



“Suicide removes one person survivors, the pain lasts for years.”

Rachel Pruchno, Ph.D.

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Scents and Sensibility

"Sexual chemistry" is more than just a way of talking about heated attraction. Subtle chemical keys actually help determine who we fall for. But here comes news that our lifestyles may unwittingly undermine our natural sex appeal.

By Elizabeth Svoboda, published on January 01, 2008 - last reviewed on March 27, 2014

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Psychologists Rachel Herz and Estelle Campenni were just getting to know each other, swapping stories about their lives over coffee, when Campenni confided something unexpected: She was living proof, she said, of love at first smell. "I knew I would marry my husband the minute I smelled him," she told Herz. "I've always been into smell, but this was different; he really smelled good to me. His scent made me feel safe and at the same time turned on—and I'm talking about his real body smell, not cologne or soap. I'd never felt like that from a man's smell before. We've been married for eight years now and have three kids, and his smell is always very sexy to me."

Everyone knows what it's like to be powerfully affected by a partner's smell—witness men who bury their noses in their wives' hair and women who can't stop sniffing their boyfriends' T-shirts. And couples have long testified to the ways scent-based chemistry affects their relationships. "One of the most common things women tell marriage counselors is, 'I can't stand his smell,'" says Herz, the author of *The Scent of Desire*.

Sexual attraction remains one of life's biggest mysteries. We might say we go for partners who are tall and thin, love to cook, or have a mania for exercise, but when push comes to shove, studies show, the people we

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actually end up with possess few of the traits we claim to want. Some researchers think scent could be the hidden cosmological constant in the sexual universe, the missing factor that explains who we end up with. It may even explain why we feel "chemistry"—or "sparks" or "electricity"—with one person and not with another.

Physical attraction itself may literally be based on smell. We discount the importance of scent-centric communication only because it operates on such a subtle level. "This is not something that jumps out at you, like smelling a good steak cooking on the grill," says Randy Thornhill, an evolutionary psychologist at the University of New Mexico. "But the scent capability is there, and it's not surprising to find smell capacity in the context of sexual behavior." As a result, we may find ourselves drawn to the counter attendant at the local drugstore, but have no idea why—or, conversely, find ourselves put off by potential dating partners even though they seem perfect on paper.

Though we may remain partially oblivious to scent signals we're sending and receiving, new research suggests that we not only come equipped to choose a romantic partner who smells good to us, but that this choice has profound biological implications. As we act out the complex rituals of courtship, many of them inscribed deep in our brain, scent-based cues help us zero in on optimal partners—the ones most likely to stay faithful to us and to create healthy children with us.

At first blush, the idea of scent-based attraction might seem hypothetical and ephemeral, but when we unknowingly interfere with the transmission of subtle olfactory messages operating below the level of conscious awareness, the results can be both concrete and devastating. When we disregard what our noses tell us, we can find ourselves mired in partnerships that breed sexual discontent, infertility, and even—in extreme cases—unhealthy offspring.

The Scent of Desire

When you're turned on by your partner's scent, taking a deep whiff of his chest or the back of her neck feels like taking a powerful drug—it's an instant flume ride to bliss, however momentary. Research has shown that we use scent-based signaling mechanisms to suss out compatibility. Claus Wedekind, a biologist at the University of Lausanne in Switzerland, created Exhibit A of this evidence by giving 44 men new T-shirts and instructing them to wear the shirts for two straight nights. To ensure that the sweat collecting on the shirts would remain "odor-neutral," he supplied the men with scent-free soap and aftershave.

After the men were allowed to change, 49 women sniffed the shirts and specified which odors they found most attractive. Far more often than chance would predict, the women preferred the smell of T-shirts worn by men who were immunologically dissimilar to them. The difference lay in the sequence of more than 100 immune system genes known as the MHC, or major histocompatibility complex. These genes code for proteins that help the immune system recognize pathogens. The smell of their favorite shirts also reminded the women of their past and current boyfriends, suggesting that MHC does indeed influence women's dating decisions in real life.



Women's preference for MHC-distinct mates makes perfect sense from a biological point of view. Ever since ancestral times, partners whose immune systems are different have produced offspring who are more disease-resistant. With more immune genes expressed, kids are buffered against a wider variety of pathogens and toxins.

But that doesn't mean women prefer men whose MHC genes are most different from theirs, as University of Chicago evolutionary biologist Martha McClintock found when she performed a T-shirt study similar to Wedekind's. Women are not attracted to the smell of men with whom they had no MHC genes in common. "This might be a case where you're protecting yourself against a mate who's too similar or too dissimilar, but there's a middle range where you're OK," McClintock says.

Women consistently outperform men in smell sensitivity tests, and they also make greater time and energy sacrifices on their children's behalf than men do—in addition to bearing offspring, they look after them most of the time. These factors may explain why women are more discriminating in sniffing out MHC compatibility.

Men are sensitive to smell as well, but because women shoulder a greater reproductive burden, and are therefore choosier about potential mates, researchers are not surprised to find that women are also more discriminating in sniffing out MHC compatibility.

Unlike, say, blood types, MHC gene complements differ so much from one person to the next that there's no obvious way to reliably predict who's MHC-compatible with whom. Skin color, for instance, isn't much help, since groups of people living in different areas of the world might happen to evolve genetic resistance to some of the same germs. "People of different ethnicities can have similar profiles, so race is not a good predictor of MHC dissimilarity," Thornhill says.

And because people's MHC profiles are as distinct as fingerprints—there are thousands of possible gene combinations—a potential sex partner who smells good to one woman may completely repel another. "There's no Brad Pitt of smell," Herz says. "Body odor is an external manifestation of the immune system, and the smells we think are attractive come from the people who are most genetically compatible with us." Much of what we vaguely call "sexual chemistry," she adds, is likely a direct result of this scent-based compatibility.

Typically, our noses steer us in the right direction when it comes to picking a reproductively compatible partner. But what if they fail us and we wind up with a mate whose MHC profile is too similar to our own? Carol Ober, a geneticist at the University of Chicago, explored this question in her studies of members of the Hutterite religious clan, an Amish-like closed society that consists of some 40,000 members and extends through the rural Midwest. Hutterites marry only other members of their clan, so the variety in their gene pool is relatively low. Within these imposed limits, Hutterite women nevertheless manage to find partners who are MHC-distinct from them most of the time.

The few couples with a high degree of MHC similarity, however, suffered

higher rates of miscarriage and experienced longer intervals between pregnancies, indicating more difficulty conceiving. Some scientists speculate that miscarriages may be the body's way of curtailing investment in a child who isn't likely to have a strong immune system anyway.

What's more, among heterosexual couples, similar MHC profiles spell relational difficulty, Christine Garver-Apgar, a psychologist at the University of New Mexico, has found. "As the proportion of MHC alleles increased, women's sexual responsiveness to their partners decreased, and their number of sex partners outside the relationship increased," Garver-Apgar reports. The number of MHC genes couples shared corresponded directly with the likelihood that they would cheat on one another; if a man and woman had 50 percent of their MHC alleles in common, the woman had a 50 percent chance of sleeping with another man behind her partner's back.

The Divorce Pill?

Women generally prefer the smell of men whose MHC gene complements are different from theirs, setting the stage for the best biological match. But Wedekind's T-shirt study revealed one notable exception to this rule: women on the birth-control pill. When the pill users among his subjects sniffed the array of pre-worn T-shirts, they preferred the scent of men whose MHC profiles were similar to theirs—the opposite of their pill-free counterparts.

This dramatic reversal of smell preferences may reflect the pill's mechanism of action: It prevents the ovaries from releasing an egg, fooling the body into thinking it's pregnant. And since pregnancy is such a vulnerable state, it seems to activate a preference for kin, who are genetically similar to us and likely to serve as protectors. "When pregnant rodent females are exposed to strange males, they can spontaneously abort," Herz says. "The same may be true for human females." What's more, some women report a deficit in sex drive when they take the pill, a possible consequence of its pregnancy-mimicking function.

The tendency to favor mates with similar MHC genes could potentially hamper the durability of pill users' relationships in the long term. While Herz shies away from dubbing hormonal birth control "the divorce pill," as a few media outlets have done in response to her theories, she does think the pill jumbles women's smell preferences. "It's like picking your cousins as marriage partners," Herz says. "It constitutes a biological error." As a result, explains Charles Wysocki, a psychobiologist at Florida State University, when such a couple decides to have children and the woman stops taking birth control, she may find herself less attracted to her mate for reasons she doesn't quite understand. "On a subconscious level, her brain is realizing a mistake was made—she married the wrong guy," he says.

"Some couples' fertility problems may be related to the pill-induced flip-flop in MHC preferences," Garver-Apgar adds. No one has yet collected data to indicate whether the pill has created a large-scale problem in compatibility. Still, Herz recommends that women seeking a long-term partner consider alternative birth control methods, at least until they get to know their potential significant other well and are sure they like the way he smells. "If you're looking for a man to be the father of your child," she says, "go off

the pill before you start your search."

If you were on the pill when you met your current partner, the situation is more complicated. Once a relationship has progressed to long-term commitment, says Herz, a woman's perception of her partner's smell is so intertwined with her emotional reaction to him that it could be difficult for her to assess his scent as if he were a stranger. "If she's in love, he could smell like a garbage can and she'd still be attracted to him."

Crossed Signals

The pill subverts a woman's ability to sniff out a compatible mate by causing her to misinterpret the scent messages she receives. But it may warp olfactory communication channels in the other direction as well, distorting the signals she sends—and making her seem less appealing to men, an irony given that women typically take the pill to boost their appeal in a partner's eyes.

Geoffrey Miller, an evolutionary psychologist at the University of New Mexico and author of *The Mating Mind*, noticed the pill's connection to waning male desire while studying a group of exotic dancers—women whose livelihoods depend on how sexually appealing they are to male customers. Non-pill-using dancers made about 50 percent more in tips than dancers on oral contraceptives. In other words, women who were on the pill were only about two-thirds as sexy as women who weren't.

Why were the pill-takers in the study so much less attractive to men? "Women are probably doing something unconsciously, and men are responding to it unconsciously," says Miller. "We just don't know whether it has to do with a shift in their psychology, their tone of voice, or if it's more physical, as in the kind of pheromones they're putting out."

The biggest earners in Miller's study were non-pill-using dancers at the time of ovulation. Other studies have shown that men rate women as smelling best when they are at the most fertile point of their menstrual cycles, suggesting that women give off scent-based signals that broadcast their level of fecundity. "The pill might be producing cues that a woman is in the early stage of pregnancy, which would not tend to elicit a lot of male sexual interest," Miller says. "It makes sense for men to be sensitive to that and for them not to feel the same chemistry with the woman."

Drowning in Fragrance

The pill isn't the only way we might confound sexual chemistry. Every day, far more people may be subverting their quest for love with soap and bottled fragrances. In ancestral times, smelling ripe was just a fact of life, absent hot showers and shampoo. This held true well into the 19th century, when the miasma of body odor in Parisian streets grew so thick that it was dubbed "The Great Stink of 1880." Back when a person's scent could waft across a room, a mere handshake could provide valuable information about attraction.

Since the 20th-century hygiene revolution and the rise of the personal-care industry, however, companies have pitched deodorants, perfumes, and colognes to consumers as the epitome of sex appeal. But instead of

furthering our quest to find the perfect mate, such products may actually derail it, say researchers, by masking our true scent and making it difficult for prospects to assess compatibility. "Humans abuse body smell signals by hiding them, masking them, putting on deodorant," says Devendra Singh, a psychologist at the University of Texas. "The noise-to-signal ratio was much better in primitive society."

Miller argues that modern hygiene may be such an impediment to sexual signaling that it could explain why so many people in our culture get so physical so fast. "Hunter-gatherers didn't have to do a lot of kissing, because they could smell each other pretty clearly from a few feet away," Miller says. "With all the showering, scents, and soap, we have to get our noses and mouths really up close to people to get a good idea of their biochemistry. People are more motivated to do a lot more kissing and petting, to do that assessment before they have sex." In other words, the need to smell our mates—and the comparative difficulty of doing so in today's environment of perfumes and colognes—may actually be driving the sexual disinhibition of modern society.

Other scientists counter that odor detection is a bit subtler. For one thing, it's possible we select store-bought scents to complement our natural odorprints, rather than mask them entirely: One study found that people with similar MHC profiles tend to go for the same colognes. And Garver-Apgar points out that in spending hours together each day, partners have ample opportunity to experience each other sans artificial scents. "Once you're in a close enough relationship," she says, "you're going to get a real whiff at some point."

Scents and Sensibility

There's no way to know whether couples who shell out thousands of dollars to fertility clinics—and those who struggle to make a relationship work because "the chemistry just isn't there"—suffer MHC incompatibility. We might never know, since a multitude of factors contributes to every reproductive and romantic outcome. But we can, at least, be cognizant of the importance of natural scent.

"Scent can be a deal breaker if it's not right, just like someone being too stupid or unkind or short," says Miller. Nevertheless, smell isn't the be-all and end-all of attraction, but one of a constellation of important factors. Armed with knowledge of how scent-based attraction operates, we have some power to decide how much priority we want to accord it. Is it more important to be with the partner who smells amazing and with whom you have great chemistry, or with the one who may not attract you quite as much on a physical level but is honest and reliable?

"People tend to treat this as an either-or situation: Either we're completely driven by pheromones, like moths, or we're completely in charge of our own destiny," University of Chicago psychologist McClintock says. "But it's not a wild idea that both factors are involved." While people like Estelle Campenni have reaped untold benefits by trusting their scent impressions, it's ultimately up to us how highly we value what our noses tell us.—*Elizabeth Svoboda*

Follow Your Nose

How to put your nose to work in choosing a partner—or evaluating an existing one.

Think twice about opting for the pill if you're seeking a long-term partner. The first few weeks of a relationship are critical to assessing compatibility, so make sure your nose is up to the task.

Try a fragrance-free week. Eliminate factors that could throw your nostrils off. Have your partner set aside scented shower gels in favor of fragrance-free soap, nix the cologne, and use only unscented deodorant.

Keep smell's importance in context. If you sometimes find your partner's scent off-putting, don't panic; it doesn't necessarily mean fertility issues are in your future. Connections between MHC compatibility and conception problems have yet to be confirmed in large-scale population studies, so don't plunk down big bucks for MHC testing at this point.

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