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# Experimental effects of degrading versus erotic pornography exposure in men on reactions toward women (objectification, sexism, discrimination)

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There is considerable debate about the potential harmful impacts of pornography exposure and viewing among men. The current literature suggests that heterosexual men's use of pornography may be associated with negative attitudes and behaviour toward women. However, little research has experimentally examined exposure to different types of nonviolent pornography, using a range of outcome variables, and differentiating effects for women generally versus the porn actress. In the current study, 82 undergraduate men were randomly assigned to one of three conditions (degrading, erotica, or control); within each condition they were randomly assigned to watch one of two approximately 10-minute clips: degrading pornography (i.e., nonviolent, debasing, dehumanizing), erotic pornography (i.e., non-degrading, nonviolent, consensual), or a news clip as a control condition. After watching the clip, measures of subjective sexual arousal, objectification of the specific woman in the clip, essentialism of women, ambivalent sexism, and discrimination against a fictitious woman were completed. Exposure to erotica (vs. degrading) generated less objectification of the porn actress; exposure to erotica (vs. control) also generated the greatest discrimination toward the fictitious woman, although the omnibus for the latter was non-significant. Exposure to degrading pornography (vs. erotica or control) generated the strongest hostile sexist beliefs and the greatest amount of objectification of the woman in the clip. Thus, pornography use may not be generally harmful or harmless, but the effect of pornography exposure may depend on the type of pornography and the specific outcome. Implications for debates about the potential negative impact of pornography exposure are discussed.

KEY WORDS: Discrimination, erotica, impact, objectification, pornography exposure, sexism

Pornography—production and viewing—is a highly lucrative industry with estimated revenues in the billions. Indeed, 2017 statistics on use of Pornhub, a popular web page supplying links to pornography content to the public worldwide, reflect the enormity with which pornography is viewed. About 25 billion searches were performed, 28.5 billion visits (81 million average daily visitors), four million videos uploaded, and an average time of 9 minutes, 59 seconds spent on the site (Pornhub Insights, 2018). Canada ranked fifth in terms of traffic to the site, and fourth in average time spent per visit (10 minutes, 10 seconds).<sup>1</sup> Pornography also remains popular in the offline world. Magazines (e.g., *Playboy*) and

DVDs are produced primarily with pornography content, and some television features some form of pornography (e.g., *Sex and the City*; Dines, 2010), demonstrating how mainstream pornography has become. Across international studies it has been estimated between 50% and 99% of men<sup>2</sup> view pornography (Hald, Seaman, & Linz, 2012), with variability in these estimates from study to study (e.g., Hald & Malamuth, 2008; Peter & Valkenburg, 2011). Overall, pornography represents a vast industry, and as a result, there may be negative effects regarding attitudes toward and the treatment of women in society, such as objectification, sexism, essentialist beliefs, and discrimination.

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## RESEARCH ON EFFECTS OF PORNOGRAPHY ON BIAS TOWARD WOMEN

Research has examined the effects of pornography use by heterosexual men on their attitudes and behaviour toward women. This research was largely focused on violent pornography, but the focus of our research is on nonviolent degrading versus nonviolent non-degrading pornography (see below for a full definition). Thus, we summarize the existing literature on nonviolent pornography.

Greater viewing of nonviolent pornography has been associated with a greater likelihood of committing sexual aggression (mean  $r = .27$ ; Wright, Tokunaga, & Kraus, 2016) and greater attitudes supporting violence against women (mean  $r = .13$ ; Hald, Malamuth, & Yuen, 2010; see also Allen, Emmers, Gebhardt, & Giery, 1995). Allen, D'Alessio, and Brezgel (1995) found across 24 experimental studies that viewing nonviolent pornography increased behavioural aggression (mean  $r = .17$ ) toward male and female targets (e.g., giving electric shocks). Notably, several of the included studies were conducted after angering the participant. However, in recent experiments participants were not made to be angry. In these recent experiments, sexist attitudes and attitudes supporting violence against women were greater after watching nonviolent pornography, especially among men low in agreeableness (Hald & Malamuth, 2015; Hald, Malamuth, & Lange, 2013). Thus, across several nonexperimental and experimental studies, a small positive relationship between nonviolent pornography exposure/viewing and unfavourable attitudes and aggression toward women has generally been found (cf. Kohut, Baer, & Watts, 2016).

Given our focus on nonviolent degrading versus nonviolent non-degrading pornography, it is important to define them (see Fisher & Barak, 2001; Wright et al., 2016). Scenes of violence or physical aggression toward the woman do not appear in nonviolent pornography; however, the content can still be degrading or not degrading. *Degrading pornography* is “sexually explicit and degrades, debases, and dehumanizes people, generally women, in a fashion that endorses such degradation” (Fisher & Barak, 2001, p. 313). Degrading pornography focuses on an insatiable and eager-to-please woman in most of the frames, and often concludes with the man ejaculating onto the woman’s face, breasts, or both. The impact of degrading pornography is important to examine because in top-selling pornography, scenes of degradation of women are very common (Bridges, Wosnitzer, Scharrer, Sun, & Liberman, 2010). *Erotica*, on the other hand, consists of “sexually explicit, nondegrading, and nonviolent portrayal[s] of consensual sexual activity” (Fisher & Barak, 2001, p. 313). In erotica, men and women mutually enjoy sexual activity, often with scenes of affection. Notably, erotica (vs. degrading or violent pornography) has not been used extensively in research on the effects of pornography exposure. Comparing erotica and degrading pornography will delineate whether overt sexual activity or degradation is driving any purported negative outcomes. Discerning where effects originate is important because some of the debate concerning the effects of pornography use centres around the distinction

between types of pornography (see Berger, Searles, & Cottle, 1991; Hald et al., 2012 for reviews).

## POTENTIAL EFFECTS OF PORNOGRAPHY ON BIAS TOWARD WOMEN

Across both public and scientific discourse, there exist a range of views about whether pornography use affects attitudes and behaviours toward women. From a *conservative-moralistic* perspective, with greater availability and viewing of pornography, people’s values will become less conservative and society’s morals will decline (Berger et al., 1991; Hald et al., 2012). Further, from a radical feminist perspective, all pornography use harms women by portraying women as sexual objects that are ready to serve men for their sexual pleasure. Erotica use may also be harmful because it may promote men wanting to view more extreme pornography, and/or because erotica still shows women as sex objects (Berger et al., 1991; Dines, 2010). Thus, from these perspectives both degrading pornography and erotica exposure should be associated with negative outcomes relative to a control condition (Figure 1, panel A).

On the other hand, a *libertarian* perspective argues that people generally recognize that pornography is fiction and fantasy and thus are not necessarily affected. Further, pornography contains information about sex and sexuality, including the freedom to express oneself sexually (Berger et al., 1991). Thus, from a libertarian perspective, pornography use is generally not harmful, regardless of its content. If this is true, degrading pornography and erotica exposure should not be associated with negative outcomes relative to control (Figure 1, panel B).

In contrast, some feminist perspectives (e.g., liberal) argue that pornography use will not be harmful unless it contains scenes of violence or degradation (Berger et al., 1991; Hald et al., 2012). Erotica portrays consensual nonviolent and non-degrading sexual activity and can contain a rather positive context. Thus, from a *liberal feminist* perspective, degrading pornography, but not erotica, exposure should be linked with negative outcomes (vs. control; Figure 1, panel C).

Another possibility is the level of harm to women is proportional to the level of harm depicted in the pornography in an escalating harm pattern. Proponents of this effect argue men become desensitized to the sexual explicitness depicted in nonviolent and/or non-degrading pornography (e.g., erotica) and view pornography with increasing violence and degradation in order to feel the same amount of sexual gratification (e.g., Hald et al., 2012; Park et al., 2016). From this *escalating harm perspective*, degrading pornography exposure is more harmful than erotica, which is itself more harmful than a control clip (Figure 1, panel D).

A final and less obvious possibility is that erotica use is particularly harmful (Figure 1, panel E). Within the ongoing debate regarding pornography, no prominent perspective or model supports such a position. However, research conducted from an *aversive racism/modern prejudice perspective* suggests that erotica exposure might increase negative outcomes.

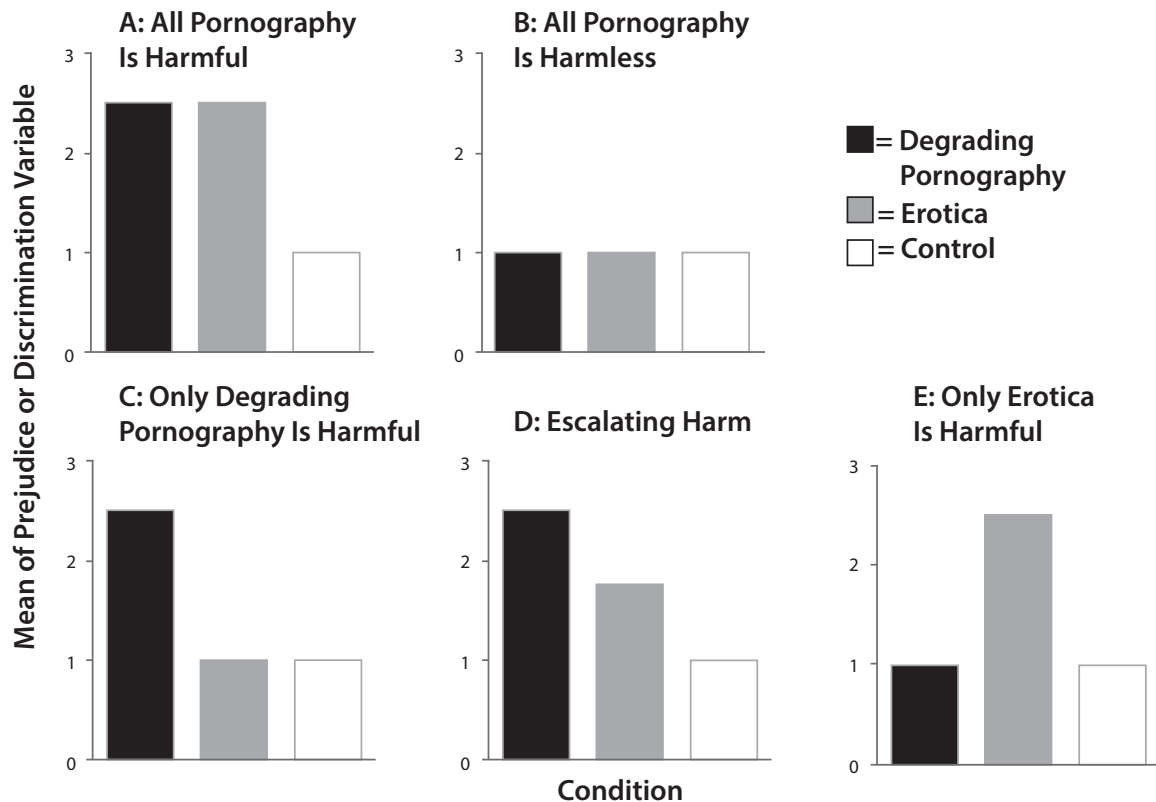


Figure 1. Patterns of prejudice or discrimination predicted by the various perspectives and models concerning the effects of pornography. A: The conservative-moralistic and radical feminist perspectives predict that exposure to degrading pornography and erotica will both result in high levels of prejudice or discrimination. B: The libertarian perspective predicts that exposure to degrading pornography and erotica will result in little to no prejudice and discrimination. C: The liberal feminist perspective predicts that exposure to degrading pornography will result in prejudice and discrimination, but exposure to erotica will not. D: The escalating harm perspective predicts that the level of prejudice and discrimination will reflect the level of increasing sexual explicitness, degradation, and violence in each clip. E: From an aversive racism/modern prejudice perspective, only erotica will be associated with prejudice and discrimination.

Specifically, erotica can be considered *ambiguous* because of its middle-ground position, presenting women in a sexualized manner that is not necessarily demeaning. Thus, erotica may be in a grey zone of ambiguity, where biases often emerge in contemporary settings (see Hodson, Dovidio, & Gaertner, 2002). Indeed, research on aversive racism has shown that biases toward ethnic minorities are likely to slip out and find expression when the social context is relatively ambiguous (see Hodson, Dovidio, & Gaertner, 2004 for a review). For example, White participants are unlikely to discriminate against strong Black applicants to university, because doing so would be overtly prejudiced. However, when candidates present mixed or ambiguous qualifications with some strong and some weak aspects, racial biases become expressed (Hodson et al., 2002). Notably, these racial biases become expressed especially in people's *behaviours* or *behavioural intentions* (e.g., not admitting a Black applicant to a university program) rather than their attitudes. In a pornography context, negative responses toward women might arise in response to erotica exposure (*vs.* other conditions) to the extent that this form of pornography is

presumably more socially acceptable and not sexist or offensive (Cowan & Dunn, 1994).

In addition to the use of different types of content, it is also important to consider a range of psychological outcomes that might be affected, including objectification, sexism, essentializing women, and discrimination. Sexual objectification can be defined as, "seeing or treating another person as a sexualized object" (Loughnan & Pacilli, 2014, p. 309). It is also likely to occur when simply focusing on the physical attributes of an individual, leading to perceptions of an object that lacks mind (see Heflick & Goldenberg, 2014 for a review). Sexual objectification occurs with pornography use; the women in it are often shown as sexualized, with their physical attributes on display and of central focus (Loughnan & Pacilli, 2014).

Ambivalent sexism theory represents a contemporary approach to sexism recognizing that people can hold two simultaneous beliefs about women: hostile and benevolent sexist beliefs (Glick & Fiske, 2001, 2011). Hostile sexism is a negative, blatant belief that women try to control men through their sexuality or through feminism, whereas benevolent sexism is

a seemingly positive belief that women need to be protected, supported, adored, and are necessary for the completeness of a man. Hostile and benevolent sexism are positively associated with each other (e.g.,  $r = .37$  to  $.74$ ; Glick & Fiske, 1996) and can occur concurrently depending on the roles women play in society (e.g., homemaker, business woman).

Psychological essentialism reflects the notion that social categories have a core, unchanging element to their membership that differentiates one category from another (Haslam, Rothschild, & Ernst, 2000). It is often conceptualized as being composed of two factors, essentialist naturalness (the inalterable but natural boundaries between groups) and essentialist entitativity (the perceived similarities of the group members that make them alike; Haslam et al., 2000; Hodson & Skorska, 2015; Roets & Van Hiel, 2011). Gender is a social category that is routinely essentialized (Haslam et al., 2000, 2002; Prentice & Miller, 2006): those high in psychological essentialism rate women as having an essence or some qualities that is/are unchanging and different from men. Thus, after viewing pornography produced for men and displaying women as highly sexualized, psychological essentialism of women might increase.

Discrimination reflects the negative behaviours directed at members of a social group (Correll, Judd, Park, & Wittenbrink, 2010). Violence and aggression are extreme forms of discrimination examined in the pornography literature (e.g., Allen, D'Alessio et al., 1995); however, less extreme forms are also examined in the prejudice literature, such as renting or hiring decisions (e.g., MacInnis & Hodson, 2012; see also Crisp & Husnu, 2011). It is currently unknown if the findings using somewhat more extreme forms of discrimination would generalize to less extreme forms of discrimination in the pornography context.

## LIMITATIONS OF PREVIOUS LITERATURE

Of most importance, surprisingly little research has compared degrading and erotic pornography use to each other, and to a control condition. This comparison will help clarify whether overt sexual activity or degradation is driving negative outcomes. Discerning where effects originate will, in turn, inform some of the debate concerning the effects of pornography use, given that part of the debate centres around the distinction between pornography types. More day-to-day forms of discrimination (e.g., renting) have also not been investigated. Further, not many studies have investigated the effects of pornography exposure on a specific, unrelated target woman not involved in the pornography. Rather, the focus has been on aggression and violence toward women in general (Allen, D'Alessio et al., 1995; Hald et al., 2010; Wright et al., 2016). Only one pornography study has included ambivalent sexism as an outcome variable in an experimental design. Hald et al. (2013) showed that hostile sexism, but not benevolent sexism, was associated with degrading pornography exposure. Moreover, no studies to date have examined psychological

essentialism as a potential outcome variable in the pornography context. Overall, we know of no study to date that has incorporated several outcome variables that cover the three components of prejudice: affect/evaluation (e.g., sexism), cognition (e.g., objectification; essentialism), and behaviour (e.g., discrimination).

## THE CURRENT STUDY

To address these gaps in the research literature, we utilized an experimental design, randomly assigning participants to watch degrading pornography, erotic pornography, or a control news clip. The control news clips showed men and women discussing Alberta's oil sands in relation to the 2015 Canadian federal election. Participants afterward reported their subjective sexual arousal, to ensure that the pornography clips were indeed sexually stimulating relative to control. This was followed by the completion of measures of ambivalent sexism (affective/evaluative component of prejudice), essentialist representations of women (cognitive component), and objectification of the woman in the clip (cognitive component). Participants then read about a fictitious woman and answered questions about discrimination toward this woman not associated with the pornographic content of the video (behavioural component).

## HYPOTHESES

**Hypothesis 1.** Exposure to degrading pornography and erotica, both sexually explicit, would lead to greater subjective sexual arousal than the non-sexually-explicit control condition.

**Hypothesis 2.** The woman in degrading pornography would be more objectified than the woman in erotica, who would be more objectified than the woman in the control condition (Figure 1, panel D). Given degrading pornography contains scenes that solely focus on a sexualized woman, degrading pornography exposure should lead to the greatest objectification. Erotica emphasizes both a man and a woman and thus objectification of the woman should be lower than degrading pornography, but greater than control. Previous research has shown that sexualized individuals are objectified (Loughnan & Pacilli, 2014), and that focusing on physical attributes leads to objectification (Heflick & Goldenberg, 2014). Erotica is focused on more than just physical attributes (e.g., romance and affection), thus objectification should occur less following erotica exposure (*vs.* degrading pornography exposure).

**Hypothesis 3.** Exposure to degrading pornography and erotica (*vs.* control) leads to:

- a) more hostile sexist attitudes (Figure 1, panel A) because women in both types of pornography can be construed as trying to control men through their sexuality. Hald et al. (2013) showed that hostile (but not benevolent) sexism increased after degrading pornography exposure, providing support for this hypothesis.

- b) more essentialist attitudes toward women (Figure 1, panel A). Essentialist beliefs about gender have been associated with greater sexist attitudes and use of gender stereotypes (Haslam & Whelan, 2008), although psychological essentialism has not been examined within a pornography context. Thus, thinking about women as a distinct group from men, with an unalterable essence, might be increased by watching pornography.

Hypothesis 4. The unrelated target woman would experience the most discrimination after participants view erotica (vs. degrading pornography exposure or control; Figure 1, panel E). Following exposure to the more middle-ground or ambiguous pornography (erotica), behavioural expressions of bias (discrimination) would be the greatest. The aversive racism literature has demonstrated that biases toward ethnic minorities are likely to be expressed when the social context is relatively ambiguous (Hodson et al., 2004).

## METHOD

### Participants

Ninety-two undergraduate men participated in a study on “Attitudes, Censorship, and Sexuality” for course credit or a \$50 draw at a Canadian university. We excluded: self-identified gay or queer men ( $n = 4$ ), men with an unspecified sexual orientation ( $n = 2$ ), those who indicated a peer told them about the specifics of the study ( $n = 1$ ), and those who came close to guessing the hypotheses of the study (see Measures section;  $n = 3$ ). The final sample consisted of 82 males drawn from Psychology ( $n = 64$ ) and Business ( $n = 18$ ) research pools.

The mean age was 20.51 years ( $SD = 2.53$ , range = 18 to 31), most were White ( $n = 58$ ), and approximately half were single ( $n = 43$ ). Participants had watched pornography several times ( $n = 79$ ) or a couple of times ( $n = 3$ ), with an average age of first watching pornography of 13.27 years ( $SD = 1.60$ , range = 10 to 17; see Measures for the exact questions and response options). Thus, none of the sample had *never* watched any pornography. With respect to typical monthly porn viewing, the most frequent response was 21–25 times per month ( $n = 16$ ), followed by 3–5 times per month ( $n = 15$ ), 16–20 times per month ( $n = 13$ ), 11–15 times per month ( $n = 12$ ), 26–30 times per month ( $n = 7$ ), 6–10 times per month ( $n = 6$ ), 1–2 times per month ( $n = 6$ ), and five indicated 31 + times per month. Only two participants indicated no porn viewing per month.

### Procedure

Male participants were recruited via the research pools and posters on campus for a study on the relations between attitudes, sexuality, and opinions about censorship of a clip (which could be a clip of sexually explicit material/pornography) as a cover story, similar to McKenzie-Mohr and Zanna (1990). Participants were told that identification would be checked

and to not sign up if they would be uncomfortable potentially watching pornography.

Each participant arrived individually to a computer lab with private cubicles, was greeted by the first author (female), was briefly introduced to the study, and left alone in a cubicle (with curtain closed) to complete the study on the computer.<sup>3</sup> Then participants were randomly assigned to one of three conditions (control ( $n = 30$ ), degrading ( $n = 25$ ), or erotica ( $n = 27$ )) by the computer. Within each condition, participants were randomly assigned by the computer to watch one of two clips (both of the same nature). Before the clip started, written instructions indicated to put on headphones, and briefly described the clip they would be watching. After watching the clip, participants rated their sexual arousal and, for the purposes of the cover story, gave opinions about censorship.

Next, participants completed questions about attitudes about the woman in the clip and about women in general. Then, participants read a fictitious paragraph describing events in a day of a woman named Jessica and answered questions about discrimination relevant to her. After completing demographic and past sexual behaviour questions, verbal debriefing occurred with a male or female debriefer, of the participants' choosing. Participants were also thanked and compensated. All procedures were approved by the university Research Ethics Board.

### Stimuli

Within each condition, participants were randomly assigned to watch one of two clips (e.g., degrading clip 1 or degrading clip 2); responses were aggregated across the two clips within each condition. Two clips were chosen to ensure that responses were fairly generalizable beyond the idiosyncratic features of any clip. We selected typical pornography clips (e.g., store-bought or shown on The Movie Network) to ensure good face validity to the clip selection process. Each clip was shortened to about ten minutes (range 538–596 seconds), similar to Pornhub's average length of time spent on their site (556 seconds in 2014, 560 seconds in 2015, 576 seconds in 2016, 599 seconds in 2017; Pornhub Insights, 2015, 2016, 2017, 2018). The first and second authors watched all potential clips and agreed on the final selection of clips.

**Degrading pornography clips.** The first author purchased DVDs after consulting with a local sex shop about their top-selling heterosexual pornography DVDs. Each clip contained scenes of oral and vaginal sex between a man and a woman, with most frames focused on the woman and with the man ejaculating directly onto the woman's face, breasts, or both at the conclusion. In one clip, there were scenes of anilingus and fingering of the woman's anus, each by the man. Absent from all scenes were indications of love or affection (Fisher & Barak, 2001).

**Erotica pornography clips.** Two segments were recorded from The Movie Network (representing commonly available erotic material). Each clip contained scenes of oral and vaginal sex between a man and a woman, but also contained some

Table 1. Means and Standard Deviations by Clip/Condition for Independent Ratings of the Clips and All Outcome Variables

| Variable  | Clip/Condition |                    |           |          |                    |           |           |                    |           |
|---|----------------|--------------------|-----------|----------|--------------------|-----------|-----------|--------------------|-----------|
|   | Degrading      |                    |           | Erotica  |                    |           | News Clip |                    |           |
|   | <i>n</i>       | Mean               | <i>SD</i> | <i>n</i> | Mean               | <i>SD</i> | <i>n</i>  | Mean               | <i>SD</i> |
| <b>Independent Ratings of the Clips (From Research Assistants)</b>    |                |                    |           |          |                    |           |           |                    |           |
| Violence <sup>^</sup>   | 3              | 3.33 <sub>a</sub>  | 0.82      | 3        | 1.17 <sub>b</sub>  | 0.41      | 3         | 1.33 <sub>b</sub>  | 0.82      |
| Love/Affection <sup>^</sup>   | 3              | 1.00 <sub>a</sub>  | 0         | 3        | 4.83 <sub>b</sub>  | 1.60      | 3         | 1.00 <sub>a</sub>  | 0         |
| Respect <sup>^</sup>  | 3              | 1.50 <sub>a</sub>  | 0.55      | 3        | 5.67 <sub>b</sub>  | 1.03      | 3         | 5.50 <sub>b</sub>  | 1.38      |
| Degrading <sup>^</sup>  | 3              | 6.00 <sub>a</sub>  | 0.63      | 3        | 1.83 <sub>b</sub>  | 0.41      | 3         | 2.00 <sub>b</sub>  | 1.55      |
| Sexually Explicit <sup>#</sup>  | 3              | 7.00               | 0         | 3        | 7.00               | 0         | 3         | 1.00               | 0         |
| Interesting <sup>§</sup>  | 3              | 3.00               | 1.27      | 3        | 3.33               | 1.63      | 3         | 3.50               | 2.43      |
| Sexually arousing <sup>^</sup>  | 3              | 3.50 <sub>a</sub>  | 1.76      | 3        | 4.83 <sub>a</sub>  | 1.17      | 3         | 1.00 <sub>b</sub>  | 0         |
| <b>Outcome Variable Results (From Participants)</b>                   |                |                    |           |          |                    |           |           |                    |           |
| Sexual arousal  | 24             | 43.10 <sub>a</sub> | 22.92     | 27       | 41.83 <sub>a</sub> | 20.38     | 18        | 6.86 <sub>b</sub>  | 20.74     |
| OB: Sense of mind woman   | 24             | 4.42 <sub>a</sub>  | 1.64      | 26       | 3.50 <sub>b</sub>  | 1.75      | 30        | 2.30 <sub>c</sub>  | 1.34      |
| OB: MSAT  | 25             | 5.82 <sub>a</sub>  | 1.31      | 27       | 4.72 <sub>b</sub>  | 1.50      | 30        | 4.41 <sub>b</sub>  | 1.15      |
| Essentialist entitlement  | 25             | 2.28               | 1.23      | 27       | 2.77               | 1.19      | 30        | 2.31               | 1.19      |
| Essentialist naturalness  | 24             | 3.68               | 1.36      | 27       | 3.47               | 1.47      | 30        | 3.74               | 1.40      |
| Benevolent sexism   | 25             | 4.02               | 0.94      | 27       | 3.74               | 0.82      | 30        | 3.66               | 1.02      |
| Hostile sexism  | 24             | 4.54 <sub>a</sub>  | 0.87      | 27       | 3.82 <sub>b</sub>  | 1.18      | 30        | 3.76 <sub>b</sub>  | 1.13      |
| Overall negative impression   | 25             | 4.68               | 1.21      | 27       | 4.51               | 1.08      | 30        | 4.96               | 1.12      |
| Discrimination index (z-score)  | 25             | 0.03               | 0.57      | 27       | 0.21 <sub>a</sub>  | 0.69      | 30        | -0.21 <sub>b</sub> | 0.77      |
| D: Hard evidence required for allegation of work harassment (z-score) | 24             | -0.06              | 0.99      | 27       | 0.18               | 0.95      | 30        | -0.11              | 1.07      |
| D: Believe allegation of work harassment (z-score)                    | 25             | -0.12*             | 0.99      | 27       | -0.32 <sub>a</sub> | 0.82      | 30        | 0.39 <sub>b</sub>  | 1.06      |
| D: Future salary (z-score)  | 25             | 0.03               | 0.84      | 27       | -0.30 <sub>a</sub> | 1.11      | 30        | 0.25 <sub>b</sub>  | 0.98      |

Note. SD = standard deviation; OB = objectification; MSAT = mental state attribution task; D = discrimination. Within each row, different subscripts indicate the means were significantly different from each other ( $p < .05$ ).

\* = marginally significantly different from control ( $p = .053$ ), not significantly different from erotica.

<sup>^</sup> = Omnibus one-way ANOVA was significant,  $F(2,15) \geq 15.26$ ,  $p \leq .001$ .

<sup>#</sup> = Omnibus one-way ANOVA did not run because the within-groups sum of squares was 0.

<sup>§</sup> = Omnibus one-way ANOVA was not significant,  $F(2,15) = 0.12$ ,  $p = .892$ .

context to the clips (i.e., sexual intercourse with a boyfriend, sexual intercourse after a romantic dinner), and with frames focused on both the man and the woman in the clip. Thus, in contrast to the degrading clips, the erotica clips involved indications of love and/or affection (Fisher & Barak, 2001).

**Control clips.** Two control clips contained no sexual content and involved men and women interacting. Segments were recorded from the Canadian national broadcaster CBC. Both clips showed a panel of men with a woman<sup>4</sup> discussing Alberta's oil sands in relation to the 2015 federal election in Canada.

**Independent ratings of clips.** Three independent male raters, blind to the hypotheses and goals, watched all clips, in an order of their choosing, and rated them on a 7-point scale on seven questions (see Table 1). Scale anchors were: 1 ("no" violence/love and affection/respect or "not at all" degrading/sexually explicit/interesting/sexually arousing) to 4 ("moderate amount of" or "moderately") to 7 ("a lot of" or "very").

Results were similar across the two clips within condition, and thus were collapsed across the clips within condition. Higher scores represent greater levels of the trait. The clips in the degrading condition were rated as significantly more violent, more degrading, and less respectful than the clips in the control or erotica conditions, which did not differ significantly from each other. The clips in the erotica condition were rated as containing significantly more love and affection than the clips in the control or degrading conditions, which did not differ significantly from each other. The clips in the erotica or degrading conditions were rated as significantly more sexually explicit and sexually arousing than the clips in the control condition, and did not differ from each other. Clips across conditions were rated equally, though moderately, interesting, on average. Intraclass correlation coefficients were high across raters ( $\geq .86$ ), except how interesting the clip was ( $-2.81$ ).

## Measures

Measures are listed in the order completed.<sup>5</sup> Scale anchors (except where stated otherwise) ranged from “do not agree” (or “strongly/very strongly/completely disagree”) to “strongly agree” (or “very strongly/completely agree”). Averages were computed if about 80% of the items for each scale or subscale were answered. All measures listed below were completed after viewing a clip. See [Table A1](#) in Appendix A for descriptive statistics across conditions.

**Subjective sexual arousal.** Participants provided a number from 0% (“no sexual arousal at all/presently”) to 100% (“very high sexual arousal (the most sexual arousal you have ever experienced or can imagine)/very high sexual arousal presently”) to reflect their sexual arousal after watching the clip. They answered: “How sexually aroused were you by the clip?” and “How sexually aroused are you presently?” An average was computed, such that higher scores reflected greater sexual arousal ( $\alpha = .77$ ; inter-item  $r = .64$ ).

**Objectification: Sense of mind item and the Mental State Attribution Task (MSAT).** One item on a 1 (“not much mind at all”) to 7 (“a lot of mind”) scale was answered to measure objectification of the woman in the clip: “How much ‘sense of mind’ does the woman in the clip have?” as in [Loughnan and colleagues \(2010\)](#). Also, as part of the MSAT, participants rated “the extent to which you think the woman in the clip that you just watched typically experiences the following psychological states” for 14 items (e.g., imagining, pride, deciding) on a 0 (“not at all”) to 10 (“very much so”) scale (similar to [Haslam, Kashima, Loughnan, Shi, & Suitner, 2008](#); [Loughnan et al., 2010](#)). An average<sup>6</sup> across the 14 items included in the MSAT was computed ( $\alpha = .82$ ). For both measures, higher scores reflect more objectification.

**Essentialist beliefs about women.** A shortened 10-item version of an essentialist beliefs about women scale was completed. Five items represented essentialist naturalness (e.g., “Women are the way they are and do not change”). Five items represented essentialist entitativity (e.g., “Women are usually very similar to each other”), similar to [Hodson and Skorska \(2015\)](#); see also [Roets & Van Hiel, 2011](#)). An average was computed such that higher scores represent greater essentialist entitativity ( $\alpha = .86$ ) and naturalness beliefs ( $\alpha = .78$ ).

**Ambivalent sexism.** Participants completed the Ambivalent Sexism Inventory ([Glick & Fiske, 1996](#)), a 22-item scale with two subscales: hostile sexism (e.g., “Most women interpret innocent remarks or acts as being sexist”) and benevolent sexism (e.g., “Every man ought to have a woman whom he adores”). An average was computed for each subscale such that higher scores represent greater hostile ( $\alpha = .88$ ) and benevolent sexism ( $\alpha = .76$ ).

**Ratings of fictitious target woman (“Jessica”).** Participants read a paragraph about the events in a day of, and about the actions of, a hypothetical target named Jessica (see Appendix B), similar to the so-called “Donald paradigm” (see [Devine, 1989](#)). The information could be interpreted both positively and negatively (i.e., it is ambiguous). After reading the passage,

questions were asked about their overall impression and discrimination against Jessica, recoded such that higher scores represent a more negative impression and more discrimination.

**Overall negative impression of Jessica.** Participants rated Jessica on 12 adjectives (e.g., unfriendly, thoughtful, boring, dependable, intelligent) using scales from “not at all” (0) to “extremely” (10), as in [Devine \(1989\)](#). An average was computed for the 12 items, after recoding the positive items ( $\alpha = .69$ ).

**Discrimination toward Jessica.** Participants answered four questions from 1 (“extremely unlikely”) to 7 (“extremely likely”) about discrimination of Jessica: “If you were a landlord, how likely would you be to rent an apartment or house to Jessica?,” “If you ran a company and were in charge of hiring, how likely would you be to hire Jessica?,” “If you were Jessica’s boss, and she came to you with concerns about being harassed at work, how likely would you be to believe her?,” “If Jessica were to run for mayor of your city, how likely would you be to vote for her?” An additional question about evidence required for an assessment of harassment was asked from 1 (“very little evidence”) to 7 (“a lot of evidence”): “If you were Jessica’s boss, and she came to you with concerns about being harassed at work, how much evidence would you think would be necessary for you to believe her?” Also, participants suggested Jessica’s starting salary and future salary from 1 (“less than \$5,000”) to 12 (“\$150,000 or more”) across two questions. An average (the “discrimination index”) was computed for z-scores of six of the discrimination variables (rent, hiring, believing an allegation of harassment at work, elect as mayor, start salary, future salary;  $\alpha = .79$ ). The seventh item regarding hard evidence required for an allegation of harassment at work, was analysed independently due to low and mostly not significant correlations with the other discrimination variables ( $.04 \leq r \leq .24$ ).

**Relationship status.** Participants indicated their current relationship status. Those in any kind of relationship (e.g., dating, committed relationship) were classified as “not single” (coded 0); otherwise, they were classified as “single” (coded 1).

**Pornography viewing.** Participants answered a question about whether they had ever viewed pornography in their lifetime, with response options of: “yes, once”; “yes, a couple of times”; “yes, several times”; “not really”; “no, never”; “prefer not to say.” Only the “yes, a couple of times” (coded 1) or “yes, several times” (coded 0) responses were selected (see Participants section). Participants also answered two questions about the frequency of watching pornography in an average month in the past year online or on DVD/TV. Response options were “0 times per month” (coded 1), “1–2 times per month” (coded 2), “3–5 times per month” (coded 3), “6–10 times per month” (coded 4), “11–15 times per month” (coded 5), “16–20 times per month” (coded 6), “21–25 times per month” (coded 7), “26–30 times per month” (coded 8), “31 + times per month” (coded 9), or “prefer not to say” (missing data). Seventy participants indicated they did not watch any pornography on DVD/TV. Thus, one pornography viewing variable was created, with the highest frequency of either response chosen. Participants



were also asked about the age at which they first watched pornography. If a range was provided, the average of the end points of the range was used (e.g., for a response of “13–14 years old” 13.5 years was used).

**Age.** Participants self-reported their age in years.<sup>7</sup>

**Ethnicity.** Any of the following ethnicities were selected: White/Caucasian/European, Black/African-American, Asian, Aboriginal, Middle Eastern, Hispanic/Latino/South American, and/or Other (please specify). Responses were coded as “White” (1) or “Other Ethnicity” (0).

**Purpose of study.** Open-ended questions were asked about the hypotheses and if a peer told them about the study. Responses were independently coded by the first and second authors; any discrepancies were resolved via discussion. Responses coded as 2 were highly suspicious and were excluded ( $n = 4$ ), as mentioned previously. Remaining responses were coded as 1 ( $n = 13$ ) for those with minor suspicion and 0 ( $n = 69$ ) for those with no suspicion.

## Data Analysis

Using SPSS version 24, to compare across conditions, one-way analyses of variance (ANOVA) were conducted, with follow-up least square difference (LSD) pairwise comparisons.<sup>8</sup> Condition (degrading vs. erotica vs. control) was the predictor, and the criterion was each of the variables pertaining to the first six Measures listed in the previous section.

## RESULTS

### Subjective Sexual Arousal

The omnibus ANOVA was significant,  $F(2, 66) = 18.42, p < .001$ . Pairwise comparisons indicated similar levels of sexual arousal after exposure to degrading pornography or erotica, but significantly greater arousal than control (*Mean difference*<sub>degrading-control</sub> ( $MD$ ) = 36.24,  $SE = 6.67, p < .001, d = 1.66$ ; *MD*<sub>erotica-control</sub> = 34.97,  $SE = 6.51, p < .001, d = 1.70$ ; Table 1; Figure 2, panel A). Thus, both pornography clips successfully manipulated sexual arousal relative to control.

### Ratings of the Woman in the Clip: Objectification

For ratings of how much perceived *mind* the woman in the clip possessed, the omnibus ANOVA was significant,  $F(2, 77) = 12.30, p < .001$ . Participants in the degrading (vs. control or erotica) condition (*MD*<sub>degrading-control</sub> = 2.12,  $SE = .43, p < .001, d = 1.42$ ; *MD*<sub>degrading-erotica</sub> = 0.92,  $SE = .45, p = .043, d = 0.54$ ) rated the woman in the clip as having significantly less mind (i.e., more objectification). Also, participants in the erotica (vs. control) condition ( $MD = 1.20, SE = .42, p = .006, d = 0.77$ ) rated the woman in the clip as having less mind (Table 1; Figure 2, panel B). Thus, objectification of the woman in the clip increased with greater degradation of the woman in the pornography, as expected.<sup>9</sup>

The omnibus ANOVA was significant for the MSAT ( $F(2, 79) = 8.41, p < .001$ ). Those in the degrading (vs. control or erotica) condition (*MD*<sub>degrading-control</sub> = 1.42,  $SE = .36, p < .001, d = 1.15$ ; *MD*<sub>degrading-erotica</sub> = 1.11,  $SE = .37, p = .004, d = 0.79$ ) rated the woman in the clip as having significantly lower mental states (i.e., more objectification) (Table 1; Figure 2, panel C). The difference between erotica and control was not significant. Thus, objectification of the woman in the clip regarding various mental states (e.g., thoughts, intentions), was greatest for the content that was most degrading.

### Ratings of Women Generally: Essentialist Beliefs about Women

The omnibus ANOVAs and pairwise comparisons were not significant for essentialist entitativity ( $F(2, 79) = 1.41, p = .251$ ) or naturalness ( $F(2, 78) = 0.27, p = .767$ ; Table 1).

### Ratings of Women Generally: Ambivalent Sexism

For hostile sexism, the omnibus ANOVA was significant,  $F(2, 78) = 4.20, p = .019$ . Participants in the degrading (vs. control or erotica) condition (*MD*<sub>degrading-control</sub> = 0.79,  $SE = .29, p = .009, d = 0.78$ ; *MD*<sub>degrading-erotica</sub> = 0.73,  $SE = .30, p = .019, d = 0.70$ ) expressed significantly greater hostile sexist attitudes; no differences were observed between erotica and control conditions (Table 1; Figure 2, panel D). In contrast, the omnibus ANOVA for benevolent sexism was not significant, ( $F(2, 79) = 1.09, p = .342$ ; Table 1), and no pairwise comparisons were significant. Thus, participants who watched degrading pornography expressed more hostile sexist, but not benevolent sexist beliefs, relative to those who watched erotica or the news clips.

### Ratings of Fictitious Target Woman (“Jessica”)

With regard to the discrimination index, the omnibus ANOVA was not significant,  $F(2, 79) = 2.81, p = .066$ . Pairwise comparisons indicated participants in the erotica (vs. control) condition were significantly more discriminatory toward Jessica ( $MD = .43, SE = .18, p = .021, d = 0.59$ ); no other pairwise comparisons were significant (Table 1; Figure 3, panel A).<sup>10</sup>

The omnibus ANOVAs and pairwise comparisons were not significant for the overall negative impression of Jessica ( $F(2, 79) = 1.18, p = .314$ ), and the hard evidence required for an allegation of harassment at work variables ( $F(2, 78) = 0.66, p = .518$ ; Table 1).

## DISCUSSION

In the current study, we found that among men, pornography exposure (vs. watching a news clip) led to greater objectification, greater hostile sexist attitudes, and some greater discrimination. Specifically, both erotica and degrading pornography were equally sexually arousing, supporting Hypothesis 1. But exposure to different types of pornography

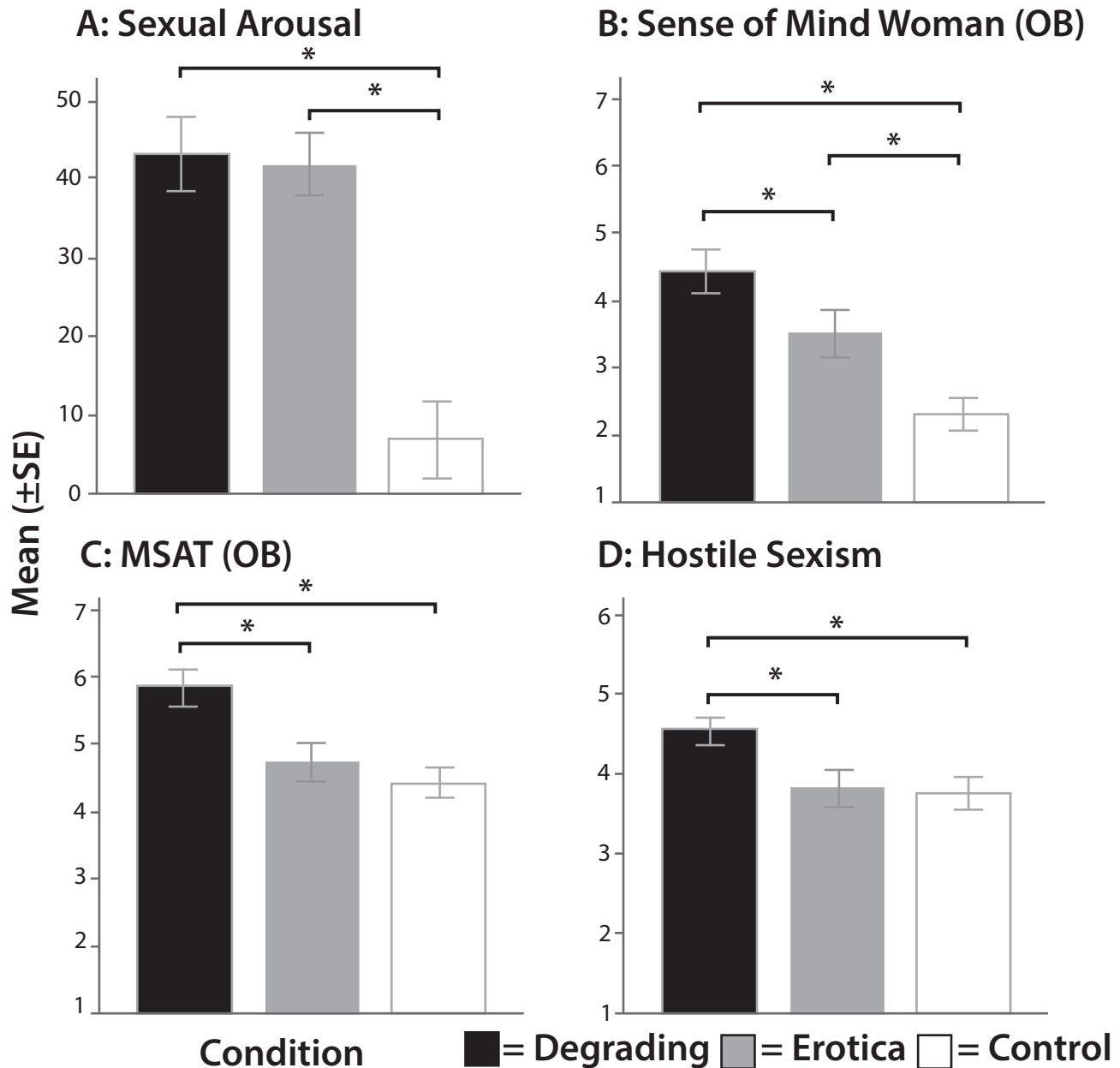


Figure 2. Results of one-way ANOVAs and pairwise comparisons for four dependent variables (sexual arousal (A), objectification-sense of mind woman (B), objectification-MSAT (C), hostile sexism (D)) by condition (degrading, erotica, control). SE = standard error; OB = objectification; MSAT = Mental State Attribution Task. For sexual arousal (A), higher scores indicate more subjective sexual arousal. For B, C, and D higher scores indicate more objectification and more sexist attitudes. Potential ranges: A, 0–100; B, 1–7; C, 1–11; D, 1–7.

\*  $p < .05$

had distinct effects on reactions toward women. Objectification of the woman in the clip in terms of perceived mind, was greatest after watching the degrading content, followed by exposure to erotica, then by exposure to the control condition. For perceptions of various mental states, the woman in the degrading condition was more objectified than in the erotica or control conditions. Thus, Hypothesis 2 was largely, but not completely, supported.

For attitudes toward women generally, only hostile sexism was affected: hostile sexist attitudes were greatest for those participants who watched degrading pornography (vs. erotica or control), partially supporting Hypothesis 3a. Benevolent sexism, the other component of ambivalent sexism, did not differ between the three conditions. Likewise, for psychological essentialism, there were no differences between the three conditions, providing no support for Hypothesis 3b. Yet

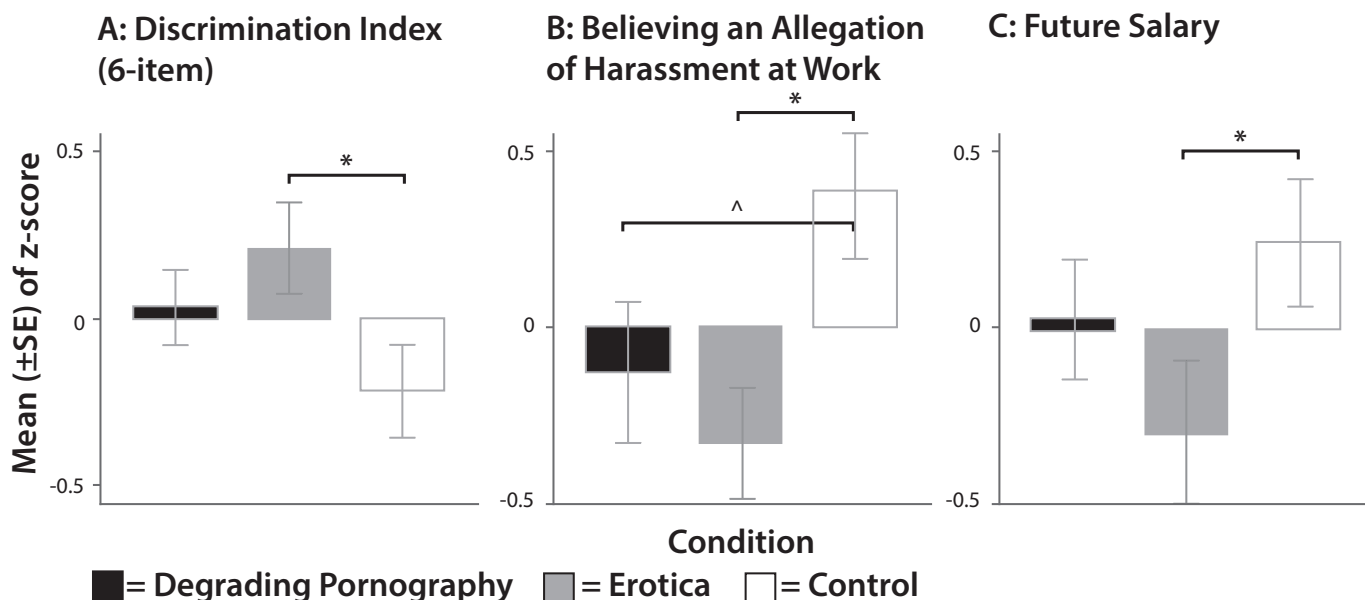


Figure 3. Results of one-way ANOVAs and pairwise comparisons for three outcome variables related to discrimination of a fictitious target woman by condition (degrading, erotica, control). Higher scores indicate more discrimination for the discrimination index (A). Note that the discrimination index is a z-scored average of six items, including belief in an allegation of harassment at work and future salary. Higher scores indicate greater belief in an allegation of harassment at work (B) and greater future salary (C). SE = standard error.

\*  $p < .05$ , ^  $p < .06$

participants exposed to erotica (*vs.* other conditions) were the most likely to discriminate against an unrelated target woman (i.e., Jessica) in terms of more day-to-day forms of discrimination (e.g., renting, hiring), providing some support for Hypothesis 4, predicted based on aversive racism literature showing that biases can emerge in more ambiguous contexts. Although the pairwise comparison between the erotica and news clip condition was significant, this finding would benefit from replication given that the omnibus was not significant.

Broadly speaking, pornography exposure (*vs.* watching a news clip) led to greater objectification, greater hostile sexist attitudes, and discrimination, at least in the form of behavioural intentions. This overall finding supports and extends other research conducted on the relationship between pornography use and objectification, attitudes toward women, and discrimination of women (Allen, D'Alessio et al., 1995; Allen, Emmers et al. 1995; Hald et al., 2010, 2013; Hald & Malamuth, 2015; Wright et al., 2016; cf. Kohut et al., 2016). Across these previous studies, degrading pornography viewing or exposure were generally associated with greater likelihood of committing sexual aggression, greater behavioural aggression (e.g., giving electric shocks to male and female targets), greater attitudes that support violence against women, and greater sexist attitudes. However, many of these studies were not experimental and did not compare two types of nonviolent pornography exposure: erotica versus degrading pornography. We found that reactions toward women depended on the type of pornography participants were exposed to, holding implications for the perspectives arguing for

effects of pornography use/exposure on male viewers (Figure 1). Our findings did not support the conservative-moralistic/radical feminist perspective that all pornography use is harmful (Figure 1, panel A), or the libertarian perspective that all pornography use is not harmful (Figure 1, panel B)– Pornography exposure (*vs.* watching a news clip) was associated with some negative outcomes for either exposure to degrading pornography and/or erotica, and across the outcome variables, the patterns consistent with these perspectives were generally not found (Figure 2).

Instead, the current study findings support the escalating harm perspective (Figure 1, panel D) for one objectification measure (Figure 2, panel B). Objectification and psychological essentialism were two cognitive components of prejudice that were included in the study. We found no evidence that men essentialize women after exposure to pornography. Yet men objectified the woman's perceived sense of mind following an escalating harm pattern: objectification was the greatest after exposure to degrading content, and there was some objectification for erotica (*vs.* control). This finding supports previous objectification research suggesting that objectification occurs when focusing on the physical attributes of a target (Heflick & Goldenberg, 2014). In other words, simply showing bodies performing sexual acts even in the presence of a loving context results in some objectification. Thus, even in the presence of some love or affection in the pornography, some objectification still occurs, but the greatest amount occurs after exposure to degrading pornography.

We found some support for the liberal feminist perspective that degrading pornography exposure is particularly harmful

to women (Figure 1, panel C) with the other objectification measure: perceptions of various mental states of the woman in the clip (Figure 2, panel C). The degrading content was the most influential in driving objectification of the woman in the clip. Additional support for the liberal feminist perspective was found with results of hostile sexism (Figure 2, panel D), but not benevolent sexism. Thus, pornography exposure was not associated with the belief that women need to be protected and are needed to complete men (Glick & Fiske, 1996). In Hald et al. (2013) hostile sexism increased after exposure to degrading pornography. We showed that the degrading, but not the sexually explicit aspects of the pornography, lead to an increase in the belief that women try to control men through their sexuality.

Last, we found some support for the aversive racism/modern prejudice perspective (Figure 1, panel D) on the discrimination index (Figure 3). This measure of day-to-day discrimination (e.g., renting, future salary) is relatively unexplored in pornography research. Exposure to erotica (vs. control) led to the greatest level of discrimination toward Jessica, a fictitious woman unrelated to the pornography, although note that we measured behavioural intentions and not direct behaviour. Erotica is the more socially ambiguous pornography, and thus provides an opportunity for contemporary bias to express itself. Likewise, biases toward ethnic minorities are likely to surface in ambiguous contexts (Hodson et al., 2002, 2004). Indeed, what we found for the discrimination/behavioural intentions outcomes may be construed as aversive sexism. Much of the prior pornography research has focused on violence and aggression, more extreme behaviours that often lie outside of the domain of day-to-day life in many social contexts. Our findings reveal that the effects of pornography exposure can be subtle and may influence how men react to and treat women more generally. Overall, depending on the outcome variable of interest and type of pornography, we found support for the escalating harm, liberal feminist, and aversive racism/modern prejudice perspectives.

### Limitations and Future Directions

Given the immediate ratings of attitudes and discrimination in the current study, we do not know the long-term effects of pornography exposure beyond the time frame used. We did not examine a complete range of types of pornography and different sources of pornography (e.g., online vs. DVD; Tibbals, 2010), all of which are important to consider given the abundance and variety of pornography available. Other limitations include the relatively small sample size, rendering our study underpowered to detect small effects. Also, there was low reliability of the overall negative impression of Jessica measure (which may influence predictive ability of the measure), and reliance on undergraduate students, all of whom had previous experience with use of pornography, and in particular online pornography. It is noteworthy however, that we found negative effects of pornography exposure even though undergraduates tend to be more liberal on average (Henry, 2008). Also, only

one aspect of objectification, which is a broad concept, was covered (Loughnan et al., 2010; Nussbaum, 1995). One measure was a single item, which can be less reliable and valid than multi-item measures.

In addition to addressing the limitations above, replication in a representative sample would be helpful with generalization of the results. Also, using non-Western samples would be helpful, given the over-reliance on WEIRD (western, educated, industrialized, rich, democratic) samples (Henrich, Heine, & Norenzayan, 2010). Regarding our clips, vocalizations/phrases, including “dirty talk,” were left in the clips to maintain face validity. The vocalizations/phrases in the degrading clips sometimes differed from those in the erotica clips (e.g., “dirty talk” in degrading clips only) and it would be useful to examine the extent to which such differences in vocalizations/phrases across the types of pornography contribute to negative attitudes and discrimination. Also, the degrading clips were rated by independent coders as highly degrading but also moderately violent. There was some hitting of the buttocks in the degrading clips, which may have contributed to the perception of violence, but it may be difficult to fully parse degradation from violence in degrading pornography, which should be investigated in future studies. It is unknown how women would react to experimental exposure to degrading versus erotic pornography. We know that for some women, benevolent sexism increases after exposure to degrading pornography (Hald et al., 2013), but in general research on the reactions of women to pornography exposure is limited (Ash-ton, McDonald, & Kirkman, 2018). Additionally, using a pre-post design would provide valuable information about changes in attitudes and behaviours within subjects after pornography exposure. Last, assessing actual behaviours (e.g., as in McKenzie-Mohr & Zanna, 1990) would be useful for generalization of our findings.

### Strengths and Implications

Pornography use is abundant and viewership is high. Thus, it is important to study the effects of watching pornography on negative attitudes and discrimination, and especially the effects of watching different types of pornography, some of which have been described as degrading to women. There are several perspectives on the impacts of pornography use. Our research informs this debate by experimentally manipulating exposure to two types of pornography. To approximate real-life pornography exposure, we used pornography that is easily accessible to the public: DVDs purchased in a standard sex shop and clips from The Movie Network. Our approximately 10-minute exposure time is comparable to typical exposure times in natural settings (e.g., Pornhub Insights, 2015, 2016, 2017, 2018). Of critical importance, the fictitious target woman used in the discrimination part of the study was not featured in any clip, suggesting that effects may generalize beyond watching pornography, and especially in users of erotica. These strengths help to advance our knowledge of the effects of pornography

use, including different types of pornography, on attitudes and discrimination toward women.

Our study findings also have implications for those aiming to reduce any negative effects of pornography exposure on men. To achieve this aim, it seems pertinent that the following variables be taken into account and targeted: 1) type of pornography; 2) the choice of criteria, and 3) whether the outcome is targeted at the porn actress, women generally, or a specific woman unrelated to the pornography clip. For example, to reduce hostile sexist attitudes toward women generally as a result of pornography watching, men who watch degrading pornography should be especially targeted. Strategies that have been used to reduce aversive racism might work to reduce the effects of aversive sexism shown in the current study. For example, focusing the categorization process on representing women as people (*vs.* “others” or objects) should help to reduce negative intergroup biases including discrimination, and especially for users of erotica. One way to achieve these goals would be to include discussions of pornography use, including use of different types of pornography, and its effects within sex education curricula and sexuality courses. In support of this approach, the relationship between online pornography viewing and objectification was weaker among participants with more porn literacy education (Vandenbosch & van Oosten, 2017). Another suggestion is accompanying pornography with educational materials that provide information about the fantasy aspects of pornography use, the potential effects of pornography use on viewers, including use of different types of pornography, and links to resources about sexual activity.

Our findings have implications for the various perspectives presented in this article on the negative effects of pornography use/exposure. The perspectives that represented more black-and-white approaches (e.g., all pornography use is either harmful or not harmful) were generally not supported, whereas the perspectives that were more nuanced regarding the type of pornography participants were exposed to were partially supported. However, no single perspective was fully supported, suggesting that multiple perspectives with a nuanced approach offer insights into the negative effects of pornography use, contingent on the specific outcome and type of pornography. Proponents of the various perspectives may need to consider the other approaches and the nuances found in the current study and other studies (see below) when discussing effects of pornography use. It would be interesting to examine whether proponents of the various perspectives distinguish between attitudes, cognition, and/or behaviours in their beliefs about the effects that pornography use has on viewers.

Although our results demonstrate that pornography use, including erotic pornography, is harmful to women, there are several points to note. Our effect sizes were medium to large, but should be interpreted cautiously given the small sample size. Moreover, our findings address group differences, but men nonetheless show variability in their responses. For example, men low in agreeableness (Hald et al., 2013) and men who are masculine in terms of gender role traits (McKenzie-Mohr & Zanna, 1990) are more prone to be affected by exposure to

pornography. It would be valuable for future research to consider such factors as moderators of the experimental results presented here, especially utilizing different types of pornography. Also, some research suggests positive consequences of viewing pornography. For example, some pornography viewing can help with sexual communication between partners, relationship satisfaction, and broadening the sexual activities of partners, especially for couples engaging in similar levels of pornography viewing (e.g., Daneback, Traeen, & Mansson, 2009; Willoughby, Carroll, Busby, & Brown, 2016), indicating that pornography use is not universally negative.

## Conclusion

Overall, the current study is consistent with arguments that pornography use exerts negative effects in terms of how men think about, evaluate, and behave toward women. Moreover, it demonstrates negative effects of both degrading and erotic pornography exposure, depending on the measure of interest. Thus, our findings do not completely support any single perspective on the impact of pornography use, but rather suggest nuance regarding the type of pornography. We found very little support for some positions (i.e., all pornography use is harmful/conservative-moralistic/radical feminist perspective, and all pornography use is harmless/libertarian perspective), but evidence supporting others: sometimes degrading pornography use is harmful (liberal feminist perspective), sometimes erotica use is harmful (aversive racism/modern prejudice perspective), and at times their type of harm varies depending on the criteria considered. Generally, hostile sexist attitudes toward women increased with exposure to degrading pornography, but discrimination toward an unrelated target woman increased with exposure to erotica (*vs.* control). As such, advocates of the various perspectives may be speaking past one another when considering their outcome of choice. With intergroup bias being complex, attempts to address the potentially harmful effects of pornography use on women should examine multiple types of pornography and multiple types of outcomes.

## NOTES

- 1 On February 22, 2018, Pornhub was ranked as 35 on the top 500 global websites according to Alexa, a company that tracks traffic online daily (“The top 500 sites on the web,” n.d.). Pornhub has regularly been ranked in the top 50 since April 2017 (“How popular is pornhub.com?” n.d.).
- 2 Pornography is also viewed by women. In 2017, 26% of Pornhub visitors were women (Pornhub Insights, 2018) and Hald et al.’s (2012) estimates of pornography viewing by women across several international studies were between 30% and 86%. We focus on pornography viewed by heterosexual men because most pornography is directed toward and viewed by men (Hald et al., 2012), and given our interest in anti-women prejudice.
- 3 Participants completed scales measuring individual differences (e.g., right-wing authoritarianism) that are not part of the main study.

- 4 In one clip the host was a woman; participants were instructed to rate the panelist woman and not the host woman in the follow up questions.
- 5 Only the variables of interest are included. Please contact the first author for all variables used in the study, and for any other methodological details regarding the study.
- 6 Participants originally completed 37 items from Haslam et al. (2008). The results for some items are not included because pornography purposefully presents woman as “tasting,” “expecting,” “hearing,” “seeing,” “wanting,” “desiring,” and “wishing,” and having primary emotions of specifically passion, pleasure, and excitement. In hindsight, these types of measures (previously used, for example, with regard to perceptions of animals), were not suitable for assessing women in pornography.
- 7 One participant reported his age as “10.” However, the first author checked all IDs to ensure a minimum age of 18 years, so this value was changed to 18. Results were not affected using mean substitution.
- 8 Correlations were computed between the demographic variables and the outcome variables (e.g., sexual arousal, discrimination). Some significant correlations were found with age, ethnicity, compensation, ever watched pornography, and age watched first pornography (see Table A2 in Appendix A). Analyses were run with and without controlling for the demographic variables and results were largely the same (contact the first author for full results). We present results not controlling for the demographic variables.
- 9 We also measured perceptions of mind regarding the male in the clips. When we covaried out this variable from perceived sense of mind of the woman, the results were largely the same except that the degrading versus erotica pairwise comparison was no longer statistically significant.
- 10 This effect is driven by the believing an allegation of harassment at work ( $F(2, 79) = 4.22, p = .018$ ) and future salary variables ( $F(2, 79) = 2.19, p = .118$ ). To assess which variables were driving the effect, we investigated each of the questions that make up the discrimination index individually. Specifically, participants in the erotica (vs. control) condition ( $MD = -0.72, SE = .26, p = .006, d = -0.76$ ) indicated less likelihood to believe Jessica if she came to them with concerns about being harassed at work. This was also the case, but at a marginal level of significance, for participants in the degrading (vs. control) condition ( $MD = -0.51, SE = .26, p = .053, d = -0.50$ ). Participants in the degrading and erotica conditions were similar in their lower levels of believing Jessica if she came to them with concerns about being harassed at work (Table 1; Figure 3, panel B). For future salary, participants who watched erotica (vs. control) indicated they would pay Jessica a significantly lower future salary ( $MD = -.55, SE = .26, p = .040, d = -0.53$ ). No other pairwise comparisons were significant (Table 1; Figure 3, panel C).

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**APPENDIX A**

Table A1. Descriptive Statistics for All Continuous Variables Across Conditions

| Variable   | <i>n</i> | Mean  | <i>SD</i> | <i>SEM</i> | Median | Mode  | Skewness | <i>Kurtosis</i> | <i>Range</i> | <i>Possible Range</i> |
|--|----------|-------|-----------|------------|--------|-------|----------|-----------------|--------------|-----------------------|
| Sexual arousal   | 69       | 33.15 | 26.30     | 3.17       | 35.00  | 0     | 0.27     | -0.96           | 0-87.50      | 0-100                 |
| OB: Sense of mind woman  | 80       | 3.33  | 1.78      | 0.20       | 3.00   | 3.00  | 0.34     | 0.92            | 1-7          | 1-7                   |
| OB: MSAT   | 82       | 4.94  | 1.44      | 0.16       | 4.96   | 6     | 0.13     | -0.60           | 1.71 to 8.38 | 1-11                  |
| Essentialist entitativity  | 82       | 2.45  | 1.21      | 0.13       | 2.10   | 2.00  | 0.86     | -0.23           | 1-5.40       | 1-7                   |
| Essentialist naturalness   | 81       | 3.63  | 1.40      | 0.16       | 3.60   | 3.60  | 0.00     | -0.62           | 1-7          |                       |
| Benevolent sexism  | 82       | 3.80  | 0.93      | 0.10       | 3.73   | 2.91  | -0.04    | -0.46           | 1.45-5.82    | 1-7                   |
| Hostile sexism   | 81       | 4.01  | 1.12      | 0.12       | 4.18   | 4.18  | -0.41    | -0.43           | 1.27-6.10    |                       |
| Overall negative impression  | 82       | 4.73  | 1.14      | 0.13       | 4.83   | 4.25  | -0.18    | -0.10           | 2-7.55       | 0-10                  |
| Discrim index <sup>#</sup>   | 82       | 0     | 0.70      | 0.08       | 0.13   | 1.36  | -0.18    | -0.20           | -1.78-1.58   |                       |
| Discrim: Believing an allegation of harassment at work <sup>#</sup>                  | 82       | 0     | 1         | 0.11       | -0.23  | -0.89 | -0.12    | -0.81           | -2.21-1.76   |                       |
| Discrim: Hard evidence required for an allegation of harassment at work <sup>#</sup> | 81       | 0     | 1         | 0.11       | 0.04   | 0.04  | 0.47     | 0.25            | -1.49-3.09   |                       |
| Discrim: Future salary <sup>#</sup>  | 82       | 0     | 1         | 0.11       | 0.15   | 0.15  | -0.54    | -0.07           | -2.29-1.55   |                       |
| Pornography viewing  | 82       | 5.29  | 2.12      | 0.23       | 5.50   | 7.00  | -0.12    | -0.97           | 1-9          | 1-9                   |
| Age  | 82       | 20.51 | 2.53      | 0.28       | 20.00  | 18.00 | 1.76     | 4.12            | 18-31        | n/a                   |
| Age of first porn watching   | 81       | 13.27 | 1.60      | 0.18       | 14.00  | 14.00 | -0.32    | -0.09           | 10-17        | n/a                   |

Note. *SD* = standard deviation; *SEM* = standard error of the mean; OB = objectification; MSAT = mental state attribution task; Discrim = discrimination.

<sup>#</sup> = descriptive statistics represent z-scores of these variables.

Table A2: Correlations between Sexual Arousal, Attitudes, Overall Impression, Discrimination, and Demographic Variables

| Variable  | Age   | Relationship Status | Ethnicity | Comp. | Research Pool | Suspicion | Pornography Viewing | Age Watched First Porn | Ever Watched Porn |
|---|-------|---------------------|-----------|-------|---------------|-----------|---------------------|------------------------|-------------------|
| Sexual arousal  | -.20  | .21                 | -.16      | -.24  | .15           | -.15      | .07                 | .05                    | -.12              |
| OB: Sense of mind woman   | -.11  | .01                 | .06       | -.15  | -.00          | .09       | -.18                | .20                    | .34**             |
| OB: MSAT  | -.05  | .06                 | .17       | .00   | .09           | .13       | .02                 | .17                    | .26*              |
| Essentialist entitativity   | -.06  | .21                 | -.41**    | -.12  | .22           | -.12      | .20                 | .22*                   | -.04              |
| Essentialist naturalness  | .02   | .11                 | -.13      | .03   | .04           | -.07      | .12                 | .23*                   | -.02              |
| Benevolent sexism   | -.02  | .06                 | -.24*     | .06   | .20           | .06       | .02                 | .10                    | .08               |
| Hostile sexism  | -.23* | .12                 | -.03      | .11   | .12           | -.00      | .09                 | .11                    | -.02              |
| Overall negative impression   | -.02  | .18                 | -.02      | -.16  | -.04          | .04       | .18                 | -.11                   | -.03              |
| Discrim index   | -.19  | -.05                | -.13      | -.06  | .17           | -.16      | -.07                | .16                    | .09               |
| Discrim: Believing an allegation of harassment at work                  | .07   | .15                 | .11       | .13   | -.14          | .10       | .07                 | -.14                   | -.09              |
| Discrim: Hard evidence required for an allegation of harassment at work | .08   | .06                 | .06       | -.04  | .04           | -.01      | .07                 | -.09                   | .19               |
| Discrim: Future salary  | .11   | -.13                | .12       | .10   | -.18          | .11       | -.06                | -.17                   | -.06              |

Note. *n* = 68 to *n* = 82. OB = objectification; MSAT = mental state attribution task; Discrim = discrimination; Comp. = compensation. Relationship status was coded as "not single" (0) or "single" (1). Ethnicity was coded as "White" (1) or "other ethnicity" (0). Compensation was coded as "course credit" (0) or "draw" (1). Research pool was coded as "psychology" (0) or "business" (1). Suspicion was coded as "not suspicious" (0) or "somewhat suspicious" (1). Ever watched porn was coded as "several times" (0) or "a couple of times" (1). See Measures section for more information about the demographic variables.

\* *p* < .05. \*\* *p* < .01.



## APPENDIX B

“I ran into my old acquaintance Jessica the other day, and I decided to go over and visit her, since by coincidence we took our vacations at the same time. Soon after I arrived, a saleswoman knocked at the door, but Jessica refused to let her enter. She also told me that she was refusing to pay her rent until the landlord repaints her apartment. We talked for a while, had lunch, and then went out for a ride. We used my car, since Jessica’s car had broken down that morning, and she told the garage mechanic that she would have to go somewhere else if

he couldn’t fix her car that same day. We went to the park for about an hour and then stopped at a shoe store. I was sort of preoccupied, but Jessica bought some shoes, and then I heard her demand her money back from the sales clerk. I couldn’t find what I was looking for, so we left and walked a few blocks to another store. The Red Cross had set up a stand by the door and asked us to donate blood. Jessica lied by saying she had diabetes and therefore could not give blood. It’s funny that I hadn’t noticed it before, but when we got to the store, we found that it had gone out of business. It was getting kind of late, so I took Jessica to pick up her car and we agreed to meet again as soon as possible.”