

Erotic Plasticity: Nature, Culture, Gender, and Sexuality
Roy F. Baumeister and Tyler Stillman

Baumeister, R. F. & Stillman, T. F. (2006). Nature, culture, and sex: Gender and erotic plasticity. In R.D. McAnulty & M.M. Burnette, *Sex and Sexuality* (Vol. 3). Westport, CT: Praeger Press.

Erotic plasticity is defined as the degree to which the sex drive is shaped by social, cultural, and situational factors. High plasticity means that the sex drive is highly amenable to such influences, whereas low plasticity suggests indifference or even immunity to such sources of influence.

All theories of sex strike some sort of balance between the influence of social and cultural factors and the influence of natural, biological factors. For example, the question of whether homosexuality is the result of biological influences (such as a gay gene) or social and cultural ones (such as having a clinging, intrusive mother) has come up over and over in every generation of theory, and there is still no definite answer. Most modern experts now accept that both types of causes play some role, so that any major sphere of sexual behavior reflects some combination of natural and cultural or social causes. Even so, different theories differ widely as to how much of each is important. Some theories heavily emphasize the influence of innate, genetic, hormonal, and other biological factors, whereas others concede only a preliminary and minimal role to those and focus mainly on social, cultural, and situational factors as decisive.

In that context, the degree of erotic plasticity reflects the degree to which culture should be emphasized over nature. If erotic plasticity is high, then nature is not all that important, and most of the variation in human behavior can be attributed to cultural and other social factors. If it is low, then behavior follows straight from genes and hormones, and the influence of culture is at best a peripheral factor. The question of plasticity thus lies at the heart of one of the most far-reaching and bitter debates in the field of sexuality theory. To be sure, it is possible to state the issue in a less antagonistic manner: High plasticity can be considered an adaptation by which nature makes creatures better able to adjust and change in response to meaningful experience.

The most discussed application of this concept concerns the possibility of gender differences. An article by Baumeister (2000) contended that a basic, fundamental difference is that female sexuality has higher erotic plasticity than male. In relative terms, this means that women's sexual responses and feelings are more affected by social, cultural, and situational factors, whereas male sexuality is relatively more shaped by genetic, hormonal, and other biological factors. The bulk of this article will focus on the question of gender differences in erotic plasticity.

Assuming that plasticity is not a strict constant quantity, then there is no single answer to the great and hotly debated question of nature versus nurture in sexuality. For some people, the sex drive would be a relatively fixed biological fact, whereas for others it would be subject to considerable influence from the social environment.

Value judgments also introduce a dimension of sensitive problems into debates about sexual behavior. We concur with the view that erotic plasticity is not an inherently evaluative dimension, in the sense that it is not clearly or a priori better to have high versus low plasticity. There might be small ways in which high or low plasticity is better,

but these largely cancel each other out, and for the most part it is not clearly better to be one or the other. However, the difference can be hugely influential in behavior, and failure to appreciate its importance can introduce deeply divisive or even offensive misunderstandings.

Ultimately, it may emerge that some individuals have higher erotic plasticity than others. At present there is no published scale available to assess these differences, but some researchers have begun discussions about creating one, and it is possible that after this work is published a trait scale may become available.

GENDER DIFFERENCES IN EROTIC PLASTICITY

At present the best established difference in erotic plasticity is between men and women. The evidence for this will be summarized in the next section. Women have higher erotic plasticity than men. This statement means that female sexuality will be more influenced by and more variable in response to social, cultural, and situational factors, as compared to male sexuality. The term plasticity is thus used only in the biological sense of being amenable to environmental influence and change. The second meaning of plasticity, as in artificiality or falseness, is not implied in any sense and not relevant to gender differences in sex drive.

A gender difference in erotic plasticity would lead to a group of other gender differences in sexual behavior, not to mention potentially making it harder for men and women to achieve an intuitive understanding of one another. Self-knowledge in the sexual realm would be more difficult for women than for men to achieve, insofar as women would be seeking to gain knowledge about a moving target, unlike men (see Vanweesenbeeck, Bekker & van Lenning, 1998). Women would generally show greater change in response to different social and cultural demands, and indeed adapting to new sexual rules or otherwise new contingencies should be easier for women than for men. In contrast, the greater plasticity might make women more gullible and susceptible to influence, and ultimately it might become easier to convince a woman than a man to engage in some sexual activity toward which the person was initially disinclined. In adjusting to marriage or other long-term relationships, women should be more willing than men to compromise in the sexual domain. Sexual decision-making ultimately should be more difficult and complex for women than for men, insofar as men can assume their responses and feelings are relatively constant and so they do not need to consider much about the specific circumstances in order to make a decision, whereas for a woman the nuances of meaning in the current situation may prove powerfully decisive.

There would also be implications for sex therapy. To be sure, one must recognize that each individual is unique and the special needs or problems of each individual must be recognized and understood before prescribing treatment. Still, by and large, there should be a general pattern such that different kinds of therapy will be differentially effective by gender. For women, sexual response depends on social and cultural factors, such as meaning, and so sex therapy would typically need to understand the subjective meanings and interpretations, along with their emotional implications, in order to treat sexual problems. For men, in contrast, sex is more of a physical and biological phenomenon, and so physiological treatments may be recommended as the first option in many cases. Hormonal treatments and other

physiological interventions should generally be more effective with men, whereas women may need “talking cure” insight-oriented interventions. In plainer terms, many men’s sexual problems will respond to purely physical treatments such as Viagra, but we should not expect sex therapy for women to be quite as physical or as simple.

EVIDENCE AND APPLICATIONS

This section will cover some of the phenomena that have been cited as relevant to the gender difference in erotic plasticity. The differences can be invoked as evidence to prove the thesis that women have higher erotic plasticity than men. It can also be seen as surveying the range of phenomena that will be different for men versus women as a result of women’s greater plasticity.

Do People Change Over Time?

The first set of applications is based on comparing people with themselves across time. High plasticity makes people prone to change as they encounter new or different circumstances. If men are relatively low in erotic plasticity, then their sexual patterns should remain essentially the same across their adult life, whereas the higher plasticity of women would make them more prone to change their sexual patterns and preferences as they move through different phases of adult life.

A first pattern, involving fluctuations in total amount of sexual activity, was noted in the original Kinsey reports (Kinsey, Pomeroy, & Martin, 1948; Kinsey et al., 1953). Kinsey and his colleagues noted a pattern in women’s sexual histories that was almost entirely absent in men’s histories. What they called “total outlet,” which meant the sum of all orgasms per week from any and all modes of stimulation, fluctuated much more widely among women than men. Thus, a woman might have a happy, busy, and energetic sex life with one partner, but upon losing that partner she might eschew all sexual activity for some months, then resume with a new partner. In contrast, if a man lost his main partner, he would typically make up the deficit with masturbation, casual partners, prostitutes, or other sources. These wide fluctuations in total sexual activity indicate a degree of plasticity that is much more common among women than men.

Converging evidence comes from studies of long-term sexual adjustment in marriage and through across the aging process. Husbands and wives typically agree that wives make more sexual adjustments than husbands in adapting to marriage (Ard, 1977). Studies of the impact of aging on sex typically show a broad reduction in total sex, reflecting an apparent waning of sexual interest as one grows old. One study that searched for exceptions did find some instances in which people had acquired new sexual interests or activities by age 60 that they had not had in their 20s, but these were mainly among women (Adams & Turner, 1985). Thus, a man’s sexual tastes seem to emerge early in life and remain fairly constant, whereas some women acquire new sexual interests at various points in adulthood, consistent with the view that women have higher erotic plasticity.

Changes in sexual orientation provide some of the most interesting (from both theoretical and practical perspectives) applications of erotic plasticity. People with low plasticity should presumably be quite fixed and unchanging in their category of desired sex partners, whereas higher plasticity would bring an openness to new partners. Multiple findings and studies suggest that women have higher plasticity in this regard.

For example, lesbians are more likely than gay males to have had heterosexual sex (Bart, 1993; Bell & Weinberg, 1978; Goode & Haber, 1977; Kinsey, Pomeroy, & Martin, 1948; Kinsey et al., 1953; Kitzinger & Wilkinson, 1995; Laumann et al., 1994; McCauley & Ehrhart, 1980; Rosario et al., 1996; Savin-Williams, 1990; Schäfer, 1976; Whisman, 1996), and they are also more likely to have heterosexual relationships even after having been exclusively gay for years (Rust, 1992). Circumstances that promote sexual experimentation, such as swinging (i.e., mate-swapping) parties, seem to induce a fair number of heterosexual women but hardly any heterosexual men to experiment with same-gender sex (Smith & Smith, 1970; O'Neill & O'Neill, 1970; Fang, 1976). Likewise, some evidence suggests that there is more consensual same-gender activity in women's than in men's prisons, and women seem to make the transition from an exclusively heterosexual orientation prior to their imprisonment, to homosexual while in prison, and then back to heterosexual upon release from prison much more smoothly and easily than men (Gagon & Simon, 1968; Giallombardo, 1966; Ward & Kassebaum, 1965). All of this supports the view of greater plasticity in sexual orientation among women.

Impact of Social and Cultural Factors

A second way to search for evidence about plasticity is to consider specific sociocultural variables and see how much effect they have. If women have higher plasticity than men, then social and cultural factors should generally produce bigger effects on women than on men.

Education and religion are two of the most powerful and important socializing influences in most cultures. The National Health and Social Life Survey (NHSL; Laumann et al., 1994) is widely regarded as the methodologically best large-scale survey about sexual behavior in the United States, and it provided extensive data on how education and religion were linked to sex. Almost invariably, it found both variables to have larger effects on women's than on men's sexuality, consistent with the view that women have higher erotic plasticity. Thus, the most educated women differed from the least educated women on multiple dimensions, including oral sex, anal sex, liking for different sexual activities, use of contraception, and same-gender activity, whereas the corresponding differences for men were smaller or not significant. Likewise, the most religious women's sex lives were notably different from those of the least religious, whereas the most and least religious men were largely similar. As variables, religion and education complement each other in a methodologically helpful manner, because higher religion tends to be associated with less sexual activity whereas higher education tends to be associated with more. Thus, two powerful social institutions that pull in opposite directions both seem to have more impact on women than on men.

Other studies have likewise found religion and education to affect women more than men (Adams & Turner, 1985; Harrison et al., 1974; Reiss, 1967; Wilson, 1975). Sex education also seems to change women's attitudes and behaviors more than men's (Weis, Rabinowitz, & Ruckstuhl, 1992). These findings do not appear to be explainable as floor or ceiling effects and thus point toward a difference in plasticity.

The recent expansion of research on cultural differences in psychology will likely result in an accelerated accumulation of knowledge about how sex differs across cultures. Although the amount of information available on such issues has been small,

the weight of evidence does seem to show greater cross-cultural variability in women's sexuality than in men's. Studies comparing different cultures typically find that the women differ more across those cultural boundaries than the men (e.g., Christensen & Carpenter, 1962). One large and systematic compilation of results from nearly 200 cultures found significantly greater variation in sexual behavior among female adolescents than male (Barry & Schlegel, 1984).

Plasticity can be seen not just in the simple fact of cultural variation but also in acculturation. That is, when a person moves from one culture to another, does the person adopt the values and practices of the new culture or retain the habits and tendencies taught in the old one? An extensive study of Latino immigrants to Detroit found that women's sexuality was closely linked to the process of learning and internalizing the new culture, whereas for men the links between acculturation and sex were weak or nonsignificant (Ford & Norris, 1993).

Education, religion, and culture are large, powerful forces, and one can complement them by examining the smaller and more proximal sources of social influence, namely peer groups and parents. There again the available evidence supports the conclusion of higher plasticity among women and girls than among men and boys. Peer groups have been shown to have a significantly greater impact on young women than on young men, at least in the sexual arena (Mirande, 1968; Sack, Keller, and Hinkle, 1984). To be sure, some correlational findings could be taken to mean that people choose their peer groups to match their sexual preferences. But other studies have ruled out this alternative explanation by tracking people over time and showing that it is the peer group at time 1 that predicts sexual behavior at time 2, rather than the reverse (Billy & Udry, 1985). In plainer terms, it is not that a girl who loses her virginity then reshuffles her peer group by dumping her virgin friends and acquiring new, nonvirgin friends. Rather, having nonvirgin friends increases the likelihood that she will lose her own virginity.

The greater influence of the female peer group finds converging evidence in studies that look at parental influence. A variety of findings suggest that parents have more impact on their daughters' sexuality than on their sons' (Miller & Moore, 1990; Newcomer & Udry, 1987). Parental attitudes, behaviors, and teachings seem to have greater effects on females than males (Thornton & Camburn, 1987).

Parents are not subject to being chosen or dropped on the basis of personal inclinations, so studies of parents are not vulnerable to the alternative explanation on the basis that sexual wishes are the cause rather than the effect, but there are other issues. In particular, it is plausible that parents try harder to influence their daughters than their sons. Still, some of the parental impact studies do not reflect differential exertion. For example, parental divorce appears to have a stronger effect on the daughter's subsequent sex life (e.g., toward starting earlier and having more partners) than the son's, and it is fair to assume that almost no divorces are motivated by the goal of making the daughter more promiscuous.

The question of whether sexual orientation is chosen or unchosen has been debated at some length and with some political and religious bias (e.g., is it fair to reproach people as sinful for feeling ways they cannot help). One creative and novel approach has been to ask people whether they feel they had some choice as to whether to be homosexual or heterosexual. Having choice is one sign of plasticity, insofar as

one must be capable of more than one possible orientation in order to be able to choose among them. Only a minority of people claim to feel that their sexual orientation was a matter of choice, but this minority is almost entirely female (Rosenbluth, 1997; Whisman, 1996). Indeed, gay males are more likely than gay females to express the wish that they could change to a heterosexual orientation, but apparently most men feel that this is impossible.

Another approach to assessing social and cultural influences is to consider them environmental factors and compare them against genetic influences. Stronger effects of genes indicate low plasticity. Although the information base for this sort of comparison is limited, there are several findings suggesting that genetic influences on sexuality are stronger among males than females. One finding is that male identical twins are more likely than other pairs to have begun having sex at the same age (though the finding is limited to more modern times, after the sexual revolution, probably because of limited opportunities available to males before this) (Dunne et al., 1997). Female identical twins were less likely to start having sex at the same age, which implies that the onset of sexual behavior has a stronger genetic component among males than females (and therefore, conversely, the onset of sexual behavior is more shaped by social and situational factors among females than among males).

The issue of genetic influences on homosexuality has attracted considerable research attention. Most studies find stronger evidence of some genetic input among males than females. In particular, the preliminary finding of a possible "gay gene" was based solely on a male sample, and no such claim has been made regarding females. A review by Bailey and Pillard (1995) concluded that either male homosexuality is more genetically determined than female homosexuality, or the state of evidence remains inadequate to draw a conclusion. At the time they favored the latter (more cautious) position, but we suspect that in time the former conclusion will be confirmed. Recent work by Lippa (2003) further supports a greater biological contribution to homosexuality in men than women. In a study of over 2000 participants, he found that the ratio of index to ring finger lengths differed in males and females. Men typically have a lower index to ring finger ratio than do females. Homosexual and heterosexual men also showed different ratios. Homosexual men had higher, more typically feminine ratios. However, finger length ratios were not related to sexual orientation in women, which suggests a lesser biological contribution to sexual orientation in women than in men.

The pattern of sexual identification in a gay and lesbian sample is also instructive. Savin-Williams and Diamond (2000) found that women generally self-identify as lesbians first, and then engage in same-sex sexual activity. The pattern was reversed in men. They generally labeled themselves as gay after seeking sexual encounters with the other men. Assuming that biology is less involved in self-labeling than it is in the pursuit of sex, this pattern points to the primacy of biology in male sexuality in contrast to the primacy of meaningful self-definition in women.

Given the sensitive political nature of the issue, we hasten to clarify our position. It would be reckless to conclude that sexual orientation is entirely dictated by genes or environment in anyone. Even identical twins, who share exactly the same genes, do not always end up with the same sexual orientation. Most likely some combination of genetic predisposition, social influences, and formative experiences (see Bem, 1996) contribute to sexual orientation in both genders. Our point is merely that the direct

contribution of genes is probably stronger in males, whereas the greater plasticity of females leaves more room for the social environment to shape sexual orientation — perhaps repeatedly.

Indeed, plasticity may underlie some of the startling new findings about sexual orientation in women. Diamond (2000) has noted the stereotype that people merely try to pass as heterosexual because of social and cultural pressures, but that once a woman engages in lesbian sex she may discover that it is her true nature and hence will not go back. Contrary to this, Diamond's longitudinal sample has provided ample cases of women who initially identify as heterosexual, then have a serious lesbian relationship, and when that ends have their next relationship with a man. The person, rather than the person's gender, was apparently the crucial determinant of whom the woman would love and sexually desire. The ability to be satisfied in a sexual relationship with someone of either gender is itself an indication of relatively high plasticity. In a recent follow-up study, Diamond (2003) found that 27% of lesbian or bisexual women had changed their sexual identities over a five year period. Half of these women gave up any identity label, and half had reclaimed heterosexuality. Those who relinquished their lesbian or bisexual identities were similar to those who had maintained it in their sexual identity development. Consistent with the erotic plasticity hypothesis, the crucial factor in altering their identity appears to have been a shift in whom they found sexually desirable.

Attitude-Behavior Consistency

A third way that erotic plasticity manifests itself is in low correlations between general attitudes and specific behaviors. If plasticity is low, then the person's general attitudes are likely to predict what he will feel and want (and presumably do) in most situations. In contrast, if plasticity is high, then the person will find that her behavior depends on specific aspects of the situation, and her general attitudes will not apply all the time. High plasticity means that social and situational factors are influential, in which case behavior is less consistent.

A variety of evidence confirms that attitude-behavior consistency is lower, at least in the sexual realm, among women than among men. Many researchers have confirmed that girls and women are more likely than boys and men to engage in sexual behaviors of which they do not approve, and indeed they may continue doing them despite their own ongoing disapproval (Antonovsky, Shoham, Kavenocki, Modan, & Lancet, 1978; Christensen & Carpenter, 1962). These inconsistencies ranged from adolescent girls who were having intercourse despite advocating abstinence, to adult women who disapproved of casual sex but engaged in it anyway (Croake & James, 1973; Herold & Mewhinney, 1993). A variation on this inconsistency is having sex when one does not desire to have sex. Although both men and women in committed relationships periodically report engaging sex when they did not feel desire (usually because they wanted to please a partner), women report this more frequently than men (Beck, Bozman, and Qualtrough, 1991).

Most people advocate using condoms, especially when having sex for the first time or with a partner one does not know well. But many people act contrary to that attitude, such as by having sex without condoms or other protection under those circumstances. Still, some work suggests that the gap is larger for women than men

(Herold & Mewhinney, 1993). This is ironic because most people believe that condoms detract from male sexual pleasure more than from female, so one might have predicted the opposite result. Plasticity can however explain the greater gap for women.

Many people disapprove of extramarital and extradyadic sexual activity but engage in it anyway. Such inconsistency appears to be higher among women. Hansen (1987) showed that attitudes toward extramarital sex predicted actual behavior fairly closely for men but not for women. Thus, many women may regard extradyadic sex as desirable and exciting yet never engage in it, while others may disapprove of it but do it anyway.

Similar findings emerged regarding same-sex activity. The NHSLS (Laumann et al., 1994) asked respondents whether they liked the idea of having sex with a member of their own gender and whether they had done so during the past year. For males, these questions were very highly correlated, but for women there was much less connection. Thus, again, many women liked the idea but never did it, whereas others disliked the idea but had done it anyway. Specific and situational factors presumably overrode the general attitudes, consistent with high plasticity

Attitudes about sexuality are conducive to making specific predictions about behavior. One would expect behavior to correspond to the attitude. However, there are other dispositional variables that do not lend themselves to a priori predictions about sexual behavior. Attachment style is one such variable that appears to affect sexuality. In a sample of nearly 800 participants, Bogaert and Sadava (2002) found that adult attachment style covaries with sexual behavior, and it does so disproportionately in women. Infidelity was related significantly to an anxious attachment style in women, and not men. Recent condom use was related to both secure and anxious attachment styles in women, but not in men. Age of first intercourse was also related to both secure and anxious attachment in women, and, again, not in men. There were no behavioral variables (although some dispositional variables) that were significantly correlated to attachment style in men, with the exception of attachment.

It is plausible that some of the behaviors (i.e., early intercourse) may have influenced attachment style, so we do not cite this as evidence that female sexuality is necessarily dictated by attachment style. However, it does appear safe to conclude that attachment is a social/situational factor that is more closely tied to female sexuality than male sexuality. As the scale tips toward a relatively greater social influence in women, it points to a relatively greater role of biology in men.

Differential Arousal in the Laboratory

This broad pattern of gender differences in erotic plasticity should also be observable when tested empirically in the laboratory. Indeed, objective physiological measurements of sexual arousal also indicate that women display greater variability in the stimuli that sexually arouse them than do men. By monitoring penile circumference fluctuations (via plethysmograph) and vaginal vasocongestion (by photoplethysmograph), level of arousal can be directly monitored. Using this technique, researchers have shown that women are aroused by a greater variety of erotic images than are men (Chivers, Rieger, Latty, & Bailey, 2004). Regardless of sexual orientation, men reacted physiologically to seeing sexual acts performed by the gender of their preference: Homosexual men were aroused by watching male-male sex, while

heterosexual men were aroused by watching female-female sex. Women did not display this same pattern of arousal. Lesbian and heterosexual women were aroused as a result of seeing both male-male and female-female sexual acts.

Clearly, the instrumentation needed to measure vaginal vasocongestion differs from what is needed to measure penile circumference fluctuations, which presents a potential limit to interpretability. The gender differences in arousal plausibly could have been because vaginal vasocongestion is only capable of measuring diffuse sexual arousal, not the gender-of-preference-specific arousal found in men. Chivers et al. employed a clever solution. Using the same instrumentation employed in the genetic-female sample, they tested male to female transsexuals. Results indicated that transsexuals who preferred men were aroused by male-male images, while those who preferred women were aroused by the female-female stimulus. Thus male to female transsexuals showed the same preference-specific physiological reactions as did heterosexual and homosexual males, and did so using instrumentation that did not detect this pattern in females.

Subjective measures of arousal also were consistent with greater plasticity in women. Women indicated that they were aroused by a greater variety of stimuli than were men. However, women's subjective ratings of arousal showed a much weaker correspondence with physiological arousal than did men's. Although this finding does not necessarily follow a priori from the plasticity hypothesis, it is relevant, particularly in light of evolutionary theories of sexuality.

Species propagation cannot occur without a high degree of male arousal, but it can occur without a commensurate degree of female arousal. Therefore, sexual initiation would have been wasteful if the male were not physiologically prepared for penetration. Thus it would be efficient that the traditional initiator, the male, be more consciously aware of preparedness for mating than the female. The seeming disconnect between women's conscious awareness of arousal and actual physiological arousal is likely to result in a degree of uncertainty about actual physiological arousal. This uncertainty in females may have made them more receptive to male initiation, regardless of their actual arousal. If a female who is somewhat less aroused than her male counterpart is unaware of this fact, she is more likely to consent to mating than if she were aware of it. Therefore, if a degree of uncertainty is indeed related to greater receptivity, the disconnect between consciousness and physical arousal, and the resulting uncertainty, may help explain the pattern of broader sexual receptivity (plasticity) in women.

A classical conditioning study found this same pattern of gender-based differences in erotic plasticity (Hoffmann, Janssen, & Turner, 2004). Researchers paired a picture of an abdomen with an erotic film clip for both male and female participants. Heterosexual male participants were shown a female abdomen, and heterosexual female participants were shown a male abdomen. Both genders became sexually conditioned to the abdomen. That is, repeated pairings demonstrated an increase over baseline in genital arousal when participants were presented with the abdomen. However, when the stimulus paired with the erotic film clip was both sexually irrelevant and presented subliminally, a disparity emerged. Women showed a significant increase in genital sexual arousal when the erotic film was paired with a gun, while men did not show a commensurate increase. This is consistent with the female

sex drive as protean.

Any Exceptions?

A determined search for counterexamples yielded only a handful of suggestive findings. For instance, not all evidence points in the direction of greater biological contributions in sexual orientation for men than women. A study investigating the relationship between fingerprint patterns and handedness found a significant relationship between handedness and orientation in women, but not men (Mustanski, Bailey & Kaspar, 2002). Fingerprint patterns were unrelated to orientation in both genders. The aforementioned difference in finger-length ratios is a natural point of comparison to this finding. Finger length ratios are more compelling evidence of biology than is handedness because handedness is subject to social factors, and finger lengths are not. A study investigating shifting handedness trends in Japan found some evidence that men's hand preferences are more malleable than women's (Iwasaki, Kaiho & Iseki, 1995). This might account for the non-finding in men.

The most instructive counterexamples of erotic plasticity point toward childhood. For example, males are more likely than females to acquire sexual paraphilias, and although the origins of these are poorly understood, most evidence points to some kind of childhood experience that creates the unusual sexual desire. In adulthood, paraphilias have low plasticity and are quite difficult to change or erase.

There is also some evidence that childhood sexual abuse has more severe and long-lasting effects on boys than on girls. A follow-up to the NHSLS found that people who had suffered sexual abuse as children were more likely to have sexual health problems as adults if they were men rather than women (Laumann et al., 1999).

Such findings suggest that there may be a phase of plasticity in male sexual development, but it is apparently in childhood. Once the boy reaches puberty, the pattern of sexual tastes and preferences is largely set (though the person may not discover all these until some time later, especially if he regards his desires as socially unacceptable). In contrast, female sexuality may continue to develop and change throughout adulthood. This may help women recover from events of childhood, and as such would be one clear benefit of plasticity for some people.

Some research with animals confirms the conclusion of a brief phase of plasticity during male childhood, although cross-species generalizations about sex must be made very cautiously. An experimental study by Kendrick, Haupt, Hinton, Broad and Skinner (2001) swapped baby sheep and goats at birth, so each was raised by the other species. The adults were allowed access to both species, and their mating preferences were observed. Consistent with high plasticity, the females copulated with other species. The males exhibited low plasticity but in a most curious manner: They would only mate with their adoptive species, and not their own true species. This indicates that the male sexual preferences were shaped during childhood and remained fixed during adulthood, even though those preferences were such that they would prevent offspring.

Why the Difference?

The evidence for the gender difference in erotic plasticity is abundant and consistent, but the reason for the difference is far less clear. Several possible explanations could be proposed.

Differential power provides one line of explanation. Because women have generally had less physical strength and less political power than men, they may have had to be more flexible. Lacking power to get what they want, they would instead benefit from accommodating themselves to external influences. This line of argument would predict that women would generally have higher plasticity in most social behaviors.

An intriguing explanation could be developed from the so-called gatekeeper role of female sexuality. The idea here is that men want sex earlier and with more partners, and so it is up to the woman to decide when and whether sex happens. In practice, most women will start out saying no to most sexual invitations, but at some point the woman may change her vote to yes, and at that point sex happens. The close linkage of sex to changing one's decision could require or foster a broader flexibility that could be manifested in erotic plasticity. This line of argument would be specific to sex.

The third explanation invokes strength of motivation. It is plausible that milder drives are more amenable to civilizing influences. Nearly all signs indicate that men have more frequent and intense sexual desires than women (for review, see Baumeister, Catanese, & Vohs, 2001), and women's plasticity might derive from the milder drive. This line of argument would apply wherever there are gender (or other group) differences in strength of motivation.

More research is needed before we can establish which of these explanations is correct. At present the evidence seems to favor the last one. The relevant test case would be some motivation that is more frequent and intense among women than men: would then men have higher plasticity? By most accounts, the desire to create and nurture children is stronger among women than men. Moreover, and crucially, the father role appears to be much more variable across cultural and historical boundaries than the mother role (e.g., Fukuyama, 1999). In other words, when women's desire is stronger, it is also marked by less plasticity, and so this lends plausibility to the argument that the difference in sexual drive is linked to the difference in erotic plasticity.

CONCLUSION

Erotic plasticity makes the sex drive malleable and enables cultural and situational factors to shape and alter it, not least by use of meanings. Plainly many animals in nature have satisfactory, efficacious sex without any influence of culturally constructed or individually interpreted meanings. Yet, just as plainly, many human sexual responses depend heavily and sometimes crucially on meaning. The great variety of human sexual response is partly attributable to the plasticity that is prepared by nature and activated by cultural meanings.

A substantial body of evidence indicates that female sexuality has higher plasticity than male, which entails that female sexuality is more open to social and cultural influence than male. The reason for the gender difference in plasticity is not established with anywhere near the certainty that the fact of the difference is, but at present the best guess is that it is linked to the mildness versus intensity of the desire. High erotic plasticity is not necessarily better or worse than low, but it has wide-ranging implications including ease of self-knowledge, ease of adaptation to new demands and circumstances, capacity for change across the lifespan, and optimal type of therapeutic intervention. Future work is needed to extend and verify the implications of gender differences in plasticity as well as to establish its basic causes. Future work is also

desirable to map out dimensions other than gender that can promote differential plasticity.

REFERENCES

- Adams, C. G., & Turner, B. F. (1985). Reported change in sexuality from young adulthood to old age. *Journal of Sex Research, 21*, 126-141.
- Antonovsky, H. F., Shoham, I., Kavenocki, S., Modan, B., & Lancet, M. (1978). Sexual attitude-behavior discrepancy among Israeli adolescent girls. *Journal of Sex Research, 14*, 260-272.
- Ard, B. N. (1977). Sex in lasting marriages: A longitudinal study. *Journal of Sex Research, 13*, 274-285.
- Bailey, J. M., & Pillard, R. C. (1995). Genetics of human sexual orientation. *Annual Review of Sex Research, 6*, 126-150.
- Barry, H., & Schlegel, A. (1984). Measurements of adolescent sexual behavior in the standard sample of societies. *Ethnology, 23*, 315-329.
- Bart, P. B. (1993). Protean women: The liquidity of female sexuality and the tenaciousness of lesbian identity. In S. Wilkinson & C. Kitzinger (Eds.), *Heterosexuality: Feminism and psychology reader* (pp. 246-252). London: Sage.
- Baumeister, R. F., Catanese, K. R., & Vohs, K. D. (2001). Is there a gender difference in strength of sex drive? Theoretical views, conceptual distinctions, and a review of relevant evidence. *Personality and Social Psychology Review, 5*, 242-273.
- Baumeister, R. F. (2000). Gender differences in erotic plasticity: The female sex drive as socially flexible and responsive. *Psychological Bulletin, 126*, 347-374.
- Beck, J. G., Bozman, A. W., & Qualtrough, T. (1991). The experience of sexual desire: Psychological correlates in a college sample. *Journal of Sex Research, 28*, 443-456.
- Bell, A. P., & Weinberg, M. S. (1978). *Homosexualities: A study of diversity among men and women*. New York: Simon & Schuster.
- Bern, D. J. (1996). Exotic becomes erotic: A developmental theory of sexual orientation. *Psychological Review, 103*, 320-335.
- Billy, J. O. G., & Udry, J. R. (1985). Patterns of adolescent friendship and effects on sexual behavior. *Social Psychology Quarterly, 48*, 27-41.
- Chivers, M. L., Rieger, G., Latty, E., & Bailey, J. M. (2004). A sex difference in the specificity of sexual arousal. *Psychological Science, 15*, 736-744.
- Christensen, H. T., & Carpenter, G. R. (1962). Value-behavior discrepancies regarding premarital coitus in three Western cultures. *American Sociological Review, 27*, 66-74.
- Croake, J. W., & James, B. (1973). A four-year comparison of premarital sexual attitudes. *Journal of Sex Research, 9*, 91-96.
- Dunne, M. P., Martin, N. G., Statham, D. J., Slutske, W. S., Dinwiddie, S. H., Bucholz, K. K., Madden, P. A. F., & Heath, A. C. (1997). Genetic and environmental contributions to variance in age at first sexual intercourse. *Psychological Science, 8*, 211-216.
- Diamond, L. M. (2003). Was it a phase? Young women's relinquishment of lesbian/bisexual identities over a 5-year period. *Journal of Personality & Social*

- Psychology* 2003, 84, 352-64.
- Diamond, L. M. (2000). Sexual identity, attractions, and behavior among young sexual-minority women over a two-year period. *Developmental Psychology* 2000, 36, 241-50.
- Fang, B. (1976). Swinging: In retrospect. *Journal of Sex Research*, 12, 220-237.
- Ford, K., & Norris, A. E. (1993). Urban Hispanic adolescents and young adults: Relationship of acculturation to sexual behavior. *Journal of Sex Research*, 30, 316-323
- Fukuyama, F. (1999). *The great disruption: Human nature and the reconstitution of social order*. New York: Free Press.
- Gagnon, J. H., & Simon, W. (1968). The social meaning of prison homosexuality. *Federal Probation*, 32, 28-29.
- Giallombardo, R. (1966). *Society of women: A study of a women's prison*. New York: Wiley.
- Goode, E., & Haber, L. (1977). Sexual correlates of homosexual experience: An exploratory study of college women. *Journal of Sex Research*, 13, 12-21.
- Hansen, G. L. (1987). Extradyadic relations during courtship. *Journal of Sex Research*, 23, 382-390.
- Harrison, D. A., Bennett, W. H., Globetti, G., & Alsikafi, M. (1974). Premarital sexual standards of rural youth. *Journal of Sex Research*, 10, 266-277.
- Herold, E. S., & Mewhinney, D.-M. K. (1993). Gender differences in casual sex and AIDS prevention: A survey of dating bars. *Journal of Sex Research*, 30, 36-42.
- Iwasaki, S., Kaiho, T., & Iseki, K. (1995). Handedness trends across age groups in a Japanese sample of 2316. *Perceptual & Motor Skills*, 80, 979-994
- Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). *Sexual behavior in the human male*. Philadelphia: Saunders.
- Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). *Sexual behavior in the human female*. Philadelphia: Saunders.
- Kitzinger, C., & Wilkinson, S. (1995). Transitions from heterosexuality to lesbianism: The discursive production of lesbian identities. *Developmental Psychology*, 31, 95-104.
- Laumann, E. O., Gagnon, J. H., Michael, R. T., & Michaels, S. (1994). *The social organization of sexuality: Sexual practices in the United States*. Chicago: University of Chicago Press.
- McCauley, E. A., & Ehrhardt, A. A. (1980). Sexual behavior in female transsexuals and lesbians. *Journal of Sex Research*, 16, 202-211.
- Miller, B. C., & Moore, K. A. (1990). Adolescent sexual behavior, pregnancy, and parenting: Research through the 1980s. *Journal of Marriage and the Family*, 52, 1025-1044.
- Mirande, A. M. (1968). Reference group theory and adolescent sexual behavior. *Journal of Marriage and the Family*, 30, 572-577.
- Mustanski, B. S., Bailey, J. M. & Kaspar, S. (2002). Dermato-glyphics, handedness, sex and sexual orientation. *Arch. Sex. Behav*, 31, 113-122.
- Newcomer, S., & Udry, J. R. (1987). Parental marital status effects on adolescent sexual behavior. *Journal of Marriage and the Family*, 49, 235-240.

- O'Neill, G. C., & O'Neill, N. (1970). Patterns in group sexual activity. *Journal of Sex Research, 6*, 101-112.
- Reiss, I. L. (1967). *The social context of premarital sexual permissiveness*. New York: Holt, Rinehart, & Winston.
- Rosario, M., Meyer-Bahlburg, H. F. L., Hunter, J., Exner, T. M., Gwadz, M., & Keller, A. M. (1996). The psychosexual development of urban lesbian, gay, and bisexual youths. *Journal of Sex Research, 33*, 113-126.
- Rosenbluth, S. (1997). Is sexual orientation a matter of choice? *Psychology of Women Quarterly, 21*, 595-610.
- Rust, P. C. (1992). The politics of sexual identity: Sexual attraction and behavior among lesbian and bisexual women. *Social Problems, 39*, 366-386.
- Sack, A. R., Keller, J. F., & Hinkle, D. E. (1984). Premarital sexual intercourse: A test of the effects of peer group, religiosity, and sexual guilt. *Journal of Sex Research, 20*, 168-185.
- Savin-Williams, R. C. (1990). *Gay and lesbian youth: Expressions of identity*. New York: Hemisphere.
- Savin-Williams, R. C. & Diamond, L. M. (2000). Sexual identity trajectories among sexual-minority youths: Gender comparisons. *Archives of Sexual Behavior, 29*, 419-440.
- Schäfer, S. (1976). Sexual and social problems of lesbians. *Journal of Sex Research, 12*, 50-69.
- Smith, J. R., & Smith, L. G. (1970). Co-marital sex and the sexual freedom movement. *Journal of Sex Research, 6*, 131-142.
- Thornton, A., & Camburn, D. (1987). The influence of the family on premarital attitudes and behavior. *Demography, 24*, 323-340.
- Vanwesenbeeck, I., Bekker, M. & van Lenning, A. (1998). Gender attitudes, sexual meanings, and interactional patterns in heterosexual encounters among college students in the Netherlands. *Journal of Sex Research, 35*, 317-327.
- Ward, D. A., & Kassebaum, G. G. (1965). *Women's prison: Sex and social structure*. Chicago: Aldine.
- Whisman, V. (1996). *Queer by choice*. New York: Routledge.
- Weis, D., Rabinowitz, B., & Ruckstuhl, M. F. (1992). Individual changes in sexual attitudes and behavior within college-level human sexuality courses. *Journal of Sex Research, 29*, 43-59.
- Wilson, W. C. (1975). The distribution of selected sexual attitudes and behaviors among the adult population of the United States. *Journal of Sex Research, 11*, 46-64.