Born Both Ways: The Alloparenting Hypothesis for Sexual Fluidity in Women

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**Abstract:** Given the primacy of reproduction, same-sex sexual behavior poses an evolutionary puzzle. Why would selection fashion motivational mechanisms to engage in sexual behaviors with members of the same sex? We propose the alloparenting hypothesis, which posits that sexual fluidity in women is a contingent adaptation that increased ancestral women’s ability to form pair bonds with female alloparents who helped them rear children to reproductive age. Ancestral women recurrently faced the adaptive problems of securing resources and care for their offspring, but were frequently confronted with either a dearth of paternal resources due to their mates’ death, an absence of paternal investment due to rape, or a divestment of paternal resources due to their mates’ extra-pair mating efforts. A fluid sexuality would have helped ancestral women secure resources and care for their offspring by promoting the acquisition of allomothering investment from unrelated women. Under this view, most heterosexual women are born with the capacity to form romantic bonds with both sexes. Sexual fluidity is a conditional reproductive strategy with pursuit of men as the default strategy and same-sex sexual responsiveness triggered when inadequate paternal investment occurs or when women with alloparenting capabilities are encountered. Discussion focuses on (a) evidence for alloparenting and sexual fluidity in humans and other primates; (b) alternative explanations for sexual fluidity in women; and (c) fourteen circumstances predicted to promote same-sex sexual behavior in women.

**Keywords:** alloparenting, sexual fluidity, evolution, homoerotic behavior, homosexuality

**Introduction**

As Darwin outlined in *The Descent of Man* (1871), reproduction is the engine of evolution. Sexual selection favors traits that increase an organism’s ability to reproduce...
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relative to alternative traits. Given the primacy of reproduction, seemingly counter-
reproductive traits like same-sex sexual behavior pose an evolutionary puzzle. Why would
selection have fashioned motivational mechanisms to engage in sexual behaviors with
members of the same sex?

Numerous evolutionary hypotheses have been advanced to account for same-sex
sexual behavior in humans and other animals (for reviews see Bailey and Zuk, 2009; Buss,
2003; LeVay, 2011; Mealey, 2000; Sommer and Vasey, 2006; Vasey, 1995). Most of these
hypotheses have focused on the potential benefits that same-sex sexual behavior afforded
ancestral men. Relatively little attention has been paid to the evolution of same-sex sexual
behavior in women. Here we propose the alloparenting hypothesis which posits that sexual
fluidity in women is a contingent adaptation that increased ancestral women’s abilities to
form pair bonds with female alloparents who helped them rear children to reproductive age.
Before fleshing-out the hypothesis and its predictions, several disclaimers, definitions, and
discussions of alloparenting and sexual fluidity are necessary.

Disclaimers

Given the sensitive nature of sexuality in many social, political, and religious
climates, four important disclaimers are warranted. First, the alloparenting hypothesis is not
intended to explain the evolutionary significance of a homosexual sexual orientation.
Rather, it aims to account for same-sex sexual behavior among heterosexually-identified
women. Second and third, the hypothesis is not intended to explain all occurrences of
same-sex sexual behavior in women, nor does it posit that all same-sex sexual behavior
serves to promote alloparenting. Even a cursory view of the sexual landscape suggests
otherwise. The hypothesized mechanisms need not always (or ever) serve the adaptive
purposes of an ancient time in a modern day world. Fourth, the hypothesis does not imply
that same-sex sexual behavior is the only route to promoting alloparenting effort. Rather,
the hypothesis posits that selection fashioned adaptations in women to promote
alloparenting, one of them being sexually fluid mating mechanisms that facilitated,
cemented, and sustained bonds between mothers and allomothers. Fifth, following
Diamond (2008), we are not equating a fluid sexuality with a chosen sexuality. That is,
although we postulate the existence of mating mechanisms that served to promote
flexibility in women’s sexual responsiveness, no conscious choice is invoked or implied.
Sexual fluidity is a hypothesized conditional adaptation designed to promote opposite-sex
sexual behavior in certain situations and same-sex sexual behavior in other situations, much
like callous-producing mechanisms (Confer et al., 2010) promote calluses in high friction
environments but not in less abrasive ones. Much as it would be nonsensical to argue that
callous production or absence is a choice, it would be illogical to conclude that the elicitors
of women’s sexual responsiveness are chosen.
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Alloparenting

Alloparenting occurs when an animal other than a biological parent helps in the rearing of offspring (Hrdy, 2008). It has been observed in an array of species. An example among birds can be found in the Laysan albatross (*Phoebastria immutabilis*), a large shorebird whose main breeding colonies are in the Hawaiian Islands. When there is a shortage of paternal investment due to a female-biased sex ratio, females pair with one another for multiple years and cooperate in chick rearing (Young, Zaun, and VanderWerf, 2008). The possibility that a dearth of paternal investment prompts human females to pursue same-sex sexual behavior to facilitate alloparenting will be developed later in this paper (for a discussion of this in lesser snow geese, *Chen caerulescens*, see Diamond, 1989 as well as Quinn, Davies, Cooke, and White, 1989).

Alloparenting in Monkeys

Alloparenting is particularly common in our primate cousins (Hrdy, 1999a). Several species of monkey engage in alloparenting, including the squirrel monkey (*Saimiri*) and the Japanese macaque (*Macaca fuscata*). Among squirrel monkeys, relatives and non-kin engage in alloparenting and allonursing of infants to free up time for the genetic mother to forage, find potential mates, and scour the vicinity for predators (Roulin, 2002; Williams et al., 1994). Allomothering and allonursing are reciprocal relationships in squirrel monkeys: those who receive allohelp are expected to return the favor (Roulin, 2002; Soltis, Wegner, and Newman, 2005; Williams et al., 1994). Squirrel monkeys who allocate alloparenting help to each other’s offspring engage in frequent grooming to solidify their relationships and to increase the likelihood of reciprocation in the future (Roulin, 2002; Soltis, Wegner, and Newman, 2005; Williams et al., 1994).

Among Japanese macaques, mothers allow females in the group to hold and care for their offspring (Bardi, Shimizu, Fujita, Borgoglini-Tarli, and Huffman, 2001). These allomothers help macaque mothers hunt, babysit, and protect infants who are very susceptible to predators (Bardi et al., 2001; Redmond, 2008). Genetic mothers and allomothers engage in frequent grooming behavior and may stay together for their entire lives (Redmond, 2008). Female Japanese macaques also engage in same-sex sexual behavior (Vasey, Forund, Duckworth, and Kovacovsky, 2006), but such behavior was not found to promote alloparenting in a captive colony of Japanese macaques (Vasey, 1998). Whether there is something unique about Japanese macaque ecology, parenting, or sexuality that renders same-sex sexual behavior as unnecessary or unsuited to promote alloparenting awaits future research.

Alloparenting in Great Apes

Although it was once thought that non-human great apes did not alloparent (e.g., Hrdy, 1999b), growing evidence now suggests that such behavior occurs in at least one of our great ape cousins, the bonobo (Radtke, 2012). Bonobos (*Pan paniscus*) are 98.7%
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genetically similar to humans (Prüfer et al., 2012) and engage in substantial alloparenting, mostly by females (B. Bell, personal communication, July 18 2012; de Waal and Lanting, 1997; Furuichi, 2011; Kano, 1992; Radtke, 2012). Bonobo females form strong pair bonds that last the duration of their lives (Furuichi, 2011; Kano, 1992). When a female reproduces, other females are significantly involved in the life of the young bonobo (De Lathouwers and Van Elsacker, 2004; Furuichi, 2011; Kano, 1992). Following the infant stage, young bonobos are often carried by other females and left with other females while the mother forages, eats, or mates (De Lathouwers and Van Elsacker, 2004; Furuichi, 1989; 2011; Kano, 1992; Parish, 1996; Radtke, 2012).

Food sharing is an essential component of alloparenting (Hrdy, 2008), and one that bonobos engage in regularly. Females often share food with offspring of their close female companions, especially when the offspring engage in “peering” behavior: continuously looking at them while they are eating (Chapais, 2008; Hrdy, 2008; Kano, 1992). Females also allow unrelated young to extract morsels of food directly out of their mouths with little to no hesitation or objection (Woods, 2010). Sharing food with non-kin demonstrates the strong bonds bonobo females have with each other and with non-related infant and juvenile bonobos.

Bonobo females will also band together in defense of an unrelated infant bonobo who is fearful. Together with the genetic mother, the females will threaten whatever may be making the young bonobo scared until the threat subsides (Woods, 2010). Bonobo females’ threats include the baring of teeth and threatening calls which signal that they are willing to attack the threat (Woods, 2010).

To cement pair bonds within the troop, female bonobos engage in various forms of sex with troop members, especially with females who may serve as allomothers. Bonobo females frequently partake in a unique behavior called genito-genital (GG) rubbing in which two females rub their prominent clitorises and genitals together (de Waal, 2005; Kano, 1992; Savage-Rumbaugh and Wilkerson, 1978). They often reach orgasm, and have been observed to eye gaze with each other and hold hands during the activity, suggesting that bonding is occurring (de Waal and Lanting, 1997; Dunbar and Barrett, 2000; Hashimoto and Furuichi, 1994; Hrdy, 2008; Kano, 1992; Raffaele, 2010; Savage-Rumbaugh and Wilkerson, 1978). Bonobo females also engage in French kissing which releases hormones such as oxytocin that may help individuals bond (Raffaele, 2010). Although many believe that same-sex sexual behavior among female bonobos exists to facilitate bonding, some have argued that it serves to display one’s dominance (e.g., Hohmann and Fruth, 2000; Parish, 1996). These explanations are not mutually exclusive and await further research.

Given the ubiquity of alloparenting and same-sex sexual behavior in bonobos, it is possible that GG rubbing and other same-sex sexual acts facilitate the acquisition of alloparent care (Radtke, 2012). Although a causal relationship between same-sex sexual behavior and alloparenting has never been directly studied in bonobos, it is an important area for future research.
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Alloparenting in Humans

The human infant is tremendously dependent on its caregivers to survive and thrive (Alexander, 1990; Lancaster and Lancaster, 1983). Without prolonged investment from two parents, infants and young children are more likely to die before they reach reproductive age (Hill and Hurtado, 1996). For example, among the Aché Indians of Paraguay, children whose fathers die suffer a death rate that is 2.6 times higher than children with fathers (Hurtado and Hill, 1992). Alloparenting may have been a means with which ancestral mothers acquired biparental investment for their children in the face of paternal desertion, death, or divestment of resources. Indeed, Hrdy (1999a, 2007, 2008) surmises that without cooperation from both kin and non-kin alloparents, humans may have been unable to flourish as a species because human infants are so altricial. “Alloparental care and provisioning set the stage for children to grow up slowly and remain dependent on others for many years, paving the way for the evolution of anatomically modern people with even bigger brains” (Hrdy, 1999b, p. 25).

Close kin are not always the dominant allo-caregiver; unrelated women often contribute substantial allomothering across cultures (Bentley and Mace, 2009; Hrdy, 1999a; Meehan, 2009). Non-kin women are especially likely to alloparent if they themselves have offspring (Hrdy, 1999a). For example, Efê mothers of the Democratic Republic of the Congo cooperate in raising offspring by gathering and preparing food, watching for predators, and ensuring adequate shelter is sustained (Ivey, 2000). This allomothering has been shown to increase the likelihood of Efê infants’ survival (Ivey, 2000). Among the Aka and Nganda tribes in Central Africa, Meehan (2009) observed that when allomothers are available, they are always utilized.

In sum, alloparenting occurs in numerous species, including distant and close primates, and among humans across various cultures. Before unpacking our alloparenting hypothesis for women’s sexual fluidity, a definition and discussion of fluidity is warranted.

Sexual Fluidity

In her groundbreaking book on the topic, Lisa Diamond defines sexual fluidity as “situation-dependent flexibility in women’s sexual responsiveness…that makes it possible for some women to experience desires for either men or women under certain circumstances, regardless of their overall sexual orientation” (2008, p. 3). Diamond argues that “the hypothesis that female sexuality is fundamentally fluid provides the most robust, comprehensive, and scientifically supported explanation for the research data” on women’s sexuality (2008, p. 9). This data indicates that relative to men, women are more likely to report bisexual attractions than exclusive same-sex attractions (for reviews see Baumeister, 2000; Diamond, 2006, 2007, 2008; Peplau, 2001; Peplau and Garnets, 2000). Additionally, U.S. women aged 18–44 years are more than twice as likely as men to report being attracted to and having had sexual contact with members of the same sex (Chandra, Mosher, and
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Women’s fluid sexuality is also evidenced physiologically (Chivers, 2005, 2010). In contrast to men, women’s genital arousal is not significantly greater for stimuli of partners of their preferred versus nonpreferred sex (Chivers and Bailey, 2005; Chivers, Rieger, Latty, and Bailey, 2004). Among heterosexuals, women are more likely than men to exhibit genital arousal (Chivers and Bailey, 2005; Chivers et al., 2004) and pupil dilation (Rieger and Savin-Williams, 2012) to erotic stimuli of both sexes. In sum, a growing body of evidence suggests that “non-specific sexual arousal best describes heterosexual but not homosexual women’s genital sexual response” (Chivers, 2010, p. 411). Given women’s flexible psychological and physiological sexual responsiveness to both sexes, a growing notion among relationship researchers is that women’s sexuality is best described as being plastic (Baumeister, 2000) or fluid (Diamond, 2007, 2008; Peplau, 2001, 2003; Peplau and Garnets, 2000).

As sexual fluidity is commonly conflated with erotic plasticity and often means different things to different researchers, we must be clear about our use of it here. For the present purposes, a fluid sexuality is one that is potentially sexually responsive to both sexes (but not necessarily at the same point in time). This definition eschews many of the phenomena originally under the umbrella of erotic plasticity (e.g., changes in the desired frequencies of sex and sex acts, and changes in preferred partner characteristics as per Baumeister, 2000). It also avoids the focus on changes in one’s sexual identity or sexual orientation that is commonly associated with Diamond’s longitudinal research on sexual fluidity.

**Sexual Fluidity as a Conditional Female Mating Strategy**

According to our alloparenting hypothesis, sexual fluidity (the potential to be sexually responsive to both sexes) increased ancestral women’s reproductive success by mitigating the costs of four potent adaptive problems that resulted in a dearth of paternal investment and by promoting the acquisition of allomothering investment from unrelated women.

**An Absence of Paternal Investment Due to Rape**

Although debate exists on whether rape is an adaptation or a byproduct of other evolved mechanisms (Thornhill and Palmer, 2000), a consensus exists on two important points. First, rape is an abhorrent, inexcusable act. Second, rape was a recurrent feature of our ancestral past (as, sadly, it remains today). Rape occurred throughout recorded human history, occurs in all human cultures, and has been documented in numerous non-human primates and other animals (Buss, 2003). As rape, by definition, circumvented women’s ability to exercise mate choice, its reproductive costs were catastrophic. Rape could potentially have left ancestral women impregnated by a man with inferior genes, at an inopportune time, and without investment from the father or his relatives. Given the social stigma surrounding rape, mated women who were raped risked losing their primary partner.
Victims of rape, particularly those who were fertilized, would also have incurred damage to their mate value (desirability on the mating market) and hence their ability to choose and acquire quality mates in the future. Raped women likely also suffered intense psychological trauma including fear, anxiety, rage, and depression. Given this cavalcade of calamitous costs, evolutionary psychologists have predicted, and found evidence of a suite, of antirape adaptations in women including specialized fears, psychological pain, and a decrease in risk-taking activities during ovulation (for reviews see Buss, 2003, 2012; McKibbin et al., 2009; McKibbin and Shackelford, 2013).

Reduced Paternal Investment Due to Paternal Defection

Because men’s reproductive success historically was dependent upon their ability to gain sexual access to reproductively valuable women, men have evolved preferences for women with characteristics indicative of high reproductive value (Symons, 1979). As reasoned by Kuhle (2007), men’s evolved preference for youth could have prompted some ancestral men to pursue younger women as their mates aged. Evidence that as men get older, they tend to prefer and marry women who are increasingly younger than they are supports this notion (Buss, 2003; Kenrick and Keefe, 1992). Ancestral mated men who defected from their middle-aged mates, by mating with younger women in place of them, would likely have partially or wholly reallocated their resources and protection to the younger women. Evidence that fathers who leave their wives and children invest less in those children than fathers who remain with their family is consistent with this suggestion (Anderson, Kaplan, and Lancaster, 1999).

Reduced Paternal Investment Due to Paternal Death

Cross-culturally, men tend to mate with women who are younger than they are (Buss, 1989) and die several years before women (Lopez and Ruzicka, 1983). This combination results in a male tendency to die several years before their mates (Turke, 1997). American men, for example, tend to mate with women 2.7 years younger than they are (Buss, 1989) and die 5.0 years before American women (U.S. Census Bureau, 2011). As a result, American men die 7.7 years before their mates, on average. Higher male mortality, coupled with men’s tendency to mate with women younger than they are, likely were recurrent features of our evolutionary history (Turke, 1997). Thus, men’s earlier death would have prevented them from protecting and investing in their mates and any offspring their mates bore near the time of their deaths (Kuhle, 2007), and left their wives widowed with children. Widowed mothers would likely have incurred diminished mate values that inhibited their ability to acquire quality replacement mates (Duntley, 2003).

Reduced Paternal Investment Due to a Dilution of Resources

Polygynous mating systems were likely a part of our ancestral history (Symons, 1979). In modern times, 84% of 853 societies studied were found to permit polygyny, with 44% considering it the preferred mating system (van den Berghe, 1979). In polygynous
mating systems, co-wives of ancestral men who acquired additional wives may have experienced a dearth of paternal investment due to the dilution of their husband’s time, investment, and protection across co-wives. As men aged, they may have divested in their established mates to free resources they could invest into new potential mates.

**The Alloparenting Hypothesis**

Given the ancestral ubiquity of rape, there would have been minimal selective impetus to rigidly focus ancestral women's sexual responsiveness solely on men; men would copulate with women regardless of whether women were interested in them. According to the alloparenting hypothesis, there was maximal selective impetus to design women's sexual responsiveness to be fluid because:

1. Rape left some ancestral women without paternal resources to allocate to their children.
2. Ancestral women’s mates may have deserted them, divested in them, or died, especially as they aged, which would have jeopardized their and their children’s ability to survive and reproduce (Kuhle, 2007).
3. Raped, abandoned, or widowed ancestral mothers would have had limited ability to acquire an investing mate and stepfather to their children due to their diminished mate value.
4. Ancestral mothers would have encountered women who exhibited strong alloparenting potential.
5. A fluid sexuality would have increased an ancestral woman’s likelihood of forming a pair bond with an unrelated woman who could help rear her children through alloparenting.

In sum, a fluid sexuality would have helped solve the adaptive problems ancestral women faced of a dearth of paternal resources due to rape and to their mates’ death, desertion, and divestment of resources by promoting the acquisition of alloparental care from female friends. Under this view, most heterosexual women are born with the capacity to form romantic bonds with both sexes. Female sexual fluidity is a conditional reproductive strategy with pursuit of men as the default strategy and same-sex sexual responsiveness triggered when inadequate paternal investment occurs or when women with alloparenting capabilities are encountered. Sexual selection is hypothesized to have designed sexual responsiveness mechanisms in women that are sensitive to the situations and experiences that were recurrently associated with the availability of paternal and allomothering investment over evolutionary history. Situations and experiences indicative of low paternal investment or the potential for high allomothering investment are hypothesized to shunt some women into forming same-sex romantic bonds that facilitate alloparenting. The alloparenting hypothesis makes fourteen testable predictions.

1. Relative to women who have never been abused by their male mates, women who have experienced abuse by male mates will be more likely to have subsequently engaged in same-sex sexual behavior.
2. Relative to women who have never been raped by men, women who have been raped by men are more likely to have subsequently engaged in same-sex sexual behavior.

3. Relative to women who were never abused as children, women who experienced physical or sexual abuse by men during childhood or adolescence will be more likely to have subsequently engaged in same-sex sexual behavior. As with research on the consequences of father absence (Belsky, Steinberg, and Draper, 1991; Ellis, 2004; Ellis, Schlomer, Tilley, and Butler, 2012; James, Ellis, Schlomer, and Garber, 2012), this prediction is predicated on the notion that formative childhood experiences with men shape women’s future mating psychology.

4. Women whose husbands divested in them for the sake of other women are more likely to have subsequently engaged in same-sex sexual behavior (especially if they have children) relative to women whose husbands’ investment did not diminish from being diluted among other women.

5. Women whose husbands deserted them are more likely to have subsequently engaged in same-sex sexual behavior (especially if they have children) relative to women whose husbands remain mated to them.

6. Women whose husbands have died are more likely to have subsequently engaged in same-sex sexual behavior (especially if they have children) relative to women whose husbands are alive and investing in them.

7. In the absence of paternal defection, desertion, and death, wives of husbands whose investment has diminished are more likely to have subsequently engaged in same-sex sexual behavior (especially if they have children) relative to women whose husbands’ investment is sufficient.

8. A woman’s mate value (MV) will be an important moderating variable on her likelihood of engaging in same-sex sexual behavior. All things being equal, lower MV women will be more likely than higher MV women to engage in same-sex sexual behavior in the face of male abuse, rape, divestment, desertion, and death because they are less able to acquire sufficient paternal investment from other men.

9. Women who have formed more deep, emotional friendships with women who exhibit alloparenting potential are more likely to have engaged in same-sex sexual behavior than women with fewer such friendships.

10. Women who experience extreme stress associated with childrearing are more likely to report having engaged in same-sex sexual behavior than women without such stress. That is, when experiencing childrearing stress, women’s oxytocin-mediated “tend and befriend” (Taylor, 2006; Taylor et al., 2000) response will increase the likelihood of engaging in same-sex sexual behavior that serves to facilitate and strengthen affiliations with women that protect the self and offspring.

11. Women with an unrestricted sociosexuality (Jackson and Kirkpatrick, 2007; Simpson and Gangestad, 1991) will be more likely to engage in same-sex sexual behavior than women with a restricted sociosexuality. The more willing and
comfortable a woman is in engaging in casual sex without love, commitment, or closeness, the more likely she is to experience a dearth of paternal investment postpartum and hence need allomothering investment. (However, the possibility that unrestricted women are more likely than restricted women to engage in same-sex sexual behavior due to being more sexually adventurous would have to be addressed.)

12. Women with few kin available to alloparent will be more likely to engage in same-sex sexual behavior than women with abundant alloparenting help from kin.

13. Women will be more likely to engage in same-sex sexual behavior during non-fertile versus fertile phases of their menstrual cycles. In the context of a plural marriage, same-sex sexual behavior during ovulation comes with opportunity costs that detract from reproduction. However, such behavior during non-fertile phases could promote the forming and grooming of alloparenting relationships among women. Fleischman, Fessler, and Cholakians’s (2012) findings that women’s homoerotic motivation is positively associated with progesterone level and that their homoerotic motivation appears to (non-significantly) decline as a function of conception risk are consistent with this prediction.

14. If sexual fluidity serves to promote female-female bonds, heterosexual women who evidence high levels of fluidity (e.g., the most non-specific patterns of genital arousal) should have a larger number of close female friends compared to heterosexual women with lower levels of fluidity.

Although we are unaware of empirical evidence bearing on predictions 4-14, several studies indirectly relevant to the first three predictions exist. These studies compared rates of abuse and rape among women of various sexual orientations (e.g., Balsam, Rothblum, and Beauchaine, 2005; Harrison, Hughes, Burch, and Gallup, 2008; Scheer et al., 2003). As our predictions concern experiences that may prompt heterosexual women to engage in same-sex sexual behavior, and these studies explored experiences that may influence the expression of a self-identified same-sex sexual orientation, their findings do not directly bear on our predictions. However, as some women transition from a heterosexual to a bisexual or lesbian label after having engaged in same-sex sexual behavior (Diamond, 2008), these studies are deemed sufficiently probative to warrant discussion here.

Contrary to prediction one (physical abuse), Harrison et al. (2008) found that those who engaged in same-sex sexual behavior (lesbian undergraduates) were not more likely than heterosexual female undergraduates to have experienced physical abuse by male mates. However, among those who were abused, lesbians experienced marginally significantly greater severity of abuse and a significantly higher frequency of abuse by men. It appears that experiencing frequent, severe abuse and not abuse per se may differ between lesbians and heterosexual women. In support of this notion, when comparing self-identified lesbians who had previously had sex with a man to sexually-experienced heterosexual women, Harrison et al. (2008) found that heterosexually-experienced lesbians
reported that the lifetime physical abuse they sustained from men was more severe and more frequent than that reported by sexually-experienced heterosexual women.

In accord with prediction 2 (rape), Harrison et al. (2008) found that, relative to heterosexual women, lesbians reported significantly more instances of forced, unwanted sexual contact from men. Heterosexually-experienced lesbians also reported more instances of enduring forced, unwanted heterosexual contact than did heterosexual women. In their survey of low-income young women from California, U.S., Scheer et al. (2003) found that compared to heterosexual women, self-identified lesbian and bisexual women reported significantly higher rates of both being “threatened with force to engage in sexual activity” and of having been “forced to have sex.” Lesbian and bisexual women were also more likely than heterosexual women to report a history of rape in adulthood in Balsam, Rothblum, and Beauchaine’s (2005) study of European American adults. This pattern of findings—lesbians, relative to heterosexual women, experiencing more severe and more frequent physical abuse from men and more instances of forced, unwanted male sexual contact and rape—is potentially consistent with predictions one and two.

Rates of abuse by men during childhood and adolescence also vary as a function of self-identified sexual orientation in adulthood. Early physical and sexual abuse by men may portend a future mating market in which most men are opportunistically abusive cads as opposed to investing and caring dads. As such, prediction three posits that physical or sexual abuse by men in childhood or adolescence may shunt some girls toward same-sex sexual behavior. Consistent with this prediction, several studies have found that childhood physical and sexual abuse are significantly more prevalent among lesbian women than their heterosexual counterparts (Austin et al., 2008; Balsam, Rothblum, and Beauchaine, 2005; Hughes, Johnson, and Wilsnack, 2001; Ross and Durkin, 2005; Saewyc, Bearinger, Blum, and Resnick, 1999; but see Brannock and Chapman, 1990). Alternatively, it is possible that the association between childhood abuse and sexual orientation stems from lesbian and bisexual children being more likely to be abused by men because of their increased likelihood of gender-non-conforming behavior (for a meta-analysis on the relation between childhood gender-non-conforming behavior and adulthood sexual orientation, see Bailey and Zucker, 1995; for a more recent study see Lippa, 2008).

Relation to Other Theories of Female Sexual Fluidity

At least two alternative explanations for female sexual fluidity have been published (Baumeister, 2000; Diamond, 2006). Whereas we view female sexual fluidity as a contingent adaptation, Diamond “maintain[s] that diverse manifestations of plasticity in female-female desire are by-products of the uncoupling of female proceptivity from female arousability, which evolved in concert with the loss of a circumscribed and observable period of estrus in higher primates” (Diamond, 2006, p. 251). Diamond (2008) conceptualizes proceptivity as one’s hormonally-driven, relatively stable libido and arousability as one’s dynamic capacity to become aroused by specific stimuli and
situations. The greater role of arousability than proceptivity among women than men accounts for women’s greater degree of situation-dependent sexuality in Diamond’s view. Although Diamond (2008) notes that “with the right set of circumstances and triggers, people who might never otherwise seek out same-sex activity could nonetheless find themselves aroused by it” (p. 210), she never specifies what those “right” set of circumstances are, nor what makes them right. This is because sexual fluidity serves no evolutionary function in Diamond’s view. Under the alloparenting hypothesis sexual fluidity increased our ancestors’ reproductive success.

Baumeister (2000) puts forward three explanations for female erotic plasticity: (1) women are socially malleable as an adaptation to male power and strength; (2) women’s flexibility is an obligatory feature of their sexual script; and (3) women’s flexibility arises from their weaker sex drive, which is “presumably easier to redirect, channel, or transform than a powerful one” (p. 349). As with Diamond’s byproduct explanation, Baumeister’s proposed explanations fail to specify variables that predict which women will experience sexual fluidity, and when they will experience it. In contrast, the alloparenting hypothesis makes several predictions about specific circumstances that were historically associated with a dearth of paternal investment or the prospect of allomothering investment that will shunt some women into engaging in same-sex sexual behavior.

But why the sex? Because sex is an effective means of forming, increasing, and sustaining pair bonds between people (Brigman and Knox, 1992; Hazan and Diamond, 2000; Leigh, 1989; Meston and Buss, 2009). Sexual behavior with male mates promotes women’s feelings of commitment to these partners (Meston and Buss, 2009). A similar process of sexual behavior-induced commitment is likely to occur between female partners. As female same-sex behavior in bonobos appears to increase both the survival of the mother and her offspring (Furuichi, 1989; Hohmann and Fruth, 2000; Parish, 1994, 1996), it is likely that future research will reveal that sexual relations between female bonobos increases pair bonding and helps ensure that a mother’s offspring are cared for by alloparents (Radtke, 2012). We suggest that psychological mechanisms underlying a similar process of same-sex sexual behavior in the service of alloparenting evolved in human females, and is particularly likely to be triggered among women who encounter a dearth of paternal investment or the availability of allomothering investment.

Questions Raised

In an attempt to address a puzzling question (why does same-sex sexual behavior occur among heterosexual women?), the alloparenting hypothesis raises questions of its own. These questions await research and include:

- Although sex can help to recruit and retain an allomother, does it actually occur between alloparents in our species? Might reciprocal alloparenting be sufficient to account for the bonds formed between alloparents?
- Does women’s week-to-week sexual responsiveness to women fluctuate, and if so,
do such fluctuations correspond to changes in perceptions of their husbands’ provisioning and parenting levels?

Implications

A fluid sexuality that enabled same-sex sexual behavior as a means of securing alloparenting would have been particularly beneficial to ancestral women when their male mates were unable to adequately care, protect, and provide because they were injured, away on prolonged hunts, or preoccupied finding, courting, and mating with other women. The latter scenario was particularly likely to occur within polygynous mating systems. If so, it is possible that men’s relative lack of aversion to a female mate’s homosexual, rather than heterosexual, affair (Confer and Cloud, 2011; Sagarin, Becker, Guadagno, Nicastle, and Millevoi, 2003) and men’s common fantasy of simultaneously mating with multiple women (Ellis and Symons, 1990; Hughes, Harrison, and Gallup, 2004) is an outgrowth of a male psychology designed to promote their mates’ same-sex sexual behavior (C. D. Goetz, personal communication, October 20, 2011). Future research might explore the ubiquity and degree of men’s apparent fascination with female-female sex, and whether it stems more from men’s desire for multiple potential sex partners or more from a desire for multiple potential alloparents, should they become unable or unwilling to invest in offspring.

More generally, although sexual fluidity in women is being increasingly documented and explored by traditional sexuality researchers, relatively little attention to fluidity has been paid by evolution-minded researchers (but see Fleischman, Fessler, and Cholakians, 2012; Radtke, 2009, 2012). This may be due, in part, to some evolutionary researchers’ understandable tendency to overlook behaviors that seemingly fail to arise from mechanisms that promoted ancestral survival or reproduction. Insofar as the alloparenting hypothesis provides a plausible account of the evolution of mechanisms to promote same-sex sexual behavior in women, we hope that it promotes the exploration of same-sex sexual behavior by evolutionary social scientists.

Conclusion

In one coherent framework, the alloparenting hypothesis weaves together several diverse phenomena including (a) female sexual fluidity in human and non-human primates, (b) heterosexual women’s potent genital arousal to both sexes, (c) the rates of rape, physical abuse, and sexual abuse as a function of sexual orientation, and (d) the ubiquity of alloparenting among human and non-human primates. The alloparenting hypothesis also outlines 14 testable predictions, 12 of which specify variables that will shunt some women into forming same-sex romantic bonds that facilitate alloparenting. No other hypothesis for sexual fluidity is as wide-ranging or as falsifiable.

As the engine of evolution is reproduction, same-sex sexual behavior poses a
paradox. This paradox is resolved if, far from impeding reproduction, the trait in question actually facilitates it. In light of the alloparenting hypothesis, a trait that formerly appeared maladaptive—sexual behavior between women—is recast as an adaptive outgrowth of sexual fluidity. This hypothesized contingent adaptation may have increased ancestral women’s ability to form pair bonds with women who helped them rear children to reproductive age in the face of male rape, death, desertion, and divestment of resources, as well as during stressful childrearing times, or simply when a suitable allomother presented herself. Being born with the ability to go both ways may have been beneficial to ancestral women.

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