

Negative Social Implications of Gym Behaviors: Grunting and Masculinity Perceptions

Skyler R. Reynolds

s3925404

Department of Psychology, University of Groningen

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Supervisor: Dr. Yasin Koc

Second evaluator: Dr. Anastasios Sarampalis

In collaboration with: Philip Kaesemann, Charlotte Lieser, Johanna Mann, Rieke Peters,

Maaïke van der Sluijs

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Abstract

Grunting occurs frequently at gyms, often being cited as a method of increasing physical performance. Recent research has highlighted the possible social functions of grunting during exercise, relating to constructs such as masculinity. However, the effects of grunting in a social context remains poorly understood. This study sought to empirically test the effect of grunting on people's perception of several variables pertaining to the athletes' masculinity, using questionnaires in a 2x2 between-subjects factorial experiment (N=333). Along with masculinity, we evaluated perceived promiscuity, self-objectification, wellbeing and Stereotype Content Model's (SCM) competence, which were hypothesized to increase due to grunting, and SCM's warmth, which was hypothesized to decrease. The results indicate that grunting decreases perceptions of masculinity, competence, warmth and self-objectification of the athlete. There were no significant effects of grunting on promiscuity or wellbeing. We also manipulated the 'sexuality' of the athlete (e.g., heterosexual or homosexual) in order to investigate interaction effects between grunting and sexuality. Warmth was rated higher for the homosexual athlete compared to the heterosexual athlete. There was an interaction effect where grunting decreased perceived self-objectification of the athlete, but to a lesser degree for the homosexual athlete. Our research shows preliminary evidence that grunting has negative social impacts regarding how others perceive certain dimensions of an athlete when participating in the behavior.

Keywords: grunting, masculinity, sexuality, perception.

Negative Social Implications of Gym Behaviors: Grunting and Masculinity Perceptions

Gym settings often evoke a mental image of a multitude of specific behaviors that people consider central to that environment. One such behavior commonly observed in gyms is the act of grunting, indicated by a loud, voluntary noise made when exerting effort (Lev & Hertzog, 2021). Anecdotal evidence provides us with countless examples of grunting as commonplace at commercial gyms, solidifying its role in gym culture. Often, grunting during workouts is seen as a behavior mainly reserved for men, leading to speculation surrounding its ties with masculinity and the social implications of the behavior. This is reflected in the recent rise of discussions in popular media surrounding grunting, with varying perceptions of grunTERS and arguments citing a range of behavioral underpinnings such as sexism or tension release. However, the sociological and psychological effects of grunting in public gym settings is unclear due to the relative lack of research currently available on this particular behaviors' effect on others. In order to investigate this, we looked at peoples' perception of individuals who grunt during a workout, mainly through the lens of masculinity, as well as sexuality.

Sports Perspective

The phenomenon of grunting has mostly been studied from a sport research perspective, primarily leading to theories surrounding the impact of grunting on physical performance. Studies on sports such as tennis and martial arts suggest that there is a performance advantage to grunting. O'Connell et al. (2014) found a slight but significant increase in peak velocity, muscle activity and force production of tennis players during their serve and forehand strokes in grunting conditions compared to non-grunting conditions. However, the mechanisms underlying how grunting increases performance remain unclear. Similarly, the act of 'kiaping', characterized as a grunt or yell when exerting effort in martial arts, was found to increase handgrip strength in participants by 5-8% in a study by Welch and

Tschampl (2012). However, Welch and Tschampl (2012) speculated that kiaping influences performance partly through psychological factors, by psyching the participant up and motivating them through increased arousal and positive affect, which are known performance enhancing phenomena (Perkins et al. 2001).

To further investigate the psychological aspect of grunting, Farhead and Punt (2015) investigated the effect of grunts in tennis competition settings. They found that by playing recordings of grunting noises during a computerized tennis simulation, the participants in the tennis simulation tended to perform worse. They speculated that grunting may thus be used by tennis players as a way to mask the noise of their racket hitting the ball. This in turn disrupts the play of the opponent through disorientation and intimidation. In this case, grunting is not used as an enhancer of physical performance, but as a tool to trip up the other opponent in order to achieve certain benefits in the game. These findings highlight that even in sports research, where grunting is arguably investigated the most, there is a lack of consensus regarding why grunting increases physical performance, and what the role of psychological factors in grunting may be.

Grunting and Masculinity

A recent qualitative study by Lez and Hertzog (2021) looked at the effect and process of grunting in gyms from a sociological perspective, giving rise to psychological theories underlying the behavior related to masculinity. Through observational research and semi-structured interviews on gym behavior in two Israeli gyms for three years, they found that typically, grunting in gyms is mainly a behavior performed by and expected of males and is used as a tool in male bonding, space control and situational adjustments. The attempt to control space was observed by louder grunts performed by more masculine men, which would discourage smaller men from grunting. Grunting created social bonds between fellow male gym goers by acknowledging and encouraging each other's physical efforts. Grunting was a

behavior that was also sporadically displayed depending on context instead of just the individual. If a male was comfortable in his regular gym, the grunting was apparent. The same individual in an unknown new gym ceased to grunt, showcasing the social nature of the behavior.

Lez and Hertzog's (2021) paper indicated some of the possible social privileges granted to men engaging in grunting, through masculinity, and the effects of grunting on others. However, due to the qualitative nature of the study, there is a lack of empirical evidence to back up these claims. This leads to an opportunity to find empirical evidence to support theories on grunting's link to masculinity. Accordingly, the study at hand used experimental design to examine grunting and its relation to masculinity. Due to previous research pointing at grunting as a way for men to express masculinity, we expect that grunting will therefore increase how masculine the athlete is perceived. Despite primarily focusing on males, Lev and Hertzog (2021) made no further distinction between participants besides gender, leading us to explore other possibly influential factors.

Masculinity and Sexual Orientation

Grunting's theorized ability to provide men with certain privileges related to masculinity, along with the observation of gender differences in grunting behavior, led to interest in whether grunting would grant the same privileges between sexual orientations. Numerous research has been dedicated to investigating the intricate relationship between masculinity and sexuality. Stereotypically, gay men are perceived as less masculine than heterosexual men, which can have negative consequences regarding how others view gay men, and how gay men perceive themselves (Blashill & Powlishta, 2009). Research on likeability of gay men showed that more traditionally 'masculine' gay men were rated more likeable than 'feminine' gay men, specifically by heterosexual men (Cohen et al., 2009). Duncan (2008) explored gay men's perceptions of themselves, specifically regarding body

image, and found that many gay men experienced oftentimes ‘toxic’ situations where the masculine body ideals were endorsed in gay communities (Duncan, 2008). Thus, masculine ideals that stem from heterosexual norms seem to be held to some extent by both heterosexual and homosexual orientations. The possible negative effects for gay men being perceived as less masculine and the prevalence of adherence to masculine ideals across sexual orientations led us to include sexuality as an independent variable in our research. Combining theories on masculinity perception and the privileges grunting possibly grants men through masculinity, led us to investigate whether the disadvantages of being perceived as less masculine for gay men could be mitigated by engaging in masculine behavior, namely grunting (Lev & Hertzog, 2021). We expect grunting to increase masculinity perceptions across sexual orientations, however, we expect lower baseline ratings of perceived masculinity of the homosexual athlete compared to the heterosexual athlete.

Possible Outcome Variables of Interest

As research regarding how grunting affects perception is limited and generally qualitative, we have chosen to measure, through means of an experimental design, a number of variables alongside masculinity. These variables are split into two clusters, namely gender and psychological, and further explore factors related to grunting, sexuality and masculinity. The research at hand is mainly exploratory and literature guiding predictions about these clusters is limited. Therefore, predictions are based on existing stereotypes and research on these variables related to masculinity.

Gender Cluster

Promiscuity and Sexual Self-Objectification. Research points at links between sexual behavior, masculinity and sexual orientation in gym environments, leading us to investigate grunting’s effect on promiscuity and sexual self-objectification. A study by Mor et al. (2014) found that gay gym-going men tended to participate in riskier sexual behaviors as

well as sensation seeking sexual experiences than heterosexual male gym goers. We were interested if this difference in sexual behavior was perceived externally, leading us to measure perceived promiscuity of the athlete. Following Mor et al.'s (2014) results, we hypothesize that gay men will score higher in perceived promiscuity than heterosexual men in the grunting conditions. However, Mor et al. (2014) used self-reported promiscuity measures and did not address perceived promiscuity as we intend to. Thus, perceptions of promiscuity may not accurately reflect actual individual behavior. Additionally, grunting draws attention to the participant, and is generally performed in situations where the individual feels confident (Lev & Hertzog, 2021). Thus, a grunting 'confident' athlete may also be perceived as more promiscuous than a non-grunting 'non-confident' athlete.

Self-objectification is derived from the theory proposed by Frederickson and Roberts (1997) and concerns an individual's tendency to internalize the view of an objectifying observer, leading to a self-perception partly shaped by this objectification. A key characteristic of self-objectification is increased focus on body image, comparing themselves to a standard determined by outside influences. Brewster et al. (2016) measured factors stemming from self-objectification theory and how they related to the use of anabolic steroids and compulsive exercising in sexual minority men. Based on their findings, they proposed a framework wherein concerns related to self-objectification, such as body surveillance, predicts, to some extent, compulsive exercise and use of anabolic steroids in gay men, indicating a link between gym behavior, sexuality and self-objectification. Therefore, also based partly on anecdotal evidence, we predict that by drawing attention to the self in a physical manner through grunting, it may be possible that participants will perceive the athlete as partaking in more self-objectification than not grunting, as they voluntarily expose themselves in a context where the focus lies on appearance, namely the gym. However, both Brewster et al. (2016) and Frederickson et al. (1997) measured self-objectification through an

individual's perspective, while we focused on the perception of an individual's self-objectification. Thus, similarly to promiscuity, perceptions of self-objectification may not be in line with the actual self-objectification of the individual.

Psychological Cluster

Wellbeing. The gym is a context wherein people are often focused on bettering themselves and their wellbeing, attempting to increase their self-esteem and life satisfaction through altering their body image and introducing healthy lifestyle habits. Self-esteem, body image and life satisfaction are related concepts, yet might differ in regards to masculinity and sexuality. Research remains limited in that regard. Therefore, due to grunting's possible links to masculinity and sexuality, along with wellbeing's ties to exercise, we chose to include these variables, explaining these concepts below.

Self-esteem. Self-esteem often stems from body image perceptions, and may be influenced by certain behaviors, such as grunting. Zamani et al. (2016) found that physical activity was a significant predictor of self-esteem, with body image being a mediating factor, indicating a relationship between gym behavior and self-esteem. Confidence and self-esteem may be increased by higher self-perceived power, as demonstrated by Anderson and Galinsky (2006) when measuring risk taking behaviors in differing 'power' conditions. Grunting may evoke judgements relating to the person's confidence and self-esteem, as it draws attention to the athlete in a public setting, and may be interpreted as a display of power. This link between power, self-esteem and confidence may therefore affect peoples' perceptions of our athlete's self-esteem in the grunting condition. Therefore, perceived self-esteem is predicted to be rated higher in grunting conditions.

Body Image. Body image, and the altering thereof, can motivate and be determined by exercise (Homan & Tylka, 2014). Due to body image's link to self-esteem, by predicting that grunting increases perceived self-esteem, it seemed probable that body image satisfaction

would follow, therefore, body image satisfaction is predicted to be perceived as higher for grunting individuals (Sani et al., 2016). However, literature suggests possible links between body image satisfaction and sexuality that may oppose this prediction. Regarding grunting and sexuality, Murray and Touyz (2012) found that endorsement of masculine ideals seems to drive body image dissatisfaction in both homosexual and heterosexual males. By viewing grunting as an expression of masculinity, and thus adherence to masculine ideals, grunting may result in increased body dissatisfaction. Furthermore, Mor et al. (2014) found that homosexual men seem to engage in gym activities to reach goals pertaining to muscularity and body image more so than heterosexual men, perhaps indicating more focus on body image amongst gay men. Both of these studies are related to the people grunting and their psychological states and not the perceptions people have of them as they grunt. Thus, on the perception level body image satisfaction may be higher when grunting, but this again may not reflect true mental states.

Life Satisfaction. The relation between self-esteem and life satisfaction, as well as the possible effect of physical exercise on life satisfaction led us to further investigate this variable (Szcześniak, 2021). Perceived life-satisfaction differs from perceived self-esteem as it includes a broader understanding of the individual's satisfaction with themselves and their surroundings. Although there is a lack of research on the subject, anecdotal evidence suggests that it may be possible that by grunting in a gym, an individual is drawing attention to their physical progress, an assumption also shaped by the setting of the behavior. Seeming confident and actively working towards certain goals may translate into a higher level of perceived life satisfaction than non-grunting individuals. Perceptions of the athlete's life satisfaction is thus predicted to increase due to grunting.

Warmth-Competence. The stereotype-content model from Fiske (2018) evaluates stereotypes through the dimensions of warmth and competence. Masculine stereotypes tend to

include higher perceptions of confidence, skill and capability, while including lower perceptions of friendliness, good-naturedness and warmth. Based on the prediction that grunting will increase perceived masculinity, we inferred that it would then also shift people's perception of the grunting individual into a more traditionally male stereotype. Grunting is predicted to be a way of expressing masculinity and assertiveness, thus, regarding the stereotype content model, grunting is expected to increase ratings of perceived competence, while simultaneously decreasing ratings of perceived warmth.

Design and Hypotheses

We measured the effect of grunting during a workout on perceived masculinity of the athlete, and on the previously identified additional variables, across homosexual and heterosexual athlete conditions through experimental design. The aim of our research was to investigate how grunting impacts social perceptions on men in gyms, and seeing whether these perceptions remain stable amongst different sexual orientations. Perceptions of masculinity, competence, life satisfaction, self-body image, self-esteem, promiscuity and sexual objectification are expected to increase in the grunting athlete compared to the non-grunting athlete across sexuality variables, whilst perceptions of warmth are expected to decrease. Furthermore, the relationships are expected to hold across sexuality variables. However, gay men are expected to be perceived lower on masculinity and the variables relating to masculinity than heterosexual men.

Method

Participants

The initial sample size in the conducted study was 369, where a total of 16 participants dropped out of the study before completion and 12 participants were excluded due to failing the manipulation check. Furthermore, five participants who reported a sexual orientation other than heterosexual were removed from the sample to increase the homogeneity of the

participant pool, and 3 outliers were removed, leaving us with a total sample size of $N = 333$. Of the 333 participants, 79 were male (23.72%), 253 were female (75.98%) and one person identified as non-binary (0.3%). The age range of participants was 18- 79 years old ($M = 34.75$, $SD = 13.106$).

Procedure

The survey was hosted on Qualtrics, the participants were recruited through Prolific Academic, and the study was conducted in English. The recruitment text used to advertise the study, briefly mentioned the nature and content of the experiment, namely watching a video of a man working out followed by a questionnaire measuring multiple variables. Participation was voluntary and there was monetary compensation of 1.50 euros for completing the study. The participants had to provide consent for processing their data, and information about participant identity was kept anonymous.

After having chosen to take part in the study, participants were required to read and fill out the informed consent prior to starting the experiment. Once the participants had agreed to the requirements of the study and filled out the informed consent form, certain demographic data were collected. Participants were asked about their gender, age, sexual orientation, perceived socioeconomic status, education and how often they go to the gym to exercise (Appendix A). Participants were able to choose not to answer these questions if they did not want to. Afterward, they were randomly allocated to one of the conditions, watched the video with audio, and responded to the dependent variables. Furthermore, the participants' prolific ID was needed in order to transfer the compensation amount following the completion of the experiment. The data was collected anonymously and would be securely stored for 10 years on Qualtrics.

After completing the questionnaire, participants were debriefed on the study. The debriefing made participants aware of the other possible conditions of the study. Furthermore,

it described the aim of the study and the variables the study intended to measure, which was purposefully left vague in the informed consent. The benign deception resulting from the manipulation of the sexuality variable was also made clear to the participants. Finally, the reasons for conducting the study were briefly explained, as well as the expected effects. The overall duration of participation in the study was approximately 10 minutes.

Design

The current study used a 2x2 between-subjects design. Therefore, two independent variables were manipulated, namely, sexual orientation (heterosexual vs homosexual) and grunting (grunting vs no grunting). The participants were randomly assigned to one of the four conditions, which are grunting-heterosexual ($N = 78$), non-grunting-heterosexual ($N = 88$), grunting-homosexual ($N = 78$) and non-grunting-homosexual ($N = 89$).

Experimental Manipulation

The four conditions were grunting heterosexual, non-grunting heterosexual, grunting homosexual and non-grunting homosexual. The sexuality variable was manipulated through means of a text appearing on the screen before the video began mentioning that the man working out was being filmed by his partner, a female name in the heterosexual condition and a male name in the homosexual condition. The participant would then watch a video of the man performing a number of exercises. These exercises were a leg press, deadlift, overhead barbell and bench press. The grunting variable was manipulated through a voiceover. There were two video versions of each exercise, where the athlete would either grunt or remain silent, meaning there was no difference in video material in the different sexuality conditions. The athlete was the same in every condition

Measures

This research was conducted as part of a thesis project, where a range of variables were measured that are not discussed in this paper. Other variables that were investigated

include masculine attributes, feminine attributes and femininity, as well as a physical cluster that investigated attractiveness, health, workout enjoyment and exertion level. This paper focuses solely on the gender and psychological clusters which include measures of masculinity, promiscuity, sexual objectification, warmth, competence and wellbeing. 7-point Likert scales were used for all variables except self-objectification.

Gender Cluster

Masculinity, self-objectification, and promiscuity were measured in the gender cluster. Masculinity was measured using a singular 7-point Likert scale question directly asking participants to rate the subject on masculinity. To assess *self-objectification* of the athlete, a self-objectification scale by Frederickson (1997) was used, where participants had to rank 10 features, from most important (1) to least important (10), based on how much they thought the athlete would value them. These features included physical coordination, health, strength, weight, sex appeal, physical attractiveness, stamina, sculpted muscles, physical fitness level and measurements. The self-objectification scale was analyzed by subdividing the scale into sexual objectification scores for competence, and self-objectification for appearance. The resulting perceived sexual objectification (so) score was created by subtracting so-competence from so-appearance, giving a rating between -25 to 25, with higher numbers indicating greater level of perceived self-objectification of the athlete. Five participants had missing data for self-objectification, leading to a lower sample size of $N=328$ for this scale alone. *Promiscuity* was assessed using one item with a Likert scale ranging from 1 (not at all) to 7 (entirely).

Psychological Cluster

The psychological cluster focused on investigating perceptions of *warmth and competence* from the stereotype content model, self-esteem, body and life satisfaction of the athlete (Cuddy, et al. 2009). Likert scales ranging from 1 (not at all) to 7 (entirely) were used to assess people's perception of the athlete's warmth and competence. Four items were used

to measure warmth (friendly, warm, sincere, good-natured) and four items were used to measure competence (capable, competent, confident, and skillful). Separate composite scales for warmth and competence were created due to their respective high internal consistency (respectively $\alpha = 0.89$ and $\alpha = 0.89$). *Self-esteem*, *perceived body image satisfaction* and *life satisfaction* were assessed using items that directly related to each construct by asking participants to rate how highly they believe the athlete would rate himself on these factors (e.g., “He has high self-esteem”). Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree) were used for all three. With $\alpha = 0.82$, the internal consistency of the three items was sufficient to combine them into the scale “wellbeing”.

Checks

Manipulation checks were conducted to test whether the manipulation of each of the independent variables was perceived by the participants. Regarding the sexuality independent variable, at the start of the survey participants had to answer who had shot the video of the athlete, which had been stated in the descriptive text the participants received prior to watching the video. If the answer given did not fit the assigned condition, their data got excluded from the statistical analysis ($N = 12$).

For the independent variable of grunting, an audio check was performed at the start of the video to ensure that participants had adequate sound quality. This was done by playing an audio recording of someone listing a four-digit number, which the participant then had to fill in. Only when the participant filled out the correct four-digit number they would be able to proceed with the rest of the experiment. This eliminated the possibility of participant data being included where the grunting was not observed.

As an attention check, participants were asked the name of the athlete in the video after having viewed the video, which had been stated in the descriptive text. This was done as

an additional precaution to observe whether participants were retaining the information provided before the video and subsequent survey.

Results

Screening Analysis

In order to test that the different levels of the independent variable sexual orientation were perceived by the participants, a manipulation check was performed. $N=12$ participants failed this check, and were subsequently removed from the data analysis. Regarding the attention check, a total of $N=38$ participants failed, however they were included in the data analysis as it was decided that as long as they passed the checks regarding the manipulation of the independent variables their responses were valid. In total, $N=5$ participants identified themselves as a different sexuality than heterosexual, their responses were removed in order to make the sample more homogenous.

Assumptions of ANOVA

Following the removal of participants in the screening process, the dependent variables were checked in order to determine whether they met the assumptions necessary for a two-way ANOVA. The independence of observations assumption was met due to our design. Furthermore, the normality assumption was assumed to suffice due to the relatively large sample size ($N=333$). In order to check the homogeneity of variance assumption, the dependent variables were evaluated using Levene's test. Significant values for the Levene's test were found for the composite scale wellbeing ($F(3,332) = 3.59, p = .014$), indicating unequal variances. Wellbeing also had a kurtosis value of 1.46, indicating non-normal data distribution compared to the other dependent variables, which had kurtosis and skewness values within the range of ± 1 (Appendix B). Due to the high kurtosis value and significant Levene statistic, wellbeing was checked for outliers. Outliers were determined as being three standard deviations from the mean. Three participant responses were identified as outliers and

were subsequently removed. Following the removal of these participants' data, Levene's test statistic became non-significant for wellbeing ($F(3,329) = 1.61, p = .476$; Appendix B). Following the removal of the outliers, the internal reliabilities of the composite scales were recalculated to ensure they remained at a sufficient level ($\alpha > 0.7$) to retain the composite scales, and a 2x2 between-subjects factorial ANOVA was conducted on the dependent variables (Taber, 2017).

Descriptive Statistics

Descriptive data of the means and standard deviations of the dependent variables grouped by the four conditions are shown in Table 1. Preliminary differences in the means between the conditions can be observed, however, further inferential tests were necessary to determine whether differences between the means were significant.

Inferential Analysis

The dependent variables were then analyzed using a two-way ANOVA, exploring the main and interaction effects of grunting and sexual orientation on the two clusters.

Gender Cluster

Masculinity. Grunting had a significant effect on perceived masculinity ($F(1,329) = 6.18, p = .013, \eta_p^2 = .02$) where grunting led to participants rating masculinity of the athlete lower ($M = 4.80; SE = .10; 95\% CI = 4.59, 5.00$) compared to the non-grunting condition ($M = 5.15; SE = .10; 95\% CI = 4.96, 5.34$), showing an inverse relationship to the one predicted (Figure 1). Sexual orientation, along with the interaction effect, had no significant effects regarding differences in perceived masculinity of the athlete ($F(1,329) = .96, p = .328, \eta_p^2 = .00; F(1,329) = .42, p = .52, \eta_p^2 = .00$).

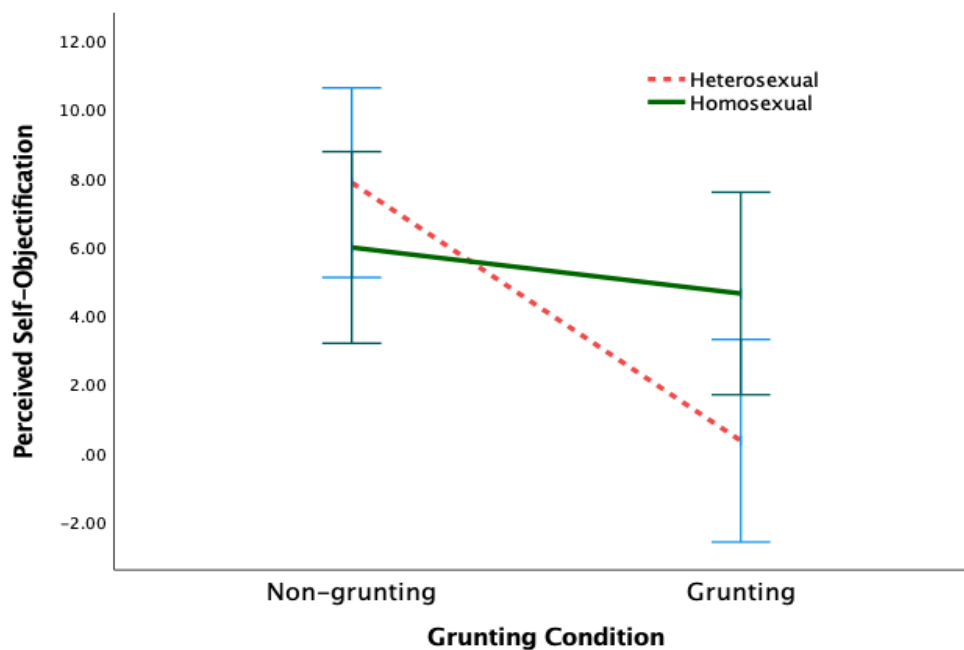
Promiscuity. There was no significant effect of grunting on perceived promiscuity of the athlete ($F(1,329) = .56, p = .454, \eta_p^2 = .00$) or sexual orientation on perceived promiscuity ($F(1,329) = .36, p = .549, \eta_p^2 = .00$), which did not follow our predictions. Furthermore, the

interaction effect of grunting and sexual orientation was also observed to have no significant effect on perceived promiscuity ($F(1,329) = .00, p = .996, \eta_p^2 = .00$).

Self-objectification. There was a non-significant effect for sexual orientation on perceived sexual objectification, opposing our initial hypothesis ($F(1,324) = .68, p = .410, \eta_p^2 = .00$). Grunting had a significant effect on perceived self-objectification ($F(1,324) = 9.25, p = .003, \eta_p^2 = .03$) whereby grunting ($M = 2.49; SE = 1.06; 95\% CI = .41, 4.58$) led to lower perception of self-objectification of the athlete than non-grunting ($M = 6.92; SE = 1.00; 95\% CI = 4.96, 8.88$). However, the interaction effect of grunting and sexual orientation on perceived self-objectification was also significant ($F(1,324) = 4.50, p = .035, \eta_p^2 = .01$), meaning the main effect of grunting cannot be interpreted on its own. Figure 2 shows a line graph of the interaction effect between grunting and sexual orientation on perceived self-objectification. The graph illustrates that when the athlete is not grunting, the heterosexual

Figure 2

Interaction Effect of Grunting and Sexual Orientation on Marginal Means of Perceived Self-Objectification



Note. Error bars show 95% confidence intervals.

and homosexual athlete are rated similarly on perceived self-objectification, demonstrated by the large overlap in their error bars, however, when the athlete is grunting, the homosexual athlete is rated higher on self-objectification than the heterosexual athlete.

Psychological Cluster

Wellbeing. There were no significant effects on perceived wellbeing for both the main effects and the interaction effect, which was not in accordance with our hypothesis. The two-way ANOVA results for grunting were $F(1,329) = .01, p = .926, \eta_p^2 = .00$, for sexual orientation $F(1,329) = .57, p = .449, \eta_p^2 = .00$, and for the interaction effect $F(1,329) = .64, p = .425, \eta_p^2 = .00$.

Warmth. There were significant results for differences in warmth perceptions of the athlete for both the main effect grunting ($F(1,329) = 13.38, p < .001, \eta_p^2 = .04$) and main effect sexual orientation ($F(1,329) = 9.83, p = .002, \eta_p^2 = .03$). As expected, the grunting condition showed lower perceptions of warmth ($M = 3.68; SE = .08; 95\% CI = 3.52, 3.84$) compared to the non-grunting condition ($M = 4.09; SE = .08; 95\% CI = 3.94, 4.24$). Interestingly, the homosexual orientation led to higher perceptions of warmth of the athlete ($M = 4.06; SE = .08; 95\% CI = 3.91, 4.22$) compared to the heterosexual condition ($M = 3.71; SE = .08; 95\% CI = 3.55, 3.87$) regardless of grunting (Figure 3). The interaction effect of grunting and sexual orientation on perceived warmth was non-significant ($F(1,329) = 1.74, p = .188, \eta_p^2 = .01$).

Competence. A significant effect of grunting on perceived competence was found ($F(1,329) = 9.09, p = .003, \eta_p^2 = .03$), where the athlete's competence was perceived lower when grunting ($M = 4.80; SE = .08; 95\% CI = 4.64, 4.96$) compared to the non-grunting condition ($M = 5.14; SE = .08; 95\% CI = 4.99, 5.29$) showing an inverse relationship to the one predicted (Figure 4). Neither sexual orientation nor the interaction had a significant effect

on perceived competence ($F(1,329) = 1.49, p = .223, \eta_p^2 = .01$; $F(1,329) = 1.74, p = .838, \eta_p^2 = .00$).

Discussion

This research aimed to investigate grunting's impact on perceptions of the variables masculinity, warmth, competence, self-objectification, promiscuity and wellbeing in order to gain a deeper understanding on the social implications of the behavior in an empirical manner. Sexuality was used as an independent variable in order to further explore the link between masculinity and sexuality, as well as evaluate possible practical applications of grunting due to the privileges the behavior was hypothesized to grant (Lez & Hertzog, 2021). The main hypothesis of the study was that the athlete would be perceived as more masculine due to grunting, which would be reflected in increased ratings of the athlete's competence, promiscuity, self-objectification and wellbeing, and decreased ratings of the athlete's warmth. Furthermore, it was expected that these trends would also be reflected across sexuality variables, showing that grunting may increase masculinity perceptions of gay men and thus provide certain benefits that are stereotypically tied to masculinity.

Gender Cluster

Masculinity

Grunting led to decreased perceived masculinity of the athlete in both sexual orientations, revealing an inverse relationship to the one hypothesized. This implies that grunting causes people to perceive grunters as less masculine than people who remain silent during their workouts. There was no significant difference in masculinity ratings between the heterosexual and homosexual condition, which was unexpected as gay men are stereotypically seen as less masculine than heterosexual men (Blashill & Powlishta, 2009). As part of our research focused on whether gay men could utilize grunting in order to gain privileges commonly attributed to masculine ideals, these findings suggest that grunting may decrease

the possibility of gaining privileges through decreasing how masculine one is perceived as. However, due to the low effect size of this relationship, the practical applications of this effect are limited. Future research should aim to investigate this more and replicate these effects.

The gender distribution of our sample, along with how we chose to measure masculinity in regards to perception, poses possible limitations to our masculinity hypothesis and potential explanations for the unexpected result. Lev and Hertzog's (2021) research, on which we based our masculinity hypothesis, refer to anecdotal evidence that women tend to refrain from grunting and see it as unnecessary. As our sample was mainly composed of women, perhaps the view of grunting was thus skewed in a more negative direction in regards to masculinity. By utilizing a sample with a more equal gender distribution, possible differences in perception determined by gender could, to an extent, be controlled for. Future research could empirically test differences in men and women's views on grunting in order to see if the gender of the perceiver has a significant effect on masculinity ratings. Furthermore, Lev and Hertzog (2021) combined perspectives on grunting from grunter's themselves and others, suggesting that grunters in gyms hold the behavior in a higher regard than non-grunters. As we focused solely on how others perceived people who grunt, future research could thus measure masculinity perceptions of grunters themselves to investigate whether masculinity ratings differ depending on the perspective measured.

Future research could focus on the masculine overcompensation hypothesis and theories on internalized homophobia. The masculine overcompensation hypothesis suggests that when men experience threats to their masculinity, they overcompensate by behaving in more traditionally masculine ways (Willer et al., 2013). Thus, future research could focus on whether grunting during exercise increases when participants are faced with internal threats to masculinity in order to further explore the link between grunting and masculinity. As our research shows that grunting decreases perceived masculinity, it would be interesting to

research observers' reactions to overcompensation behavior in order to determine to what extent overcompensation behavior has the desired effect. A primary threat to masculinity in the masculine overcompensation theory is to be perceived as homosexual. Thepsourinthone et al. (2020) found strong correlations between internalized homophobia in gay men and adherence to stereotypically masculine ideals. Investigating the possible link between internalized homophobia and masculine behavior, such as grunting, could provide further insight on the link between grunting and masculinity with a focus on sexuality. For instance, a field study whereby gym-goers who are first, through observation, determined to grunt during workouts or remain silent, are then asked to fill out internalized homophobia measures in order to determine to what extent grunting and internalized homophobia are linked.

Promiscuity

Neither grunting nor the manipulation of the sexuality variable had a significant effect on perceived promiscuity of the athlete. We predicted that promiscuity ratings would increase during grunting based on anecdotal evidence that grunting indicates a voluntary and intentional way of drawing attention to the self, leading to the perception that the grunter is more confident, correlating more with promiscuity than an individual who is perceived as less confident. However, this hypothesis was not sufficiently supported in our research. Thus, our results imply that grunting and sexual orientation do not greatly affect perceivers ratings of promiscuity of an athlete.

Our promiscuity hypothesis was based on anecdotal evidence linking confidence and promiscuity. This hypothesis could potentially be improved by verifying whether this correlation exists before using it to infer promiscuity predictions. Furthermore, we hypothesized that gay men would be seen as more promiscuous than heterosexual men following a study from Mor et al. (2014) that showed evidence of a higher frequency of risky sexual activity for gay than heterosexual gym-going men. However, Mor et al.'s study was

based on self-reported ratings of sexual activity, while we focused on others perception of the athlete, thus pointing at possible differing conceptualizations of promiscuity between the studies.

Future research could investigate whether grunting influences perceived promiscuity of female athletes. This follows findings from the paper from Lev and Hertzog (2021) that provides quotes from the male gym population that often attribute women's grunts to something sexual. This would lead to insight regarding perceived gender differences in specific environments, such as the gym, and whether grunting has moderating variables such as gender.

Self-Objectification

Grunting led to lower perceived self-objectification of the athlete, opposing our hypothesis. Despite grunting's significant effect on self-objectification, the significant interaction effect between grunting and sexuality points at a more complex relationship between the variables that cannot be attributed solely to grunting. The interaction effect demonstrated that gay men are rated higher on self-objectification when grunting than straight men, even though they were rated similarly to straight men on self-objectification in the non-grunting condition. The interaction effect implies that although grunting may decrease perceptions of self-objectification, being perceived as homosexual moderates that affect. However, the effect size is small and the validity of the measuring instrument is questionable regarding how we utilized it, specifically in our design.

A limitation to the self-objectification measure was that the scale is based on the self-objectification theory by Frederickson and Roberts (1997), which looks at objectification from the perspective of the individual being sexualized. As we measure others' perception of the athlete, the scale might lose its validity in our research as we infer self-objectification

from an outside party. A more valid approach could be a field study where people who are observed to grunt in gyms are then asked to fill out self-objectification scales.

Future research could investigate the differences in baseline perceptions of sexual objectification of gay and heterosexual men. This would look at the foundation of self-objectification, namely external sexual objectification, which may be more fitting to our research design as it is focused on outsiders' perception. Using means such as the Implicit Association Test could empirically evaluate whether grunting induces unconscious bias surrounding sexualization, in the case of sexuality (Greenwald et al., 1998).

Psychological Cluster

Wellbeing

Wellbeing, a composite including measures of self-esteem, body image and life satisfaction, was hypothesized to increase due to grunting. However, neither grunting nor sexuality significantly influenced perceptions of the athlete's wellbeing, implying that grunting and sexuality have no clear implications regarding perceptions of wellbeing in a gym setting.

Our hypothesis was mainly based on assumptions surrounding masculinity, such as that grunting would lead to an individual being regarded as more confident and powerful, which was then predicted to reflect people's perception of the athlete's wellbeing. Thus, a lack of literature to base hypotheses on acted as a limitation. Furthermore, the literature in relation to self-esteem and body image used evaluated self-perceptions, as opposed to our research which focused on others' perceptions of the athlete. Thus, their findings may not be compatible with our research design as the scope through which they measure the same variable as us differ in terms of perception (Anderson & Galinsky, 2006; Murray & Touyz, 2012; Mor et al., 2014). Future research could therefore acknowledge this difference in

perception by measuring self-rated wellbeing of participants when engaging in grunting during workouts, compared to remaining silent.

Warmth-Competence

As hypothesized, grunting led to the athlete being perceived as less warm, rating lower on dimensions of friendliness, warmth, sincerity and good-natured-ness. The homosexual athlete was perceived as more ‘warm’ than the heterosexual athlete, which had not been predicted. A possible explanation for this result could be that our sample size was mainly composed of women, and research suggests that heterosexual women rate gay men higher on likeability than heterosexual men do (Cohen et al. 2009). These results imply that grunting while exercising may increase the probability of being disliked by bystanders to some extent, however, the small effect size limits its practical implications.

The hypothesis distinguished warmth as being, to some extent, in opposition to perceived masculinity, which grunting was hypothesized to increase for the athlete. However, considering grunting lowered perceptions of the athlete’s masculinity, the foundation of the warmth hypothesis is possibly invalid. In general, ratings of high warmth correspond with increased likeability, as stipulated by the stereotype content model (Fiske, 2018). Future research could therefore investigate the mechanisms through which grunting decreases warmth by, for instance, measuring likeability of grunting individuals.

Similar to the results of the perceptions of the athletes masculinity, competence was rated lower in the grunting condition, opposing our expectations. Our hypothesis predicted that perceived competence would increase as a result of grunting due to competence including attributes often linked to stereotypically masculine ideals (Fiske, 2018). The decrease in perceived masculinity may therefore explain the decrease in perceived competence. Unlike warmth, perceived competence did not vary significantly across sexual orientations. The findings imply that grunting increases the possibility that an individual will be perceived as

less competent by others. The small effect size of the relationship between grunting and perceived competence limits the practical applications of the findings.

Limitations and Future Directions

Certain limitations to the method may have impacted the reliability and possible applications of the results. Firstly, the study was designed in order to empirically test claims mainly made in the qualitative Lez and Hertzog (2021) paper. However, the use of a survey following a video may be an oversimplified and unnatural method to test the effect of grunting and sexual orientation on multiple variables. Furthermore, the consistency of the grunting audio track compared to the cut and edited workout video may make it apparent to the participant that the athlete is not actually grunting. This may lead to participant expectations surrounding the focus of the study, as well as creating an unnatural experiment that may lead to non-externally valid results. Considering the research focuses on grunting in a gym setting, it would be beneficial to combine aspects of a field study along with surveys in order to have a method that leads to more practically generalizable results. For instance, by having our athlete grunt in a workout setting, and then surveying willing participants in the area could lead to more valid results as the study is more in line with real life settings.

Furthermore, our design only collected results from heterosexual participants which impacts the external validity of our results. Although this controls for possible moderators in terms of the participants sexual orientation, gyms are not only reserved for heterosexual people. Thus, the social implications of grunting or sexuality on other's perception of an individual in a gym found in this research would be limited to how the heterosexual gym population would evaluate an individual. However, literature previously cited in our study, such as Duncan's (2008) paper on gay men and body image, do discuss a possible emphasis on body image and gym culture in homosexual communities. Future research could thus be to measure homosexual participants' perspective on grunting individuals in gyms in order to

investigate body image and grunting solely through the scope of homosexual participants, and comparing it to heterosexual participants views, discussed in this paper.

Another variable that could be investigated in the scope of our research would be how body shape and size moderated the relationship between perceptions of the athlete's warmth-competence, grunting and sexuality. In the current study, the athlete was of average age and shape and was kept consistent across all four conditions. However, research points at body shape and size having an effect on measures of warmth and competence, following the stereotype-content model (Baker & Florack, 2021). As our research points to differences in ratings of warmth and competence between grunting and sexuality conditions, evaluating body size and shape could add an extra dimension to our findings and to how others perceive people in the gym.

Conclusion

The research at hand demonstrates experimental evidence of novel relationships regarding the influence of grunting and sexuality on masculinity perceptions in a social environment, challenging our assumptions surrounding masculinity. The exploratory nature of our research may limit the practical applications of the results, yet motivates a large variety of future directions. However, for now, if you want to decrease your chances of being seen as less masculine, less competent and less warm, refrain from grunting at the gym.

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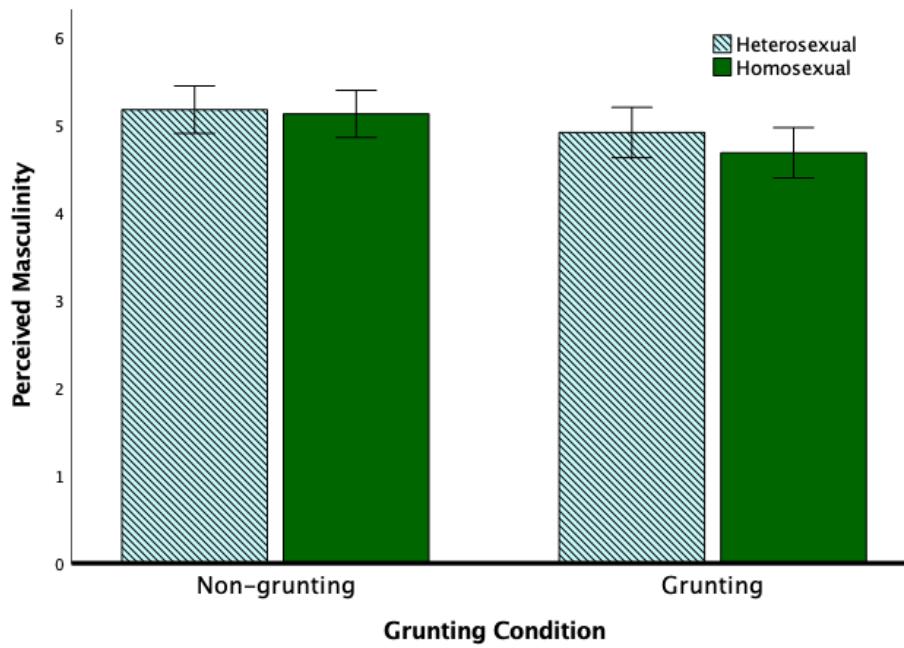
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Table 1*Means and Standard Deviations of Dependent Variables for the Conditions*

Variable	Condition			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Sample Size N	88	89	78	78
Masculinity M(SD)	5.17 ± 1.25	5.15 ± 1.23	4.19 ± 1.29	4.68 ± 1.39
Promiscuity M(SD)	2.72 ± 1.39	2.82 ± 1.66	2.85 ± 1.46	2.95 ± 1.76
Wellbeing M(SD)	5.36 ± .87	5.52 ± .96	5.43 ± 1.00	5.42 ± .85
Warmth M(SD)	3.99 ± .99	4.19 ± .97	3.43 ± 1.06	3.93 ± 1.11
Competence M(SD)	5.08 ± .87	5.19 ± 1.07	4.72 ± 1.02	4.88 ± 1.12
Sample Size N	88	86	77	77
Sex-Object M(SD)	7.86 ± 11.72	5.98 ± 13.91	.35 ± 13.21	4.64 ± 13.76

Figure 1

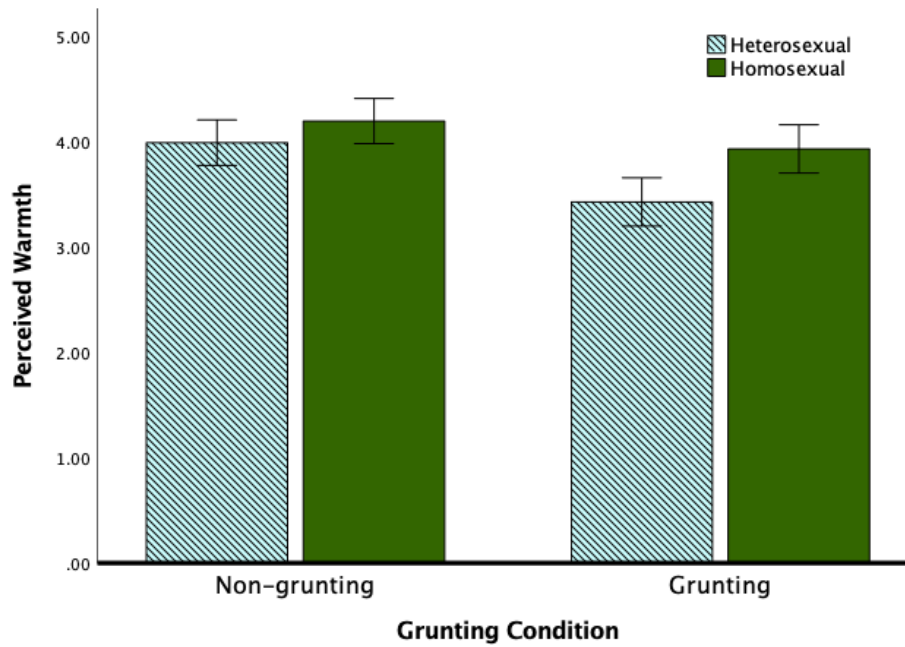
Estimated Marginal Means of Perceived Masculinity Across Grunting and Sexual Orientation Conditions



Note. Error bars show 95% confidence intervals.

Figure 3

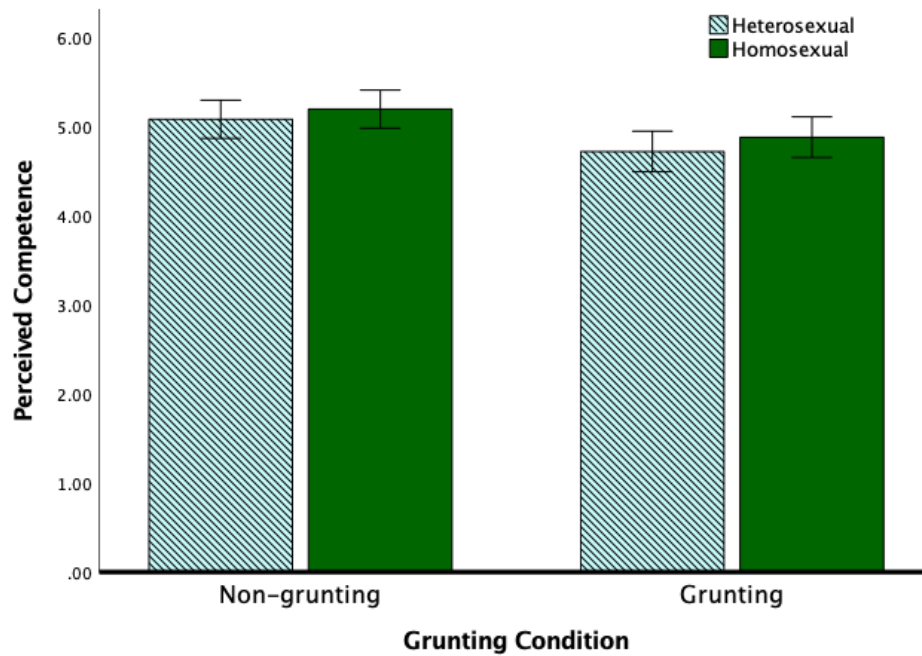
Estimated Marginal Means of Perceived Warmth Across Grunting and Sexual Orientation Conditions



Note. Error bars show 95% confidence intervals.

Figure 4

Estimated Marginal Means of Perceived Competence Across Grunting and Sexual Orientation Conditions



Note. Error bars show 95% confidence intervals.

Appendix A**Demographic data****Table A1***Demographic Data Participants*

Variable	Condition			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Sample size <i>n</i>	88	89	78	78
Age M(SD)	34.60 ± 14.48	33.48 ± 12.25	36.66 ± 13.48	34.91 ± 12.10
Male (%)	27.30	20.02	20.50	26.90

Table A2*Demographic Data Participant Political Ideology and Self-rated Socioeconomic Status*

Variable	Condition			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Political Ideology (1=very liberal, 7=very conservative)	3.04 ± 1.64	3.20 ± 1.71	3.29 ± 1.67	3.25 ± 1.79
Self-rated socioeconomic status (1= high SES, 10=low SES)	5.51 ± 1.78	5.71 ± 1.66	5.56 ± 1.88	5.79 ± 1.57

Table A3*Participant Workout Frequency*

Workout Frequency	Condition			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Never	31	43	29	25
Sometimes	24	18	20	26
A few times a week	25	14	16	20
Most days of the week	8	11	12	4
Everyday	0	3	1	3

Table A4*Participant Education Level*

Education Level	Condition			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Secondary education	1	1	3	1
High school / A level	21	20	15	19
Technical / community college degree	11	11	9	8
Undergraduate degree	44	42	40	32
Postgraduate degree	9	15	10	15

Doctorate degree	2	0	1	3
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Appendix B**Assumption Checks and Outliers**

Table B1
Skewness and Kurtosis Values for Each Dependent Variable Before Removal of Outliers

Variable	Skewness			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Warmth (\pm SE skew)	.20 \pm .26	-.41 \pm .26	.30 \pm .27	-.62 \pm .27
Wellbeing (\pm SE skew)	-.61 \pm .26	-.28 \pm .26	-1.06 \pm .27	-.18 \pm .27
Competence (\pm SE skew)	-.17 \pm .26	-.80 \pm .26	-.42 \pm .27	-.85 \pm .27
Masculinity (\pm SE skew)	-.58 \pm .26	-.50 \pm .26	-.45 \pm .27	-.47 \pm .27
Promiscuity (\pm SE skew)	.26 \pm .26	.55 \pm .26	.20 \pm .27	.54 \pm .27
Sexual Objectification (\pm SE skew)	-.40 \pm .26	-.50 \pm .26	-.16 \pm .27	-.41 \pm .27
Kurtosis				
Warmth (\pm SE kurtosis)	1.23 \pm .51	1.38 \pm .51	.61 \pm .53	.72 \pm .54
Wellbeing (\pm SE kurtosis)	.21 \pm .51	-.35 \pm .51	1.88 \pm .53	-.22 \pm .54
Competence (\pm SE kurtosis)	.42 \pm .51	2.01 \pm .51	.19 \pm .53	.72 \pm .54
Masculinity (\pm SE kurtosis)	.75 \pm .51	.73 \pm .51	.16 \pm .53	-.01 \pm .54
Promiscuity (\pm SE kurtosis)	-1.07 \pm .51	-.49 \pm .51	-.86 \pm .53	-.61 \pm .54

Sexual Objectification (\pm SE kurtosis)	$-.68 \pm .51$	$-.80 \pm .51$	$-.98 \pm .53$	$-.80 \pm .54$
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Table B2

Skewness and Kurtosis Values for Each Dependent Variable After Removal of Outliers

Variable	Skewness			
	Non-grunting Heterosexual	Non- grunting Homosexual	Grunting Heterosexual	Grunting Homosexual
Warmth (\pm SE skew)	$.20 \pm .26$	$-.41 \pm .26$	$.25 \pm .27$	$-.62 \pm .27$
Wellbeing (\pm SE skew)	$-.61 \pm .26$	$-.28 \pm .26$	$-.22 \pm .27$	$-.18 \pm .27$
Competence (\pm SE skew)	$-.17 \pm .26$	$-.80 \pm .26$	$-.23 \pm .27$	$-.85 \pm .272$
Masculinity (\pm SE skew)	$-.58 \pm .26$	$-.50 \pm .26$	$-.16 \pm .27$	$-.47 \pm .27$
Promiscuity (\pm SE skew)	$.26 \pm .26$	$.55 \pm .26$	$.15 \pm .27$	$.54 \pm .27$
Sexual Objectification (\pm SE skew)	$-.40 \pm .26$	$-.50 \pm .26$	$-.20 \pm .27$	$-.40 \pm .27$
Kurtosis				
Warmth (\pm SE kurtosis)	$1.23 \pm .51$	$1.38 \pm .51$	$.77 \pm .54$	$.72 \pm .538$
Wellbeing (\pm SE kurtosis)	$.20 \pm .51$	$-.35 \pm .51$	$-.61 \pm .54$	$-.22 \pm .54$
Competence (\pm SE kurtosis)	$.42 \pm .51$	$2.01 \pm .51$	$-.03 \pm .54$	$.72 \pm .54$
Masculinity (\pm SE kurtosis)	$.75 \pm .51$	$.73 \pm .51$	$-.18 \pm .54$	$-.01 \pm .54$

Promiscuity (\pm SE kurtosis)	-1.07 \pm .51	-.49 \pm .51	-.87 \pm .54	-.61 \pm .54
Sexual Objectification (\pm SE kurtosis)	-.68 \pm .51	-.80 \pm .51	-.94 \pm .54	-.80 \pm .54

Table B3

Levene's Test Values for Each Dependent Variable Before Removal of Outliers

Dependent Variable	Levene's test Statistic			
	Levene Statistic (F)	df1	df2	<i>p</i>
Warmth	1.08	3	332	.358
Wellbeing	3.59	3	332	.014
Competence	1.62	3	332	.184
Promiscuity	2.12	3	332	.098
Masculinity	.88	3	332	.454
Sexobject	1.70	3	327	.181

Table B4

Levene's Test Values for Each Dependent Variable After Removal of Outliers

Dependent Variable	Levene's test Statistic			
	Levene Statistic (F)	df1	df2	<i>p</i>
Warmth	.83	3	329	.476
Wellbeing	1.61	3	329	.188
Competence	1.40	3	329	.243
Promiscuity	2.08	3	329	.102
Masculinity	.51	3	329	.676
Sexobject	1.67	3	324	.174

Table B5

Removed Outlier Scores on Dependent Variable Wellbeing

Case number	Wellbeing score	Predicted value	Residual
205	1.00	5.28	-4.28
211	1.33	5.28	-3.94
250	2.00	5.28	-3.28