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The assessment and treatment of adult heterosexual men with self-perceived problematic pornography use: A review



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HIGHLIGHTS

- Self-perceived problematic porn use impacts various psychosocial life domains.
- Currently, this field lacks standardized diagnostic, assessment, and treatment tools.
- Mindfulness-based therapies, specifically ACT, have provided encouraging treatment results.

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ABSTRACT

Self-Perceived Problematic Porn Use (SPPPU) refers to an individual who self-identifies as addicted to porn because they feel they are unable to regulate their porn consumption, and that use interferes with everyday life. Although porn addiction has not been formally classified as its own distinct behavioral addiction, therapists and clinicians are advised to educate themselves on the current state of literature pertaining to pornography consumption given the widespread availability and consumption of sexually explicit material online. This review article begins with a general overview of pornography and porn use so that therapists and researchers can discern between non-intrusive and problematic pornography consumption patterns within their practice and understand the common characteristics of those that most commonly present with SPPPU. Thereafter, an overview and examination of therapeutic interventions for SPPPU will be identified and analysed. Finally, the review concludes with recommendations for therapists, clinicians, and future research.

1. Introduction

Burgeoning neurobiological research has called into question the concept of addiction, which has traditionally been associated with the problematic consumption of alcohol and other substances (Love, Laier, Brand, Hatch, & Hajela, 2015). Evidence suggests, however, that various behaviors can also be classified as an addiction because of the common neurobiological mechanisms and motivational processes at play with both substances and addictive behaviors (Grant, Brewer, & Potenza, 2006; Koob & Le Moal, 2008; Robinson & Berridge, 2008). This radical shift in the understanding of addiction has been accompanied by significant implications for clinical and therapeutic assessment and treatment (Love et al., 2015). This is evidenced by the American Psychiatric Association (APA) acknowledging one behavioral addiction, Gambling Disorder, with its own official classification and another, Internet Gaming Disorder, as a ‘Condition for Further Study’ within the DSM-5 (APA, 2013). The APA has not, however, provided

researchers and clinicians with an overarching framework for evaluating other emerging and potentially addictive behaviors. One such behavior is compulsive pornography use, which may have the highest addictive potential of all Internet-related behaviors (Griffiths, 2012; Meerkerk, Van Den Eijnden, & Garretsen, 2006).

Problematic pornography consumption, often referred to as ‘porn addiction’ or ‘internet porn addiction’, can be conceptualized as any use of pornography that leads to and/or produces significant negative interpersonal, vocational, or personal consequences for the user (Grubbs, Exline, Pargament, Hook, & Carlisle, 2015; Grubbs, Volk, Exline, & Pargament, 2015). Increasing evidence suggests that excessive and compulsive pornography consumption has similar effects to substance-dependencies, including interference with working memory performance (Laier, Schulte, & Brand, 2013), neuroplastic changes that reinforce use (Hilton, 2013; Love et al., 2015), and the significant negative association between consumption and grey matter volume in the brain (Kühn & Gallinat, 2014). Indeed, brain scan studies have shown

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that the brains of self-perceived pornography addicts are comparable to individuals with substance dependence in terms of brain activity as monitored by functional magnetic imaging (fMRI) data (Gola et al., 2017; Voon et al., 2014).

Sexual disorders, in general, have been excluded from formal classification in the DSM-5. In 2010, Kafka's proposal for hypersexual disorder (Kafka, 2010), even though a subsequent field trial supported the reliability and validity of criteria for hypersexual disorder (Reid et al., 2012). Pornography addiction, similarly, has been excluded from formal classification because of the lack of published scientific literature in the field (Ley, Prause, & Finn, 2014), and because compulsive pornography use is often considered a subset of other sexual disorders, i.e. Hypersexual Disorder (Kraus, Voon, & Potenza, 2016). Much of the current scientific research pertaining to problematic pornography viewing has been conceptualized as sexual addiction (Orzack & Ross, 2000), sexual impulsivity (Mick & Hollander, 2006), sexual compulsivity (Cooper, Putnam, Planchon, & Boies, 1999), or hypersexual behavior (Rinehart & McCabe, 1998), suggesting there may be similarities among the criteria of these other, related classifications. Kraus and colleagues have suggested the adoption of the term Compulsive Sexual Behavior (CSB) to reflect a broader category of problematic sexual behaviors (including pornography use) that incorporates all of the above terms (Kraus, Voon, et al., 2016). Despite similarities, however, literature suggests that problematic pornography use may be distinct and different from other sexual disorders (Duffy, Dawson, & das Nair, 2016). For example, problematic pornography use can differ from general sexual addiction because sexual activity involving human contact may be more anxiety-provoking than the ease of anonymously, privately, and inexpensively consuming pornography online (Short, Wetterneck, Bistricky, Shutter, & Chase, 2016).

Even though problematic pornography use can impact sexual behaviors, create sexual difficulties, and negatively alter attitudes related to sexuality (Cotiga & Dumitrache, 2015), therapists and clinicians are underprepared when it comes to managing problematic pornography use. Individuals who perceive themselves to have problematic use of pornography face a difficult situation in which therapists lack the sufficient training necessary to manage pornography use (Ayres & Haddock, 2009), even though clinicians believe such consumption patterns are worthy of treatment and intervention (Pyle & Bridges, 2012) and clients continue to regularly disclose habitual pornography use in sessions (Ayres & Haddock, 2009). Without an appropriate understanding of the assessment and treatment of problematic pornography use, the possibility for unethical treatment increases since therapist treatment approaches are more likely to be influenced by personal biases and beliefs (Ayres & Haddock, 2009).

Self-perceived problematic pornography use (SPPPU), or self-perceived pornography addiction, has increasingly emerged as a topic in scientific research, despite lacking formal recognition as a disorder and continued disagreements about its definition, or even existence (Duffy et al., 2016). An individual can experience pornography use as problematic for a myriad of reasons. These include personal or moral, social and relationship, time spent viewing, or viewing in inappropriate contexts such as at work (Twohig & Crosby, 2010). Consequently, even though the consumption habits and behaviors may not be inherently problematic, the costs for individuals for whom it is problematic may be significant (Twohig & Crosby, 2010).

SPPPU refers to the extent to which an individual self-identifies as addicted to pornography and feels they are unable to regulate their pornography use. This definition relies on the user's subjective self-perception and experiences when determining the extent to which the pursuit and subsequent consumption of pornography interferes with everyday life (Grubbs, Exline, et al., 2015; Grubbs, Volk, et al., 2015). Many individuals perceiving themselves to suffer from problematic pornography use feel they do not have viable treatment options; otherwise they would seek help (Ross, Månsson, & Daneback, 2012). This is typically because they feel their pornography use is out of

control and have experienced failed attempts at either cutting back or quitting (Kraus, Martino, & Potenza, 2016). Of the small percentage of individuals who seek treatment, most indicated treatment was only marginally helpful (Kraus, Martino, et al., 2016). The purpose of this literature review is to gather, synthesize, and analyze the current literature addressing the treatment of SPPPU in adult heterosexual men, with the principle aim of contributing towards recommendations for clinicians, therapists, and future research in the field.

1.1. Definition

For purposes of this review, the term 'porn', 'pornography', or 'internet porn', is defined as professionally produced or consumer-generated pictures or videos intended to sexually arouse the viewer (Peter & Valkenburg, 2011). Specifically, pornography usually portrays a variety of sexual activities, including but not limited to, masturbation, oral sex, vaginal and anal intercourse, most often with a focus on the genitals (Morgan, 2011; Peter & Valkenburg, 2016).

1.2. Internet pornography

Since its arrival, the Internet has had a huge impact on the way pornography is consumed, with most current pornographic material accessed via the Internet (Peter & Valkenburg, 2016). The Internet is credited for having provided pornography the necessary platform for unprecedented dissemination (Cooper, 1998). Some evidence suggests that the Internet has served as a catalyst for changing the fundamental relationship between the individual and pornographic material, allowing access to a seemingly endless supply of free and diverse content (Wood, 2011). The qualities specific to Internet pornography credited for this global dissemination is known as the Triple-A Engine: accessibility, affordability, and anonymity (Cooper, 1998). All indications suggest that the ever-present access to cheap and diverse pornographic material is a reality that will not change.

1.3. Problematic pornography use

Problematic pornography use presents a difficult challenge for clinicians. Firstly, even though the words 'pornography' and 'porn' are often seen as negative, research has shown that self-perceived effects of pornography are generally positive, with little, if any, negative effects (Hald & Malamuth, 2008). Even persistent and frequent use can be considered a healthy form of 'passionate attachment' to a highly valued activity and reflect a harmonious passion, as opposed to a compulsive or obsessive behavior (Rosenberg & Kraus, 2014). While at least a portion of the overall self-perceived positive effects of pornography consumption could be explained by biased optimism, cultural bias of study participants (Hald & Malamuth, 2008), and mainstream culture becoming more pornographic in general (Weinberg, Williams, Kleiner, & Irizarry, 2010), evidence suggests that viewing pornography can, nevertheless, become problematic for a small, but significant, percentage of individuals (Cooper, Delmonico, & Burg, 2000; Ross et al., 2012). For those individuals, pornography use has created problems in at least one major life domain, with the greatest implications in psychological/spiritual, behavioral, relational domains (Twohig, Crosby, & Cox, 2009).

Research suggests that individuals who are very vulnerable to the particular stimulus produced by pornography includes those with underlying comorbidities such as depression or anxiety disorders (Wood, 2011), impulsivity (Grant & Chamberlain, 2015), compulsivity (Wetterneck, Burgess, Short, Smith, & Cervantes, 2012), or those displaying deficient self-regulation (Sirianni & Vishwanath, 2016), high levels of neuroticism (Egan & Parmar, 2013), or high levels of narcissism (Kasper, Short, & Milam, 2015). Those that seek treatment are more likely to be Caucasian than from other ethnic backgrounds (Kraus, Meshberg-Cohen, Martino, Quinones, & Potenza, 2015), believe their

Table 1
SPPU intervention studies.

Author(s), (year)	Design	Sexual behavior classification	N	Age (M)	Treatment type	Length of treatment	Assessment or measures	Summary of outcome
Bostwick and Bucci (2008)	Case Report	Internet Sex Addiction	1	24	Drug: Naltrexone	NA	Not Reported	Decline in addictive symptoms, with improvements in social, occupational, and personal function
Capurso (2017)	Case Report	SPPU	1	69	Drug: Naltrexone	2 weeks	Not Reported	Naltrexone treatment resulted in a decrease in pornography viewing, but adverse effect of anhedonia.
Crosby and Twohig (2016)	Randomized Trial	SPPU	26	M = 29.3	Acceptance and Commitment Therapy	10 weeks	DPVQ, SCS, CBOSB, QOLS	A lower dose modestly impacted pornography use. 92% reduction and an 86% reduction at 3-month follow-up. Complete cessation was seen in 54% of participants.
Fall and Howard (2015)	Case Report	SPPU	1	30	Adlerian Counselling	Not Reported	Not Reported	Specific outcomes not provided
Ford, Durtzchi, and Franklin (2012)	Case Report	SPPU	1	30	Structural Therapy	Not Reported	Not Reported	Decrease in porn consumption; increased marital satisfaction
Gola and Potenza (2016)	Case Series	SPPU	3	24, 32, 35	Drug: Paroxetine	15–20 weeks	Kinsey's Sexual Orientation Scale	Although initially effective in reducing pornography use and anxiety, treatment appeared related to new compulsive sexual behaviors after 3 months.
Hardy, Ruchty, Hull, and Hyde (2010)	Survey	Hypersexuality	134	M = 37.97	Online Psycho-educational Programme	M = 17.97 weeks	Not Reported	Participants showed significant improvements in all measured aspects of recovery when comparing retrospective and current ratings.
Kraus et al. (2015)	Case Report	SPPU	1	30's	Drug: Naltrexone	18 weeks	Not Reported	Significant decrease of sexual urges
Orzack, Voluse, Wolf, and Hennen (2006)	Closed Group Experiment	Internet-Enabled Sexual Behavior	35	M = 44.5	Group Therapy: RTC, CBT, & MI	16 weeks	Orzack Time Intensity Survey, BASIS-32, BDI	Significantly increased quality of life and decreased severity of depressive symptoms. However, no reduction in internet pornography consumption.
Twohig and Crosby (2010)	Experiment	SPPU	6	39, 23, 29, 23, 21, 24	Acceptance and Commitment Therapy	10 weeks	Self-Monitoring, OCL, AAQ, QOLS, TAF, TCO, PIOS	Treatment resulted in an 85% reduction in viewing at posttreatment with results being maintained at 3-month follow-up.
Young (2007)	Survey	Internet Addiction	114 total (34 Male & Porn)	NA	CBT	12 weeks	Internet Addiction Test (IAT)	Continuous improvement by the 3rd session, effective symptom management by the 8th and 12th sessions, and overall improved symptom maintenance upon 6-month follow up
Zitzman and Butler (2005)	Structured Interview	Sexual Addiction	6	NA	Conjoint Couple Therapy	Not Reported	Not Reported	Increase in marital trust, mutual softening, and client-perceived marital enhancement

pornography use to be a religious or moral transgression (Grubbs, Exline, et al., 2015; Grubbs, Volk, et al., 2015), and report both early adolescent exposure to pornography, as well as participating in risky sexual behavior during adolescence (Doornwaard, Eijnden, Baams, Vanwesenbeeck, & Bogt, 2016). When individuals with SPPPU consume pornography, research indicates it may be a maladaptive coping strategy and form of experiential avoidance, which is an effort to cope with and manage unwanted thoughts or negative feelings even though the coping strategy itself leads to additional harm (Wetterneck et al., 2012). Lastly, many of those who report with SPPPU are either married, in a committed relationship, or dating, and that their viewing caused problems within their relationship (Daneback, Ross, & Månsson, 2006).

Overall, studies indicate that between 2% and 17% of pornography consumers meet previously established thresholds for compulsive and/or problematic pornography use (Albright, 2008; Ross et al., 2012). Problematic pornography use has been quantified as spending at least 11 h per week viewing pornography (Cooper et al., 2000), consuming daily (Harper & Hodgins, 2016), or surpassing a threshold of seven orgasms per week (Kafka, 2010). It was found that around 9% of consumers of Internet pornography met this quantitative criteria (Cooper, Griffin-Shelley, Delmonico, & Mathy, 2001). Other researchers believe qualitative factors can help determine problematic use since the frequency of consumption might not be the core issue for patients, and because negative symptoms more strongly predict seeking treatment (Gola, Lewczuk, & Skorko, 2016).

The prevalence and nature of problematic pornography consumption seems to warrant a separate and distinct framework for assessment and treatment. Clinicians, therapists, and researchers, however, are faced with the difficult task of examining a multitude of scattered and conflicting studies on pornography and potentially harmful consequences associated with its problematic consumption. The current review seeks to assimilate and analyze the current studies and interventions that have addressed SPPPU in order to analyze approaches that have been utilized, as well as to assess their relative effectiveness for addressing problematic use.

2. Method

EBSCOhost, an online reference system with access to a broad range of academic, medical, and scientific databases, was used to access a range of databases, including: Academic Search Premier, CINAHL Plus, MEDLINE, Psychology and Behavioral Sciences Collection, and Academic Search Alumni Edition for researching in April 2017. The primary keyword search used for research was: ‘internet porn’ OR ‘porn*’ OR Internet-enabled sexual behavior OR sex* addict* within the ‘Title’ field. Studies that focused on the treatment of sex addiction specifically were used only if they specifically mentioned pornography as the determining factor in diagnosis or classification.

Additional keyword fields were used in conjunction with primary keywords, including: ‘treat’ OR ‘therap*’ OR ‘problem*’ OR ‘addict*’ OR ‘compul*’ within the abstract of the study. Subject terms ‘child*’, OR ‘adolescen*’ OR ‘teen*’ were excluded from search fields. Lastly, a secondary search included identifying studies that were referenced within other studies found during initial search queries, but were not revealed during initial searches. Studies were included if they were recent (from 2000 to 2017), and in English. The search was additionally limited to peer-reviewed journal articles since they traditionally represent the standard for empirical studies, ensure at least some base level of comparability, and guarantee basic academic quality within the studies (Peter & Valkenburg, 2016).

3. Results

This search resulted in 198 relevant articles after being refined for additional parameters, such as studies only in English, only peer reviewed articles and after exact duplicates were removed from query

results. 64 studies remained that were relevant and whose abstracts were scanned in order to determine relevance. Out of the 64 relevant studies, 11 studies were used in the review as they specifically addressed the treatment of problematic pornography consumption. Seven of the studies dealt directly and specifically with problematic pornography use. Of the five remaining studies, four categorized SPPPU as a different, yet related, sexual disorder (e.g., Internet Sex Addiction, Internet-Enabled Sexual Behavior, Sexual Addiction, or Hypersexuality), while one study identified pornography consumption as a subset of other participants who were treated for Internet Addiction (Young, 2007). Descriptive information from the studies is summarized in Table 1.

4. Discussion

The case for pharmacological approaches as a potential treatment option for SPPPU lacks the scientific rigor necessary for widespread clinical implementation. Gola and Potenza conducted a case series for three heterosexual men utilizing paroxetine, a serotonin reuptake inhibitor commonly used as anxiety medication, along with Cognitive Behavioral Therapy (CBT). All three men reported significantly lower levels of anxiety and decreased pornography consumption, which could be the result of paroxetine's impact on amygdala-related reactivity (Gola & Potenza, 2016). Within 12–14 weeks, however, new risky sexual behaviors appeared that were not present prior to treatment, which included extra-marital relations and engaging in paid sexual services (Gola & Potenza, 2016). One possibility provided by the researchers was that the decrease in anxiety gave the men a sense of confidence necessary to explore sexual relationships and experiences outside of their relationship and pornography consumption (Gola & Potenza, 2016). Researchers concluded that problematic pornography use may arise from the interplay of multiple domains, with paroxetine treatment only targeting anxiety-related aspects (Gola & Potenza, 2016). Consequently, the results of the case series provide little support for paroxetine as a viable treatment for SPPPU.

Three studies used naltrexone as a treatment option for SPPPU, likely because it has been shown to be a relatively safe, efficacious, and tolerable treatment option for other substance-based and behavioral addictions (Aboujaoude, Salame, & Salame, 2016). Indeed, naltrexone has been successfully used as an adjunct treatment for compulsive sexual behavior (Raymond, Grant, & Coleman, 2010). Kraus and colleagues chose naltrexone because compulsive pornography consumption is often characterized by craving, impulsivity, and higher rates of psychiatric comorbidity, all of which have been shown to be mediated by naltrexone (Kraus et al., 2015). The case study participant reported subjective decreases in urges to masturbate to pornography within two weeks of initiating medication, as well as resuming regular sexual intercourse with his wife (Kraus et al., 2015). Kraus and colleagues suggested that naltrexone might serve as an effective adjunct treatment for problematic pornography consumption, but emphasized that additional testing in a double-blind, randomized, placebo-controlled trial would be required in order to adequately evaluate the efficacy and tolerability of naltrexone with and without psychotherapy for the treatment of SPPPU (Kraus et al., 2015).

Bostwick and Bucci's case study followed a man self-reporting as addicted to pornography, who spent up to 8 h per day online, masturbating until tissue irritation or fatigue ended the sessions (Bostwick & Bucci, 2008). Naltrexone produced measurable and significant differences in sexual urges (Bostwick & Bucci, 2008). The patient remained in nearly complete remission from depressive symptoms and compulsive Internet pornography use for 3 years after the study. Since the patient was also receiving sertraline, a selective serotonin reuptake inhibitor (SSRI), it is unknown as to whether, and how much, naltrexone contributed to successful treatment and recovery.

Finally, Capurso's report represents the first case of intervening with SPPPU alongside a co-existing condition in the literature. Specifically,

this case study examines the co-existence of tobacco and pornography addiction (Capurso, 2017). While co-existing disorders are common, treatment strategies have not been extensively studied, especially for behavioral addictions like SPPPU (Capurso, 2017). Despite early signs of efficacy for both decreased smoking and pornography consumption, the subject discontinued naltrexone after only two weeks, citing the adverse effect of anhedonia (Capurso, 2017). Even with a lowered dose, the subject continued to experience anhedonia and therefore discontinued medication altogether (Capurso, 2017). The study's most notable contribution is that it supports the assertion that treatment of one addictive disorder can benefit another in dually-addicted populations (Capurso, 2017).

Overall, the three studies utilizing naltrexone highlight the severe lack of scientific evidence in this field. The total sample size ($n = 3$) of the naltrexone case reports reinforce Kraus's position that more substantive testing is required. The current studies lack clinical controls and are highlighted by unconvincing research methods, inconsistent results, and conjoint treatments that make it impossible to accurately assess naltrexone efficacy. Appropriately rigorous randomized control trials (RCT) conducted in the future may reveal naltrexone to be a viable treatment option for SPPPU. Presently, however, the non-compelling state of the literature shows that research is still in its infancy and that the clinical recommendation of naltrexone is not justified.

Many of those who commonly self-report problematic pornography use tend to be in a committed relationship (Daneback et al., 2006). Indeed, disturbed family and social relationships are often considered diagnostic criteria for SPPPU (Şenormanci, Konkan, Güçlü, & Şenormanci, 2014). As such, some researchers have attempted to treat SPPPU of the male partner with couples-oriented conjoint therapeutic approaches. Ford utilized structural therapy, a modality in which family structures are altered so that members are empowered them to solve their own problems (Minuchin & Fishman, 1981), in order to not only treat the male partner's problematic pornography use, but also as a way of nurturing the intimate relationship of the couple (Ford et al., 2012). Ford's case study included a married couple whose marriage was ending due to the male partner's pornography use. Structural therapy allowed the couple to identify distrust and secrecy within the marriage (Ford et al., 2012). The male partner was allowed to continue consuming pornography when he felt he needed it, as long as he told his partner first (Ford et al., 2012). Within a few weeks of this newly formed relationship structure, the male partner threw out all of his pornography (Ford et al., 2012).

Adlerian therapy, similar to structural therapy, emphasizes the relationship between the individual and their lifestyle choice or habit (Adler, 1956). Fall and Howard's case study participant was consuming pornography as a way to cope with, manage, or avoid relationship stress (Fall & Howard, 2015). The case study discovered that the short-term stress reduction he experienced with pornography use was substantively adding to the long-term tension within his intimate relationship with his spouse (Fall & Howard, 2015).

Finally, Zitzman and Butler utilized conjoint couple's therapy with six married couples recovering from the husband's excessive use of pornography. An important part of the therapy included incorporating the wife's experience and story in order to coach the husband how to appropriately respect it (Zitzman & Butler, 2005). Preliminary findings suggested that conjoint couple's therapy not only proved to be an effective mediator of pornography use, but also facilitated the rebuilding of trust and increased mutual support within the relationship (Zitzman & Butler, 2005).

As a whole, there are several limitations to this group of conjoint therapy studies. Firstly, the sample size ($n = 8$) means that results, however encouraging, cannot be extrapolated and applied to broader populations. Additionally, most of the sample size was homogenous, with mostly Caucasian and Christian participants. Lastly, future studies seeking to find consistent results would be difficult to design since the studies did not report using any reliable scales, assessments, or

measuring tools. Further research into conjoint therapy for SPPPU should aim to use reliable and valid diagnostic protocols and measurement tools so that protocols can be improved and refined.

Possibly the most significant takeaway from the studies was that all three directly, or indirectly, addressed the experiences of shame and guilt of the male partner. This is important because shame and guilt have been shown to be relevant with regards to the maintenance of hypersexual behavior (Gilliland, South, Carpenter, & Hardy, 2011). Gilliland and colleagues found that persons seeking treatment for compulsive pornography use reported experiencing feelings of shame and guilt surrounding the pornography use, with both shame and guilt contributing significantly to the maintenance of their hypersexual behavior (Gilliland et al., 2011). Male partners from all three conjoint therapy studies reported having to keep their pornography consumption hidden from their respective partners. It is both possible and probable that the efficacy demonstrated by the three conjoint studies – irrespective of whether Adlerian, structural, or conjoint methodologies were utilized – was the result of the couple learning how to communicate about and accept the male partner's pornography use, which subsequently lowered feelings of shame and guilt experienced by the male partner. Further research with conjoint therapy could help determine and/or strengthen this assertion.

The theme of shame and guilt again emerge in the first of three studies which utilized Cognitive Behavioral Therapy (CBT) as the primary intervention for behavioral change. This CBT-based approach was implemented in a group setting by Orzack and colleagues, and included a combination of Readiness to Change (RtC), CBT, and Motivational Interviewing (MI) over a 16-week program that utilized three different scales to track progress over time (Orzack et al., 2006). On the surface, results were mixed. While quality of life measurements improved and depressive symptoms decreased, the intervention failed to actually reduce pornography consumption (Orzack et al., 2006). Researchers suggest that the feelings of connectedness, bonding, and being listened to create an atmosphere of self-forgiveness and acceptance, both of which have been found to be negatively related to hypersexual behavior and feelings of shame or guilt (Hook et al., 2015). The implications for future research are profound since this study shows that merely reducing pornography use may not represent the most important treatment goal. Depending on context, increasing pornography acceptance may be equally or more important. Clinicians would be well-advised to determine the nature and context of each case of problematic pornography use in order to determine the appropriate treatment and recovery approach.

Young also utilized CBT to address pornography addiction, but only as a small subset (34 of 114 study participants) were men addicted to pornography (Young, 2007). Utilizing outcome variables such as client motivation, online time management, improved social relationships, and ability to abstain from problematic online applications, analyses indicated that most clients were able to manage their presenting complaints (Young, 2007). Because this study relied on self-reported data to measure changes in behavior, however, the results may be biased, inaccurate, and/or unreliable (Young, 2007).

Hardy and colleagues conducted a preliminary study on a CBT-based online psychoeducation and recovery program for hypersexuality, called Candeo, with a specific emphasis on problematic pornography use and masturbation (Hardy et al., 2010). Candeo's approach to mediating pornography consumption is a combination of a social and psychological approaches to addictions (Hardy et al., 2010). What makes Candeo's approach unique, however, is their online mode of delivery. This means that the program shares the same fundamental characteristics that may contribute to pornography consuming behaviors becoming problematic: accessibility, anonymity, and affordability (Hardy et al., 2010). Online programs may represent an effective delivery method for other forms of therapy as they overcome some of the barriers of more traditional forms and delivery methods of therapy, while capitalizing on the benefits of modern technology (Greist, 2008).

Preliminary results from participants utilizing the Candeo program reported significant improvements across all measured aspects when comparing retrospective and current ratings and that other treatments attempted by participants in the past were 'somewhat less helpful' than Candeo (Hardy et al., 2010). Initial findings, however, should be viewed with caution. First, there is a sample bias present since all participants were current customers of Candeo and their perceptions of the program could have been influenced because they had paid for it. Additionally, without experimental studies involving participant randomization to different treatment conditions, it cannot be determined to what extent Candeo's efficacy is substantively different from that of other modalities. Finally, since all data provided regarding participant experience was retrospective, any definitive statements or results should be provisional until confirmed and validated by experimental and longitudinal research.

Finally, Twohig and Crosby treated individuals with SPPPU utilizing Acceptance and Commitment Therapy (ACT), an approach that aims to decrease the effects of many inner experiences on behavior (e.g. urges and cravings to consume pornography) and increase the effects of other inner experiences (e.g. self-created morals and values) on one's actions (Twohig & Crosby, 2010). Twohig and Crosby tested ACT twice, in 2010 as a case series, and again in 2016 as a randomized control trial (Crosby & Twohig, 2016; Twohig & Crosby, 2010).

The ACT experiment is considered to be the first experimental study to specifically address problematic pornography use (Twohig & Crosby, 2010). The study's encouraging results motivated a subsequent randomized control trial, which was the first controlled report for the treatment of compulsive pornography viewing (Crosby & Twohig, 2016). Again, results indicated ACT as an effective treatment intervention for SPPPU, with a 92% reduction in viewing at post treatment and an 86% reduction at 3-month follow up (Crosby & Twohig, 2016).

ACT's efficacy could be because its approach is fundamentally rooted in mindfulness. Reid and colleagues have already found that mindfulness may be a critical component of successful therapy among individuals seeking help for hypersexual behavior (Reid, Bramen, Anderson, & Cohen, 2014), which could mean that the same strategies can be useful and effective for SPPPU. Mindfulness is the state attained when focusing one's awareness and attention on the present moment (Chisholm & Gall, 2015), whilst acknowledging and accepting all of the thoughts, emotions, and body sensations that may be occurring (Kuvaas et al., 2014). In the realm of compulsive behaviors like problematic pornography use, mindfulness is an important concept as a result of the strong link between body sensation (emotional) regulation and addictive/compulsive consumption (Bowen, Witkiewitz, Dillworth, & Marlatt, 2007). In particular, emotional instability (Kuvaas et al., 2014) and impulse control difficulties (Dvorak et al., 2014) are positively correlated with compulsive behaviors and consumptions. Enhancement of body sensation and emotional regulations skills has been shown to be an important in the treatment of addictive behaviors (Berking et al., 2011).

Lastly, while research suggests ACT provides a potential path forward for additional research and treatment, there are a number of issues that decrease the generalizability of both ACT studies. Most important is the small sample sizes from the studies ($n = 6$ and $n = 26$). Samples were also significantly homogeneous with respect to sex (male), race (Caucasian), geographical region (Utah, USA), and religious affiliation (Christian, i.e. Church of Jesus Christ and Latter Day Saints). The two ACT studies highlight what is consistently seen in a majority of the studies included in this review, which is the lack of participant diversity. As such, future research would benefit from the inclusion of diverse populations.

5. Conclusion

Even though SPPPU is not currently a diagnosable disorder, like other potentially problematic behaviors, it can adversely impact functioning in a variety of significant life domains. SPPPU will likely be a

growing problem because an ever-increasing number of people are accessing the Internet, where a diverse and seemingly unlimited quantity of free pornography content can be accessed privately and anonymously. While the case for the existence and prevalence of SPPPU is strong, many questions remain regarding the assessment and treatment of problematic pornography use primarily due to the overwhelming state of existing literature. Currently, the sample sizes are small, clinical controls are lacking, and participant populations are homogenous. The majority of research methods in this field thus far are scattered, unverifiable, and not replicable. Only one RCT exists in this field, and the sample size is small and homogenous. Additionally, because it is difficult to know whether SPPPU represents its own construct or whether it is an indication of another existing comorbidity or pathology, it is essential that future research controls for other psychiatric disorders as potential confounds. Lastly, further research into SPPPU should aim to use reliable and valid diagnostic protocols and measurement tools so study results can be connectable, comparable, and thus help move the field forward. As research in the field of treating SPPPU is only beginning, such would be expected. Regardless, important implications for clinicians are highlighted below.

Whether or not a drug like naltrexone is a good idea for SPPPU is still a research question that remains unanswered and demands more substantive research. Clinicians would certainly benefit greatly from the results of RCTs conducted in this field, and certainly this kind of evidence would be required before clinicians can recommend naltrexone. CBT, conjoint therapy, and ACT have shown promising results, which is likely related to the mindfulness and acceptance-based frameworks of these approaches. Nonetheless, this emerging research has shown that more questions are left unanswered. Mainly, whether reducing pornography or increasing pornography acceptance should be the primary treatment objective. Three of the reviewed studies (Crosby & Twohig, 2016; Orzack et al., 2006; Twohig & Crosby, 2010) revealed that helping people perceive their otherwise non-pathological and/or normal pornography use differently resulted in positive outcomes for the participants.

The continued challenge for clinicians is that the lack of agreed-upon criteria for problematic pornography consumption, which means that determining whether or not consumption is problematic in a standardized way is difficult. This is why self-perception is the driving factor in the experience of problematic pornography use and why an understanding of the specific context and nature of consumption is required. Many variables influence both consumption habits as well as perception. Additionally, despite the widespread social acceptance and consumption of pornographic content over the last several decades, reliable and valid instruments designed for assessing problematic use of pornography do not currently exist. Lastly, it may be useful to explore mobile and online applications since they seem to provide a viable and potentially useful vehicle for implementing such interventions in a cost-effective and efficient way.

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Contributors

Luke Sniewski conducted literature searches and provided summaries of previous research studies. Luke Sniewski wrote the first draft of the manuscript and Panteá Farvid and Phil Carter contributed to editing, strategic direction, literature review study design, and approved the final manuscript.

Conflict of interest

All authors declare that they have no conflicts of interest.

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