Meditation as an intervention for men with self-perceived problematic pornography use: A series of single case studies

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Abstract

The aim of this study was to explore the effectiveness of meditation as an intervention for pornography viewing for men who identify with self-perceived problematic pornography use (SPPPU). A series of randomized, multiple baseline (across subjects) single-case studies are reported in accordance with accepted guidelines (SCRIBE). Twelve males with SPPPU participated in a 12-week AB design with a single intervention condition: twice-daily guided meditations delivered via audio recordings. Eleven participants completed the study. They logged daily pornography viewing throughout and filled out the Problematic Pornography Consumption Scale (PPCS) at intake and post-study. Post-study interviews provided important explanatory data for outcome measures. Although TAU-U calculations for data trends showed that TAU-U values were all in the expected direction, only results from two participants indicated meditation as a statistically effective intervention. The baseline trends in the expected direction were likely the result of participants logging their daily pornography use for the first time – thus representing a significant deviation from pre-intervention 'life as usual' – an effect that was not considered at the time of study design. Interview data provided support and evidence for meditation as the reason for reduced SPPPU, specifically due to the perceived impacts participants experienced related to decreased rumination, improved self-acceptance, and decreased experiences of guilt and shame that typically followed pornography viewing. PPCS results indicated that measures had significantly improved for seven out of the eleven participants who completed the study. This study shows encouraging – but inconclusive – results on meditation as a potentially effective intervention for SPPPU. Further studies would benefit from addressing research limitations.

Keywords Meditation · Pornography · Self-perceived problematic pornography use · Single-case experimental design

Self-Perceived Problematic Porn Use (SPPPU) refers to the experiential state of an individual who self-identifies as addicted to pornography, due to the inability to regulate their pornography use, or the interference of their pornography use with everyday life. Men with SPPPU typically note that their pornography viewing is out of control and have experienced multiple failed attempts at quitting and/or reducing back their pornography consumption (Kraus et al. 2016). Men can experience their pornography use as problematic for a variety of reasons. These include personal or moral/ethical reasons, social and relational reasons, the frequency of use, amount of time spent engaging with pornographic content or material, consuming pornography in inappropriate contexts, or consuming pornographic material at the expense of other responsibilities (Sniewski and Farvid 2019a; Twohig and Crosby 2010). Frequency of consumption alone is not essential to SPPPU. Instead, the core issues that tend to predict the seeking of treatment are the negative symptoms that men experience (Gola et al. 2016). The literature also suggests that central to SPPPU is the notion of experiential avoidance (Wetterneck et al. 2012). For some men, watching pornography functions as an 'emotional pacifier', helping them to cope with unwanted thoughts or negative feelings, even though the viewing itself subsequently leads to additional undesirable consequences, such as experiences of shame and erosion of

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perceived self-efficacy (Sniewski and Farvid 2019a; Wetterneck et al. 2012).

Mindfulness, in contrast, can be conceptualized as the opposite of experiential avoidance. The traditional practice of meditation has existed for thousands of years, but the teachings of mindfulness have recently surged in popularity within personal, corporate, and academic landscapes (Shonin et al. 2015). Mindfulness has been defined as consciously and non-judgmentally paying attention to the present moment (Marcus and Zgierska 2009). The practice encourages awareness and acceptance of thoughts, feelings, and physical body sensations as they arise, and recognition of their ever-changing and impermanent nature. Mindfulness practitioners are taught to *acknowledge, observe, and accept* their internal experience rather than to change, suppress, or react to it. This kind of mindful and purposeful control of attention can be developed and trained utilizing techniques such as meditation (Zgierska et al. 2009). As opposed to everyday, habitual mental functioning (i.e., being on autopilot), meditation can set the conditions for an individual to facilitate a productive, skillful, or mindful response to any given situation. Mindfulness-based interventions have been applied across the health sectors, with evidence supporting its efficacy as a facilitator for behavioral change (Khoury et al. 2013). Indeed, mindfulness may be a critical component of successful therapy among individuals seeking help for hypersexual behavior (Reid et al. 2014), which could mean that the same strategies can be useful and effective for SPPPU.

Meditation is one of the popular methods used for practicing and cultivating mindfulness. The backdrop of meditation – silence and stillness – creates an ideal environment for training attentional skills that can assist in cultivating improved emotional and behavioral self-regulation and self-management (Guendelman et al. 2017). Developing and cultivating the mental skill of focus and concentration has been shown to improve cognitive functioning and memory (Mrazek et al. 2013), making it easier to sustain voluntary attention (MacLean et al. 2010). Meditation also trains the individual to draw attention away from the past and future, when making current decisions (Hafenbrack et al. 2014). Additionally, the cultivation of somatic awareness sensitizes practitioners to better detect and regulate when the mind loses touch with bodily sensations, which may result in enhanced cognitive regulation and metacognition (Kerr et al., 2013). Cultivating and developing the awareness of bodily sensations has been shown to be important in the treatment of addictive behaviors (Berking et al. 2011). Meditation may thus serve as a practical training ground where individuals with perceived addictions can practice observing their cravings, urges, and unwanted thoughts without reacting to them by using their coping substance or behavior (Marlatt and Chawla 2007; Bowen et al. 2006). The ability to observe one's own internal experiences, without judgement, sets the conditions necessary for the individual to learn productive ways of responding to various thoughts and feelings (Dvorak et al. 2014). With the cultivation of this skill, emotional instability and impulse control difficulties can be better managed, helping to address the cycle of reactive consumption (Dvorak et al. 2014).

While mindfulness-based therapies have demonstrated efficacy for SPPPU (Sniewski et al. 2018), no study to date has assessed meditation, specifically, as a possible intervention for this population. Research on meditation demonstrates its effectiveness in managing various other addictions and compulsive behaviors (Marcus and Zgierska 2009), which suggests it could be useful for men with SPPPU. Meditation can help such men to cultivate awareness of the uncomfortable affective states that drive their compulsive behaviors (Bowen et al. 2007). This paper aims to investigate the implications and experiences of a guided meditation intervention that tasks participants with sitting and objectively observing their internal experience with non-judgmental acceptance. While meditation served as the primary intervention for the study, it was also intended to serve as a quasi-research method as the predetermined time participants spent meditating provided suitable conditions for self-reflection. It was anticipated that meditation would allow participants to reflect on their past and current pornography use – as well as other life circumstances and variables perceived to be related to their pornography consumption – thus providing important data that could be examined in post-intervention interviews. This paper contributes towards filling a new and emerging research gaps: preliminary examinations of meditation as an intervention for men with SPPPU, as well as this populations' subjective experiences with meditation as they attempt to intervene with a problematic behavior. This report followed (SCRIBE) guidelines for clarity, completeness, accuracy, and transparency (Tate et al. 2016).

Method

Participants

Twelve self-selected adult heterosexual men (see Table 1 for demographic details) participated in this 12-week mixed-method single-case experimental design (SCED) intervention study. Participants were recruited via advertising, social media, and via New Zealand-based therapists/clinicians who work with the targeted population. Inclusion criteria for study participants required being aged 21 years or over, identifying as a heterosexual male, residing in New Zealand throughout the duration of study, and having SPPPU. The twelve participants subsequently recruited for the study were aged between 22 and 51 years (M = 32.5), most (*n* = 6) identified as Pākehā (Non-Māori New Zealanders of European descent). Five participants were tertiary students in New Zealand, meaning they

Table 1 Demographic Details of Study Participants

Participant ID	Age	Ethnicity	Occupation	Pre-existing Mental Health Concern
IS01	35	Pākehā*	Professional	Yes
IS02	29	Pākehā	Teacher	No
IS03	23	Asian	Tertiary Student	Yes
IS04	34	Māori	Did not Specify	Yes
IS05	40	Pākehā	Did not Specify	No
IS06	51	Pākehā	Mentor	Yes
IS07	29	Asian	Professional	Yes
IS08	27	Asian	Tertiary Student	Yes
IS09	22	Pākehā	Tertiary Student	Yes
IS10	23	Middle-Eastern	Tertiary Student	Yes
IS11	23	Asian	Tertiary Student	No
IS12	43	Pākehā	Therapist	No

*Non-Māori New Zealanders of European descent

were engaged in educational pursuits beyond the high school level (i.e., diplomas, undergraduate and graduate certificates, and associate's, bachelor's, master's and doctoral degrees).

Due to mental health concerns being potentially exacerbated by a meditation practice (Cebolla et al. 2017) and the potential consequences of reducing or abstaining from pornography use, an additional screening process was incorporated after consent but prior to commencement of the research. The screen was designed to identify participants who did not meet the selection criteria (i.e., those who consumed illegal pornographic content), those who were at risk or vulnerable by presenting with co-morbidities (i.e., substances addictions, or serious mental health concerns), or those who might engage in risky sexual behaviors as a substitute to viewing pornography (i.e., non-consensual or abusive porn). No participants were excluded after this screening process. Two cases that were considered as borderline risky were discussed in detail with clinical supervisors, in order to determine appropriate protocols and procedures during the intervention study. Eight ($n = 8$) participants self-reported prior histories of mental health issues related to depression, anxiety, or both. These participants were asked to contact the primary researcher directly during the study, in the event their mental health deteriorated. Participants with pre-existing or prior mental health concerns were provided with additional email "check-ins" to ensure participant safety.

Prior to commencing the study, each participant consented to treatment by signing an informed consent form. One participant who consented withdrew from the study after his baseline phase finished, due to a self-reported exacerbation of mental health concerns. Thus, 11 participants completed the full 12-week baseline and intervention requirements of the study. Ethical approval was gained from the authors' institutional ethics committee prior to commencing data collection.

Experimental Design and Procedure

SCED methodology is particularly well suited for examining the processes and outcomes of psychological and behavioral interventions (Smith 2012). A randomized, multiple-baseline design was used to improve the internal validity of the research outcomes (Smith 2012). The standard AB design was selected, with two phases: baseline and meditation intervention. Twelve intervention pathways were pre-determined utilizing a random number generator that produced a sequence of twelve numbers, each between two and five, which represented the length of time – in weeks – that a participant would remain in the baseline phase. After the intervention pathways were generated, the twelve pathways were then randomly assigned into a sequence from one to twelve. Participants were assigned to the intervention pathway, in the order they joined the study (i.e., first participant to intervention pathway one, third participant to intervention pathway three, etc.). No blinding/masking was used during the study. No procedural changes occurred during the course of the investigation after the start of the study.

Baseline

During the baseline phase of the study, no experimental variables were manipulated. All of the participants were instructed to continue living their life as usual, and the guided meditation recordings – along with the instructions on how to use them – were not provided during this phase. While participants did not meditate during the baseline phase of the study, they did log their pornography use in a spreadsheet provided to them prior to the study. The logging spreadsheet tracked the total duration of daily pornography viewing, and – eventually during the intervention phase – daily frequency of meditation sessions. Weekly totals were calculated by summing the daily

figures from the previous week. It is important to note that, when designing the study, daily pornography logging was not intended or anticipated to be an intervention. It was not considered that logging might itself may represent a significant change to 'life-as-usual' and/or pornography viewing habits. Yet, subsequent observation and data analysis revealed that daily logging represented a significant change to the 'life-as-usual' requirement for the participants during the baseline phase of the research, since the participants had never logged their use in this way prior. The implications and experiences of logging pornography use – as well as participants' perceptions of logging – are explored in the Discussion section of this paper.

Meditation Intervention

Between 24 and 48 h prior to beginning the meditation intervention, participants were provided general instructions via email, which involved listening to pre-recorded 15-min guided meditations in the morning and evening. Additionally, basic guidelines were provided for where the participants' meditation practice should take place (i.e., quiet room/place in the house where they would be able to meditate uninterrupted and undisturbed), and choosing the appropriate practice posture (i.e., comfortable, upright seated position; either sitting in a chair or sitting cross-legged). Guided meditation tracks were pre-recorded and accessible via SoundCloud (https://soundcloud.com/byog), a mainstream and popular music-streaming platform, and available for streaming and listening at any time. All participants reported using their mobile devices as their chosen platform for streaming the pre-recorded audio tracks during the study.

Users had access to three guided meditation variations – Full Instructions, Guided, and Unguided. This allowed the user to meditate with detailed instructions when first learning the technique, and subsequently progress to less-guided versions as they became more comfortable and experienced with the meditations. Regardless of variation, the majority of pre-recorded meditations' runtimes were silent, with short instructions being provided at the beginning and end of the audio track. The beginning of the meditation recording instructed participants to observe the breath and/or sensations of breathing at the area of the nose as the air passed through the nostrils with each breath. The meditations provided instructions for the participants to observe their thoughts and emotions without paying attention to them or trying to avoid, change, or suppress them. The conclusion of each meditation involved a somatic check-in, instructing the participant to rest their attention within the framework of the body and to acknowledge and accept whatever experience may have been present at this time.

Post-Study Interviews

Post-study semi-structured interviews – ranging between 20 to 45 min in length (average of 30 min) - were conducted either in person or over Skype. The questions asked during the interviews pertained to the various aspects of the participants' pornography use, past experience of meditation, perceived impacts of the meditation intervention, and reflections on the intervention process and intervention structure as a whole. The interviews were audio recorded, transcribed verbatim, and subsequently analyzed alongside quantitative results in order to assist in explaining and contextualizing the quantitative data gathered by the logging sheets and questionnaire.

Measures

Pornography Use Logging Spreadsheet

Participants were asked to keep a daily log of the total time spent viewing pornography per day. At the end of each week, participants were required to provide the primary researcher with an updated spreadsheet. This documented the weekly totals for the total duration of daily pornography viewing per day throughout the study and the total number of meditation sessions per day during the intervention phase of the study.

Problematic Pornography Consumption Scale

The Problematic Pornography Consumption Scale (PPCS) is an 18-item self-report scale that presents items on a 7-point Likert scale. The instrument has been shown to have high internal consistency and convergent validity, as well as the ability to correlate with measures of psychopathological-related symptoms, such as low self-esteem, depression, and poor attachment (Bőthe et al. 2018). Additionally, the PPCS has a strong theoretical basis, as well as strong psychometric properties in terms of factor structure and reliability (Bőthe et al. 2018). Participants filled out the PPCS pre- and post-study. A final total of 76 points or more for the 18-item scale indicates possible problematic pornography use.

Data Analyses

Consistent with standard reporting practices for single-case experimental designs, graphs for each individual are presented in Fig. 1 (Barlow et al. 2009). In order to complement visual inspection and analysis, both quantitative and qualitative techniques were provided as necessary additions for a robust analysis. TAU-U is an index for analysis of single-case research data that combines non-overlap between phases with trends from within the intervention phase. In addition, it provides the option of controlling undesirable trends during the baseline phase (Parker et al. 2011). Rakap (2015) reported guidelines
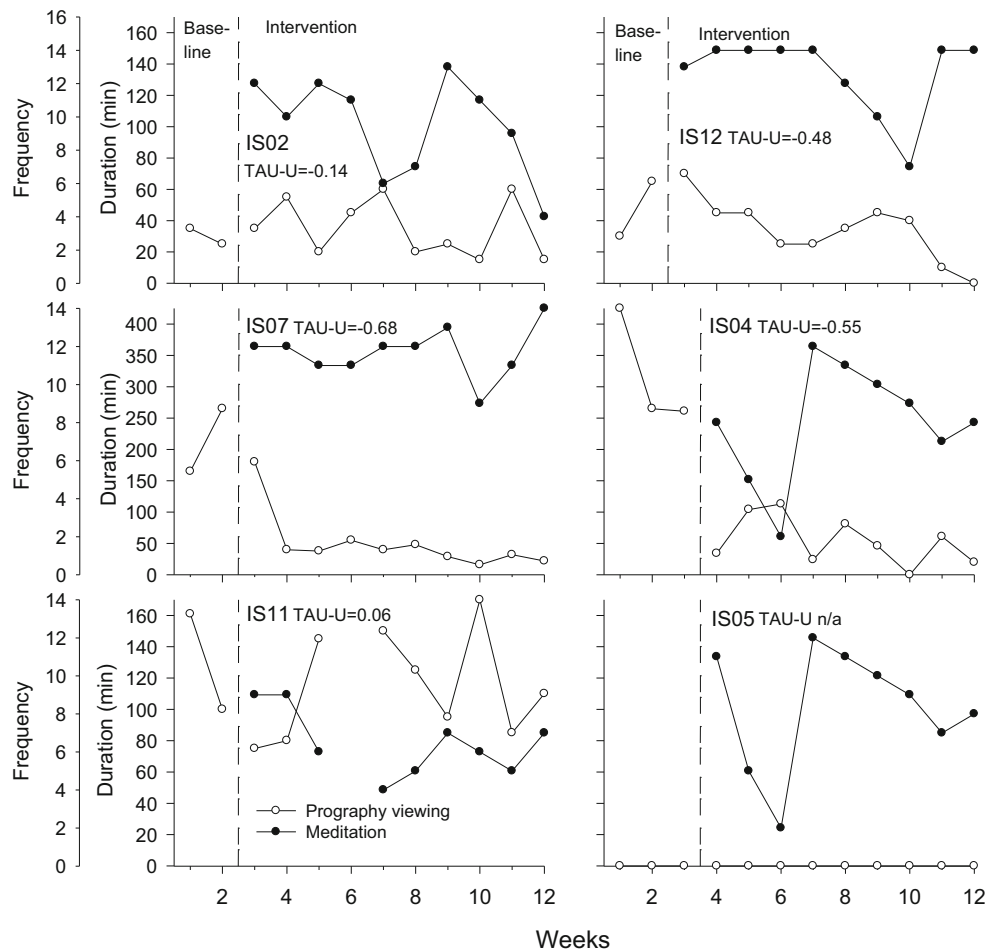
Fig. 1 Duration of pornography viewing, frequency of meditation sessions, and TAU-U scores

for interpreting TAU-U effect size data, with 0.00–0.65 representing questionable effects, 0.66–0.92 representing an effective intervention, and 0.93 and above representing a very effective intervention.

To provide an additional and more rigorous examination of the findings, a reliable change index (RCI) score was calculated for pre/post-scores of the PPCS for each participant (Table 2). Since test scores will likely vary from one administration to another due to imperfect reliability, the RCI statistic provides an indication of whether change in an individual's score is significantly above and beyond the fluctuations and potential imprecisions typically found in measurement tools (Jacobson and Truax 1991). If the change score exceeds the RCI, then the participant can be said to be 'significantly improved', meaning that the observed change would be expected by chance alone at a probability of less than 5% (Jacobson and Truax 1991). The RCI has been used to determine clinically significant change in mental health and behavioral medicine outcomes research (Ferguson et al. 2002), making it relevant, applicable, and useful with the present research.

Applying a mixed-methodological technique that employed both qualitative and quantitative methods

expanded the scope and improved the analytic power of the findings (Sandelowski 2000). Post-intervention interviews were recorded in order to assist in explaining and contextualizing the quantitative data gathered by the logging sheets and questionnaires. The unique lived experiences of each participant were also important because the factors and variables surrounding how and why an individual presents with SPPPU are often unique and contextual (Sniewski and Farvid 2019a).

The semi-structured interviews were analyzed based on Interpretative Phenomenological Analysis (IPA) methodology (Smith and Osborn 2015). IPA is a qualitative approach that seeks to make sense of lived experience through the lenses of its three primary theoretical underpinnings (Hammond 2010). Firstly, phenomenology is a philosophical approach that focuses on the account of lived experience in its own terms rather than one that would have otherwise been prescribed by theoretical frameworks already in existence (Hammond 2010). The interpretative component of IPA recognizes that humans are sense-making organisms. The researcher's task is to make sense of the participant trying to make sense of what is happening to them. Lastly, IPA takes an
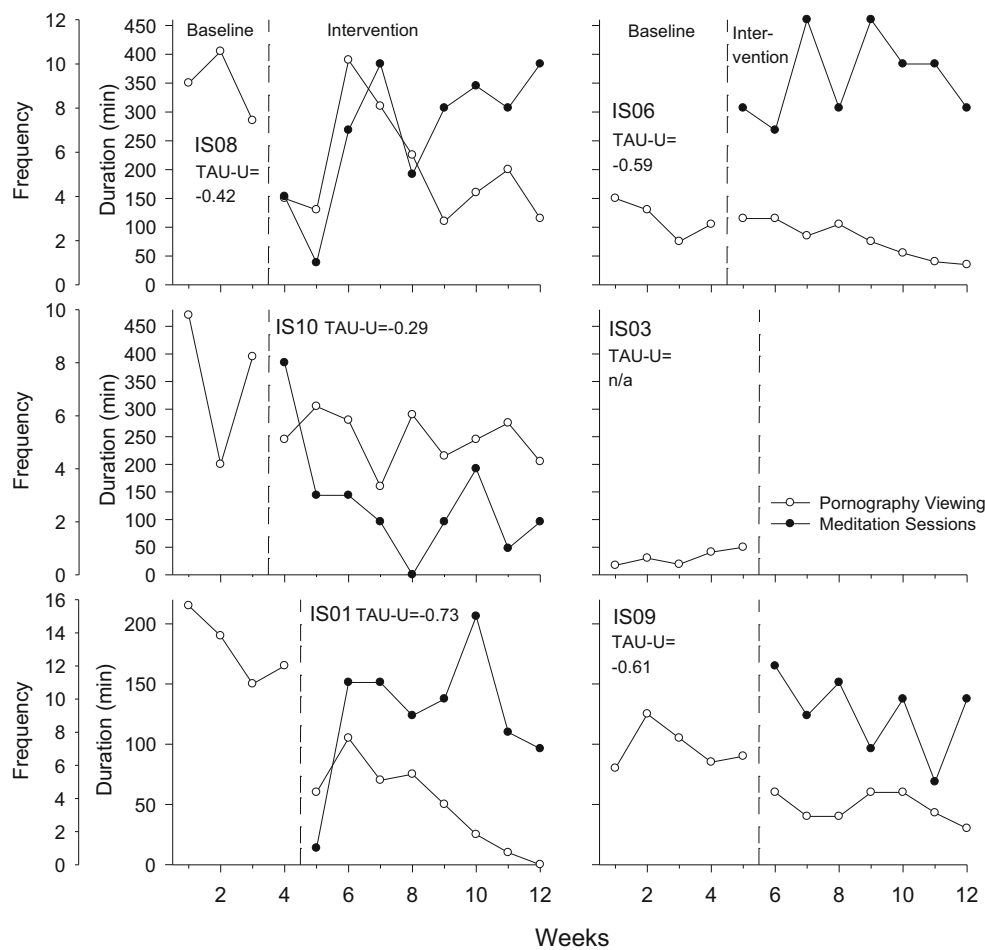
Fig. 1 (continued)

analytical approach to examining the detailed experiences of each case before moving towards more general claims.

IPA is a useful qualitative methodology for examining matters that are highly personal, complex, ambiguous, and/or emotionally-laden. Meditation – and the subjective experiences of men as they progress through a meditation intervention – is a prime example of a phenomenon particularly well-suited for IPA. The experiences of participants when they meditate are often times complex psycho-somatic experiences that can be difficult to articulate, especially for those new to meditation (as many of the participants in this research were). Additionally, the perceived benefits resulting from meditation are highly contextual based on the individual, further confirming the appropriateness of IPA.

Results

Figure 1 presents data on the duration of pornography viewing, frequency of meditation sessions during the intervention phase of the research, and TAU-U scores for each week.

Table 2 Pre-/Post-Intervention Data and RCI Measures for PPCS Scores

| Participant | Problematic Pornography Consumption Scale | | | |
	Pre-Study	Post-Study	RCI Score	Significant Change
IS01	56	20	36	Yes
IS02	96	77	19	Yes
IS04	58	35	23	Yes
IS05	81	21	60	Yes
IS06	72	41	31	Yes
IS07	67	58	9	No
IS08	61	68	−7	No
IS09	76	39	37	Yes
IS10	52	55	−3	No
IS11	87	102	−15	No
IS12	71	60	11	Yes

TAU-U analyses were conducted as described by Parker et al. (2011). As visual-inspection of the graphs showed significant trends during the baseline phase of some of the participants, TAU-U was calculated and used as opposed to TAU-nonoverlap so that the baseline trend could be controlled and adjusted for. TAU-U calculations show that TAU-U values are all in the expected direction (except for IS11). However, only results from two participants would indicate meditation as an effective intervention (IS01, IS07) from a statistical standpoint.

IPA of the semi-structured interviews provided important information regarding the subjective experiences of the participants and the degree to which they felt their meditation practice contributed to their decreased pornography viewing and/or decreased PPCS scores. Eight out of the eleven participants who had completed the study believed that meditation played a significant role in their ability to manage their pornography use, as well as managing the affective states that were contributing to habitual pornography use. One of the common benefits reported by participants who found meditation helpful was the decrease in mental rumination and the time spent thinking about pornography. While five of these participants found meditation to be a generally pleasant experience (IS01, IS06, IS08, IS09, IS12), the remaining three (IS04, IS05, IS08) meditated regularly but did not find the practice enjoyable and only continued to do so because they thought it might have been contributing towards the seemingly improved management of pornography viewing. Within the group of participants that enjoyed practicing meditation, they reported a "sense of peace and calmness" after each sitting. Indeed, some of the participants reflected on these post-meditation experiences of calmness and compared them to the similar short-lived and fleeting experiences of peace after watching pornography. These participants (n = 3) reported preferring starting their day with a meditation practice, instead of watching pornography, because they experienced the same positive affective states without the accompanying shame and guilt. One of the participants, IS05, was the only participant to abstain from all pornography use throughout the baseline and intervention phase of the study despite having self-reported multiple weekly pornography viewing sessions lasting as long as 2.5 h per instance in the weeks and months leading up to the study.

Three participants did not find the meditation practice to be helpful and/or useful during the study (IS02, IS10, IS11). These participants had the lowest meditation compliance, completing an average of 43% of the required guided meditation sittings for their respective intervention pathways. Conversely, the eight participants who did perceive meditation as helpful and beneficial completed an average of 68% of their required sittings. One of the data anomalies for IS11 occurred when he took a vacation with his family, which resulted in a week in which he did not watch pornography or complete any meditation sittings.

Lastly, Table 2 shows RCI scores, which were used to analyze results from the PPCS data for each participant. Change scores greater than 10.05 represented statistically significant change for the PPCS. Results indicate that eight out of eleven changed in the expected and hypothesized direction. Of these eight, seven participants (IS01, IS02, IS04, IS05, IS06, IS09, and IS12) significantly improved according to RCI threshold calculations. Similarly, if only participants who meditated at least once per day (>50% meditation compliance) were considered, then the PPCS measures would have significantly changed for seven out of eight participants, or 88%, of the group. However, participants IS08, IS10, and IS11 demonstrated change in the opposite of the predicted direction. Of the three participants who demonstrated change in the opposite of the predicted direction, only one (IS11) was significant as per the RCI analyses. One explanation for the lack of efficacy could be that this participant meditated less than 50% of the required sessions.

Discussion

The goal of the present study was to examine the effectiveness of meditation as an intervention for males with SPPPU, as well as to explore the experiences of these males as they engaged in such an intervention. Interview data and PPCS scores provided additional data and important contextual information for the quantitative data. Specifically, we sought to test the principal hypothesis that providing males consistent time for sitting with self and training concentration skills – as a meditation practice provides – would cultivate and develop the capacity to resist the temptations and cravings to use pornography when faced with the uncomfortable affective experiences in everyday life that would have otherwise triggered pornography use (Sniewski and Farvid 2019a). Lastly, Table 3 provides the top 10 themes that were identified from the interview data – along with the saturation for each theme – which contribute to the readers' understanding of the themes as they are discussed within this section.

At first glance, statistical results – in and of themselves – lack robustness and are not overwhelmingly supportive of meditation as an intervention for males with SPPPU. The first real problem for statistical analysis occurred during the study design phase of the research, when the randomization techniques were chosen for the intervention pathways. While randomization of the minimum baseline length helped to create a multiple baseline design and improved internal validity of results, the start of the intervention phase should have ideally occurred after the baseline scores had stabilized. Had that been the case, adjusting and controlling for the baseline during statistical analysis may not have been necessary and statistical findings may have been more convincing. The fact that baseline scores were trending in the expected direction – and thus

Table 3   Main Themes Identified Across the Data

Theme	Saturation Among Participants
Daily logging was helpful	100%
Accountability to researcher was helpful	73%
Increased acceptance of pornography use	55%
Meditation was pleasant	45%
Decreased rumination	45%
Meditation was unhelpful	36%
Logging was more helpful than meditation	27%
Meditation was unpleasant	27%
Meditation created sense of calm and peace	18%
Realized pornography was coping mechanism	18%

required statistical compensation – is likely the result of study participants recording their pornography use during the baseline phase of the research, which can be considered an intervention in and of itself (Sniewski and Farvid 2019b). Indeed, logging pornography use allowed participants to begin cultivating an awareness of their behavior, something they had not previously experienced. Indeed, IS05 remained abstinent throughout the entire study even though he had self-reported a significant frequency and duration of weekly pornography use. He credited the increased accountability that he experienced when faced with the requirement of logging his pornography use. Contextual factors related to intervention set and setting (i.e., accountability, therapeutic relationship, and daily logging of pornography viewing) have been shown to be efficacious as a quasi-intervention for SPPPU regardless of the specific intervention utilized in the study (Sniewski and Farvid 2019b). As such, the baseline phase served as a light or brief mindfulness intervention, which then seemed to be intensified with the onset of the intervention for most of the participants.

The degree to which meditation was perceived as helpful or useful – as well as the degree to which meditation impacted the weekly duration of pornography viewing – was largely dosage-dependent. In other words, the participants who had meditated regularly experienced the greatest changes in terms of subjective benefits and reductions in pornography viewing. Lastly, additional evidence supporting the efficacy of meditation as an viable intervention for problematic pornography use can be found in the significant changes to PPCS scores between intake and post-study.

Some of the participants (IS01, IS04, IS07, IS09, IS12) discussed that even though they continued to view pornography throughout the duration of the study, they reported less ruminating on their behavior. Whereas some of the participants reported spending significant time during the day thinking about pornography (i.e., content they were going to watch,

planning their next viewing session, browsing through pornographic content, etc.) prior to the study, participants self-reported that the time spent ruminating over pornography decreased significantly or ceased altogether. These participants reported greater acceptance towards their pornography viewing as a consequence. They also experienced less guilt and shame when they did watch pornography because of the significant decreases in rumination. Since experiences of guilt and shame are related to the continued and reinforced use of pornography (Sniewski et al. 2018), reducing the frequency of the affective experiences of shame and guilt would have also likely been an important catalyst for decreasing pornography use. Rather than being preoccupied with thoughts of pornography, participants were able to engage with their everyday life more cognitively present and were able to view pornography when they consciously decided they want to. When some of the participants did consume pornography, they reported spending far less time browsing through pornographic content, which seemed to represent a dramatic shift when compared to the way they had been watching pornography previously. One explanation for this phenomenon is that the ruminating over pornography could have been one of the key contributing factors to the participants identifying with SPPPU, even though it was not directly mentioned as an underlying cause. The experience of rumination was experienced by many of the participants. In this sense, pornography represented a constant disturbance in the background of the participants' mind as they conducted everyday-life tasks. Indeed, participants reported ruminating on pornographic content within various life contexts (i.e., meeting women, trying to study, preparing for a job interview). Once this pattern of rumination ended, these participants were able to both live their life without the mental distraction of pornography, as well as watch pornography without feeling that it was intruding on their life negatively.

What is difficult to determine, however, is the degree to which meditation influenced the decreased rumination patterns, since aspects of the study design could be forms of mindfulness interventions. Given the association between practicing meditation and decreased rumination (Wiveka et al. 2004), it is possible and likely that meditation was, at least, a contributor to the participants' decreased rumination and, thus, contributed to the subsequent decreases in the total time spent viewing pornography. Additionally, though many of these participants continued to watch pornography, they no longer felt their use was problematic. One explanation – as described above – is that the participants were no longer ruminating over their use, which meant they could consume pornography without the accompanying experiences of shame and guilt. A second explanation supported by literature suggests that there is positive relationship between meditation and self-acceptance (Thompson and Waltz 2008) and self-compassion (Baer et al. 2012; Birnie et al. 2010). Indeed, as

these participants developed a consistent meditation practice, it is possible that they cultivated self-compassion towards themselves and increased their self-acceptance in the process, thus contributing to changes in perception towards pornography use. Some participants (e.g., IS07, IS09, and IS12) reported feeling greater acceptance towards their pornography use, and the ability to watch and enjoy pornography. This was because they were triggered by pleasure or sexual stimulation, rather than simply using pornography as a mechanism for avoiding uncomfortable affective states such as stress, loneliness, boredom, depression, or anxiety. Thus, reported participant experiences – coupled with previous literature – seem to suggest and support the notion that meditation played a role in the mitigation of problematic pornography use in three ways: reduction in the experiences of guilt and shame, decrease in rumination patterns (especially those related to pornography viewing), and improvement to perceived self-acceptance.

Interview data helps to provide insights into the reasons why participants perceived meditation to be a useful tool for intervening with SPPPU. IS07 and IS09 reported feeling a sense of calm and peace after finishing meditation sessions. Within a few sessions they were able to determine that this same feeling of calm and peace is what they had always sought from pornography, a feeling they both reported feeling after viewing pornography. Upon reflection, they noted that they could now experience the same sense of calm they were seeking through meditation – rather than consuming pornography – without the subsequent feelings of shame and guilt that commonly accompanied pornography use. Additionally, two participants (IS06 and IS12) realized during the study that pornography was a coping mechanism for stress. Consistent with literature that discusses experiential avoidance as a common trigger for pornography use (Wetterneck et al. 2012), these participants started noticing that stressful situations were the primary triggers for their pornography viewing habits. IS07 even ascertained that his cigarette smoking, too, served the same stress-management purpose, and he subsequently quit his smoking habit and invested more time in exercise during the time of the study. As current literature supports the notion of meditation as an effective intervention for stress (Vandana et al. 2011), these participants were able to lower their pornography use by learning how to manage their stress – and stressful situations – in a more productive way.

While many participants found the actual practice of meditating to be generally pleasant, IS01, IS04, and IS05 reported various degrees and levels of distress and discomfort while meditating. How each of the three participants responded to that discomfort is important. IS05 experienced the environment of stillness and silence as particularly distressing. This participant, however, subsequently made the connection that the meditation was a good way to practice sitting with his discomfort instead of avoiding it, which would have effectively replicated the avoidance strategy that often-triggered

pornography viewing. Instead, he was able to face his discomfort knowing that practicing 'being okay' with this state was an inherent part of learning how to cope with the stress in his everyday life. IS10 and IS11, however, had adverse reactions that highlight important considerations. IS04 reported traumatic memories of childhood sexual abuse being triggered during meditation. After contacting the primary researcher, he decided to receive counseling services alongside the meditation intervention. He did not, however, withdraw from the study as he felt that addressing his SPPPU was important. For IS01, meditation exacerbated feelings of anxiety and low mood. He was already working with mental health professionals prior to the start of the study, and worked with his medical team to increase the dosage of his medication during the study. While it is not known if meditation triggered these three situations, literature does suggest that it is possible that meditation could have played a role in magnifying mental health symptoms (Cebolla et al. 2017). While the first participant highlights one of the best possible outcomes for meditation, the second two participants reveal important considerations when determining the appropriateness of meditation. Because some with SPPPU typically present with underlying mental health vulnerabilities and pre-existing co-morbidities (Wood 2011), it may be important that those who do begin practicing have therapeutic support in the event that an adverse mental health situation arises. Common pre-existing vulnerabilities that have been connected to problematic pornography use include depression or anxiety disorders (Wood 2011), deficient self-regulation (Sirianni and Vishwanath 2016), or high levels of neuroticism (Egan and Parmar 2013). While research has shown mindfulness-based therapies – namely meditation – to be linked to improvements in all of these (Jain et al. 2014; Hofmann et al. 2010; Oken et al. 2016; Tang et al. 2013), the present study seems to indicate that pre-existing mental health vulnerabilities represent a potential contraindication of engaging in such a practice, despite both of these participants choosing to continue with the study because they experienced the intervention as helpful overall.

Limitations and Suggestions for Future Research

This research is the first to examine the effectiveness of meditation as an intervention for SPPPU. Overall, the present study shows preliminary results on meditation as a potential mediator for men with SPPPU that are both promising and something to build upon. While the guided meditations were intended to be the primary vehicles for initiating a more mindful approach to pornography use and managing the affective triggers that often drive use, it would seem that the logging process cultivated moments of reflection and mindfulness, often times before the participants even began meditating.

Mindful reflection began immediately as the baseline phase commenced. Regardless, preliminary efficacy demonstrated by this study is a notable first step forward towards addressing an emerging problem that continues to be an area of growing clinical concern.

While the overall results from the current study are encouraging and optimistic, results are also inconclusive. As such, findings must be interpreted within the context of its additional limitations. First, though the study participants were diverse – both in terms of age and ethnicity - the sample size of the present study was small. Equally, because there are currently no formal diagnostic criteria for SPPPU, a variety of presentations of SPPPU were intervened with in this study. While SCED research can – under certain circumstances (i.e., highly-controlled and randomized) – compare in rigor to randomized controlled trials (Dallery et al. 2013), more research and replications are needed for such robustness. Second, all of the reported outcomes were measured via self-report, which is invariably vulnerable to the influences of demand characteristics, mood-memory effects, and other sources of inaccuracy.

Another limitation of the present study is the confounding factor associated with individuals with prior mental health concerns. Firstly, the additional check-ins increased contact with the participants that represent study conditions, which could have influenced the outcomes being measured and experiences of the participants. Additionally, this limitation highlights the possibility of future researchers choosing to either focus primarily on participants with co-existing mental health concerns or excluding these participants entirely. Meditation – and its relatively efficacy – will likely be different for those where SPPPU is predominantly a compulsive habit compared to those for whom pornography is a means of emotional regulation, especially if the underlying mental health concerns are not concurrently attended to during such an intervention. As result of these confounding variables, another limitation that emerged was related to the lack of suitable follow-up data. While some data were recorded, the existence of confounding variables limited their interpretation.

Additional limitations were highlighted by reports from IS10 and IS11 was that the main reason they did not meditate was because they did not particularly resonate with the meditation style, voice, and technique utilized during the study. Both IS10 and IS11 reported a strong dislike of the tone of voice and pace guiding the meditations on the provided tracks, and did not enjoy the style and technique being taught. IS11 also mentioned not enjoying the long periods of silence during the meditation tracks, and found himself falling asleep or getting bored. The strong dislike of the meditations could have been a contributing factor to these participants' lack of engagement and intervention adherence. Future research may be able to personalize the delivery of such a meditation intervention by providing a selection of styles and voices, so that the participant can choose what they particularly resonate

with. As long as the overall technique goals and intentions remain the same, it would not represent or warrant an entirely new SCED study population, so comparability and potential for generalizability would not necessarily be sacrificed.

Ultimately, the goal of SCEDs is to achieve internal validity in the preliminary evaluation of treatment mechanisms with less of a focus on external validity, which was endeavored to be achieved in the present study through its detailed study design. Additionally, this study highlights some useful research methods and procedures such as self-monitoring, daily logging, weekly check-ins, and multiple outcome measures that can be utilized in future studies. These research benefits, however, also create a fundamental limitation to the study design that would be difficult to avoid. Since pornography is often viewed in secrecy and men often do not talk about their use with anyone, then such a logging process would inherently change the baseline phase as 'life-as-usual' would be altered by the logging process. While the guided meditations were intended to be the primary vehicles for initiating a more mindful approach to pornography use and managing the affective triggers that often drive use, it would seem that the logging process cultivated moments of reflection and mindfulness, often times before the participants even began meditating. Mindful reflection began immediately as the baseline phase commenced. Regardless, this study represents a notable step forward towards addressing an emerging problem that is likely a growing clinical concern.

This preliminary study suggests that meditation may be a promising intervention for men with SPPPU, and that clinicians – more than most – are uniquely positioned to utilise such an intervention as a conjunct to other therapies since clinicians are able to assess for – and address – underlying mental health vulnerabilities. Additionally, should meditation trigger experiences that are particularly distressing, the clinician is in an advantageous position to assess and support such instances. Finally, clinicians are encouraged to explore utilising a logging system alongside their therapeutic approaches since the present study highlights the effectiveness of logging as a complementary intervention with a low risk of adverse side effects.

Researchers working within the field of pornography would be benefitted from understanding the inherent complexity of SPPPU, which has shown demands a contextualisation of data. The nuances and subtleties of each participant means that reducing use or abstaining from pornography may not be the best solution, or even represent successful research. As such, for men with SPPPU, this research shows that pornography may not be the problem at all. After intervention a participant may consider pornography to be their passionate hobby and no longer perceive their use to be problematic. Contextualisation will require researchers to gather qualitative data in order to explain scales and other quantitative results in pornography research, especially since

frequency of use may not be an important measure of either problematic use or successful intervention. Pornography researchers may also be interested in exploring and expanding the conceptualisation of SPPPU.

Compliance with Ethical Standards

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