Want sexual satisfaction? Do the math

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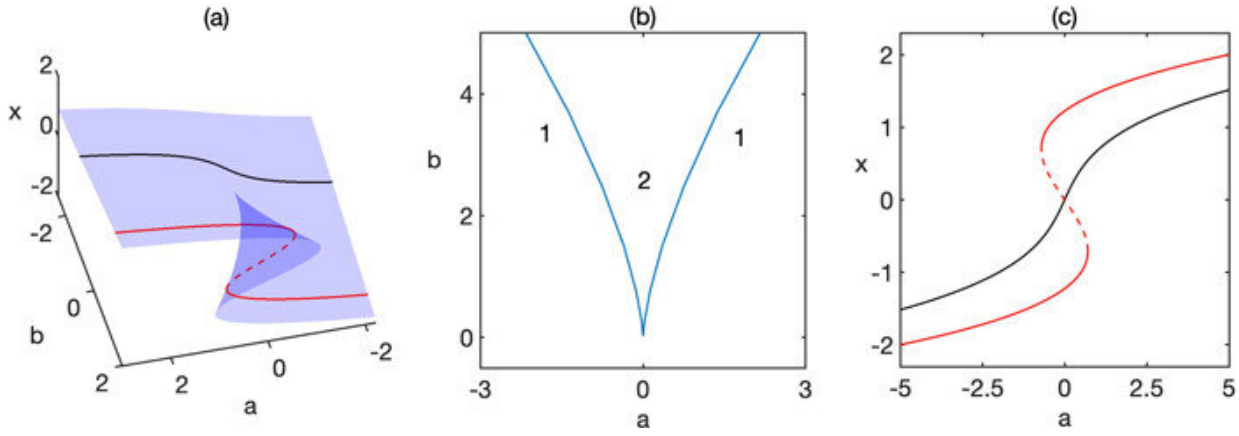

(a) Surface of steady states of the system (1). (b) Projection onto the ?–? parameter plane illustrating a cusp, as well as fold curves separating parameter regions with one and two stable steady states. (c) Sample curves illustrating monotonic behavior (black, ?=−1) and hysteresis (red, ?=1), with curves of stable steady states shown in solid and unstable in dashed. Credit: *Chaos: An Interdisciplinary Journal of Nonlinear Science* (2023). DOI: 10.1063/5.0143190

University of Sussex mathematicians have developed the first ever mathematical model of how to reach sexual climax, as revealed in a new paper.

Taking inspiration from the use of math to analyze and improve sports performance, the Sussex researchers have combined decades of data on physiological and psychological arousal to model the optimum conditions to achieve orgasm.

The researchers did this by tracking and analyzing data from the four stages of the male cycle—excitation, plateau, orgasm and resolution. They found that participants who had too much psychological stimulation too early in the cycle were less likely to achieve climax.

As a result, the researchers have created two mathematical equations to represent their findings—one which covers the physiological aspects of reaching climax, and the other which covers the psychological ones.

Dr. Konstantin Blyuss, co-lead author on the research and reader in mathematics in the University of Sussex School of Mathematical and Physical Sciences, explains their findings:

"In the past, researchers have tried to write a model to describe the physiological path to climax, but without success. Drawing on established data, as well as our own previously published work on modeling biological phenomena such as epidemiology and immunity, we have developed the first successful mathematical model of sexual performance. Our results cover the physiological and psychological aspects required to reach climax. They reinforce, and mathematically prove, existing studies into the psychology of sex."

"A key finding is that too much psychological arousal early in the process can inhibit the chance of reaching climax. Simply put, our findings can be summarized as 'don't overthink it.'"

The study focuses on the sexual responses of men because, compared to women, they have a simpler arousal cycle and so were a good scientific starting point. Using their findings, the Sussex mathematicians are now working on a model for female satisfaction.

Dr. Yuliya Kyrychko, a reader in mathematics in the University of Sussex School of Mathematical and Physical Sciences, who co-led the

research with Dr. Blyuss, says, "Our findings shed light on a socially taboo subject, which we believe could have useful applications for the clinical treatment of sexual dysfunction, as well as for providing the general public with a tested formula for improving their sex life."

"With what we have learned from this study, we intend to mathematically model the female sexual response, which is physiologically—and mathematically—more complex than the male response."

About the study

The Sussex mathematicians analyzed data from previous studies, notably the Masters-Johnson theory of sexual response cycle, which included data from 10,000 sexual acts performed in the lab by 382 women and 312 men. This study underpins much of the scientific research into human sexual response which has followed.

The Sussex team compared those findings with data from studies undertaken at the University of Groningen in the Netherlands around a decade ago. In those studies, consenting participants undertook sexual acts inside fMRI machines. Their neurological changes were monitored, including when they reached climax.

The combined data captures a variety of observed phenomena, including periods of normal spontaneous excitement during the day, responses in men with spinal cord injury, as well as spontaneous nocturnal emissions, known colloquially and clinically as "wet dreams."

The paper, titled "Sex, ducks and rock 'n' roll: mathematical model of sexual response," is published in a special issue of the journal *Chaos: An Interdisciplinary Journal of Nonlinear Science*. "Ducks" is a reference to the mathematical concept of "canards."

More information: K. B. Blyuss et al, Sex, ducks, and rock "n" roll: Mathematical model of sexual response, *Chaos: An Interdisciplinary Journal of Nonlinear Science* (2023). DOI: 10.1063/5.0143190

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