the highest conception risk. The analysis of vowel samples revealed a significant increase in degree of unvoiceness and noise-to-harmonic ratio during menstruation, possibly related to an increase in tissue water content. Neither estrogen nor progesterone levels predicted the observed changes in acoustic characteristics. The perceptual experiments revealed a preference by males for voice samples recorded during the pre-ovulatory period compared to other periods in the cycle. While overall we confirm earlier findings in that women speak with a higher and more variable fundamental frequency just prior to ovulation, the present study highlights the importance of taking the full range of variation into account before drawing conclusions about the value of these cues for the detection of ovulation.

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