

W241.3 Essay 1 - Study Critique

Daniel Olmstead

In their academic journal article *Does Semen Have Antidepressant Properties?* (Gallup, Burch, Platek, Archives of Sexual Behavior, Vol. 31, No. 3, June 2002), the authors present compelling evidence of a correlation between condom use and depression in sexually active college-age women. From this, they derive the conclusion that chemical compounds present in semen are absorbed into a woman's bloodstream during intercourse, and thereby "antagonize depression."

In the study, 293 college-age women at the State University of New York in Albany completed an anonymous questionnaire detailing their sexual activity, and also completed the Beck Depression Inventory (BDI), a widely-used measure of depressive symptoms. From the results of these surveys, researchers point out three main correlations:

1. Among women who never use condoms, they found "significantly lower scores on the BDI than those who usually ($p < .001$) or always ($p < .05$) used condoms."
2. There was significant difference in the rate of suicide attempts between groups, from 4.5% for the "never" group to 28.9% in the "usually" and 13.2% in the "always" groups.
3. Among those who never or only sometimes used condoms, there was significant correlation between depression scores and how long it had been since they last had sex.

They are careful to address most of the objections that people would raise to this claim:

- There is no significant correlation between length of committed relationship and depression, forestalling the argument that it is being in a long-term relationship that prevents depression.
- Although oral contraception is extremely common among the "never" group, there is no significant difference between women who use condoms AND birth control vs those that use condoms only, suggesting that it isn't the birth control that makes women less depressed.
- While it is true that those who do not use condoms simply have more sex than those who do, when looking within categories there is no correlation between quantity of sex and depression, and BDI scores for women who abstain completely are the same as those who are active but use condoms.

While the authors do attempt to anticipate arguments to their findings, and do acknowledge that "these data are preliminary and correlational in nature, and as such are only suggestive," there are still many holes in their argument:

- There are any number of unmeasured confounding variables that could explain the correlation, from family history, religious upbringing, work/study stressors, etc.
- This sample population is very limited in age, geography and (presumably) demographics. As such, any causal effect may be limited to the subset of mostly white, well-educated college-age women in upstate New York, or the limitation to this subset may result in an under- or overestimate of the true effect.

- Although they do ask about duration of relationship, they don't ask about quality of relationship - casual vs. committed, or how safe they feel with their partner.
- The BDI scores and suicide rates for the "usually" group are much higher than the "never" group, which belies the implication that fewer condoms leads to less depression.
- While the researchers attempt to dispel the argument that it is simply the quantity of sex that explains the difference by asserting that there is no correlation between BDI score and quantity of sex within the categories, the fact that women who don't use condoms have significantly more sex than those who do (by nearly a factor of two) suggests that there is a relationship there that should be explained.

One important distinction the researchers fail to address is that oral contraception prevents pregnancy, but not venereal disease. Therefore women are more likely to rely on the pill when they are in a committed relationship with someone they trust to be exclusive. While there may be enough women in relationships in the "usually" or "always" groups to prevent the conclusion that relationship alone is enough to forestall depression, the fact that they are using condoms may indicate that those relationships are not exclusive, or that they don't trust their partner to be clean, or other similar factors that may mean the relationships promote--rather than relieve--symptoms of depression. This instability might explain why the "usually" group scores so much higher than the "always" group, in contravention of the researchers' conclusions: the women who usually (but not always) use condoms are more likely to be in unreliable and/or stressful relationships, while those that always use them may be in settled, committed and secure relationship but choose not to use the pill (ie, for medical reasons). This scenario might be particularly prevalent in this sample population.

In order to accept the causal connection put forward by the authors, we have to believe that unprotected heterosexual intercourse results in a sufficient quantity of biological compounds in the female bloodstream that work to relieve symptoms of depression that might otherwise occur. While science has resolved that semen contains hormones and other compounds that are measurable in a woman's bloodstream after sex, the causal mechanism between the presence of these compounds and anti-depression is not established.

As such there are unresolved steps between cause and effect in this study. The ideal remedy would be to isolate the chemicals in semen that are absorbed into the blood and perform a double-blind experiment that injects these compounds (or a placebo) into a population to see if happiness improves. This makes the assumption that the chemicals even CAN be isolated and injected in the right quantities to perfectly simulate bloodstream conditions after unprotected sex, so simpler alternative would be a similar trial with application of semen or placebo to the vagina. This raises obvious practical and ethical concerns, which could perhaps be ameliorated with donors that have been screened for sterility (via vasectomy, and assuming sperm themselves are not a contributing factor) and venereal disease. Of course, this would eliminate any beneficial effect that might derive from the act of sex itself (ie, endogenous hormonal release), but that would isolate if it is, in fact, semen alone that prevents depression in women.