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Affairs of the Lips: Why We Kiss

Researchers are revealing hidden complexities behind the simple act of kissing, which relays powerful messages to your brain, body and partner

By Chip Walter

When passion takes a grip, a kiss locks two humans together in an exchange of scents, tastes, textures, secrets and emotions. We kiss furtively, lasciviously, gently, shyly, hungrily and exuberantly. We kiss in broad daylight and in the dead of night. We give ceremonial kisses, affectionate kisses, Hollywood air kisses, kisses of death and, at least in fairytales, pecks that revive princesses.

Lips may have evolved first for food and later applied themselves to speech, but in kissing they satisfy different kinds of hungers. In the body, a kiss triggers a cascade of neural messages and chemicals that transmit tactile sensations, sexual excitement, feelings of closeness, motivation and even euphoria.

Not all the messages are internal. After all, kissing is a communal affair. The fusion of two bodies dispatches communiqués to your partner as powerful as the data you stream to yourself. Kisses can convey important information about the status and future of a relationship. So much, in fact, that, according to recent research, if a first kiss goes bad, it can stop an otherwise promising relationship dead in its tracks.

Some scientists believe that the fusing of lips evolved because it facilitates mate selection. "Kissing," said evolutionary psychologist Gordon G. Gallup of the University at Albany, State University of New York, last September in an interview with the BBC, "involves a very complicated exchange of information—olfactory information, tactile information and postural types of adjustments that may tap into underlying evolved and unconscious mechanisms that enable people to make determinations ... about the degree to which they are genetically incompatible." Kissing may even reveal the extent to which a partner is willing to commit to raising children, a central issue in long-term relationships and crucial to the survival of our species.

Satisfying Hunger

Whatever else is going on when we kiss, our evolutionary history is embedded within this tender, tempestuous act. In the 1960s British zoologist and author Desmond Morris first proposed that kissing might have evolved from the practice in which primate mothers chewed food for their young and then fed them mouth-to-mouth, lips puckered. Chimpanzees feed in this manner, so our hominid ancestors probably did, too. Pressing outturned

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lips against lips may have then later developed as a way to comfort hungry children when food was scarce and, in time, to express love and affection in general. The human species might eventually have taken these proto-parental kisses down other roads until we came up with the more passionate varieties we have today.

Silent chemical messengers called pheromones could have sped the evolution of the intimate kiss. Many animals and plants use pheromones to communicate with other members of the same species. Insects, in particular, are known to emit pheromones to signal alarm, for example, the presence of a food trail, or sexual attraction.

Whether humans sense pheromones is controversial. Unlike rats and pigs, people are not known to have a specialized pheromone detector, or vomeronasal organ, between their nose and mouth [see "Sex and the Secret Nerve," by R. Douglas Fields; *Scientific American Mind*, February/March 2007]. Nevertheless, biologist Sarah Woodley of Duquesne University suggests that we might be able to sense pheromones with our nose. And chemical communication could explain such curious findings as a tendency of the menstrual cycles of female dormitory mates to synchronize or the attraction of women to the scents of T-shirts worn by men whose immune systems are genetically compatible with theirs. Human pheromones could include androstenol, a chemical component of male sweat that may boost sexual arousal in women, and female vaginal hormones called copulins that some researchers have found raise testosterone levels and increase sexual appetite in men.

If pheromones do play a role in human courtship and procreation, then kissing would be an extremely effective way to pass them from one person to another. The behavior may have evolved because it helps humans find a suitable mate—making love, or at least attraction, quite literally blind.

We might also have inherited the intimate kiss from our primate ancestors. Bonobos, which are genetically very similar to us (although we are not their direct descendants), are a particularly passionate bunch, for example. Emory University primatologist Frans B. M. de Waal recalls a zookeeper who accepted what he thought would be a friendly kiss from one of the bonobos, until he felt the ape's tongue in his mouth!

Good Chemistry

Since kissing evolved, the act seems to have become addictive. Human lips enjoy the thinnest layer of skin on the human body, and the lips are among the most densely populated with sensory neurons of any body region. When we kiss, these neurons, along with those in the tongue and mouth, rocket messages to the brain and body, setting off delightful sensations, intense emotions and physical reactions.

Of the 12 or 13 cranial nerves that affect cerebral function, five are at work when we kiss, shuttling messages from our lips, tongue, cheeks and nose to a brain that snatches information about the temperature, taste, smell and movements of the entire affair. Some of that information arrives in the somatosensory cortex, a swath of tissue on the surface of the brain that represents tactile information in a map of the body. In that map, the lips loom large because the size of each represented body region is proportional to the density of its nerve endings.

Kissing unleashes a cocktail of chemicals that govern human stress, motivation, social bonding and sexual stimulation. In a new study, psychologist Wendy L. Hill and her student Carey A. Wilson of Lafayette College compared the levels of two key hormones in 15 college male-female couples before and after they kissed and before and after they talked to each other while holding hands. One hormone, oxytocin, is involved in social bonding, and the other, cortisol, plays a role in stress. Hill and Wilson predicted that kissing would boost levels of oxytocin, which also influences social recognition, male and female orgasm, and childbirth. They expected this effect to be particularly pronounced in the study's females, who reported higher levels of intimacy in their relationships. They also forecast a dip in cortisol, because kissing is presumably a stress reliever.

But the researchers were surprised to find that oxytocin levels rose only in the males, whereas it decreased in the females, after either kissing or talking while holding hands. They concluded that females must require more than a kiss to feel emotionally connected or sexually excited during physical contact. Females might, for example, need a more romantic atmosphere than the experimental setting provided, the authors speculate. The study, which Hill and Wilson reported in November 2007 at the annual meeting of the Society for Neuroscience, revealed that cortisol levels dropped for both sexes no matter the form of intimacy, a hint that kissing does in fact reduce stress.

To the extent that kissing is linked to love, the act may similarly boost brain chemicals associated with pleasure,

euphoria and a motivation to connect with a certain someone. In 2005 anthropologist Helen Fisher of Rutgers University and her colleagues reported scanning the brains of 17 individuals as they gazed at pictures of people with whom they were deeply in love. The researchers found an unusual flurry of activity in two brain regions that govern pleasure, motivation and reward: the right ventral tegmental area and the right caudate nucleus. Addictive drugs such as cocaine similarly stimulate these reward centers, through the release of the neurotransmitter dopamine. Love, it seems, is a kind of drug for us humans.

Kissing has other primal effects on us as well. Visceral marching orders boost pulse and blood pressure. The pupils dilate, breathing deepens and rational thought retreats, as desire suppresses both prudence and self-consciousness. For their part, the participants are probably too enthralled to care. As poet e. e. cummings once observed: "Kisses are a better fate / than wisdom."

Litmus Test

Although a kiss may not be wise, it can be pivotal to a relationship. "One dance," Alex "Hitch" Hitchens says to his client and friend in the 2005 movie *Hitch*, "one look, one kiss, that's all we get ... one shot, to make the difference between 'happily ever after' and, 'Oh? He's just some guy I went to some thing with once.' "

Can a kiss be that powerful? Some research indicates it can be. In a recent survey Gallup and his colleagues found that 59 percent of 58 men and 66 percent of 122 women admitted there had been times when they were attracted to someone only to find that their interest evaporated after their first kiss. The "bad" kisses had no particular flaws; they simply did not feel right—and they ended the romantic relationship then and there—a kiss of death for that coupling.

The reason a kiss carries such weight, Gallup theorizes, is that it conveys subconscious information about the genetic compatibility of a prospective mate. His hypothesis is consistent with the idea that kissing evolved as a courtship strategy because it helps us rate potential partners.

From a Darwinian perspective, sexual selection is the key to passing on your genes. For us humans, mate choice often involves falling in love. Fisher wrote in her 2005 paper that this "attraction mechanism" in humans "evolved to enable individuals to focus their mating energy on specific others, thereby conserving energy and facilitating mate choice—a primary aspect of reproduction."

According to Gallup's new findings, kissing may play a crucial role in the progression of a partnership but one that differs between men and women. In a study published in September 2007 Gallup and his colleagues surveyed 1,041 college undergraduates of both sexes about kissing. For most of the men, a deep kiss was largely a way of advancing to the next level sexually. But women were generally looking to take the relationship to the next stage emotionally, assessing not simply whether the other person would make a first-rate source of DNA but also whether he would be a good long-term partner.

"Females use [kissing] ... to provide information about the level of commitment if they happen to be in a continuing relationship," Gallup told the BBC in September. The locking of lips is thus a kind of emotional barometer: the more enthusiastic it is, the healthier the relationship.

Because women need to invest more energy in producing children and have a shorter biological window in which to reproduce, they need to be pickier about whom they choose for a partner—and they cannot afford to get it wrong. So, at least for women, a passionate kiss may help them choose a mate who is not only good at fathering children but also committed enough to stick around and raise them.

That said, kissing is probably not strictly necessary from an evolutionary point of view. Most other animals do not neck and still manage to produce plenty of offspring. Not even all humans kiss. At the turn of the 20th century Danish scientist Kristoffer Nyrop described Finnish tribes whose members bathed together but considered kissing indecent. In 1897 French anthropologist Paul d'Enjoy reported that the Chinese regard mouth-to-mouth kissing to be as horrifying as many people deem cannibalism to be. In Mongolia some fathers do not kiss their sons. (They smell their heads instead.)

In fact, up to 10 percent of humanity does not touch lips, according to human ethology pioneer Irenäus Eibl-Eibesfeldt, now head of the Max-Planck-Society Film Archive of Human Ethology in Andechs, Germany, writing in his 1970 book, *Love and Hate: The Natural History of Behavior Patterns*. Fisher published a similar figure in

1992. Their findings suggest that some 650 million members of the human species have not mastered the art of osculation, the scientific term for kissing; that is more than the population of any nation on earth except for China and India.

Lopsided Love

For those cultures that do kiss, however, osculation conveys additional hidden messages. Psychologist Onur Güntürkün of the Ruhr-University of Bochum in Germany recently surveyed 124 couples kissing in public places in the U.S., Germany and Turkey and found that they tilted their heads to the right twice as often as to the left before their lips touched. Right-handedness cannot explain this tendency, because being right handed is four times more common than is the act of kissing on the right. Instead Güntürkün suspects that right-tilted kissing results from a general preference that develops at the end of gestation and in infancy. This “behavioral asymmetry” is related to the lateralization of brain functions such as speech and spatial awareness.

Nurture may also influence our tendency to tilt to the right. Studies show that as many as 80 percent of mothers, whether right-handed or left-handed, cradle their infants on their left side. Infants cradled, face up, on the left must turn to the right to nurse or nuzzle. As a result, most of us may have learned to associate warmth and security with turning to the right.

Some scientists have proposed that those who tilt their heads to the left when they kiss may be showing less warmth and love than those who tilt to the right. In one theory, tilting right exposes the left cheek, which is controlled by the right, more emotional half of the brain. But a 2006 study by naturalist Julian Greenwood and his colleagues at Stranmillis University College in Belfast, Northern Ireland, counters this notion. The researchers found that 77 percent of 240 undergraduate students leaned right when kissing a doll on the cheek or lips. Tilting to the right with the doll, an impassive act, was nearly as prevalent among subjects as it was among 125 couples observed osculating in Belfast; they tilted right 80 percent of the time. The conclusion: right-kissing probably results from a motor preference, as Güntürkün hypothesized, rather than an emotional one.

Despite all these observations, a kiss continues to resist complete scientific dissection. Close scrutiny of couples has illuminated new complexities woven throughout this simplest and most natural of acts—and the quest to unmask the secrets of passion and love is not likely to end soon. But romance gives up its mysteries grudgingly. And in some ways, we like it like that.

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