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Abstract

This paper explores the phenomenon of *pornography induced erectile dysfunction* (PIED), meaning sexual potency problems in men due to Internet pornography consumption. Empirical data from men who suffer from this condition have been collected. A combination of topical life history method (with qualitative asynchronous online narrative interviews) and personal online diaries has been employed. The data have been analyzed using theoretical interpretative analysis (according to McLuhan's media theory), based on analytic induction. The empirical investigation indicates that there is a correlation between pornography consumption and erectile dysfunction that suggests causation. The findings are based on 11 interviews along with two video diaries and three text diaries. The men are between the ages of 16 and 52; they report that an early introduction to pornography (usually during adolescence) is followed by daily consumption until a point is reached where extreme content (involving, for example, elements of violence) is needed to maintain arousal. A critical stage is reached when sexual arousal is exclusively associated with extreme and fast-paced pornography, rendering physical intercourse bland and uninteresting. This results in an inability to maintain an erection with a real-life partner, at which point the men embark on a "re-boot" process, giving up pornography. This has helped some of the men to regain their ability to achieve and sustain an erection.

Keywords

pornography addiction, social fragmentation, cultural critique, social isolation, Internet

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PORNOGRAPHY INDUCED ERECTILE DYSFUNCTION AMONG YOUNG MEN

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ABSTRACT

This paper explores the phenomenon of *pornography induced erectile dysfunction* (PIED), meaning sexual potency problems in men due to Internet pornography consumption. Empirical data from men who suffer from this condition have been collected. A combination of topical life history method (with qualitative asynchronous online narrative interviews) and personal online diaries has been employed. The data have been analyzed using theoretical interpretative analysis (according to McLuhan's media theory), based on analytic induction. The empirical investigation indicates that there is a correlation between pornography consumption and erectile dysfunction that suggests causation. The findings are based on 11 interviews along with two video diaries and three text diaries. The men are between the ages of 16 and 52; they report that an early introduction to pornography (usually during adolescence) is followed by daily consumption until a point is reached where extreme content (involving, for example, elements of violence) is needed to maintain arousal. A critical stage is reached when sexual arousal is exclusively associated with extreme and fast-paced pornography, rendering physical intercourse bland and uninteresting. This results in an inability to maintain an erection with a real-life partner, at which point the men embark on a "re-boot" process, giving up pornography. This has helped some of the men to regain their ability to achieve and sustain an erection.

KEYWORDS

pornography addiction; social fragmentation; cultural critique; social isolation, Internet

*P*ornography induced erectile dysfunction (PIED) is a condition that has garnered some attention in the media (Dagens Nyheter, 2017; Abel, 2013), popular literature (Jack & Wilson, 2014) along with being the focus of scientific studies (presented in the literature review below). It might be defined as a dependence on pornography causing an inability to achieve and maintain an erection required for partnered sex (such as intercourse, oral sex, and manual stimulation). In other words, what starts as an alternative to sexual intimacy with a person ends up outcompeting the real thing. To illustrate one aspect of the problem: One becomes unable to feel arousal upon seeing an attractive person in a sexual pose,

unless and until one records and gets to watch the same person, in the same pose, through a screen.¹

The purpose of this study is to treat this problem as a social phenomenon by conducting an empirical study. Ten male respondents have been interviewed, explaining their Internet pornography viewing habits along with their sexual potency problems. Along with this, I have made use of one pre-recorded video interview; and a set of five diaries (three text and two video diaries). This empirical material is then analyzed using social theory, to assess which, if any, aspects of the theory may be deemed relevant and where it may offer insights into the matter, as well as where it falls short.

The study begins with an empirical investigation into men suffering from PIED. This consists of qualitative interviews with 10 respondents, along with one video interview publicly available and accessed through the Internet, as well as three text and two video diaries. In all, the experiences of 16 men suffering from PIED are utilized. This is followed by an analysis of this empirical material using Marshall McLuhan's theory about the social effects of media.

Background

The concept of pornography addiction remains controversial in some quarters. However, the World Health Organization's (2018) *International Statistical Classification of Diseases and Related Health Problems* (ICD-11) uses the term "compulsive sexual behavior disorder" to diagnose, among other behaviors, what otherwise could be termed pornography addiction.² This interpretation is supported by a recent study (Gola & Potenza, 2018). "Cybersexual addiction" and "cyberrelational addiction (where online relationships become more important than real life ones)" (Ross, Mansson & Daneback 2011, p. 459) are other suggested terms and descriptions of the phenomenon in question (or aspects of it).

In a strictly sociological context, where a clinical diagnosis is not as crucial, the most relevant term would perhaps be *self-perceived pornography addiction* (SPPA). The self-identified nature of the problem is stressed by some social scientists (Grubbs, Exline, Pargament, Hook, & Carlisle, 2014), but even without a definitive diagnosis, the fact that the problem manifests itself as an addiction has been accentuated (De Alarcón, de la Iglesia, Casado, & Montejo, 2019 and Sirianni & Vishwanath, 2015). With time, a more standardized and synchronized definition might emerge, but the current state of research in the field is characterised by a certain lack of uniformity in that regard.

A recent systematic review of studies on SPPA concludes that different theoretical perspectives underlie current research on the matter, and that there are diverse definitions available (Duffy, Dawson, & das Nair, 2016). The same conclusion has been reached in another literature review (Wéry & Billieux, 2017). As for the nature of the problem itself, one study has identified a certain addiction process,

¹ On the other hand, for a man who has conditioned his arousal to certain fetishes, or the need to continuously click from one video to another, such a measure will prove ineffective. This issue will be explored in the study.

² It should be noted that neither the ICD-11 nor the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (2013) uses the word "addiction" to describe addictions in general (this includes heroin, gambling and nicotine addictions).

along the following trajectory: “Discovery → Experimentation → Escalation → Compulsion → Hopelessness” (Young, 2008, p. 29).

Since the focus of the present study is not on mere pornography addiction, but specifically its adverse consequences in the form of sexual dysfunction, I shall now be highlighting the research on that particular aspect of the problem. A major 2016 literature review, which examines data from clinical, biological, psychological as well as sociological studies, shows that “evidence has mounted that Internet pornography may be a factor in the rapid surge in rates of sexual dysfunction” (Park, Wilson, Berger, Christman, Reina, Bishop, Klam & Doan, 2016, p. 3). Significantly, the sharp rise in sexual dysfunction is demonstrable amongst men under 40. Several studies cited have correlated pornography consumption with sexual problems including erectile dysfunction; this particularly applies to consumption of extreme pornography. For example, in one study, men with a higher interest in extreme pornography were more likely to be concerned about sustaining an erection than other Internet pornography consumers. (Park et al., p. 13) In one study, 49% of respondents reported consuming pornography previously deemed uninteresting or even disgusting (Wéry & Billieux, 2016). Lower erectile function was also associated with “online sexual activity” in this study. A “habituation effect” has been reported in another recent study as well, with the researchers concluding that the novelty afforded by Internet pornography has the potential to continually feed the addiction (Banca, Morris, Mitchell, Harrison, Potenza, Voon, 2016). Significantly, clinical reports featured in the review indicate that eliminating pornography might reverse the condition. This has been shown in a French study as well, where men who eliminated pornography managed to regain their sexual potency (Porto, 2016).

Yet another literature review highlights studies where men who frequently consume pornography report sexual dysfunctions, mainly difficulties achieving orgasm with a partner. In a study on men with hypersexuality disorders, 71% of men who chronically masturbated to pornography reported sexual functioning problems (Mollaioli, Sansone, Romanelli, & Jannini, 2018). Delayed ejaculation was reported by 33% (Sutton, Stratton, Pytyck, Kolla, & Cantor, 2014). Another study has found that with frequent pornography consumption “an individual may become conditioned to pornographic as opposed to other sources of sexual arousal” (Wright, Sun, Steffen, & Tokunaga 2017, p. 12). The study has found that pornography consumption may lead to reduced partnered sexual excitement. A meta-analysis by some of the same researchers has demonstrated less sexual and relationship satisfaction associated with greater pornography consumption (Wright, Tokunaga, Kraus, & Klann, 2017).

Studies also show that some Internet pornography users report that they reach a point where they begin to prefer it over partnered sex (Young, 2008 and Freeman-Longo, 2000). In an Italian study, 16% of adolescent boys (out of 1163 respondents) who consume pornography more than once a week report abnormally low sexual desire compared with 0% in non-consumers. The number is 6% for those whose consumption extends to less than once a week (Pizzol, Bertoldo, & Foresta, 2015). Male participants in an Australian study have reported that compulsive pornography consumption has had adverse effects on sexual function and arousal (Davis, Carrotte, Hellard, Temple-Smith, & Lim, 2017). Another study has found that pornography consumption may lead to reduced partnered sexual excitement (Wright, Sun, Steffen & Tokunaga, 2017). The results of that study suggest that pornography consumers become conditioned to pornography as a source

of sexual arousal, which has also been confirmed in other studies. For example, one study reaches the following conclusion:

[C]lassical conditioning is also involved in the continuation of problematic sexual activities online. Through repeated pairing of online use for sexual purposes with physical arousal, the latter becomes conditioned so that it is elicited by engaging with the technology, the conditioned stimulus, itself. Thus, the mere sight of a computer screen, the sound of the router connecting to the Internet, and/or the tactile sensations when typing on a keyboard may serve as sources of arousal” (Griffiths, 2011, p. 114).

Furthermore, in an experiment where video pornography was employed, participants who had been subjected to a high exposure to erotica experienced lower responsivity to pornography of the regular variety (Janssen, 2007). This, again, suggests that consumers build up a tolerance with time and increased use, which in turn may lead to an escalation in terms of the content, where increasingly extreme forms of pornography are needed to achieve arousal. A hedonic adaptation³ approach may be employed to explain this phenomenon (D’Orlando, 2011).

The aim of the present study is to further the research on this topic by exploring PIED as lived and described by men who perceive to suffer from the condition. In doing so, I wish to highlight the process by which PIED ensues. One study described the process whereby addiction arises out of pornography consumption (Young, 2008); similarly, I wish to describe the process whereby PIED ensues out of the addiction.

Method

This study is based on a topical life history method and data triangulation. The former means that only a certain aspect of the subject’s life is investigated (in this case, PIED) and the latter that both interviews and personal diaries (in the form of texts and videos, acquired from the Internet) are combined. The interviews and text diaries are anonymous; the video content is publicly available. The interviews are asynchronous and narrative, meaning that the questions have been submitted first, and the answers are provided at a later point, and the focus of the interviews is the story that the respondent divulges, specifically the description and the structure of the personal experience as it relates to PIED. The text and video diaries published on the Internet serve as a confessional journal, which offers insight into the private life of an individual.

In order to accomplish the set task of interpreting the data based on a social theory (McLuhan’s), I will be using what is called analytic induction, which involves studying a social phenomenon, formulating a hypothetical explanation of that phenomenon, and determining how well the hypothesis serves to explain it (Denzin, 2009, p. 195). In this study, the above procedure is performed by

³ Hedonic adaption has been defined as “a reduction in the affective intensity of favorable and unfavorable circumstances.” (Frederick & Loewenstein, 1999, p. 302). It simply means that one tends to get used to one’s circumstances, be they good or bad, and continuously fall back to a stable emotional state. In the context of pornography, it would mean that a certain variety of pornography will provide the viewer with a certain amount of pleasure for a limited amount of time before it turns unsatisfying, making the consumer move on to a new variety of pornography.

presenting the results of my empirical investigation and determining whether McLuhan's theory serves to explain it.

Marshall McLuhan is famous for stressing that one does not necessarily need to analyze the actual content of the material produced by a medium in order to appreciate its effect on a person and its potential for social impact. In fact, to focus on the content instead of the effect distracts from the real significance of the medium. One should "turn from the content of messages to study total effect" (McLuhan, 1964, p. 28), a technological innovation that revolutionizes the way one understands reality and interacts with the world serves, as it were, as an extension of oneself. This applies in particular to electronic media since they have a bearing on the way our nervous system works. Using McLuhan's theory, the "message" of Internet pornography is the extension or acceleration it creates in the life of a person watching the action on the screen. McLuhan writes of a "technological simulation of consciousness" that extends "our central nervous system itself" (McLuhan, 1964, p. 3) and "affects the whole psychic and social complex" (McLuhan, 1964, p. 4). He envisages a different world and an entirely novel system that constitutes "a global embrace, abolishing both space and time" (McLuhan, 1964, p. 4). He writes of the modern medium creating "the man of action who appears not to be involved in the action," or what in this context might be paraphrased: "the man of sex who appears not to be involved in sex" (McLuhan, 1964, p. 5).

McLuhan also mentions that modern media serve as extensions of man, and he claims that "each extension brings about in the individual and society" something that he refers to as "numbness" (McLuhan, 1964, p. 6). He explains this by claiming that the modern medium "shapes and controls the scale and form of human association and action" (McLuhan, 1964, p. 9) and that this process might lead down the path of "amputation" (McLuhan, 1964, p. 12). The modern media hypnotizes the modern man to the point of the aforementioned state of amputation (McLuhan, 1964, p. 12). McLuhan also refers to something that he calls "the subliminal state of Narcissus trance." This happens when the involved media consumer falls under the hypnotic spell of the relevant medium that, as it were, "has the power of imposing its own assumption on the unwary" (McLuhan, 1964, p. 16). I shall be returning to McLuhan in the discussion section.

Since this study deals with male sexual potency problems, only males have been targeted. There are two criteria to qualify as a respondent for this study. These are: one has experienced an inability or severe difficulty in gaining and/or sustaining an erection with a partner; and one believes that this problem is caused by PIED. In order to establish contact with potential respondents, I put an announcement on an online forum called NoFap Forums (2017) and ended up with 10 respondents. In terms of the diaries, for the text variety, I again used the NoFap Forums and selected the diaries by utilizing the forum search engine, typing in "PIED" in the "Reboot logs" section where the members tell their stories and report their progress in trying to eliminate pornography from their lives. I ended up with three users who mention their struggles with PIED in multiple posts (at least five posts). As for the video diaries, here I utilized the video upload website YouTube. The combined search "PIED" and "NoFap" resulted in about 1,090 videos. Out of these, I found five relevant videos, four of which belong to one person. Apart from the above material, I have also used an unedited 31-minute publically available video interview uploaded to YouTube, conducted with an anti-pornography activist.

Ethical issues in regards to this particular study are primarily related to maintaining the anonymity of the respondents. This does not apply to the video and text diaries that have been made public on the Internet by the creators of these diaries; in the case of those sources, I have made sure to reference them properly. In the American Sociological Association's Code of Ethics (2008), it is stated that "[s]ociologists may [...] use publicly-available information about individuals (e.g., naturalistic observations in public places, analysis of public records, or archival research) without obtaining consent" (Paragraph 12.01). This is balanced off with the following point, taken from paragraph 14: "In their publications [...] sociologists provide acknowledgment of and reference to the use of others' work, even if the work is not quoted verbatim or paraphrased[.]" The result, then, is that the sources for the diaries are disclosed and referenced, whereas the respondents' identities remain undisclosed. I have followed all of the points under paragraphs 11 and 12 of the Code of Ethics, regarding confidentiality and informed consent.

There was an additional measure taken at the behest of the administrators of the NoFap forums. They requested that I conduct the interviews exclusively via the personal messages feature available at the forum website, to avoid obtaining the e-mail addresses of the respondents (as this could enable me to learn more about their Internet presence and therefore, possibly, their real identities). These administrators did not allow me to advertise for respondents on their forums without first agreeing to this and other conditions, which include providing detailed information about myself as a researcher, the objectives and methods of this study, and Örebro University. I agreed to these conditions.

Results

Having processed the data, I have noticed certain patterns and recurring themes, following a chronological narrative in all of the interviews. These are: **Introduction**. One is first introduced to pornography, usually before puberty. **Building a habit**. One begins to consume pornography regularly. **Escalation**. One turns to more "extreme" forms of pornography, content-wise, in order to achieve the same effects previously achieved through less "extreme" forms of pornography. **Realization**. One notices sexual potency problems believed to be caused by pornography use. **"Re-boot" process**. One tries to regulate pornography use or eliminate it completely in order to regain one's sexual potency. The data from the interviews are presented based on the above outline.

This outline is not equally applicable to the diaries since they usually start from the re-boot process and provide limited background information about the history up to that point. In order to complete the picture, additional research would be needed. For example, one might try to contact the diarists and conduct an interview in order to collect additional information. This being said, some diaries are more detailed than others, and in some of them, the narrative runs along the same five-point trajectory. Other diaries provide less information, the focus being on the re-boot process, documenting the progress and counting the days. In the case of these less detailed diaries, only the realization and re-boot stages will be presented.

The Respondents and Diarists

The video interviewee is Gabe Deem (2015), a public figure who became an anti-pornography activist after experiencing erectile dysfunction and concluding that excessive pornography consumption was the cause. The interview was

conducted by a journalist for a news report. It is unedited and uploaded to YouTube by Gabe Deem himself.

For the video diaries, I have used two diaries uploaded to YouTube. The first is by someone with the username AjaxUnchained (2016) who wants to give up pornography and records his progress through video diaries, sharing his experiences and thoughts. Since his YouTube channel does not deal exclusively with PIED – he discusses pornography in general without focusing specifically on erectile dysfunction – I have singled out four videos (because they reference PIED) amongst around one hundred (the rest of which do not). In two of these, he brings up and discusses his sexual potency problems specifically, which he believes to have been caused by excessive pornography consumption (AjaxUnchained, 2016a, and AjaxUnchained, 2016b). In addition to these two videos, I have also picked out the first pornography related one on AjaxUnchained’s channel, where he explains how he decided to stop watching pornography, and also another one, where he discusses the escalation process (AjaxUnchained, 2016c, and AjaxUnchained, 2016d). Another public online video diary that I have used comes from user Hayden Rose (2016). He has uploaded one video where he discusses the issue, doing so rather concisely. So, in this case, AjaxUnchained is an example of a diarist who provides more details, and Hayden Rose is someone who provides less. I believe that the scarcity of the number of videos and the information contained within them has to do with the sensitive nature of the topic at hand, combined with the public form of medium. This is in line with what has been discussed about data triangulation in the method section: there are differences in the anonymous and public narrative in terms of the sheer quantity of information. This means that for this study, video diaries provide less data than do, in particular, anonymous interviews. Hayden Rose’s testimony is therefore only relevant when it comes to a realization and the re-boot process.

The text diaries have been retrieved from the same forum – the NoFap forum – through which I conducted my interviews. I selected the diaries by searching for “PIED” in the “Reboot logs” section, where the members tell their stories and report their progress. I picked out the ones with the most posts, in order to gain the most information, ending up with three diaries. The results are presented based on two themes: realization and the re-boot process. The first diary is titled *Journal of wally_s* (wally_s, 2015). The second one is titled *back on the mountain* (Applehead, 2015), a man who is in his thirties. The last one is by another 52 years old; it is titled *Kidding myself for a coupla decades* (Mooses67, 2016).

Finally, I conducted online interviews. Table 1 lists the respondents’ age, occupation, age of first exposure to pornography and their pornography use habits.

Early Use of Pornography

The respondents and diarists have generally had an early introduction to pornography. In some cases, they first learned about it before puberty.

Gabe Deem mentions that he was introduced to pornography and masturbation at the age of eight, and then staying up late at the age of ten watching pornography on cable television. He was introduced to the Internet variety of pornography, specifically, at twelve.

As for AjaxUnchained, in the first video dealing with pornography, recorded thirty days into his “NoFap” experiment, he mentions that he started masturbating before puberty without providing additional detail.

The first text diarist, wally_s, is 52 years old, which is a bit of an anomaly in this study since the respondents and the other diarists have generally been up to the age of around 30. wally_s mentions starting off watching pornography as an early teenager: “Since I was an early- to mid-teenager I now realize that I have engaged in chronic masturbation. So, most of forty years?” (wally_s, 2015).

Mooses67, another text diarist, mentions starting to watch pornography as a teenager (since he was about sixteen). Interestingly enough, he is the same age as wally_s, that is, 52 years old. He is married.

Table 1 – Respondents Age, Occupation, First Exposure to Pornography, and Pornography Use Habits

Alias	Age	Occupation	First Exposure to Pornography (Age)	Pornography Use Habits (At Their Most Intensive)
Pierre	24	Barman	10	3-5 times/day
André	16	Student	11	2-3 times/day
Dante	25	Marketing Manager	14	Most part of the day
Horace	22	Working in Internet Technology	13	5 times/day
Milton	23	Pizzeria Owner	Around 14-15	6-7 hours/day
Lambert	20	Working in Retail	14	30-90 min/day
Frederick	29	Self-Employed	Around 12-13	7-8 times/day
Cole	21	Sailor	Around 7	5-6 times/day
Patric	31	Musician	Around 8-9	3 hours/day
Owen	29	Works in Pest Control	9	5 times/day

When it comes to the online interview respondents, as is evident from Table 1, five or possibly six of the ten respondents were first introduced to pornography before their teenage years. The youngest got introduced to it around the age of seven; the oldest around the age of 15. The pattern, then, is that exposure to pornography tends to start at an early age.

Building a Habit

Gabe Deem continued to watch pornography throughout high school and college. The use was excessive to the point of watching in school, during class. He would watch it almost every day.

For AjaxUnchained, after his initial introduction before puberty, he got into the habit of watching pornography and masturbating “every single day.” He would go so far as to masturbate “while driving” (AjaxUnchained, 2016c).

All of the 10 online interview respondents mention that when their pornography viewing habits reached their peak, they would watch every day. Lambert’s habits were the mildest, with 30 to 90 minutes a day; Dante’s habits were the most rigorous, taking up most of the day (he mentions being self-employed at the period, thus managing his own time). See Table 2 for the respondents’ age at the first instance of PIED, whether they report an escalation of content (i.e. whether they found the need to turn to more extreme content with time) and, finally, whether they can report a recovery from PIED.

Escalation

Gabe Deem mentions that he started with “soft-core” pornography, and ended up with more extreme content. By extreme, he means such material that used to disgust him and that he would describe as “shocking.” He states: “I need[ed] more excitement, to feel the same level of arousal.” He would watch compilations, i.e., collections of sex scenes in sequence. This suggests that one sex scene was not enough for him to maintain the same level of arousal (Gabe Deem, 2015).

For AjaxUnchained, the escalation process turned out to be traumatic and personally devastating. He explains how he felt the need to watch increasingly “extreme” porn in order to experience arousal. Starting off watching regular heterosexual intercourse, he mentions that after a certain period this would not satisfy him anymore. He would then search for new varieties of pornography until he ended up watching “rape porn,” porn involving feces and urine, “peeping Tom” videos, and what for him turned out to be most shocking: trans-sexual pornography, even though he identifies as a heterosexual. This had a traumatic effect, and he would keep it a secret, until finally revealing this on his YouTube channel.

You want to view something more shocking, something to where you feel that adrenaline rush, that heart pounding, more dopamine hit, and that’s where it lead me. Because, you know, I started watching porn at the age of eleven, just watching regular porn. [...] Soft core porn, then it lead up to hard core porn. Then eventually it lead me into looking at shemales at maybe around, I want to say, fourteen or fifteen (AjaxUnchained, 2016d).

He reiterates that he does not identify as homosexual, and he kept these viewing habits a secret due to feelings of shame. He mentions that he became worried that he would not be able to be attracted to non-transsexual women. He eventually concluded that these pornography viewing habits were not related to sexual orientation per se.

Just know that you need something shocking, something, uhm, something new, something, like, hardcore to trigger that ... trigger more dopamine. ‘Cause that’s what we’re addicted to. We’re addicted to that dopamine

rush. We're addicted to that dopamine hit. And every time I watched something shocking and new I would feel like, like I just like stuck myself up with, like, more heroine and I would get, like, a bigger rush. You know, so, that's the thing that we're addicted to. It's not that we're addicted to she-male porn. We're addicted to something shocking, something new, you know, something that's, like, out of the norm (AjaxUnchained, 2016d).

Moses67 mentions the following:

I'm 52 and have been using porn since I was about 16--sort of a late bloomer from what I gather. Over the years, it's escalated [sic] to the point where now I M[asturbate] at least once a day, wasting a LOT of hours along the way. I am happily married--my wife knows vaguely that I use porn--used porn?--but I keep the extent--and variety--a secret. I definitely am ashamed (Moses67, 2016).

Turning now to the online interview respondents, since McLuhan distinguishes between hot and cold – that is, high and low definition – media, I tried to determine whether video quality was a factor in PIED for them. Therefore, I included questions about escalation in video quality, meaning whether the respondents noticed that a switch from low to high definition video quality affected them in terms of sexual potency. Unfortunately, it was difficult for them to determine whether there ever was such a shift from lower to higher quality of videos because they did not keep track of such developments over time, nor did they keep track of which videos were of good and which were of bad video quality, or how much of the pornography was viewed on a computer screen and how much on the smart phone (they used both).

The hypothesis that high definition pornography is conducive to PIED is therefore difficult to test without resorting to experiments using control groups. One could argue that since the respondents have not taken notice of any difference in how low quality or high-quality videos affected their PIED, this perhaps indicates that the distinction is not important. After all, if it were important and did have an impact, they would perhaps have taken notice of it. However, this is not necessarily the case; since the respondents were generally unaware of the risk of PIED, there would be no reason for them to keep tabs on the video quality of what they watched to establish whether an upgrade in quality did have an adverse effect on them, because they had not considered the possibility that consuming Internet pornography might have an adverse effect in the first place. Also, if the video clips being watched throughout the day vary in terms of quality – some high-definition and some low-definition – there is a practical problem in that it becomes difficult to pinpoint when a possible shift in quality takes place, and it would appear pointless to record these shifts in quality unless one purposefully sets out to conduct a study, which they did not. It could be that at a certain point in time the amount of high-quality video clips increased by a certain percentage, but since these clips were garbled together with clips of lower quality, such a shift would remain unnoticed.

Even when a switch from low to high definition can be determined, it is difficult to pin it down as a factor. Owen explains his own case:

Yes, I did start out with VHS tapes and pay per view television. I can't really say if jumping low-res to hi-res had an impact on me in this way. My viewing was not as great in amount on low-res and I was very young. When I switched to internet porn at age 12, my viewing amount went much higher. Yes, I did start with just a clip or two in the beginning and eventually graduated into multiple clips during a session. By age 16 PIED started. I couldn't get fully erect without touching myself and forcing it to happen. I also had to seek out more extreme clips in combination with self stimulation (Owen, online interview, March 8, 2017).

Due to this, I will not be able to apply this particular empirical data to that aspect of McLuhan's theory, meaning his distinction between low and high definition media.

However, when it comes to escalation from "regular" forms of pornography to "extreme" or "shocking" forms, in terms of the content itself, the pattern is clear. All of the respondents mention such a transition. For example, five of the respondents, who identify as heterosexual, mention that they went from pornography with heterosexual themes to pornography featuring trans-women (what they term "she-male porn"), and three of the respondents mention that they would gradually turn to pornography featuring violence. Andre states:

I began to watch more hardcore material – fighting, BDSM, that sort of genre. At this point I also began to watch it more and more. I slowly climbed through this area of porn until just before my decision to quit it was hardly sex, just beating and abuse – as if the female was just a sex object. I knew it was wrong but nothing 'normal' excited me any more. [...] I was having trouble to get fully erect even with hardcore porn. With 'normal' porn I could not maintain an erection at all. With a real partner it was even worse (Andre, online interview, February 18, 2017).

Escalation of this type suggests that hedonic adaption might be a factor at play. However, since PIED suggests a dependence, i.e. the person needs pornography to function sexually, there appears to be more to the story than mere hedonic adaptation. Dante states:

I went from regular porn, to drunk, to more extreme porn even had a shift into shemale porn. I needed more and more extreme porn to get off. this was between 22-25 [...] There has been very random times where I can get an erection. Through crazy fantasizing and role playing (Dante, online interview, February 18, 2017).

Frederick states:

I shifted towards more extreme. From man-girl to more men-girl, more girls, compilation of intense short clips, rough, piss, humiliation, role plays etc. But I never got to scat, homosexual type. The progress was gradual and sometimes it took few steps back. For example when I spent three weeks on a summer camp without access to porn (I did not even think about it because so many fun things going on), after that it was just enough to watch something milder (Frederick, online interview, March 1, 2017).

Horace:

I remember when I found the first videos online when I was about 14 only watching normal PIV⁴ for about 2 weeks until I switched to anal. After another year it gradually became more brutal with forced deepthroat and humiliating and slaps. and after I discovered hentei I also watched/read a lot of futanari/shemale-porn at about 18 (Horace, online interview, February 21, 2017).

This suggests that completely ignoring the content, as suggested by McLuhan’s suggestion to merely focus on the effects of media, would appear misguided in this case, since content escalation is such an integral aspect of PIED.

Table 2 – Respondents Age of First Instance of Pornography Induced Erectile Dysfunction, Escalation of Content, and Report on Recovery

Alias	Escalation of Content	Age at First Instance of Pornography Induced Erectile Dysfunction?	Re-boot (Recovery) Success? ⁵
Pierre	Yes	Around 21	N/A
André	Yes	Around 14-15	N/A
Dante	Yes	Around 23	N/A
Horace	Yes	17	No
Milton	Yes	22	N/A
Lambert	Yes	18	No
Frederick	Yes	19	Yes
Cole	Yes	Around 19-21	N/A
Patric	Yes	26	N/A
Owen	Yes	23	Yes

Realization

Gabe Deem mentions that he was unaware of any notion that pornography could have a negative physiological impact. He still does not have any moral objections to pornography. He states health reasons as the motive behind his current negative attitude toward it. He would experience decreased drive to have real sex and an increased drive for porn.

I didn’t realise it was a problem until I had porn induced erectile dysfunction at the age of twenty three, when I realized I could no longer be aroused

⁴ PIV stands for “Penis In Vagina”

⁵ N/A in re-boot success means that the person has not yet had an opportunity to determine whether or not he has recovered from PIED.

with a real partner and I became dependent on porn to feel anything.
(Gabe Deem, 2015)

After experiencing erectile dysfunction, he searched around the Internet and found others with similar problems. There were similar stories and similar details from people who mentioned PIED. This made him suspect that this might be the problem. To him, the diagnosis made sense:

You practice over and over and over again – you train your brain to respond to a certain stimulus. Like Pavlov’s dog that salivated when he heard the bell, we condition ourselves: when we become sexually aroused or have a sexual thought, we crave a screen, we crave novelty, we crave a shock, something new, something we can keep clicking on. But when we’re with a real partner, you see her once, there’s no novelty, there’s nothing new, and your body hasn’t been trained for skin-on-skin contact, it’s been trained for hand-on-keyboard contact (Gabe Deem, 2015).

In a video recorded on day eighty-one of his “NoFap” experiment, AjaxUnchained explains that at a certain point (without going into specifics about his age at the time) he could not get an erection without the aid of pornography. He would not be able to achieve an erection with a real woman.

I could only get [it] up when looking on porn vids, or when I’m getting ready to masturbate. Even when I was having sex, uhm, I couldn’t get it up, and that was fucking depressing. [...] Even if I drank, I would still get ED [erectile dysfunction], I still wouldn’t be able to perform (AjaxUnchained, 2016a).

He explains that he was able to achieve an erection with a woman on occasions, but for this to happen he had to imagine watching pornography. “When you see a real person, it doesn’t match up with how your brain is wired. Because your brain is wired to getting hard on only pictures and videos” (AjaxUnchained, 2016a). In the case of the other video diarist, Hayden Rose, he never experienced sexual potency problems to the point of not being able to achieve an erection. However, he mentions that after having watched pornography for a period of 10 years, he required “more stimuli to get [...] a strong erection” (Hayden Rose, 2016). He felt that he experienced weaker erections to the point of coming near to losing his sexual potency completely. According to his understanding of this experience, “your mind is not going to be able to understand the difference between, you know, what you’re watching on the screen and a real-life situation” (AjaxUnchained, 2016a).

Text diarist wally_s first started watching Internet pornography in early 2000.

I am 52 years old and have been using internet porn for probably fourteen years or so. I got my first high-speed connection in the fall of 2001 and immediately took to going after porn clips and pics in large quantities and frequently. Honestly, I really thought that lots of jerking off was a healthy thing and that it would make things even stronger for when the right girl came along (wally_s, 2015).

Well then, needless to say now, when the right girl did come along last fall and after a couple weeks of dating, she gave herself to me... I couldn’t get

it up, no erection, nothing. I was horrified, embarrassed, worst feeling in the world (wally_s, 2015).

At first, he suspected a medical condition. Due to this, he tried medication. However, he noticed that pornography was the determining factor. With it, erections were possible, without it, they were not.

I am brand new to this pill stuff, by the way. I mean, last fall I did try half a pill right when I first got the samples, and then I, of course, went right to the internet porn to see how things worked. Dumb, I know, but I was dumb to all of this then. Had no inkling of an idea of PIED or NoFap or anything. I just wanted the wang to work, and with the porn it did, of course (wally_s, 2015).

It was through reading about other peoples' experiences with PIED that he ended up self-diagnosing.

I confess, a few months ago when I first began learning about PIED and PMO6 addiction, my initial reaction was one of hopelessness. I thought to myself, "Oh no! I've been doing this for so long, there can't be any hope for my poor brain. I've wrecked myself for sure!" But pretty quickly I was set straight by information and especially testimonials of recovered people, and not only recovered but enjoying lives beyond any expectations. Truly amazing stories that are not only believable but totally motivating (wally_s, 2015).

Another text diarist, the user applehead, mentions that his realisation coincided with him and his wife trying to conceive a child. "[W]e were trying to conceive, and my PIED was not allowing it" (applehead, 2015). He had a desire for pornography, but not for actual intercourse. "It only manifested itself in PIED and the fact that I had no desire for real sex" (applehead, 2015).

The online interview respondents were between the ages of 14 to 26 at the time of realisation that they might be suffering from PIED. The problem here is that other factors that are difficult to determine might be at play. The young ages of the respondents and the fact that they were able to achieve erections in other situations suggest that medicinal factors independent of PIED, such as an impaired blood supply, are improbable explanations, but they cannot be ruled out. Performance anxiety may also be a factor but may perhaps be ruled out in a case such as Horace's. He explains:

At 17 with my first and only partner. At first I couldn't get an erection for more than a few seconds, when I later did it wasn't hard enough at all but it got better after a few tries (I sure was nervous) and we managed to have sex regularly however I was never a 100% erect or even aroused. i [sic] never had a reliable and stable erection - I'd loose [sic] it easily - even in midst of penetration sometimes. I never was able to orgasm with her, not even with my own hand. At that time I was using 2 times a day on average. [...] I googled the symptoms, found NoFap & ybop and the symptoms fit: I can get an intense erection/orgasm with porn but only a weak and unstable

⁶ PMO stands for "Pornography, Masturbation, Orgasm"

erection and no orgasm without it. I've been (ab)using porn for years and when I tried to stop I just couldn't (Horace, online interview, February 21, 2017).

I rule out performance anxiety in this particular case because even when Horace was by himself he experienced difficulties achieving an erection and orgasm without pornography.

Whether or not performance anxiety or some other physiological problem was the determining factor, what is significant is that the respondents came to the conclusion that PIED was the cause. Andre mentions: "I was having trouble to get fully erect even with hardcore porn. With 'normal' porn I could not maintain an erection at all. With a real partner it was even worse" (Andre, online interview, February 18, 2017).

Patric:

I had another encounters with other people but I had one not too long ago that made realize I was suffering something weird that I did not know as I could not understand at that time how there was no issue with my erection watching porn, but could not have one when I was with somebody else (Patric, online interview, March 7, 2017).

Realization happens through one or more of these ways: through an experience with a partner; through reading about other people's experiences online; or through researching addiction, specifically the role of dopamine in developing dependency. All of the diarists and respondents self-diagnose.

Re-boot Process

After having concluded that he might suffer from PIED, Gabe Deem stopped watching pornography and masturbating. He lived through a depression for six months and experienced insomnia and social anxiety. After a few weeks he noticed a decrease in sex drive. He considers these to be withdrawal symptoms and concludes that he was dependent on porn to function normally, that is, he suffered from an addiction. After six months without pornography and masturbation, he noticed a return of his sex drive. After nine months he regained his sexual potency and was able to have intercourse.

AjaxUnchained mentions that on day 81 of his re-boot process, quitting pornography and masturbation, he again experienced sexual arousal and achieved erection outside of pornography. He says that he now gets aroused by merely observing women out on the street. He believes that the recovery happened at around day 30. "I think it probably happened to me after 30 days. So, start looking for the ED to go away maybe after thirty days, before sixty or something like that" (AjaxUnchained, 2016a). In another video, recorded about five months later, he describes his sexual encounter with women after giving up pornography and masturbation. He describes how he contacted a girl to "test out" and see whether he would still experience difficulties getting an erection. This was three months prior to the recording of the video, meaning that it happened around two months after the video discussed above (the one recorded on day eighty-one of the re-boot process). The woman he contacted was someone with whom he had experienced erectile dysfunction earlier. This time, he experienced no sexual potency problems at

all. Subsequent sexual encounters after this have also been successful in terms of sexual potency (AjaxUnchained, 2016b).

As for Hayden Rose, after having stopped watching pornography (and masturbating), he has experienced a change. Previously, he needed “more and more stimuli” to gain an erection, and now they come spontaneously. This has made him conclude that PIED is “very real” (Hayden Rose, 2016).

Since the realization, text diarist wally_s has tried to give up pornography and masturbation. As of yet, he has not recorded any progress in terms of recovering from PIED, since there have been no sexual interactions since the last attempt, that is, he has not yet had an opportunity to determine whether giving up pornography has affected his sexual potency: “I look forward to my next sexual experience. Can't be helped, man, because my last was a PIED fail and that night is stuck in my mind” (wally_s, 2015). On the other hand, applehead mentions that his experiment appears to have worked. Giving up pornography seems to have affected his sexual potency positively after about two months: “I did not get any relief from PIED until around 60-70 days in my first streak” (applehead, 2015). Mooses67 records the same progress. Three weeks into the experiment, he writes: “PIED and DE all but cured. Have had sex a few times with greater inclination to intimacy and simultaneous O[rgasm]. That has been rare” (Mooses67, 2016). On day 28 he writes: “PIED has all but dissipated. Sex with the wife has been quite nice.” On day 30: “I have had sex with my beautiful wife a few times, and each time PIED has not been an issue.” He does, however, mention a relapse which caused the PIED to return:

From the time I returned from Croatia until last Monday, I was PMOimg [sic] with reckless abandon. I enjoyed it the first few times, then it quickly became a burden just like the old days. I'd be fapping and scrolling through tube sites just wishing it could be over. Then the PIED returned. Monday night was the most recent occurrence coinciding with the Great Stress documented above. I haven't felt like it since (Mooses67, 2016).

For two of the online interview respondents, as with Gabe Deem, avoiding pornography has in fact restored their ability to achieve an erection. To them, this gives further credence to the theory that pornography caused their erectile dysfunction. Frederick explains:

First girl I tried to have sex was when I was 19 and it did not work at all. I had ED. After that I had a girlfriend and I tried not to watch porn at all when I knew we can be together [sic], because if I did (no matter if one clip or more, one session or more, lo-hi resolution) I could not get it up at all. It took about 2-3 days no porn-watching to be able to have sex [...] During time I tried to stop watching porn (from around 25 years of age). Only complete stop for several days showed some progress, but not 100%. It took about 8 days to get satisfactory erection. After about 15 days, I was even able to enjoy the real sex, that was not the case (Frederick, online interview, March 1, 2017).

Owen:

Yes, my reboot has worked completely. I am two years porn free. I can maintain an erection effortlessly, and sex feels incredible. I regret that I ever looked at porn and directed my life in such a way. Nothing positive

and only negative came from having porn in my life. I am still fixing the mess I made of myself with porn. It stunts you as a human being when you start looking at it so young. I never learned to problem solve, be compassionate, have empathy, or see other people as anything much beyond meat for my personal use. It's as though I got locked in that selfish 9-year-old child place and never left it. You constantly escape the world of adult responsibility [sic] and maturity to consume porn when life gets hectic. As a consequence, you never learn to be an adult until you stop (Owen, online interview, March 8, 2017).

Since several of the respondents have yet to attempt sexual intercourse with a partner, it is inconclusive whether the re-boot process has worked or not. The same could perhaps be said for the two respondents that have not yet been able to perform sexually even after having stopped their pornography consumption, since they might require more time. Cole mentions: "I have yet to orgasm with a real woman."

Finally, Owen, explains how he started viewing reality through the lens of his media consumption:

Mid-March of 2015 is the last time I have viewed screen porn of any type. My fiancée [sic] was at the end with me. All the lies, secrecy, erratic personality, lack of caring, and all the other garbage I had been doing. She was nine months pregnant. I was losing her and my son that hadn't even been born yet. I told her I would drop porn. And I did. What I didn't account for at that time was my own brain. I was still fantasizing, still objectifying people in public, still masturbating to porn fantasy. Purging the porn from my brain was a much longer process that took a year and a half approximately. I realized that screen porn and porn thoughts had been a crutch throughout my life. I resorted to porn and porn thoughts when stressed, angry, overwhelmed, frustrated or even just bored. These epiphanies made me understand how weak and avoidant I was. I also started understanding how negatively porn has affected society in so many ways, and continues to negatively impact culture. My porn thoughts disrespected me and everyone around me. I also had given myself prostate issues which I still live with today. [...] Giving up screen porn was easy. Cleaning up my porn brain was not. It started off with redirecting my thoughts when they would wander off into porn directions. That evolved into recognizing when my thoughts were wandering - my brain was in auto-pilot. I had a tendency to not be actively aware of my mind. Taking control and being actively aware instead of auto-piloting was a huge key. The next step was dealing with societal triggers like objectifying people, commercials, magazine covers, internet click bait, billboards, movies and television. Not allowing those things to lead me down the road of porn thoughts (Owen, online interview, March 8, 2017).

Discussion

The following points are the main conclusions about what PIED is. They relate to how those who believe to be suffering from PIED understand their problems.

- The sufferer gets introduced to pornography relatively early; either as a pre-pubescent or during adolescence.
- A habit is built up, with regular – often times daily – pornography consumption and masturbation.

- As one gets de-sensitized to the usual pornographic material, one feels a need to escalate to more “shocking” content in order to reach the same level of arousal.
- During this period of building up a habit and escalating to more extreme content, the sufferers perceive, or believe, that their brains get acclimatized to pornography consumption to the point of associating arousal with watching pornography. When this reaches a critical stage at which the brain exclusively associates arousal with pornography – and later extreme pornography, such as pornography including violent elements – erectile dysfunction kicks in. Regular pornography turns boring in the sense that one does not feel the same level of arousal anymore. Finally, sexual intercourse itself turns boring and one needs to either fantasize about or watch extreme pornography to achieve an erection. There is, thus, a clear correlation between heavy pornography use and erectile dysfunction.
- The sufferer learns about PIED and self-diagnoses through one or more of the following steps: one, accessing expert knowledge (learning about addiction, the role of dopamine, and so on.); two, by meeting women and experiencing erection related problems; three, by discovering an online community dedicated to the issue and reading similar stories online. He then tries to “re-boot” the brain, by giving up pornography and masturbation. The goal is to end the procedure by which arousal becomes associated with the screen, in order to re-associate arousal with sexual intercourse. Some of the respondents and diarists report that this has worked.

Implications for theory

As previously stated one of McLuhan’s statements about man being rendered inactive through watching action on the screen (McLuhan, 1964, p. 5) could, in the present context, be paraphrased “the man of sex who appears not to be involved in sex”. Consider the case of the respondent Dante, who would spend most of his day watching pornography and masturbating (being “a man of sex”) without actually being able to engage in sexual relations with a person (never “involved in sex”). McLuhan highlights the hypnotizing effect of modern media, claiming that this leads to amputation (McLuhan, 1964, p. 12) and numbness (McLuhan, 1964, p. 6). Now, McLuhan (1964) does not make an explicit sexual connection in this regard, but the implications are not, I think, far-fetched: modern media is powerful enough to *hypnotise* modern man to the point of a metaphorical *numbness* or *amputation* of the penis – that is, impotence.

When the media consumer falls under the hypnotic spell of the relevant medium, “the subliminal state of Narcissus trance” (McLuhan, 1964, p. 16) ensues. It is through this discussion about the Narcissus myth (in chapter four of his book) that McLuhan perhaps comes closest to actually predicting PIED, which is why I shall quote him extensively.

[The name Narcissus] is from the Greek word *narcosis*, or numbness. The youth Narcissus mistook his own reflection in the water for another person. This extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. The nymph Echo tried to win his love with fragments of his own speech, but in vain. He was numb. He had adapted to his extension of himself and had become a closed system. Now the point of this myth is the fact that men at once become fascinated by any extension of themselves in any material other than themselves. [...] [T]he wisdom of the Narcissus myth does not convey any idea that Narcissus fell in love with anything he regarded as himself. Obviously he would have had very different feelings about the

image had he known it was an extension or repetition of himself (McLuhan, 1964, p. 45-46).

If one translates this to the topic at hand, the text could instead read something like this: The extension of the modern Narcissus's self by the computer screen numbs his perception until he becomes the servomechanism of the pornographic images and reduced to a closed system. The consequences of this are not abstract, they are very much tangible: the numbness is quite literal, it is actual impotence. A real-life person (who corresponds to the nymph Echo in the myth) might try to win his love with real life sex, but in vain. He is now numb (impotent). He has adapted to his extension of himself (by associating arousal with reflective sex) and become a closed system, unable to perform sexually except with himself and the reflection.

McLuhan goes on to explain the mechanisms at work as this phenomenon ensues. Why does self-extension lead to numbness?

In the physical stress of superstimulation of various kinds, the central nervous system acts to protect itself by a strategy of amputation or isolation of the offending organ, sense, or function. [...] Such amplification is bearable by the nervous system only through numbness or blocking of perception. This is the sense of the Narcissus myth. The young man's image is a self-amputation or extension induced by irritating pressures. As counter-irritant, the image produces a generalized numbness or shock that declines recognition. [...] The function of the body, as a group of sustaining and protective organs for the central nervous system, is to act as buffers against sudden variations of stimulus in the physical and social environment (McLuhan, 1964, p. 46-48).

In other words: Modern technology with its different media over-stimulates the individual to the point of extending the central nervous system. This entails a shock to this system which reacts to the pressure it has to endure by a self-protective numbness, or "autoamputation", i.e. by shutting down an "organ, sense, or function". One need not accept the medical reasoning behind this explanation to at least recognise its theoretical relevance to PIED. In fact, PIED might serve as a case in point – perhaps *the* case in point – for what McLuhan is speaking of here. Using this aspect of McLuhan's theory, one might say that pornography proves to be such a powerful superstimulant that the central nervous system reacts to it with the self-protective measure of amputating an organ and a function. This causes the impotence. One might say that McLuhan offers an etiology of PIED.

Implications for Research and Practice

The interdisciplinary nature of the problem at hand means that more research in different fields is needed to get a comprehensive understanding of the matter. My field is sociology, and the present study is a sociological one, I shall therefore be focusing on the implications for sociological research.

PIED is not the only social problem related to online pornography consumption; further studies about other social effects of pornography consumption should complete the picture that has been painted here. For example, even if erectile dysfunction per se does not become an issue, pornography consumption could lead to a decrease in motivation to find a sexual partner (and, hence, start a family) or engage in social activities in general. In fact, this has already been suggested by

studies discussed in the literature review; for example, a 2017 meta-analysis has demonstrated that a preponderance of studies involving males report a correlation between greater pornography consumption and less sexual and relationship satisfaction (Wright, Tokunaga, et. al., 2017).

Pornography addiction also has the potential to affect one's sexual health in other unforeseen ways, and further exploratory studies should be undertaken to ascertain what these possible effects (related to expectations about sex, sexual self-esteem, romantic relationships, etc.) could be. Also, a study such as this one deals with only one specific aspect of the emergent "digital society" that is taking shape in our time. The relationship between online pornography consumption to gaming addiction, social media addiction, online gambling and other forms of compulsive digital activities should also be explored. It could be argued that the digital society runs the risk of outcompeting the "real thing" in general, where an online presence is prioritized over social relationships in real life. If that is the case, PIED is merely one symptom of a larger social problem that needs to be studied holistically. It should also be stated that the findings of this study have been limited in terms of the "re-boot" process, where men who suffer from PIED try to give up pornography in order to regain their sexual potency. In other words, more longitudinal studies are needed to assess the success rates of the re-boot process. Also, since I have attempted to identify the process whereby PIED develops, more research is needed to corroborate (or challenge) my own findings, and this includes quantitative studies featuring larger number of respondents.

Without setting out to conclusively establish a causal relationship between pornography addiction and erectile dysfunction, this study shows that pornography consumption does not come without its risks. The men in this study have reported that pornography consumption has had a detrimental effect on their sexual health. For some, giving up pornography has improved their sexual relationships. This study complements others that likewise indicate a correlation between pornography addiction and sexual dysfunction. Clinical practitioners dealing with men who report erectile dysfunction might therefore consider investigating their pornography consumption and masturbation habits. If it is established that the men in question are able to gain and sustain erections whilst watching pornography (and in particular the extreme variety), then it might be worth eliminating pornography to ascertain whether this reverses the effects of heavy consumption. Mainly, this study along with others that contain similar results, shows that further investigation into the possibility that erectile dysfunction (particularly amongst young men) could be treated as a problem associated with pornography is warranted, and that clinical practitioners should discuss the matter with their patients and raise their awareness about a possible relationship between the two.

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