

Can monogamy undermine intelligence?

March 7 2014, by Rob Brooks



Drosophila melanogaster

Yes. At least over 100 generations in *Drosophila melanogaster* vinegar flies.

"Male [cognitive performance](#) declines in the absence of sexual selection" proclaim Brian Hollis and Tadeusz Kawecki in the title of [a paper](#) out this week in *Proceedings of the Royal Society of London B*.

It's the kind of experiment I love to see done – in somebody else's lab. Set up some populations (lines) of a fast-breeding animal. Let some lines compete for mates but impose strict life-long monogamy on the other lines. Repeat. Then, a couple of years down the line, if all goes well,

measure various traits you predict will be affected by the presence (competition) or absence (monogamy) of sexual selection.

Normally, monogamous lines end up more productive. When there is no advantage to males of jostling for dominance over one another or competing frantically for female attention, the fittest males are usually those that stay alive and don't harm the females. But in lines where males have to compete with one another, females often end up collateral damage of the robust competition between males and even the chemical warfare between their [ejaculates](#).

But this particular paper looked at male smarts.

Put a male vinegar fly into a vial with one receptive and a few non-receptive females, and he will court them all. How quickly he realises which female he should be courting can be used as a measure of his mating savvy.

No surprises that *this* measure of smarts declined after 100 generations of enforced monogamy. Each monogamous line male comes from a long line of male flies who never had to decide which female to court.

But it turns out that males from monogamous lines were also much slower to learn to associate a particular smell with the likelihood of their vial being shaken (a nasty thing for a fly to endure). So, it seems there's some kind of general decline in cognitive performance in those lines where monogamy has been enforced for 100 generations.

Sexual selection for smarts

It's a pretty neat finding from a purely genetic and evolutionary point of view. That removing the normally hectic competition among males (by enforcing monogamy) to find, court and sometimes coerce female flies

leads to the withering of cognitive performance reveals the role of sexual competition and mate choice in the evolution of cognitive capacity.

Of course the *Drosophila* study says very little directly about human intelligence. It's value – apart from the discipline-specific genetic issues it addresses – is the clean experimental evidence it provides that sexual selection can favour the evolution of cognitive performance.

But this evidence cannot help but stir human curiosity. To what extent do we owe our much-celebrated human intelligence to sexual selection?

In [The Mating Mind](#), evolutionary psychologist Geoffrey Miller made the intriguing case that we owe much of human intelligence to the never-ending competition to out-compete our rivals in love and to find, court, keep and even manipulate potential mates. In the past decade or so, support for Miller's hypothesis has accumulated from a variety of sources.

Does this mean we're getting dumber?

Ever since Darwin gave us a viable process – natural selection – by which evolution occurs, some thinkers have fretted about whether people are getting dumber. In 2012 I wrote about one such argument in which Stanford geneticist [Gerald R. Crabtree](#) lamented that humanity is "almost certainly" losing its superior intellectual and emotional capacities.

Such worries seem to come from a misplaced nostalgia about the purifying nature of natural selection in the past. The idea that back-in-the-day, those of below average intelligence fell victim to lions, wolves or starvation. But modern human institutions, by mollycoddling the intellectually weak, are somehow undermining our collective genetic

intelligence.

It's the kind of argument one might expect to find in a 21st Century tabloid lamenting the rise of the [welfare state](#). But it's [not too far from Plato](#) either.

Coming from exactly this position, [Herbert Spencer](#) mangled Darwin's idea of natural selection into the pithy but hopelessly wrong notion of "survival of the fittest". When Spencer co-opted natural selection to substantiate laissez-faire capitalism and oppose the "poor laws", he diminished evolutionary thinking in a way that it has never quite shaken.

Likewise, Francis Galton drew on the work of his cousin – Charles Darwin – to argue that governments protecting the weak and infirm thwart natural selection's role in improving humanity. In so doing he gave us several important statistical concepts, including correlation, regression to the mean. And he extended it to suggestions for action that initiated [modern eugenics](#), another shameful perversion of evolutionary thinking.

The idea that [human intelligence](#) is on a slippery evolutionary slope lubricated by the protections societies provide to their less fortunate or well-endowed citizens has always been a dangerous one. But while Spencerian survival of the fittest doesn't hold as much cachet as it once did, I am still often asked by well-meaning readers whether an apparent decoupling between intelligence and reproduction is leading us up the evolutionary garden path.

The questioners seem propelled by the same intuition that had people giggling at the band [Harvey Danger's](#) 1997 observation that "only stupid people are breeding". It's an impulse that fuels much of the prurient interest in and sneering about shows like [Maury](#) or [Jersey Shore](#).

It would be impossible to replicate the *Drosophila* experiment in humans. Randomly assigning individuals to life-long total monogamy for generation after generation is a fate, once you think of it, far worse than it even sounds. Hopefully the mistakes governments made with eugenics have taken half-baked social engineering programs of this nature off the table.

Modern civilisation has – thank goodness – eliminated many of the ghastly ways in which our ancestors could die. And that has dampened [natural selection](#) on survival. But sexual selection is *always* happening. And much of sexual selection's power comes from the fact that humans *aren't* life-long exclusive monogamists.

People compete for status and wealth with which to attract mates, they do the most outlandish things to get noticed and they engage in the most elaborate forms of persuasion to court and seduce their mates. Either to find somebody to settle down with, or to find another, or another. These are all expressions of intelligence, and while smarts don't always win out, they usually help.

In fact, Mark Roeder, in his new book [Unnatural Selection: Why the Geeks Will Inherit the Earth](#), argues that the anthropocene has seen intelligence eclipse strength vigour as determinants of success. If that is the case, then [sexual selection](#) may well ensure that 100 generations – say 2,500 years – from now, humans will have evolved to be much, much smarter than they are today.

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