

## The Psychology of Sexual Arousal

The processes by which males and females become sexually aroused are no longer considered a taboo concept of discussion in modern society. Scientists have discovered that the basis of sexual response lies in the brain and not just in the loins, specifically in the hypothalamus and other such areas. Research has also been conducted on the effects of brain damage on the sections of brain that are concerned with normal sexual response functioning. Sexual arousal is controlled both by certain brain areas and hormones, but those bodily functions would not even come into discussion if not for the environmental cues that can produce the state of sexual arousal in the first place. The body shows that it is indeed in a state of arousal by physical reactions to the output of those hormones in concordance with outside stimuli. In lecture, the events that occur in the hypothalamus were elaborated upon, and in this paper they will be touched on briefly. More importantly, what could potentially provoke those occurrences together with hormone release will be discussed. The body undergoes significant changes when sexually aroused. To understand stimuli's effect on sexual arousal, one must understand the physical changes that occur as well. Those changes would be difficult to understand if not for Master's and Johnson's Four Phases of Sexual Arousal.

In review, for males, the hormone that dominates sexual arousal and response is testosterone. It is produced by the adrenal gland and the testes. For females, that hormone is estradiol, which is secreted by the ovaries. The release of hormones primarily regulates the sexual drives of an individual. The hypothalamus contains a nucleus that is termed the sexually dimorphic nucleus. It is located in the medial preoptic area, and its growth is regulated by an aromatized form of testosterone. When lesioned, the medial

preoptic area has been shown to produce deficiencies in male sexual behavior (Ferris, Snowden, & King, et al. 2006). In contrast, when the female medial preoptic area is destroyed, the sexual behaviors are not eliminated. This leads researchers to conclude that the dimorphic nucleus in the medial preoptic area is extremely important to the motivational aspects of male sexual behavior (Pinel, 335).

The processes thus described in the brain have no importance unless connected to the genital structures through the endocrine system. The chemical changes in the brain that occur when a human has been aroused can be described using four stages of sexual response in the sexual organs. The sexual response in women includes four phases: Excitement, Plateau, Orgasm and Resolution. The Excitement Phase begins with vasocongestion. Lubrication of the vagina continues, called transduction. The tenting effect follows transduction, which is when the cervix and uterus pull up, making a large opening in the cervix. If the female has not produced offspring, the labia majora thicken and become flattened. If children have been produced, then there is enlargement of both labia majora and minora. This process may take from a few minutes to a few hours. In the Plateau Phase, breast size increases. The clitoris retracts behind the clitoral hood 1-3 minutes before orgasm. In the Orgasm Phase, vasocongestion in the pelvis creates an orgasmic platform in the lower third of the vagina, labia minor and the uterus. Vigorous contractions follow which produces a pleasurable orgasmic sensation. There is then a release of vasocongestion and muscle tension. In the Resolution Phase, the body returns to the pre excitement conditions.

The Excitement Phase in men is very short. It includes the erection, with testicle enlargement. The dartos and crematic muscles pull the testicles closer to the body to

avoid injury during thrusting. In the Plateau Phase, the glans of the penis increases in size, and a few drops of pre-ejaculatory fluid may appear on the head of the penis. In the Orgasm Phase, the orgasm and ejaculation do not always occur together. Ejaculation can occur in two stages. The first is when there are contractions in the vas deferens, seminal vesicles and prostate gland. The second is what leads to ejaculatory inevitability. This is the feeling that ejaculation can no longer be controlled. Semen is forced out of the urethra by muscle contractions. In the Resolution Phase, the glans of the penis decreases in size. It then goes into a refractory stage, which means that it cannot be re-stimulated to orgasm for a certain time period.

The environment plays an enormous role in sexual arousal. The sense of touch is the dominant sexual sense. Erogenous zones are where the body is the most sensitive to touch. These zones tend to make the body (male and female) the most aroused. Olfactory cues in the environment are the source of much inquiry for researchers. “Chemical or olfactory cues derived from female scent secretions are known to provide cues of the female’s reproductive status and are important in mediating male sexual behavior in marmosets and tamarins” (Ferris, Snowden, & King, et al. 2006). That same study found through the use of a spectrometer (which measures brain region activity) that the periovulatory odor significantly increased brain activity in the areas of the striatum, hippocampus, septum, periaqueductal gray, medial preoptic area and cerebellum, in comparison to ovariectomized monkey odor (Ferris, Snowden, & King, et al. 2006). In humans, sense of smell can either arouse or offend someone. For example, positive smells for men include lavender, pumpkin pie and donuts. For women, positive smells

include cucumber, and banana nut bread. Negative smells for women include cherries, and men's cologne.

Vision is also a very important sense for sexual arousal in concordance with viewing sexually arousing stimuli. A study conducted in 2002 by Arnow, Desmond & Banner et al. found that there were five areas in the brain that were associated with visual cues for sexual arousal. They are the right insula, the hypothalamus, the caudate nucleus, the putamen and Brodmann area. The insula is important because it has been linked to motor, vestibular and language functions, and lies close in proximity to the secondary somatosensory cortex (Arnow, Desmond & Banner, et al. 2002). Another study by Stoleru in 1999 found similar results when subjects compared sexually explicit film compared to comic film. There were five areas in this study as well that were more active during the sexually explicit stimuli than during the comic film: the inferior temporal cortex, the right orbitofrontal cortex, the right insula, and the right caudate nucleus. The testosterone level also sharply rose during the viewing of the sexually explicit film. The aforementioned studies were all based on the results from male subjects. Previous data gathered from brain injury patients with decreased sexual arousal leads researchers to believe that impairment is associated with difficulties forming and manipulating sexually arousing imagery (Crowe and Ponsford, 1999). Taste is a minor factor in sexual arousal. In terms of sounds, certain sounds may either irritate or arouse an individual.

Differences have been found between adolescent women and adult women regarding sexual activity and sexual interest in a study by Katz and Orr. Adolescent women were found to be less likely to engage in sexual intercourse than adult women.

However, the rarity of sexual intercourse among adolescents may explain the assumption that “sexual behavior is simply dependent on opportunity, likely to be impulsive and sporadic and therefore not subject to contraception or infection prevention” (Katz, 2005). Mood has also come into play in the differences between adolescent and adult women. Adolescents appear to be more likely to engage in sexual activity while in a negative state of mind while adults are more likely to engage during a positive mood.

In our society today, many different aspects of life contribute to the pressure of sexual activity and the use of drugs among adolescents. The previous study by Katz and Orr determined that the use of marijuana may also be considered to assess the frequency of sexual activity. Katz and Orr found that the use of marijuana in a certain day was associated with higher likelihood of sexual activity during that day. However, there was only a relationship found; the causation is still unknown. It may be that the use of marijuana causes increased sexual activity, sexual activity causes increased use of marijuana, or that they could be a communal lifestyle within adolescent sexual behaviors.

The male and female brains are similar in the way that the hypothalamus controls hormone regulation through the pituitary glands. It is vastly different in the ways that the connecting tracts are organized, and what hormones regulate which systems. Results from research using females as subjects are not as prominent in humans for several reasons. Women’s hormone cycles are not usually synchronous, and therefore are releasing different chemicals throughout the month. Also, positron emission scanning involves using a low dosage of radioactive markers, which could be dangerous for the fetus in an undiagnosed pregnancy (Stoleru, 1999). This may produce a methodological bias. The development of those systems in males and females is nearly exactly the same,

and research continues to discover new comparative details between the sexes. The structures of the brain between males and females are similar, but with most of the differences between males and females dependent on the type of stimuli that arouses those structures, the environment is allowed to take a bigger role in the particular sexual responses.

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