

Internet Pornography Use and Sexual Motivation:
A Systematic Review and Integration

Joshua B. Grubbs
Bowling Green State University

Paul J. Wright
Indiana University

Abby L. Braden
Bowling Green State University

Joshua A. Wilt
Case Western Reserve University

Shane W. Kraus
Dept. of Veterans Affairs, VISN 1 New England MIRECC, Bedford VAMC

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Correspondence concerning this article should be addressed to Joshua B. Grubbs, Ph.D., Department of Psychology, Bowling Green State University, Bowling Green, OH, 43403. Email: Grubbsj@BGSU.edu

Internet Pornography Use and Sexual Motivation:
A Systematic Review and Integration

Joshua B. Grubbs, Paul J. Wright, Abby Braden, Joshua A. Wilt, Shane W. Kraus

Abstract

Pornography use is a common activity in the developed world. This work consolidates research about pornography use into an organizational structure that is relevant to sexual motivation more broadly. To accomplish this, a comprehensive review of research is conducted, examining personality, emotional, and attitudinal associates and predictors of pornography use, as well as behaviors, attitudes, and motivations that are associated with or predicted by pornography use. Reviewing over 130 studies, the present work demonstrates that pornography is most often consumed for pleasure-seeking purposes, that it is associated with increases in casual or impersonal approaches to sexuality, and that it predicts more pleasure-oriented approaches to sexual behavior. The implications of these findings are discussed.

Sexually explicit forms of media—pornography—have existed for millennia. However, technological advances over recent decades (i.e., the internet) have revolutionized the distribution and consumption of such media. Globally, internet pornography use (hereafter: IPU = internet pornography use; IP = internet pornography) is a common phenomenon (Ogas & Gaddam, 2011; Price, Patterson, Regnerus, & Walley, 2016; Regnerus, Gordon, & Price, 2016). Internationally, substantial majorities of individuals have viewed internet pornography (e.g., Sweden, Canada, Germany, and U.S., 77% of college students; Döring, Daneback, Shaughnessy, Grov, & Byers, 2017; Australia, 84% of men and 54% of women Rissel et al., 2017). Furthermore, in nationally representative studies, up to 46% of adult men in the U.S. and 16% of adult women report intentional IPU in any given week (Regnerus et al., 2016). A number of recent works confirm that these viewing patterns are extremely common among adolescents as well (e.g., Taiwan, 74% of adolescent boys and 26% of adolescent girls, Chen, Leung, Chen, & Yang, 2013; Sweden, 96% of adolescent boys, Mattebo, Tydén, Häggström-Nordin, Nilsson, & Larsson, 2013; U.S. 50% of adolescents Rasmussen & Bierman, 2016). Various reports have placed IP as the largest single category of electronic media both in terms of total bandwidth and total traffic (Misra, 2014), with the most popular online pornography website boasting over 3,732 petabytes (over three billion gigabytes) of downloads in 2017 alone (Pornhub, 2018). In short, the consumption of IP is a common activity for many adults and adolescents worldwide, with a frequency that is unprecedented by previous forms of erotic media.

Given the prevalence of IPU, it is not surprising to see that it is also often a topic of academic inquiry. Over recent years, there has been an increase in peer-reviewed literature examining IP from psychological (for reviews, see: Peter & Valkenburg, 2016; Short, Black, Smith, Wetterneck, & Wells, 2012), sociological (Brickell, 2012), anthropological (Vucurovic, 2013), and even philosophical (Watson, 2010) perspectives. However, despite the ubiquity of pornography use in developed nations, to date, the majority of publications and empirical studies of IPU have been relegated to topical journals and special interest publications. Herein, we seek to consider this behavior in terms that are relevant to psychological and communication sciences more broadly.

Internet Pornography Use and Sexual Motivation

Internet pornography use is a sexual behavior. That is, people most often view pornography for sexual purposes (Solano, Eaton, & O'Leary, 2018) and describe their use of pornography as being related to other aspects of their sexual attitudes, beliefs, preferences, and behaviors (Attwood, 2005; Kohut, Fisher, & Campbell, 2017; Rissel et al., 2017). In the decades following the advent and widespread use of the internet, a plethora of empirical research has been published examining how IPU is related to various aspects of sexuality (Grubbs & Perry, 2019; Harkness, Mullan, & Blaszczynski, 2015; Peter & Valkenburg, 2016). Building on this, the purpose of the present work was to conduct a systematic and integrative review that contextualizes pornography within the greater context of human sexual motivation. Specifically, we sought to examine what factors (both sexual and non-sexual) predict IPU and the ways in

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which IPU influences, predicts, or is associated with sexual attitudes, beliefs, and behaviors. More to the point, we examined what factors predict IPU (a sexual behavior) and how IPU, in turn, seems to influence various dimensions of the human sexual experience.

To accomplish these goals, we conducted a systematic review of available literature on IPU. To be included, the study had to examine the association between IPU and at least one other variable relevant to sexual motivation, attitudes, or behaviors. Studies that only examined gender as a correlate of IPU were excluded.¹ Cross-sectional and longitudinal investigations were included. To this end, we conducted a search of available academic literature, specifically querying the following databases: Academic Search Complete, Academic Search Premier, MEDLINE, Psychology and Behavioral Sciences Collection, PsycINFO, SocINDEX, CINAHL, and PubMed. All searches included the initial terms, “internet” and “pornography,” which were followed by a number of search terms that were meant to assess the variables of interest. These additional terms were: “reason*,” “predict*,” “outcome,” “behavior,”² “personality,” “motiv*,” “trait,” “risk,” “attitude,” “longitudinal,” “effect,” and “future.” These initial search parameters returned over 1,000 results that were then screened for inclusion. The results of this review are summarized, according to PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009), in Figure 1.

After deleting duplicates, removing irrelevant or non-academic works, and screening out studies that did not involve empirical research, we then reviewed the full texts of over 275 papers for inclusion in our final review. We elected to only include studies that either examined personality and motivational associates and predictors of IPU or studies for which IPU was framed as an associate or predictor of a behavioral (e.g., sexual activity) or attitudinal (e.g., sexual values, acceptance of sexual behaviors) outcome. We specifically omitted

studies that focused exclusively on problematic or addictive use of pornography, studies that were limited to clinical or treatment seeking populations, studies that focused exclusively on non-internet pornography (e.g., studies before 1998), studies that focused exclusively on paraphilic or pedophilic pornography use, case studies or reports, and studies that did not focus on human subjects directly (e.g., content analyses of pornography websites). This process led to the inclusion of 134 studies.

Methodological Concerns

Before engaging in such a systematic review, it is important to acknowledge the methodological critiques of research to date. Below, we consider three such concerns: gender, morality, and negative bias.

Gender

One of the greatest limitations of research related to IPU is that such research tends to be gender-constricted. A vast number of studies regarding IPU have focused on such use in men alone (Duffy, Dawson, & das Nair, 2016; Short et al., 2012). This male-centric focus is warranted to a degree, as women reportedly use pornography at rates much lower than men do (Regnerus et al., 2016), which is likely a function of multiple factors such as a grander cultural trend in which women’s sexual motivation is often secondary to the male sexual drive (Baumeister, 2000, 2004; Baumeister, Catanese, & Vohs, 2001; Baumeister & Twenge, 2002; Baumeister & Vohs, 2004), more universal differences in male vs. female sexuality (Peplau, 2003; Petersen & Hyde, 2010; Schmitt & International Sexuality Description Project, 2003), and the fact that much of currently available pornography is marketed toward male audiences (French & Hamilton, 2018). Another possibility is that women may also underreport their IPU due to cultural norms around sexuality and gender roles, and there is good evidence that significant numbers of women do use IP with some regularity (16-17% of adult women in the U.S. report use within the past week or month Grubbs,

¹ Across numerous studies in several cultural settings, the greatest predictor of pornography consumption is male gender (e.g., Grubbs, Kraus, & Perry, 2019; Rasmussen & Bierman, 2017; Regnerus, Gordon, & Price, 2016; Rissel et al., 2017; Vanwesenbeeck I, Bakker F, & Gesell S, 2010; Wright, 2013; Wright, Bae, & Funk, 2013). For the present review, we did not

include studies only reporting gender as a predictor of use, instead focusing on works that identified individual difference variables that are associated with pornography use, self-reported reasons for pornography use, or evidence of pornography use for specific reasons.

² We also searched for “behaviour”

Kraus, & Perry, 2019; Regnerus et al., 2016). In short, the male-centric approach to IP research to date has hampered understandings of women's use. As such, we provide gender breakdowns for each sample reviewed in this paper, and note areas in which gender is of particular importance.

Morally charged Subject Matter

Another noted limitation of IP research is related to the morally charged nature of the topic (Fisher, Montgomery-Graham, & Kohut, 2018; Grubbs & Perry, 2019; Grubbs, Perry, Wilt, & Reid, 2018). Numerous analyses have found that both personal morality and religious beliefs dramatically impact attitudes toward IP use (Droubay, Butters, & Shafer, 2018; Grubbs, Exline, Pargament, Hook, & Carlisle, 2015; Grubbs, Wilt, Exline, Pargament, & Kraus, 2018; Short, Kasper, & Wetterneck, 2015). Religious individuals tend to broadly disapprove of IP use (MacInnis & Hodson, 2016) and support the censorship of pornography in various forms (Droubay et al., 2018; Lambe, 2004). Not surprisingly then, religious individuals report using IP at rates much lower than the general population (Perry, 2017; Rasmussen & Bierman, 2017; Wright, 2013; Wright, Bae, & Funk, 2013). Yet, despite these associations, there are several studies indicating that religious individuals do indeed use IP (MacInnis & Hodson, 2015; L. J. Nelson, Padilla-Walker, & Carroll, 2010; Perry, 2015), often with great emotional distress (Grubbs et al., 2019; Patterson & Price, 2012; Volk, Thomas, Sosin, Jacob, & Moen, 2016). Given these associations, religiosity and moral values should be considered relevant covariates in research on IP use. Yet, these factors have not been considered frequently enough in formal analyses, limiting the generalizability of current research.

Negative Bias

Finally, another key limitation of pornography research is the seemingly negative bias of such research (Fisher & Barak, 2001; Fisher et al., 2018; Ley, Prause, & Finn, 2014; Montgomery-Graham, Kohut, Fisher, & Campbell, 2015), with little research examining whether there could be positive aspects of IP use. Inherently then, there is likely a bias in available studies demonstrating either negative or neutral effects of IP consumption, with very little prior research demonstrating, or even attempting to measure, positive effects (Kohut & Campbell, 2019).

Factors Motivating or Predicting Internet Pornography Use

In the first part of this review, we consider the various factors that may motivate the consumption of internet pornography, with special attention paid to studies presenting evidence of factors that are likely to drive pornography use. This method resulted in the identification of 34 studies falling into three broad categories, as described below.

Individual difference variables. Across a number of studies—particularly earlier studies (e.g., before 2010) of IPU—personality characteristics and individual difference variables consistently emerged as predictors of IPU. These findings are detailed in Table 1, though we review the general findings below.

Dispositional sexual affect. Dispositional sexual affect is a term for personality factors that lead individuals to respond to sexual stimuli in a predictable way (Gunter, 2001). It often refers to the erotophobia-erotophilia spectrum (Paul, 2009) that ranges from negative attitudes toward impersonal sex (e.g., disinterest in strippers or pornography) to more positive attitudes toward impersonal sex (e.g., casual or group sex), including pornography specifically (Fisher, White, Byrne, & Kelley, 1988). Higher levels of erotophilia are associated with pleasure-seeking motivations for sexual activity in general (Birnbaum & Gillath, 2006; Cooper, Shapiro, & Powers, 1998), and a greater propensity to pursue sexual pleasure.

As reviewed in Table 1, U.S. studies show that higher erotophilia predicts greater motivation to engage in IPU, greater arousal from IPU (Paul, 2009), and greater probability of responding to unsolicited IP with more IP search behaviors (Shim, Lee, & Paul, 2007). These tendencies seem to hold in contexts outside the U.S. as well (e.g., Lima, Peru; Velezmoro, Negy, & Livia, 2012).

Sensation-seeking. Across a number of studies, sensation-seeking is a common predictor of IPU, in both U.S. and international contexts using both cross-sectional and longitudinal designs (See Table 1). This is notable, given that sensation-seeking is a pleasure-seeking drive (Hirschman & Holbrook, 1982; Zuckerman, 1994, 2014), that predicts pleasure-seeking behaviors in general (Comeau, Stewart, & Loba, 2001; Magid, MacLean, & Colder, 2007) and sexual behaviors specifically (Kalichman & Rompa, 1995). Not surprisingly then, a number of studies identified

sensation-seeking as a consistent predictor of IPU, both cross-sectionally and over time.

Narcissistic traits. In addition to dispositional sexual affect and sensation-seeking, narcissistic traits have also been linked to IPU. For example, entitlement is a self-focused trait that is a key component of narcissism more broadly (W. K. Campbell, Bonacci, Shelton, Exline, & Bushman, 2004; Grubbs & Exline, 2016). Generally speaking, entitlement is associated with a desire for pleasure and enjoyable experiences and it often predicts selfish behaviors (Bushman, Moeller, & Crocker, 2011; W. K. Campbell et al., 2004). At least a few studies have noted that trait entitlement, narcissism, and sexual narcissism are each cross-sectionally and retrospectively associated with greater levels of reported pornography use. Collectively, these studies, alongside previously reviewed studies, suggest that self-focused traits such as dispositional sexual affect, sensation-seeking, and narcissism are all associated with IPU (See Table 1).

Self-Reported Reasons for IPU

In addition to research on dispositional correlates of IPU, many studies have directly evaluated self-reported reasons for IPU. Below, we consider the major findings in this domain.

Arousal and enhancement. IPU results in sexual arousal (Brand et al., 2010; Goodson, McCormick, & Evans, 2000, 2001; Hald, Malamuth, & Lange, 2013). Not surprisingly then, sexual arousal and sexual enhancement are consistently reported as predominant reasons for using pornography (See Table 2). Specifically, masturbation enhancement (Wallmyr & Welin, 2006), sexual arousal (Baltazar, Helm, McBride, Hopkins, & Stevens, 2010), and more general pleasure-seeking goals (Paul & Shim, 2008) are all commonly reported as the predominant motivation for pornography consumption. Self-reported hedonic motivations for pornography use are also evident in recent work attempting to classify pornography users by their reasons for viewing pornography (C. C. Brown, Durtschi, Carroll, & Willoughby, 2017). Finally, these findings also persist outside of Western contexts (Chen et al., 2013).

Curiosity and information-seeking. A number of studies also note that a commonly reported motivation for IPU is education, curiosity, or information (e.g., Chen et al., 2013; Paul & Shim, 2008). Individuals may report a desire to learn new

sexual positions, new sexual practices, or generally gain a better understanding about sexual activity in general (Attwood, 2005; Weinberg, Williams, Kleiner, & Irizarry, 2010). Given that curiosity is a less commonly endorsed reason for viewing IP than directly hedonic reasons (C. C. Brown, Durtschi, et al., 2017), curiosity is not likely the most common motivation for use, particularly among frequent users. Additionally, in some ways, curiosity and information-seeking may also be seen as pleasure-seeking drives (Kashdan, Rose, & Fincham, 2004; Kashdan & Steger, 2007; Litman, 2005). New information can be both liked and wanted (Litman, 2005), and the hedonic value of new information can be predictive of the individual's engagement with it (Higgins, 2006). As such, although this reason is less commonly endorsed than arousal, pleasure, or masturbatory aid, it may be another form of pleasure-seeking motivation for pornography use.

Intimacy and coupling motives. Another potential motivation for IPU would be intimacy or relationship goals. A number of prior theories of sexual motivation (e.g., Cooper et al., 1998; Baumeister & Tice, 2001) have cited intimacy and relationship goals as important impetuses for sexual drive. These motives are particularly common for women (Basson, 2000; Peplau, 2003) and often serve as the primary motivation for sexual activity (Cooper et al., 1998). As such, the role of such goals in motivating any sexual behavior cannot be understated.

Some men and women in heterosexual relationships report viewing IP with their partner (Daneback, Træen, & Månsson, 2009; Olmstead, Negash, Pasley, & Fincham, 2013; Poulsen, Busby, & Galovan, 2013; Resch & Alderson, 2014). Oftentimes, the motivation for this use is to satisfy a partner or enhance a sexual relationship. However, IPU with a romantic partner is less common (Poulsen et al., 2013), as less than 20% of men report ever using pornography with a partner, compared to 90% of men who report using alone (Kraus & Rosenberg, 2014, 2016). More to the point, coupled use of pornography is likely not a primary motivation for regular IPU for the majority of users. Having said this, recent qualitative research suggests that young adults are increasingly expecting pornography use to be a part of their future relationships (Kohut et al., 2017), which may indicate that this motivation for pornography consumption will change in coming years.

Coping. In addition to enhanced pleasure, the reduction or avoidance of dysphoric or unpleasant states is also a powerful motivation for a variety of behaviors (Elliot & Covington, 2001; Ryan & Deci, 2001). Importantly, this motivation is also a consistent predictor of greater pornography use. That is, across a variety of studies (See Table 3), mood management and stress relief are consistently endorsed as reasons for IPU, as are feelings of psychological distress and/or loneliness more generally. Importantly, these findings are both cross-sectional and longitudinal (Peter & Valkenburg, 2011b), suggesting a potential causal link between lower mood states and the use of pornography as a coping mechanism. We also note that problematic pornography use (though not the focus of this review) is also commonly predicted by the use of pornography to cope with or avoid negative emotions (Reid, Li, Gilliland, Stein, & Fong, 2011).

Boredom. Continued evidence for IPU for pain reduction or avoidance is also present in research related to boredom and IPU (See Table 3). Boredom is considered a unique and undesirable psychological state (Goldberg, Eastwood, LaGuardia, & Danckert, 2011) that is distressing (Martin, Sadlo, & Stew, 2006). Consequently, people are often highly motivated to avoid boredom (Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010), often through a variety of pleasure-seeking behaviors, such as gambling (Neighbors, Lostutter, Cronce, & Larimer, 2002), eating (Macht, 2008), drug use (Boys, Marsden, & Strang, 2001), and masturbation (Carvalho, Træen, & Stulhofer, 2015; Janssen, McBride, Yarber, Hill, & Butler, 2008). In keeping with this trend, a number of studies do suggest that boredom is often a motivation for pornography use (See Table 3).

Summary of Motivations for IPU

A number of factors may motivate IPU, but pleasure-focused motives seem to be the most robust and obvious of these factors. Self-focused, individual-difference variables, such as entitlement and sensation-seeking, often predict IPU; and people most often report viewing IP to enhance arousal and pleasure or to escape negative affective states. These findings are particularly true of men, for whom sexual arousal, sexual excitement, and masturbation were the most consistent predictors of use. For women, pleasure focused motivations were also common, though typically endorsed at lower rates than men. Such a

finding is consistent with the broader literature suggesting that men tend to be more pleasure-motivated in sexual behavior than women (Cooper et al., 1998). Although certain exceptions to this motivation certainly exist (e.g., individuals watching IP as a couple), self-focused pleasure-seeking motives seem to predict general desire to consume IP and the consistency of such consumption better than other factors (Paul & Shim, 2008; Solano et al., 2018).

Despite the consistency of these results, the majority of studies described in Tables 1-3 are cross-sectional and retrospective in nature. That is, the vast majority of findings on the individual differences and self-reported reasons that predict pornography use are based on temporally static, past recall dependent methods, rather than on prospective longitudinal or experimental designs. The notable exceptions to these trends are the few longitudinal studies documenting that psychological distress seems to predict pornography use over time (Peter & Valkenburg, 2011b) and the studies that show that sensation-seeking prospectively predicts greater pornography use over time (Beyens, Vandenbosch, & Eggermont, 2015; Peter & Valkenburg, 2011b). As such, there is a need for future longitudinal and experimental work that explicitly test the causal mechanisms motivating greater IPU, as well as for more rigorous assessment methods, such as Ecological Momentary Assessments which would allow for more immediate detail regarding the specific predictors of pornography use.

Influence of Sexual Media on Sexual Motivation

Separate from the above literature seeking to examine or explain what factors motivate or drive IPU, there is also a body of literature examining how IPU is associated with sexual attitudes, beliefs, and behaviors. This literature is often framed in terms of outcomes or effects of pornography use, though such causal language may not be universally warranted. Below, we summarize this literature, with a specific focus on the broad categories that seem to be well-represented in published work: casual sexual behavior and attitudes, sexual risk-taking, sexual objectification, sexual preferences, and sexual satisfaction.

Casual Sexual Behavior

One commonly investigated associate and outcome of IPU is uncommitted sexual behavior (e.g., casual sex with consenting partners). Across many studies (See Table 4), uncommitted sexual behavior,

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casual sex, hooking up, and sexual permissiveness are consistently well-predicted by IPU. These findings are observed in nationally-representative data, as well as in convenience samples and a variety of methodologies. In studies both in the U.S. (Braun-Courville & Rojas, 2009; Carroll et al., 2008) and abroad (Peter & Valkenburg, 2008; Rissel et al., 2017), IPU is consistently associated with greater sexual permissiveness, more sexual partners in recent history, and with casual sexual behavior. Outside of Western contexts, these findings persist. For example, in Indonesia (Hald & Mulya, 2013), in a sample of Taiwanese adolescents (Lo & Wei, 2005;) and in a cross-sectional analysis of men in Hong Kong (Lam & Chan, 2007)), IPU was consistently positively associated with greater acceptance of and engagement in casual sexual behaviors. Moreover, these findings are also consistently found in longitudinal works, over the course of several weeks (Braithwaite, Aaron, Dowdle, Spjut, & Fincham, 2015) to multiple years (Martyniuk & Stulhofer, 2018).

Collectively, these findings indicate that there is likely an association between IPU and both attitudes toward and engagement in casual sexual behavior. These findings are consistent across several cultural contexts and methodological paradigms. Furthermore, given that many of these findings are both longitudinal and representative in nature, they provide strong evidence for the generalizability of this conclusion (that IPU is associated with casual approaches to sexuality) and there may be grounds for causal speculation.

Sexual Preferences/Desires

Sexual preferences and desires are also commonly investigated as correlates or outcomes of IPU. Across a number of studies (See Table 5), IPU is consistently cross-sectionally associated with greater diversity in sexual preferences, with a greater endorsement of specific sexual preferences or requests for specific sexual acts, and with a greater desire to replicate or imitate sexual acts or behaviors that are observed in IP. Qualitative works that seek to explore individual narratives around and understandings of personal IPU often find that users of IP understand the link between IPU and sexual preferences as directional in nature (Attwood, 2005; Löfgren-Mårtenson & Månsson, 2010; Rothman, Kaczmarzsky, Burke, Jansen, & Baughman, 2015). In short, despite limitations associated with cross-sectional designs and

retrospective recall (Chan, 2009), people seem to believe that their IPU influenced their sexual preferences.

Sexual Risk-Taking

Collectively, across several (but not all) studies, there appear to be links between IPU and sexual risk taking (See Table 6). Given this general trend, previous systematic reviews have concluded that there is a notable, positive relationship between the use of sexually explicit media and risky sexual behavior (Harkness et al., 2015) and that this link is possibly causal in nature. Having said this, the results of our review suggest that such clear conclusions may be premature, particularly based on data obtained in the past 4-5 years. That is, links between IPU and risk behaviors are not consistent across studies, with many studies reporting no association between IPU and real-world sexual risk behaviors. This discrepancy, in part, seems to be attributable to the content of pornography content viewed. Several studies note links between consumption of pornography demonstrating unsafe sexual practices and likelihood of engaging in unsafe sexual practices. However, in many case (as reviewed in Table 6), direct links between mere consumption of pornography and sexual risk-taking are not evident.

Sexual Satisfaction

The relationships between IPU and sexual satisfaction have been studied extensively in recent years, with dozens of publications addressing the topic, theoretical reviews proposing models for understanding the topic (Leonhardt, Spencer, Butler, & Theobald, 2018), and previous meta-analytic reviews examining these findings (Wright, Tokunaga, Kraus, & Klann, 2017). The findings of these studies are summarized in Table 7.

In general, as indicated in Table 7, the relationships between IPU and personal sexual satisfaction are complex. Among couples, there is limited support for the idea that IPU may enhance sexual satisfaction when it is incorporated into partnered sexual activities. On an individual level, there is consistent evidence that IPU is predictive of lower sexual satisfaction in men, with both cross-sectional and longitudinal works pointing to the associations of such use with diminished satisfaction. Regarding women, scattered evidence suggests that IPU may enhance sexual satisfaction, have no effect on satisfaction, or diminish satisfaction over time. Despite

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these mixed findings, the conclusion of no significant effect of IPU on sexual satisfaction in women is the most common finding. These results have also been confirmed by a recent meta-analysis (Wright, Tokunaga, et al., 2017). Reviewing 50 studies of pornography consumption and various satisfaction outcomes (e.g., self satisfaction, body satisfaction, relational satisfaction, sexual satisfaction), this meta-analysis found that pornography consumption (not internet-specific) was consistently related to and predictive of lower interpersonal satisfaction variables, including sexual satisfaction, but for men only. No significant findings were found for women. Collectively, such mixed results preclude definitive conclusions about the role of IP in influencing satisfaction for women.

One of the more notable findings of recent works examining IPU and sexual satisfaction is that there appears to be a curvilinear relationship between use and satisfaction, so that satisfaction decreases more sharply as IPU becomes more common (Wright, Bridges, Sun, Ezzell, & Johnson, 2017; Wright, Steffen, & Sun, 2017). Given clear evidence across multiple international samples, it seems reasonable to accept the conclusion that, as IPU increases to more than once per month, sexual satisfaction decreases. Furthermore, although these studies (Wright, Bridges, et al., 2017; Wright, Steffen, et al., 2017) were cross-sectional, given the number of longitudinal studies (Peter & Valkenburg, 2009b) linking IPU to lower sexual satisfaction, it is possible to infer that these associations are potentially causal in nature. As IPU increases, interpersonal sexual satisfaction appears to decrease (Tokunaga, Wright, & Roskos, 2018). However, very recent research on this topic (Perry, 2019) suggests that, for married couples, this decrease in satisfaction may be accounted for by masturbation itself, rather than pornography use.

Sexual Objectification

Sexual objectification, by nature, involves the devaluation of the personhood of prospective sexual partners and the view of them as objects for personal pleasure enhancement (Fredrickson & Roberts, 1997). This is especially true of heterosexual men, for whom sexual objectification has been primarily researched (Fredrickson & Roberts, 1997; Szymanski, Moffitt, & Carr, 2011). However, both men and women may view others as sexual objects (Strelan & Hargreaves, 2005),

and, although understudied in LGBTQ populations, there is evidence that such individuals may also objectify prospective partners (Wilson et al., 2009).

Published literature on the use of pornography and attitudes toward women generally shows that the use of pornography is associated with greater acceptance of violence toward women (Allen, Emmers, Gebhardt, & Giery, 1995; Demare, Briere, & Lips, 1988; Hald, Malamuth, & Yuen, 2010), particularly among men already predisposed to engage in sexual violence (Malamuth, Hald, & Koss, 2012). Moreover, in a meta-analytic study of the effects of pornography use on sexual behaviors (Wright, Tokunaga, & Kraus, 2016a), pornography consumption in both men and women was associated with more sexually aggressive behaviors. Building on this, in a longitudinal study of Dutch adolescents ($N = 962$, Age Range: 14–20; Peter & Valkenburg, 2009a), IPU (7-point ordinal; *never—several times a day*) predicted general notions of women as sexual objects among both men and women. However, it was noted that only among men did such increased views of women as sexual objects then predict increases in IPU. In short, for male participants, IPU was longitudinally linked to greater sexual objectification of women, which was, in turn, longitudinally linked to greater IPU.

Pornography exposure has also been shown to predict sexually objectified attitudes toward women in experimental and correlational research conducted with collegiate men in the United States (Wright & Tokunaga, 2015, 2016). For instance, in a sample of undergraduate men ($N = 133$, $M_{age} = 20.91$, $SD = 1.84$), participants who did not generally consume sexually explicit media and who were shown digital images of centerfolds from a popular pornographic website (compared to individuals shown images of sports) reported increased desires for non-relational sex, increased importance of physical attractiveness in prospective partners, and more views of women as sexual objects for the purpose of gaining pleasure (Wright & Tokunaga, 2015). Internationally, IPU (6-point ordinal; *never—every day*) specifically has also been correlated with objectifying women among college students ($N = 476$; 40.3% men, $M_{age} = 19.5$, $SD = 1.3$) in Japan (Omori, Zhang, Allen, Ota, & Imamura, 2011). Similar results have been found in undergraduate men in the U.S. ($N = 393$; $M_{age} = 18.9$, $SD = 1.6$), where pornography use (time spent per week) was

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positively associated with sexual objectification of women (Mikorski & Szymanski, 2016). Collectively, these findings suggest that, particularly for heterosexual men, IPU is cross-sectionally, longitudinally, and experimentally associated with increases in sexual objectification.

Summary of Sexually Related Outcomes

From the above literature, a few key outcomes are clear. Primarily, IPU is associated with more permissive attitudes toward casual sex and more engagement in casual sex. These findings are particularly robust, having been documented extensively in cross-sectional, longitudinal, and experimental works, in diverse cultural settings, and in nationally-representative works in the U.S. and abroad.

Additionally, there is strong evidence from cross-sectional, longitudinal, and experimental works that IPU users are more likely to endorse sexually objectifying prospective sexual partners, viewing them as instruments for personal pleasure. This body of work is smaller than the body of work linking IPU to casual approaches to sexuality, but the evidence for this conclusion is relatively strong.

Moving beyond casual sex and sexual objectification, there is some evidence that IP consumers are also likely to report specific sexual motives and preferences that they attribute to their IPU. That is, the preponderance of literature strongly suggests that viewing IP is clearly associated with sexual experimentation, greater willingness to try behaviors demonstrated in pornography, and greater preferences for behaviors demonstrated in pornography. Having said this, the majority of this research is cross-sectional or retrospective in nature, which limits causal inferences. Even so, users of pornography typically report that they believe IPU has influenced their sexual desires and preferences.

Finally, IPU demonstrates more complex relationships with sexual risk-taking and sexual satisfaction. In both cases, divergent findings abound in the literature, precluding definitive speculation about causal or directional links.

Discussion and Implications of the Review

The present article sought to systematically review and synthesize research findings from the past 20 years on IPU in the context of human sexual motivation, attitudes, beliefs, preferences, and behavior more broadly. To this end, we reviewed literature on

the factors predicting IPU and literature related to human sexuality related outcomes and correlates of IPU. Collectively, the findings point toward a few key conclusions.

Primarily, we found that IPU is a pleasure-oriented behavioral engagement. That is, people primarily use IP for sexual-pleasure seeking purposes such as sexual arousal, masturbation enhancement, and sexual gratification. Moreover, people also seem to use IPU quite frequently as a means of coping with or escaping negative affective states such as psychological turmoil or boredom. Not surprisingly, personality traits associated with more pleasure-seeking orientations in general (e.g., sensation-seeking, narcissistic traits) are consistently predictive of IPU, rounding out an understanding of IPU as a hedonic behavior. When this finding is integrated with the consistent finding in past literature noting that IPU is most often a solitary activity (Grubbs et al., 2019; Kraus & Rosenberg, 2014; Maddox, Rhoades, & Markman, 2011), it is reasonable to conceptualize this behavior as an ego-centric, hedonically motivated behavior, as opposed to socially or relationally focused.

Moving beyond motivations for IPU, results also consistently pointed toward an understanding of IPU's influence as being hedonically or pleasure-focused as well. For example, IPU—across diverse methods and cultural settings—consistently predicts greater engagement in casual sexual behavior. Uncommitted sexual behavior is commonly associated with pleasure-seeking motives (Garcia & Reiber, 2008; Kruger & Fisher, 2008; Sirin, McCreary, & Mahalik, 2004). People who engage in uncommitted sexual behavior often describe hedonistic goals as the primary motivation for such encounters (Armstrong & Reissing, 2015; Lyons, Manning, Longmore, & Giordano, 2014; Manning, Giordano, & Longmore, 2006; Regan & Dreyer, 1999) and often explicitly deny social sexual motivations as reasons for such encounters (Lyons et al., 2014). More to the point, such behaviors are often inherently somewhat impersonal in nature. As such, uncommitted sexual behavior is likely a strong indication of pleasure-focused sexual motivation, particularly among men (Regan & Dreyer, 1999), although women also frequently report hedonic motivations for such encounters (Lyons et al., 2014).

We also note that a number of studies clearly indicate that IPU is associated with the development of

and experimentation with novel sexual preferences and practices. That is, many users of IP report that IP has shaped how they view their own sexuality and the sexual preferences and proclivities that they hold. In this regard, it seems that IPU is influential in shaping the sexual desires of users.

Additionally, IPU is consistently related to sexual objectification of prospective partners, particularly by men. Should one approach partnered sexual activity from an exclusively self-focused and hedonic perspective, it is quite likely that one would also view prospective sexual partners as sexual objects by which greater sexual pleasure can be obtained (Wright & Tokunaga, 2015, 2016). Therefore, links between IPU and increased sexual objectification are further evidence that IPU seems to be associated with greater levels of pleasure-focused, impersonal sexual motivation, particularly for heterosexual men.

In contrast to the clear findings mentioned above, the influence of IPU on sexual satisfaction and on sexual risk taking is much more nuanced. In both domains, IPU has been found to have deleterious effects (lower satisfaction and more risk taking), no effects, or positive effects (more satisfaction and less risk taking). These divergent results seem to vary as a function of populations being studied and measures being used. Even so, there is evidence in prior literature that consuming pornography that displays risky sexual behavior is, itself, predictive of engaging in such behaviors. Similarly, there is also evidence that the use of pornography as a compensatory behavior (e.g., to account for unmet sexual desires in a relationship) may also be associated with lower satisfaction (Perry, 2019).

Ultimately, whether or not IPU is causally linked to pleasure-seeking sexual motivation is unclear. Given that IPU itself is predicted by greater pleasure-seeking sexual motivation, it is quite plausible that associations between present IPU and future pleasure-seeking sexual motivations and behaviors is largely accounted for by a more pleasure-seeking sexual motivation in general. That is, the same factors that motivate more pornography use may also be motivating future engagement in more pleasure-focused sexual behavior (see Wright, 2018 for some evidence that this is not the case). Thus, it remains for future work to explicitly test whether or not sexual motivation, specifically hedonic sexual motivations, are influenced by IPU or whether both IPU and hedonic

sexual motivation are both influenced by other explanatory variables.

Sexual Script Theory

Another possible implication for the present work can be seen in its integration with media effects extensions of sexual script theory. Sexual script theory posits that human sexuality is guided by social influences that create scripts for determining sexual desires, fantasies, and practices (Gagnon, 1990; Simon & Gagnon, 1986). People observe, learn, and modify the scripts in their environment, using them as cognitive guides for how to pursue and engage with real-life sexual partners. In regards to sexual media generally and pornography specifically, Wright has integrated the concept of sexual scripting with research and theory from communication, media effects, observational learning, and information processing into a sexual script *Acquisition, Activation, Application* model (*3AM*) of sexual media socialization (Wright, 2011, 2014; Wright & Bae, 2016; Wright & Donnerstein, 2014; Wright, Malamuth, & Donnerstein, 2012). Within the *3AM*, acquisition refers to the processes by which a consumer of sexual media develops new or novel sexual scripts based on the sexual philosophies espoused and behaviors exhibited by media models. For example, an IP consumer might develop a particular fetish or behavioral preference that had not existed for them prior to IPU due to the statements and actions of actors in pornography. Script activation refers to the processes by which sexual media may trigger, or prime, existing sexual scripts. An IP consumer may have learned scripts for both relational, other-oriented sex and casual, self-interested sex, for example, but their IPU keeps the latter script more centrally activated in memory. Finally, application refers to the processes by which a sexual script that has been acquired and activated is called on to guide a particular judgment, attitude, or behavior.

Studies guided by the *3AM* in the context of IPU (Braithwaite, Coulson, Keddington, & Fincham, 2015; Braithwaite, Givens, Brown, & Fincham, 2015; Donevan & Mattebo, 2017; M. S. Lim, Carrotte, & Hellard, 2016; Tomaszewska & Krahé, 2016; Wright & Randall, 2012) have found evidence supporting its conclusions, with many such findings consistent with the position that IPU is associated with pleasure-focused aspects of sexuality. Our findings are consistent with the notion that there is an influence of

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IP on the acquisition or development of specific sexual scripts, the activation of already existing scripts, and the application of those scripts. Additionally, as has been repeatedly discussed in script-theory literature, the sexual scripts available in IP tend to be hedonically self-focused in nature, particularly for men (J. D. Brown & L'Engle, 2009; Hald & Štulhofer, 2016; Štulhofer, Buško, & Landripet, 2010; C. Sun, Bridges, Johnson, & Ezzell, 2016). Therefore, the present findings may be seen as a general body of evidence in support of the Δ AM, in that the current work directly supports the notion that IPU is influential in acquiring, activating, and applying pleasure-focused sexual scripts.

Limitations and Future Directions

Despite the evidence reviewed herein, there are limitations that are of consequence to the present work. Chiefly, across over 100 studies reviewed, the most common methodology for pornography related studies is cross-sectional survey research. Consistent with past critiques of the methodology used in pornography research (Short et al., 2012), current research is similarly plagued by a preponderance of causal speculations and inferences based on cross-sectional and retrospective reports. In some domains, these critiques are less applicable (e.g., the abundant and robust links between pornography use and casual sexual behavior). Yet, generally speaking, IP research is in need of diverse methods, experimental paradigms, and longitudinal studies. This need is particularly apparent in adolescent and child populations, as the age of pornography exposure is quite young, and the developmental outcomes of widespread pornography exposure during childhood are not yet known. There is also a need for more rigorous methods (e.g., Ecological Momentary Assessment techniques) that delve into the experiences associated with pornography consumption in more detail.

We also note that the limitations mentioned at the beginning of this review likely influenced the body of literature available to be reviewed. That is the foci of prior IPU literature on negative outcomes (L. Campbell & Kohut, 2017; Ley et al., 2014; Montgomery-Graham et al., 2015), the male-centric approach to IP literature (Short et al., 2012), and the morally charged nature of the topic of IP (Grubbs et al., 2015; Grubbs & Perry, 2019; Grubbs, Perry, et al., 2018) are all likely limiting factors that have prevented a more complete

understanding of the diverse ways that IPU impacts those who use it.

Finally, we would also note that the incredible rate of technological advancement means that the type of IP available to consumers and the means by which it is consumed is perpetually changing. As has been the case with technologies prior, at present, sexually explicit media—particularly IP—are one of the first and predominant uses of new technologies such as virtual reality programming, kinesthetic internet-connected devices, and even robotics. Given such advances, it is likely that the literature concerned with technology and pornography more broadly will continue to expand at a seemingly exponential rate in coming years, and these changes in interactivity will likely correspond to differential effects on human behaviors (Lo, Wei, & Wu, 2010). Although we believe that the general conclusions of the present work, chiefly our demonstration of the links between pleasure-focused sexual attitudes/behaviors and IPU, will still be relevant to future technology, only time will test this supposition.

Conclusion

Given the incredible popularity of IP in modern societies and the rate at which it continues to be used, it is likely to continue to influence and be influenced by various individual, relational, and cultural motivations. The present article sought to provide a systematic review of the ever-expanding body of literature related to IPU and to demonstrate the relevance of such literature to understanding human sexuality more broadly. Collectively, available literature suggests that IPU is most often associated with and predicted by pleasure-seeking motives and associated personality traits. With regards to attitudes, behaviors, and beliefs about sexuality, IPU itself tends to be associated with more casual and pleasure-centric attitudes. Oftentimes, these associations are predictive in nature, wherein IPU predicts greater future engagement in pleasure-centric sexual behaviors and greater acceptance of pleasure-focused sexuality. Ultimately, the results of this review suggest that IPU is more closely linked with pleasure-focused sexual constructs, rather than socio-sexual bonding or procreative goals. However, given the over-reliance of this research domain on cross-sectional self-report methods, causal inferences should still be made with

some caution, and there is a pressing need for more rigorous and definitive methodological applications.

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Table 1

Summary of studies reporting individual difference variables predicting or associated with pornography use

Study	Sample Characteristics	Traits Identified	Study Conclusions
(Beyens et al., 2015)	Longitudinal Study of Belgian adolescent boys ($N = 325$; $M_{age} = 14.1$, $SD = 0.8$)	Sensation-Seeking	Sensation-seeking was positively associated with six-month pornography use concurrently and predictive of such use over time.
(Bouffard, 2010)	Cross-sectional sample of U.S. undergraduate men ($N = 325$; age not specified).	Sexual Entitlement	Sexual entitlement was positively associated with greater use of pornography.
(Buzzell, Foss, & Middleton, 2006)	Cross-sectional study of undergraduate men in the U.S. ($N = 134$, 53% men, $M_{age} = 20.8$, $SD = 1.3$)	Low Self Control	Low self-control was positively associated with likelihood of viewing online pornography by downloading pornography or by visiting pornographic websites.
(Grubbs, Wilt, et al., 2018)	Cross-sectional U.S. samples of both undergraduates ($N = 1,507$; 65.2% men; $M_{age} = 19.3$; $SD = 2.2$) and adult web users ($N = 782$, 48.8% men, $M_{age} = 32.6$, $SD = 10.3$)	Trait Entitlement	Trait entitlement was positively, though weakly, correlated with average daily pornography use (as measured in hours)
(Kasper, Short, & Milam, 2015)	Cross-sectional, U.S. sample of web users ($N = 257$; 37% men, $M_{age} = 29$, $SD = 9.3$)	Narcissism	Narcissism was a consistent positive associate of past and current pornography use (yes/no question of use).
(Luder et al., 2011)	Cross sectional study of Swiss Adolescents ($N = 7,548$, 51.5% boys; <i>Age Range</i> : 16-20)	Sensation-Seeking	Sensation-seeking broadly correlated with both wanted and unwanted exposure to IP among both boys and girls independently, even when various other explanatory factors (e.g., frequency of internet use, the use of the internet for sexual information-seeking) were adjusted statistically
(Paul, 2009)	Cross sectional study of undergraduate students in the U.S. ($N = 337$, 53.1% men, $M_{age} = 20$, $SD = 1.8$)	Erotophilia	For both men and women, erotophilic tendencies positively predicted both pornography use and arousal from pornography use, above and beyond other predictors. Additionally, separate analyses in this same sample (Shim, Lee, & Paul, 2007), found that erotophilic tendencies were also associated with general likelihood to respond to unsolicited IP (e.g., pop-up advertisements, sexually explicit emails, sexually explicit ads) by seeking more IP.
(Peter & Valkenburg, 2006a)	Cross sectional analysis of Dutch adolescents ($N = 690$, 48% boys, $M_{age} = 15.5$, $SD = 1.7$)	Sensation-Seeking	Sensation-seeking was positively associated with pornography use and of intentional efforts to view pornography.

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(Peter & Valkenburg, 2011b)	Longitudinal study of Dutch Adolescents and Adults (Adolescent $N = 1,445$, 51% men, $M_{age} = 14.5$, $SD = 1.7$; Adult $N = 833$, 49% men, $M_{age} = 47.9$, $SD = 16.7$)	Sensation-Seeking	Sensation-seeking at baseline predicted pornography use six months later
(Sinković, Štulhofer, & Božić, 2013)	Cross-sectional analysis of Croatian young adults ($N = 1,005$; 50.7% men; <i>Age Range</i> : 18-25)	Sensation-Seeking	In both genders, sensation-seeking was positively related to pornography use in the past year. Sensation-seeking was also positively associated with considering pornography as important in the participant's life, suggesting that sensation-seeking is associated with both behavior and values regarding pornography use.
(Ševčíková, Šerek, Macháčková, & Šmahel, 2013)	Cross-sectional study of adolescents in the Czech Republic ($N = 495$, 48.4% men, $M_{age} = 13.0$, $SD = 1.5$)	Sensation-Seeking	Sensation seeking emerged as a consistent positive predictor of pornography consumption among children/adolescents
(Velezmoro et al., 2012)	Cross-sectional analysis of undergraduates in Lima, Peru, ($N = 251$, 62.5% men, $M_{age} = 21.3$, $SD = 2.8$) and Southeastern U.S. ($N = 320$, 39.1% men, $M_{age} = 18.6$, $SD = 0.5$)	Erotophilia	Across both genders in both samples, erotophilia was consistently associated with the use of the internet for sexual purposes, including viewing IP.
(Weisskirch & Murphy, 2004)	Cross-sectional study of college students in the U.S. ($N = 138$; 45% men; $M_{age} = 20.0$, $SD = 2.4$)	Sensation-Seeking	Across the whole sample, pornography use was positively predicted by trait-sensation-seeking.
(Zheng & Zheng, 2014)	Cross-sectional analysis of Chinese young adults ($N = 460$, 55.4% men, $M_{age} = 30.5$, $SD = 6.0$)	Sensation-Seeking	Sensation-seeking was positively associated with pornography use in both men and women.

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Summary of studies reporting self-reported reasons for pornography use

Study	Sample Characteristics	Reasons Reported	Study Conclusions
(Baltazar et al., 2010)	Cross-sectional analysis of undergraduates ($N = 751$, 44.6% men, $M_{age} = 22.3$, $SD = 5.6$) at a religiously affiliated (Christian) university in the U.S.	Sexual Arousal	Sexual arousal was the most commonly endorsed reason for pornography use among both men (39% endorsed as factor leading to pornography use) and women (25% endorsed as factor leading to pornography use), despite the fact that the sample had largely negative views of pornography in general.
(C. C. Brown, Durtschi, et al., 2017)	Cross-sectional analysis of college students at a university in the Midwestern U.S. ($N = 457$; 36% men; $M_{age} = 19.7$, $SD = 2.0$)	Sexual Arousal, Pleasure, Masturbation	Pornography users (38% of total sample) predominantly endorsed pleasure-focused reasons as the primary motivations for pornography use (i.e., sexual arousal, physical pleasure, masturbation)
(Chen et al., 2013)	Cross-sectional sample of Taiwanese Adolescents ($N = 1,166$, 55.5% men; <i>Age Range</i> : 10th-12th grade students)	Satisfying sexual desires	Satisfying sexual desires was listed as a core motivation for pornography use by over 64% of teens reporting intentional pornography use.
(T. M. Emmers-Sommer, 2018)	Cross-sectional sample of adult pornography users in the U.S. ($N = 76$; 60.5% men; $M_{age} = 21.2$, $SD = 4.8$)	Masturbation enhancement; curiosity, sexual excitement	In the total sample, the primary reasons identified for pornography use were “I use it to masturbate” (53.9%), “It is sexually exciting” (15.8%), and “Curiosity” (13.2%).
(Mattebo, Tydén, Häggström-Nordin, Nilsson, & Larsson, 2014)	A cross-sectional sample of adolescents in Sweden ($N = 877$; 54% men, <i>Age Range</i> : 15-20)	Self-reported reasons for viewing pornography	Preponderance of participants (94% of boys, 79% of girls) reported that pornography use is arousing; Additionally, 93% of adolescent boys and 72% of adolescent girls reported that pornography is “good for masturbating.”
(Paul & Shim, 2008)	Cross-sectional analysis of college students in the U.S. ($N = 321$, 150 men, 171 women, $M_{age} = 20$, $SD = 1.8$)	Sexual Arousal & Masturbation	Pleasure enhancement reasons (e.g., “As an arousing visual aide to look at while masturbating,” Paul & Shim, 2008; p. 193) were the most commonly endorsed reason for pornography use. This motivation was grouped (through exploratory factor analysis) with other pleasure-enhancement/pain-reduction motivations such as frustration management, boredom relief, and stress reduction
(Romito & Beltramini, 2011)	Cross-sectional sample of young adults in Italy ($N = 303$; 52% men; <i>Age Range</i> : 18 - >22)	Reasons for first exposure	For men, curiosity (84.2%), friends watching (70.4%), sexual excitement (52.6%) were the primary reasons for first exposure to pornography. For women, friends watching (82.0%), Curiosity (76%),

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			and accidental encounters (56%) were the primary reasons.
(Ševčíková & Daneback, 2014)	Cross-sectional analysis of adolescents in the Czech Republic ($N = 2,950$, 53.3% women, $M_{age} = 20$, $SD = 1.8$)	Sexual Arousal, Curiosity, and Desire for Sexual Education	Among adolescent boys, sexual arousal was the greatest self-reported reason for pornography use (69.8%) and this motivation increased as they aged through adolescents (e.g., older boys reported greater use for arousal). Among women, curiosity was the greatest self-reported reason (46.1% of users), followed by arousal (44.9%)
(Solano et al., 2018)	Cross-sectional convenience sample of adults in the U.S. (Mechanical Turk. $N = 1,392$, 61% women, $M_{age} = 35.8$, $SD = 11.8$)	Sexual Arousal; Masturbation enhancement; Sexual Relief; Entertainment	For both men and women, sexual excitement to aid in masturbation was the primary motivation for pornography use (81.6% of men; 66.7% of women), followed by sexual arousal more generally and sexual relief. Entertainment and curiosity were also commonly endorsed.
(Wallmyr & Welin, 2006)	Cross sectional sample of Swedish adolescents and young adults ($N = 876$, 36.6% male; <i>Age Range</i> : 15-25)	Sexual Arousal & Masturbation	Sexual arousal with the goal of masturbation was the most commonly reported reason that men gave for viewing IP (48.8%). For female respondents, sexual arousal was much less frequently endorsed as a motive for pornography use compared to other motives (12.4%), falling far behind reasons such as curiosity (54.6%) and social pressure (19.0%)

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Table 3

Summary of studies reporting coping motivations for pornography use

<i>Study</i>	<i>Sample Characteristics</i>	<i>Negative Affect Measure</i>	<i>Study Conclusions</i>
(Baltazar et al., 2010)	Cross-sectional analysis of undergraduates ($N = 751$, 44.6% men, $M_{age} = 22.3$, $SD = 5.6$) at a religiously affiliated (Christian) university in the U.S.	Coping Motivation and Low Self-Esteem	Among pornography users, 23% of men and 4% of women reported using pornography to reduce negative affect, despite the fact that the sample had largely negative views of pornography in general. Additionally, 8% of men users and 5% of women users also endorsed increasing pornography use in response to feelings of low self-esteem.
(Chen et al., 2013)	Cross-sectional sample of Taiwanese Adolescents ($N = 1,166$, 55.5% men; <i>Age Range</i> : 10th-12th grade students)	Boredom	Boredom relief was listed as a motivation for IP-seeking among 55.8% of respondents
(L. J. Nelson et al., 2010)	Cross-Sectional Study of young adult men in the U.S. ($N = 192$; 100% men; $M_{age} = 21.0$, $SD = 3.0$)	Depressive Symptoms	Depressive symptoms were associated with greater use of pornography.
(Paul & Shim, 2008)	A cross-sectional analysis of U.S. college students ($N = 321$, 150 men, 171 women, $M_{age} = 20$, $SD = 1.8$).	Frustration management, boredom relief, and stress reduction	Pleasure enhancement reasons were the most commonly endorsed reason for pornography use. However, these motivations were grouped (through exploratory factor analysis) with pain-reduction motivations such as frustration management, boredom relief, and stress reduction
(Peter & Valkenburg, 2011b)	A longitudinal, nationally representative, 2008, two-wave panel study of adults ($N = 833$; $M_{age} = 14.49$, $SD = 1.68$; 51% men) and adolescents ($N = 1,445$; $M_{age} = 47.89$, $SD = 16.67$; 49% men) in the Netherlands.	Lower Life Satisfaction	Ratings of lower life satisfaction at baseline, for both adults and adolescents, consistently predicted pornography use six months later.
(Rissel et al., 2017)	A cross-sectional, nationally representative sample of Australian adults ($N = 8,424$; 47.6% men; <i>Age Range</i> : 16-69)	Psychological Distress	For both men and women, current psychological distress was associated with greater likelihood of reporting lifetime pornography use.
(Rothman et al., 2015)	A qualitative study of inner-city youth in the U.S. ($N = 23$; $M_{age} = 17.6$, $SD = N/A$; 40% boys)	Boredom	Boredom relief was endorsed as a reason for the use of pornography (not limited to internet pornography use).
(Schenk, 2009)	A U.S. cross-sectional study of 290 couples ($N = 580$ individuals; 50%	Boredom	Boredom was consistently related to pornography use; although the simple effect of this relationship was small (e.g., 2.2% variance in pornography use

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men, $M_{age} = 45.4$, $SD = 5.8$)

accounted for by boredom), these results were actually curvilinear in nature, with boredom demonstrating positive quadratic effects (e.g., more powerful predictor of pornography use at higher levels of boredom)

(Weaver et al., 2011)	Cross-sectional sample of adults in the U.S. ($N = 559$; 48.5% men, Age Range: 35-54)	Depressive Symptoms	Depressive symptoms associated with greater use of pornography.
(Weber et al., 2018)	A Cross-sectional study of German adults ($N = 2527$ individuals; 47% men, $M_{age} = 49.4$, $SD = 17.8$)	Life Satisfaction; Loneliness	Loneliness was positively associated with greater pornography use among both men and women; for men only, lower levels of life satisfaction also predicted greater levels of pornography use
(Wilt, Cooper, Grubbs, Exline, & Pargament, 2016)	Cross-sectional, U.S. undergraduates ($N = 1,070$, 68% men, $M_{age} = 19.23$, $SD = 2.34$)	Self-Esteem	Lower levels of self-esteem were related (weakly) to greater use of pornography.
(Ybarra & Mitchell, 2005)	Nationally representative, cross-sectional study of adolescents in the U.S.; $N = 1,501$, gender not specified; Age Range: 10-17 years	Depressive Symptoms	Depressive symptoms were associated with greater IP-seeking behaviors.
(Yoder, Virden III, & Amin, 2005)	Cross-sectional survey of adults in the U.S. ($N = 400$; 71.5% men; Age Range: 21-61)	Loneliness	Loneliness was positively associated with daily and weekly pornography use.

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Table 4

Summary of studies reporting associations between pornography use and casual sexual attitudes and behavior

<i>Study</i>	<i>Sample Characteristics</i>	<i>Outcome</i>	<i>Study Conclusions</i>
(Baams et al., 2015)	Longitudinal study of Dutch adolescents ($N = 444$, 48.2% men, $M_{age} = 14.5$, $SD = 0.61$)	Permissive attitudes toward sexuality	Higher sexual media use (including pornography) corresponded to more permissive sexual attitudes. Over time, these variables trended together, so that greater sexual media use was associated with increasingly permissive attitudes toward sex over time.
(Braithwaite, Aaron, et al., 2015) Study 1	Cross-sectional study of undergraduates in the U.S. (Study 1, $N = 850$, 23% men, $M_{age} = 19.3$, $SD = 1.3$)	Friends with benefits relationships	Pornography use was associated with greater likelihood of having engaged in a “friends with benefits” relationship, greater number of partners with which one had engaged in such relationships, and greater plan to continue such relationships in the future
(Braithwaite, Aaron, et al., 2015) Study 2	Longitudinal study of undergraduates in the U.S. (Study 2, $N = 992$, 30% men, $M_{age} = 19.5$, $SD = 1.3$)	Friends with benefits relationships	Cross-sectional replication of Study 1 (above). When these findings were examined longitudinally over a three-month period, the association between pornography use and “friends with benefits” relationships both held, and was stronger than the cross-sectional association between the two behaviors, after adjusting for the stability of “friends with benefits” relationships
(Braithwaite, Coulson, et al., 2015)	Same as described in Braithwaite, Aaron, et al., 2015	Casual Sexual Encounters (referred to as “hook ups”)	Pornography use was associated with casual sexual behavior in the form of hookups both cross-sectionally and longitudinally. pornography use predicted both the likelihood of having engaged in a hookup, the number of previous hookup partners, and the planned likelihood of engaging in future hookups.
(Braun-Courville & Rojas, 2009)	A cross-sectional study of adolescents in the U.S. ($N = 433$, 85% women, $M_{age} = 18$; $SD = 2.1$)	History of past casual sexual encounters; Attitudes toward future casual sexual encounters	Pornography use was associated with a greater history of casual sexual encounters and more permissive attitudes toward future casual sexual encounters
(C. C. Brown, Conner, & Vennum, 2017)	A cross-sectional study of college students in the U.S. ($N = 635$; 75% women; $M_{age, for men} = 20.22$, $SD = 3.10$; $M_{age, for women} = 19.16$, $SD = 2.12$)	Sexual Permissiveness	Pornography use was associated with greater sexual permissiveness in both men and women.

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(J. D. Brown & L'Engle, 2009)	Longitudinal study (2 years) of adolescents in the Southeastern United States ($N = 967$, 49.9% boys, $M_{age} = 13.6$, $SD = 0.7$),	Permissive Sexual Norms and Casual Sexual Behavior	Greater use of sexually explicit media was cross-sectionally associated with more permissive sexual norms and greater acceptance of casual sexual behavior in both men and women. When sampled again two years later, pornography use at baseline was associated with continued tendencies toward greater sexual permissiveness, as well as greater engagement in a variety of sexual behaviors
(Carroll et al., 2008)	Cross-sectional study of young adults in the U.S. ($N = 813$, 38% men; $M_{age} = 20$, $SD = 1.8$)	Attitudes toward non-committed sexual behaviors	Pornography use was commonly reported by both genders (more so among men: 86.1% men vs. 31% of women) and positively associated with acceptance of non-committed sexual behaviors
(Doornwaard, Bickham, Rich, ter Bogt, & van den Eijnden, 2015)	A four-wave, longitudinal study of Dutch adolescents ($N = 1,132$; 52.7% boys; $M_{age} = 13.95$, $SD = 1.18$)	Sexually permissive attitudes and sexual behavior	For boys, there was a unidirectional effect of pornography use on sexually permissive attitudes, where greater use predicted more permissive attitudes over time, but not the reverse. That is, pornography use led to increases in permissive sexuality, but permissive sexuality did not necessarily lead to increases in pornography use.
(T. Emmers-Sommer, Hertlein, & Kennedy, 2013)	A cross-sectional study of university students in the U.S. ($N = 846$; 41.9% boys; $M_{age} = 21.25$, $SD = 5.05$)	Sexual openness and permissiveness	For both men and women, use of pornography was associated with greater sexual openness and permissiveness as indicated by greater willingness to engage in non-committed or extra-relational sexual behavior.
(Ferron, Lussier, Sabourin, & Brassard, 2016)	A cross-sectional study of French-Canadian adults in relationships ($N = 779$; 32.7% men; $M_{age} = 29.85$, $SD = 9.91$)	Cyber-infidelity (e.g., emotional or sexual involvement with an individual who is not one's primary partner)	Pornography use was associated with greater engagement in cyber-infidelity among both men and women.
(Gwinn, Lambert, Fincham, & Maner, 2013)	Two studies of undergraduates in the U.S. Study 1, Experimental ($N = 74$; 36% men; $Age Range = 18-25$) Study 2, 12-week longitudinal ($N = 291$; 18.2% men; $Age Range: 18-28$)	Attitudes toward and engagement in infidelity	Experimentally (Study 1) exposure to pornography use was shown to increase perceived quality of relationship alternatives (e.g., options for infidelity). Longitudinally (Study 2), over 12 weeks, greater use of pornography use at baseline predicted greater engagement in extradyadic infidelity.
(Hagen, Thompson, &	A four-year longitudinal study of college men in	Number of sexual partners since age 14	Pornography use was associated with a greater mean number of sexual partners since age 14.

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Pornography and Sexual Motivation

Williams, 2018)	the U.S. ($N = 795$; $M_{age} = 18.58$ at baseline)		
(Hald & Mulya, 2013)	Cross-sectional study of university students ($N = 556$; 73.4% women) in a predominantly Muslim society with strict anti-pornography laws (Indonesia)	Non-committed and extramarital sexual behavior	Pornography use was predictive of non-committed sexual behaviors and extramarital sexual behaviors
(Lam & Chan, 2007)	Cross-sectional analysis of men in Hong Kong ($N = 229$, $M_{age} = 21.5$, $SD = 1.8$)	Sexually permissive attitudes	Pornography use was positively associated with sexual permissiveness and proclivity to engage in sexual harassment
(Lambert, Negash, Stillman, Olmstead, & Fincham, 2012)	Cross-sectional analyses of college students in romantic relationships in the U.S. Study 1 ($N = 367$, Age 17-26 18.3% men) Study 4 ($N = 67$, Age Range 17-25, 43.5% men) Study 5 ($N = 240$, Age Range 18-28, 21.5% men)	Casual sexual encounters, infidelity	Pornography use in the past 30 days was associated with greater likelihood of engaging in casual sexual encounters and/or extradyadic encounters, as well as reduced commitment to one's partner.
(Leonhardt & Willoughby, 2017)	Cross-sectional ($N = 568$) and longitudinal ($N = 142$) studies of emerging adults in the U.S. (Time 1: $M_{age} = 20.82$, $SD = 3.53$)	Sexual Permissiveness	Both cross-sectionally and over a one year time period, for unmarried emerging adults, greater pornography use was associated with greater sexual permissiveness and greater emphasis on being sexually "ready" before marriage.
(Lo & Wei, 2005)	Cross-sectional sample of Taiwanese adolescents ($N = 2,001$; 50% boys; $M_{age} = 15.6$, $SD = 0.9$)	Sexually permissive attitudes	Pornography use was cross-sectionally associated with and predictive of more sexually permissive attitudes and behaviors (e.g., casual sex)
(Lou et al., 2012)	Cross-sectional sample of Chinese	Premarital sexual permissiveness	Pornography use (including, but not limited to pornography use) was positively

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	adolescents ($N = 17,016$, <i>Age Range</i> 15-24; 51.2% women)	and sexual behavior engagement	predictive of greater premarital sexual permissiveness and behavioral sexual engagement.
(Martyniuk & Štulhofer, 2018)	Longitudinal studies of Croatian adolescents in two samples (Sample 1, $N = 372$; 72% women, $M_{age} = 16.1$, $SD = 0.46$; Sample 2, $N = 753$; 63% women; $M_{age} = 15.9$, $SD = 0.52$)	Sexual Permissiveness	Although positive cross-sectional associations between pornography use and sexual permissiveness were observed, over the course of two years, pornography use did not predict increases in sexual permissiveness in men or women.
(Martyniuk, Briken, Sehner, Richter-Appelt, & Dekker, 2016)	Cross-sectional survey of German ($N = 1,303$, 51.5% men; $M_{age} = 22.79$, $SD = 1.96$) and Polish ($N = 1,135$, 34.5% men; $M_{age} = 21.91$, $SD = 1.88$) University students.	Casual sexual behavior.	Men who used pornography more (including, but not limited to the internet) reported greater levels of casual sexual behavior.
(Mattebo et al., 2014)	A cross-sectional sample of adolescents in Sweden ($N = 877$; 54% men, <i>Age Range</i> : 15-20)	Self-reported experiences of casual sex	Positive attitudes toward pornography use were associated with greater self-reports of casual-sex engagement.
(Mattebo, Tydén, Häggström-Nordin, Nilsson, & Larsson, 2016)	A cross-sectional sample of adolescent girls in Sweden ($N = 393$, <i>Age Range</i> : 15-20)	Casual sex engagement (one-night stands)	Girls who reported pornography use (not limited to the internet) reported substantially higher rates of casual sexual behaviors (45% of pornography users) in contrast with non-users (22%).
(Omori et al., 2011)	A cross-sectional sample of college students in Japan ($N = 476$; 40.3% men, $M_{age} = 19.5$, $SD = 1.3$)	Sexual permissiveness	Pornography exposure (in print, internet, and TV forms) was associated with greater endorsement of sexually permissive attitudes
(Rasmussen & Bierman, 2018)	Longitudinal study of adolescents in the U.S. ($N = 2029$; 50% boys; <i>Age Range</i> : 13-17)	Number of sexual partners	Pornography use (including, but not limited to the internet) was predictive of initiation of sexual activity with a greater number of partners and experimentation in a greater number of sexual activities.
(Peter & Valkenburg, 2008)	Cross-sectional study of Dutch adolescents ($N = 2,343$, 51% men; $M_{age} = 16.4$, $SD = 2.29$)	Sexual permissiveness; Attitudes toward future non-committed sexual acts	Pornography use was associated with greater sexual permissiveness and acceptance of non-committed sexual exploration in the future.

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(Peter & Valkenburg, 2006b)	Cross-sectional study of Dutch adolescents ($N = 471$, 52% boys; $M_{age} = 15.5$, $SD = 1.7$)	Recreational attitudes toward sex.	Exposure to IP was associated, positively, with more recreational and uncommitted attitudes toward sex, though this relationship was mediated by perceived realism.
(Peter & Valkenburg, 2010)	Longitudinal study of Dutch adolescents ($N = 959$; $M_{age} = 16.8$, $SD = 2.3$)	Instrumental views of sex	Exposure to IP at baseline positively predicted increasingly instrumental (rather than relational/intimate) views of sexual behavior. This process was mediated by the effect of pornography use on increasing social realism (i.e., that IP was realistic) and utility (i.e., that IP is useful). Greater frequency of IP at baseline predicted increases in perceived realism and utility, which, in turn, predicted increases in instrumental attitudes toward sex.
(Rissel et al., 2017)	Cross-sectional, nationally representative study of adults in Australia ($N = 20,094$; 49.5% men; <i>Age Range</i> : 18-65)	Number of sexual partners in the past year	Having two or more sexual partners within the previous 12 months was predictive, for both men and women, of greater odds of endorsing both lifetime and 12 month use of pornography
(Shaughnessy, Byers, & Walsh, 2011)	A cross-sectional study of participants in the U.S. ($N = 217$; 50% men; $M_{age} = 19.5$; $SD = 2.0$)	Acceptance of casual sexual behavior and number of sexual partners	Past-month pornography use for sexual arousal purposes was positively associated with both greater acceptance of casual sex and a greater reported number of past sexual partners.
(ter Bogt, Engels, Bogers, & Kloosterman, 2010)	A cross-sectional sample of Dutch adolescents ($N = 217$; 53% boys; <i>Age Range</i> : 13-16)	Casual sex acceptance	Among boys, but not girls, pornography use (both on the internet and on TV) was positively associated with greater acceptance of casual sex.
(To, Ngai, & Iu Kan, 2012)	A cross-sectional study of adolescents in Hong Kong ($N = 503$; 53.1% boys; $M_{age} = 15.85$; $SD = 1.18$)	Premarital sexual permissiveness	Adolescents who reported pornography use in the past year were more likely to report higher levels of premarital sexual permissiveness, with greater frequency being related to greater permissiveness.
(Štulhofer, Buško, & Schmidt, 2012)	A cross-sectional study of Croatian college students ($N = 544$; 34% men; <i>Age Range</i> : 18-25)	Acceptance of recreational sex	Among both men and women, frequency of pornography use was not associated with greater acceptance of recreational or casual sex.
(van Oosten, Peter, & Vandenbosch, 2017)	Longitudinal study of Dutch adolescents ($N = 1,467$; 50% men; <i>Age Range</i> : 13-17)	Willingness to engage in casual sexual behavior	Over time, greater pornography use was associated with increased willingness to engage in casual sex.

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(Vandenbosch & van Oosten, 2018)	Three-wave longitudinal study of Dutch Adolescents ($N = 1079$; 53.1% boys; $M_{age} = 15.11$; $SD = 1.39$)	Engagement in casual sexual behavior	Pornography use was positively predictive of engagement in more casual sexual behaviors over time. This finding was robust, though the inverse was not (i.e., that casual sex predicted more pornography use over time).
(Wright, 2012)	U.S. Nationally Representative Sample (GSS)	Casual Sexual Behavior	Pornography use was associated with increasing engagement in casual sexual encounters, but casual sexual encounters were not reciprocally associated with increased pornography use. Although these findings cannot confirm a direct, causal relationship between pornography use and casual sex, they do show that increases in pornography use precede greater engagement in casual sexual behaviors over time
(Wright, 2018)	Four nationally representative samples of participants in the U.S. derived from the General Social Survey data from 1988-2016. Sample 1: unmarried participants ($N = 4181$; $M_{age} = 40.9$, $SD = 18.3$, 43% men) Sample 2: unmarried participants ($N = 275$; $M_{age} = 32.8$, $SD = 12.7$, 54% men) Sample 3: married or previously-married participants ($N = 6621$; $M_{age} = 49.3$, $SD = 15.3$, 44% men) Sample 4: married or previously-married participants ($N = 388$; $M_{age} = 44.62$, $SD = 11.93$, 51% men)	Premarital (Samples 1 and 2) and extramarital sexual behavior (Samples 3 & 4)	Across samples 1 and 2, pornography viewing was consistently associated with greater acceptance of premarital sexual activity and greater engagement in premarital sexual activity, even after controlling for the relationship between use and attitudes toward premarital sexuality. That is, pornography use was independently related to behavioral engagement in premarital sexual activity, above and beyond its relationship with attitudes toward and acceptance of such behaviors. Across samples 3 and 4, the same patterns held, with regards to both attitudes toward and engagement in extramarital sexual activity.
(Wright, Tokunaga, & Bae, 2014)	Longitudinal panel study of General Social Survey (GSS) participants in the	Sexual Permissiveness and openness to	Over time, the use of sexually explicit media (not directly defined as internet use only) was associated with increases in sexual permissiveness and more open

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U.S.; two samples were surveyed at two time-points over two years (Sample 1, $N = 269$, $M_{age} = 47.0$, $SD = 14.8$, 37% men, sampled at 2006 and 2008; Sample 2, $N = 282$, $M_{age} = 49.9$, $SD = 14.0$, 50.1% men, sampled at 2008 and 2010

extramarital behaviors

attitudes toward extramarital sexual behaviors. Notably, this association persisted, above and beyond baseline attitudes, suggesting that pornography use is predictive of such attitudes. Additionally, the pattern was not evident in reverse (e.g., extramarital openness did not predict pornography use over time), suggesting that the relationship between the two variables is not bidirectional.

Summary of studies reporting associations between pornography use and specific sexual preferences or desires

Study	Sample Characteristics	Outcome	Study Conclusions
(Bridges, Sun, Ezzell, & Johnson, 2016)	A cross-sectional samples of internet using undergraduates in the U.S.; $N = 1,883$; 38.6% men; $M_{age} = 22.6$, $SD = 8.0$),	Desire for specific sexual practices	Pornography use was associated with the desire to try specific sexual practices commonly seen in pornographic content (e.g., men spanking their partners, facial ejaculation, anal penetration).
(Donevan & Mattebo, 2017)	A large cross-sectional study of high-school students in Sweden ($N = 229$, 46% boys; <i>Participants all 18 years old</i>)	Likelihood of trying activities seen in IP	Greater pornography use was associated with engagement in behaviors or acts witnessed in pornography.
(Häggström-Nordin, Hanson, & Tydén, 2005)	A large cross-sectional study of high-school students in Sweden ($N = 718$, 53.9% boys; <i>Age Range: 17-21</i>)	Likelihood of trying activities seen in IP	Users, particularly boys, who consumed more pornography reported greater likelihood of trying to perform acts seen in a film.
(Hald, Kuyper, Adam, & de Wit, 2013)	Cross-sectional study of Dutch adolescents ($N = 4,600$; 30.5% men; <i>Age Range: 15-25</i>)	Desire for “adventurous sex”	Pornography use was positively predictive of a desire to have more “adventurous sex” in real life (e.g., multiple partners at the same time; meeting online partners for real-life encounters), even when other explanatory variables (e.g., thrill-seeking, sexual sensation-seeking, assertiveness, sexual self-esteem, religiousness) were controlled
(Husain & Qureshi, 2016)	A cross-sectional study of married adults in Pakistan ($N = 100$, 41% men; <i>Age Range: 21-66</i>)	Sexual practice preferences in marriage	Both men and women who consumed IP were more likely to report a desire or expectation for partnered practices commonly depicted in pornography (e.g., oral sex, unconventional sexual practices).
(Martyniuk et al., 2016)	Cross-sectional survey of German ($N = 1,303$, 51.5% men; $M_{age} = 22.79$, $SD = 1.96$) and Polish ($N = 1,135$, 34.5% men; $M_{age} = 21.91$, $SD = 1.88$) university students.	Variety of sexual activities	Pornography use (including, but not limited to pornography use) was positively associated with greater variety of sexual activities, but not with greater sexual risk taking.
(Mattebo et al., 2016)	A cross-sectional sample of adolescent girls in Sweden ($N = 393$, <i>Age Range: 15-20</i>)	Sexual fantasy and variety of sexual activities	Pornography use (not limited to the internet) was associated with greater sexual activity and with endorsement of having fantasies or attempts to copy behaviors witnessed in pornography.
(Morgan, 2011)	Cross-sectional study of college students	Sexual Preferences	Regular pornography use was associated with greater variety in sexual preferences

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	in the Northwest U.S. (N = 782, 41.7% men, $M_{age} = 19.9$, <i>Age Range</i> : 18-30)		and a greater preference for a variety of sexual practices (e.g., using toys or props; playful domination/submission; trying novel positions). Regular users tended to report a desire to engage in a wide variety of sexual experiences, even if they had previously had no experience with such behaviors
(Schrimshaw, Antebi-Gruszka, & Downing, 2016)	A cross-sectional study of men who have sex with men in the U.S (N = 265; $M_{age} = 32.9$, $SD = 12.5$)	Sexual Fantasies and Preferences	Large proportions of respondents indicated that pornography use (not limited to the internet) had shaped their sexual desires (85%), fantasies (93%), and actions (70%).
(C. Sun et al., 2016)	A cross-sectional of undergraduate men in the U.S. (N = 479, <i>Age Range</i> : 18-29)	Sexual Preferences	Pornography use predicted the likelihood that an individual would request specific sexual acts seen in IP from a real-life partner and the likelihood that pornography would be integrated into sexual encounters as a supplement to enhance arousal.
(C. F. Sun, Wright, & Steffen, 2017)	A cross-sectional study of German women (N = 392; $M_{age} = 27.49$, $SD = 6.72$)	Desire to participate in submissive sexual acts	Pornography use (including, but not limited to the internet) was positively associated with a desire to participate in sexually submissive acts, consistent with those seen in most mainstream pornographic films.
(B. Træen & Daneback, 2013)	A cross-sectional sample of Norwegian adults (N = 2381; 41% men; <i>Age Range</i> : 18-25)	Sexual Experimentation	Among heterosexual men (but not among women or Gay/Bisexual men), pornography consumption was associated with greater sexual experimentation and sexual activities consistent with those witnessed in pornography.
(Weinberg et al., 2010) Study 1	Interview based study of undergraduates in the U.S. (N = 172; 41% men; $M_{age} = 21.3$; <i>Age Range</i> : 18-34)	Openness to Diverse Sexual Acts	IP exposure was associated with increased openness to a variety of sexual acts, including oral-genital contact, the use of mechanical enhancements (i.e., sex toys), openness to anal sexual stimulation, and the desire to engage in multi-partner sexual encounters (i.e., three-way sexual encounters)
(Weinberg et al., 2010) Study 2	Cross-sectional, qualitative study with undergraduates (N = 73, 26% men)	Openness to Diverse Sexual Acts	Free response answers from both men and women reflected a causal understanding of the relationship between their pornography use and sexual preferences, noting that IP had normalized a wide range of sexual behaviors and enhanced their personal openness to engaging in such behaviors.
(Wright & Tokunaga, 2015)	Experimental Study of undergraduate men in the U.S. (N = 133,	Preference for more attractive partners	Men who typically did not engage in regular pornography use, when shown images of centerfolds, reported greater preferences for attractive partners.

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	$M_{age} = 20.91, SD = 1.84,$		
(Wright, Steffen, et al., 2017)	Cross-sectional study of German women ($N = 392, M_{age} = 27.5, SD = 6.7$)	Desire for specific sexual practices	Pornography use in women is associated with a desire to engage in specific sexual practices seen in IP
(Wright, Sun, Steffen, & Tokunaga, 2015)	Cross-sectional study of German men; $N = 384, M_{age} = 32.1, SD = 9.1$	Desire for specific sexual practices	Pornography use in men is associated with a desire to engage in specific sexual practices seen in IP

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Summary of Studies Reporting Associations between Pornography Use and Sexual Risk Taking

Study	Sample Characteristics	Outcome	Study Conclusions
(Bradley et al., 2016)	Clients of Female Sex Workers in India (N = 684; 100% men; <i>Age Range</i> : 18-60; <i>M_{age}</i> = 31.4)	Solicitation of sex workers. HIV risk behaviors.	Among men who were clients of female sex workers, those who had recently consumed pornography (not limited to internet) were more likely to report anal sex with a sex worker. Additionally, clients who did not use condoms during encounters with sex workers were more likely to be regular pornography users.
(Braithwaite, Givens, et al., 2015)	Cross-sectional study of college students in the U.S. (N = 1216; 37% men; Men: <i>M_{age}</i> = 19.6, <i>SD</i> = 1.4; Women: <i>M_{age}</i> = 19.2, <i>SD</i> = 1.15)	Multiple indicators of sexual risk taking	Pornography use was associated with intoxication during uncommitted sexual encounters, with men specifically demonstrating a pattern of greater pornography use being associated with greater intoxication. Additionally, it was also associated with a higher incidence of unprotected (e.g., no condom) penetrative sexual encounters while intoxicated, a particularly risky sexual behavior
(Braun-Courville & Rojas, 2009)	Cross-sectional study of adolescents in New York City (N = 433; 85% girls; <i>M_{age}</i> = 18, <i>SD</i> = 2.1, <i>Age Range</i> : 12-22)	Multiple indicators of sexual risk taking	Pornography use was positively associated with greater frequency of sexual intercourse, more lifetime partners, more partners within the past three months, greater likelihood of using alcohol or illicit substances during intercourse, greater likelihood to have had anal sex, and with overall sexual risk scores.
(Bulut, Leurent, & Collier, 2015)	Cross-sectional study of university students in (N = 794; 38.2% men; <i>M_{age}</i> = 19.8, <i>SD</i> = 1.7)	Various indicators of sexual risk taking	pornography use use, particularly more frequent pornography use, was associated with a number of risk factors such as greater number of sexual partners, greater engagement in casual sexual behaviors, lower use of preventative measures to avoid sexually transmitted infections, and higher consumption of substances when sexual active.
(Donevan & Mattebo, 2017)	A large cross-sectional study of high-school students in Sweden (N = 229, 46% boys; <i>Participants all 18 years old</i>)	Multiple indicators of sexual risk taking	Individuals who use more IP report a variety of behaviors that are often considered risky, such as earlier sexual debut.

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(Eaton, Cain, Pope, Garcia, & Cherry, 2012)	Cross-sectional study of men in the U.S. who have sex with men ($N = 149$)	Unprotected sex	In a sample of HIV negative men participating in a risk-reduction intervention, pornography use was associated with a greater likelihood of having had recent unprotected sex and a greater number of partners with whom unprotected sex had occurred
(M. S. C. Lim, Agius, Carrotte, Vella, & Hellard, 2017)	Cross-sectional study of Australian adolescents and young adults ($N = 941$; 27% men; <i>Age Range</i> . 15-29)	High-risk sexual behaviors	Pornography viewing was not associated with unprotected or high-risk sexual behaviors, but was associated with greater prevalence of anal sex.
(Luder et al., 2011)	A 2002, Cross sectional study of internet-using Swiss adolescents ($N = 7,458$, 51.5% boys)	Multiple indicators of sexual risk taking	There were no associations found between IP exposure (intentional or unintentional) and risky sexual behaviors for either male or female participants, except for condom use among boys. For boys, intentional exposure to IP was associated with a reduced likelihood to have used a condom during the most recent sexual encounter.
(Mahapatra & Saggurti, 2014)	Cross-sectional study of male migrant workers in India ($N = 11,219$, 100% men, $M_{age} = 26.6$, $SD = 5.5$)	Multiple indicators of sexual risk taking	Having viewed pornographic videos in general was associated with a greater likelihood of engaging in paid sex, experience of an STI, and inconsistent use of condoms.
(Martyniuk et al., 2016)	Cross-sectional survey of German ($N = 1,303$, 51.5% men; $M_{age} = 22.79$, $SD = 1.96$) and Polish ($N = 1,135$, 34.5% men; $M_{age} = 21.91$, $SD = 1.88$) University students.	Sexual debut under 15, number of sexual partners, and	Among women, but not men, pornography use (not limited to the internet) was associated with younger sexual debut and a greater number of sexual partners. In both men and women, pornography was not related to condom use.
(Morrison, Morrison, & Bradley, 2007)	A cross-sectional sample of men who have sex with men ($N = 66$, $M_{age} = 35.5$, $SD = 12.6$)	Safe sex practices	No statistically significant association was found between exposure to pornography (not limited to the internet) and safe sexual practices.
(Noubiap et al., 2015)	A cross-sectional survey of college students in Cameroon ($N = 411$; <i>Age Range</i> : 17–50; $M_{age} 24.6$, SD	Condom use, number of lifetime sexual partners, and age of sexual debut	Consumption of pornography (not limited to internet pornography) was associated with a greater number of lifetime sexual partners and a lower age of first sexual debut. Condom use was unrelated to pornography consumption.

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(K. M. Nelson, Eaton, & Gamarel, 2017)	African-American/Black men in the U.S. who reported same-sex sexual encounters ($N = 654$; <i>Age Range</i> : 18–62; $M = 33.58$, $SD = 11.01$)	Condom Use and preference for condom use in pornography	Pornography use was common, with the majority of participants indicating a preference for pornography that feature no use of condoms. However, such preferences were not associated with real-world behaviors with regards to condom use.
(Peter & Valkenburg, 2011a)	Longitudinal, nationally representative, 2008, two-wave panel study of adults ($N = 833$) and adolescents ($N = 1,445$) in Holland	Unsafe Sexual Practices	Pornography use was associated with greater sexual risk taking. Cross-sectionally, within both samples, there were small positive correlations between pornography use and unsafe sexual practices (i.e., unprotected sex). Over a six-month period, pornography use was unrelated to risky sexual behaviors in adolescents, but positively predictive of risky sexual behavior in adults, above and beyond the predictive influence of baseline risky sexual behaviors. Additionally, no reciprocal relationship was found (i.e., risky sexual behavior did not predict pornography use over time), suggesting that pornography use may be driving increases in risky sexual behavior, but not the inverse
(Rissel et al., 2017)	Nationally representative study of Australian Adults ($N = 20,094$; <i>Age Range</i> 18-65)	Anal Sex	Lifetime history of anal sex (for both men and women) was associated with greater odds of lifetime and past-year use of pornography.
(Rosser et al., 2013)	A cross sectional study of U.S. men who have sex with men ($N = 1,391$; 83.7% aged 18-45; 16.3% aged over 45)	Condomless sex	Pornography use itself was not associated with condom use behaviors, though there were indications that higher use of pornography (e.g., an hour per day or more) was associated with condomless sex. Greater consumption of pornography featuring condomless sex was associated with greater risk behaviors in real-life sexual encounters.
(Schrimshaw et al., 2016)	A cross-sectional study of men who have sex with men in the U.S ($N = 265$; $M_{age} = 32.9$, $SD = 12.5$)	Condomless sex	Pornography use (not limited to the internet) including preferences for condomless pornography were largely unrelated to condom use in sexual encounters.
(Sinković et al., 2013)	Croatian young adults ($N = 1,005$;	Sexual risk-taking	Frequency of pornography use and personal importance of pornography use were not predictors of various risky sexual

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	50.7% men; <i>Age Range</i> : 18-25)		behaviors. However, age at first exposure to IP was a significant, but weak, predictor of sexual risk taking, with earlier age of exposure being associated with greater risk taking.
(Stein, Silvera, Hagerty, & Marmor, 2012)	Large-scale, cross-sectional study of non-monogamous men (in the U.S.) who have sex with men (<i>N</i> = 751; <i>Median Age</i> = 32; <i>Age Range</i> : 18-68)	Unprotected sex	men who reported having witnessed unprotected anal intercourse in IP were also more likely to endorse engaging in such behaviors in their real-life sexual encounters.
(X. Sun et al., 2013)	Cross-sectional study of college students in China (<i>N</i> = 19,123; 48.7% men, <i>M_{age}</i> = 20.8, <i>SD</i> = 1.5)	Attitudes toward condom use	For both men and women pornography use was associated positive attitudes toward risky sexual behaviors such as not using condoms
(Svedin, Åkerman, & Priebe, 2011)	A cross-sectional study of Swedish adolescent boys (<i>N</i> = 1,902; <i>M_{age}</i> = 18.15; <i>SD</i> = 0.74)	Unsafe sexual practices	Frequent users of IP (<i>N</i> = 200) in comparison to infrequent and non-users (<i>N</i> = 1,702) were more likely to have paid for sex, sold sex, have a sexual debut younger than 15 years of age, and engage in sexually coercive behavior in sexual encounters.
(Thai & Barlow, 2018)	Experimental study of Australian men who have sex with men (<i>N</i> = 659; 84.5% aged 18-50; 15.5% aged over 50)	Condomless sex	Consumption of pornography featuring condomless anal sex was associated with greater intention to engage in condomless sexual activity, but only when the potential target of such activity (e.g., prospective partner) was deemed highly attractive.
(Træen et al., 2015; Bente Træen, Hald, et al., 2014; Bente Træen, Noor, et al., 2014)	A cross sectional study of Norwegian men who have sex with men (<i>N</i> = 507; 75.4% aged 18-45; 24.6% aged over 45)	Condomless sex	Consuming pornography showing condom use was associated with real-world condom use behaviors. However, overall pornography consumption was associated with greater unprotected anal sex, though this was mediated by personal feelings of condom use self-efficacy. Consumption of pornography featuring condomless sex predicted condomless sex.
(Whitfield, Rendina, Grov, & Parsons, 2018)	A longitudinal study of gay and bisexual men in the U.S. (<i>N</i> = 546; <i>M_{age}</i> = 40.8; <i>SD</i> = 13.7)	Condomless Anal Sex	Pornography use itself did not directly predict more condomless sex, but consuming pornography that featured condomless sex moderated this finding, in that frequent consumers of pornography featuring condomless sex were substantively more likely to engage in condomless sex themselves.
(Wilkerson et al., 2012)	Cross-sectional, qualitative study	Unsafe sexual practices	When participants found acts depicted in IP to be arousing and pleasurable (in

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	of men (in the U.S.) who have sex with men ($N = 79$; $M_{age} =$ not reported)		appearance), and when a trusted sexual partner was available, riskier sexual behaviors were reported as a likely result.
(Wright & Arroyo, 2013)	Women from the U.S. nationally representative GSS (years 2000-2004)	Sexual partners	Women who acknowledged pornography use were more likely to report having multiple sexual partners.
(Wright & Randall, 2012)	Men from the nationally representative GSS ($N = 1,079$; $M_{age} = 14.2$; $SD = 14.1$)	Multiple indicators of sexual risk taking	Men who acknowledged viewing pornography also endorsed a variety of other riskier sexual behaviors including having multiple partners, engaging extramarital sex, and paying for sex.
(Wright, 2013)	Cross-temporal analysis of 37 years (1973-2010) of U.S. nationally representative data on men (via the GSS)	Multiple indicators of sexual risk taking	For men, pornography use in general—not just IP—in men was associated with more sexual partners over the lifetime and greater likelihood of having solicited or paid for a sexual encounter.
(Wright et al., 2013)	Cross-temporal analysis of 37 years (1973-2010) of U.S. nationally representative data on women (via the GSS)	Multiple indicators of sexual risk taking	Women who used pornography were also more likely to report having extramarital sex, having paid sex, and having multiple sexual partners
(Wright, Miezan, Sun, & Steffen, 2018)	A cross-sectional study of English adults ($N = 98$; 58% men; $M_{age} = 31.2$; $SD = 9.5$)	Condom Use	For individuals not in monogamous relationships, viewing pornography as a source of sexual information was associated with lower levels of condom use.
(Wright, Sun, & Steffen, 2018)	A cross-sectional study of German adults ($N = 200$; 50.5% men; $M_{age} = 28.93$; $SD = 7.34$)	Condom Use	Pornography use itself was unrelated to condom use, but considering pornography as a source of sexual information was associated with lower levels of condom use.
(Wright, Tokunaga, & Kraus, 2016b)	Two cross-sectional studies of undergraduates in the U.S. (Study 1, $N = 310$, 54.5% men; $M_{age} = 20.4$, $SD = 1.8$; Study 2, $N = 418$, 78.7% women; $M_{age} = 21.2$, $SD = 2.8$)	Condom Use	Pornography use (predominately IPU) was associated with less frequent use of condoms during sexual encounters and lower estimation of peer condom use (i.e., believing that condom use is generally less common).

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(Wright, Sun, & Miezan, 2019)	A cross-sectional study of women in South Korea ($N = 140$; $M_{age} = 23.7$; $SD = 3.7$)	Condom use	Pornography use was negatively associated with condom use, as was perceiving pornography as a source of sexual information.
(Xu, Zheng, & Rahman, 2017)	Cross-sectional study of Chinese men who have sex with men ($N = 314$; $M_{age} = 25.46$; $SD = 6.46$)	Multiple indicators of sexual risk taking	Pornography use itself, among men who have sex with men, was unrelated to risk behaviors, though viewing unsafe sexual practices in pornography was associated with greater sexual risk taking with regular partners, but not with casual sexual partners.

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Summary of Studies Detailing Relationships between Pornography Use and Sexual Satisfaction

Study	Setting and Sample	Summary of findings
(Bridges & Morokoff, 2011)	A cross-sectional sample of U.S. adults in committed relationships ($N = 217$ couples; 50% Men; Men, $M_{age} = 36.9$, $SD = 10.7$; Women, $M_{age} = 34.2$, $SD = 10.5$)	Pornography use in men was associated with lower individual sexual satisfaction; pornography use in women not associated with personal sexual satisfaction.
(Blais-Lecours, Vaillancourt-Morel, Sabourin, & Godbout, 2016)	A cross-sectional sample of French-Canadian adults ($N = 832$, 28% men; $M_{age} = 25.2$, $SD = 7.99$)	Daily pornography use (average use in minutes) was associated with lower sexual satisfaction, though this was mediated by the association between daily use and self-reported feelings of compulsivity or addiction to IP.
(C. C. Brown, Carroll, et al., 2017)	A cross-sectional sample of U.S. Couples ($N = 326$ couples; 50% Men; Men, $M_{age} = 38.2$, $SD = 10.4$; Women, $M_{age} = 36.3$, $SD = 9.9$)	Among both men and women, pornography use was associated with lower levels of individual/personal sexual satisfaction. Among women only, pornography use was positively associated with greater levels of shared sexual satisfaction.
(Cranney & Štulhofer, 2017)	A cross-sectional sample of adults in Croatia ($N = 2,580$, 28% men; Men $M_{age} = 35.4$, $SD = 9.55$; Women, $M_{age} = 28.7$, $SD = 9.0$)	For men, pornography use (including, but not limited to the internet) was associated with lower sexual satisfaction. For women, there was not such a direct relationship, but the link between use and sexual satisfaction was moderated by religiousness, so that use was associated with less sexual satisfaction for more religious women.
(Doornwaard et al., 2014)	A longitudinal study of Dutch adolescents ($N = 1,132$, 47.3% boys; $M_{age} = 13.95$, $SD = 1.18$)	Over four waves of data collection over four years, there was a negative predictive relationship of pornography use on sexual self-perception and esteem, so that those who used more pornography reported more negative views of themselves over time.
(Ferron et al., 2016)	A cross-sectional study of French Canadian adults in coupled relationships ($N = 779$, 32% men; $M_{age} = 29.85$, $SD = 9.91$)	A small negative relationship was observed between pornography use and both sexual and couple satisfaction
(French & Hamilton, 2018)	A cross-sectional study of Canadian young adults ($N = 505$, 38.6% men; Men $M_{age} = 19.8$, $SD = 2.7$; Women, $M_{age} = 19.8$, $SD = 3.8$)	For women, self-reported pornography use that involved female-pleasure-centric pornography (e.g., more focus on women's pleasure) was associated with self-reported positive impacts on participant's sex lives.
(Groß, Gillespie, Royce, & Lever, 2011)	A cross-sectional study of adults in Croatia ($N = 2,313$; 44.9% Men; Men, $M_{age} = 37.3$, $SD = 9.4$; Women, $M_{age} = 30.2$, $SD = 8.8$)	pornography use was negatively associated with sexual satisfaction in men. No association found between use and satisfaction in women

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(Leonhardt & Willoughby, 2019)	A cross-sectional sample of U.S. in committed romantic relationships ($N = 858$; 46.5% Men; $M_{age} = 33.10$, $SD = 9.36$)	For men, greater use of pornography (not limited to the internet) was associated with lower reported sexual satisfaction. For women, there were no links between pornography use and sexual satisfaction.
(Maddox et al., 2011)	A cross-sectional study of U.S. Adults in romantic relationships ($N = 1,291$; 36.8% Men; $M_{age} = 25.5$, $SD = 4.0$)	pornography use as a primarily solitary activity (76% men, 31% of women users) was associated with lower sexual satisfaction. Exclusive use with a partner (no solitary use) associated with higher sexual satisfaction.
(Morgan, 2011)	A cross-sectional sample of U.S. undergraduates ($N = 782$; 42% Men; $M_{age} = 19.9$, $SD = NA$)	pornography use was negatively associated with sexual satisfaction even when gender was controlled statistically.
(Muusses, Kerkhof, & Finkenauer, 2015)	A longitudinal study of adult couples in the Netherlands ($N = 190$ couples; 50% Men; Men, $M_{age} = 34.1$ (NA); Women, $M_{age} = 31.2$ (NA))	pornography use in men was cross-sectionally associated with lower sexual satisfaction. There was no association found for women. Longitudinally, over two years, no associations found for either gender.
(Peter & Valkenburg, 2009b)	A longitudinal study of Dutch adolescents ($N = 1,052$; 50% Men; <i>Age Range</i> : 13-20)	Baseline pornography use was cross-sectionally associated with lower sexual satisfaction in both genders, and with decreases in sexual satisfaction at intervals of six months and one year.
(Poulsen et al., 2013)	A cross-sectional study in the U.S. of adult couples ($N = 617$ couples; 50% Men)	pornography use in men was associated with lower sexual satisfaction in men. pornography use in women was associated with greater satisfaction, but use in women was most often in the context of dyadic use.
(C. Sun et al., 2016)	A cross-sectional study in the U.S. of undergraduate men ($N = 487$; 100% Men; <i>Age Range</i> : 18-29)	Pornography use was associated with lower sexual satisfaction and lower enjoyment of partnered sexual activity.
(Szymanski & Stewart-Richardson, 2014)	A cross-sectional study in the U.S. of undergraduate men in committed relationships ($N = 373$; 100% Men; <i>Age Range</i> : 18-29)	Frequent pornography use was associated with lower levels of satisfaction in sexual relationships.
(Willoughby, Carroll, Busby, & Brown, 2016)	Cross-sectional study of U.S. Couples ($N = 1,755$ couples; 50% Men; Men $M_{age} = 28.8$, $SD = 8.8$; Women $M_{age} = 27.0$, $SD = 8.0$)	Pornography use discrepancy (female partner use – male partner use) was associated with diminished sexual satisfaction in couples, with men reporting substantially higher rates of use than women, and increased discrepancy predicting lower satisfaction.
(Wright, Bridges, et al., 2017)	A cross-sectional analysis of U.S. undergraduates and adults ($N = 1,513$; 38.5% Men; $M_{age} = 22.6$, $SD = 8.0$)	Among both men and women, pornography use was associated with less sexual satisfaction in an accelerating negative curvilinear fashion.
(Wright, Steffen, et al., 2017)	Cross-sectional samples of English and German undergraduates and adults (English: $N = 195$; 38% Men;	In both samples, for both men and women, pornography use was associated with less sexual satisfaction in an accelerating negative curvilinear fashion.

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	$M_{age} = 30.1, SD = 9.1$; German: $N = 699$; 49% Men; $M_{age} = 30.0, SD = 8.2$)	As pornography use approached once per month or more, sexual satisfaction decreased.
(Wright, Sun, Steffen, & Tokunaga, 2017)	A cross-sectional sample of German adults ($N = 405$; 52% Men; $M_{age} = 30.2, SD = 8.3$)	Among both men and women, pornography use was associated with less sexual satisfaction indirectly, linked by a preference for pornography over sexual interaction. Those who preferred pornography were less satisfied sexually.

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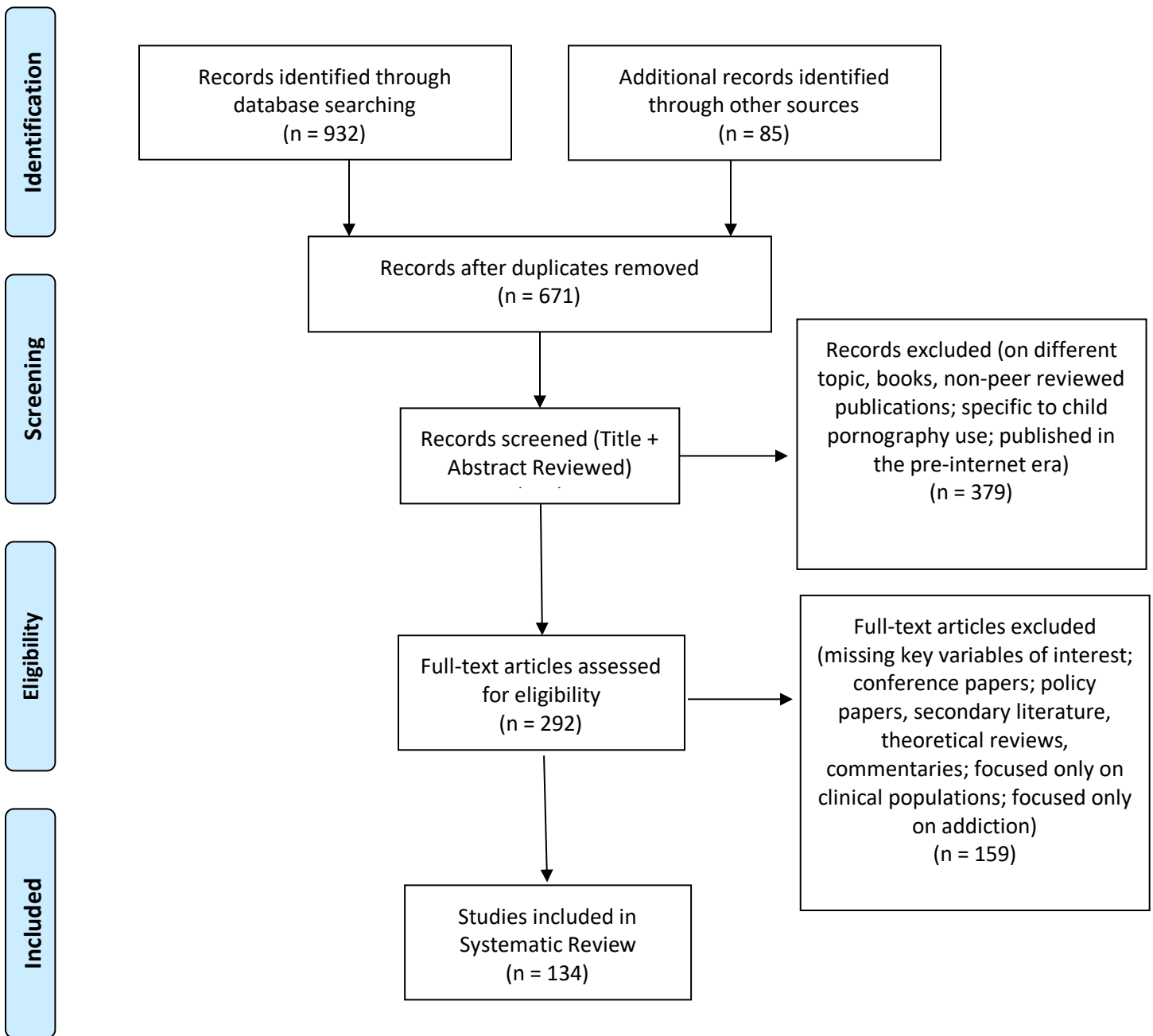


Figure 1. Summary of systematic review according to PRISMA guidelines (Moher et al., 2009).