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Review

Use of sexual stimuli in research and clinical settings: expert opinion and recommendations

Maddie A. Katz, BA (Honours)[1], Trinda L. Penniston, MSc[2], Caitlin Barry, MSc[2], Nina Micanovic, MSc[2], Michael C. Seto, PhD, CPsych[3,4], Meredith L. Chivers, PhD, CPsych[2,*]

[1]Department of Psychology, Wilfrid Laurier University, Waterloo, Ontario, N2L 3C5, Canada
[2]Department of Psychology, Queen's University, Kingston, Ontario, K7L 3N6, Canada
[3]Royal Ottawa Health Care Group, Brockville Mental Health Centre, Ottawa, Ontario, K1Z 7K4, Canada
[4]Department of Psychiatry, University of Ottawa, Kingston, Ottawa, Ontario, K1N 6N5, Canada

*Corresponding author: Department of Psychology, 62 Arch Street Humphrey Hall, Room 232, Queen's University, Kingston, ON, K7L 3N6, Canada.
Email: chiversm@queensu.ca

Abstract

Background: Sexual stimuli, such as sexual videos, images, and narratives describing sexual interactions, are one of many tools used by clinicians and researchers to elicit or augment sexual response. Given the wide variability within sexual stimuli and their effects on sexual response, we provide guidance on when and how to use sexual stimuli, selecting sexual stimuli, and standardizing the use and reporting of sexual stimuli in research and clinical practice.

Aim: This expert opinion review article discusses standard operating procedures when using sexual stimuli in clinical and research applications, addressing 3 broad areas: settings in which sexual stimuli are used, characteristics and contexts of the stimuli, and practical and ethical considerations when using the stimuli.

Methods: This article is based on an expert opinion review of the sexual psychophysiology literature.

Results: First, we discuss the settings in which sexual stimuli are typically used and evaluate the ecological validity of each setting. Second, we review the types of sexual stimuli used in sexual response research, including physical characteristics, depicted sexual activity, and context, and the impacts of these characteristics on sexual response. Last, we discuss the practical and ethical considerations that come with the choice and use of sexual stimuli in clinical and research settings. We address potential limitations of certain sexual stimuli, including practical and ethical considerations such as participant vs experimenter choice, diversity and representation, and proper sourcing of sexual stimuli for use in clinical and research applications. Discussions on the future applications of sexual stimuli, such as the use of virtual reality, and ethical considerations in terms of user-generated Internet sexual stimuli are also explored.

Conclusion: We provide an expert opinion review of the literature regarding use of sexual stimuli for clinical and research applications and offer best use practices and recommendations.

Keywords: audiovisual sexual stimuli; sexual arousal; sexual response; pornography; ethics; sexuality science.

Sexual stimuli—explicit audio and/or visual depictions of individuals that feature erotic content, sexual activities, or sexual interactions with others—are commonly used to elicit sexual arousal for the purposes of research, for clinical assessment of sexual interests, or as part of clinical treatment of sexual difficulties. Of all sexual stimulus modalities used in sexual psychophysiology, videos and still pictures have received the greatest attention within sexual response research. Given the proliferation of sexual stimuli freely available online, the selection of sexual stimuli for research and clinical purposes should ideally be guided by knowledge of the research literature in terms of effects of sexual stimuli on sexual response, individual preferences, and ethical considerations with respect to the production and dissemination of sexual material.

This expert opinion review provides guidance for the use and selection of sexual stimuli in research and clinical settings. The review is not intended to be exhaustive, as in a scoping or systematic review, but rather guided by research on best practices of sexual stimuli for sexual psychophysiology research and clinical practice. First, we describe the settings in which sexual stimuli are typically used and how different settings affect the use of sexual stimuli (see Settings). Second, we examine variability in sexual stimulus content and their subsequent effects on sexual responses (see Characteristics). Last, we review considerations for choosing and using sexual stimuli in clinical and research settings (see Considerations).

Settings

Sexual stimuli are used in a range of settings to meet several different objectives, including research assessment in laboratories (e.g., sexual medicine, psychophysiology) and clinical assessment in hospital and treatment settings (e.g., forensic assessment). In some cases, home assessment of sexual response can occur for both research and clinical purposes. Although these settings differ, they share a similar goal of

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using sexual stimuli to generate sexual arousal (e.g., changes in genital vasocongestion, subjective experience of sexual arousal) and/or examine patterns of sexual response to a range of different sexual cues (e.g., comparing sexual responses to adult vs child sexual cues). Results of these assessments are used to inform treatments of sexual disorders,[1] address research questions about sexual response, or obtain diagnostic information regarding forensically significant sexual attractions, such as sexual attraction to minors.[2]

In a laboratory setting, researchers aim to maximize experimental control in terms of standardizing the sexual stimuli presented to participants, and standardizing the setting in terms of comfort, lighting, and other distractions.[3]. Because of the controlled nature of the environment, in-lab research can use a wider variety of data collection methods that incorporate sexual stimuli and can also allow the researcher to experimentally manipulate the conditions under which sexual stimuli are viewed (e.g., typical testing condition vs false feedback about responses).[4] Home settings, such as a participant's residence, are less common but could potentially be a more ecologically valid location to study sexual response, at the expense of experimental control over confounding variables, such as distraction.

Laboratory assessment

In laboratory research settings, sexual stimuli are typically employed to evoke sexual response in service of research goals such as understanding how sexual stimuli impact sexual arousal and desire,[5] orgasm,[6] and sexual-related disgust,[7] or how different sexual content impacts sexual response.[8] The types of sexual stimuli used in laboratory settings may include sexually explicit written narratives,[9,10] images of nude people,[11] still images depicting sexual activity,[12] and sexually explicit film clips with the audio either included or omitted.[13] Typically, a participant is exposed to a sexual stimulus for a predetermined time period[14] and their physiological and/or subjective sexual response are measured and recorded, either concurrently or after viewing the stimuli (see Chivers et al[5] for a review of other methodologies). Each method of self-report has its strengths and weaknesses.[15] For example, discrete measures of subjective sexual arousal are more prone to impression management than contiguous measurements.[15] Qualitative reactions to sexual stimuli can also be collected to complement psychophysiological measures and provide more insight into individual experience of sexual stimuli.[16]

One concern of using sexual stimuli in controlled environments is ecological validity, or the extent to which the results generalize outside the lab. Research has indicated mixed results regarding whether participants' arousal in lab settings reflect their experiences in a more natural setting.[6,17] To mimic a comfortable environment similar to one's home, in-lab studies can provide the participant with a comfortable chair, blankets, dim lighting, an intercom system for communication, and perhaps most importantly, privacy. Despite these comforts, the artificial nature of research laboratories compared with an at-home environment may remain a concern for participants. The awareness of being in a lab and having responses monitored by experimenters can potentially inhibit participants' reactions to sexual stimuli, as can being semi-nude in a laboratory.[18] Bloemers et al.[17] reported that healthy control participants watching sexual stimuli felt less inhibited when at home compared with an in-lab setting. One of the ways that this can happen is through observer effects, which occur when the participant has the sensation of feeling "watched" by the research team, and therefore cannot react to the stimuli in the same way they would in a natural setting.[19] Given that individuals typically engage in sexual behaviors at home in a private location, the artificiality of a lab may lead a participant to feel uncomfortable when viewing sexual stimuli.[19]

Clinical assessment

In clinical and therapeutic settings addressing concerns with sexual difficulties, such as low arousal or lack of orgasm, sexual stimuli can be used as part of treatment to provide psychoeducation, or to augment sexual response during homework exercises.[1,20–23] Practitioners typically use their judgment to determine whether to use sexual stimuli in treatment[24] or how much choice clients should have over these stimuli.[21,25] While most practitioners believe that using sexual stimuli in therapy can be helpful,[25] rationales for the clinical utility of such stimuli are often not data-driven but instead based either on theory or practitioners' clinical observations.[21,26] Whether clinical treatment that includes sexual stimuli is superior to treatment without has not been empirically established, and practitioners should be mindful that not all reactions to sexual stimuli are benign or positive. Given the potential for some stimuli to be harmful,[27] particularly when naïve clients are not prepared or given informed choice on the nature and content of stimuli used in treatment,[20] some curation by the practitioner is strongly advised given the easy availability of potentially harmful depictions (e.g., aggressive and degrading sexual interactions) in free, online sexual stimuli. Sexual stimuli procured purposely for use in treatment settings might be more desirable than sending a client on to the Internet to discover their sexual interests. At the same time, clinicians' comfort level with sexual stimuli may bias judgment of what sexual stimulus will produce a positive and therapeutic experience for their client. Previewing by the client, either by vignettes or written descriptions, may reduce possible discomfort or harm associated with using sexual stimuli selected by others.

In forensic clinical settings, sexual stimuli are used to evoke sexual response to provide an objective assessment of atypical sexual interests, such as interests in nonconsenting sexual activities or in children.[28] These assessments cannot rely on self-reported sexual interests given the likelihood that someone may deny or minimize these interests because of the social and legal consequences. For example, an individual who has been arrested for sexual contact with a child can be presented with sexual stimuli depicting adult vs child sexual targets while their genital sexual response is simultaneously measured. A trained administrator then assesses their sexual arousal patterns and infers relative sexual interest in children. Similarly, individuals can be presented with sexual stimuli depicting mutually consenting sexual interactions or coercive or even violent, nonconsenting interactions. The response patterns can indicate relative sexual interest in nonconsenting sexual activities.[29] Results of these assessments are important for decisions about case formulation, diagnosis, treatment, and risk management.[30]

Importantly, the types of sexual stimuli that can be used in forensic settings vary by jurisdiction. While both Canadian and American practitioners can use audio narratives that describe coercive or violent sexual interactions,[30] the use of

visual material differs between the 2 countries. Canadian law allows the use of sexually explicit visual depictions of minors for clinical and research purposes, while such material is prohibited in the United States.[28] American practitioners then might use audio stimuli describing sexual interactions with minors compared with interactions with adults. These audio stimuli are also effective in identifying atypical sexual interests in coercive or violent interactions, or in minors, though not as well as visual stimuli.[31,32] Because of legal prohibitions and ethical objections to the use of sexually explicit visual stimuli depicting minors in the United States, computer-generated sexual stimulus sets depicting fictional persons have also been developed.[33] Indeed, many innovations in sexual stimulus development and assessment methodology have been driven by forensic concerns because of the social and legal stakes involved. This includes a lot of the earlier research comparing stimulus modalities (audio vs. visual) and the emergence of stimulus sets that have been validated in multiple studies.[34]

Home assessment

When sexual stimuli are viewed in a natural setting such as one's home, the environment is more under the control of the participant, rather than the experimenter.[10] Physiological sexual response can be assessed in at-home settings[17]; however, given the costs associated with ambulatory equipment, many studies rely on self-report measures, administered via mobile device or computer.[7] Another method of at-home assessment of sexual response to sexual stimuli includes experiments that provide video/audio clips through an online survey platform, followed by self-reported subjective experiences of sexual response.[35] Concerns with sexual response assessments in at-home environments include potential distractions,[17] which may negatively affect sexual response.[36] Researchers keen to employ at-home assessment methods are advised to consider protocols to control or reduce distraction in at-home settings.

Virtual reality

Virtual reality (VR) is now being used in sexuality research[37] to bridge the gap between at-home and in-lab environments, potentially increase the ecological validity of sexual response assessments,[38] and fully control characteristics of depicted persons such as age, gender, and body type.[39] VR allows a 180° immersive experience for the participant by providing virtual environments that mimic real-world environments. When sexual stimuli are viewed through a VR device, the participant may feel more involved in the scenario. The sexual stimulus can be viewed from different points of view (e.g., first- or third-person) and can engage more of the sensorimotor system than more traditional forms of sexual stimuli, such as 2-dimensional video clips.[37] In this sense, VR devices increase the sense of reality for the participant despite their use in artificial environments, allowing them to feel more physically and psychologically connected to the sexual stimulus. In forensic research and clinical settings, virtual reality can be used to generate sexually problematic scenarios (e.g., involving minors and/or violence) without the use of actual persons.[37,39] As a result, the use of these avatars is gaining momentum, particularly in the assessment and study of pedophilia.[39] Virtual reality may not be suitable for all, given this modality can induce motion sickness and vertigo.[40]

Characteristics of sexual stimuli modality and content, and effects on sexual response

Modality

Sexual stimuli can be presented through several different sensory modalities such as visual (e.g., films, still pictures), audio (e.g., narratives describing sexual interactions, sexual vocalizations), and touch (e.g., genital vibration). The most commonly used modality in research settings is audiovisual sexual stimuli: videos depicting sexual activities presented with sound. Audiovisual sexual stimuli are a composite of stimulus modalities—visual and auditory—and evoke the greatest genital and subjective sexual response in cisgender women[41] and men.[42] Sexual vocalizations, such as moans and sighs, further enhance sexual response when accompanying visual cues, evoking stronger genital responses vs silent visual cues among cisgender men,[43] and amplifying self-reported sexual arousal across genders.[44]

Content

Sexual stimuli varies along at least 3 content dimensions (while we identify 3 dimensions here, other dimensions could be described depending on the nature of the research question[s]): the physical characteristics of actors, depicted sexual activities, and contexts within which actor interactions are embedded. When examining differences in sexual response to sexual stimuli, it is also important to consider how all 3 content dimensions relate to the individual's sexual interests. Models of sexual response generally predict greater sexual response to stimuli that are associated with sexual rewards, such as preferred (i.e., aligns with one's sexual interests) vs nonpreferred (i.e., does not align with one's sexual interests) sexual stimuli.[45,46] Greater sexual response to one's preferred sexual stimuli is referred to as category specificity. Sexual responses that do not significantly differ between preferred/nonpreferred categories, yet are significantly higher than responses to a neutral stimulus, are described as category nonspecific. Incorporating the idea of specificity across the 3 content dimensions mentioned previously, sexual responses to sexual stimuli can vary by the categories of sexual cues presented, and thus can be gender specific in the case of gender cues in a sexual stimulus,[11,47] activity specific in the case of sexual activity cues in a sexual stimulus,[48] and/or context specific in the case of contextual cues in a sexual stimulus.[49]

Physical characteristics of actors

The first dimension, the physical characteristics of actors in sexual stimuli, includes features such as gender, age, physical attractiveness,[50] and race[35]; other features may also be relevant; however, the bulk of sexual psychophysiology research has focused on these characteristics. The effects of gender cues on sexual response are investigated by examining sexual response to sexual stimuli that depict both preferred and nonpreferred genders. Studies indicate some gendered effects in sexual response in addition to an interaction between physical characteristics and depicted sexual activities: cisgender women with predominant or exclusive sexual attraction to men demonstrate gender-nonspecific sexual response to complex sexual stimuli depicting gender and sexual activity cues, while gender specificity is found for cisgender women who report predominant or exclusive sexual attraction to women.[8] When sexual activity and context cues are absent, and sexual stimuli depict sexually aroused

genitals only, all women demonstrate gender-specific sexual responses.[45,47,49] Bisexual, gay, and heterosexual cisgender men also show gender-specific response patterns.[51,52] Sexual psychophysiology data from transgender people are few,[52,53] and to our knowledge, no research examining responses of nonbinary and gender diverse individuals has yet been conducted.

The investigation of age as an actor characteristic effect has largely focused on pedophilia in samples of sexually offending cisgender men. Age characteristic effects are observable in genital and self-reported sexual responses, with greater response to preferred age categories.[54] Less is known about actor age effects on cisgender women; however, some researchers theorize that female genital response patterns could similarly follow the pattern demonstrated in samples of men.[55]

Actor attractiveness influences sexual response,[50] with both women and men showing the greatest genital and self-reported sexual response to attractive vs unattractive still images (attractiveness judged by third parties). Similarly, Janssen et al[56] demonstrated that actor attractiveness is correlated with self-reported arousal. Attractiveness, however, is highly contingent upon cultural norms, such as Eurocentric beauty standards highly prevalent within Western cultures[57] favoring European features (e.g., light skin, straight hair) over non-Western features (e.g., dark skin, curly hair). Ideas of attractiveness are also influenced by racial homophily and attitudes, such that sexual arousal is greatest to films depicting actors of the same race as viewers,[58,59] and moderated by racial attitudes.[35]

Sexual activities depicted

The range of depicted sexual activities within sexual stimuli can be considered along at least 3 subdimensions: intensity, preferredness, and consensuality. Stimulus intensity varies within sexual stimuli, with explicit depictions of genital sexual interactions perceived as high-intensity sexual stimuli and erotic interactions (i.e., foreplay, caressing, kissing) as low-intensity sexual stimuli.[60–62] Cisgender women and men tend to show greater genital and subjective sexual responses to high-intensity sexual stimuli such as sexual intercourse.[63,64] A positive linear relationship has been demonstrated between arousal and stimulus intensity; as stimulus intensity increases from nonexplicit depictions of a nude person exercising, to a single person masturbating, to a couple having sex, genital and subjective sexual arousal also increases.[47]

Sexual activities vary in preferredness for certain sex acts. Preferred sexual activities are typically consensual, involving conventional genital and oral sexual interactions without pain or violence. People who report normative sexual interests demonstrate activity specificity, showing the greatest response to normative activities, whereas participants reporting interest in kink/BDSM showed little differentiation in sexual responses to normative and kink narratives.[48] Partner number may also be a sexual activity preference[65]; studies featuring dyadic and group sexual stimuli found that participants' sexual responses were highest to the group sex stimuli.[66,67] However, it is unclear if these results reflect a preference for group or are a result of higher stimulus intensity, with more attractive actors and more sexual activity depicted.

Consensuality has been largely investigated among cisgender men who have sexually offended, to identify correlates of sexual interest in sexual violence and coercion, as well as the effect of power dynamics on sexual response. The literature generally indicates a level of activity specificity: Participants who did not report an interest in sexual coercion or sadism had greater genital responses to consensual nonviolent sex, while those who did report an interest showed greater genital responses to nonconsensual intercourse.[68,69]

Relationship context of sexual interactions

Sexual stimuli depicting interactions between actors are embedded within social contexts, such as whether they are presented in romantic and sexual relationships, which often conform to expected scripts for sexual activity.[70] The relationships between depicted actors are rarely made explicit in sexual stimuli. However, some research has investigated the effects of relationship context (e.g., strangers, friends, long-term romantic partners) on sexual response and demonstrated that both women's and men's genital and subjective sexual responses are sensitive to relationship context cues.[9,71] Individual differences in sociosexuality (interest in casual, uncommitted sex) impact women's and men's sexual responses to casual and unknown sexual partners.[72] Other contexts, such as gender equality in sexual interactions, can additionally impact sexual response. For example, Laan et al[73] examined sexual stimuli aimed at gendered audiences, comparing a typical sexual film with a female-centered film that depicted woman-initiated sex, equal roles in sexual desire and pleasure, and perceptible attraction between actors. Cisgender women reported greater subjective sexual arousal to the female-centered film, while their genital responses did not differ across films.

Considerations for the choice and use of sexual stimuli

Many decision points come with selecting and using sexual stimuli, whether it be for research or clinical practice. In addition to factors associated with research questions, experimental designs, and participant comfort, selection of sexual stimuli for research and clinical purposes is also shaped by consideration for a host of other factors reflecting ethical and fair usage of sexual media.

Participant vs experimenter choice

In research settings, it is common practice for the experimenter to select the sexual stimuli and control which stimulus features are manipulated in their experimental design without consultation with research participants. This is typical, and necessary, in settings in which the objective is to observe sexual responses to specific sexual stimulus features, such as the modality, length, intensity, actors, or sex acts depicted, and compare responses with a neutral or control category of stimulus. As such, experimental control over the content and modality of sexual stimuli increases the internal validity of a study. This experimental control may come at a cost, however, as several studies have demonstrated that researcher-selected films result in lower subjective sexual arousal.[7,56,74]

When the purpose of using sexual stimuli is simply to evoke a strong sexual response, not to test which stimulus features are important, experimental control over content features is often not as relevant as the subjective experience of the participant. Recently, researchers have considered the potential implications when sexual stimuli are chosen by the

research participants. Goldey and van Anders[7] found that participants who self-selected erotic films responded with not only greater self-reported sexual arousal and enjoyment, but also greater disgust, guilt, and embarrassment, compared with erotic researcher-selected films. These disgust, guilt, and embarrassment responses were mitigated when the researchers preselected erotic films that participants later chose from, such that arousal, enjoyment, and negative affect were all lower compared with fully participant-selected erotic films. Bouchard[74] similarly demonstrated that subjective and genital responses were significantly greater to a participant-chosen film relative to a researcher-selected film. Although more research is needed to examine the effects of self-chosen erotica on participant responses, allowing participants to select from a collection of preselected sexual stimuli by researchers may be a suitable option for maximizing the ecological validity of sexual response studies, maximizing self-reported and genital arousal, and minimizing negative affect.

Many published research studies do not provide sufficient details about how the sexual stimuli were selected. In a review of sexual neuroimaging literature, Van't Hof and Cera[75] indicated that selection by the experimenter is the most common method for stimulus selection. However, this selection method may result in sexual stimuli that do not align with the participant's sexual desires and interests. While it is likely impossible to tailor the ideal stimulus for each participant, stimulus selection should in some way be informed by the target research group. It is also important to reflect participant diversity in the selection of sexual stimuli and to avoid content that fetishizes specific groups, e.g., in depictions of submissive Asian women or dominant Black men (unless the research question is about the effects of these kinds of sexual content).[76] While researchers should be careful to avoid stereotypes and objectionable depictions of people in sexual stimuli, they should ideally still seek consultation (preferably compensated) from those depicted in the stimuli.

Diversity within sexual stimuli

Across settings, experimenters, clinicians, and educators using sexual stimuli for work with targeted populations must consider the coverage of population-specific content and determine which characteristics may need to be present within the sexual stimuli to produce the desired outcomes. A wide selection of sexual stimuli are freely available online depicting a diverse range of stimulus features, such as the genders and races/ethnicities of the actors, in addition to a variety of sexual acts (i.e., cunnilingus, fellatio, penetrative intercourse, masturbation, coupled or group sex, etc.). Despite this diversity, sexually explicit media often overemphasize heteronormative and Eurocentric scripts (e.g., sexual acts between cisgender women and men; mostly White actors).[27] Sexual stimuli with characteristics outside these scripts can be limited in comparison. Diversity in terms of bodies and body parts (i.e., penises/vulvas, breasts) are also remiss from sexually explicit media, such that the bodies represented in sexually explicit media are usually not representative of the bodies of the general population.[76] Unfortunately, available sexual stimuli with diverse stimulus content tends to display violent, racist, sexist, and other harmful imagery.[76–80] Consequently, clinicians and researchers may experience challenges when searching for sexually explicit media if they want easily accessible sexual stimuli with diverse stimulus features but do not want to expose their clients and research participants to adverse sexual imagery. Feminist porn websites serve as a move toward an ethical alternative to mainstream websites, for accessing sexual stimuli with nonviolent and nonsexist content to which women and men are more likely to respond with similar levels of subjective sexual arousal (some suggested websites include Bellesa, FrolicMe, Afterglow, SexArt, and CrashPad; The authors have no financial relationships to any of the websites mentioned).[56]

Accessibility of stimuli

Few studies have examined how sexual stimuli can be made accessible to those with disabilities. For those with visual impairments, some literature exists on using audio described video. Rojo López et al[81] found that there were no significant differences in cortisol between sighted and visually impaired participants when viewing audio described (i.e., narrations providing information about surrounding visual elements of a piece of content) and typical audiovisual pornography. While more research is needed, Audio described sexual stimuli may increase accessibility to those who are visually impaired.

Sharing/updating stimulus sets

One potential distractor in sexual stimulus sets is the vintage of the sexual stimuli. The production dates of sexual stimuli can be distinguished via the performer's clothing, backgrounds, or even grooming, as in the case of body hair.[82] While this is not inherently problematic, dated sexual stimuli can be a distractor, particularly given that sexuality study participants are often younger.[83] To address this, sexual stimulus sets should be examined and updated from time to time. However, we do recognize that seeking out and validating new sexual stimuli is time-consuming. A potential solution may be to share sexual stimuli between researchers, allowing researchers to update their stimulus sets without having to invest resources in gathering and validating a new stimulus set. However, ethical care should be taken in selecting and using sexual stimuli.

Ethical considerations

Before the increased prevalence of online pornography, videotapes were common sources of experimental sexual stimuli in sexual psychophysiology research.[84,85] Indeed, the adage that "the Internet is for porn,"[86] while hyperbolic,[87] is not entirely without merit; Pornhub, one of the Internet's most frequented websites for sexual content, recently reported 130 million daily visits,[88] which has only increased during the COVID-19 pandemic.[89,90] Sexual stimuli are common and easily accessible on the Internet. However, increased access and availability should be complemented by an awareness of the ethical issues that impact choice and usage of sexual stimuli.

While it is easy to find free and pirated (i.e., stolen) sexual stimuli online, audio and visual quality can vary significantly. Image quality is important for stimulus selection, particularly in paradigms such as eye-tracking or neuroimaging, in which variation in stimulus quality can produce confounds.[91–93] Researchers and clinicians should also be aware of nonconsensual pornography (NCP), defined as the act of uploading or publishing sexual images or films of a person without their consent.[94] NCP encompasses all forms of nonconsensual pornography, including so-called revenge porn (i.e., sexual

images or videos uploaded without the consent or knowledge of the depicted person, often after the dissolution of a relationship), the creation of computer-generated content (i.e., deepfake porn), and child pornography. While the true prevalence of NCP on the Internet is currently unknown and difficult to ascertain,[95,96] it is clear that some portion of freely accessible sexual content is NCP.[97] This is troubling, as survivors of NCP report severe negative psychological effects knowing depictions of them are seen by others, including posttraumatic stress disorder, suicidal thoughts, anxiety, and depression.[97] It is also often challenging for survivors of NCP to have content of themselves removed from public hosting websites.[98] Additionally, marginalized populations, such as racialized and 2SLGBTQ+ people, are disproportionately targets of NCP.[98–100] While there has been some action to minimize the availability of NCP on the Internet, including Pornhub removing approximately 9 million videos uploaded by unverified users and disabling downloads after investigations found numerous instances of NCP, including videos of minors, on the site,[101] researchers and clinicians should be mindful of NCP when sourcing sexual stimuli online.

Sex workers, as well as other workers in the adult entertainment industry, have proposed that paying for professional sexual content, specifically from production companies or performers with good reputations and track records of ethical conduct, is one way to avoid NCP on the Internet.[102] This suggestion coincides with the basic principles of ethical porn, a contested term generally referring to sexual content made ethically in terms of informed consent among actors, workplace conditions, performer health and safety, transparency, and depicted sexual relations.[103–105] While the availability of free sexual content on the Internet has likely affected expectations of paying for sexual content, sex work remains a legitimate form of labor.[106]

In determining which production companies are ethical, it is important to center the voices and experiences of performers and workers within the adult entertainment industry.[107] Purchasing sexual stimuli, either directly from a production company or the performers themselves, is also likely to provide the added benefit of high audio and visual quality. While the definition of ethical may be contested, attempts can and should be made by researchers and clinicians to move toward obtaining sexual stimuli in a more ethical manner, one that considers the conditions under which the sexual stimuli was produced.

Copyright considerations

Researchers who have not yet used sexual stimuli and other forms of media in experimental paradigms may be concerned about the potential copyright issues that come with using such stimuli without the creator's knowledge or permission. In countries such as Canada and the United States, copyright laws have fair dealing[108] or fair use[109] exemptions for research purposes. While there are debates surrounding the ethics of using copyrighted materials in research, particularly with the rise of user-generated content on the Internet,[110] using sexual stimuli for research purposes typically does not infringe upon copyright law. However, it is advisable to check the copyright laws of the country in which you plan on using sexual stimuli to ensure that copyright will not be violated in the research process. It should also be noted that these copyright exemptions may only apply to research settings. For clinical applications such as diagnostic assessments, in which the clinician or researcher is being paid, using copyrighted sexual stimuli in clinical settings may violate copyright law.

Crediting and sourcing

Finally, works produced using the sexual stimulus in question, such as research articles, should sufficiently acknowledge the stimuli used in the experimental paradigm, in keeping with citation style standards, in a similar way to other audiovisual media. This is not only important not only for proper recognition of the work that goes into the production of sexual stimuli, but also for replicability, which relies upon closely following the original experiment's settings and paradigms.[111] Thus, the proper crediting of sexual stimuli can assist with successful future study replications and help contribute to open science practices.

Conclusion and recommendations

Several considerations should be made when selecting and using sexual stimuli in clinical and research settings. In this review, we focused on 3 domains of factors to consider: the setting for sexual response assessment, the effects of stimulus content and modality on sexual arousal, and the equitable and ethical selection and use of sexual stimuli. In most uses of sexual stimuli, the aim is for participants to experience and report sexual responses that are a valid representation of their sexual functioning, sexual attractions, and sexual interests. Most importantly, we hope for participants to have a positive experience. In making informed decisions about sexual stimuli, researchers and clinicians can mitigate potential harms caused by sexual stimuli, both in terms of the impact on participants, the impact on those depicted in sexual stimuli, and the creators and distributors of sexual media content. Next, we make general recommendations to consider for each domain.

We encourage researchers and clinicians to consider the impact of assessment setting and ecological validity of the participant experience on sexual response. First, we must accept that any assessment of sexual response is to some degree artificial, and any choices will have both benefits and costs. Laboratory assessment affords greater experimental control but at the cost of potential observer effects and lower ecological validity. Observer effects on experience of sexual arousal in the laboratory could introduce confounds such that response patterns or magnitudes of response may be impacted by third variables like impression management.[15] These third variables, though fascinating themselves as moderators of sexual response (and there are numerous others beyond the scope of this review),[112] should temper conclusions about sexual responses, particularly when effects are not large. Home assessment may be a comfortable setting that could facilitate more representative sexual responding but may be more prone to distraction and other loss of experimental control, plus these methods may be less accessible to researchers. As such, researchers primarily rely on laboratory-based assessment of genital responses. Virtual reality technologies, which can allow for more immersive and private experience of sexual stimuli, can also be very intense for participants and in some cases can cause vertigo or motion sickness. Understanding the pros and cons associated with each setting can inform choices and interpretations of response profiles and data.

Content and modality effects on sexual response should also be considered as moderators of sexual response. If the

goal is for participants to experience rapid, unambiguous, and moderate-to-high levels of sexual arousal, films of people engaged in sexual acts will in most cases elicit the greatest genital and subjective sexual response. Researchers must consider, however, that visual depictions of sexual acts may elicit negative emotional responses, such as disgust, that could temper sexual responses.[113] Content effects caution researchers to consider how the individuals and sex acts depicted in sexual stimuli impact sexual response and participant experience. Researchers should strive to include sexual cues that reflect a participant's sexual attractions and interests and, where possible, have options for sexual stimuli that are optimal for the population in terms of their sexuality, gender, and race.

Last, we encourage researchers to strive for ethical and equitable sourcing and use of sexual stimuli. Concerningly, many studies use sexual stimuli primarily depicting White, cisgender, young, able-bodied, and thin performers who do not reflect the diversity of participants, or depict heteronormative activities that exclude the experiences of some participants. Care is needed by researchers to ensure that a variety of scenes/actors/actions are included in sexual stimulus selection and that the actors who were involved in the creation of sexual stimuli are compensated fairly. The increase of user-generated sexual stimuli on the Internet presents ethical concerns regarding its use by researchers and clinicians. Special care should be taken to avoid unethically sourced, nonconsensual content.

Sexual stimuli, when chosen with setting, goals, and effects in mind, and when carefully sourced, can provide valuable insights into sexual response and arousal that may be difficult to attain through other methods used in research and clinical settings. When combined with other research methods such as self-report and physiological measures, we can further understand sexual arousal and response from a holistic and nuanced perspective, one that considers the interconnections across methods and diversity within the whole person. We encourage clinicians and researchers to consider these ethical and practical matters regarding the guidance, selection, and use of sexual stimuli in their clinical and research applications.

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References

1. Brotto LA. *Better Sex through Mindfulness: How Women Can Cultivate Desire*. Greystone Books; 2018.
2. Carvalho J, Bradford J, Murphy L, *et al.* Measuring pedophilic sexual interest. *J Sex Med*. 2020;**17**(3):378–392. https://doi.org/10.1016/j.jsxm.2019.12.008
3. van Lankveld J, Hubben D, Dewitte M, *et al.* The partner's presence in the sex research lab differentially affects sexual arousal in women and men. *J Sex Med*. 2014;**11**(3):697–708. https://doi.org/10.1111/jsm.12406
4. Suschinsky KD, Fisher TD, Maunder L, *et al.* Use of the bogus pipeline increases sexual concordance in women but not men. *Arch Sex Behav*. 2020;**49**(5):1517–1532. https://doi.org/10.1007/s10508-020-01737-4
5. Chivers ML, Suschinsky KD, Timmers AD, *et al.* Experimental, neuroimaging, and psychophysiological methods in sexuality research. In: Tolman DL, Diamond LM, Bauermeister JA, George WH, Pfaus JG, Ward LM eds. *APA Handbook of Sexuality and Psychology, Vol. 1: Person-Based Approaches*. American Psychological Association; 2014: 99–119. http://dx.doi.org/10.1037/14193-005.
6. Paterson LQ, Jin ES, Amsel R, *et al.* Gender similarities and differences in sexual arousal, desire, and orgasmic pleasure in the laboratory. *J Sex Res*. 2014;**51**(7):801–813. https://doi.org/10.1080/00224499.2013.867922
7. Goldey KL, van Anders SM. Identification with stimuli moderates women's affective and testosterone responses to self-chosen erotica. *Arch Sex Behav*. 2016;**45**(8):2155–2171. https://doi.org/10.1007/s10508-015-0612-3
8. Chivers ML. The specificity of women's sexual response and its relationship with sexual orientations: a review and ten hypotheses. *Arch Sex Behav*. 2017;**46**(5):1161–1179. https://doi.org/10.1007/s10508-016-0897-x
9. Chivers ML, Timmers AD. Effects of gender and relationship context in audio narratives on genital and subjective sexual response in heterosexual women and men. *Arch Sex Behav*. 2012;**41**(1):185–197. https://doi.org/10.1007/s10508-012-9937-3
10. Goldey KL, van Anders SM. Sexual arousal and desire: interrelations and responses to 3 modalities of sexual stimuli. *J Sex Med*. 2012;**9**(9):2315–2329. https://doi.org/10.1111/j.1743-6109.2012.02845.x
11. Micanovic N, Timmers AD, Chivers ML. Gender-specific genital and subjective sexual arousal to prepotent sexual stimuli in androphilic men and gynephilic women. *Can J Hum Sex*. 2021;**30**(3):361–373. https://doi.org/10.3138/cjhs.2021-0004
12. Julien E, Over R. Male sexual arousal across five modes of erotic stimulation. *Arch Sex Behav*. 1988;**17**(2):131–143. https://doi.org/10.1007/BF01542663
13. Polan ML, Desmond JE, Banner LL, *et al.* Female sexual arousal: a behavioral analysis. *Fertil Steril*. 2003;**80**(6):1480–1487. https://doi.org/10.1016/S0015-0282(03)02210-6
14. Kukkonen TM. Devices and methods to measure female sexual arousal. *Sex Med Rev*. 2015;**3**(4):225–244. https://doi.org/10.1002/smrj.58
15. Huberman JS, Suschinsky KD, Lalumière ML, *et al.* Relationship between impression management and 3 measures of women's self-reported sexual arousal. *Can J Behav Sci*. 2013;**45**(3):259–273. https://doi.org/10.1037/a0033397
16. Busch T, Penniston T, Conrads GS, *et al.* A penny for your (sexual) thoughts: qualitative analysis of women's and men's self-described reactions to sexual and nonsexual stimuli. *Arch Sex Behav*. 2022;**51**(8):3749–3763. https://doi.org/10.1007/s10508-022-02325-4
17. Bloemers J, Gerritsen J, Bults R, *et al.* Induction of sexual arousal in women under conditions of institutional and ambulatory laboratory circumstances: a comparative study. *J Sex Med*. 2010;**7**(3):1160–1176. https://doi.org/10.1111/j.1743-6109.2009.01660.x
18. Huberman JS, McInnis MK, Bouchard KN, *et al.* Exploring comfort levels and the role of compensation in sexual psychophysiology study participation. *Arch Sex Behav*. 2019;**48**:2389–2402. https://doi.org/10.1007/s10508-019-1458-x
19. Schick V, Calabrese SK, Herbenick D. Survey methods in sexuality research. In: Tolman DL, Diamond LM, Bauermeister JA, George WH, Pfaus JG, Ward LM eds. *APA Handbook of Sexuality and Psychology*. Vol **1**: *Person-Based Approaches*. American Psychological Association; 2014: 81–98.
20. Brewster M, Wylie KR. The use of sexually explicit material in clinical, educational and research settings in the United Kingdom and its relation to the development of psychosexual therapy and sex education. *Sex Educ*. 2008;**8**(4):381–398. https://doi.org/10.1080/14681810802433903
21. Neidigh L, Kinder BN. The use of audiovisual materials in sex therapy: a critical overview. *J Sex Marital Ther*. 1987;**13**(1):64–72. https://doi.org/10.1080/00926238708403880

22. Striar S, Bartlik B. Stimulation of the libido: the use of erotica in sex therapy. *Psychiatr Ann*. 1999;**29**(1):60–62. https://doi.org/10.3928/0048-5713-19990101-13
23. Watson MA, Smith RD. Positive porn: educational, medical, and clinical uses. *Am J Sex Educ*. 2012;**7**(2):122–145. https://doi.org/10.1080/15546128.2012.680861
24. Hanek BA. *Clinical Use of Sexually Explicit Media in the Treatment of Sexual Concerns*. Doctoral dissertation. Massachusetts School of Professional Psychology; 2015. Accessed August 20, 2022. https://www.proquest.com/dissertations-theses/clinical-use-sexually-explicit-media-treatment/docview/2197013699/se-2?accountid=6180
25. Robinson BBE, Manthei R, Scheltema K, *et al*. Therapeutic uses of sexually explicit materials in the United States and the Czech and Slovak republics: a qualitative study. *J Sex Marital Ther*. 1999;**25**(2):103–119. https://doi.org/10.1080/00926239908403983
26. Ratcliffe CG. *The Use of Sexually Explicit Material in Sex Therapy*. Master's thesis. Kansas State University; 2011.
27. Gorman S, Monk-Turner E, Fish JN. Free adult Internet web sites: how prevalent are degrading acts? *Gend Issues*. 2010;**27**(3-4):131–145. https://doi.org/10.1007/s12147-010-9095-7
28. Murphy L, Ranger R, Paul Fedoroff JP, *et al*. Standardization of penile plethysmography testing in assessment of problematic sexual interests. *J Sex Med*. 2015;**12**(9):1853–1861. https://doi.org/10.1111/jsm.12979
29. Lalumière ML, Quinsey VL, Harris GT, *et al*. Are rapists differentially aroused by coercive sex in phallometric assessments? *Ann N Y Acad Sci*. 2003;**989**(1):211–224. Accessed August 21, 2022. https://doi.org/10.1111/j.1749-6632.2003.tb07307.x
30. Murphy L, Curry S, Klapilova K, *et al*. Stimuli used in the measurement of problematic sexual interests. *Int Rev Psychiat*. 2019;**31**(2):126–140 10.1080/09540261.2018.15476.
31. Harris GT, Rice ME, Quinsey VL, *et al*. Maximizing the discriminant validity of phallometric assessment data. *Psychol Assess*. 1992;**4**(4):502-511. https://psycnet.apa.org/doi/10.1037/1040-3590.4.4.502
32. McPhail IV, Hermann CA, Fernane S, *et al*. Validity in phallometric testing for sexual interests in children: a meta-analytic review. *Assessment*. 2019;**26**(3):535–551. https://doi.org/10.1177/1073191117706139
33. Dombert B, Mokros A, Brückner E, *et al*. The virtual people set: developing computer-generated stimuli for the assessment of pedophilic sexual interest. *Sex Abus*. 2013;**25**(6):557–582. https://doi.org/10.1177/1079063212469062
34. Lalumière ML, Harris GT. Common questions regarding the use of phallometric testing with sexual offenders. *Sex Abus*. 1998;**10**:227–237. https://doi.org/10.1023/A:1021369904984
35. Penniston TL. *Racializing Sexual Response: The Role of Identification and Racial Attitudes on Black and White women's Responses to Race Congruent and Incongruent Sexual Stimuli*. Master's thesis. Queen's University; 2022.
36. Anderson AB, Hamilton LD. Assessment of distraction from erotic stimuli by nonerotic interference. *J Sex Res*. 2014;**52**(3):317–326. https://doi.org/10.1080/00224499.2013.876608
37. Milani S, Jabs F, Brown NB, *et al*. Virtual reality erotica: exploring general presence, sexual presence, sexual arousal, and sexual desire in women. *Arch Sex Behav*. 2022;**51**(1):565–576. https://doi.org/10.1007/s10508-021-02111-8
38. Simon SC, Greitemeyer T. The impact of immersion on the perception of pornography: a virtual reality study. *Comput Human Behav*. 2019;**93**:141–148. https://doi.org/10.1016/j.chb.2018.12.018
39. Renaud P, Trottier D, Rouleau J-L, *et al*. Using immersive virtual reality and anatomically correct computer-generated characters in the forensic assessment of deviant sexual preferences. *Virtual Real*. 2013;**18**(1):37–47. https://doi.org/10.1007/s10055-013-0235-8
40. Kim HK, Park J, Choi Y, *et al*. Virtual reality sickness questionnaire (VRSQ): motion sickness measurement index in a virtual reality environment. *Appl Ergon*. 2018;**69**:66–73. https://doi.org/10.1016/j.apergo.2017.12.016
41. Laan E, Everaerd W. Determinants of female sexual arousal: psychophysiological theory and data. *Annu Rev Sex Res*. 1995;**6**:32–76. https://doi.org/10.1080/10532528.1995.10559901
42. Janssen E, Everaerd W. Determinants of male sexual arousal. *Ann Rev Sex Res*. 1993;**4**(1):211–245. https://doi.org/10.1080/10532528.1993.10559888
43. Gaither GA, Plaud JJ. The effects of secondary stimulus characteristics on men's sexual arousal. *J Sex Res*. 1997;**34**(3):231–236. https://doi.org/10.1080/00224499709551890
44. Pfaus JG, Toledano RR, Mihai L, *et al*. Auditory cues alter the valence of subjective sexual arousal and desire induced by an erotic film. *Presented at: 32nd Annual Meeting International Academy of Sex Research; July 12-15, 2006*, Amsterdam, Netherlands.
45. Toates F. An integrative theoretical framework for understanding sexual motivation, arousal, and behavior. *J Sex Res*. 2009;**46**(2-3):168–193. https://doi.org/10.1080/00224490902747768
46. Ågmo A, Laan E. The sexual incentive motivation model and its clinical applications. *J Sex Res*. Published online November 15, 2022. https://doi.org/10.1080/00224499.2022.2134978
47. Chivers ML, Seto MC, Blanchard R. Gender and sexual orientation differences in sexual response to sexual activities versus gender of actors in sexual films. *J Pers Soc Psychol*. 2007;**93**(6):1108–1121. https://psycnet.apa.org/doi/10.1037/0022-3514.93.6.1108.
48. Chivers ML, Roy C, Grimbos T, *et al*. Specificity of sexual arousal for sexual activities in men and women with conventional and masochistic sexual interests. *Arch Sex Behav*. 2014;**43**(5):931–940. https://doi.org/10.1007/s10508-013-0174-1
49. Spape J, Timmers AD, Yoon S, *et al*. Gender-specific genital and subjective sexual arousal to prepotent sexual features in heterosexual women and men. *Biol Psychol*. 2014;**102**:1–9. https://doi.org/10.1016/j.biopsycho.2014.07.008
50. Timmers AD. *Attractiveness and Sexual Response. Doctoral dissertation*. Queen's University; 2019. Accessed December 12, 2021. https://www.proquest.com/docview/2528774866?pq-origsite=gscholar&fromopenview=true.
51. Jabbour J, Holmes L, Sylva D, *et al*. Robust evidence for bisexual orientation among men. *Proc Natl Acad Sci U S A*. 2020;**117**(31):18369–18377. https://doi.org/10.1073/pnas.2003631117
52. Chivers ML, Rieger G, Latty E, *et al*. A sex difference in the specificity of sexual arousal. *Psychol Sci*. 2004;**15**(11):736–744. https://doi.org/10.1111/j.0956-7976.2004.00750.x
53. Lawrence AA, Latty EM, Chivers ML, *et al*. Measurement of sexual arousal in postoperative male-to-female transsexuals using vaginal photoplethysmography. *Arch Sex Behav*. 2005;**34**(2):135–145. https://doi.org/10.1007/s10508-005-1792-z
54. Seto MC. *Pedophilia and Sexual Offending against Children: Theory, Assessment, and Intervention*. American Psychological Association; 2008.
55. Knack NM, Murphy L, Ranger R, *et al*. Assessment of female sexual arousal in forensic populations. *Curr Psychiatr Rep*. 2015;**17**:1–8. https://doi.org/10.1007/s11920-015-0557-1
56. Janssen E, Carpenter D, Graham CA. Selecting films for sex research: gender differences in erotic film preference. *Arch Sex Behav*. 2003;**32**(3):243–251. https://doi.org/10.1023/A:1023413617648
57. Robinson-Moore CL. Beauty standards reflect Eurocentric paradigms—so what? Skin color, identity, and black female beauty. *J Race Pol*. 2008;**4**(1):66–85.
58. Hsu KJ, Lei RF, Bodenhausen GV. Racial preferences in sexual attraction among white heterosexual and gay men: evidence from sexual arousal patterns and negative racial attitudes.

Psychophysiology. 2021;**58**(11):e13911. https://doi.org/10.1111/psyp.13911
59. Reed Hughes KY, Anderson VN. What turns women on?: black and white women's sexual arousal. *Int J Sex Health*. 2007;**19**(2):17–31. https://doi.org/10.1300/J514v19n02_02
60. Bouchard KN, Chivers ML, Pukall CF. Effects of genital response measurement device and stimulus characteristics on sexual concordance in women. *J Sex Res*. 2017;**54**(9):1197–1208. https://doi.org/10.1080/00224499.2016.1265641
61. Bouchard KN, Dawson SJ, Shelley AJ, *et al*. Concurrent measurement of genital lubrication and blood flow during sexual arousal. *Biol Psychol*. 2019;**145**:159–166. https://doi.org/10.1016/j.biopsycho.2019.05.003
62. Suschinsky KD, Lalumière ML, Chivers ML. Sex differences in patterns of genital sexual arousal: measurement artifacts or true phenomena? *Arch Sex Behav*. 2009;**38**(4):559–573. https://doi.org/10.1007/s10508-008-9339-8
63. Both S, Boxtel G, Stekelenburg J, *et al*. Modulation of spinal reflexes by sexual films of increasing intensity. *Psychophysiology*. 2005;**42**(6):726–731. https://doi.org/10.1111/j.1469-8986.2005.00364.x
64. Palace EM, Gorzalka BB. Differential patterns of arousal in sexually functional and dysfunctional women: physiological and subjective components of sexual response. *Arch Sex Behav*. 1992;**21**(2):135–159. https://doi.org/10.1007/BF01542590
65. van Anders SM. Beyond sexual orientation: integrating gender/sex and diverse sexualities via sexual configurations theory. *Arch Sex Behav*. 2015;**44**(5):1177–1213. https://doi.org/10.1007/s10508-015-0490-8
66. Cerny JA, Janssen E. Patterns of sexual arousal in homosexual, bisexual, and heterosexual men. *Arch Sex Behav*. 2011;**40**(4):687–697. https://doi.org/10.1007/s10508-011-9746-0
67. Wincze JP, Qualls CB. A comparison of structural patterns of sexual arousal in male and female homosexuals. *Arch Sex Behav*. 1984;**13**(4):361–370. https://doi.org/10.1007/BF01541908
68. Lalumière ML, Harris GT, Quinsey VL, *et al*. *The Causes of Rape: Understanding Individual Differences in Male Propensity for Sexual Aggression*. American Psychological Association; 2005.
69. Suschinsky KD, Lalumière ML. Prepared for anything? An investigation of female genital arousal in response to rape cues. *Psychol Sci*. 2010;**22**(2):159–165. https://doi.org/10.1177/0956797610394660
70. Wiederman MW. Sexual script theory: Past, present, and future. In: De Lamater J, Plante R eds. *Handbooks of Sociology and Social Research*. Cham, Switzerland: Springer; 2015: 7–22.
71. Timmers AD, Chivers ML. Gynephilic men's self-reported and genital sexual responses to relationship context cues. *Arch Sex Behav*. 2017;**47**(3):617–625. https://doi.org/10.1007/s10508-017-1094-2
72. Timmers AD, Chivers ML. Sociosexuality and sexual arousal. *Can J Hum Sex*. 2012;**21**(3/4):135–146.
73. Laan E, Everaerd W, van Bellen G, *et al*. Women's sexual and emotional responses to male- and female-produced erotica. *Arch Sex Behav*. 1994;**23**(2):153–169. https://doi.org/10.1007/BF01542096
74. Bouchard K. *A Multimethod Investigation of Women's Sexual Arousal. Doctoral dissertation*. Queen's University; 2019.
75. van 't Hof SR, Cera N. Specific factors and methodological decisions influencing brain responses to sexual stimuli in women. *Neurosci Biobehav Rev*. 2021;**131**:164–178. https://doi.org/10.1016/j.neubiorev.2021.09.013
76. Fritz N, Malic V, Paul B, *et al*. Worse than objects: the depiction of black women and men and their sexual relationship in pornography. *Gend Issues*. 2020;**38**(1):100–120. https://doi.org/10.1007/s12147-020-09255-2
77. Bridges AJ, Wosnitzer R, Scharrer E, *et al*. Aggression and sexual behavior in best-selling pornography videos: a content analysis update. *Violence Against Women*. 2010;**16**(10):1065–1085. https://doi.org/10.1177/1077801210382866
78. Mackay J, Mackay P. NDNGirls and Pocahotties: native American and first nations representation in settler colonial pornography and erotica. *Porn Stud*. 2020;**7**(2):168–186. https://doi.org/10.1080/23268743.2019.1695538
79. Vannier SA, Currie AB, O'Sullivan LF. Schoolgirls and soccer moms: a content analysis of free "teen" and "milf" online pornography. *J Sex Res*. 2013;**51**(3):253–264. https://doi.org/10.1080/00224499.2013.829795
80. Zhou Y, Paul B. Lotus blossom or dragon lady: a content analysis of "Asian women" online pornography. *Sex Cult*. 2016;**20**(4):1083–1100. https://doi.org/10.1007/s12119-016-9375-9
81. Rojo, López AM, Ramos Caro M, Espín LL. Audio described vs. audiovisual porn: cortisol, heart rate and engagement in visually impaired vs. sighted participants. *Front Psychol*. 2021;12:661452. https://doi.org/10.3389/fpsyg.2021.661452
82. Ramsey S, Sweeney C, Fraser M, *et al*. Pubic hair and sexuality: a review. *J Sex Med*. 2009;**6**(8):2102–2110. https://doi.org/10.1111/j.1743-6109.2009.01307.x
83. Dawson SJ, Huberman JS, Bouchard KN, *et al*. Effects of individual difference variables, gender, and exclusivity of sexual attraction on volunteer bias in sexuality research. *Arch Sex Behav*. 2019;**48**(8):2403–2417. https://doi.org/10.1007/s10508-019-1451-4
84. High RW, Rubin HB, Henson D. Color as a variable in making an erotic film more arousing. *Arch Sex Behav*. 1979;**8**(3):263–267. https://doi.org/10.1007/BF01541242
85. Quinsey VL, Ketsetzis M, Earls C, *et al*. Viewing time as a measure of sexual interest. *Evol Hum Behav*. 1996;**17**(5):341–354. https://doi.org/10.1016/S0162-3095(96)00060-X
86. Lopez R, Marx J. *The Internet Is for Porn*. RCA Records; 2003.
87. Harford T. *Does Pornography Still Drive the Internet?* British Broadcasting Corporation; 2019. Accessed December 10, 2021. https://www.bbc.com/news/business-48283409
88. Pornhub. The Pornhub tech review. *Pornhub Insights*; 2021. Accessed December 12, 2021. https://www.pornhub.com/insights/tech-review
89. Lau WK-W, Ngan LH-M, Chan RC-H, *et al*. Impact of Covid-19 on pornography use: evidence from big data analyses. *PLoS One*. 2021;**16**(12):e0260386. https://doi.org/10.1371/journal.pone.0260386
90. Zattoni F, Gül M, Soligo M, *et al*. The impact of Covid-19 pandemic on pornography habits: a global analysis of Google trends. *Int J Impot Res*. 2020;**33**(8):824–831. https://doi.org/10.1038/s41443-020-00380-w
91. Arndt S, Antons J-N, Schleicher R, *et al*. Perception of low-quality videos analyzed by means of electroencephalography. *In: Proceedings of the 2012 Fourth International Workshop on Quality of Multimedia Experience*. IEEE; 2012: 284–289. https://doi.org/10.1109/QoMEX.2012.6263836
92. Jia L, Tu Y, Wang L, Zhong X, *et al*. Study of image quality using event-related potentials and eye tracking measurement. *J Soc Inf Disp*. 2018;**26**(6):339–351. https://doi.org/10.1002/jsid.653
93. Kuroki Y, Takahashi H, Kusakabe M, *et al*. Effects of motion image stimuli with normal and high frame rates on EEG power spectra: comparison with continuous motion image stimuli. *J Soc Inf Disp*. 2014;**22**(4):191–198. https://doi.org/10.1002/jsid.237
94. Mania K. The legal implications and remedies concerning revenge porn and fake porn: a common law perspective. *Sex Cult*. 2020;**24**(6):2079–2097. https://doi.org/10.1007/s12119-020-09738-0
95. Ruvalcaba Y, Eaton AA. Nonconsensual pornography among U.S. adults: a sexual scripts framework on victimization, perpetration, and health correlates for women and men. *Psychol Violence*. 2020;**10**(1):68–78. https://doi.apa.org/doi/10.1037/vio0000233

96. Yar M, Drew J. Image-based abuse, non-consensual pornography, revenge porn: a study of criminalization and crime prevention in Australia and England & Wales. *Int J Cyber Criminol*. 2019;**13**(2):578–594. https://doi.org/10.5281/zenodo.3709306
97. Bates S. Revenge porn and mental health. *Fem Criminol*. 2016;**12**(1):22–42. https://doi.org/10.1177/1557085116654565
98. Henry N, McGlynn C, Flynn A, *et al*. Image-based sexual abuse: beyond "revenge pornography". In: Henry N, McGlynn C, Flynn A, Johnson K, Powell A, Scott AJ, eds. *Image-Based Sexual Abuse*. Routledge; 2020. https://doi.org/10.4324/9781351135153
99. Maddocks S. Feminism, activism and non-consensual pornography: Analyzing efforts to end "revenge porn" in the United States. *Fem Media Stud*. 2022;**22**(2):1641–1656. https://doi.org/10.1080/14680777.2021.1913434
100. Noble SU. *Searching for Black Girls. Algorithms of Oppression: How Search Engines Reinforce Racism*. NYU Press; 2018.
101. Kristoff N. The children of Pornhub. *The New York Times*. 2020. Accessed December 14, 2021. https://www.nytimes.com/2020/12/04/opinion/sunday/pornhub-rape-trafficking.html.
102. Lee J. "Ethical porn" starts when we pay for it. *Jiz Lee*. 2015. Accessed December 13, 2021. https://jizlee.com/ethical-porn-consumption-pay-for-porn-anti-piracy/
103. Adult Performer Advocacy Committee. Model bill of rights. Accessed December 15, 2021. https://www.apac-usa.com/model-bill-of-rights
104. Blake P. Why ethical porn? *Ethical Porn*. 2017. Accessed December 14, 2021. https://ethical.porn/2017/04/11/pandora-blake-ethical-porn/.
105. Williams Z. Is there such a thing as ethical porn? *The Guardian*. 2014. Accessed December 15, 2021. https://www.theguardian.com/culture/2014/nov/01/ethical-porn-fair-trade-sex
106. Lee J, Sullivan R. Porn and labour: the labour of porn studies. *Porn Stud*. 2016;**3**(2):104–106. https://doi.org/10.1080/23268743.2016.1184474
107. Hay M. *What's the most ethical way to pay for porn?* InsideHook. 2021. Accessed December 13, 2021. https://www.insidehook.com/article/sex-and-dating/most-ethical-way-watch-porn-according-performers.
108. Copyright Act of Canada, RSC 1985, c. C-42, s. 29. Accessed December 16, 2021. https://laws-lois.justice.gc.ca/eng/acts/C-42/page-6.html#h-103270
109. Copyright Act of 1976, 17 U.S.C. § 107. (1976).
110. Merriman B. Ethical issues in the employment of user-generated content as experimental stimulus: defining the interests of creators. *Res Ethics*. 2015;**10**(4):196–207. https://doi.org/10.1177%2F1747016114560764.
111. Garrett-Ruffin S, Hindash AC, Kaczkurkin AN, *et al*. Open science in psychophysiology: an overview of challenges and emerging solutions. *Int J Psychophysiol*. 2021;**162**:69–78. https://doi.org/10.1016/j.ijpsycho.2021.02.005.
112. Carvalho J, Ferreira L, Rico R, *et al*. Women's cognitive and emotional appraisal of sex pictures: the predictive role of age, exposure time, and sexual beliefs. *J Sex Marital Ther*. 2022;**48**(*5*):489–501. https://doi.org/10.1080/0092623X.2021.2009076
113. Carvalho J, Gomes AQ, Laja P, *et al*. Gender differences in sexual arousal and affective responses to erotica: the effects of type of film and fantasy instructions. *Arch Sex Behav*. 2013;**42**(6):1011–1019. https://doi.org/10.1007/s10508-013-0076-2