



Written by [James Heiser](#) on October 7, 2010

The Effect of “The Pill” on Brain Development

Fifty years after the Food and Drug Administration approved the use of oral contraceptives, a scientific study has documented the changes in the brain chemistry which “the Pill” causes in the women who take it.

From the time when they were first approved by the FDA, oral contraceptives (and birth control, in general) were opposed by [various Christian denominations](#) on ethical grounds, and [high doses](#) in the early years after FDA approval led to numerous medical problems, including depression, blood clots and strokes. Debates over the ethics of contraception will no doubt continue, but a new study purportedly documenting the deleterious emotional and mental effects of “the Pill” will no doubt influence such discussions. [As PopSci.com reports](#):



The pill turned 50 this year, and it has gone through many iterations since the Food and Drug Administration gave the pharmaceutical company G.D. Searle a green light to market the first oral contraceptive on June 23, 1960. Drug companies continually roll out contraceptives containing lower doses of hormones and entailing fewer side effects. But women who have gone on hormones can point to the effects that have stubbornly endured: moodiness, depression, decreased libido. (This last one makes some birth control pills perversely effective. Not only do they protect you from pregnancy if you do have sex, they also zap your desire to have sex in the first place — and turn you into an unstable mess, which may in turn zap your partner’s interest in sex.) But believe it or not, we still know very little about the consequences of taking daily hormones on a woman’s brain.

That is changing, say Craig H. Kinsley and Elizabeth A. Meyer in *Scientific American*. They point to a recent study in the journal *Brain Research* comparing the brains of women on birth control pills with brains of other women and men. When the study’s authors examined high-resolution images of participants’ brains, they found the women on hormones showed more matter in some areas of the brain, including the prefrontal cortex, which is associated with cognitive activities like decision-making.

The study has demonstrated an increase in the amount of gray matter in the brains of women — a fact which will, no doubt, generate a great deal of lowbrow humor, so to speak. Kinsley and Meyer are quick to demonstrate that such a change in the structure of a woman’s brain is not necessarily “more of a good thing.” [As the two authors wrote in *Scientific American*](#),

Does that increased gray matter translate into enhanced performance? It is not clear. Research



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into the hormonal regulation of cognition is extremely complicated. As [Belinda] Pletzer mentions, human MRI studies have revealed that these areas are associated with spatial navigation abilities. Other work suggests that hippocampal-dependent spatial memory is enhanced by higher levels of estrogen. Under some conditions, however, estrogens have no effect or can even impair performance in rats. ...

The brain works like a neural beehive; the proper coordinated functioning of groups of tasked neurons are [sic] important to successfully accomplish a variety of mental tasks — even the sensory processing and motor coordination needed for something as simple as picking up a hot cup of coffee without scalding oneself. Again, we do not know whether this increased gray matter translates into better or worse performance, but there likely is little good about treating a woman's brain like a spongy accordion.

That comment ought to win some sort of prize for most disturbing mental picture of the day, but Kinsley and Meyer have a point. The demographic effects of the widespread use of oral contraceptives have been documented. Now science is providing a better understanding — perhaps 50 years too late — of what “the Pill” may be doing to not only the future of our civilization, but the immediate future of those who are ingesting it. As Kinsley and Meyer observe:

The possibility that an accepted form of chemical contraception has the ability to alter the gross structure of the human brain is a cause for concern, even if the changes seem benign — for the moment. In any event, women need to have all of the medical and now, neurobiological, information they can use in informing their personal contraceptive decisions. Like the rest of life, and like the steroid choices made by those ballplayers, there are costs and benefits. The benefits are well established; the costs, however, are still coming to light.



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