



Sexual Frustration, Binary Gender, And Coercion: A Mixed-Method Experimental Study

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Abstract

Background: As the #metoo movement sadly revealed, sexual coercion is common in the normal population. To understand underlying mechanisms better, we investigated the relationship between sexual frustration and coercion in an online study. **Sample:** Participants ($N = 116$) were at least 18 years old; mean age was 21.14 (3.63). Seventy-five percent of participants were university students. On average, participants (59.48% female) reported identifying as primarily heterosexual, having had intercourse within the last two weeks, and sometimes experiencing orgasmic difficulties. **Method:** We assigned the participants to a control condition (satiation group) or an experimental condition (frustration group). The satiation group was instructed to masturbate until climax while watching a pornographic video. The frustration group was instructed not to climax. Afterwards, all participants reported whether they orgasmed and what their level of sexual arousal, disgust, and frustration was. Finally, they filled out the Tactics to Obtain Sex Scale (Camilleri et al., 2009) which proposes coaxing and coercive behaviors in a hypothetical scenario. **Results:** A two-way ANOVA estimating effects of *CONDITION* ($F(1,110) = 0.046, p = 0.830, \omega^2 = 0.000$), *GENDER* ($F(1,110) = 0.347, p = 0.557, \omega^2 = 0.000$), and their interaction ($F(1,110) = 0.528, p = 0.469, \omega^2 = 0.000$) on coercion was non-significant. **Discussion & Conclusion:** We could not find evidence in favor of our hypotheses that sexual frustration and male gender predict coercion. Possible explanations for our results are presented. The relationship between sexual arousal, frustration, and coercion seems to be more complex than previously assumed.

Keywords: Sexual coercion, sexual frustration, gender effect, sexual arousal

Sexual Frustration, Binary Gender, and Coercion: A Mixed-Method Experimental Study

The #metoo movement revealed sexual harassment, sexual coercion, and sexual aggression are still common behaviors in our current society. In 2021, the Bundeskriminalamt (BKA; 2021), the Federal Criminal Police Office, registered approximately 10,000 cases of sexual assaults in Germany. Nonetheless, Sable et al. (2006) identified several barriers to reporting sexual assaults. The barriers deemed most important in college students are shame, guilt, and embarrassment; fear of other people finding out about the assault; and fear of not being believed (Sable et al., 2006). These barriers can keep persons who have been victimized from reporting sexual assaults. Moreover, the relative number of male victims of sexual aggression seems to be underestimated. Particularly official reports commonly show a large gender-gap among victims and perpetrators of sexual violence. For instance, the BKA reported the majority of victims were female (approx. 94%), while the suspects were mostly male (approx. 99%). Likewise, Cortoni et al. (2016) found in a meta-analysis that about 2% of sentenced sexual offenders across different countries were female. Yet, it is estimated in convenience samples that approximately 30% of men (Zinzow & Thompson, 2015) and approximately 15-27% of women (Benbouriche & Parent, 2018) performed a sexually aggressive or coercive behavior once in their life. In conclusion, there appears to be not only a general but also a specific trend of underestimating the prevalence of sexual coercion.

What do we know about sexual coercion?

Sexual coercion is defined as “any unwanted oral, vaginal, or anal penetration as a result of verbal or physical pressure, including rape” (Young et al., 2017, p. 795f) but, more specifically, as strategies to involve someone else in sexual activities when there is a lack of free or denied consent (e.g. Benbouriche & Parent, 2018). Sometimes sexual coercion is set apart from aggression through the behavior’s intensity. For example, DeGue et al. (2010) differentiated between physical sexual aggression (e.g. restraining someone against their will)

and nonphysical sexual coercion (e.g. manipulation). Koss et al. (2007) developed a scoring system for the revised Sexual Experiences Survey in which they categorized victims in ascending order in non-victim, unwanted sexual contact, sexual coercion, attempted rape, and rape victim. In this paper, we use the terms sexual coercion, aggression, and violence interchangeably and define sexual coercion as an umbrella term covering physical and non-physical behaviors. A number of predictors have been investigated to explain sexual coercion.

Commonly studied predictors of sexual coercion are rape-promoting beliefs in men (also known as *rape myths*; Samji & Vasquez, 2020; Young et al., 2017), personality traits such as the “dark triad” in men (Lyons et al., 2020) and narcissistic and histrionic traits in women (Hughes et al., 2020), pornography use in both men and women (Wright et al., 2015; Hughes et al., 2020), as well as sexual arousal (Ariely & Loewenstein, 2006) and sexual frustration in men (Thomas & Garzalka, 2012). Sexual arousal in particular has been proposed as an inhibiting factor on executive functioning by Suchy et al. (2019) and, in the next step, as a risk factor of unsafe sex practices and sexual coercion by Ariely and Loewenstein (2006). The latter authors found immediate sexual stimuli were processed favorably despite a repelling nature: the male participants were more willing to hypothetically engage in morally questionable (e.g. aggression, coercion, paraphilia) and unsafe sexual behaviors (e.g. risk of STDs) when aroused, even though they rated the same stimuli as non-attractive beforehand. To our knowledge, this study has not been replicated in women yet. Nonetheless, Bondü and Birke (2021) studied the prevalence of aggression-related sexual fantasies (ASFs) in men and women. The research team found that a number of sexual activities, consensual and non-consensual ones, can be categorized into three groups: slightly painful, coercive, and intensely violent. The ASFs were less often reported with growing intensity, and men reported a higher frequency of ASFs than women (Bondü and Birke,

2021). However, the overall structure was similar for both genders and the difference in frequency was not significant in a multiple regression analysis (Bondü and Birke, 2021). This suggests the structures underlying ASFs might be comparable in women and men (Bondü and Birke, 2021). The items Ariely and Loewenstein asked the participants to rate are somewhat comparable to the ASFs Bondü and Birke measured. In both studies, participants were asked to rate two consensual items on bondage during sex (Ariely & Loewenstein, 2006; Bondü & Birke, 2021). Another similarity is that in both studies an item on ignoring a sexual partner's protest was presented (see Appendix A for all overlapping items; Ariely & Loewenstein, 2006; Bondü & Birke, 2021). Therefore, the link between sexual arousal and sexual aggression identified by Ariely and Loewenstein could extend to women based on the comparable structure of ASFs that Bondü and Birke found.

In addition to arousal, frustration has been proposed as a promoting factor of sexual coercion (e.g. Thomas & Garzalka, 2012). The idea that frustration causes aggression was first popularized by Dollard and colleagues (1939) with the frustration-aggression hypothesis. Frustration can be thought of as a state of negative affect and distress stemming from a failed attempt to obtain a goal. Thomas and Garzalka (2012) identified a significant relationship between negative affect and sexual coercion in a group of male university students. Specifically, the researchers divided participants into two groups based on their inclination to coerce (i.e. previous perpetration, higher likelihood to rape, higher rape myths acceptance, higher hostility towards women). During a follow-up meeting, half of the participants were insulted, seemingly at random, by a female research confederate after which they reported their negative affect (Thomas & Garzalka, 2012). Then, the participants read a non-sexual coercive vs. a sexually coercive narrative (Thomas & Garzalka, 2012). The participants reported identification with the main character and negative affect (Thomas & Garzalka, 2012). Last, they reported how likely they are to sexually coerce a second female research

confederate (Thomas & Garzalka, 2012). In line with the participants' group assortment, participants of the group with a high inclination to coerce identified with the coercive story character more than participants of the low inclination group which, in turn, predicted higher likelihood and anticipated enjoyment of coercing the second research confederate (Thomas & Garzalka, 2012). Therefore, the research team showed that these participants are likely to coerce based on their previous behavior, attitudes, and fantasy. In the next step, Thomas and Garzalka found that sub-anger (i.e. frustration, irritation, annoyance) was higher in the group with high inclination to coerce after being insulted. This suggests that there is a relationship between sexual coercion and frustration. The ratings of the participants of the group with a low inclination to coerce support this claim. Specifically, high negative affect after being insulted predicted likelihood of coercing the second female research confederate in these participants (Thomas & Garzalka, 2012). Thus, induced frustration could elicit sexually coercive behaviors in participants who are unlikely to coerce otherwise. Therefore, the authors established a link between sexual coercion and frustration in men.

Aside from general frustration, sexual frustration has been put forward as a promotor of aggression (e.g. Lankford, 2021). Lankford (2021) proposes three motives that can result in sexual frustration: unmet desire to have sex, lack of available partners, and no satisfaction from performed activities. Even though Lankford applies the last motive to forensic populations, it might be applicable to the normal population too. Namely, Frederick et al. (2018) identified multiple orgasm gaps where sexually active men of any sexuality had a higher orgasm frequency than sexually active women of any sexuality. This would indicate that especially heterosexual women, who scored lowest on orgasm frequency (Frederick et al., 2018), are least satisfied from performed sexual activities and, thus, most frustrated. Multi-orgasmic women have also reported sexual arousal increased, persisted, or decreased following single orgasm (Gérard et al., 2021) which suggests that a sub-level of

dissatisfaction could remain after single orgasm. Thus, some women could be (slightly) sexually frustrated even if they orgasmed once. In conclusion, sexually active women may be more frustrated than sexually active men on average.

The Present Study

In the current study, we investigated the relationship between sexual frustration and coercion via sexual arousal in women and men drawn from a convenience sample in a mixed-method experimental study. We expanded on Thomas and Garzalka's (2012) findings by examining (sexual) frustration as a predictor of sexual coercion in both women and men. In doing so, we differentiated between sexual arousal and frustration and, thus, closed a gap in Ariely and Lowenstein's (2006) study where frustration was not measured while participants were aroused and unable to orgasm. Last, we assessed whether men and women are similarly likely to perform coercive behaviors in hypothetical scenarios by asking them to fill out the Tactics to Obtain Sex Scale (TOSS; Camilleri et al., 2009). The behaviors proposed in the TOSS scale (Camilleri et al., 2009) largely overlap with the coercive ASFs established by Bondü and Birke (2021). For example, Bondü and Birke asked whether the participants fantasized about "[persuading] somebody to engage in sexual acts" (p. 1387) and an item in the TOSS scale proposes whether the participants would "explain that [their] needs should be met" (p. 972, Camilleri et al., 2009; see Appendix A for a full set of comparable items). Therefore, this study builds on Bondü and Birke's research by assessing how likely the participants are to enact some of the ASFs.

We try to maximize the explanatory power of our design by taking into account the three underlying principles of causality, i.e. association, non-spuriousness, and time order (see Clemens et al., 2021, for further information). Association refers to a significant correlation between the independent and dependent variables; non-spuriousness refers to the exclusion of confounding variables by assigning participants to their conditions randomly;

and time order where the independent variable occurs before the dependent variable. Here, frustration and gender are independent variables and coercion a dependent variable. We assessed the correlation of frustration and coercion, assigned participants randomly to the experimental (frustration) vs. control (satiation) condition, and manipulated frustration before assessing coercion. In this study, we treated gender as a categorical variable. In line with Thomas and Gorzalka's (2021) findings and Lankford's (2021) review, we expect frustration and male gender, following official records (e.g. BKA, 2021; Cortoni et al., 2016), to predict coercion. Our findings should give some insight into the willingness of women and men to perform coercive behaviors and the way frustration influences such willingness. In the end, this could extend the current body of knowledge on opportunistic sexual aggression (e.g. date rape) and intimate partner violence in the general public.

Method

The study was approved on behalf of the Faculty Board by the Ethics Committee of the Faculty of Behavioral and Social Sciences of the University of Groningen on February 22, 2022. All data analyses were conducted in JASP (Version 16).

Inclusion and Exclusion

Our inclusion criteria were as follows: participants must have been (a) proficient in English, (b) older than 18 years of age, and (c) must have identified as primarily heterosexual (incl. bisexual 50/50 with a preference for the opposite sex). This was to ensure the participants understand our instructions and are able to give consent by themselves. An exclusion criterion was identifying as primarily homosexual. This was because the study involved heterosexual erotic material, which could arouse participants who identify as primarily heterosexual vs. homosexual differently. Since we analyzed gender effects and expected too few participants identifying with a non-binary gender, we excluded participants identifying with a non-binary gender for the analysis.

Participant Characteristics

In the present sample, 69 (59.48%) participants identified as female and 47 (40.52%) as male. The overall age range was 18-43 with people < 25 years of age equal to 107 (92.24%) and a mean of 21.14 ($SD = 3.63$). Participants identified as primarily heterosexual with a mean of 87.284 ($SD = 15.09$) on a scale from *bisexual* (50) to *heterosexual* (100). On average, the participants reported they had sexual intercourse *within the last two weeks* (*Mdn*) and *sometimes* (*Mdn*) experience orgasmic difficulties.

Sampling Procedures

The participants came from a convenience sample. We advertised our study on social media (i.e. WhatsApp and LinkedIn) and on a platform for first-year psychology university students (SONA). In return for participation, the first-year students of SONA were awarded with one credit for their introductory Research Methods class (Course Code: PSBE1-28). Below, these samples are referred to as the *network* and *student* sample, respectively. Data collection started on April 5th for the network sample and April 14th for the student sample. Data collection ended for both samples on May 16th, 2022. In total, 401 persons opened the link to our study and 361 filled out at least one question aside from the consent questions. For the analysis, we excluded 245 responses for various reasons. Most participants were excluded because they did not complete the study or took too short to complete the study (i.e. under 15min even though the presented video is about 10min; see Appendix B for further information). In the end, there were 116 valid responses left. Eighty-seven (75%) participants of the final sample came from the student sample.

Materials

Demographic and Sex Life-Related Questions

There were six questions we asked the participants to report before taking part in the study. These were “How old are you?”, “What is your gender?”, “What is your sexual

orientation? I identify as...”, “When was the last time you had sex?”, “Do you experience orgasmic difficulties when engaging in sex?”. Age was reported in whole numbers. Gender was reported using a multiple-choice question with answer options *male, female, non-binary / third gender, and prefer not to say*. Sexual orientation was rated on a continuous scale ranging from *homosexual* (0) over *bisexual* (50) to *heterosexual* (100). The last time the participants had sex was reported on a scale with seven answer options, namely, *never* (0), *longer* (1), *in the last two months* (2), *in the last month* (3), *in the last two weeks* (4), *in the last week* (5), and *don't know / prefer not to say* (no score). Orgasmic difficulties were reported on a 5-point Likert scale ranging from *never* (0) to *always* (5), plus an answer option *don't know / prefer not to say* that was not scored.

Erotic Material

The pornographic video (9min42sec; Wow Girls & Silvie, n.d.) that we presented to the participants can be considered somewhat female-friendly. The video had a relatively slow-paced plot and showed, in chronological order, one couple kissing, manually stimulating each other's genitals, and engaging in fellatio and vaginal-penetrative intercourse. There were few close-ups indicating that there was little objectification and the female showed sexual agency by refusing some of the male's attempts to make her act in a certain way, initiating sexual intercourse, and focusing on female pleasure (for more information on sexual objectification and agency in pornography see Fritz & Paul, 2017). In fact, the video had been validated in another, not yet published pilot study where it was rated as sexually arousing by women (Lakhsassi, 2021).

In this pilot study by Lakhsassi (2021), 16 female participants watched two different heterosexual porn videos and rated them on their experiences of arousal and disgust. The video used in the present study, was rated on average with 4.81 ($SD = 1.38$) on a scale from *not at all arousing* (1) to *very strongly arousing* (7; Lakhsassi, 2021). Further, the

participants described in which part of the study they started to get aroused: 0:40min to 4:40min (Lakhsassi, 2021). Ten participants reported starting to feel aroused within the first two minutes, and one participant reported that they did not find any part arousing (Lakhsassi, 2021). Most participants indicated that they did not at all feel disgusted by the video ($n = 11$; Lakhsassi, 2021). The other participants reported seeing the actors kissing with tongue, facial expressions of the male, saliva of one actor on the other, fellatio, and the male licking his fingers as disgusting (Lakhsassi, 2021). One of the disgust responses was invalid; the participant described anal sex in the video as disgusting but the video does not show any anal sex (Lakhsassi, 2021). In direct comparison, 56.25% ($n = 9$) of the participants favored the video used in the present study over the other one (Lakhsassi, 2021).

Tactics to Obtain Sex Scale

The questionnaire we used to assess hypothetical engagement in coaxing and coercion was the TOSS scale (Camilleri et al., 2009). This questionnaire described a hypothetical scenario where the participant wants to have sex but their partner does not (Camilleri et al., 2009). We only used the second half of the questionnaire to keep the study short. The included 31 items asked the participants to rate how likely they are to engage in the listed behaviors to change their partner's mind, for example, "try to make them feel bad about not having sex" (p. 971) or "tickle" (p. 971; Camilleri et al., 2009). Please find the whole set of items in the original publication Camilleri et al. (2009). The answer options ranged from *definitely not* (0) to *definitely* (4), a 5-point Likert scale (Camilleri et al., 2009). In previous studies, reliability was estimated ranging from 0.92 to 0.93, 0.87 to 0.89, and 0.90 to 0.91 for the coaxing, coercion, and total scale, respectively (Camilleri et al., 2009). In our study, the two subscales and total scale showed similar high internal consistency. The estimated Cronbach's α of the coaxing scale were 0.92; 0.86 of the coerce scale; and 0.91 of the total scale (see Table D1 for further information).

Manipulation Checks

To find out whether our design worked, we implemented a couple of manipulation checks. The participants reported whether they orgasmed with *yes*, *no*, or *not sure / prefer not to say*. This allowed us to screen participants for their adherence to our instructions. The participants also indicated their sexual arousal, sexual frustration, and disgust on three continuous scales ranging from *not aroused/disgusted/frustrated at all* (0) to *very strongly aroused/disgusted/frustrated* (100).

Conditions and Design

In this study, we employed a mixed design in which we induced frustration (experimental) and measured gender (quasi-experimental) to study the effects of frustration and gender on coercion in hypothetical scenario. There was one experimental condition, the frustration group, and one control condition, the satiation group. We did not use a pre-/post-test design because we deceived the participants of the frustration group and, therefore, did not wish to prime them to think about frustration in the beginning. However, we tried to maximize the explanatory power of our design by assessing the association of frustration and coercion, assigning participants to the frustration or satiation group randomly, and manipulating frustration before assessing coercion. Note, we had to switch to non-random assignment in the second half of data collection due to unforeseen complications. Specifically, we found an error in the Qualtrics (Version July 2022) questionnaire of the student sample's satiation condition. These responses were excluded for the final analysis ($n = 59$) as they were not standardized. After updating the questionnaire, we assigned new participants from both samples only to the satiation condition to make up for the missing responses (see Appendix C for more information).

Procedure

We set up two different studies with the same content in Qualtrics (Version July 2022), one for the network sample and one for the student sample. The separate links were necessary because we implemented an automated feature to assign the course credits to the participants of the student sample. In the beginning, the participants were informed about the content, procedure and, most importantly, sensible nature of the “Emotions and Sexual Behaviour” study via a study information form and consent form. Then, participants gave consent to (a) general participation, (b) being at least 18 years of age, and (c) processing of their personal data. Participants who did not consent were forwarded to the last page of the study, unable to participate. We explicitly mentioned that the participants are allowed to withdraw their consent at any time and can ask us to remove their answers up to two weeks after their participation. It was possible for the participants to leave the webpage (e.g. by closing the tab) to deny or withdraw consent too. Eventually, the participants reported their demographic data and questions related to their sex life (age, gender, sexual orientation, last intercourse, orgasmic difficulties). These variables allowed us to estimate the representativeness of our findings and place our sample in the current literature.

Next, the participants were randomly assigned to one of two conditions, satiation or frustration. Participants of the satiation group were instructed to masturbate until climax while watching a pornographic video clip. Participants of the frustration group were instructed to masturbate but stop before climax while watching the same pornographic video clip. To induce as much frustration as possible, the video was interrupted two times in the frustration group, so that it was presented in three parts (3min20sec; 2min29sec; 3min51sec). During these interruptions, the participants reported their sexual arousal through a manipulation check. Further, we deceived the participants of the frustration group. Specifically, the participants of the frustration group were never instructed to masturbate until

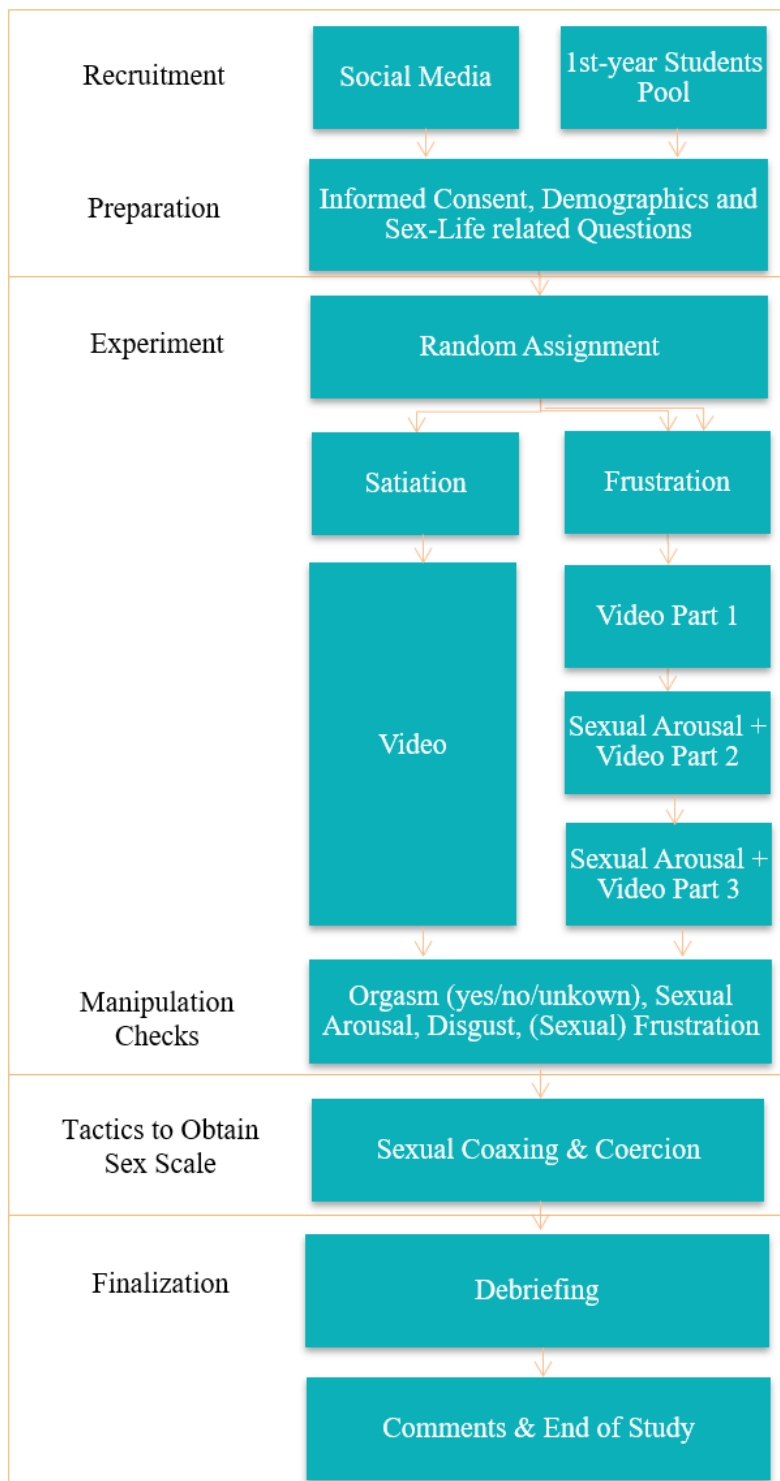
climax even though they had been under the impression that they will. This was to induce as much frustration as possible and avoid non-compliance to the instruction not to orgasm.

After that, participants from both conditions answered all manipulation checks. They indicated whether they orgasmed and what their current levels of sexual arousal, disgust and (sexual) frustration was. Then, the participants filled out the TOSS scale (Camilleri et al., 2009). Afterwards, we debriefed the participants through a debriefing form. We explained that our actual goal was to induce frustration, to study the relationship between frustration and coercion. Finally, the participants had the option to write a comment and we thanked them for their participation. Graph 2 illustrates our study design.

Data Analysis

Data Coding and Cleaning

The responses were coded and scored according to our inclusion criteria independently by two raters, who were both members of the research team (rater A and B), and two times by one rater (B). Both used Microsoft Excel (Version 2206). The raters disagreed on the inclusion of 7 participants which resulted in an agreement of approx. 93.97%. The disagreements were based on the degree of completion of the questionnaire and judgement of the comments. In the end, we followed a conservative approach and excluded all of these responses. After that, the included participants matched 100%. The two data sets cleaned and coded by rater B overlapped 100%. Taken together, the inter-rater agreement of the two raters and two ratings of rater B support the validity of the final data set. Disregarding the 59 participants that were excluded because of the error in our Qualtrics (Version July 2022) questionnaire, the main exclusion reasons were incomplete responses ($n = 108$) and spending less than 15min on the study ($n = 88$). The specific steps of data cleaning are outlined in Appendix B.

Figure 1*Illustration of the Procedure of the Present Study*

Note. This graph shows our study design in chronological order, starting with “recruitment” at the top of the page and ending with “finalization” at the bottom of the page.

Data Analysis Plan

Manipulation Checks

We analyzed sexual arousal, disgust, and frustration by (a) comparing the group means across condition and gender (including visual inspections of mean comparison plots), (b) assessing relevant correlations, and (c) conducting two-way ANOVAs using factors *CONDITION* and *GENDER*. For sexual arousal, we also analyzed the three arousal ratings provided by the frustration group. Satiation of the satiation group was reported as proportion of participants who orgasmed.

Main Analysis

Preliminary Analysis

Following the association stepping stone of causality, we assessed the correlation between the frustration manipulation check and coercion scores using *Person's r*. Then, we compared the four group means to one another, including visual inspections of mean comparison plots. The visual inspections informed us about non-significant effects that are non-significant in null-hypothesis tests.

The Effects of Condition, Gender, and their Interaction on Coercion

The main analysis was a two-way ANOVA. Sexual coercion was the dependent variable, and condition and gender were independent variables (factors). Participants who scored more than 3SDs away from the mean of the dependent variable were excluded (a score on the coercion scale > 17). The hypotheses were divided across main effects *CONDITON* (satiation, frustration) and *GENDER* (female, male), and interaction effect *CONDITION*×*GENDER* (satiation×female, satiation×male, frustration×female, frustration×male). If there were any significant findings, we would run post hoc analyses to find out in which direction the group means differ. Alternative tests that do not require the normality and homoscedasticity assumptions to be met, i.e. the Kruskal-Wallis test or

Welch's ANOVA (called 'Welch's correction' in JASP) would be conducted, if the respective assumptions were violated. These tests do not account for the interaction effect, however, which is why we would conduct an additional two-way ANOVA. It is important to note that the results of the two-way ANOVA are likely to be biased in such a case (e.g. artificially in- or deflated effect estimations). Therefore, these results should be interpreted with caution.

We calculated the expected sample size in G*Power (Version 3.1.9.7; Faul et al., 2007) using a significance level of $\alpha = 0.05$ (expected power 0.90), assuming a medium effect size of Cohen's f^2 of approximately 0.25. The resulting sample size was $N_{\text{original}} = 128$. In previous studies, where participants were instructed to masturbate but stop before orgasm, about half of them did not follow the instruction (Hoorstra, 2020). We wanted to counteract this effect. Therefore, we collected two times the original frustration-group size, allowing half of the participants to orgasm even though they were instructed not to. Thus, we aimed for a total sample size $N_{\text{adjusted}} = N_{\text{original}} \times 1,5 = 192$. The amount of participants assigned to the satiation group should be $n = 64$ participants and to the frustration condition $n = 128$. Once we excluded the expected proportion of participants who did not follow the instructions, namely, half of them, there should be $n = 128 / 2 = 64$ participants left in the frustration group. Thus, the final sample involves $n = 64$ of the participants in the satiation group and $n = 64$ in the frustration group, a total of $N = 128$.

Assumption Checks

In the following section, the assumptions checks are performed on the sample without outliers. Specifically, we excluded two female participants who scored above 17 on the coercion scale (i.e. 38 and 32). As a result, the means and standard deviations of the coaxing, coercion, and total scale changed from 26.39(10.17), 3.85(5.73), and 30.23(13.56) to 26.23(10.07), 3.30(3.96), and 29.53(12.51). Kurtosis and skewness of the coercion variable

changed from 15.04($SD = 0.45$) and 3.34($SD = 0.23$) to 2.88($SD = 0.45$) and 1.68($SD = 0.23$), respectively.

Unfortunately, the normality assumption was somewhat violated: the dependent variable coercion was exponentially distributed (Figure D1), meaning there was no normal distribution of the dependent variable across all groups. This violation is visible in Figures D2-D5). Thus, we ran a Kruskal-Wallis test in addition to a two-way ANOVA.

Simultaneously, the homoscedasticity assumption was slightly violated. Although a Levene's test of equality of variances was not significant ($F(3,110) = 0.863, p = 0.462$), Figure D6 showed a trend of the residuals to increase together with the dependent variable. Likewise, Figure D7 showed a non-linear distribution of the residuals. Therefore, two separate Welch's ANOVAs were conducted in addition to the two-way ANOVA and Kruskal-Wallis test.

Results

The final data set consisted of $N = 116$ participants ($n = 69$ females). The satiation group comprised $n = 35$ participants ($n = 20$ females) and the frustration group $n = 81$ ($n = 49$ female). There were no incomplete responses (see Appendix B for all steps of data preparation). All analyses were conducted in JASP (Version 16). The manipulation checks were conducted using the full sample including the two outliers ($N = 116$) but the main analysis without ($N = 114$).

Manipulation Checks

Sexual Arousal

Sexual arousal after watching the whole video was rated $M = 60.05$ ($SD = 29.17$). Arousal in women across the satiation condition and frustration condition was similar (M (SD)_{Female, Satiation} = 59.10 (25.14), M (SD)_{Female, Frustration} = 60.94 (29.71); Figure D8), whereas there was a clear decline in arousal in men after orgasming (M (SD)_{Male, Satiation} = 48.13 (32.96), M (SD)_{Male, Frustration} = 64.88 (28.57); Figure D8). A two-way ANOVA analyzing the

effects of *CONDITON* ($F(1,112) = 2.421, p = 0.123, \omega^2 = 0.012$), *GENDER* ($F(1,112) = , p = 0.557, \omega^2 = 0.000$), and their interaction ($F(1,112) = 1.557, p = 0.215, \omega^2 = 0.005$) was not significant (Table D2). A detailed examination of the ratings completed by the frustration group showed that arousal was high after watching each part of the video and even slightly increased between the second and third part ($M(SD)_{\text{Arousal1}} = 50.21(27.40)$, $M(SD)_{\text{Arousal2}} = 53.10(28.74)$, $M(SD)_{\text{Arousal3}} = 62.49(29.15)$; Table D3). Further, high arousal at one measurement point was strongly correlated with high arousal at another point. Arousal checks 1 and 2 correlate with *Pearson's* $r = 0.825$; arousal check 2 and 3 correlate with $r = 0.783$; and arousal check 1 and 3 with $r = 0.754$ (see Table D4 and D5 for further information). Altogether, this shows that arousal was high from the beginning for participants individually. Thus, we can conclude the manipulation for sexual arousal was successful.

Disgust

Disgust was rated $M = 14.08 (SD = 21.05)$. Females in the frustration group rated disgust as $M = 18.96 (SD = 24.15)$ and $M = 8.05 (SD = 10.89)$ in the satiation group. Males in the frustration group rated disgust as $M = 13.28 (SD = 22.16)$ and $M = 7.87 (SD = 14.64)$ in the satiation group. Figure D9 shows that disgust is higher in participants of the frustration condition. A two-way ANOVA showed no significant differences across the main effects of *CONDITION* ($F(1,112) = 3.658, p = 0.058, \omega^2 = 0.023$) and *GENDER* ($F(1,112) = 0.472, p = 0.494, \omega^2 = 0.000$), and their interaction ($F(1,112) = 0.414, p = 0.521, \omega^2 = 0.000$; Table D6). In line with our assumption that disgust could interfere with arousal, we found a negative correlation between (*Pearson's* $r = -0.32$; Table D8). The chosen video elicited little disgust as intended. Therefore, we can conclude that the manipulation was successful.

Sexual Satiation

Sexual satiation was reported by $n = 35$ participants who were assigned to the satiation condition. Fifteen participants who were assigned to the satiation condition reported

they did not orgasm. This leaves us with $n = 50$ independent observations and a sample proportion $\hat{p} = 0.70$ of successful orgasm in the preliminary sample. This shows that the majority of participants were able to orgasm, supporting the validity of the study's design (i.e. instructions and erotic material). During data preparation, all participants who did not orgasm according to their condition were excluded (Appendix B). Hence, the proportion of participants who reported they orgasmed in the satiation condition in the final sample was $\hat{p} = 1$ ($n = 35$).

Sexual Frustration

Overall, sexual frustration was rated $M = 32.72$ ($SD = 30.83$). Females rated sexual frustration on average in the satiation condition as $M = 18.15$ ($SD = 24.74$) and in the frustration condition as $M = 40.94$ ($SD = 34.38$); males rated sexual frustration as $M = 18.00$ ($SD = 12.88$) and $M = 36.13$ ($SD = 29.75$), respectively. As intended, a two-way ANOVA revealed a significant main effect of *CONDITION* on frustration ($F(1,112) = 11.351$, $p = 0.001$, $\omega^2 = 0.083$; see Appendix D for a one-sided t-test). This effect was stable across men and women (see Figure D10). There was no significant main effect of *GENDER* ($F(1,112) = 0.167$, $p = 0.683$, $\omega^2 = 0.000$) or interaction effect of *CONDITION* and *GENDER* ($F(1,112) = 0.147$, $p = 0.702$, $\omega^2 = 0.000$; Table D7) on frustration. In line with our assumption, that high arousal seems to be necessary for high frustration, we found a moderate positive correlation of $r = 0.47$ between sexual arousal and frustration (Table D8). This shows that our manipulation was successful: we induced significantly more sexual frustration in the frustration group.

Main Analysis

In the following section, we seek to answer our research question “is there an effect of gender, frustration vs. satiation, or their interaction on coercion?”. The preliminary and main analysis were conducted in a sample excluding two outliers of the frustration group ($n = 79$)

who scored $> 3SDs$ away from the mean on the coercion scale, resulting in a total sample size of $N = 114$ ($n = 67$ females).

Preliminary Analysis

On first sight, there was little difference between group means. Females in the satiation condition rated coercion as $M = 2.65$ ($SD = 3.23$), whereas males rated it $M = 3.73$ ($SD = 4.28$). In the frustration condition, females rated coercion $M = 3.43$ ($SD = 3.70$) and males $M = 3.31$ ($SD = 4.68$). Further, we found a zero-order correlation of *Pearson's r* between sexual frustration and coercion of 0.164 ($p = 0.081$), indicating an unlikely main effect of *CONDITION*. Visual inspection of Figure D12, a means plot, showed possibly but very small interaction effect of *CONDITION* and *GENDER*.

The Effects of Condition, Gender, and their Interaction on Coercion

The main effect of *CONDITION* on coercion was nonsignificant. This applies to the two-way ANOVA ($F(1,110) = 0.046$, $p = 0.830$, $\omega^2 = 0.000$, observed power = 0.055; Table 1), the Kruskal-Wallis Test ($H(1) = 0.071$, $p = 0.965$; Table 2), and a Welch one-way test ($F(1,71.720) = 0.117$, $p = 0.734$; Table 3). Further, there was no significant main effect of *GENDER* on coercion. Specifically, the two-way ANOVA ($F(1,110) = 0.347$, $p = 0.557$, $\omega^2 = 0.000$, observed power = 0.090; Table 1), the Kruskal-Wallis Test ($H(1) = 0.002$, $p = 0.790$; Table 2), and a Welch one-way test ($F(1,83.772) = 0.103$, $p = 0.750$; Table 3) were nonsignificant. The two-way ANOVA did not reveal a significant interaction effect between the factors *CONDITION* and *GENDER* ($F(1,110) = 0.528$, $p = 0.469$, $\omega^2 = 0.000$, observed power = 0.111; Table 1) either. Therefore, we could not find any evidence in favor of our hypotheses that frustration and male gender predict sexual coercion.

Table 1*ANOVA Table Showing the two Factors CONDITION and GENDER, and Their Interaction*

Effect	Sum of Squares (Type III)	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	ω^2	Observed Power ^a
GENDER	5.565	1	5.565	0.347	0.557	0.000	0.055
CONDITION	0.744	1	0.744	0.046	0.830	0.000	0.090
GENDER * CONDITION	8.459	1	8.459	0.528	0.469	0.000	0.111
Residuals	1763.848	110	16.035				

Note. None of the null-hypotheses were rejected using $\alpha = 0.05$.

^a Observed Power was obtained through SPSS (Version 26).

Table 2*Kruskal-Wallis Test for the Main Effects of GENDER and CONDITION*

Factor	<i>H</i>	<i>df</i>	<i>p</i>
GENDER	0.071	1	0.790
CONDITION	0.002	1	0.965

Note. Neither of the null-hypotheses were rejected using $\alpha = 0.05$.

Table 3*Separate Welch's One-Way Tests for Factors GENDER and CONDITION*

Factors		Sum of Squares (Type III)	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	ω^2
GENDER	Gender	1.765	1	1.765	0.103	0.750	0.000
	Residuals	1774.095	83.772	21.178			
CONDITION	Condition	1.709	1.000	1.709	0.117	0.734	0.000
	Residuals	1774.150	71.720	24.737			

Note. In JASP (Version 16), Welch's one-way tests are run by conducting an ANOVA and selecting "Homogeneity corrections > Welch" under "Assumption Checks." Neither of the null-hypotheses were rejected using $\alpha = 0.05$.

Discussion

In the present study, we investigated the relationship between sexual frustration and sexual coercion in women and men. We hypothesized that (a) people who are frustrated would exhibit more coercion in hypothetical scenarios than people who are satiated, and that (b) men particularly would exhibit more coercion in hypothetical scenarios than women. Unlike our predictions, we did not find any evidence in favor of our hypotheses. There was neither a significant effect of condition (satiation vs. frustration) on coercion, nor a significant effect of binary gender on coercion. The interaction effect of gender and condition was also non-significant. Nevertheless, the manipulation checks support the validity of our design. Namely, the participants reported they were (highly) aroused while watching the pornographic video and masturbating, experienced little disgust as intended, and were significantly more frustrated in the frustration group.

Frustration and Coercion

There is a large body of scientific literature suggesting a relationship between frustration and sexual coercion (e.g. Lankford, 2021; Thomas & Gorzalka, 2012). Therefore, it is striking that there was no significant relationship between frustration and coercion in our study. For instance, Thomas and Gorzalka (2012) showed that sub-anger, including frustration, predicts higher likelihood to and enjoyment from coercing a research confederate in persons who have a high inclination to coerce. Unlike Thomas and Gorzalka (2012), we did not divide our participants into groups of high vs. low coercion. Consequently, any effects of high vs. low inclination to coerce were averaged out in our study. Notably, it would have been difficult to meaningfully divide the participants into a low vs. high group because the coercion scores are exceptionally low in our sample. For example, Koscielska et al. (2020) studied the influence of relationship on coercion in a sample of mostly undergraduate students - a sample comparable to ours. The authors proposed the hypothetical scenario of the

TOSS scale (Camilleri et al., 2009) in three different versions to the participants, involving their (a) neighbor, (b) ex-partner, or (c) current partner. In contrast to the mean we found ($M = 3.85$, $SD = 5.73$), the coercion means in Koscielska and colleagues' (2020) study ranged from 17.23 ($SD = 21.59$) to 18.46 ($SD = 24.33$). This shows that the coercion ratings in our study were very low compared to other studies. Two possibilities out of many are that the participants answered in a socially acceptable manner, or our sample is truthfully less likely to engage in sexual coercion. There might also be undetected confounding variables that could have influenced our results.

Gender and Coercion

In spite of official reports stating that approximately 98% of perpetrators are male (i.e. BKA, 2021; Cortoni et al., 2016), we did not find a significant relationship between gender and coercion in our study. This supports Bondü and Birke's (2021) findings that the structure underlying aggression-related sexual fantasies is similar in men and women. In contrast, previous studies identified male gender or related constructs as a predictors of sexual coercion (e.g. Hettrich & O'Leary, 2007; Farris et al., 2007; Young et al., 2016). To illustrate, Hettrich and O'Leary (2007) found that men forced oral sex significantly more often than their female partners in a qualitative study on female aggression. Further, Farris et al. (2007) analyzed the misinterpretation of platonic interest as sexual interest, suggesting that a subgroup of coercive men are responsible for a gender-effect in which men misinterpret platonic interest of women as sexual significantly more than women misinterpret platonic interest of men. Last, Young et al. (2016) examined athleticism, rape myths acceptance, and hostility towards women as a predictors of sexual aggression in male only college students.

Considering the majority of studies focus on sexual coercion in men, it is surprising that the two outliers whom we excluded in the main analysis were women. The scores were almost six standard deviations away from the mean which is rare. This suggests that the

participants chose random answer options (e.g. due to a lack of attention), exaggerated their answers (e.g. extreme response bias), or came from a non-normal sample, like a clinical or forensic sample, where there is a high prevalence of sexual coercion (e.g. among women who qualify for narcissistic or histrionic traits; Lyons et al., 2020; Hughes et al., 2020). Therefore, these answers might have been incorrect or from participants outside our target population.

Frustration, Gender, Arousal, and Coercion

We did not find a significant interaction effect between frustration, binary gender, and coercion. There was a non-significant observable effect, however. Specifically, male and female coercion scores were approximately equal in the frustration condition but differed in the satiation condition (see Figure C11). Females scored lower on coercion in the satiation condition compared to the frustration condition and this was reversed for male participants: males scored slightly higher on coercion in the satiation condition than in the frustration condition. Notably, this effect was very small. The 95% confidence intervals overlapped a lot (Figure C11) and the absolute difference between group means was approximately 1. A replication study could shed some light on the existence and strength of this effect by studying it in a larger sample where small effects become significant. For now, this non-significant effect is very interesting because it suggests that the relationship between gender, sexual arousal, frustration, and coercion is not straightforward.

Specifically, in our study sexual arousal was neither linked to frustration nor satiation in women, but frustration was linked to coercion. In line with previous findings that sexual arousal stabilizes or decreases in multi-orgasmic women after single orgasm when masturbating (Gérard et al., 2021), arousal was similarly high in women who were assigned to the frustration and satiation group. Considering that frustration was higher in the frustration condition than the satiation condition, this suggests that frustration does not persist after single orgasm even though arousal remains. Moreover, women of both conditions

reported high arousal but one condition reported slightly higher coercion. If arousal were a promoting factor of coercion (e.g. by inhibiting executive functioning), coercion would be equally high in both conditions. Therefore, the results do not support the hypothesis that sexual arousal promotes coercion in women. Thus, Ariely and Loewenstein's (2006) results may not extend to women. Finally, women of the frustration group reported slightly higher coercion than women in the satiation group. This is in line with Hettrich and colleagues' (2007) findings that frustration is one of the most common reported motives for physical aggression in women. Therefore, frustration might be a promoting factor of sexual coercion in women, possibly unrelated or indirectly related to arousal.

Contrastingly, arousal and frustration were linked in men in our sample, but coercion was neither linked to arousal nor frustration. Namely, men assigned to the satiation group reported low arousal and ones assigned to the frustration condition reported high arousal. Thus, frustration and arousal do not persist after orgasm in men. Furthermore, men of the satiation group reported slightly higher coercion than men of the frustration group. Therefore, our results do not support sexual arousal as a promoting factor of coercion. In other words, we could not replicate the findings of Ariely and Loewenstein (2006) where high arousal was linked to high sexual aggression. Last, coercion ratings were slightly higher in the satiation group than in the frustration group, suggesting that frustration does not predict sexual coercion in men. Factors other than disinhibition due to sexual arousal or frustration could be taken into consideration in men in the future, such as general inclination to sexually coerce (Thomas & Gorzalka, 2012), and rape myth acceptance and hostility towards women (Young et al., 2016; Thomas & Gorzalka, 2012).

Strengths and Limitations

The greatest strength of the present study is its design. The validity of the experimental manipulation is supported by all manipulation checks. Nonetheless, there are

some limitations. These involve potential biases and unbalanced group sizes. Below, internal validity, sampling validity, as well as the results of the TOSS scale (Camilleri et al., 2009) and manipulation checks are discussed. Campbell (1957) suggested seven threats to internal validity (please visit Flannelly et al., 2018, for full definitions and some examples). *History*, *maturation*, and *instrumentation* (Campbell and Stanley, 1966) are specific events and bodily changes of the participants, and changes in the measurement instruments that occur over the course of the experiment which could confound the results (Campbell, 1957; Flannelly et al., 2018). *Testing* describes instances where the measurement instrument itself is responsible for changes in the respondents' answers, for example, through learning or reflecting on the answers (Flannelly et al., 2018). *Selection Bias* can diminish internal validity when groups of participants systematically differ on variables other than their assigned group (Flannelly et al., 2018). In other words, the participants of any compared groups should not be systematically different from one another. This is why true experiments employ random assignment: any systematic group differences are averaged out. *Regression to the mean* refers to an effect where respondents answer differently to a questionnaire without an intervention (Flannelly et al., 2018). To illustrate, Flannelly et al. (2018) describe a situation in which participants, who scored high on a test the first time they took it, scored lower the test the second time they took it, meaning that their scores approached the mean over time. *Experimental mortality* (Flannelly et al., 2018) is a threat to internal validity when there are systematic differences between the participants who drop-out vs. those who do not.

History, *maturation*, and *instrumentation* (Campbell and Stanley, 1966) are unlikely to be an issue in our study because the total duration is relatively short (30mis), we included a control group, and the design and instruments were presented in a standardized, online environment. *Testing* is a definite threat to internal validity because we did not implement a social desirability scale but participants may have given socially acceptable answers. This is

in line with the exponential distribution of scores on the coercion scale where the answers pooled at the lower end of the scale. The participants might also become more aware of and reflect on their attitudes towards coercion while filling out the TOSS scale (Camilleri et al., 2009) and, as a result, change their responses. *Regression towards the mean* (Flannelly et al., 2018) cannot be ruled out in our study since we tested the participants once. *Selection bias* is a threat in our study because our sample consists mostly of university students, and some of the participants were not assigned randomly to their condition. We cannot estimate *experimental mortality* due to the design of our study. Specifically, it is impossible to distinct between participants dropped out right before or after watching the video. Therefore, we cannot make any direct inferences regarding the threat of *mortality*. However, the university students needed to complete the whole study in order to gain their study credits. This would motivate the students not to drop out. In sum, there are two threats to internal validity in our study, namely, *testing* and *selection bias*. The threats of *regression towards the mean* and *mortality* are difficult to infer. *History*, *maturation*, and *instrumentation* are unlikely to pose a threat in our study.

Furthermore, there are some limitations stemming from our sample size and sampling validity. Even though our sample size somewhat matches the estimated sample size, the distribution across groups was not equal: more participants identified as female in our sample (approx. 59.48%) and more participants were assigned to the frustration condition (approx. 69.82%). This could bias our analysis and its results. To demonstrate, Landsheer and van den Wittenboer (2015) ran a number of simulation studies where they compared balanced to unbalanced ANOVA designs to study the influence of interaction effects. The authors found that Sum of Squares Type III, which were employed in our analysis, rejected the null-hypothesis consistently less in unbalanced than in balanced designs. In the future, a sample with a bigger sample size, equal group sizes, and high power might be able to correctly detect

a small effect that we could have missed in the present study. Concerning sampling validity, we recruited our participants from a convenience sample of mostly university students. On the one hand, this allows for comparisons to many other samples, such as Bondü and Birke's (2021). On the other hand, our results cannot be generalized to other populations (e.g. non-students) without further investigation. Please find a detailed discussion on the use of student samples and generalizability in Stroebe et al. (2018).

Concerning the measurement instrument, it appears that the TOSS scale (Camilleri et al., 2009) did not fit to our sample well because most of the scale was not engaged with ($M = 3.85$ and $SD = 5.73$ on a scale of 0 to 152), making the responses difficult to analyze. In the future, another version of the TOSS scale (Camilleri et al., 2009) could be created to obtain more nuanced ratings. Specifically, items superfluous in student populations could be removed using methods of classical test theory (CTT) or item-response theory (IRT). Following CTT, *Cronbach's α 's* could be studied to find out whether there is a significant increase in internal consistency if any item(s) were dropped. This procedure might not be promising, however, because all scales showed high internal consistency in Camilleri et al. (2009) and our study, even if items were dropped (i.e. Table D1). Using a framework of IRT, it could be possible to create a concise version of the TOSS scale (Camilleri et al., 2009). It is outside the scope of this paper to discuss such methods in detail but it would be possible to tailor the questionnaire to student populations using item-information curves and item-characteristic curves (see e.g. Warne et al., 2012, or Brzezińska, 2020, for an introduction to IRT). The analysis might show that extreme items (e.g. "Threaten self-harm," p. 970, Camilleri et al., 2009) are fairly rare in student populations and, therefore, could be removed, or other items that differentiate better between students might be added. By adjusting the questionnaire in such a way, the answers would pool less around the lower end of the scale which allows for improved effect estimation.

What makes our study stand out in spite of these limitations is that we most likely induced sufficient arousal and frustration to find a significant relationship between frustration and sexual coercion. The arousal checks showed that the participants were aroused after watching (each part of) the pornographic video while masturbating, experiencing little disgust as intended. In line with that, the satiation manipulation showed that 70% of participants who were assigned to the satiation condition orgasmed. This supports our design in which a combination of visual, auditory, tactile stimuli, and most likely fantasy, lead to high arousal. The fact that women reported similar levels of arousal in the frustration and satiation group is in line with the literature (Gérard et al., 2021). This underlines the representativeness of our sample. Further, the frustration checks clearly show that we induced significantly more frustration in the frustration condition than in the satiation condition. This suggests our deception was successful. In sum, the arousal, disgust, satiation, and frustration checks support the validity of our design. However, there was still no relevant zero-order correlation between the frustration manipulation check and coercion scores, and no significant effect in our null-hypothesis testing. There are many possibilities that could explain such results, among which are the possibility of no relationship or a confounding variable. To be able to distinguish a small from a non-existent effect, it would be necessary to replicate this study in a bigger sample in the future. Analyzing variables other than frustration, such as coaxing - which correlated significantly with coercion in our study - might prove worthwhile too.

Conclusion

To conclude, the manipulation checks support the validity of our design but there were no significant effects of sexual satiation vs. frustration, binary gender, or their interaction on sexual coercion. Put differently, we could not confirm our hypothesis that sexual frustration predicts sexual coercion. Further, we were able to extend the current literature by showcasing that women and men did not differ on sexual coercion ratings

significantly. These non-significant findings put the possibly overexaggerated role of male gender as a predictor of sexual coercion into perspective. In addition to that, the relationship between sexual arousal, frustration, and coercion appears to be more complex than assumed. There are, however, a few biases that might have influenced our results, such as selection bias, extreme response bias, and social desirability bias. Moreover, the unequal distribution of participants across groups could have artificially diminished our chances of successfully rejection of the null-hypothesis. Further investigation is needed to replicate our findings in a bigger sample with true random assignment and equal group sizes. Also, studying the interrelations of frustration and other variables, like rape myths acceptance or aggression-related sexual fantasies, could extend our findings.

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Appendix A

Table A1

Comparable Items From Three Different Studies and Questionnaires On Consensual and Non-Consensual Sexual Activities, Including Sexual Coercion.

Bondü & Birke (2021)	Ariely & Loewenstein (2006)	Camilleri et al. (2009)
	“Would you tell a woman that you loved her to increase the chance that she would have sex with you?” (p. 94)	“Say sweet things” (p. 972)
“...to bind someone during sex” (p. 1387)	“Would it be fun to tie up your sexual partner?” (p. 93)	“Tie partner up” (p. 971)
“... to have sex with several people at the same time” (p. 1387)	“If you were attracted to a women and she proposed a threesome with another man, would you do it?” (p. 93)	
“...to ignore someone’s protest against sexual activities” (p. 1387)	“Would you keep trying to have sex after your date says ‘no.’” (p. 94)	“Try to make him/her feel bad about not having sex” (p. 971) ^a
“...to persuade somebody to engage in sexual acts” (p. 1387)		“Explain that your needs should be met” (p. 972) and “Try to make him/her feel bad about not having sex” (p. 971)
	“Would you take a date to a fancy restaurant to increase your chance of having sex with her?” (p. 94)	“Offer to buy him/her something” (p. 971)
“...to force someone into	“Would you encourage your date to drink to increase the chance that she	“Provide him/her with alcohol” (p. 972), “Provide

sexual activities” (p. 1387) ^a	would have sex with you?” (p. 94) and “Would you slip a woman a drug to increase the chance that she would have sex with you?” (p. 94)	him/her with drugs” (p. 971) and “Take advantage of him/her if already drunk or stoned” (p. 972)
“... to intimately touch someone against their will” (p. 1387)		“Caress near/on partner’s genitals” (p. 971)
“... to rub against a person against their will” (p. 1387)		“Rub leg with his/her legs” (p. 971)
“... to humiliate another person during sex” (p. 1387)		“Call him/her names” (p. 971)
“... to detain someone against their will” (p. 1387)		“Physically restrain” (p. 972)
“... to physically harass another person” (p. 1387)	“Would you find it exciting to spank your sexual partner?” (p. 93) ^a	“Slap or hit” (p. 972)
“... to threaten somebody with words during sex” (p. 1387)		“Suggest you may harm him/her” (p. 971)

Note. Please find the full set of items in the corresponding publication listed in the column headings.

^a The content of these items only somewhat matches the content of the other item(s).

Appendix B

Data Cleaning

The steps of data cleaning were as follows:

1. Delete SONA responses from the satiation condition before 4th May ($n = 59$),
2. Delete responses when Qualtrics has marked progress <100 ($n = 108$),
3. Delete responses with a duration <900 seconds (equal to 15min; $n = 88$),
4. Delete responses from participants who made comments that indicated their responses are not valid (e.g. they accidentally skipped a part of the video; $n = 7$),
5. Delete responses from participants who indicated sexual orientation <50 ($n = 2$),
6. Delete responses from participants who did not report a binary gender ($n = 2$),
7. Delete responses of persons who did not orgasm according to their condition (i.e. participants in satiation condition who did not orgasm, participants in frustration condition who orgasmed, and participants who did not report whether they orgasmed; $n = 19$).

Appendix C

The Satiation Condition(s)

The error in the Qualtrics questionnaire of the first-year students sample regarding the satiation condition involved different erotic material and a slightly different design.

Specifically, the satiation condition of the student sample (SONA) was presented with a former design and video. There was a break with an arousal check halfway through the video and different content in the video. Naturally, the participants received the credits for their introductory Research Methods class in turn for their participation regardless of this error. Because these responses are not standardized, we excluded all of them ($n = 59$) for our analysis. On May 4th, 2022, we updated the questionnaire to match the new design.

Up to this point, we had few valid responses from the satiation group (of the network sample) and obtained proportionally more responses from the frustration condition of both samples. All of these responses were collected using random assignment. In order to fill the significant lack of responses in the satiation group, we decided to assign new participants from both samples only to the satiation condition to increase the number of participants in time. Therefore, the responses after May 4th, 2022, were collected through non-random assignment (resulting in $n = 35$ valid responses). We could not find any significant differences between the participants of the satiation condition before and after May 4th on the demographic and sex-life related questions using $p < 0.05$ apart from one (see Table C1). Last intercourse was significantly different in a t-test ($t(54) = 2.10, p = 0.04$) but non-significant in a non-parametric Mann-Whitney test ($U(54) = 489.50, p = 0.05$). In the normal satiation group, 16 participants were excluded because they did not orgasm and in the satiation group presented with the wrong video 10 participants did not orgasm and were excluded. The means and standard deviations of the 'error' group on arousal, frustration, and disgust were 46.74 (26.08), 24.04 (21.87), and 11.37 (15.65), respectively. As we included

valid responses from before (network sample) and after May 4th (network and student sample) in our final analysis, any un-/detected effects stemming from this non-random assignment are minimized.

Table C1

Null-Hypothesis Testing of Demographic and Sex Life-Related Questions Comparing The Two Satiation Groups Before and After May 4th.

Variable	Test	Statistic	df	<i>p</i>
Age	<i>t</i> -Test	-1.05	55	0.30
	Mann-Whitney	372.00	55	0.83
Sexual Orientation	<i>t</i> -Test	0.12	55	0.91
	Mann-Whitney	386.50	55	0.99
Last Intercourse	<i>t</i> -Test	2.10	54	0.04
	Mann-Whitney	489.50	54	0.05
Orgasmic Difficulties	<i>t</i> -Test	-0.489	50	0.63
	Mann-Whitney	288.50	50	0.63

Note. Assumption checks were not examined in detail which is why a *t*-Test and non-parametric alternative, the Mann-Whitney U test, are presented.

Appendix D

Supplementary Material

Table D1

Internal Reliability Estimate Cronbach's α If Item(s) of the TOSS Scale (Camilleri et al., 2009), TOSS1-31, Were Deleted

Item	Scale		
	Coaxing	Coercion	Total
TOSS1	0.908		0.901
TOSS2		0.851	0.906
TOSS3		0.854	0.906
TOSS4	0.906		0.899
TOSS5		0.853	0.906
TOSS6		0.854	0.906
TOSS7	0.907		0.900
TOSS8		0.856	0.903
TOSS9		0.847	0.905
TOSS10	0.922		0.906
TOSS11		0.857	0.907
TOSS12		0.866	0.904
TOSS13		0.857	0.908
TOSS14	0.912		0.902
TOSS15	0.917		0.904
TOSS16		0.852	0.906
TOSS17		0.853	0.906
TOSS18		0.852	0.906
TOSS19	0.908		0.899
TOSS20	0.906		0.899
TOSS21	0.910		0.900
TOSS22	0.904		0.899
TOSS23		0.862	0.906
TOSS24		0.854	0.907
TOSS25	0.911		0.902
TOSS26		0.853	0.904
TOSS27		0.853	0.904
TOSS28		0.849	0.906
TOSS29		0.847	0.905
TOSS30	0.910		0.901
TOSS31		0.854	0.906

Note. This table shows internal consistency of the scale if the corresponding item were

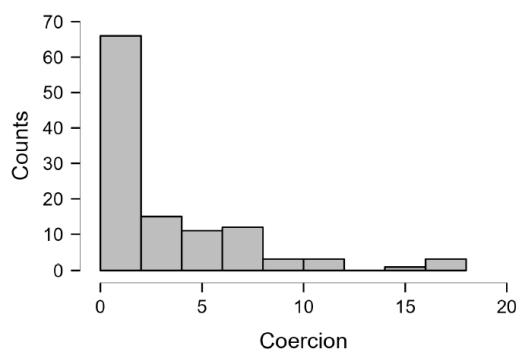
dropped. To illustrate, if the first item TOSS1 were excluded from the scale, the rest of the

coaxing scale would have an internal consistency of *Cronbach's* α of 0.908 and the total scale a *Cronbach's* α of 0.901.

Assumption Checks

Figure D1

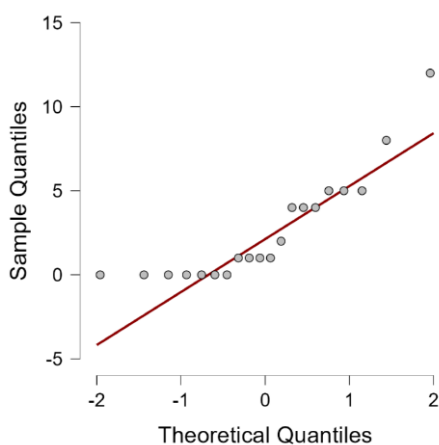
Distribution of Coercion Scores



Note. This histogram shows the distribution of coercion total scores in our sample. It is visible that the scores are exponentially distributed, pooling around the lowest answer option.

Figure D2

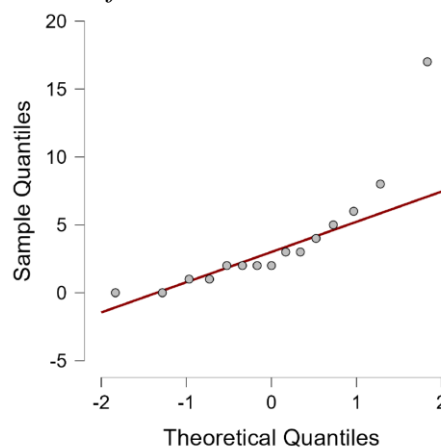
Q-Q plot of the variable coercion in women of the satiation condition



Note. This plot shows the coercion scores in this group are not normally. The ends of both tails are on the same side of the (identity) line.

Figure D3

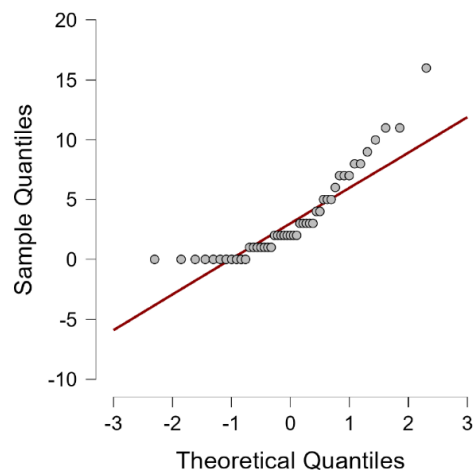
Q-Q plot of the variable coercion in men of the satiation condition



Note. This plot shows the coercion scores in this group are approximately normally distributed. However, there is one outlier at the top-right of the plot.

Figure D4

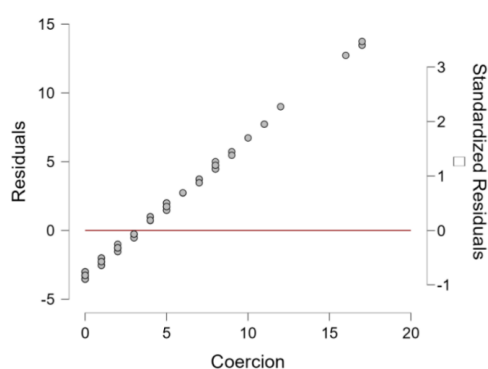
Q-Q plot of the variable coercion in women of the frustration condition



Note. This plot shows the coercion scores group are likely exponentially distributed. The data points almost form a curve rather a straight line.

Figure D6

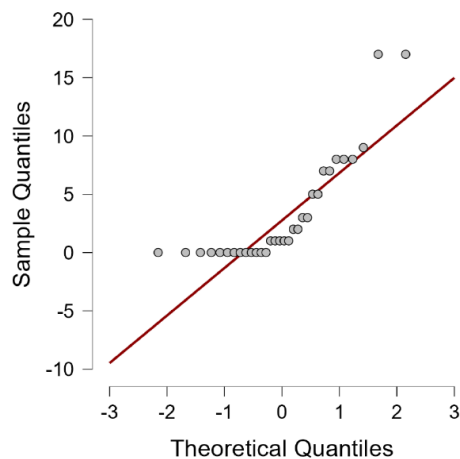
Residuals plot of the (standardized) residuals against the dependent variable



Note. This plot shows that there is a systematic difference among the resi-

Figure D5

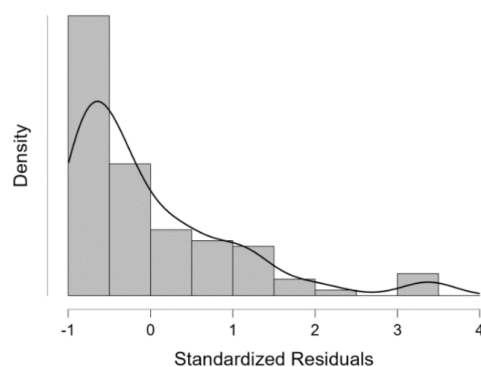
Q-Q plot of the variable coercion in men of the frustration condition



Note. This plot shows the coercion scores in this group are non-normally distributed. The scores are not allocated around the identity line.

Figure D7

Histogram of standardized residuals



Note. This plot shows that the residuals are not normally distributed, suggesting a violation

duals, suggesting a violated of the homoscedasticity assumption.

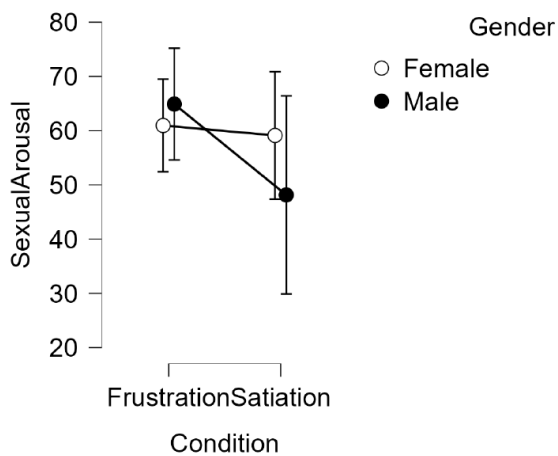
homoscedasticity assumption.

Manipulation Checks

Sexual Arousal

Figure D8

Sexual Arousal Ratings in Men and Women Across Conditions



Note. This means plot shows women and men rated sexual arousal differently across conditions. The error bars show 95% confidence intervals.

Table D2

ANOVA Table Showing the Effects of the Two Factors CONDITION and GENDER, and their interaction on Sexual Arousal Ratings

Effect	Sum of Squares (Type III)	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	ω^2
CONDITION	2050.992	1	2050.992	2.421	0.123	0.012
GENDER	293.641	1	293.641	0.347	0.557	0.000
GENDER * CONDITION	1319.450	1	1319.450	1.557	0.215	0.005
Residuals	94,889.850	112	847.231			

Note. None of the null-hypotheses could be rejected using $\alpha = 0.05$.

Table D3*Arousal Manipulation Checks of the Frustration Condition in Chronological Order*

Parameter	Arousal Check 1	Arousal Check 2	Arousal Check 3
Mean(SD)	50.21(27.40)	53.10(28.74)	62.49(29.15)
Median	60.00	61.00	73.00
Mode	60.00	65.00	100.00

Note. The results were retrieved using pairwise exclusion.

Table D4

Correlation Matrix of Pearson's r Across Arousal Manipulation Checks of the Frustration Condition in Chronological Order in Females

	Arousal Check 1	Arousal Check 2
Arousal Check 2	0.842*	
Arousal Check 3	0.799*	0.815*

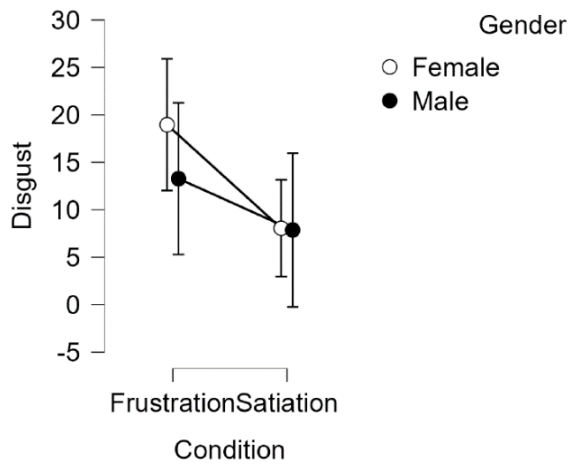
Note. Significant correlations with $p < 0.001$ are marked with *.

Table D5

Correlation Matrix of Pearson's r Across Arousal Manipulation Checks of the Frustration Condition in Chronological Order in Males

	Arousal Check 1	Arousal Check 2
Arousal Check 2	0.817*	
Arousal Check 3	0.674*	0.761*

Note. Significant correlations with $p < 0.001$ are marked with *.

*Disgust***Figure D9***Disgust Ratings in Men and Women Across Conditions*

Note. This means plot shows that disgust was rated slightly higher in the frustration condition, and disgust was differently in the frustration condition across gender. The error bars show 95% confidence intervals.

Table D6

ANOVA Table Showing the Effects of the Two Factors CONDITON and GENDER, and their interaction, On Disgust Ratings

Effect	Sum of Squares (Type III)	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	ω^2
CONDITION	1583.043	1	1583.043	3.658	0.058	0.023
GENDER	204.096	1	204.096	0.472	0.494	0.000
GENDER * CONDITION	179.359	1	179.359	0.414	0.521	0.000
Residuals	48,465.070	112	432.724			

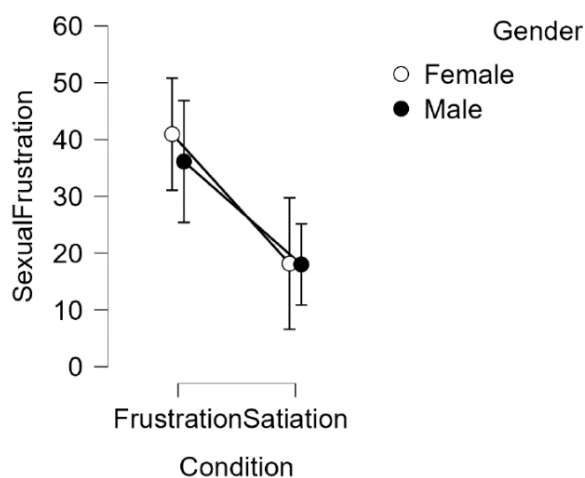
Note. None of the null-hypotheses could be rejected using $\alpha = 0.05$.

Sexual Frustration

A one-sided independent samples t-test, hypothesizing higher frustration in the frustration group, revealed that frustration was rated significantly higher in the frustration group than in the satiation group ($t(114) = 3.52, p < .001, d = 0.72$).

Figure D10

Sexual Frustration Ratings in Men and Women Across Conditions



Note. This means plot shows that frustration was rated higher in the frustration condition than in the satiation condition by both men and women. The error bars show 95% confidence intervals.

Table D7

ANOVA Table Showing the Effects of the Two Factors CONDITION and GENDER, and their interaction, On Sexual Frustration Ratings

Effect	Sum of Squares (Type III)	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>	ω^2
CONDITION	9944.683	1	9944.683	11.351	0.001	0.083
GENDER	146.378	1	146.378	0.167	0.683	0.000
GENDER *	129.219	1	129.219	0.147	0.702	0.000
CONDITION						
Residuals	98,120.866	112	876.079			

Note. None of the null-hypotheses could be rejected using $\alpha = 0.05$.

Main Analysis

Preliminary Analysis

Table D8

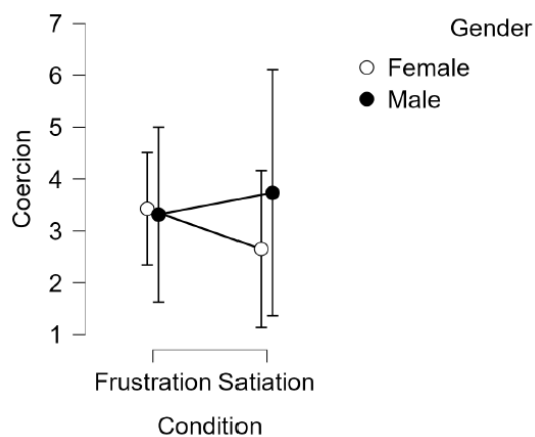
Zero-Order Correlations Among the Manipulation Checks and Coaxing, Coercion, and Total Scores Using Pearson's r .

Variables	Arousal	Frustration	Disgust	Coaxing
Frustration	0.459*			
Disgust	-0.327*	-0.136		
Coaxing	0.169	0.120	-0.086	
Coercion	0.110	0.164	0.065	0.496*
Total	0.078	0.148	-0.048	

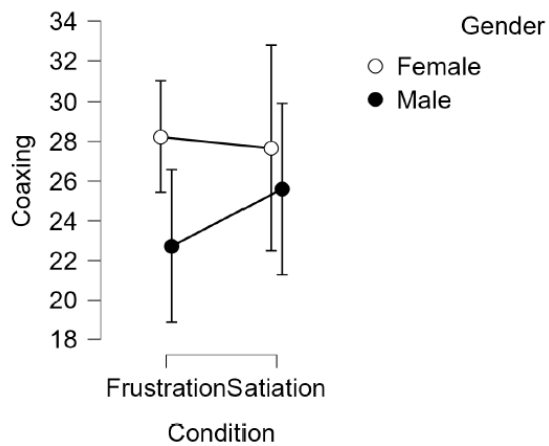
Note. Correlations with a $p < 0.001$ are marked with *. Since the total scale “Total” is the sum of the coaxing and coercion scale, their correlation is misleading and, therefore, not shown. The results show that arousal and frustration, arousal and disgust, and coercion and coaxing correlate significantly.

Figure D12

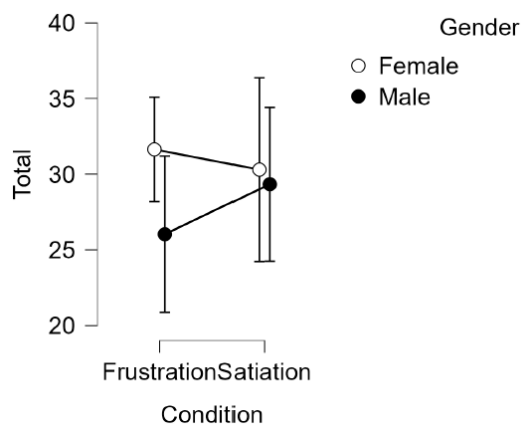
Coercion Ratings in Men and Women Across Conditions



Note. This means plot shows a possible interaction effect of frustration vs. satiation and gender on coercion. This is visible in the similar ratings by men and women in the frustration condition but differing ratings in the satiation condition. The error bars show 95% confidence intervals.

Figure D13*Coaxing Ratings in Men and Women Across Conditions*

Note. This means plot shows a possible interaction effect of the variables gender and condition on coaxing behaviors. The error bars show 95% confidence intervals.

Figure D14*Total Scores of Men and Women Across Conditions*

Note. This means plot shows a possible interaction effect of the variables gender and condition on total scores of the TOSS scale (Camilleri et al., 2009). The error bars show 95% confidence intervals.