

# Putting the “Sex” into “Sexuality”: Understanding Online Pornography using an Evolutionary Framework

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## ABSTRACT

One encounters an obvious problem when using an evolutionary framework to understand online pornography. On the one hand, theories of sex specificity in mating strategies and evolved human nature lead to the prediction that there are commonalities and universals in the content people would seek in online pornography. That is, due to the fact that men have faced a distinct set of issues over the duration of human evolution, research suggests general tendencies in mate preferences, and presumably in the types of pornography that men therefore consume. Likewise, women have dealt with sex-specific challenges during human evolutionary history, resulting in patterns of mate preferences that are reflected in the types of online pornography they consume. Consequently, although the sexes likely differ in the content they prefer, there also should be a rather limited range of material that addresses male and female evolved heritages. Looking online, however, we can immediately ascertain that this limited focus is not the case, and hence, the dilemma. There is a wide range of pornographic material available online, to the extent that we are left with no option but to agree with Rule 34: "If it exists, there is porn of it." This problem demands a solution; how can there be evolved tendencies and yet such diversity in the content of online pornography? We review who the consumers of online pornography are, how frequently they consume it, and the type of content that is most commonly consumed. Our goal is to address the issue of common sexual interests and the diversity of online pornography. We discuss not just sex-specific content but also the variety of interests that are seen within online pornography and erotic literature.

## KEYWORDS

Mate Preferences, Pornography, Internet, Sex Differences, Sexual Selection

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*The Internet is really really good  
For porn  
I've got a fast connection so I don't have to wait  
For porn  
There's always some new site,  
For porn!  
I browse all day and night  
For porn!  
It's like I'm surfing at the speed of light  
For porn!  
The Internet is for porn.*

~ *The Internet is for Porn* by Avenue Q

Not so long ago, before the advent of the World Wide Web, pornography was mostly confined to magazines, film, videos, or DVDs purchased by subscription, newsstand top racks, and shady looking “adult” stores. In the early 1990s, there were 50-75 adult magazines available via newsstands, though many typically carried only the most popular ones (e.g., *Playboy*, *Penthouse*, *Hustler*). Today there are over 2.5 million adult web sites and about 4% of the million most trafficked sites are sex related (Ogas & Gaddam, 2011). The Internet has made pornography far more accessible than ever before and, as a result, far more relevant both to those who are interested in its effects and those wondering what it tells us about human sexual psychology (Salmon & Diamond, 2012; Salmon & Symons, 2003).

With over 75% of households in the United States having Internet access at home (via phones, gaming consoles, laptops, and tablets), there is unprecedented access to sexually explicit materials (US Census Bureau, 2014). While this easy access may be new, pornography itself is not, and it is worth considering the availability of pornography consumed offline before moving on to an in depth consideration of the appeal of pornography in its online forms.

Commercial pornography occurs in every industrialized society and in many developing societies as well. Pornographic artifacts exist from many ancient cultures, from the sculptures and wall paintings that decorated the brothels of the city of Pompeii to Renaissance sculptures and frescos (Bullough & Bullough, 1995; Paglia, 1990). There is little, other than the medium, to distinguish them in nature or design from modern magazines such as *Playboy* and *Penthouse* or the typical modern pornographic movie or online film clip. Not surprisingly, Internet pornography today closely resembles ancient erotica, and there is little evidence of significant changes in the nature of preferences between the early studies of video and DVD pornography to present day Internet forms. Worldwide sales of sexually explicit magazines, books, and videos net approximately \$97 billion annually (CNBC, 2015) and DVD sales alone brought in \$7 billion in the United States in one year (Edelman, 2009).

The advent of the Internet may be changing not only how we consume but also who is consuming. Over the last decade, Internet pornography use has increased, regardless of how pornography is defined (Short et al., 2012). This

growth is likely because, as previously noted, the Internet has made pornography more accessible, in that one does not need to acquire it in a public place. Individuals can instead view pornography with a feeling of anonymity in the privacy of their own home or cubicle in the workplace. Indeed, about a quarter of a billion people are expected this year to consume pornography on their mobile telephone or tablet (Covenant Eyes, 2015). Moreover, one can often find a large variety of pornography for free on the Internet. According to one recent review from [toptenreviews.com](http://toptenreviews.com) (2016), every 39 minutes a pornographic video is created in the United States, while every second, \$3,075.64 (USD) is spent on pornography, 28,258 people are viewing pornography, and 372 people are typing adult search terms. [Toptenreviews.com](http://toptenreviews.com) also claims that there are 4.2 million websites devoted to pornography (12% of all websites), and that there are 62 million daily pornography focused search engine requests (25% of all requests). In this article, we will focus on several key questions concerning Internet pornography. Why do we spend time looking at sex online? What sex differences are there in the consumption of pornography and why do they exist? What does the current research on pornography tell us and what questions are still unanswered?

### EVOLUTIONARY PSYCHOLOGY AND SEX-SPECIFIC MATING STRATEGIES

Before continuing to examine pornography through the lens of evolutionary psychology, it is important to briefly review some basic theory on sex specific mating strategies. While critics often characterize adaptationist work on mating as portraying women as focused on long-term mating and men as focused on short-term sexual opportunities, a significant literature has developed indicating that both sexes engage in both short and long-term mating strategies (see Schmitt, Shackelford, & Buss, 2001 for a discussion of misunderstandings of sexual strategies theory). What is interesting are the circumstances that influence the strategy that is chosen and how the strategy shapes the sex-specific mate preferences discussed above. Mating strategies are different for men and women because the adaptive problems are somewhat distinct when looking for a short-term mate (e.g., variety, sexually accessible, fertile, and not interested in commitment) versus a long-term mate. For example, in a US sample, when men follow a short-term mating strategy, their standards are lower on a number of characteristics than when they are seeking a long-term partner (Buss & Schmitt, 1993). Men interested in short-term mating are generally interested in a wider range of partner ages than they might for a long-term relationship, and care less about intelligence, charm, loyalty and various other traits. However, they have an increased preference for sexual experience and high sex drive, which may indicate women possessing these characteristics would be more open to short-term sexual encounters. Unsurprisingly, women in porn are frequently depicted as young, yet highly experienced and with high sex drives.

Evidence from a variety of sources suggests that women also sometimes follow short-term strategies. At face value, men could not have evolved a powerful desire for short-term mating if no women were willing to also engage in this behavior (Smith, 1984). More convincingly, though, cross-cultural studies document the

significant extramarital activities of women (Buss, 1994; Hill & Hurtado, 1996; Shostak, 1981), as well as American college women who engage in 'hook-up' behavior (Garcia & Reiber, 2008; Townsend & Wasserman, 2011). Furthermore, studies that examine women's preferences when pursuing a short-term strategy report that the value women place on male attractiveness (Buss & Schmitt, 1993; Gangestad & Simpson, 1990) and symmetry (Gangestad & Thornhill, 1997) increases, along with a preference for masculine facial features (Waynforth, Delwadia, & Camm, 2005). These are presumed to be indicators of male genetic quality, meaning that in short-term mating, evolved mechanisms designed to obtain good genes are being triggered such that these women find more masculine facial and bodily features especially attractive, compared to how they value them when they are seeking a long-term commitment.

### **IMPLICATIONS OF SEX DIFFERENCES IN SEXUAL STRATEGIES FOR BEHAVIORS CONCERNING PORNOGRAPHY**

What do these differences in sexual strategies suggest about pornography consumption? First, pornography or erotic sexual material for men and women will be different in content. One would expect male oriented porn, whether delivered over the Internet, DVDs, or magazines, to be focused on short-term mating, meaning it will contain a variety of young, sexually eager (i.e., not requiring much mating effort on the part of the men), and attractive (i.e., curvaceous or fertile appearing) women. There should be a strong visual aspect, showing not just the attractiveness of the women but also emphasizing that they are different women, which implies a focus not only on female bodies but on their faces. A focus on long-term commitment or the evaluation of partners for long term relationships need not be included in the content. Indeed, male pornography preferences for exposure to a variety of different women are a reflection of the Coolidge effect (that fact that males exhibit renewed sexual interest when exposed to novel females). Naked novel females are particularly exciting not only to experience in person but also to watch. One would expect that women would not find this type of pornography as appealing as men and so would consume it at a much lower rate.

In contrast, female oriented pornography presumably is focused on the selection of long-term mates (i.e., the process of finding and evaluating male quality as well as the sexual resolution of that journey) and that the men featured in such material will exhibit features women desire in long-term mates (e.g., status, ambition, strength, physical attractiveness, kindness). This prediction would suggest less reliance on visual cues and more on ones related to the individual male's behavior and history of behavior. Further, this genre should be less frequently consumed by men. In the rest of this paper, we will consider the existing evidence from studies of online pornography. To what extent does the literature support the predictions made by an evolutionary perspective?

### WHO SEARCHES FOR PORNOGRAPHY ONLINE

In 2016, there were 23 billion visits to Pornhub (an adult video archive site) and 92 billion of their videos were watched worldwide ([www.pornhub.com/insights/2016-year-in-review](http://www.pornhub.com/insights/2016-year-in-review)). When it comes to traffic on sex sites online, there are sex differences in frequency and in specific uses. In an online poll of 9,000 participants, 86% of males accessed pornography online while 59% of females did (Cooper, 2000). In a study of 216 Portuguese women, 57% reported using pornographic websites and 7% stated they spend more than 6 hours per week doing so, with the purposes of entertainment, curiosity, or due to feeling sexually aroused (Gaspar & Carneiro, 2012). These latter statistics might seem surprising, as many people seem to believe males are the only significant consumers of sexually related material online but that is clearly not the case. Other studies have reported similar sex differences in frequency of traffic with 75% of males reporting viewing pictures or watching movies/clips while only 41% of women downloaded or watched pornography online (Ferree, 2003). A study focusing specifically on adults 18-26 years of age reported 87% of men using pornography with some frequency while only 31% of women did (Carroll et al., 2008) and a study comparing online sexual activity between American and Peruvian college students documented significantly greater consumption of online sexual material by men cross-nationally (Velezmo, Negy, & Livia, 2012). Regardless, while the percentages vary, the direction of the sex difference does not: men are always the larger percentage of online consumers. It should also be remembered that many men access pornography in other venues (e.g., DVDs, magazines) whereas most women accessing pornography currently seem to be doing so over the Internet as availability has increased.

In addition to the bias with respect to the number of men versus women engaging with Internet porn, there are some noteworthy differences in men's and women's online activity. There is evidence that men are typically consuming pornographic videos and explicit photos, while women are often engaging in cyber chat and reading erotic fiction (Cooper, 2000; Ferree, 2003). This difference is not surprising considering that men are more responsive to visual sexually arousing stimuli than women, while women's sexual psychology is more likely to be activated by the mating contexts seen in written stories of sexual relationships (Ellis & Symons, 1990; Hamann, et al., 2004). There are also corresponding sex differences in terms of using online material as a masturbatory aid. In one study, 72% of Canadian college men masturbated while online while only 22% of women did so (Boies, 2002).

### EVOLUTIONARY PSYCHOLOGY AND ONLINE PORNOGRAPHY

What is often missing from discussions of online sex is a deep understanding of *why* the Internet contains the information it does. Ogas and Gaddam (2011) are a refreshing exception, as they use evolutionary psychology to explain the data they obtained from various search engines, as well as other

sources of Internet content such as personal ads, websites and electronic romance novels. For example, they collected 400 million unique queries from the Dogpile search engine from July 2009 to July 2010. They report that 55 million of these queries were ones seeking sexual content, and of these, the most common term was “youth” (13.5%). They propose that these queries represent the desires of about 2 million people, explaining their results as reflections of the adaptive nature of human sexual psychology, as well as referencing sources of individual differences.

Their results, indicating the overwhelming frequency of searches for terms related to youth, clearly reflect men’s evolved interest in young women. They further argue that only 20 different categories (or ‘interests’) account for 80% of all sexual content searches, which shows a surprising lack of diversity. From an evolutionary perspective, this homogeneity is reasonable, given that the mating-relevant problems (and interests) individuals face tend to be rather similar, at least within sex. In other words, the ways in which we engage with the Internet and seek certain types of content reflects solutions to issues our ancestors faced during human evolution. We note that these desires may be different from the choices that people actually make because human behavior is often far more constrained than desire. For example, a majority of men might desire a woman who resembles Angelina Jolie but only a small minority of men will have high enough mate value to obtain such an attractive woman. Our own mate value constrains actual mate choice in a way that our desires does not. Consequently, pornography actresses can be seen as ideal rather than realized mates.

Men and women have faced distinct mating-related issues and the resulting ramifications are observed in the types of information that are found on the Internet. Again referring to the findings of Ogas and Gaddam, the most prevalent term was “youth” (13.5%), followed by gay, MILFs (mothers I’d like to f\*\*\*), breasts, and cheating wives. A fondness for looking at breasts by men should surprise no one, but MILFs and cheating wives might seem unexpected. However, this finding is not surprising. Millford’s (2013) study of adult film star statistics indicates that the average age of female stars in MILF films is 33 years, all exhibiting fertile looking body shapes. In addition, some researchers have documented that women in their 30s have more sexual fantasies than younger women, are more likely to engage in casual sex, and exhibit a greater willingness to have one-night stands (Easton et al., 2010).

With regard to the appeal of cheating wives, one possible explanation may be found in studies of sperm competition. Nick Pound’s (2002) study of sperm competition cues in pornography suggests that men have a preference for viewing sexually explicit content that involves a female and multiple males (32-36% as opposed to 12-13% preferring images or video of 1 female and 1 male or 16-18% for multiple females and a male). His argument is that as pornography is often used as an aid to masturbation, seeing multiple males with one female is a stronger source of arousal, presumably because it triggers a cue of male competition for sexual access, which ancestrally might have translated into sexual behavior that would have increased the chance of fertilization. In the modern world, this adaptive behavior (of being aroused by cues of sperm competition) may result in voluntary exposure to images of such cues because they are sexually arousing. This also

corresponds with reports from men who engage in “swinging” and report increased sexual motivation as a result of their partner’s extra-pair sexual activity (Gould, 1999), which may be especially true when they witness it visually. Similarly, McKibbin, Pham, and Shackelford (2013) examined the frequency of cues of sperm competition (such as one female with two males) reporting that the frequency of images of one woman interacting with multiple men was a significant predictor of the sales rank of the DVD, while scenes of multiple women with one man did not. However, contradictory results were found by Hald (2006) who found the opposite relationship in a Danish sample.

There clearly needs to be more investigation exploring the online popularity of multi-male with one female scenes, as well as the phenomenon of “cheating wives.” One potentially promising area to begin examining is the intended point of view of the audience. The majority of these past studies do not distinguish between male perspectives in pornography involving cheating wives. Is the male viewer intended to take the perspective of being the mate poacher (the cuckold) or the one being poached (the one cuckolded)? One might predict that the fantasy of being the poacher (and being desirable enough to succeed at poaching) would be much more common.

Popular search terms also often include female body parts, which are morphological features that are typically estrogen-dependent traits and signal fertility, thereby garnering male interest. The Alexa Adult List (42,337 total sites) has more than 1,672 large breast web sites with substantial cross-cultural representation. Breasts, buttocks, and big penises are the most popular body parts in sexual searches (Ogas & Gaddam, 2011; Pornhub 2016).

Given the higher proportion of men engaging in Internet sex searches, it may be surprising that the search term “penis” appears quite often, as do associated terms (e.g., “monster cocks”, “big cocks”). This finding indicates that men are far more interested in large penises than women, although Pornhub data (2016) suggests that it does account for a significant percentage of female searches as well. Interestingly, in an eye-tracking study, using non-sexual but naked stimuli, men looked at the area of the penis far more than women (Nielsen & Pernice, 2009). (It is worth noting that even explicit romance novels do not focus on the visual details of the hero’s penis, although small penises are not mentioned. Instead, much more attention is paid to how lovely the penis feels, how the mate uses it to please the heroine, and so on.) One might ask why men are so fascinated by the size of penises. Ogas and Gaddam (2011) suggest that our primate cousins may provide a clue in the use of the penis as a social tool, whether it be used in male-male aggression, status competitions, or to attract females. The focus on large penises may also be part of a male fantasy in which they imagine themselves as the owner of such impressive equipment. Male faces are often missing, or minimized in pornography, making it even easier for a viewer to imagine themselves as the male in the scene. Indeed, Pornhub has a point of view (POV) category where the perspective is of a man (mostly hidden) engaging with sexual acts with a woman, with the camera angles suggesting that the viewer is seeing it through his own eyes and the interaction involves his own body. In summary, erect penises appear to be of far more interest to males than females across a variety of primate species. It also seems likely that male interest in penises is mainly a form of male-male

competition and wanting to see how one measures up rather than any sexual desire per se, but the question of the visual role of the penis in male arousal is not clearly answered by any study of which we are aware.

We mentioned previously that men and women seem to be interested in different features in their pornography/erotica. One way to look at this difference is to examine the most popular web sites visited by men and women. The top five sites for men (with visitors between 7.4 and 16.0 million/month) are all adult video sites (including Pornhub.com and YouPorn.com) while the top five sites for women include four fiction sites and the fifth is a video site (including FanFiction.net, eHarlequin.com, and www.archiveofourown) (Ogas & Gaddam, 2011; Salmon, 2017). Men are looking at images online while women are focusing on stories (comparable to the contrast between DVD and *Playboy* subscriptions versus romance novels and so called “chick flicks”). The fanfiction sites that are in the top five sites visited by women contain stories, often of a romantic and sexual nature, between fictional characters (from television, movies, novels, and so on) and include both heterosexual (think House and Cuddy from *House M.D.*) and homosexual (think House and Wilson from *House M.D.*) tales. The other sites tend to be traditional romance novel sites, and both the fanfiction and romance ones focus on the same aspects as traditional romance novels as discussed previously. That is, they focus on the adaptive problems women have faced (e.g., finding love, finding someone willing to commit who has good genes, and who would be a good provider) just as Internet porn for men taps into the evolved psychology men developed to solve problems of assessing fertile females.

Evolutionary psychology would lead to the prediction that patterns in Internet behavior, in general, would match real-life behavior to a large extent. As Piazza and Bering (2009) elucidate, evolutionary psychology allows one to frame Internet behavior in terms of input into domain-specific psychological mechanisms that have been shaped over human history. Thus, there would be no important differences between online and offline behavior, because the information obtained online is still being processed and evaluated by an evolved brain that uses solutions to adaptive problems. Therefore, why is it that men (for the most part) look for young but not elderly women when searching online pornography? Because youth is a characteristic that indicates fertility and high reproductive potential, which men unknowingly prefer. Despite there being a plethora of oddities one can find online (e.g., elder pornography, pregnant pornography, pornography focused on amputees, clowns, etc.), essentially pornography revolves around the same basic content as we reviewed earlier. No one can doubt that there is a wide range of pornographic material available online; one can easily satisfy almost any preference or curiosity with a few search terms. Indeed, we are left with no option but to agree with the popular Internet meme known as Rule 34, which states “If it exists, there is porn of it.”

Yet, at the same time, the majority of pornography tends to fall into stable and predictable categories. Take, for example, the categories used by Pornhub, which, as briefly mentioned, is one of the largest online sites used to obtain pornography. Content is categorized according to a variety of indices, and reports indicate that the most well used categories are teen, lesbian, MILF, amateur and ebony (Giannotta, 2013). Pornhub does have pornography to appeal to a wide



assortment of tastes and includes many categories to select from, such as different ethnic groups, the number of individuals involved (e.g., orgies), the type of activity (e.g., anal sex), or that vary by the features of those participating (e.g., elderly). The fact that these are not the categories that are primarily used supports the idea that, although pornography of some form presumably exists for almost everything one could imagine, perhaps such less common forms are best considered novelties or a creative expression of sexuality rather than appeasing the majority of viewers' desires.

Therefore, the problem of how there can be evolved tendencies and yet such diversity in the content of online pornography is readily solved. The vast majority of online porn does reflect our evolved interests and desires, while there is variation that taps into individual differences, curiosity, or novelty.

### CROSS-CULTURAL VARIATIONS

One way of looking at pornography is to situate it within a model of evolved cultural variability. The broad ubiquitous themes reflect our evolved sexual psychology, while the variations are the product of local culture and individual history. In cultures or societies with adult magazines/books and DVDs, pornography within specific regions looks similar to how we described it in previous sections. Additionally, with the advent of the Internet, pornography produced in one part of the world can pretty much be consumed anywhere there is Internet access (with the proviso that laws do not prohibit its consumption; e.g., as of 2009 it is illegal in the Ukraine). Further, most cross-cultural work on pornography has not looked at variation in content so much as variation in consumption/availability and possible impacts on sexual violence (Diamond, Jozifkova, & Weiss, 2011; Diamond & Uchiyama, 1999).

One aspect of pornography that has experienced widespread dissemination from its culture of origin, and resulting interest from academics, is adult anime and manga (both of which can also be found on the Internet). Japan is well-known for its sexually explicit manga (Japanese comic books) and anime (animated movies), which are globally distributed either in Japanese, in translations, or with subtitles. While the format (i.e., the reliance on cartoon illustrations) was unique to its Japanese origin, many of the major themes will seem familiar and also support the evolutionarily informed predictions made earlier in this paper. For example, one genre of manga is referred to as Lolita erotica or Rorikon. These stories focus on the sexual attraction an older (i.e., usually middle-aged) man feels for a young girl and are marketed to men of all ages (Shigematsu, 1999). This focus on young females is ubiquitous in Japanese anime and manga. They are often quite childlike in facial appearance, though they typically have sexually mature post-pubertal bodies and correspondingly adult sexual desires. As mentioned before, male mate preferences, shaped by natural selection, are directed toward fertile women, so that young but sexually mature females will be ideal fantasy material.

However, manga are not only marketed to men. "Ladies comics" also have an audience of young to adult women and they can be surprisingly explicit, though

they are often more story focused. This focus is parallel to the stories mentioned with regard to romance novels (e.g., Fisher & Cox, 2010). One common theme seen in such manga is what is referred to as rape fantasy. Unlike rape in the real world, in these fantasies, it is usually portrayed as a reflection of the male's inability to resist the female and their relationship typically continues after the rape. Rather than being seen as a crime of violence, it is portrayed as an example of his uncontrollable love for the female character. This interpretation echoes that of Helen Hazen (1983) in her discussion of the role of rape fantasies in the romance novel genre and the popularity of the "bodice ripper" romances. She writes that in romance novels, "Rape occurs in the woman's world of illusion; it is a ritual of love that exists in fantasy: a man says to a woman that she is so desirable that he will defy all the rules of honor and decency in order to have her" (Hazen, 1983, p.8). In manga and in romance novels, the focus is on the evolutionarily relevant aspects of female mate choice. How committed is this man to a relationship? Is it just about sex or is it about sex with her specifically? If strong, powerful, dominant men are desirable because of their high genetic quality and ability to acquire resources (Buss, 1989; Symons, 1979), having such a man willing to do anything to attain a particular woman is a predictable fantasy.

Finally, we review one last potentially surprising culturally-specific example, which is the sub-genre of adult anime/manga commonly called yaoi, or boy's love. The focus here is on homoerotic romantic and sexual relationships between two young men or boys. Yaoi is primarily marketed to a female audience and the majority of writers are also women. In some ways, yaoi is very similar to the Western genre of male-male romantic/sexual stories based on fictional characters known as slash in which both protagonists are expropriated male media characters, such as Kirk and Spock or Holmes and Watson who fall in love and engage in a sexual relationship (Salmon & Symons, 2003, Salmon & Symons, 2004). The difference is that slash stories are written in a literary style without the illustrations characteristic of manga (for examples of slash online see [archiveofourown.com](http://archiveofourown.com)). Slash and yaoi include many aspects of romance novels that we have already discussed as reflective of female mating psychology (Salmon & Symons, 2003), including a focus on the relationship and/or the falling in love of two people. In addition, despite the obvious challenge to bodily flexibility (which does not matter much in anime anyway) a majority of the sex takes place face-to-face, increasing the intimacy and emotional content of the scenes.

However, there are some themes in yaoi, for example, that may speak more of unique local conditions and are not found cross-culturally. Xu and Yang (2013) discuss the theme of father-son incest in Chinese yaoi which not common in yaoi or slash originating in other populations. Their article situates this unusual pairing as part of generational power conflicts and the relationship between the family and the state. It may be that this sexual exploration of power dynamics might only appear in a culture with China's particular authority structure and state sexual conservatism. It would be interesting to see if other similar incest relationships are found in the pornography of similar cultures.

## CONCLUSIONS

Though much of the research that has been done on pornography has not been evolutionarily informed, the vast majority of findings strongly support an evolutionary perspective. Moreover, there is no competing theory that can explain the patterns of online (and offline) pornography usage and content. An adaptationist perspective on human sexual desires and dispositions makes sense not only of the content seen in sexual material available online but also how it is tailored to male and female audiences. Online pornography illustrates the differences between male and female sexual psychology, and draws attention to the variability within sex (as seen in Rule 34), as well as the individual and cultural differences in viewing interests that reflect specific developmental experiences.

However, there are a number of questions relating to online and offline pornography that are unanswered, many of which focus on individual or cultural differences. For example, while we reported the results of a number of studies showing greater online consumption by men, there are a large number of women consumers. Is this subgroup of women consuming more or less pornography than men on average, and is what they are consuming, as we have suggested, essentially different from what men consume? What are the ways that these women stand apart from other women who do not consume much pornography; are there interesting individual differences between women that shape their consumption? Are the women consuming pornography online more likely to be following a short-term mating strategy that could be measured by something like the sociosexuality inventory, given that this inventory captures sexual (un)restrictiveness in behavior and attitude?

The question of the appeal of MILFs and cougars is also one that has not been answered to our satisfaction. From a theoretical standpoint, it fits well with a short-term mating strategy and yet the search terms 'young' and 'teen' are more common. One aspect that could be further addressed is exactly who is searching for these terms; are they younger men, older men, men who have had specific experiences that have shaped certain preferences? Similar questions could be asked with regard to the search terms or preferences involving sexual acts of cheating wives. Are the viewers married men, single men, those who are concerned with mate guarding and infidelity, or those who are likely to be the ones with whom women are cheating?

We also feel that the time is ripe for a large scale evolutionarily informed cross-cultural study of pornography content and consumers. Much of the research on pornography has been done with North American participants and it would be useful to know how representative such samples truly are, although the scant existing evidence suggests there are minimal cultural differences. Based on research to date, we expect that the major themes related to male and female mate preferences and mating psychology will be found in most, if not all cultures but that perhaps there are interesting cultural differences worthy of examination that reflect local ecological and historical factors. The usefulness of an evolutionary perspective to studying pornography must be emphasized, and there remain many issues that require further investigation.

## FUTURE DIRECTIONS

There are many possible directions for fruitful research in this area so we close by highlighting an additional set of avenues in need of attention from intrepid scholars. We have already noted several areas that require attention, such as the characteristics of women who consume online porn as compared to those who do not.

1. In light of the Coolidge effect, do pornography preferences progress over time in such a way that increasing novelty (of females and activities) is required for the same payoff? Is there a sex difference such that any progression is different for females than males?
2. Analysis is needed in order to comprehend the popularity of pornography that relies on a storyline involving an incestuous relationship (e.g., father with step-daughter, brother with step-sister). A more complete understanding of the dynamics of incest pornography could be achieved by attending to whether the relationships are of biological, adoptive, or step-kinship. Is it simply the appeal of breaking social taboos or is there an alternative root cause that leads to its popularity? This type of study needs to assess not only pornography aimed at a male audience but also erotica aimed at a female audience with the same or similar themes of familial sex/love.
3. Systematic analysis of the relevance of age to pornography preferences with regard to the popularity of MILFs versus teens needs to be assessed. Does the life history strategy of the viewer influence his preference for different types of female stars?
4. Cross-cultural studies of pornography and erotica are relatively rare, despite websites such as Pornhub publishing data on cross-cultural consumption of videos on their site. There is much untapped potential for examining universal aspects of sexual psychology and local adaptation with cross-cultural data collected from pornography, erotica, and adult manga/anime.
5. While there have been some explorations of homosexual pornography, the majority has not taken an evolutionarily informed perspective (for an exception, see Salmon & Diamond, 2012). This is a great untapped area for testing hypotheses about the impact of sexual orientation on sexual preferences.

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