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“Harder and Harder”? Is Mainstream Pornography Becoming Increasingly Violent and Do Viewers Prefer Violent Content?

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It is a common notion among many scholars and pundits that the pornography industry becomes “harder and harder” with every passing year. Some have suggested that porn viewers, who are mostly men, become desensitized to “soft” pornography, and producers are happy to generate videos that are more hard core, resulting in a growing demand for and supply of violent and degrading acts against women in mainstream pornographic videos. We examined this accepted wisdom by utilizing a sample of 269 popular videos uploaded to Pornhub over the past decade. More specifically, we tested two related claims: (1) aggressive content in videos is on the rise and (2) viewers prefer such content, reflected in both the number of views and the rankings for videos containing aggression. Our results offer no support for these contentions. First, we did not find any consistent uptick in aggressive content over the past decade; in fact, the average video today contains shorter segments showing aggression. Second, videos containing aggressive acts are both less likely to receive views and less likely to be ranked favorably by viewers, who prefer videos where women clearly perform pleasure.

The pornography industry remains a sizable business, despite considerable changes to its business model and media over the past decade. The size of the industry in the United States alone was estimated in 2010 at around \$13 billion, and the global porn market was nearly \$100 billion (Rosen, 2013). In particular, Internet pornography, which allows easy access, affordability, and anonymity (Cooper, 1998), has flourished over the past decade and has become the main source of pornography consumption (Hald, Malamuth, & Lange, 2013). According to some estimates, it now accounts for about 30% of all Web traffic (Anthony, 2012).

Previous estimates of the prevalence of aggression in rental and Internet pornographic videos have varied greatly, ranging from about 2% (McKee, 2005) to almost 90% (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010) of all videos. This wide range partly reflects different definitions of aggression, but it is also the result of examining different forms of media and of varying methodological and sampling choices. Regardless of how one measures aggression, multiple studies have reported a relationship between consuming violent pornography and acceptance of violence against women, as well as real-life coercion, aggression, and proclivity to commit sexual assault (Boeringer, 1994; Hald, Malamuth, & Yuen, 2010; Malamuth, Hald, & Koss, 2012; McKenzie-Mohr

& Zanna, 1990; Milburn, Mather, & Conrad, 2000; Weisz & Earls, 1995), although the causal direction in this relation remains contested (Ferguson & Hartley, 2009; Lim, Carrotte, & Hellard, 2016).

One of the major contentions against the adult film industry is that it continuously pushes the boundaries of sexual conventions, becoming “harder and harder” (Fradd, 2017; Sun & Picker, 2008; Sun, Wosnitzer, Bridges, Scharrer, & Liberman, 2010) with every passing year. Contents that were previously considered marginal and esoteric, such as rough, aggressive, and demeaning acts, gradually make their way into mainstream videos and eventually become the new norm. Some pornography scholars and pundits have suggested that, over time, viewers, the majority of whom are men, gradually become desensitized to such materials. In fact, they often actively seek aggressive and demeaning contents once the thrill and excitement previously achieved by traditional videos diminishes, similar to drug addicts who consume higher doses once they are unable to reach the same high as with the previous dose (Dodige, 2007; Hilton & Clark, 2011; Paul, 2010). Some have even suggested that aggression and humiliation of women are preferred not merely because they present a novelty but rather because they celebrate the tension and thrill derived from sexualizing gender inequalities (Dines, 2006, 2010; Dines, Jensen, & Russo, 1998).

Anti-porn critics have further charged that the producers, creators, and distributors of pornographic materials are more

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than happy to comply with the growing demand for materials that depict aggression against women and/or acts that demean and humiliate women (Sun & Picker, 2008). These key industry figures, who are almost all men, remain oblivious to or outright deny the possible harms of such materials, catering to or even helping create public demand, all in a cynical pursuit of greater profits (Dines, 2010; Jensen, 2007; Paul, 2005; Sun & Picker, 2008). Consequently, and in the absence of any effective regulation, mainstream pornography unabatedly adopts harder content, with scenes depicting aggression and humiliation of female performers increasingly becoming the norm (Bridges et al., 2010).

In the present article, we sought to assess these claims. To our knowledge, no previous study has systematically examined the temporal tendencies in depictions of aggression. We are also not aware of any extant studies examining the relationship between aggressive contents and the popularity of videos (in terms of both number of views and viewers' ratings). We therefore analyzed data from a sample of 269 videos. The majority of these were very frequently watched videos, but we also analyzed a smaller random sample of less frequently watched videos for comparative purposes. Using varying definitions of aggression against women (importantly, we differentiated between all visible aggression and clearly nonconsensual aggression), we examined the content of popular videos over the past decade and whether videos that include aggression are indeed more popular among viewers. Our study follows recent calls among sociologists of sexuality and sex work to adopt a careful, evidence-based approach to the study of pornography, its contents, and its effects (McKee, 2015; Weitzer, 2011).

Does Aggression In Porn Matter And How?

Over the past few decades, multiple studies have examined the possible effects of pornography on gender inequality and sexual violence. The debate regarding the potential harmful effects of pornography is rooted in the writings of prominent feminist theorists and activists beginning in the early 1970s. These writers connected pornography to sexual violence, arguing that pornography almost invariably leads to sexual aggression and misogyny (Dines et al., 1998; Dworkin, 1994; Jensen, 2007; Paul, 2005). Some have even argued that pornography *is* violence against women. It portrays women as sexual objects who enjoy being humiliated, degraded, and treated aggressively, and fosters myths about female rape desires (Brownmiller, 1975; Dines, 2010; Dworkin, 1989; Dworkin & MacKinnon, 1988; Russell, 2000). Other scholars, however, have been more skeptical about the relationship between pornography and violence against women. They argue that pornography offers a field full of contradictory and multilayered contents that can offer significant benefits for both men and women and can be enjoyed without necessarily causing harm (Chapkis, 1996;

Duggan, Hunter, & Vance, 1994; McKee, 2014; Strossen, 1995; Watson & Smith, 2012; Weitzer, 2011; Willis, 1994).

Empirical research on the relationship of pornography use to gender inequality and sexual violence also remains inconclusive. Some studies have suggested that pornography use is associated with the endorsement of rigid gender stereotypes among young female users (Brown & L'Engle, 2009) and with nonegalitarian attitudes and sexism among male users (Hald et al., 2013; Peter & Valkenburg, 2009). A recent review of research on adolescent porn use further suggests a relationship between pornography consumption and aggressive behaviors, including sexual aggression (Peter & Valkenburg, 2016). Others have shown that exposure to pornographic materials, especially violent pornography, is associated with higher acceptance of violence against women (Hald et al., 2010; Malamuth et al., 2012; McKenzie-Mohr & Zanna, 1990). In contrast, some recent research efforts have reported that porn use is not associated with negative attitudes toward women (McKee, 2014), and that porn users hold attitudes that are actually more egalitarian toward women in positions of power, women working outside the home, and abortion compared with nonusers of porn (Kohut, Baer, & Watts, 2016). Some recent reviews of the literature concluded that the current state of evidence is limited to correlation and does not demonstrate a causal relationship between porn viewing and either acceptance of or actual violence against women (Ferguson & Hartley, 2009; Lim et al., 2016).

Still, social psychologists and communication scholars continue to argue that mass media influence viewers by providing them with cognitive scripts, including ones related to aggressive and violent behaviors (Huesmann, 1986; Wright, Tokunaga, Kraus, & Klann, 2017). These cognitive scripts provide expectations about both normative and appropriate behaviors and present behavioral guidelines (Wright, 2013). In the context of sexuality, they determine what is considered a sexual situation, who should participate in it, what events should be part of it, and how people should respond to these events (Zhou & Paul, 2016). These arguments are largely rooted in sexual scripting theory, which sees sexual scripts as specific cognitive schemata or personalized systems for defining sexual reality and preferences (Simon & Gagnon, 1986; Štulhofer, Buško, & Landripet, 2010). Mosher's (1988) sexual involvement theory further suggests that involvement in and subjective response to explicit materials is facilitated when contents match viewers' sexual scripts. "Deep involvement" and higher levels of arousal require goodness of fit between the contents and the user's preferred images and scripts (Pearson & Pollack, 1997).

Script theories suggest that pornography creates stereotypical expectations regarding the sexual behaviors and preferences of various social groups (Brown & L'Engle, 2009). As such, it is a potent teacher of both beliefs and behaviors, teaching general attitudes toward women and sexuality and shaping sexual scripts and practices (Layden, 2010; Paul, 2005). Furthermore, even if the causal relationship between general pornography consumption and actual violence

remains disputed, the consumption of pornography that includes aggression is reportedly associated with the disruption of intimate relationships (Wright, Tokunaga, & Kraus, 2016), as well as with higher degrees of real-life sexual coercion, aggression, and rape fantasies and proclivity (Boeringer, 1994; Malamuth, 1981; Milburn et al., 2000; Ohbuchi, Ikeda, & Takeuchi, 1994; Weisz & Earls, 1995).

“Harder And Harder”: Is Violence Against Women In Porn Growing In Volume And Popularity?

The final segment of the influential 2008 documentary *The Price of Pleasure* (Sun & Picker, 2008), was titled “Harder and Harder.” It projected a grim future for the porn industry, one in which the boundaries are constantly being pushed and aggression and violence become a continuously growing part of mainstream porn videos. These predictions rely in part on the views of renowned feminist anti-pornography scholars and journalists, such as Gail Dines (2010), Karen Boyle (2010), Robert Jensen (2007), and Pamela Paul (2005), but they also seem to be supported by a prominent 2010 study on the content of mainstream pornography (Bridges et al., 2010; Sun et al., 2010). In this study, the researchers examined scenes from the 50 most popular rental pornographic videos. They reported that 88.2% of these scenes contained physical aggression, almost exclusively against women. These figures led the authors and other scholars and public intellectuals to conclude that aggression is no longer reserved to niche genres but has in fact become a pervasive and normative part of mainstream pornography. They argue that this normalization, in turn, brings with it a constant expansion and escalating depictions of aggression, as producers continue to push the envelope, seeking to maximize profits.

Subsequent content analyses of pornographic videos, which focused on the Internet (Gorman, Monk-Turner, & Fish, 2010; Klaassen & Peter, 2015; Shor & Golriz, in press), suggested a lower prevalence of aggression and degradation than that proposed by Bridges et al. (2010). Still, these later analyses did not challenge the contention about the gradual escalation of aggression in mainstream pornography. How can one evaluate such claims? We argue that the “harder and harder” premise actually enfolds two related yet separate assertions, each of which can be tested empirically. The first of these assertions is a temporal one, regarding the content of popular pornography on the Internet, which presumably contains higher levels of aggression with each passing year. The second assertion is a more subtle one, related to the reason for this assumed escalation in content, namely that Internet porn viewers have come to prefer videos containing aggressive acts to those that do not contain such acts. In this section, we expand on each of these assertions.

The view that pornographic video content is becoming increasingly aggressive appears to be almost axiomatic in

much of the current popular writings on pornography; it has also been expressed in some current scholarly works on pornography (e.g., Boyle, 2010; DeKeseredy, 2015; DeKeseredy & Hall-Sanchez, 2017; Dines, 2010; Foubert, 2016; Fradd, 2017; Jensen, 2010; Tyler, 2010; Whisnant, 2010). Recent articles in leading media outlets such as the BBC (Brown, 2017), *The Daily Telegraph* (Tuohy, 2015), *The Independent* (Smith, 2013), *The Washington Post* (Halverson, 2016), *The Guardian* (Bindel, 2010), and *The Sydney Morning Herald* (McKenzie, 2011) talk about how pornography has been changing for the worse. These articles have argued that pornography has become, and continues to move in the direction of, rougher, harder, and more violent materials, with producers and audiences alike always looking for something more extreme and more shocking.

New York Times writer Judith Shulevitz (2016) argued that the Internet has made porn weirder and weirder because the flooding of the market by amateur sex tapes has cut into producers’ profits. The only way left for these producers to compete is by coming up with more extreme scenarios that satisfy the most *outré* desires. Shulevitz spoke with communication experts who maintained that, in recent years, fetishes that one could only find on the “dark net” have become easily accessible through popular porn tube sites such as Pornhub. They argue that degrading and aggressive videos have moved into more prominent locations within these sites, making them more likely to be viewed by wider audiences.

Psychiatrist Norman Dodge (2007) suggested that even the very meaning of hard-core porn has changed over the years. Soft-core contents today are what hard-core used to be in the past, while hard-core videos are increasingly dominated by themes that infuse sex with hatred and humiliation. Dodge argued that the more our society becomes sexually saturated, the more porn makers pump out harder and harder materials to try to remain on the cutting edge. Other, more recent, scholarly works (Boyle, 2010; DeKeseredy & Corsianos, 2015; DeKeseredy & Hall-Sanchez, 2017; Dines, 2010; Fradd, 2017; Jensen, 2007; Paul, 2010) have also contended that the content of pornography continues to become increasingly violent, although none of these studies has provided systematic empirical support for this contention. Indeed, to the best of our knowledge, such claims have never been supported by empirical evidence from large-scale systematic analyses of pornographic content.

H1: The number of mainstream pornographic videos that contain aggressive acts has been steadily increasing over the past decade, and the average video today is likely to contain longer segments of aggression than a decade ago.

The second assumption in many recent writings on Internet pornography is that the greater supply of videos containing aggression is fueled by ever-increasing consumer demand. That is, viewers are not only exposed to greater

degrees of aggression but also actively seek these contents and prefer them to nonaggressive ones. This claim is also quite prevalent in the anti-porn literature, despite some contrary evidence, such as those from an interviews-based study by Loftus (2002), which reported that most male pornography viewers did not prefer aggressive materials. The assumption that men prefer aggressive and demeaning content largely relies on the increasingly popular, although highly contested, premise that pornography viewing often becomes an addiction, as it affects the brain in a way that is similar to that of most drugs (Dodige, 2007; Foubert, 2016, 2017; Hilton & Clark, 2011). According to this view, much like any other addiction, frequent pornography use is characterized by habituation and a growing demand for more extreme substances to achieve the same rewards. Although this addiction model has been overtly rejected by most scientists, it remains common in both media and clinical practice (Ley, Prause, & Finn, 2014; Van Rooij & Prause, 2014).

Paul (2005, 2010), for example, interviewed male pornography consumers and concluded that once viewers increase the quantity of porn consumption, they then want more quality, meaning more action, more intensity, and more extreme situations. Viewers learn to ignore or navigate around unwanted imagery, and they gradually find previously arousing materials to be less interesting, leading them to seek more extreme and shocking materials, which often include degradation and aggression. Whisnant (2010) reviewed online postings by individuals who discussed porn and concluded that the “contemporary pornography industry is a wasteland of lost and damaged humanity” (p. 117). She argued that hostile and humiliating acts against women are gradually becoming the rule rather than the exception, perhaps because many men actually prefer and enjoy such contents, as reflected in their online comments.

Dines (2006, 2010) took another step in this direction, invoking claims by other radical feminists that pornography is pleasurable to men because it sexualizes inequality between women and men (Brownmiller, 1975; Dworkin, 1989; Dworkin & MacKinnon, 1988). Dines argued that because this is the case, pornography viewers—who are largely men—do not learn to ignore aggressive materials but rather actively seek out and prefer these materials; the more degraded and abused the woman is, the greater the sexual tension, thrill, and pleasure derived by male viewers. Following this logic, one may expect videos that include scenes of aggression and humiliation to be even more popular than those that do not include such scenes. This may be particularly true for videos where women are forced into submission and clearly perform acts against their will, as this submission reinforces gender inequalities and power relations.

It should be stressed that such contentions mostly rely on a relatively small number of interviews and anecdotal evidence. To the best of our knowledge, no previous study has systematically assessed viewers’ preferences as reflected by

their response to specific aggressive and nonaggressive videos.

H2: Videos that include aggression will be more likely to receive a higher number of views and be ranked more favorably by viewers.

Method

Sample and Data

We describe our sampling strategy in detail in another article, one which focuses on racial and ethnic differences in porn aggression (Shor & Golriz, in press). We coded mainstream videos from PornHub, one of the world’s top adult Web sites and, according to Alexa Internet, the 36th most visited site on the Internet as of 2017, with more than 80 million daily visits (PornHub, 2018). PornHub is a freely accessible video-sharing Web site, similar to YouTube. While some previous studies of Internet pornography examined multiple Web sites (e.g., Klaassen & Peter, 2015; Vannier, Currie, & O’Sullivan, 2014), many of the most popular Web sites have overlapping ownerships (Van Der Linde, 2016). Therefore, the list of most watched videos on these Web sites includes multiple overlapping and consequently comparable videos (Klaassen & Peter, 2015).

Similar to other recent analyses (Bridges et al., 2010; Klaassen & Peter, 2015; McKee, 2005), we analyzed the most highly watched videos from each of our predefined categories, seeking to increase generalizability and explore the porn content that is most likely to be watched by wide audiences (and therefore have a wider cultural impact). In our initial sampling strategy, we sought to increase representation for both women and men from multiple ethnic and racial groups. Accordingly, we employed a purposive sampling technique, including in the initial sample the most watched videos from the following PornHub categories: “All” (70 videos), “Interracial” (25 videos), “Ebony” (52 videos), “Asian/Japanese” (35 videos), “Latina” (19 videos), and “Gay” (25 videos).

Because one of the major goals of the current analysis was to compare the degree of aggression in videos that are more popular (as measured by number of views) with the degree of aggression in videos that are less popular, we complemented this initial sample with a random sample of 80 additional videos. This additional sample was retrieved using PornHub’s “Random” function, which randomly samples a video from the Web site’s archives.¹ In total, this sampling effort resulted in a pool of 307 coded videos. We then excluded six videos that had more than two participants, 26 videos that did not include women, and six videos that did not include men, as we chose to focus here on the

¹ Using this sampling strategy allowed us to reach a sample of videos that are less popular but still represent a wider range of production years, which is important for both comparability purposes and to try to assess change over time.

violence of men against women. This process resulted in a final sample of 269 videos, 262 of which were uploaded to PornHub between 2008 and 2016, with 25 to 36 videos uploaded each year within this nine-year range. (See Figure 1 for full details on the number of videos per year.)

Measurements

Table 1 presents descriptive statistics of our measurements, divided into three categories: dependent variables, focal independent variables, and covariates. For each of these measurements, we present data on its frequency in each of our sampling categories.

Dependent variables to assess video popularity. We sought to assess the effect of aggression on video popularity. However, there is no one agreed-upon way to measure either aggression or popularity. To assess the concept popularity, we coded two distinct measures:

Number of views. The first intuitive way to measure a video’s popularity is by counting the number of views it received. This approach assumes that Internet users “vote with their fingers” and videos that match the preferences and fantasies of wider audiences are more likely to be watched and rewatched. Our initial sample included only the most highly watched videos, leading to relatively low heterogeneity on this measure. We therefore added an additional random sample of videos that received fewer views. The final sample thus includes a substantial variety of videos, ranging from about 11,000 views to more than 116 million views.

Percent likes. One possible shortcoming of number of views as a measure of popularity is that videos may receive more views not because most viewers prefer them but rather because the viewers find the title or thumbnail leading to the video attractive, although these often do not clearly indicate aggression. Alternatively, the Web site itself may choose to

promote certain materials and make access to them easier, prompting higher viewership. Hence, the number of views does not always reflect viewers’ actual preferences or opinions about the videos or aggressive scenes. For example, if for some reason PornHub decides to put more aggressive videos on its home page, these videos may receive more views simply because many viewers see them first and click on them rather than searching for other content.

We therefore examine an alternative and arguably more accurate measure of popularity, which relies on users’ reported preferences. PornHub allows viewers to choose whether they “liked” (green thumb up) or “disliked” (red thumb down) each of the videos on its Web site. For every video in our sample we coded the percent of positive (“like”) votes out of the total number of votes. The range for this measure in our sample was between 45% and 89%.

Focal independent variables: Aggression and pleasure displays.

Even more than popularity, aggression has been a contested concept in the study of pornographic materials. In another article, focusing on race/ethnicity and aggression (Shor & Golriz, in press), we described in detail the debate among scholars of pornography over the importance, interpretation, and coding of consent in pornography (see most notably Bridges et al., 2010; McKee, 2005, 2015). In light of this debate, we adopted two alternative operationalizations of aggression. The first focuses on the acts themselves and on the apparent intent to cause harm, pain, or discomfort in line with most previous studies of pornographic content (see Bridges et al. (2010)). Following this definition (henceforth *visible aggression*), we coded the following acts as physically aggressive: (1) biting, (2) pinching, (3) kicking, (4) pulling hair, (5) hitting of the face, (6) hitting of the body, (7) choking, (8) forced gagging, (9) spanking, (10) sadomasochism, (11) rough handling (e.g., pushing, shoving, tossing, shaking), and (12) forceful penetration (vaginal or anal) with penis, hand, or another object, with an apparent intent to cause pain/discomfort. We

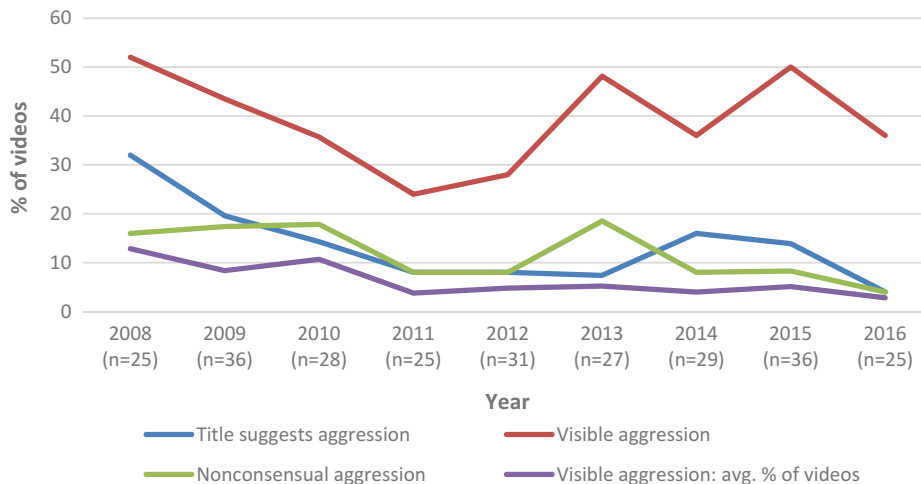


Figure 1. Temporal tendencies in aggression (n = 269).

Table 1. *Descriptive Statistics*

	“Asian”/ “Japanese”	“Interracial”	“Ebony”	“Latina”	“Most Viewed”	“Random”	Total
<i>N</i> videos	31	23	50	19	70	76	269
<i>Dependent variables</i>							
Mean number of views (millions)	6.6	8.4	7.3	14.0	23.5	0.06	10.0
Likes (%)	80.3	79.7	80.7	80.5	80.5	73.2	78.4
<i>Independent variables</i>							
Aggressive or “demeaning” acts							
Video title suggests aggression (%)	0.0	30.4	4.0	5.3	11.4	10.5	9.7
Physical aggression—Visible (%) ^a	74.2	65.2	36.0	73.8	12.9	36.8	39.8
Physical aggression—Nonconsensual (%) ^b	32.3	34.8	10.0	10.5	1.4	9.2	12.3
Verbal aggression (%)	3.2	4.4	12.0	10.5	28.6	50.0	25.3
Women’s pleasure expressions							
Display of pleasure (%)	71.0	65.2	84.0	100.0	68.6	68.4	73.6
Display of climax (%)	16.1	13.0	2.0	0.0	31.4	6.6	13.4
<i>Controls</i>							
Amateur video (%)	3.2	4.4	2.0	0.0	12.9	26.3	11.9
Mean video duration (minutes)	20.3	14.7	17.1	17.2	16.2	12.7	15.8
Mean number of views (millions)	6.6	8.4	7.3	14.0	23.5	0.11	10.0
Mean year uploaded to Web site	2011	2011	2010	2012	2011	2013	2012

^aDefinition not considering consent.

^bDefinition considering consent.

also noted the duration of each of these acts relative to the duration of the entire video.

The second definition considers lack of consent as key for defining an act as aggressive or violent, in line with McKee’s (2005, 2015) conceptualization (henceforth *non-consensual aggression*). We watched carefully for both verbal and physical cues for lack of consent. These could be in the form of explicit verbal requests to stop or avoid a certain act, nonverbal signs of resistance (e.g., pushing away), attempts to avoid the act, and/or evident unhappiness at being in the situation or performing a certain act, which were nevertheless ignored by the sexual partner. Whenever such verbal or nonverbal cues appeared, we coded the video as containing nonconsensual aggression.

In addition to noting whether a video contained aggression or not, we also coded the total length of aggressive acts and then used this figure to calculate the percentage of the video including visible aggression. This variable is important because a video that lasts 30 minutes and includes only 2 seconds of slapping would still be considered as containing aggression, but it is clearly not the same as a video in which half of the playing time is devoted to aggressive acts. Next, for each of the videos, we also determined whether the title suggests aggression. Examples of titles suggesting aggression are “Gigantic Cock Rips Skinny Bitch” and “Teeny Booper Kidnapped by Huge Black Cock.” Examples of more neutral titles include “Stunning MILF Has the Most Spectacular Tits” and “Office Asian Fuck.” While titles may not accurately represent the actual content of videos, we believe they are often important to analyze in their own right, as even the suggestion of aggression may be an important part of the fantasy and viewing experience.

Finally, we also noted the occurrence of verbal aggression (including practices such as yelling, name-calling, threatening, and swearing at the partner) and of women’s pleasure responses and displays (e.g., moaning, screaming in pleasure, or clearly pronouncing a climax). While such pleasure responses/displays may be (and probably often are) staged, they are nevertheless important because of the message they deliver that women, and not only men, should (or are even expected to) enjoy the sexual act.

Covariates. We also coded information for four theoretically important covariates: (1) whether the video was amateur or professional, (2) the duration of the video, (3) the year in which the video was uploaded to Pornhub, and (4) the number of views the videos received. The three first variables were included in all of our multivariate regression models, while the fourth was included in all models of our ordinary least squares (OLS) regression analyses but not in our negative binomial analyses (Table 2), because in Table 2 viewership numbers are the dependent variable (refer to Table 3 for OLS analyses).

We coded videos as amateur relying primarily on the tags associated with them (i.e., labeling them as “amateur”). Theoretically, one might expect amateur videos to be viewed less frequently than professionally produced videos, as large pornographic Web sites such as Pornhub often promote the latter genre more heavily due to commercial incentives. We also control for video duration (in minutes), although we are unsure in what direction this might affect popularity. We expected the number of views (in millions) to be positively associated with percent likes. Finally, we controlled for the year in which the video was uploaded to Pornhub to

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Table 2. *Aggression and Pleasure As Predictors of Viewership (Negative Binomial Regression; n = 146)^a*

	1	2	3	4	5	6
Aggression						
Video title suggests aggression	-0.19 (-0.37)					
Physical aggression—Visible (%) ^b		-0.95* (-2.52)				
Physical aggression—Nonconsensual (%) ^c			-4.72** (-2.62)			
Verbal aggression				-0.36 (-1.11)		
Pleasure						
Woman displays pleasure					-0.06 (-0.16)	
Woman displays climax						0.70^ (1.81)
Controls						
Amateur video	0.22 (0.56)	0.17 (0.41)	0.21 (0.54)	0.33 (0.78)	0.21 (0.52)	0.23 (0.58)
Video duration (minutes)	-0.02 (-1.21)	-0.01 (-0.58)	-0.02 (-1.06)	-0.02 (-1.13)	-0.02 (-1.23)	-0.02 (-1.41)
Year uploaded to Web site	-0.32*** (-4.37)	-0.27*** (-3.77)	-0.29*** (-4.14)	-0.33*** (-4.50)	-0.32*** (-4.37)	-0.31*** (-4.31)

Note: ^aWe included in the analysis only the 146 videos from the all most viewed ($n = 70$) and from the random ($n = 76$) categories. We excluded the videos from the specific racial categories from this particular analysis because preliminary analyses revealed that these are both less popular and more likely to include aggressive acts. They, therefore, might skew an analysis that focuses on the relationship between aggression and video popularity.

^bDefinition not considering consent.

^cDefinition considering consent.

Unstandardized coefficients (two-tailed t tests in parentheses) ^ $p < .01$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. *Aggression and Pleasure As Predictors of Percent Likes (Ordinary Least Squares Regression; n = 269)*

	1	2	3	4	5	6
Aggression						
Video title suggests aggression	-0.08 (-0.07)					
Physical aggression—Visible (%) ^a		0.81 (0.97)				
Physical aggression—Nonconsensual (%) ^b			-2.81* (-2.33)			
Verbal aggression				-0.98 (-1.07)		
Pleasure						
Woman displays pleasure					2.65** (3.04)	
Woman displays climax						3.55** (3.06)
Controls						
Amateur video	-3.05* (-2.50)	-2.90* (-2.37)	-3.25** (-2.70)	-2.85* (-2.32)	-2.73* (-2.27)	-3.08* (2.58)
Video duration (minutes)	0.07* (2.08)	0.06^ (1.93)	0.08* (2.42)	0.07* (2.19)	0.06* (1.97)	0.06^ (1.93)
Number of views (millions)	0.09** (2.76)	0.09** (2.90)	0.08* (2.42)	0.09** (2.81)	0.09** (2.74)	0.07* (2.09)
Year uploaded to Web site	-0.94*** (-7.27)	-0.93*** (-7.29)	-0.95*** (-7.49)	-0.91*** (-7.01)	-0.93*** (-7.36)	-0.92*** (-7.28)
R^2	0.26	0.26	0.27	0.26	0.28	0.28

Note: ^aDefinition not considering consent.

^bDefinition considering consent.

Unstandardized coefficients (two-tailed t tests in parentheses) ^ $p < .01$; * $p < .05$; ** $p < .01$; *** $p < .001$.

detect potential temporal changes in popularity but also to account for the fact that videos uploaded at an earlier time have the potential to accumulate a larger number of views.

Coding and Analytical Strategy

Two female coders worked on this project. Both were students with good familiarity of sexually explicit materials from previous research projects. They both coded all of the videos in the sample separately and then met to compare their coding. The coders first met several times with the project leader, who trained them in the method and coding scheme. Before coding from the actual sample, each separately coded five trial videos. The research team then met to discuss the coding and resolve unclear issues. Next, the two coders continued to code together all the videos in the sample. When they encountered disagreements over the interpretation of contents, they met with the project leader; the entire research team then discussed the issues and reached a resolution. Finally, the project leader watched all of the videos and coded each independently to ascertain coding accuracy, paying special attention to the coding of aggression. Differences in coding were then resolved through discussion among the members of the research team.

Intercoder agreement between students' coding and the project leaders' coding was generally good, with 94.42% agreement for aggressive titles, 89.59% agreement for visible aggression, and 96.28% agreement for nonconsensual aggression. Kappa statistic scores for these three measures were 0.73, 0.77, and 0.81, respectively. The only measurement of aggression for which intercoder agreement was somewhat lower was the percent of the video containing aggression, with 65.67 intercoder agreement and a Kappa coefficient of 0.41, which is often considered fair or moderate. However, we should note that for this variable it is difficult to reach a high degree of agreement, as even slight variations in the recording of time (e.g., one minute and a half versus one minute and 45 seconds) generate disagreement. It is therefore important to note that when disagreements did occur they were usually fairly small, mostly within no more than five seconds difference and never more than 30 seconds difference. When such disagreements did occur, we resolved them by rewatching the video.

While previous studies have often used "scene" or "character" as their unit of analysis (Bridges et al., 2010; Cowan & Campbell, 1994; Klaassen & Peter, 2015; McKee, 2005), we chose instead to use the entire video as our unit of analysis to prevent overrepresentation for longer videos. We should note, however, that most of the videos in our sample consisted of one sex scene only. Our analyses combine descriptive statistics of time trends in aggression and regression analyses (both negative binomial and OLS, depending on the measurement of the dependent variable) to determine the effects of aggression on video popularity.

Results

Our first hypothesis, based on much of the extant literature, was that depictions of aggression in pornographic videos have increased over the years. As reported in Table 1, and similar to other recent research (Klaassen & Peter, 2015), we found that, in the overall sample (all years), visible aggression (definition not considering consent) was present in slightly less than 40% of the videos, nonconsensual aggression appeared in about 12% of the videos, and nearly 10% of the titles suggested aggression.

However, we found no evidence for a temporal increase in aggression (hypothesis 1). In Figure 1, we show the percentage of videos including one of our three measures of aggression in each year between 2008 and 2016. The graph begins in 2008 because only five videos in our sample were uploaded to PornHub prior to this year. Our data do not provide support for hypothesis 1 over this nine-year period, as none of our three measures of aggression shows an increase over time; in fact, some of them actually show a downward trend.

First, depictions of visible aggression fluctuate but show no steady upward or downward trend. Videos depicting visible aggression mostly range from around 30% to 50% of all videos yearly (the trend for this measure was not statistically significant).² Importantly though, the average duration of visible aggression in videos shows a substantial declining trend ($p < 0.05$). In 2008, nearly 13% of the average video portrayed visible aggression. By 2016, this figure dropped to less than 3%. This finding is important, as it stresses the fact that even videos that contain aggressive acts are not *all* about aggression. In fact, many of them also portray female pleasure (not only in response to aggression), courtship, tenderness, and affection. Similarly, the rate of videos with nonconsensual aggression slightly declined over time, from about 20% of all videos at 2009 and 2010 to roughly 10% over the past three years, although this trend was not statistically significant. Finally, the prevalence of videos with titles that suggest aggression dropped significantly ($p < 0.05$) from nearly 40% of all videos in 2008 to about 5% in 2016.

Our second hypothesis, following the common view among many feminist writers on pornography, was that videos depicting aggression would be more popular than those that do not depict aggression. We first tested this hypothesis by comparing the sample of all-time most-watched videos ($n = 70$; mean n views = 23.5 million) to our random sample of videos watched no more than 100,000 times ($n = 76$; mean n views = 60,000). Our findings clearly stand in opposition to the assumption about the popularity of aggression. Table 1 shows that

²In addition to overall time trends in aggression, we also examined time trends in each of the specific measures of aggression noted previously (e.g., biting, pulling hair, hitting of the body, choking, forced gagging, spanking, and forceful penetration). We found no significant trend for any of these practices.

while only 12.9% of the videos in the most-viewed sample contained visible aggression and only 1.4% (one video) included nonconsensual aggression, in the random sample of less-watched videos, visible aggression was present in 36.8% of the videos and nonconsensual aggression in 9.2% of them (verbal aggression was also significantly more prevalent in the random sample).

We next explore our hypotheses about the relationship between aggression and popularity using regression analyses, with popularity (both number of views and percent likes) measured as a continuous variable. Tables 2 and 3 present results for the effects of aggression and of women’s pleasure responses on both the number of views and the percent of likes a video received. Once again, neither table provides support for the hypothesis that aggression is more popular. In fact, they suggest that videos depicting aggression, particularly of the nonconsensual type, are less likely to be viewed and less likely to elicit a favorable response (i.e., a “like”) from viewers. Conversely, videos where women respond with pleasure were more likely to receive greater viewership and a favorable response.

In Table 2 we present the results of a negative binomial logistic regression including the predictors of the number of views a video received. Of note, we excluded from this analysis all videos sampled through the specific racial categories ($n = 123$), because preliminary analyses reveal that these are both less popular and more likely to include aggressive acts. Their inclusion might therefore skew an analysis that focuses on the relationship between aggression and video popularity.³ We examined four measurements of aggression and two measurements of pleasure. The findings show that physical aggression, whether it was measured while considering consent (Model 3) or not (Model 2), was negatively associated with the number of views. Conversely, videos where the female performer displayed clear pleasure in the form of a climax were more likely to receive a higher number of views.

In Table 3 we present a similar analysis (using OLS), but this time with the percent of favorable viewer responses (“likes”) to a given video as the dependent variable. While here we do not find a significant coefficient for visible aggression (Model 2), we do find that videos depicting nonconsensual aggression (Model 3) were less likely to be popular, as reviewers were more likely to award them a “thumbs down.” Also consistent with the findings in Table 2, videos where female performers displayed pleasure, whether it was a climax (Model 6) or an alternative pleasure response (Model 5), were more likely to be viewed favorably and receive a “like.” Overall, then, our results suggest that the majority of viewers who choose to share their preferences favor videos that do not include aggression and where women, rather than just men, appear to enjoy the sexual act.

³ Nevertheless, we also ran robustness checks for the entire sample ($n = 269$). Results for the main variables of interest (both the measurements of aggression and the measurements of pleasure) remained in the same direction and statistical significance did not change.

Conclusion And Discussion

We examined the popular claim that Internet pornography is becoming “harder and harder” (DeKeseredy & Corsianos, 2015; DeKeseredy & Hall-Sanchez, 2017; Dines, 2010; Fradd, 2017; Halverson, 2016; Shulevitz, 2016; Sun et al., 2010; Tuohy, 2015). More specifically, we utilized a sample of 269 videos to test two hypotheses related to this claim: (1) depictions of aggression have increased over the past decade and (2) viewers respond favorably to depictions of aggression. Our analyses show no support for either of these claims. First, over the past decade, we found no increase in the number of videos depicting visual aggression. We did find a significant decrease in the average length of scenes depicting such aggression, as well as an overall downward trend in the number of videos containing nonconsensual aggression and titles that suggest aggression. Second, we found that videos containing aggression (in particular nonconsensual aggression) were less likely to be viewed than videos with no aggression and were less likely to receive favorable reviews from viewers.

Our findings may be viewed as a positive development by the large body of scholars and activists who write and speak about the pernicious effects of aggression in pornography, such as its potential links to violence against women (DeKeseredy & Hall-Sanchez, 2017) and an increased acceptance of rape myths (DeKeseredy, 2015). Indeed, it appears that at least some mainstream viewers are gradually moving away from prevalent depictions of aggression and degradation, and in particular from videos that include long sequences of such practices and from videos that depict nonconsensual aggression. This shift away from nonconsensual aggression may signify lower demand and, depending on the responsiveness of producers to consumer preferences, might result in reduced distribution of material featuring nonconsensual aggression.

We also find our results somewhat encouraging in terms of what they mean for sexuality and gender relations. Over the years, some feminist anti-porn scholars have viewed pornography per se as violence against women, an industry which fosters sexual aggression, misogyny, and rape myths (Brownmiller, 1975; Dines, 2010; Dworkin, 1989; Dworkin & MacKinnon, 1988; Russell, 2000). Some have even suggested that the pervasiveness of aggression and degradation in today’s porn industry testifies to widespread misogyny. Gail Dines, one of the most prominent anti-pornography scholars, said in an interview with *The Guardian*: “To think that so many men hate women to the degree that they can get aroused by such vile images is quite profound” (Bindel, 2010).

Our findings suggest that, in fact, Dines and similarly minded thinkers may be confusing supply—what a large portion of mainstream porn looks like—and demand—what most viewers actually want to watch. Indeed, while some viewers (both men and women) undoubtedly enjoy aggression and degradation of women and find such videos to be

arousing and gratifying, our study provides no support for the claim that the majority of viewers prefer to be exposed to such images. We suggest that future studies relying on surveys and interviews with porn viewers should focus on this point and try to assess whether most viewers indeed prefer aggression-free pornography, as at least one previous study has already suggested (Loftus, 2002).

We should further note that our findings regarding the lack of popularity for aggression hold mainly for nonconsensual aggression. This is consistent with McKee's (2005, 2015) contention that judgments about consent are at the heart of viewers' treatment of sexually explicit materials. In describing "healthy pornography," many viewers refer to consent as a key issue and find violence and nonconsensual acts unacceptable (McKee, 2006). We believe it is indeed important to make this differentiation. Acts such as ejaculation in mouth, anal penetration, and spanking—which some might find reprehensible or degrading—generally did not have an effect on viewers' popularity rankings (i.e., the percent of "likes"). Conversely, acts that were more clearly unpleasant/painful for female performers, such as forced gagging or forceful anal penetration, were ranked as less popular.

Our findings also appear to be consistent with those reported by Loftus (2002), who interviewed male pornography viewers. Most of these men stated that they did not like depictions of domination or aggression against women. The men also testified that they did not find the male performers to be suitable role models and did not want to imitate them. Finally, the interviewees also did not report gradually gravitating toward increasingly extreme contents. They did not seek ever more vivid, kinky, and violent pornography; instead, they either stuck with what they liked first, investigated harder contents but came back to those they preferred at first, or lost interest altogether.

Beyond aggression, our findings also indicate viewers' preferences for videos showing women's pleasure in pornographic videos. These findings are again consistent with those of Loftus (2002), who found it was important for his male interviewees that the female performers in the videos seemed to be enjoying themselves. The men in his study also said they much preferred it when the female performers were notably involved in the sex, rather than merely serving the interests of male performers. In accordance with these notions, the majority of the videos in our sample depicted women who were not merely passive and compliant but rather sought sex quite enthusiastically and made clear efforts to demonstrate that they desired the act and were deriving pleasure from it.

Still, one might wonder whether these are "real" displays of pleasure or merely an entirely scripted act. Some feminist writers have argued that mainstream pornography is made exclusively for men and creates a sexual world centered on men's pleasure (Fitzgerald & Grossman, 2017; Paul, 2005). Within this world, women's sexual pleasure is inconsequential, at least in its own right. That is, women's displays of pleasure are rarely (if ever) genuine; they follow a scripted

act and serve merely as a testimony of men's prowess and success in eliciting pleasure from their sexual partners, with little regard to consent (Dines, 2003). Columnist Joan Smith (2013) expressed this idea in an article in *The Independent*: "I have always tried to make a distinction between sex which was enjoyed by both parties and sex-and-violence. These days the latter predominates and the idea that most Internet porn has anything to do with women's sexual pleasure is laughable."

Our findings for the most widely watched mainstream pornography problematize and put in question such contentions. It is true that even if women perform displays of pleasure and climax, this is often scripted. Interviews with performers in the porn industry (Bauer & Gradus, 2015; Miller-Young, 2014; Wagoner, 2012) and behind-the-scenes documentations (Bauer & Gradus, 2015; Sun et al., 2010) often reveal the scripted nature of these interactions, dictating that both female and male performers (in particular the former) display ecstatic pleasure throughout the videos. Yet, following McKee (2005, 2015, 2016), we argue that when analyzing the content of videos it is important to pay attention not only to the subtext but also to the text itself. The fact that women display pleasure in the large majority of videos, and that the majority of these pleasure displays do not follow aggressive acts, sends a message that women's sexual pleasure is important after all.

Consent in pornographic videos (and in sexual interactions more generally) is rarely completely free. Indeed, consent is embedded in a larger context of gendered power relations and normative expectations regarding the role and performance of men and even more of women in the pornography industry (and in life). However, as McKee (2015) argued, it does not logically follow from this premise that consent is unimportant. Similarly, we argue that pleasure displays, even when scripted and embedded within a set of role expectations, are nevertheless meaningful. They convey a message that women's pleasure is an important part of most sexual encounters and that women are entitled, in fact expected, to experience sexual pleasure. Such expectations are, of course, not without problems of their own. Both female and male viewers may feel pressures to perform certain acts and exhibit pleasure even when their actual experiences do not conform. Still, we found no support for the notion that mainstream pornography is entirely focused on men's pleasure and completely ignores women and their real needs, desires, and entitlement to pleasure.

Limitations

Our study is marked by a few notable limitations, which we hope future studies may be able to address and improve upon. First, the time range of the videos that we analyzed here is limited to the past decade. Almost all videos that were either most watched or randomly sampled from PornHub were within this time range, and we are therefore unable to comment on changes that have occurred prior to

this date. It is worth noting, though, that this problem is not easy to bypass. Because videos from earlier years seldom come up when using either random or “most watched” sampling methods, one would have to adopt purposive sampling techniques (e.g., search by year in the title) to collect more of them. Such sampling, however, runs the risk of capturing a sample of videos that were more likely to be preserved and uploaded to Pornhub, for whatever reason, and thus may not be representative of the more general population of videos from these years. For example, it is possible that those videos containing less bizarre scripts and occurrences or those containing relatively less aggression were also those more likely to be eventually uploaded to the Web. As such, an attempt to assess time trends in aggression using two diverging sampling techniques may prove misleading.

A second issue in our analysis has to do with sample size, in particular as it pertains to establishing time trends. While we were able to reach a sample of at least 25 videos for each of the nine years in our sample, this number might not provide sufficient statistical power to confidently determine time trends. However, it is important to note that even with this relatively lower statistical power, we were still able to find a significant downward trend for two of the measures presented in Figure 1: titles and average duration of aggression. Furthermore, all four measures we present in Figure 1 show a trend that is in the opposite direction to that predicted by our first research hypothesis. As such, even if we were to significantly increase our sample, it appears unlikely that such an augmented sample would provide support for hypothesis 1.

Third, we acknowledge the possibility that while some categories of mainstream pornography may not see an increasing rise in violence, others—particularly those featuring group sex or multiple men with a single woman (e.g., “gang-bang” scenes) might. We would have likely found more aggression if we conducted a purposive sample on categories like “double penetration” or “bukkkake,” but we saw no good justification to target these specific categories when our main purpose was to focus on the most watched content. This said, only about 1% ($n = 3$) of the videos captured by our sampling strategy (i.e., finding mainstream content by using the “most viewed all time” and the “random” filters) featured more than two individuals. The decision to exclude these videos from our present analysis was partly based on this very small number and partly on the difficulty to code group interactions in a manner analogous to coding dyadic sexual interactions. We could have over-sampled on categories like gangbangs to increase the number of such multiple-partner videos, but doing this would have violated the guiding principle behind our sampling strategy: trying to reach videos that are either mainstream (i.e., highly viewed) or randomly sampled.

Another limitation, which this study shares with many others on aggression in pornographic videos, is that of adequate measurements. Our strategy in this article was to try to examine a wider set of alternative measurements for

both popularity (which we measured with either number of views or percentage of likes) and aggression (for which we adopted five distinct measures). Still, as we also note in our description of the measurements, these operationalizations remain imperfect. In particular, our two measurements for popularity suffer from some shortcomings. First, as noted, the number of views for a video may be influenced not only by its actual content but rather by factors such as prominence given to it by the porn Web site, as well as its title, tags, and thumbnails. The latter three features (particularly the title and tags) may be only partly correlated with the actual content of the video and, at times, may even be entirely unrepresentative of the contents.

Our second measure for popularity (percentage of likes) appears to have greater validity. Still, this measurement is based on a subsample of the actual viewers of each video, as most viewers do not rate content. This subsample may be different in various qualities (that we cannot assess) from the larger population of viewers, and therefore the ratings should be treated with some caution. The figures for percent likes (as well as those for number of views) may further be susceptible to intentional manipulation by the owners and operators of pornographic videos. However, we conducted short interviews with past and present employees of Pornhub, who reassured us that this is not a concern for the owners and that the operators and programmers of the Web site do not habitually manipulate these figures. Furthermore, even if that were the case (i.e., that Web sites would manipulate figures), we see no clear reason why this practice should coincide with certain contents (e.g., deliberately altering figures downward for more aggressive videos).

In conclusion, we see this study as a first attempt to systematically assess the various claims in the literature about online free pornographic content and the direction in which mainstream consumer preferences may be moving. As noted in this Limitations section, this analysis suffers from several imperfections, in particular ones related to the time span that we were able to evaluate and the validity of measures for video popularity. Given these shortcomings, the findings of our study should be treated with some caution, and we suggest that future research should further explore these issues through the use of complementary methods, in particular, surveys and interviews.

Ethics Statement

Because we are analyzing the content of freely available online materials, no ethics approval was required.

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