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IDEAS & TRENDS

The Myth, the Math, the Sex

By GINA KOLATA

EVERYONE knows men are promiscuous by nature. It's part of the genetic strategy that evolved to help men spread their genes far and wide. The strategy is different for a woman, who has to go through so much just to have a baby and then nurture it. She is genetically programmed to want just one man who will stick with her and help raise their children.

Surveys bear this out. In study after study and in country after country, men report more, often many more, sexual partners than women.

One survey, recently reported by the federal government, concluded that men had a median of seven female sex partners. Women had a median of four male sex partners. Another study, by British researchers, stated that men had 12.7 heterosexual partners in their lifetimes and women had 6.5.

But there is just one problem, mathematicians say. It is logically impossible for heterosexual men to have more partners on average than heterosexual women. Those survey results cannot be correct.

It is about time for mathematicians to set the record straight, said David Gale, an emeritus professor of mathematics at the University of California, Berkeley.

"Surveys and studies to the contrary notwithstanding, the conclusion that men have substantially more sex partners than women is not and cannot be true for purely logical reasons," Dr. Gale said.

He even provided a proof, writing in an e-mail message:

"By way of dramatization, we change the context slightly and will prove what will be called the High School Prom Theorem. We suppose that on the day after the prom, each girl is asked to give the number of boys she danced with. These numbers are then added up giving a number G. The same information is then obtained from the boys, giving a number B.

Theorem: $G=B$

Proof: Both G and B are equal to C, the number of couples who danced together at the prom. Q.E.D."

Sex survey researchers say they know that Dr. Gale is correct. Men and women in a population must have roughly equal numbers of partners. So, when men report many more than women, what is going on and what is to be believed?

"I have heard this question before," said Cheryl D. Fryar, a health statistician at the National Center for Health Statistics and a lead author of the new federal report, "Drug Use and Sexual Behaviors Reported by Adults: United States, 1999-2002," which found that men had a median of seven partners and women four.

But when it comes to an explanation, she added, "I have no idea."

"This is what is reported," Ms. Fryar said. "The reason why they report it I do not know."

Sevgi O. Aral, who is associate director for science in the division of sexually transmitted disease prevention at the Centers for Disease Control and Prevention, said there are several possible explanations and all are probably operating.

One is that men are going outside the population to find partners, to prostitutes, for example, who are not part of the survey, or are having sex when they travel to other countries.

Another, of course, is that men exaggerate the number of partners they have and women underestimate.

Dr. Aral said she cannot determine what the true number of sex partners is for men and women, but, she added, "I would say that men have more partners on average but the difference is not as big as it seems in the numbers we are looking at."

Dr. Gale is still troubled. He said invoking women who are outside the survey population cannot begin to explain a difference of 75 percent in the number of partners, as occurred in the study saying men had seven partners and women four. Something like a prostitute effect, he said, "would be negligible." The most likely explanation, by far, is that the numbers cannot be trusted.

Ronald Graham, a professor of mathematics and computer science at the University of California, San Diego, agreed with Dr. Gale. After all, on average, men would have to have three more partners than women, raising the question of where all those extra partners might be.

"Some might be imaginary," Dr. Graham said. "Maybe two are in the man's mind and one really exists."

Dr. Gale added that he is not just being querulous when he raises the question of logical impossibility. The problem, he said, is that when such data are published, with no asterisk next to them saying they can't be true, they just "reinforce the stereotypes of promiscuous males and chaste females."

In fact, he added, the survey data themselves may be part of the problem. If asked, a man, believing that he should have a lot of partners, may feel compelled to exaggerate, and a woman, believing that she should have few partners, may minimize her past.

"In this way," Dr. Gale said, "the false conclusions people draw from these surveys may have a sort of self-fulfilling prophecy."