

**Female Voice Pitch Modulation as a Signal of Fertility and Aggression to Competition**

**Prediction Paper**

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One of the more important forms of communication between humans that is often overlooked is not what people are saying but how they choose to say it. Moreover, the use of pitch has been confirmed to relay messages, such as both men and women lowering the pitch of their voice in order to indicate attraction and women modulating their pitch when speaking to other women they view as a competitor (Leongómez et al., 2014). I am interested in the modulation of women's voices, which is the fluctuation of pitch up and down when talking. Other animal species have been known to scale their vocal frequencies to exaggerate physical size and express threat, dominance, and formidability (Pisanski, 2016). Zhang et al (2021) found that in human males, pitch modulation is an aggressive-intent signal. It was also discovered that in many studies, speakers adjust their vocal parameters based on their own social status in relation to the receiver. When people want to display higher status they lower their pitch, while people who feel more of lower status tend to use a higher pitch (Hughes & Puts, 2021). In addition, Shoup-Knox and Pipitone (2015) conducted a study that found that women's voices change during times of high fertility. Naturally cycling women during high fertility were assessed as more attractive, and when listening to high fertility voices, participants had the highest increase in heart rate and galvanic skin response for both women and men. Along with this, women were found to have higher-pitched voices during high fertility (Bryant & Haselton, 2008). From these studies, it is clear that higher-pitched voices are correlated with high fertility, and lower-pitched voices are correlated with aggression and dominance.

Based on the previous research, we can predict that voice pitch is an important communication factor for not only heterosexual relationships but also intrasexual competition between women. Females are able to use the vocal pitch as a nonverbal cue to inform their competition of their fertility and dominance. From the above studies, one theoretical assumption

might be that women lower their pitch when interacting with competition to have the appearance of higher testosterone because testosterone is correlated with strength and aggression. Another theory is that women use high-pitched voices when interacting with competition to give an appearance of high levels of fertility since fertility is viewed as more attractive by men and women. The subject that I will assess is the question of if women's modulation of pitch can be perceived as dominant and fertile, thus, as a result, interpreted a threat to the same sex. Based on these assumptions, I predict that there will be an association between hearing high voice modulations and perceived dominance, perceived fertility, and perceived competition for women.

To test this prediction, I will conduct a quantitative study using a random sample of 18-30-year-old women because they are in their peak reproductive years. Each participant will be brought into the lab to listen to a voice recording of two women having a short conversation about a mundane topic. Woman A in the recording will have a highly fluctuating voice pitch and Woman B will have a stagnant voice pitch. This difference in voice modulation between the two women is the independent variable. After listening to the recording, the participants will be administered a survey that uses the Likert-type items to rate to what degree they perceived each woman's fertility, dominance, and threat level, which are the three dependent variables. For example, the participants might be asked to rank how strongly they agree/disagree with the following statements: "Woman A would be a good mother," "I would feel threatened if Woman A was good friends with my boyfriend," and "Woman A is aggressive." The exact same questions would be asked for Woman B. If my prediction is confirmed correct, all three dependent variables (perceived dominance, fertility, and threat) will have a positive correlation with the highly fluctuating voice.

## References

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