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Original Article

Eliminate Chronic Internet Pornography Use to Reveal Its Effects*

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Abstract

There's growing evidence that today's streaming pornography videos are *sui generis*, with unique properties such as inexhaustible sexual novelty at a swipe, effortless escalation to more extreme material, and accessibility by youthful viewers, and that these unique properties are giving rise to severe symptoms in some consumers. Formal research on internet pornography (IP) has thus far failed to illuminate the phenomenon adequately. The usual correlation studies cannot establish which related factor *causes* another (or whether an effect is bi-directional). Yet establishing causation is critically important lest symptoms caused by IP overuse be confounded with evidence of psychological traits and indications of mental disorders. The most effective way to reveal the effects of IP is to ask study participants to *give up* IP use for an extended period and compare them with controls. A possible research design is described.

Keywords

Internet pornography • Sexually explicit material • Pornography effects • Pornography addiction • Study design • Erectile dysfunction • Psychological health • Visual sexual stimuli

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Today's cornucopia of free, streamed, high-definition pornography videos run the gamut from erotic to extreme. Limitless in supply, such videos are increasingly consumed by younger viewers, often via the ubiquitous smartphone. For example, a 2013 study of 16-year-olds found that 96% of the boys and 54% of the girls had watched internet pornography (IP) (Mattebo, Tydén, Häggström-Nordin, Nilsson, & Larsson, 2013). A 2011 UK internet survey reported that young men watch, on average, 2 hours of IP each week ("Young men watch," 2011). This phenomenon represents a massive human experiment conducted on a global scale.

Pornography enthusiasts frame this experiment as one of "free speech versus censorship," "sexual freedom versus morality," "vital information for sexual minorities versus heteronormative tyranny," and so forth. However, there is growing evidence that today's streamed pornography videos are *sui generis,* with unique properties such as inexhaustible sexual novelty at a click or tap, effortless escalation to more extreme material, and accessibility for young viewers, and that these unique properties are giving rise to severe symptoms in some consumers and, indirectly, have adverse effects on others (Wright, Tokunaga, & Kraus, 2016; Stanley et al., 2016). In fact, widespread pornography use is considered by some to be a public health concern (Dines, 2016; Zimbardo & Coulombe, 2016).

Although a full review of research correlating (or failing to correlate) IP use with social and personal problems is beyond the scope of this paper, existing studies associate IP use with greater anxiety (Voon et al., 2014), shyness (Luster, Nelson, Poulsen, & Willoughby, 2013), depression (Weaver et al., 2011), poorer academic performance (Beyens, Vandenbosch, & Eggermont, 2015), ADHD (Reid, Davtian, Lenartowicz, Torrevillas, & Fong, 2013), and relationship dissatisfaction (Morgan, 2011). Researchers have also linked IP use with arousal, attraction, and sexual performance problems, including difficulty orgasming and erectile dysfunction (ED) (Sutton, Stratton, Pytyck, Kolla, & Cantor, 2015; Wéry & Billieux, 2016; Voon et al., 2014, Porto, 2016), negative effects on partnered sex (Poulsen, Busby, & Galovan, 2013; Sun, Bridges, Johnason, & Ezzell, 2014), a need for stronger pornographic material (Wéry & Billieux, 2016), and a preference for using IP to achieve and maintain arousal rather than having sex with a partner (Sun, Miezan, Lee, & Shim, 2015). In the latter study, users with increased interest in degrading or extreme IP also had the greatest concerns about their sexual performance, penis size, and ability to sustain an erection (Sun et al., 2015), suggesting their IP use may have fueled a need for more extreme stimulation.

However, for a number of reasons, formal research on IP has thus far failed to illuminate the phenomenon adequately. First, academic research is painstakingly slow and narrow, while the phenomenon of today's pornography evolves at lightning speed

and may be contributing to a broad range of effects. In the last decade, the technology of pornography delivery has changed so rapidly in ways that increase its risk to users (such as streaming pornography, smartphone access for youngsters and now virtual reality pornography) that by the time a study is released its findings are rapidly becoming obsolete. Even well-designed research dates swiftly, yet academics have little choice but to lean on outdated assumptions in subsequent research. Policymakers do the same thing. To the extent that the scope of the IP phenomenon is rapidly expanding, this can lead to poor decisions. Second, researchers have been slow to acknowledge that some populations, such as adolescents and single males who are exposed to pornography early, are more at risk (Harper & Hodgins, 2016). One consequence is that the gravity of these users' circumstances is not yet fully acknowledged or adequately addressed. Another challenge is that young subjects may not divulge the truth about their pornography use ("Mischievous Responders", 2016).

The Importance of Establishing Causation

More troubling is the possibility that the historical methodologies typically employed by pornography researchers can inadvertently mislead people into mistaking causality. For example, research in 2016 found a strong correlation between internet addiction and social anxiety. The authors suggested that, "individuals who have difficulties engaging and bonding with their peers in real life may instead use the internet" (Kuss & Lopez-Fernandez, 2016). This is a logical inference and implies that pre-existing social difficulties cause excessive internet use. Yet in online pornography addiction recovery forums, one of the most common benefits reported by young IP users who quit is vastly reduced, or entirely healed, social anxiety (Wilson & Jack, 2015). Thus, in these users, social phobia was a *result* of excessive internet use, not the cause.

Correlation studies cannot prove which related factor *causes* another (or whether an effect is bi-directional); yet establishing causation is critically important. Why does it matter?

It matters because an IP user whose symptoms are the result of his use cannot heal except by giving it up. It matters because only when causation is correctly understood can parents and policymakers make sound decisions about who gains access to IP and at what age. It matters because healthcare providers who presume symptoms are pre-existing (rather than caused by internet use) risk incorrectly diagnosing patients as having underlying mental disorders (such as social anxiety, depression, apathy, severe concentration problems or performance anxiety) and prescribing medications for them that, at best, temporarily mask their symptoms. As medications often have side effects, much misery could be avoided by pinpointing IP use as the cause in those who simply need to abandon its use to resolve their symptoms.

Meanwhile, the possibility that IP either causes symptoms that mimic mental and emotional disorders or exacerbates symptoms in those with such disorders is not being adequately investigated. Psychologists and psychiatrists are typically trained to assume that certain symptoms indicate underlying pathologies, and that problematic overuse of a substance or behavior is therefore a *result* of these disorders. Few healthcare providers are advised to consider that internet overuse can cause *reversible* symptoms, which merely resemble those of underlying disorders. Given the similarity of symptoms in those with underlying disorders and those who have similar, but temporary, symptoms from overuse, research that distinguishes which way causation runs in these two groups is vitally needed.

The most practical way researchers can reveal the true effects of IP on users is to design research in which study subjects *give up* IP use for an extended period and researchers measure any changes. It can take months, or even a couple of years, for young men to experience the full benefits of giving up IP use, but most see some benefits long before then. Those who do not may indeed have underlying disorders. To date, only a handful of research teams have asked study participants to cut out IP use to investigate its effects. These will be summarized later.

The Online Porn Experiment

Meanwhile, a huge informal experiment is underway in cyberspace. Hundreds of thousands of experimenters around the world are quitting IP in the hope of resolving their symptoms. These "researchers" are members (or lurkers) in online recovery forums, typically founded by non-religious young men. The largest English-speaking recovery forum has nearly 200,000 members (NoFap: Get a new grip on life, 2016), and a similar Chinese forum boasts 1.8 million members (BaiDu Forum, 2016). Most are young males. They describe similar symptoms and benefits from quitting IP, which typically fall into three categories:

Sexual performance difficulties. These include abnormally low sexual desire for real partners (sometimes self-perceived as "asexuality," even when the consumer is climaxing very frequently to IP), loss of morning erections, difficulty climaxing with a partner (delayed ejaculation, anorgasmia), difficulty achieving or maintaining erections during partnered sex (and therefore difficulty using condoms safely), escalation to pornographic material that is more extreme or does not match original tastes or sexual orientation, often because the user is experiencing difficulty sustaining arousal or erections with familiar material, and "flatlines "shortly after quitting IP (temporary loss of libido, lifeless genitals).

Mood and concentration symptoms. Common mood and concentration symptoms reported include severe, often uncharacteristic, social anxiety, difficulty concentrating,

lack of motivation, depression, emotional numbness, depersonalization, lack of confidence, unexplained low energy or fatigue, disturbing pornography flashbacks during everyday encounters, doubts about one's sexual identity, increased anxiety, and exacerbation of obsessive–compulsive tendencies.

Indications of addiction. Recovery forum members frequently report escalation to more extreme (or forbidden) genres of IP, inability to quit despite negative consequences, loss of interest in activities they once enjoyed, and repeatedly returning to IP even after recovering from severe symptoms after quitting. They also often report withdrawal symptoms during the weeks (and even months) after quitting IP use, such as irritability, insomnia, mood swings, headaches, panic attacks, depression, sweating, lack of focus, lethargy, suicidal ideation, or uncontrollable cravings to use IP. Incidentally, functional magnetic resonance imaging and neuropsychology studies published in the last few years lend strong support to the hypothesis that IP addiction exists and involves brain changes similar to those found in substance addicts (Kraus, Voon, & Potenza, 2016; Love, Laier, Brand, Hatch, & Hajela, 2015).

Obviously, it is possible that in any individual forum member, symptoms such as those listed in the previous paragraphs may be arising from underlying disorders rather than overuse of IP. However, the author has compiled the above symptom lists from *recovery* self-reports. That is, multiple former pornography consumers have reported that each of these symptoms improved, or remitted entirely, after giving it up, suggesting that overuse of IP was causing or exacerbating their symptoms. This anecdotal evidence, gathered from thousands of self-reports on various online recovery forums, suggests that formal research needs to assess the effects of IP viewing by removing the variable of IP consumption.

The author's monitoring of pornography consumers' self-reports on recovery sites began shortly after streamed pornography appeared on so-called "tube sites" at the end of 2006 (Sarracino & Scott, 2008). For the first time in the history of pornography dissemination, these sites offered video on-demand. That is, IP viewers no longer needed to download special applications or risk computer viruses, and could easily erase evidence of their visits from their computers. They could open multiple tabs with pornography videos and click from item to item without pausing. Indeed, for the first time ever, consumers could click to novel IP genres *during* a masturbation session, augmenting the risk of escalating to more extreme material. Users report learning to masturbate with their non-dominant hand so that they could click freely with their dominant hand. Widespread smartphone access marked a second jump in users reporting problems as younger users gained easy access to streamed pornography. More teens then began to register on these recovery forums seeking help and advice.

Although members of online recovery forums experiment with quitting IP for a variety of reasons, most of the impetus for this ongoing experiment stems from young men who have developed sexual dysfunctions they suspect are IP-related. Unexpectedly, many of those who quit because they are desperate to heal sexual dysfunctions also report major improvements in *other* areas of their lives: mental clarity, improved marks at school, energy, motivation, self-assurance and charisma, hunger for and enjoyment of social contact, a wider range of emotions, improved mood and optimism, deeper faith, and decreased depression and general anxiety. Many report increased desire to be in a relationship, more pleasure from intimacy, and a very different, more human, perception of potential mates. It is likely that these benefits, like the initial symptoms, are the result of neuroplastic changes (Park et al., 2016). Some 4,000 recovery self-reports gathered from online recovery forums can be viewed at www.yourbrainonporn.com (Your Brain on Porn, 2016).

How Many Pornography Users Are Adversely Affected?

No one yet knows, because formal research is currently too narrow to pick up all of the effects of IP use experienced and reported by online forum members. However, it is worth reflecting on the sharp, unexplained rise in rates of sexual dysfunction since the advent of streamed pornography. If IP is contributing to this rise, then one must ask what other, equally profound, effects it might be having on substantial percentages of users. Consider the following.

Shortly after streamed pornography appeared at the end of 2006, in a 2008 survey 20% of French men aged 18–24 years reported that they had no interest in sexual or romantic activity (Crumley, 2008). A 2011 Japanese survey reported that 36% of men aged 16 to 19 had no interest in sex, double the figure from 2008 (Reversing Japan's rising, 2012). Is IP use a factor? A 2015 Italian study reported that 16% of high school males who use IP more than once per week report abnormally low libido, while 0% of those who do not use it report low libido (Damiano, Alessandro, & Carlo, 2015).

Between 1948 and 2002, historical rates of ED for men under 40 were consistently 2%–3% and did not begin to rise steeply until after age 40 (de Boer et al., 2004; Prins, Blanker, Bohnen, Thomas, & Bosch, 2002). However, since 2010, six studies have found ED rates of 27%–33% in young men, a 1000% increase in the last 15 years (Park et al., 2016).

More evidence of an unprecedented increase in sexual dysfunctions comes from a sexual function survey (Global Study of Sexual Attitudes and Behavior) administered to large numbers of men in several European in countries. In 2001–2002, the survey was administered to 13,618 sexually active men in 29 countries (Nicolosi et al., 2004). A decade later, in 2011, it was administered to 2,737 sexually active men in

Croatia, Norway, and Portugal (Landripet & Štulhofer, 2015). The 2001–2002 group was aged 40–80. The 2011 group was 40 and under. Based on historical studies, older men would be expected to have far higher ED rates than younger men (de Boer et al., 2004; Prins et al., 2002). However, in just a decade, things had changed radically. The 2001–2002 rates for men 40–80 were about 13% in Europe (Nicolosi et al., 2004); by 2011, ED rates in *young* Europeans aged 18–40 ranged from 14% to 28% (Landripet & Štulhofer, 2015). In the last few years, studies using a variety of assessment instruments have revealed further evidence that sexual difficulties are affecting as many as one in three young men (Landripet & Štulhofer, 2015; Mialon, Berchtold, Michaud, Gmel, & Suris, 2012; O'Sullivan, Brotto, Byers, Majerovich, & Wuest, 2014; Wilcox, Redmond, & Hassan, 2014). These unprecedented rates of sexual performance problems suggest that the total percentage of consumers who have been adversely affected *in all ways* by IP use may be significant.

How Long Do Men Need to Heal?

Some bounce back quickly; some need months or even years to recover fully; and some have underlying issues or pathologies that require professional intervention. Generally, men aged 35 and older report healing from sexual dysfunctions in only 8–12 weeks, and their healing is stable. Their sexual function tends to be recovered as long as they avoid IP. In contrast, younger men who used streamed pornography from the time they began to masturbate (or before) often require 6–12 months, or longer, and their sexual function tends to be less reliable.

The fact that older men often recover more quickly from sexual dysfunctions suggests that those who begin using IP during early adolescence, when the brain is more malleable (Crews, He, & Hodge, 2007), may, in effect, be training for the wrong sport. They are teaching themselves to respond to screens and not to real people, to watch others having sex rather than to court and connect with partners, to rely upon a constant stream of sexual novelty to sustain arousal rather than the pleasure of sensual connection, and perhaps to extreme fetishes viewed online. Their expectations may no longer match real-life intimate experiences. Rewiring an attraction to real people can be difficult for them, not unlike mastering a new language (Porto, 2016). Moreover, early exposure to IP increases risk of addiction (Harper & Hodgins, 2016).

Thus, it is not unreasonable to suggest that IP is both fueling the rise in youthful sexual problems and an unsuspected contributor to emotional and mental disorders, as well as poor academic performance. Psychiatrist Victoria Dunckley, MD estimates that 80% of her young patients are misdiagnosed as having mental disorders when their symptoms are largely due to excessive use of the internet. She recommends a 3-week "screen fast" followed by sensible use, and has documented remarkable improvements in patients who follow this protocol (Dunckley, 2015).

What Does Research That Removes IP Use Find?

Given the importance of doing research that establishes the effects of IP by removing it, it is unfortunate that only five studies in academic journals have called for IP use to be removed to assess its effects. All five reported significant changes. In 2015, researchers correlated IP use with decreased ability to delay gratification when they assessed IP users before and after a 30-day period. Next, they divided participants into two groups. Half were to abstain from their favorite food; half were to abstain from IP. The IP abstainers scored better on their ability to delay gratification. The researchers said, "The finding suggests that internet pornography is a sexual reward that contributes to delay discounting differently than other natural rewards. It is therefore important to treat pornography as a unique stimulus in reward, impulsivity, and addiction studies and to apply this accordingly in individual as well as relational treatment." (Negash, Sheppard, Lambert, & Fincham, 2015).

A 2012 study found that when half of participants tried to abstain from pornography use for 3 weeks, they reported higher levels of relationship commitment (Lambert, Negash, Stillman, Olmstead, & Fincham, 2012). These two studies demonstrate that even in those who are not addicted, who only endeavor to abstain, and who do so for a mere 3 weeks, changes are significant.

In an Israeli case study, a man suffering from abnormally low desire for partnered sex, fetishes and anorgasmia, sought treatment. The sexual intervention called for a 6-week abstinence from pornography and masturbation. After 8 months the man reported increased sexual desire, successful sex and orgasm, and enjoying "good sexual practices" (Bronner & Ben-Zion, 2014).

A 2016 review of the literature related to pornography-induced sexual problems involving US Navy doctors included three clinical reports of men who developed porn-induced sexual dysfunctions (Park et al., 2016). Two of the three men healed their sexual dysfunctions by eliminating porn use. The third man was unable to abstain from pornography use.

In 2016 a French psychiatrist reported his clinical experience with 35 men who developed erectile dysfunction and/or anorgasmia related to their habitual pornography use (Porto, 2016). His therapeutic approach involved the men "unlearning" masturbatory habits associated with their pornography use. Sexual dysfunctions regressed in nineteen patients of the thirty-five patients and these men were able to enjoy satisfactory sexual activity. Three patients were continuing to progress, while thirteen had given up.

Taken together with the thousands of recovery self-reports in online forums, these studies demonstrate the importance of designing research that removes the variable of IP use in order to reveal its effects on users.

Conclusion

The determined efforts of thousands of online forum members suggest that IP could be causing a wide range of symptoms among heavy users. Future research should be conducted on a scale sufficient to prove or disprove the hypothesized potential of IP as a causal factor for these symptoms. Much progress could be made in just 5 years if large-scale studies with good statistical reliability were commissioned and executed.

So, what is the nature of the required research? It demands experimental designs that systematically remove IP as a variable under controlled conditions. In order to create powerful studies capable of demonstrating causality, the experimental designs will need to be based on current best practice in social science research. The hypothesis and experimental design should be lodged publicly or published in advanced of the study and full ethics approval should be granted by the commissioning institution. The scale of the study should be sufficient to allow confidence levels of at least two-sigma (95.45% confidence) in the statistical analysis for even the smallest group of subjects used in the study. Ideally the study would wish to demonstrate causality, if it exists, at a three-sigma level (99.73% confidence) for the hypothesis that removing IP use improves the health of heavy users in specific ways.

The initial cohorts of subjects need to be large enough to accommodate some level of failure to abstain from IP consumption without reducing the number of subjects remaining in the 100% abstinent group to the point where they destroy its statistical validity. Anecdotal evidence suggests that only a percentage will be able to truly quit IP on the first try, but gaining a statistically based understanding of what is happening to the population during the period of trying to abstain is also very important.

The control group will be an equal-sized, matched group of subjects who have equivalent porn consumption habits at the start of the study. They will be monitored on an identical range of factors across the study period to the group stopping porn use.

These design imperatives suggest that research will need to employ timescales longer than 3 weeks. Emphasis should be placed on studying young males, isolating separate cohorts of users under 18 and ideally also those under 16. Banding men over-18 into groups such as 18–20, 21–25 and 26–30 would permit deeper understanding, and would encompass the transition of the adolescent brain to the adult brain as defined by modern neuroscience.

Several variables of each subject's behavior should be measured at the start of the study to provide an effective and secure baseline. Subjects should self-assess their sexual orientation before the study and at the times(s) they are subsequently questioned. Records should be made of each subject's long-term history of voluntary IP consumption, as well as recent IP consumption factored in terms of hours of viewing

per week (or other time interval), time spent masturbating per week and number of orgasms per week. They should also be assessed for evidence of escalation to novel genres of IP or to genres which do not match their original sexual orientation. Self-reports of sexual performance should be gathered for those engaging in partnered sex.

Preferably, data testing could measure what happens in IP consumers at several intervals after quitting, such as 6 weeks, 12 weeks, 6 months and a year, or even two years. Industry-standard tools should be used to measure changes in depression, anxiety, life satisfaction, sexual health, relationship contentment, and so forth before, during and at the end of the study.

Studies also need to investigate a range of cultures, ideally including separate cohorts in Europe, the Middle East, Asia, North America, Africa, South America, and Australasia. This is necessary to demonstrate the degree of universality of IP-related issues, as well as the power of removing its use.

In the meantime, users who suspect IP may be affecting them adversely can make their own experiments simply by giving it up and gauging any changes for themselves.

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