“Just Joking”: Women’s Cardiovascular Responses to Sexist Humor

by

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Table of Contents

List of Tables

List of Figures

Abstract

The ambiguity inherent to humorous communication may make women minimize experiences of sexist jokes, which may have downstream emotional and motivational consequences. The present thesis study tested whether the manner in which sexism is communicated, as a statement or joke, would reflect the motivational intensity model in cardiovascular responses during a performance-based task. Additionally, the present studies tested whether blatant and humorous sexism differentially affects emotional responses, evaluations of a male speaker, reporting of sexist misconduct, and ingroup identification. Using an online chat paradigm, participants were randomly assigned to receive one of three messages: a sexist joke, blatantly sexist statement, or non-sexist statement, ostensibly sent by a fellow male participant named Mike. Self-reported anger toward Mike did not differ between sexism conditions; if participants experienced more anger, they had increased HR reactivity, as evidenced by a significant indirect effect for mediation. In Study 1, participants had more positive evaluations of Mike in the sexist joke condition compared to the sexist statement condition, whereas evaluations did not differ between sexism conditions in Study 2. In Study 2, participants in the sexist joke condition reported Mike's inappropriate behavior significantly less frequently than those in the sexist statement condition. In sum, sexist humor and blatant sexism elicit the same cardiovascular responses indicative of increased motivational intensity. Humor in sexist communication prevents women from reporting misconduct of the sexist male speakers and may cause distancing from one's stigmatized ingroup. Additionally, women's evaluations of men are not necessarily influenced by their attributions of sexism toward him. Implications are discussed.

Introduction

Over the last half-century in the United States, egalitarian norms have been driven by anti-discrimination legislation and recent movements like Black Lives Matter or #MeToo (Schuman, Steeh, & Bobo, 1997; Juris 2012). These changes may indicate progress on some fronts. However, mainstream popularity of egalitarian norms may simply help conceal prejudice, while the exclusion of stigmatized people persists (Alexander, 2012). While expressions of overt, blatant prejudice have declined, ambiguous expressions of prejudice, in which group-based bias is unclear, remain stable (Dovidio & Gaertner, 2000). For example, antagonistic attitudes toward women that overtly convey male superiority have evolved to a more subtle denial of gender discrimination (Swim Aikin, Hall, & Hunter, 1995). In a similar vein, women have made significant strides toward social and economic equality in the late 1900s, but this progress has plateaued since the mid-1990s (England, 2010). This stagnation may be explained in part by greater reliance on ambiguity in how sexism is communicated.

Traditional conceptualizations of prejudice are often thought of as overtly negative and antagonistic (Glick & Fiske, 1996). These blatant expressions of prejudice, in which group-based bias is overt, allow for attributions of negative intent to be made. Such behavior is often condemned, because group-based prejudice violates egalitarian norms (Crandall, Eshleman, & O'Brien, 2002). Additionally, blatant subjugation is not an effective long-term strategy for dominant groups, given it eventually causes uprisings (Jackman, 1994). Therefore, ambiguous forms of subordination are used to coax subordinate groups into being complicit in their own oppression, thereby allowing dominant groups to effectively maintain their status (Jackman, 1994; Jost, Banaji, & Nosek, 2004). Dominant group members' prejudice can be disguised

through the use of benevolence, legitimizing ideologies, or rationalizing language, all of which can cause dominant group members to appear to have positive intentions (Jackman, 1994; Alexander, 2012). These strategies that obscure group-based bias allow prejudice to persist under egalitarian norms, albeit in ambiguous forms (Ellemers & Barreto, 2009; Hill, 2009).

Using humor to express prejudice is an especially effective way to uphold social hierarchies because of its inherent ambiguity. Humor transcends the standard rules of conversation by indicating a listener should not take a given message at face value (Grice, 1970). This can blur a speaker's intent, which can make an otherwise socially unacceptable message palatable (Raskin 1994). Humor is also subjectively positive communication and is viewed as a mode of play (Mannell & McMahon, 1982). Further, humor can protect a speaker's malicious message against potential backlash because it provides a defense of, "it was only a joke" (Raskin & Attardo, 1994). Therefore, in societies that espouse egalitarian norms, disparaging humor in everyday language functions to maintain stereotypes, and thus, prejudice (Hill, 2009).

Sexist humor indicates that an individual's immediate social norm is accepting of sexism (Ford & Ferguson, 2004). Societal acceptance of sexism not only serves as justification for men to express prejudice against women (Ford, Boxer, Armstrong, & Edel, 2008; Ford, Wentzel, & Lorion, 2001) but also prevents women from challenging the status quo (Mallett, Ford, & Woodzicka, 2016). Specifically, humor in sexist communication prevents women from confronting sexism and increases women's tolerance of sexual harassment (Mallett, Ford, & Woodzicka, 2016). In contrast, exposure to blatant sexism does not have these effects; humor in sexist communication makes light of sexism, whereas blatantly sexist communication does not (Mallet, Ford, & Woodzicka, 2016; Ford & Ferguson, 2004).

Experiencing demeaning jokes about one's stigmatized group is the most frequently reported type of microaggression (i.e., a commonplace instance of stigmatization that is often perceived as benign) (Van Laer & Janssens, 2011; Yosso, Smith, Ceja, & Solórzano, 2009; Sue, Capodilupo, Torino, Bucceri, Holder, Nadal, & Esquilin 2007). Sexist jokes are also classified as sexual harassment (Fitzgerald, Magley, Drasgow, & Waldo, 1999; Siebler, Sabelus, & Bohner, 2008). However, little is known about how stigmatized individuals experience disparaging humor.

Self-Esteem, Attributions, and Emotion

Disparaging humor possesses a unique feature not shared by other forms of ambiguous expressions of prejudice, in that inherent to humor is an indication to interpret the communication in a non-critical way (Raskin, 1994). Therefore, humor that targets an individual's stigmatized group may have especially insidious consequences for the self.

The attributional process may explain how ambiguous and blatant prejudice elicit different motivations and emotions (Crocker, Voelkl, Testa, & Major, 1991; Barreto & Ellemers, 2005). People deduce personal relevance by making causal attributions, or explanations, to experiences (Snyder & Wicklund, 1981). Individuals may believe an experience is due to something about themselves (internal attribution) or an outside factor (external attribution). Internal and external causal attributions determine the extent of self-relevance and have differential downstream emotional and behavioral consequences, such as (Tracy & Robins, 2004; Perren, Ettekal, & Ladd, 2013).,

Although stigmatized people receive a disproportionate level of negative evaluations from others, making external attributions to prejudice, and away from the self, protects self-esteem (Crocker & Quinn, 2000; Crocker & Major 1989). For example, if a stereotype is

perceived as biased by a target, it is determined to be irrelevant to the self, and thus, the evaluation is discounted. Because the evaluation is not incorporated into one's self-view, self-esteem is not affected. Further, external attributions predict emotions that are externally oriented (Tracy & Robins, 2004), which may explain why blatant sexism gives rise to greater approach emotions, such as anger, than ambiguous sexism (Barreto & Ellemers, 2005; Wang, Stroebe, & Dovidio, 2012). External attributions to prejudice allow targets to identify the source of a perceived injustice, which creates a pathway for a potential behavioral response.

In contrast, an experiencing ambiguous prejudice causes inhibition: greater negative self-directed emotion, negative self-evaluations, and hits to self-esteem, relative to blatant prejudice, suggesting greater internal attributions were made to mistreatment (Major, Quinton, & McCoy, 2003; Major, Kaiser, & McCoy, 2003). Internal attributions to negative experiences (i.e., "it happened because of something about *me*,") make salient the ways in which one does not live up to standards, which decrease self-esteem (Brewin, 1986) and elicit self-conscious emotions, such as shame or embarrassment (Tracy & Robins, 2006). Additionally, negative self-conscious emotions are associated with displays of submissiveness and withdrawal to mitigate the consequences of social threat (Gilbert, 2000). Internal attributions elicit withdrawal emotions, such as shame, because characteristics of the self cannot easily be resolved (Tangney, 1999) and no direct action can change internal, global characteristics of the self (Abramson, Seligman, & Teasdale, 1978). Supporting the idea that ambiguous sexism disarms targets, it causes greater anxiety, and less willingness to protest mistreatment, relative to blatant sexism (Barreto & Ellemers, 2005; Barreto, Ellemers, Scholten, & Smith, 2010; Cihangir, Barreto, & Ellemers, 2014).

Humor disguises negative intent in sexist communication, which inhibits external attributions to prejudice (Mallett et al., 2016). This may leave greater room for internal attributions, given a target may look internally for a reason the comment was made. Therefore, experiencing a sexist joke may cause increased negative self-conscious emotion and hits to self-esteem. On the other hand, blatant sexism makes negative intent clear, which makes it easier to make an external attribution to prejudice. If a speaker of sexist communication is perceived as having caused the negative evaluation, rather than the self, self-esteem is not affected (Crocker & Major, 1989). The evaluation may be seen as unjust and increase feelings of anger.

Although internal and external attributions predict self and other-directed emotions respectively, they are not mutually exclusive. Experiencing prejudice can simultaneously elicit shame and anger, as well as internal and external attributions to prejudice (Matheson & Anisman, 2009; Blodorn, Major, & Kaiser, 2016; Schmitt & Branscombe, 2002; Tangney, Hill-Barlow, Wagner, Marschall, Borenstein, Sanftner, & Gramzow, 1996). Further, anger and shame each have negative implications for health (Dickerson, Gruenewald, & Kemeny, 2004; Brosschot & Thayer, 1998). However, anger can be constructive by providing motivation to interpersonally or systematically challenge the status quo (Jost, Chaikalis-Petritsis, Sidanius, Van Der Toorn, & Bratt, 2012; Hercus, 1999). On the other hand, negative self-conscious emotion may undermine approach motivation (Tracy & Robins, 2006).

Attitudes Toward Women

Exposure to ambiguous sexism may not necessarily lead to negative attitudes toward the self (as marked by impaired self-esteem and negative self-directed emotion) but may lead to negative perceptions of the ingroup. In some cases, exposure to sexism can decrease women's gender bias (Ramos, Barreto, Ellemers, Moya, Ferreira, & Calanchini, 2016). However, this

effect likely only applies to sexism that women are able to identify as such (i.e., blatant sexism). Sexism that is not overtly negative is more likely to lead women to accept negative beliefs about their group (Jackman, 1994; Mallett et al., 2016; Sibley, Overall, & Duckitt, 2007; Becker, 2010). Additionally, ignoring sexism leads to tolerance of sexual harassment (Mallett, Ford, & Woodzicka, 2019). Therefore, exposure to sexist humor may increase negative attitudes toward women. Specifically, sexist humor may increase sexual harassment tolerance, given that it taps into hostile stereotypes of women through measuring attributions of blame toward a female victim of sexual harassment (Mallett et al., 2016).

Additionally, exposure to ambiguous sexism has been shown to increase gender self-stereotyping, by leading women to accept their subordination through incorporating a sexist stereotype into their self-perception (Barreto & Ellemers, 2005; Barreto et al., 2010; Cihangir, Barreto, & Ellemers, 2014). However, self-stereotyping is not necessarily an indication of acceptance of sexism. To demonstrate, self-stereotyping also predicts confrontation of sexism and collective action on behalf of the group (Becker, Barreto, Kahn, & de Oliveira Laux, 2015; Leonard, Moons, Mackie, & Smith, 2011). In other words, self-stereotyping has been associated with *both* acceptance of and opposition toward the gender status quo because self-stereotyping can be associated with both acceptance of the gender roles which function to subordinate women *or* reflect strong group identity and solidarity with the ingroup. Sexist humor, which should cause more identity threat than blatant sexism, may lead women to distance themselves from the ingroup in an effort of self-preservation (Derks, Van Laar, & Ellemers, 2016), resulting in decreased self-stereotyping. Additionally, sexist humor could lead to greater self-stereotyping that reflects an acceptance of women's subordinate status. In sum, exposure to sexist humor may lead to increased *or* decreased gender self-stereotyping.

Motivation

Experiencing sexist humor may have negative consequences for motivation by impacting perceived ability in and success importance of stereotyped domains. For example, sexist stereotypes often depict women as incompetent. Believing oneself to be a member of a group that does not perform well may decrease the perceived possibility of success or perceived individual ability, which can cause disengagement from goals related to stereotyped domains (Woodcock, Hernandez, Estrada, & Schultz, 2012). This is likely because individuals aim to expend effort in cost-effective ways (Brehm & Self, 1989). Effort is the intensity and direction in which resources (e.g., attentional or metabolic) are expended in pursuing a goal (Richter, Gendolla, & Wright, 2016), which is determined by perceived ability and the importance of success (Brehm & Self, 1989; Wright & Kirby, 2001). If individuals believe they do not possess the ability to achieve success or believe achieving success is not worth the required effort expenditure, they avoid exerting effort that could otherwise be spent on more worthwhile endeavors.

Exposure to sexist stereotypes that is not easily attributed to prejudice, such as those expressed through sexist jokes, present a threatening idea: the stereotype can be attributed to something internal to women (Barreto & Ellemers, 2005). Attributing a shortcoming to characteristics of one's group, rather than to prejudice, is akin to an internal attribution because group membership is a part of the self (Tajfel, 1982). Further, when individuals fear they might perform poorly, they may exert less effort in order to blame failure on lack of effort, rather than lack of ability (Snyder & Wicklund, 1981). Therefore, exposure to a stereotype that is seen as relevant to the self (i.e., ambiguous sexism) might impede effort.

Supporting the idea that internal attributions demotivate women, ambiguous sexism causes lower performance self-esteem, greater self-handicapping, and worse performance and self-efficacy in comparison to blatant sexism (Cihangir et al., 2014; Kuchynka, Salomon, Bosson, El-Hout, Kiebel, Cooperman, & Toomey, 2018). Additionally, women's math performance, a domain in which women are stereotyped to perform poorly, is impaired when reminded of their gender (Danaher & Crandall, 2008). Further, these effects are strongest when experimental manipulations are indirect and subtle (Nguyen & Ryan, 2008). On the other hand, women exposed to blatant sexism may exert greater effort in order to prove a stereotype wrong because it is easier to make an external attribution to prejudice (Mendoza-Denton, Shaw-Taylor, Chen, & Cheng, 2009; Salomon, Burgess, & Bosson, 2015).

Emotional Recovery

Experiencing sexist humor, precisely because of its perceived non-seriousness, may prevent women from overcoming its emotional consequences. Women expect their emotional responses to hostile sexism to last longer than responses to benevolent sexism; however, women report taking a longer period of time to emotionally recover from benevolent sexism (Bosson, Pinel, & Vandello, 2009). This also holds for experiences unrelated to prejudice; mild stressors can take longer to emotionally recover from than intense stressors (Gilbert, Lieberman, Morewedge, & Wilson, 2004). If individuals do not appraise a stressor as requiring coping strategies, they do not engage in coping that would otherwise mitigate stress, thus extending the emotional response (Bosson, Pinel, & Vandello, 2009). The same may be true for women's emotional responses to sexist humor.

There are several reasons as to why women would fail to appraise sexist humor as requiring coping strategies and minimize its impact. First, it is socially unacceptable to make

attributions to prejudice. Those who do are evaluated as "hypersensitive" or "troublemakers" (Kaiser & Miller, 2001), especially when prejudice is expressed through a joke (Woodzicka, Mallett, Hendricks, & Pruitt, 2015). Furthermore, women are stereotyped as over-emotional in general (Barrett & Bliss-Morea, 2009; Ghavami & Peplau, 2013), which provides women incentive to avoid making attributions to prejudice, lest they fulfill the stereotype of a "hysterical woman." The minimization of an experience with sexist humor may lead to attempts to suppress thoughts about the experience, which unintentionally can increase thoughts about the stressor (Dardenne, Dumont, Sarlet, Phillips, Balteau, Degueldre, … & Collette, 2013). In support of this hypothesis, exposure to ambiguous prejudice predicts activity in cortical regions associated with thought suppression and intrusive thought more so than blatant prejudice (Dardenne et al., 2013).

Additionally, the uncertainty in experiencing sexist humor should prolong the causal attributional process in judging why the comment was made. Ambiguous behavior provides multiple reasons as to why an individual behaved a certain way (Hilton, Fein, & Miller, 1993). Considering several explanations when presented with ambiguous behavior, instead of quickly deciding an individual's true attitudes when behavior is overt, prolongs the cognitive representation of the experience. This may result in rumination (Barreto & Ellemers, 2015), which is repetitive negative thought that is often self-reflective (Nolen-Hoeksema, 1991; Gerin, Davidson, Christenfeld, Goyal, & Schwartz, 2006). If a speaker's intent is unclear, no clear solution exists to end the rumination process. In support of this hypothesis, exposure to ambiguous prejudice impairs working memory, which can be an indicator of rumination (Salvatore & Shelton, 2007; Dardenne, Dumont, & Boiler, 2007; Curci, Lanciano, Soleti, & Rimé, 2013).

Cardiovascular Reactivity

Given that ambiguous and blatant sexism elicit different emotional and motivational responses, they should also elicit different cardiovascular stress responses. Cardiovascular reactivity is the extent to which cardiovascular function increases from individuals' resting levels during challenging tasks or situations. It can also be an index of effort during these tasks. The cardiovascular system is a primary measure of effort because the sympathetic nervous system prepares an organism for action (Brehm & Self, 1989). Active engagement in one's performance predicts cardiovascular activation: when individuals complete tasks in which they have the ability to control outcomes through their performance, compared to when outcomes are not contingent on performance, sympathetic myocardial responses increase (Obrist, 1981; Wright & Kirby, 2001). Incentives to succeed increase success importance, which then predict increased sympathetic myocardial responses (Obrist, 1981; Richter & Gendolla, 2009; Gendolla & Richter, 2006). This is likely because positive outcomes that might be achieved through success increase the energy individuals are willing to exert to succeed (Brehm & Self, 1989).

Cardiovascular reactivity can also serve as an indicator of anger during challenging situations. State anger is related to greater increases in cardiovascular reactivity (Kassam & Mendes, 2013). Similarly, trait hostility and aggression are associated with increased cardiovascular reactivity (Chida & Hamer, 2008). Exposure to hostile sexism elicits cardiovascular reactivity, and anger mediates the association between sexism and reactivity (Salomon et al., 2015). If a target of sexist humor, particularly humor that depicts stereotypes of incompetence, is unable to make an attribution to prejudice, she may believe herself or her group to be inept, thereby putting forth less effort and exhibiting decreased cardiovascular reactivity. On the other hand, a target of a blatantly sexist statement is able to make an attribution to

prejudice, thereby increasing anger directed at the speaker and providing more motivation to prove the speaker wrong, which would predict greater cardiovascular reactivity.

Domain-Specific Self-Esteem and Motivation

As mentioned previously, impaired self-esteem is an outcome of ambiguous prejudice exposure. However, self-esteem may also *moderate* cardiovascular responses to ambiguous prejudice. Individuals that view tasks as self-relevant exhibit greater effort expenditure, as indexed by cardiovascular reactivity during a task (Gendolla & Richter, 2010). Given that the domains in which individuals base their self-esteem on vary (Crocker, Luhtanen, Cooper, & Bouvrette, 2003), those who possess self-esteem in a particular task domain are more likely to possess motivation to be successful at the task. In contrast, those whose self-esteem is *not* contingent upon task performance would have less motivation to expend effort in a given task.

The effect of self-relevance on CV reactivity may be compounded by exposure to sexism that expresses a stereotype of incompetence, especially if it is expressed ambiguously. Women who have low self-esteem in a particular stereotyped domain who are also exposed to an ambiguous sexist message of incompetence would have less motivation to perform at the task. Ambiguous sexism's demotivating effects mentioned previously, coupled with lack of self-relevance to task performance in stereotyped domain, may lead women with low domain-specific self-esteem to exhibit less cardiovascular reactivity relative to those with high domain-specific self-esteem who are exposed to blatant prejudice.

Cardiovascular Recovery

Cardiovascular recovery to sexist humor may be impaired through rumination caused by a prolonged attributional process and the failure to employ coping strategies. Cardiovascular recovery is the extent to which cardiovascular activity returns to individuals' resting levels after

a stressor. As a cognitive representation of a stressor is prolonged through rumination, cardiovascular stress responses are also prolonged (Brosschot, Gerin, & Thayer, 2006; Gerin, Davidson, Christenfeld, Goyal, & Schwartz, 2006; Key, Campbell, Bacon, & Gerin, 2008; Neumann, Waldstein, Sellers III, Thayer, & Sorkin, 2004). Because sexist humor is less likely to be appraised as prejudiced compared to blatant sexism (Mallett et al., 2016), the cognitive representation of the event may be extended through attempts to find an explanation to the ambiguous behavior or a failure to cope. These processes may be reflected in impaired cardiovascular recovery, given it provides an index of state rumination that captures stress recovery while avoiding the facilitation or prevention of rumination that self-report measures can cause (Kassam & Mendes, 2013). Salomon et al. (2015) found that women exposed to benevolent sexism, an ambiguous expression of sexism, exhibited impaired cardiovascular recovery compared to that of no sexism and hostile (i.e., blatant) sexism. Likewise, sexist humor may cause a lingering cognitive representation of the experience, which would then elicit impaired cardiovascular recovery.

A lingering cognitive representation of experiencing sexist humor may be reflected in impaired cardiovascular recovery.

Health Consequences

Sexist humor may pose a risk to women's health through prolonged stress responses. In the short-term, stress is adaptive. Fight-or-flight responses direct resources toward systems that aid in coping with an immediate stressor and away from systems that operate on a long-term basis (McEwan & Seeman, 1999). However, extended stress responses are maladaptive for health (Brosschot, Gerin, & Thayer, 2006). Although a stressor is not proximate, the body may physiologically respond as though it is. This overactivation creates wear and tear on the

cardiovascular system (i.e., allostatic load) which predicts cardiovascular disease and mortality (McEwan & Seeman, 1999). Further, impaired cardiovascular recovery and exaggerated cardiovascular reactivity in response to stressors predicts cardiovascular disease equal to that of risk factors like smoking, high cholesterol, diabetes, and body mass index (Panaite, Salomon, Jin, & Rottenberg, 2015).

Experiences of ambiguous prejudice can account for as many self-reported mental and physical health problems as experiencing blatant prejudice does (Jones, Peddie, Gilrane, King, & Gray, 2016; Sojo, Wood, & Genat, 2016). Further, ambiguous expressions of prejudice are more common than blatant (Glick & Fiske, 2001; Crandall & Eshleman, 2003; Hill, 2009) and have been shown to impair recovery of cardiovascular stress responses (Salomon et al., 2015). Given that greater frequency and the overactivation of stress responses are patterns of stress that cause allostatic load (McEwan & Seeman, 1999), experiencing sexist humor may have insidious consequences for women's cardiovascular health.

The Present Study

For the proposed thesis study, I examined emotional and cardiovascular consequences of experiencing ambiguous and blatant prejudice. Women participants were exposed to one of three conditions: a sexist joke, a blatantly sexist statement, or a non-sexist control statement from a study accomplice. To find preliminary evidence of sexist humor's effects on women's emotional responses and perceptions of sexism, I conducted a pilot study without cardiovascular measures. The pilot study also allowed me to refine the experimental manipulation and self-report dependent variables.

Pilot Study

To ensure that comments in both sexism conditions were evaluated equally on a series of parameters that may otherwise confound the experimental manipulation, a pilot study was run testing perceptions of 6 pairs of sexist jokes and statements (see Appendix A for means and standard deviations by condition). I aimed to choose a pair of sexist comments (i.e., a corresponding sexist joke and sexist statement) that 1) communicated the same message and stereotype about women, and 2) that would be evaluated equally on how sexist and offensive it was perceived to be. Additionally, I aimed to measure the extent to which individuals perceived the comment as humorous, in order to validate that the comment was perceived as a joke (using methodology of Ford, 2000) I identified six sexist jokes online and developed parallel non-humorous sexist statements for each (see Appendix A). The final aim of the pilot study was to ensure that the non-sexist control comment was indeed rated as less sexist or offensive as the sexist jokes and sexist statements. Therefore, I developed a non-sexist control statement that would be a believable comment to make as a participant in a psychology study speaking to another participant ("I wonder what else they're going to have us do").

Measures

Perceived offensiveness was measured by asking participants, "How offensive would this comment be?" Perceived sexism was measured in two ways. First, participants responded on a scale of 0 to 6, "how sexist would this comment be?" Second, participants responded on a 0 (not at all likely) to 6 (extremely likely) scale, with the likelihood their male partner would agree with five statements from the Hostile Sexism scale of the Ambivalent Sexism Inventory (e.g.,

"Women exaggerate problems they have at work"). This would avoid questions later regarding if the sexist joke and sexist statement conditions would yield different results because one of them was inherently more offensive or sexist. Perceived humor was measured by asking participants, "how funny would this comment be?" Additionally, I aimed to choose a pair of sexist comments that were both higher than the midpoint of believability and likelihood (possess a mean above 3 on a scale of 0 to 6). Additional materials and information regarding the pilot study can be found in Table 1 and Appendices A-C.

Table 1.
Means and standard deviations for pilot study dependent measures for the selected sexism manipulation.

	Statement Rating		Joke Rating			
Dependent measures	*M*	*SD*	*M*	*SD*	*t*	95% CI
How sexist would this comment be?	6.50	0.79	6.41	0.87	-0.32	[-0.66, 0.48]
Perceived Hostile Sexism composite	3.09	1.58	2.90	1.90	-0.33	[-1.39, 1.00]
How offensive would this comment be?	6.22	1.39	6.24	1.15	0.03	[-0.87, 0.89]
How funny would this comment be?	1.50	1.47	1.65	1.22	0.32	[-0.78, 1.08]
How believable is this scenario?	4.67	1.81	4.35	1.97	-0.49	[-1.61, 0.99]
How likely would a man say something like this?	4.39	1.79	5.06	1.43	1.22	[-0.45, 1.79]

Note. * = $p < .05$, ** = $p < .01$, *** = $p < .001$, based on results of a series of independent t-tests with sexism type (statement v joke) as the independent variable.

Procedure

Two hundred twenty-one female participants were recruited from USF's Sona participant pool. Participants completed this study online using Qualtrics, in which they were asked to, "Imagine that you are in a psychology research lab participating in an experiment about online

communication." The hypothetical study setting and procedure was briefly described to participants (see Appendices B and C for more details on the procedure and materials). Then, they were told to imagine they were having an online conversation with a fellow participant named Mike who was completing the same study. They were asked to imagine that, after chatting for a few minutes, their male partner made "the following statement"; participants were then randomly presented with 1 of the 13 comments: either 1 of 12 sexist comments (either a sexist joke or sexist statement), or the non-sexist control statement. Below the comment presented, participants completed the self-report measures of interest.

Results and Conclusion

Given that the perceived sexism and offensiveness were the same between the two comments and were perceived as believable and likely to happen, the following joke-statement pairing was chosen for the experiments (see Table 1 for means for the chosen sexist joke and sexist statement; see Appendix A for all joke and statement means):

Sexist Joke Condition: "Hey, wanna hear a joke? What's the difference between a woman's argument and a knife? A knife has a point."

Blatant Sexism Condition: "tbh I don't think women are good at debating. Their arguments are usually pointless."

The following non-sexist control comment was chosen to use in the experiments was rated as significantly less sexist and offensive was perceived as believable and likely to happen:

No Sexism Condition: "I wonder what they're going to have us do next."

Although one of the aims of the pilot study was to obtain a joke and statement pairing in which the joke was perceived as funnier than the statement, there were no differences in perceived humor between the chosen joke and statement. However, this may not have a negative

influence on the validity of the manipulation. Although participants may not perceive the sexist joke as funny, the beginning of the remark makes it explicit that it should be perceived as a joke.

Study 1

Before conducting a cost-intensive psychophysiological study, a study using a procedure without cardiovascular measures was conducted to ensure the manipulation worked as expected – that women attribute significantly less sexism to men who express sexism through humor, as compared to a blatant expression of sexism. Additionally, several dependent variables that were to be tested in the psychophysiological study were included, as well.

Hypothesis 1: Condition will have an effect on perceived sexism of partner such that women exposed to a blatantly sexist statement will report greater perceived sexism of partner than women exposed to the sexist joke or no sexism.

Hypothesis 2: Condition will have an effect on anger such that women exposed to a blatantly sexist statement will report greater anger toward their partner than women exposed to the sexist joke or no sexism.

Hypothesis 3: Condition will have an effect on evaluations such that women exposed to a blatantly sexist statement will report more negative impressions of their partner and less affiliation toward their partner than women exposed to the sexist joke or no sexism.

Hypothesis 4: Condition will have an effect on self-conscious emotion such that women exposed to the sexist joke will report less state performance self-esteem and greater negative self-directed emotion than women exposed to the sexist statement or no sexism.

Participants

One hundred fifty-two women were recruited through the psychology participant pool at University of South Florida. According to a power analysis conducted in G*Power, 159

participants are needed to detect a medium effect with 3 conditions in a One-Way ANOVA. The Covid-19 pandemic prevented further data collection to reach the sample size suggested by the power analysis.

Measures and Tasks

Perceived Sexism. Using a scale of 1 (not at all) to 9 (very much), participants indicated the degree to which the following thoughts crossed their mind during their interaction with Mike: "I have a feeling my partner may be prejudiced," "I have a feeling my partner may be sexist," and "I disagree with his/her considerations about my gender." These were averaged together to create a measure of perceived sexism ($\alpha = .91$).

Anger. Participants indicated on a scale of 1 (not at all) to 9 (very much) the degree to which Mike made them feel anger (annoyed, frustrated, angry, disgusted, hostile, resentful, surprised) ($\alpha = .89$) (Salomon et al., 2015; Bosson et al., 2010).

Partner Impressions. To assess impressions, participants rated Mike on politeness, communication skills, and positive attitude on a scale of 1 (not at all) to 9 (very much). These were averaged to obtain a measure of positive impression ($\alpha = .81$).

Partner Affiliation. Seven items were created for this study to assess the degree to which participants felt they affiliated with Mike and saw a potential friendship with their partner. Participants responded on a scale of 1 (strongly disagree) to 9 (strongly agree) to complete items such as, "I feel like my partner and I have similar opinions"; "If given the chance, I could see myself becoming friends with my partner" ($\alpha = .92$; see Appendix E for all items).

State Performance Self-esteem. Participants evaluated their performance self-esteem with items like, "I feel confident about my abilities," and, "I feel frustrated or rattled about my

performance," (reverse-coded) on a 5-point scale (1 = not at all, 2 = a little bit, 3 = somewhat, 4 = very much, and 5 = extremely) (Heatherton & Polivy, 1991; α = .84; Appendix F)

Negative Self-Directed Emotion. Using a 7-point Likert scale (from '1' not at all to '7' very much), participants completed six items that captured shame and other negative self-directed emotion such as, "I feel small," and, "I feel strong," (reverse coded) (Marschall, Saftner, & Tangney, 1994; Barreto et al., 2010; α = .85; Appendix F).

Backward Digit Span Task. Items were adapted from the Wechsler adult intelligence test (Wechsler, 1997), which is a measure of executive function. The adapted task required participants to listen to an audio recording of a voice reciting 6 strings of 4 digits, 19 strings of 5 digits, and 2 strings of 6 digits. Between each string of digits was a pause, in which participants were asked to repeat out loud the digits they heard in the *opposite* order they heard them (see Appendix G for an example of the task).

Procedure

Upon arrival to the lab, participants were greeted by a female research assistant. The research assistant told participants that the study examined online communication and teamwork dynamics and collected informed consent. The research assistant informed participants that they would chat online with another participant in a lab across the hall. However, the research assistant would follow a script to play the role of "Mike" in another room (see Appendix I for script). Next, the research assistant reviewed the directions for the online chat. They informed participants that they would use Google instant messaging to chat with the other participant. The research assistant provided participants pre-selected discussion topics, such as club involvement, to discuss with their partner. They also told participants they would have a few minutes to chat online and that they will come into the room when their chat time is done.

When the chat began, the research assistant in the other room introduced themselves as Mike, a psychology major who is in the debate club. The research assistant playing Mike followed a script. His messages had a neutral tone, in that he was responsive and asked questions, but did not seem overly enthusiastic or friendly. After a few minutes of chatting about college majors and campus involvement, Mike made a comment about his debate club experience, with the purpose of segueing to the manipulation.

The research assistant would be naïve to condition until this time. Then, the research assistant sent one of three messages from the pilot study according to random assignment: the sexist joke, sexist statement, or non-sexist control message. Immediately after participants received the manipulation message, the research assistant entered the room to tell participants their chat time was over. The research assistant moved the keyboard out of reach to prevent participants from responding to the manipulation and gave directions to the Backward Digit Span task. After completing the Backward Digit Span task, research assistants told participants they were going to set up the next part of the study and to wait in the room. In reality, the purpose of the 5-minute waiting period was to mimic the cardiovascular recovery period for Study 2, in which participants sit alone for 10 minutes after completing a task. Following the 5-minute waiting period, participants completed the self-report measures of state self-esteem, negative self-directed emotion, anxiety, and impressions of Mike.

In order to obtain measures of perceived sexism of and anger toward Mike, the research assistant gave participants a paper copy of a "Departmental Research Experience Report" form. The research assistant told participants that because the study involved a higher level of interaction between participants and between participants and researchers, the department wanted to ensure that participants were having positive experiences in lab studies (see Appendix

J). In reality, this was a cover story to avoid participant suspicion when they answered questions about potentially uncivil, sexist interactions. To increase believability, participants first completed items related to their perceived sexism and emotion items related to the researcher (who is trained to be polite and not elicit negative emotion or perceptions of sexism). Then, participants completed perceived sexism and emotion items related to Mike. Once the form was completed, the research assistant probed for any suspicion regarding sexism or Mike as being part of the study. Finally, the research assistant debriefed participants on the deception used in the experiment and the purpose of the study.

Analytic Strategy

All analyses were conducted using IBM SPSS Statistics 25. Fourteen participants (9.2%) accurately guessed the purpose of the study. All analyses were run with and without participants who accurately guessed the purpose of the study. If results were not altered with the inclusion of participants who accurately guessed the purpose of the study, they remained in the final reported analyses. If results differed after excluding participants who accurately guessed the purpose of the study, they were excluded in the final reported analyses. The two dependent variables in which analyses excluded participants who accurately guessed the purpose of the study were anger, partner affiliation, and impressions.

To test for differences between condition in all dependent variables (perceived sexism, anger, partner impressions, partner affiliation, state performance self-esteem, and negative self-directed emotion) I conducted one-way analyses of variance (ANOVAs). Follow-up comparisons were tested using Tukey post-hoc tests.

Results

Hypothesis 1: Manipulation Check (Perceived Sexism). I expected that the sexist joke condition would yield less perceived sexism ratings than the sexist statement condition, which was supported. There was a significant effect of condition on perceived sexism of Mike, (F(2, 151) = 29.82, p < .001). Post-hoc tests revealed that each condition significantly differed from one another. The sexist statement condition had the highest perceived sexism ratings (M = 4.37, SD = 2.52). Women in the sexist joke condition reported Mike as significantly less sexist (M = 2.60, SD = 2.55) than the sexist statement condition, whereas women in the no sexism condition reported him as significantly less sexist (M = 1.17, SD = 0.58) than both sexism conditions. These results support the idea that, although both comments out of context were previously rated as equally sexist and offensive, women are less likely to attribute sexism to a man who communicates that sexism in a humorous way.

Hypothesis 2: I expected that the sexist statement condition would lead to greater reports of anger toward their partner compared to that of the sexist joke and no sexism condition. This was partially supported. There was a significant effect of condition for reported anger toward Mike, (F(2, 131) = 9.09, p < .001). Participants reported significantly less anger toward Mike in the no sexism condition, as would be expected (M = 1.04, SD = 0.02). However, there were no significant differences in anger between the sexist joke (M = 1.97, SD = 1.75) and sexist statement conditions (M = 2.10, SD = 1.66). This analysis was conducted with the exclusion of participants who accurately guessed the purpose of the study during debriefing. When including all participants, there was a marginally significant difference between the sexist statement and sexist joke condition (p = .05), in which participants reported greater anger toward Mike in the sexist statement condition. However, when excluding participants who accurately guessed the

purpose of the study, the difference becomes non-significant ($p = .34$). Therefore, participants who accurately guessed the purpose of the study were excluded in the analysis.

Hypothesis 3: I expected that women in the sexist statement condition would report more negative impressions of their partner and less affiliation toward their partner than women exposed to the sexist joke or no sexism. This hypothesis was supported. There was a significant effect of condition on partner affiliation, ($F(2, 134) = 12.46$, $p < .001$). Participants reported less affiliation toward Mike in the sexist statement condition ($M = 4.55$, $SD = 1.31$) than in the sexist joke and no sexism conditions, as expected. There was not a significant difference in partner affiliation between the no sexism ($M = 5.99$, $SD = 1.27$) and sexist joke conditions ($M = 5.52$, $SD = 1.53$). Additionally, there was a significant effect of condition on impressions of Mike, ($F(2, 148) = 15.16$, $p < .001$). Post-hoc tests indicated significant differences between each condition. Participants reported having the most negative impressions in the sexist statement condition ($M = 5.99$, $SD = 1.89$), impressions in the no sexism condition were the best ($M = 7.80$, $SD = 1.20$), and impressions in the sexist joke condition were in between the two ($M = 6.82$, $SD = 1.78$).

Hypothesis 4: I predicted that women in the sexist joke condition would report less performance self-esteem and greater negative self-directed emotion than women exposed to the sexist statement or no sexism. These hypotheses were not supported; there was not a condition effect for performance self-esteem ($F(2, 148) = 0.03$, $p = .97$), or negative self-directed emotion, ($F(2, 148) = 0.28$, $p = .76$). See means for all Study 1 dependent variables in Table 2.

Discussion

Women in the sexist statement condition reported significantly lower partner affiliation compared to sexist joke and no sexism, whereas there were no differences between the sexist joke and control. Additionally, women reported having more positive impressions of Mike in the

sexist joke condition compared to that of the blatant sexism condition. Additionally, sexism condition did not affect performance self-esteem or negative self-directed emotion.

Table 2.
Means and standard deviations for study 1 dependent measures, split by sexism condition.

	Condition							
	Sexist Statement		Sexist Joke		No sexism		Total	
Dependent Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived Sexism (*n* = 152)	4.37 ab	2.52	2.60 a	2.55	1.17 b	0.58	2.68	2.44
Positive Impression (*n* = 137)	5.99 ab	1.89	6.82 a	1.78	7.80 b	1.20	7.10	1.64
Performance Self-Esteem (*n* = 141)	3.99	0.73	3.89	0.71	3.94	0.64	3.94	0.69
Negative Self-directed Emotion (*n* = 151)	2.69	1.54	2.89	1.39	2.84	1.29	2.81	1.41
Anger (*n* = 138)	1.77 ab	1.11	1.48 ab	1.22	1.06 a	0.26	1.41	0.97
Partner Affiliation (*n* = 137)	4.55 ab	1.31	5.52 a	1.53	5.99 a	1.27	5.41	1.49

Note. Means in the same row with different subscript letters and column means with different subscript numbers differ at $p < .05$ based on results of a one-way ANOVA with condition as the independent variable. Variability in sample size is due to analyses with missing responses and/or excluded participants who accurately guessed the purpose of the study (only dependent variables that excluded participants for this purpose was partner affiliation and anger for both studies).

In sum, these results suggest that when men express sexism with humor, women may be more likely to give them the benefit of the doubt and continue to express interest in befriending and affiliating with them. Humor in sexist communication can also help men to subvert negative impressions that may otherwise be made of them. Additionally, the results indicate that even though participants perceived men in the sexist statement condition to be more sexist than the sexist joke condition, these attributions of sexism do not necessarily lead to greater anger toward their partner.

The lack of condition effects among performance self-esteem and negative self-directed emotion variables suggest that perhaps the manipulation was not strong enough to move these variables. On the other hand, it is possible that the perceived difficulty of the task could have prevented variability in these measures; participants may have experienced the same degree of negative self-conscious emotion because they felt the task was too difficult, regardless of condition. Specifically, in a preliminary analysis of the first 83 participant scores, participants on average only answered approximately 50% of overall items correctly. In reality, performance will be scored on the basis of correct digits *within* each item (performance scores of which are outside the scope of the current paper), allowing for a more lenient performance score. However, if participants on average believed that they were only answering about half of the items correctly, this may have prevented variation in performance self-esteem and negative self-directed emotion. For these reasons, in Study 2, I used a speech task, rather than the Backward Digit Span task.

Study 2

Three aims guided Study 2. First, cardiovascular measures were collected to find whether exposure to sexist humor or blatant sexism affects cardiovascular reactivity or recovery. Second, Study 2 included additional measures of rumination, internal and external attributions, attitudes toward women, reporting sexism, and public speaking self-esteem. To decrease the length of the study and avoid participant fatigue, the measure of partner affiliation was not included in Study 2. Finally, the third aim was to replicate the results of Study 1.

The procedure for the current study was nearly identical to Study 1. Women participants were randomly sent one of the same three messages in an online chat used in Study 1 (sexist joke, sexist statement, or no sexism). However, the Backward Digit Span task was replaced with a speech task, a domain which fit into the content of the sexism manipulation (i.e., women's supposed incompetence at debating an argument). The hypotheses for the study are as follows:

Hypothesis 1a: Condition will have an effect on cardiovascular reactivity such that women exposed to a blatant sexist statement will experience greater CV reactivity than women exposed to a sexist joke or no sexism.

Hypothesis 1b: Condition will have an effect on anger such that women exposed to a blatant sexist statement will report greater anger toward Mike than women exposed to a sexist joke or no sexism.

Hypothesis 1c: The effect of condition on reactivity will be mediated by reported anger directed towards the male.

Hypothesis 2a: Condition will have an effect on cardiovascular recovery such that women exposed to the sexist joke will experience impaired CV recovery relative to women exposed to the blatant sexist statement or no sexism.

Hypothesis 2b: Condition will have an effect on rumination such that women exposed to the sexist joke will report more rumination relative to women exposed to the blatant sexist statement or no sexism.

Hypothesis 2c: The effect of condition on recovery will be mediated by rumination during the recovery period.

Hypothesis 3: Condition will have an effect on impressions of Mike such that women exposed to a blatant sexist statement will report more negative evaluations of their partner and greater perceived sexism of partner than women exposed to the sexist joke or no sexism.

Hypothesis 4: Condition will have an effect on self-conscious emotion such that women exposed to the sexist joke will report less state performance self-esteem and greater negative self-directed emotion than women exposed to the sexist statement or no sexism.

Hypothesis 5: Condition will have an effect on causal attributions such that women exposed to blatant sexism will report greater external and fewer internal attributions of inappropriate comments toward their partner than women exposed to the sexist joke or no sexism.

Hypothesis 6: Condition will have an effect on reporting of sexism such that women exposed to blatant sexism will report Mike's sexism more so than women in the sexist joke or no sexism conditions.

Hypothesis 7: Public speaking self-esteem will moderate the effect of condition on CV reactivity such that women exposed to the sexist joke who are also low in public speaking self-

esteem will have decreased cardiovascular reactivity, compared to those high in public speaking self-esteem exposed to a sexist statement.

Exploratory Research Question 1a. Does exposure to sexist humor affect attitudes toward women, in that it leads to increases or decreases gender self-stereotyping, relative to sexist statement or no sexism conditions?

Exploratory Research Question 1b. Does condition affect attitudes toward women, as measured by sexual harassment tolerance?

Participants

One hundred fifty-six participants were recruited through the psychology participant pool at University of South Florida. Participants must have identified themselves as women, not be pregnant, and not have previously participated in other cardiovascular psychophysiological experiments in the same lab to avoid suspicion. According to a power analysis conducted in G*Power, 159 participants were needed to detect a medium effect with 3 conditions in a one-way Anova test. However, the Covid-19 pandemic prevented data collection to reach the sample size suggested by the power analysis.

Measures and Tasks

The measures of perceived sexism, positive impressions, performance self-esteem, negative self-directed emotion, and anger were comprised of the same items used in Study 1. Due to an error, the items of negative self-directed emotion were rated on a scale of 1-7, whereas in Study 1, they were rated on a scale of 1-9.

Health Questionnaire and Demographics. After providing information on their age, race, and ethnicity, participants completed items assessing variables that affect cardiovascular functioning such as smoking, diet, caffeine intake, medications, exercise habits, and first day of

last menstrual cycle (see Appendix K). Items assessing pregnancy and a history of cardiovascular health complications were also used to screen out participants who either incorrectly indicated these conditions as part of Sona prescreening or for whom these conditions had changed, as these affect the normal functioning of the cardiovascular system.

Speech Task. Participants were instructed to imagine they received an unfair traffic ticket and that they were to argue their case in court (as used in Salomon, Bylsma, White, Panaite, and Rottenberg, 2013). Based on the scenario they were given, participants were asked to include the following three points in their speech: the events that led up to the ticket, whether they believe they deserved a traffic ticket, and the extent of the city's responsibility to keep road signs in good view. They were informed their performance would be evaluated on persuasiveness and the content of their speech. Participants were told that they had three minutes to mentally prepare their speech. Then, they were told they would have three minutes to give their speech. Participants were asked to continue speaking for the entirety of the three minutes. They were also informed that if they stopped speaking, they would be prompted over the intercom by a research assistant and be asked to continue their speech (see Appendix L for stimuli that appeared on-screen during the task).

Public Speaking Self-Esteem. Public Speaking Self-Esteem was created using adapted 5 items from the Contingencies of Self-Worth Scale (Crocker et al., 2003). For example, the item, "I feel better about myself when I know I'm doing well *academically*" was changed to, "I feel better about myself when I know I'm doing well *at public speaking,"* ($\alpha = .79$; see Appendix M for all self-report measures).

Rumination. During the 10-minute cardiovascular recovery period, participants were prompted to complete Rest Activities 1 and 2, at the 5-minute and 10-minute marks,

respectively. Instructions for both rest activities asked them to write down one to two words that represented what had just been on their minds (methods from Key et al., 2008). After the recovery period, participants were asked to type responses to elaborate on what the words meant. These longer elaboration responses were coded for ruminative thought. The variables were coded depending on rumination content: referring to a sexist comment or negative thoughts about performance.

The two content themes that were coded as rumination were any reference to a sexist comment made by Mike or negative thoughts about the speech performance task. Those who mentioned thoughts containing either of these themes were coded as 1, whereas those who did not were coded as 0. "Total rumination" scores were computed by adding the sum across each rumination type. For example, participants who did not mention either rumination themes were coded as "0", those who mentioned one of the two were coded as "1", and those who mentioned both rumination types were coded as "2". A rumination theme of anger was originally planned as an additional rumination content type; however, because only 3 participants out of 164 were coded to possess anger rumination, the theme was not used in further analyses.

Misconduct Reporting. At the end of the "Department Review" form, participants were provided with space to, "in your own words, please comment about your interaction with your partner," (located at the end of Appendix J). As mentioned previously, the "Department Review" form was part of a cover story to avoid participant suspicion when participants would complete the perceived sexism items. Therefore, participants were under the impression that their responses would be sent to the Psychology department. Responses were coded "1" if participants referred to any negative interaction with Mike, whereas responses that did not mention a negative interaction were coded as "0". Responses did not need to include the words "sexist" or

"sexism" to count as a report of misconduct (e.g., only a mention of a "rude" comment counted as a misconduct report).

Internal and External Attributions. Participants were presented with two items to measure attributions of the sexism manipulation measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale: "If your partner said anything inappropriate to you, this event happened because of something about *you* personally (such as your personality, or something you did or said)," and, "… because of something about *your partner* personally (such as their personality, or something they did or said)" (Blodlorn, Major, & Kaiser, 2016). Additionally, a composite measure was computed to combine both measures; lower values indicated greater internal attributions (relative to external attributions), whereas higher values indicated greater external attributions (relative to internal attributions). These items were included on the ostensible "Department Review" form, as used in Study 1, to avoid suspicion.

Gender Self-Stereotyping. Participants were asked to provide ratings of characteristics that they believed themselves to possess and characteristics they believed women as a group to possess. Higher within-participant correlations between the two measures (perceived characteristics of the self and of women) reflected higher self-stereotyping (self-stereotyping measurement using within-participant correlations from Biernat, Vescio, and Green (1996)). The measures regarding the self and women both possessed the same characteristics (items taken from list of prescriptive gender stereotypes for American women (Prentice & Carranza, 2002); see Appendix N for items).

For self-ratings, participants were asked to, "Rate yourself on the following traits using a scale from "not at all true of me" (1) to "very true of me" (7)." For ratings of women, participants were asked to, "Consider the following traits and indicate the percentage of women

(0%-100%) who possesses each characteristic." Participants responded to 29 characteristics; given they were listed twice (once for women and once for the self), participants responded to 58 items in all. The order in which participants received the measures (the measure about women and the measure about the self) was counterbalanced.

Because items assessing gender prescriptions were taken from studies conducted approximately 17 years prior, an exploratory factor analysis was conducted on the items to ensure the factor reflected modern stereotype content of women. Guidelines for measure construction from Hinkin (1998) and Worthington and Whittaker (2006) were used to delete items; items had to be "(a) loaded at least .40 on the target factor, (b) loaded at least twice as strongly on the target factor as they did on the next highest-loading factor, (c) did not load above .32 on any non-target factors, and (d) had communalities exceeding .40." After item deletion, 8 items remained that represented the current sample's feminine stereotypes of women: clean, cheerful, wholesome, excitable, warm, kind, friendly, polite. The reliability was good for both the 8 characteristic items related to women and the 8 characteristic items related to the self (α = .87 and .81, respectively). Next, within-participant correlations were calculated between the items. The higher the correlation, the higher level of self-stereotyping (i.e., the greater the relationship between participants' perceptions of 1) themselves and 2) women as a group).

Sexual Harassment Tolerance. Participants read a short scenario that described an interaction between "Anne" and "John", in which "John" is committing sexual harassment. In order to increase variation of responses, the scenario depicts a subtle instance of sexual harassment, (adapted from Klein, Apple, and Kahn (2011) and Bernard, Legrand, and Klein (2018)); see Appendix O). After reading the scenario, participants used 8 items to report the

extent to which they blame “John” or “Anne” for the occurrence (e.g., “John’s behavior was totally unacceptable”; “Anne is partly to blame for the situation”; $\alpha = .87$).

Physiological Recording Apparatus. An Accutorr Plus BP monitor measured systolic (SBP) and diastolic blood pressure (DBP) according to established guidelines (Shapiro et al., 1996). A Biopac MP150 system (Biopac Instruments Inc., Goleta, GA) will be used to acquire the electrocardiogram (ECG), impedance cardiography (ZKG), and respiration measures. ECG will be collected using Cleartrance CT disposable Ag/AgCl electrodes (Conmed Andover Medical, Haverhill, MA) placed in a modified Lead II configuration on the chest. ZKG will be collected with four mylar-band electrodes placed in a full circumference around the neck and chest (Sherwood et al., 1990). The waveforms from the impedance will be measured by the inner-most two bands and amplified by a NICO100C Biopac system. Biopac AcqKnowledge 3.9.1 Software on a PC will digitize, collect, and save ECG and ZKG signals.

Procedure

Upon arrival to the lab, participants were greeted by a female research assistant. The research assistant told participants that the study examined online communication and teamwork dynamics, as in Study 1. They collected informed consent and demographic information. First, participants were asked to “sit quietly and relax” in a lab room and watch a ten-minute emotionally neutral video depicting Alaskan nature to achieve a “vanilla” resting baseline (see Jennings, Kamarck, Stewart, Eddy, & Johnson, 1992).

Next, the research assistant reviewed the directions for the online chat, as in Study 1. The procedure for the online chat and manipulation were virtually the same as in Study 1 with two small changes. First, the research assistant informed participants that they and their online chat partner would complete a speech task later in the study, after the online chat. Second, the online

chat script was changed in a minor way to accommodate the new speech task and provide a segue to the manipulation. After a few minutes of chatting about college majors and campus involvement, Mike asked participants how they felt about the upcoming speech that they would have to give in the study. Then, after receiving the participant's response, the research assistant sent the manipulation.

Next, participants completed the speech task, during which ECG and ZKG measures were collected to derive cardiovascular reactivity. After the task ended, participants were asked to sit quietly and wait for instructions for 10 minutes, in which ECG and ZKG measures were collected to derive cardiovascular recovery. At the 5-minute and 10-minute marks of the recovery period, participants were presented with a task prompt on their computer screen, entitled, "Rest Activity 1" and "Rest Activity 2", respectively. The instructions asked participants to write one to two words that represent what had been on their minds in the past 5 minutes. After the 10-minute recovery period, participants were presented with an online survey on Qualtrics to complete the rest of the measures. First, they were asked to elaborate on what they were thinking about during the 10-minutes of post-speech rest for Rest Activity 1 and Rest Activity 2. Following this, participants completed the self-report measures of state performance self-esteem, negative self-directed emotion, impressions of their partner, and attitudes toward women measures (gender self-stereotyping and sexual harassment tolerance).

Finally, as in Study 1, participants completed the ostensible "Department Review" form to assess their perceptions of sexism, anger toward Mike, and internal and external attributions. Additionally, at the end of the form, participants had the option to leave a comment, in which their reports of sexism were measured. Participants were probed for suspicion, debrief on the purpose of the study, and granted course credit.

Cardiovascular data recording and reduction. EKG and ZKG measures were continuously recorded during the last 5 minutes of the 10-minute baseline period, all 6-minutes speech task (3 minutes of speech preparation and 3 minutes of speech performance) and the 10 minutes immediately following the speech task (the recovery period). Blood pressure (BP) was measured at the beginning of the 5th, 7th, and 9th minute of the baseline period, the beginning of the 1st, 3rd, 4th and 6th minute of the speech task, and once every two minutes starting with the first minute of the recovery period.

After visual inspection, measures of heart rate (HR; beats per minute), stroke volume (SV; mL of blood ejected per heartbeat), cardiac output (CO; liters of blood pumped by the heart per minute), and pre-ejection period (PEP; cardiac contractility in milliseconds) derived from ECG and ZKG recordings were scored using Mindware IMP 2.51. Mean arterial pressure was calculated, for use in calculating total peripheral resistance, using MAP = (SBP + (2 * DBP))/3 for each minute of BP measurement. Vascular function, or total peripheral resistance (TPR), was calculated from CO and MAP ((MAP/CO) * 80 in dyne-s/cm5). Body mass index (BMI) was calculated using weight (lb) / height (inches) ^{2} x 703.

One-minute segments of ensemble averages were used to compute cardiovascular reactivity and recovery. Ensemble averages of the three minutes of the speech task, as well as the three minutes of preparing for the speech task, were averaged, and a difference score was calculated to represent reactivity. Therefore, two variables for each CV measure were averaged to compute reactivity during the three minutes of giving the speech, as well as the three minutes of preparing the speech. Blood pressure readings during the speech and preparation period (taken at the first and third minute of the respective three-minute segments) were averaged to compute reactivity for the speech and speech preparation periods. To create reactivity scores for all

cardiovascular measures (HR, PEP, CO, TPR, SBP, DBP, and MAP), baseline averages were subtracted from the averages of the 3-minute speech preparation time as well as the 3-minute speech time, as cardiovascular reactivity is the increase of cardiovascular outcomes relative to baseline measures.

Cardiovascular recovery for each cardiovascular outcome was calculated using the area-under-the-curve method (AUC; Kario et al., 2002). First, the difference between peak stress response during the task and average baseline value was calculated to create the recovery span (distance to be recovered after stressor, to return to baseline value; Kario, Schwartz, Gerin, Robayo, Maceo, & Pickering, 2002). Next, the difference from peak stress response to the average of each recovery minute was calculated. These values were divided by the recovery span and multiplied by 100, to create a percent recovered value for each minute. Therefore, each minute was valued between 0% and 100% recovered.

Values that exceeded 100%, in which the difference between peak stress response and recovery minute average surpassed the recovery span, were considered 100% recovered in that minute. For example, if a participant's recovery score during a given minute was 100%, the cardiovascular measure was completely returned to baseline rates. Values that were less than 0%, in which the difference between peak stress response and recovery minute average was negative (that is, recovery minute average of the cardiovascular outcome was greater than the peak stress response during the task) was considered 0% recovered. Finally, an average of the percent recovery values for each of the 10 minutes were taken to equal the AUC average percent recovered for each participant for each cardiovascular measure. This calculation allows for greater variability in a participant's recovery period, given cardiovascular indices may fluctuate

to below baseline values and then return to above baseline levels (Kario et al., 2002; Fekedulegn, Andrew, Burchfiel, Violanti, Hartley, Charles, & Miller, 2007).

Analytic Strategy

All analyses were conducted using IBM SPSS Statistics 25. There were 20 participants who accurately guessed the purpose of the study. Participants who accurately guessed the purpose of the study were only excluded if their exclusion changed the results. The two dependent variables in which analyses excluded participants who accurately guessed the purpose of the study were anger, 5-minute SBP recovery, and CV reactivity for the task preparation period. All cardiovascular variables were winsorized, in which values that were greater or less than 3 standard deviations past the mean were altered to a value equal to ± 3 standard deviations from the mean.

Random Assignment. One-way analyses of variance and Chi-squared tests confirmed were no significant condition differences on all participant variables (baseline cardiovascular measures, BMI, race/ethnicity, and public speaking self-esteem).

Cardiovascular Reactivity. To test hypotheses 1a, 1b, and 7, I used multiple linear regression to test the main effects of condition and public speaking self-esteem, as well as their interactions, in each regression analysis. I created two dummy codes to represent the three sexism conditions (dummy code 1: sexist statement = 1, sexist joke = 0 control = 0; dummy code 2: sexist statement = 0, sexist joke = 1, control = 0). Dummy code 1 represented sexist joke vs. control, whereas dummy code 2 represented sexist statement vs. control. I treated dummy codes 1 and 2 as independent variables, mean-centered Public Speaking Self-Esteem as a continuous moderator, and HR, PEP, SBP, DBP, CO, MAP, and TPR as outcome variables. Dummy codes 1 and 2 were entered in Step 1, public speaking self-esteem was entered in Step 2, and the two

interaction variables of dummy codes 1 and 2 and public speaking self-esteem were entered in Step 3.

Cardiovascular Recovery. Hypotheses regarding CV recovery were tested using multiple linear regression. I treated dummy codes 1 and 2 as independent variables, CV reactivity variables for the given CV recovery variables as covariates, and HR, PEP, SBP, DBP, CO, MAP, and TPR as outcome variables. Dummy codes 1 and 2 (as described previously) and CV reactivity for the given CV variable were entered in Step 1.

When coding the number of ruminative thoughts from the brief rest activities occurring at 5 and 10 minutes of the recovery period, very little rumination was reported in the second half of the 10-minute recovery period (9% of participants reported ruminative thoughts) compared to the first half (37% reported ruminative thoughts). Therefore, alternate CV variables were calculated to compute recovery for the first 5 minutes of the recovery period.

Mediations for CV Reactivity and Recovery. Hypotheses 1c and 2c regarding mediation were tested using Hayes Process (Model 4) with SPSS. Both mediation analyses used indicator coding (dummy code 1: sexist statement = 1, sexist joke = 0 control = 0; dummy code 2: sexist statement = 0, sexist joke = 1, control = 0). In the analysis for hypothesis 1c, the predictor variable was condition, the mediator was anger toward Mike, the outcome variables were CV reactivity (HR, CO, PEP, TPR, SBP, DBP and MAP). In the analysis for hypothesis 2c, the predictor variable was condition, the mediator was total number of ruminative thoughts, the outcome variables for analysis were recovery (HR, CO, PEP, TPR, SBP, DBP and MAP) for 10 minutes and 5 minutes, and the covariate was reactivity for the respective CV variable.

Self-report Variables. Condition effects on perceived sexism (the manipulation check dependent variable), anger, rumination, impressions, negative self-conscious emotion, causal

attributions, and attitudes toward women were tested using a series of One-way ANOVAs and Tukey post-hoc tests. There were three dependent variables that represented causal attributions: external attributions, internal attributions, and the composite measure of both.

Reports of sexism. A chi-square test was used to test condition effects on the dichotomous variable regarding if participants reported Mike's comment on the ostensible "Department Review" form. No reference of a negative interaction regarding Mike was coded as "0", whereas the presence of a comment regarding this content was coded as "1". Post-hoc tests using corrected Bonferroni method were conducted using cellwise residual analysis (Garcia-Perez & Nunez-Anton, 2003).

Results

Manipulation Check. There was a significant effect of condition on perceived sexism of Mike, $F(2, 153) = 33.97$, $p < .001$. As in Study 1, post-hoc tests indicated each condition significantly differed from one another. The sexist statement condition had the highest perceived sexism ratings ($M = 4.66$, $SD = 2.87$). Women in the sexist joke condition reported Mike as significantly less sexist ($M = 3.37$, $SD = 2.83$), whereas women in the control condition reported him as significantly less sexist ($M = 1.00$, $SD = 0.00$). See Table 3 for means and standard deviations for Study 2 non-physiological variables.

*Hypothesis 1a***:** I expected women in the sexist statement condition to display greater CV reactivity than those in the sexist joke or no sexism conditions. There were no significant condition effects for any of the overall models for cardiovascular reactivity measures (results regarding public speaking self-esteem are reported below under Hypothesis 7).

Hypothesis 1b: I expected that the sexist statement condition would lead to greater reports of anger toward their partner compared to that of the sexist joke and no sexism condition.

This was partially supported. There was a significant effect of condition for reported anger toward Mike $F(2, 131) = 9.09$, $p < .001$. Post-hoc tests indicated participants reported significantly less anger toward their partner in the control condition, as was expected ($M = 1.04$, $SD = 0.16$). However, there were no significant differences in anger between the sexist joke ($M = 1.96$, $SD = 1.75$) and sexist statement conditions ($M = 2.10$, $SD = 1.40$).

Hypothesis 1c: I expected that anger would mediate CV reactivity for women in the sexist statement condition, relative to that of women in the sexist joke or control conditions. For mediation analysis using HR reactivity, the indirect effect of sexist statement compared to control, as well as sexist joke compared to control, was found to be statistically significant (see Figure 1). In sum, the sexism conditions led to more anger than the no sexism condition, and if participants experienced more anger, they had increased HR reactivity. However, the significantly greater anger reported in the sexism conditions did not result in significantly greater HR reactivity compared to the no sexism condition. Anger mediation for other cardiovascular reactivity measures were not found to be statistically significant.

Because anger was measured after CV reactivity, an alternate mediation model was tested to see if heart rate reactivity would mediate the relationship between condition and anger. The indirect effects were not significant [Effect = -0.07, 95% C.I. (-0.11, 0.11)], suggesting that there is not a bidirectional relationship between anger and HR reactivity in the sexism conditions. In other words, anger is what mediates the relationship between condition and heart rate reactivity, and not vice versa.

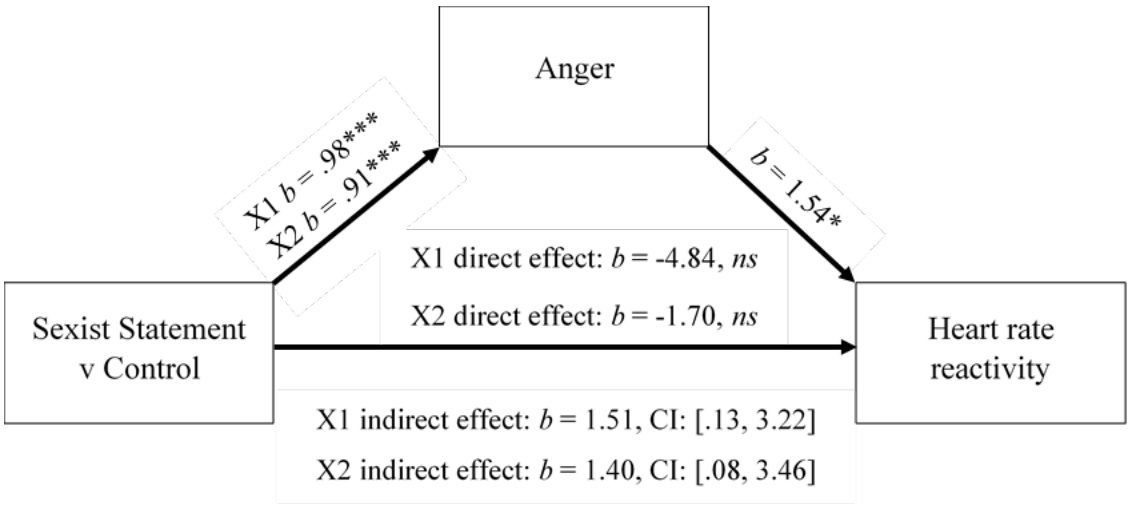

Figure 1. Note. Mediation model using Hayes Process Model 4. *$p < .05$. **$p < .01$. ***$p<.001$; see Analytic Strategy for coding.

Hypothesis 2a: I expected women in the sexist joke condition to display impaired CV recovery relative to those in the sexist statement or no sexism conditions. This hypothesis was partially supported. There were no significant effects of condition on the full 10-minute CV recovery variables. However, there was a significant condition effect for systolic blood pressure (SBP) recovery in the first 5 minutes of recovery, ($F(2, 131) = 3.20$, $p < .05$). Post-hoc tests indicated that participants in the sexist joke condition exhibited impaired recovery relative to the sexist statement condition. There were no significant differences between the sexist joke and no sexism condition. There were no significant condition effects for the other 5-minute CV recovery variables.

Hypothesis 2b: I expected that women in the sexist joke condition would report greater rumination than the sexist statement and no sexism conditions. This hypothesis was not supported; there was not a condition effect on rumination, ($F(2, 153) = 0.76$, $p = .47$).

Hypothesis 2c: I expected that the effect of condition on CV recovery would be mediated by rumination during the recovery period. This hypothesis was not supported; rumination scores were not found to mediate the effect of condition on any of the CV recovery variables. Additionally, rumination in the first 5 minutes did not mediate condition effects for the 5-minute CV recovery variables.

Hypothesis 3: I expected that women in the sexist statement condition would report more negative impressions of their partner than women in the sexist joke or no sexism condition. There was a significant effect of condition on positive impressions of Mike, ($F(2, 153) = 11.91$, $p < .001$). Post-hoc tests indicated that participants reported having equal impressions of Mike between the sexist joke ($M = 6.22$, $SD = 2.14$) and sexist statement conditions ($M = 5.85$, $SD = 2.21$). The no sexism condition yielded significantly more positive scores than both sexism conditions ($M = 7.58$, $SD = 1.32$).

Hypothesis 4: I expected that women in the sexist joke condition would report less performance self-esteem and greater negative self-directed emotion than women in the sexist statement and no sexism conditions. There were no significant condition effects of negative self-conscious emotion ($F(2, 153) = 0.09$, $p = 0.91$) or performance self-esteem, ($F(2, 152) = 0.22$, $p = 0.81$). These results replicate findings from Study 1.

Hypothesis 5: I expected that women in the sexist statement condition would report greater external causal attributions and fewer internal causal attributions toward their partner who made an inappropriate comment. There was a significant effect of condition on internal attributions, ($F(2, 144) = 5.84$, $p < .01$). Post-hoc tests indicated that, contrary to the hypothesized direction of the effect, women in the sexist statement condition reported significantly higher internal attributions ($M = 2.25$, $SD = 0.29$) than the sexist joke ($M = 1.51$, SD

= 1.10; or no sexism conditions $M = 1.29$, $SD = 1.07$). There were no differences between the sexist joke and no sexism conditions.

There was a significant effect of condition on external attributions, ($F(2, 144) = 17.348$, $p < .001$). Post-hoc tests indicated that women in the sexist joke ($M = 3.69$, $SD = 2.34$) and sexist statement conditions reported equal levels of external attributions ($M = 3.49$, $SD = 2.47$); external attributions for the sexism conditions were significantly higher than the control condition ($M = 1.40$, $SD = 1.25$).

For the composite measure of internal vs. external attributions, there was a significant condition effect, ($F(2, 122) = 9.56$, $p < .001$). Both sexism conditions had significantly greater external to internal attribution proportions than the no sexism condition ($M = 0.11$, $SD = 1.03$). Additionally, the composite measure did not significantly differ between the sexist joke condition ($M = 2.05$, $SD = 2.62$) and the sexist statement condition ($M = 1.19$, $SD = 2.44$) (see Table 3; lower values indicated greater internal attributions relative to external attributions, whereas higher values indicated greater relative external attributions).

Hypothesis 6. I expected that women in the sexist statement condition would be more likely to report Mike's misconduct than women in the sexist joke or no sexism conditions. Condition was found to significantly contribute to the model, X^2 $(2, N = 155) = 70.69$, $p < .001$. Post-hoc tests using corrected Bonferroni method indicated that women in the blatant sexism condition reported Mike's misconduct more frequently than the sexist joke condition ($p < .05$).

Hypothesis 7. I predicted that public speaking self-esteem would moderate the effect of condition on cardiovascular reactivity. This hypothesis was not supported; public speaking self-esteem and sexism condition did not interact to affect any CV reactivity variables.

*Exploratory Research Questions 1a and 1b***.** I expected either that the sexist joke condition would exhibit *less* self-stereotyping compared to the sexist statement and no sexism condition or that the sexist joke condition would lead to *less* self-stereotyping compared to the sexist statement or control condition. Condition effects were tested on the correlations between the feminine items participants attributed to themselves and women in general. Therefore, the lower correlation among participants exposed to the sexist joke condition perceived themselves to have less in common with women in general than participants in the control and sexist statement conditions.

There was a marginally significant effect of condition on self-stereotyping, ($F(2, 141) = 3.02$, $p = .05$). Correlations for the sexist statement and no sexism conditions were .26 and .25 respectively, whereas the correlation for the sexist joke condition was .09. Therefore, although the overall condition effect was not significant, the trend suggests that self-stereotyping was lower in the sexist joke condition compared to the sexist statement and control conditions. There were no significant condition effects found for sexual harassment tolerance, ($F(2, 153) = 2.06$, $p = .13$).

Table 3.
Means and standard deviations for study 2 physiological dependent measures, split by sexism condition.

	Condition							
	Sexist statement		Sexist Joke		No sexism		Total	
Dependent Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
CV Reactivity								
SBP (*n* = 154)	15.65	11.70	14.73	12.94	16.95	9.64	15.82	11.40
DBP (*n* = 154)	8.97	9.55	8.83	9.32	10.66	7.74	9.53	8.85
HR (*n* = 152)	17.95	10.26	14.40	11.84	16.98	10.28	16.43	10.84
PEP (*n* = 151)	-20.37	15.08	-20.07	14.99	-20.72	13.87	-20.40	14.53
CO (*n* = 151)	1.52_{1}	1.56	1.07_{2}	1.50	1.68_{1}	1.66	1.43	1.59
TPR (*n* = 150)	-44.94_{1}	126.40	4.79_{2}	147.80	-46.06_{1}	166.79	-29.10	149.75
CV Recovery								
SBP (*n* = 147)	74.20	19.20	68.66	21.38	70.16	20.10	70.99	20.24
DBP (*n* = 147)	70.36	20.92	76.94	16.63	74.56	19.55	73.97	19.19
HR (*n* = 148)	83.32	14.72	85.96	14.60	82.70	18.72	83.98	16.13
PEP (*n* = 144)	40.20	25.07	36.86	29.83	40.59	27.75	39.20	27.55
CO (*n* = 144)	59.15	27.43	57.11	27.24	60.01	26.97	58.75	27.04
TPR (*n* = 143)	53.23	37.11	55.12	36.94	54.37	34.84	54.26	36.03
*SBP (*n* = 147)	72.99_{a}	20.67	63.59_{b}	24.36	67.48_{b}	21.46	68.01	22.38
*DBP (*n* = 147)	66.85	28.65	74.79	20.82	75.43	21.41	72.42	24.00
*HR (*n* = 148)	81.52	16.29	83.17	18.78	81.49	18.25	82.06	17.72
*PEP (*n* = 144)	29.75	24.99	28.60	26.98	30.76	26.73	29.71	26.12
*CO (*n* = 144)	54.23	27.11	51.52	28.75	53.51	28.76	53.06	28.08
*TPR (*n* = 142)	50.17	38.86	50.27	37.45	50.69	38.62	50.38	38.04

Note. SBP = systolic blood pressure; DBP diastolic blood pressure; HR = heart rate; CO = cardiac output; VC = ventricular contraction; TPR = total peripheral resistance. Means and standard deviations for recovery are in percentages (i.e., percentage recovered relative to baseline). Asterisks before variable names indicate the additional recovery variables that were computed for the first 5 minutes of the recovery period. Means in the same row with different subscript *letters* differ at $p < .05$ based on results of a one-way ANOVA with condition as the independent variable; means in the same row with different subscript *numbers* differ at $p < .10$ based on results of a one-way ANOVA with condition as the independent variable. All recovery analyses include reactivity scores for the same CV indicator as a covariate. Variability in sample size is due to recording errors and problems with signal quality.

Table 4.
Means and standard deviations for study 2 non-physiological dependent measures, split by sexism condition.

	Condition							
	Sexist Statement		Sexist Joke		No sexism		Total	
Dependent Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived Sexism (*n* = 154)	4.66 $_{ab}$	2.87	3.37 $_{a}$	2.83	1.00 $_{b}$	0.00	2.95	2.74
Positive Impression (*n* = 163)	5.85 $_{ab}$	2.21	6.22 $_{ab}$	2.14	7.58 $_{a}$	1.32	7.94	1.58
Rumination	0.46	0.61	0.33	0.52	0.36	0.49	0.38	0.54
Performance Self-Esteem (*n* = 154)	3.85	0.74	3.86	0.69	3.91	0.77	3.87	0.73
Internal Attributions (*n* = 147)	2.25 $_{ab}$	1.98	1.51 $_{a}$	1.10	1.29 $_{a}$	1.07	1.68	1.49
External Attributions (*n* = 145)	3.49 $_{ab}$	2.47	3.69 $_{ab}$	2.34	1.40 $_{a}$	1.25	2.88	2.33
Composite Attributions (*n* = 124)	1.19 $_{ab}$	2.44	2.05 $_{ab}$	2.62	0.11 $_{a}$	1.03	1.07	2.24
Reporting (*n* = 155)	0.78 $_{ab}$ (78%)	0.42	0.58 $_{a}$ (58%)	0.50	0.00 $_{b}$ (0%)	0.00	0.45	0.50
Negative Self-directed Emotion (*n* = 155)	2.71	1.24	2.59	1.04	2.72	1.18	2.68	1.15
Anger (*n* = 134)	2.10 $_{ab}$	1.40	1.96 $_{ab}$	1.75	1.04 $_{a}$	0.16	2.10	1.22

Table 4 (Continued)

Sexual Harassment Tolerance (n = 156)	2.89	1.25	2.68	1.14	3.16	1.30	2.92	1.24
Gender Self-Stereotyping (n = 144)	0.25 $_1$	0.43	0.09 $_2$	0.45	0.26 $_1$	0.41	0.20	0.43

Note. Column means with different subscript letters differ at $p < .05$ and column means with different subscript numbers differ at $p < .10$ (based on results of a one-way ANOVA with condition as the independent variable). Variability in sample size is due to analyses with missing responses and/or excluded participants who accurately guessed the purpose of the study.

General Discussion

I examined the effects of blatant and subtle sexism on cardiovascular reactivity and recovery. I expected that exposure to blatant sexism would cause greater increases in cardiovascular reactivity, mediated by anger toward a sexist male. I also expected that exposure to sexist humor would cause impairment in CV recovery, mediated by ruminative thoughts. Additionally, I also expected sexist humor to prevent women from reporting sexism they experienced, lead to greater negative self-conscious emotion, greater internal attributions to mistreatment, and better impressions of the sexist male speaker than blatant sexism. I also explored whether self-esteem in the domain of task performance would interact with sexism condition to influence cardiovascular reactivity, as well as how exposure to sexist humor would affect attitudes toward women in general.

Cardiovascular Reactivity and Anger

As was hypothesized, women who were exposed to blatant sexism and as a result reported anger toward the sexist male, exhibited increased HR reactivity, although this did not result in significant HR reactivity differences by condition. Additionally, though not necessarily hypothesized, the same effect was found for the sexist humor condition. This finding supports the idea that sexism exposure causes approach-oriented emotion such as anger, which then promotes increases in energy expenditure, as evidenced by increased HR during a performance-based task.

Blatant sexism alone did not cause greater CV reactivity, as predicted by the effort model and found in Salomon et al. (2015). The form in which the manipulation was delivered may have

prevented this effect from being found. Experiencing sexism face-to-face may elicit more effort, and in turn, greater CV reactivity, than in an online format, as was done in the current study. Perhaps women did not feel the need to exert additional effort in defiance of Mike's sexist remark because he was not present during task performance, in which reactivity was measured. Salomon et al. (2015) theorized that women were motivated to "prove" the sexist man wrong, which is why they found blatant sexism increased reactivity. However, participants were under the general impression that Mike did not know how they performed. In contrast, the sexist men who delivered the manipulations in Salomon et al. (2015) and Schneider, Tomaka, and Palacios (2001) remained in the presence of participants during the task. Having Mike present during the task would have provided additional motivation to try harder at the task; however, the online chat paradigm used here did not allow for this.

The hypothesis that public speaking self-esteem would interact with exposure to blatant sexism to elicit greater CV reactivity during task performance was not supported. This could be the case because a stereotype of women's incompetence at public speaking is not ubiquitous, compared to more common stereotypes like women's inability in math and science. It is likely that the sexist comments used in the experiments evoked a more diffuse stereotype of women's incompetence that participants were already familiar with, rather than evoking a known stereotype regarding public speaking specifically. Additionally, it is possible that the sexist remarks evoked women's unintelligence, rather than incompetence. The sexist remarks referenced women's inability to argue, which may have stereotyped women as illogical or irrational. It is possible that a more general measure of self-efficacy may have served as a better moderator; it would avoid the issue of a narrow stereotype and would capture both competence and intelligence.

It was hypothesized that blatant sexism would lead to greater anger than sexist humor. However, even though blatant sexism elicited greater perceptions of sexism than sexist humor, blatant sexism elicited the same level of anger of sexist humor. It is possible that sexist humor does suppress anger responses compared to blatant sexism but was not apparent in the current studies because women were not willing to report how angry they were in the blatant sexism condition. Average anger responses were particularly low in both studies, averaging approximately 2 on a 1-9 scale for both sexism conditions. It is possible that, even in the face of blatant sexism, women may downplay the severity of, and therefore, emotional responses to, sexism. Suppressing anger in the face of sexism would have several societal and psychological functions. Anger is a response to acknowledging and challenging the status quo (Leonard et al., 2011). Additionally, downplaying the severity of discrimination serves to psychologically protect women from the threatening information that they are victims of the gender status quo (Napier, Suppes, & Bettinsoli, 2020). *Not* getting angry after experiencing blatant sexism, even with construing the experience as sexism, could be a manifestation of the aforementioned psychological protective strategy. Additionally, women run the risk of interpersonal and economic consequences when they act with agency and violate the gender status quo (Rudman, Moss-Racusin, Phelan, & Nauts, 2012). Becoming "too angered" by sexism runs the risk of violating prescriptive stereotypes for women to be warm, kind, and communal (Ramos, Barreto, Ellemers, Moya, & Ferreira, 2018).

Cardiovascular Recovery and Rumination

Sexist humor did not uniquely impair CV recovery. In fact, exposure to blatant sexism led to *better* SBP recovery than exposure to no sexism or sexist humor, which reflects similar findings from Salomon et al, (2015). Specifically, Salomon et al. (2015) found that women

exposed to blatant sexism exhibited better recovery relative to those in the no sexism condition. Again, contrary to hypotheses, ruminative thoughts did not mediate condition effects on CV recovery. Similarly to the explanation for CV reactivity mentioned previously, evidence for the hypotheses may not have been found because the manipulation was delivered through an online format.

It is possible that participants may not have found it necessary to ruminate on Mike's intentions, given that his intentions did not have implications for participants in the future. Specifically, after the sexist manipulation occurred, the interaction between Mike and the participants ended. I initially reasoned that humor in sexist communication would cause participants to ruminate to disambiguate Mike's unclear intentions, which would ultimately drive impaired CV recovery. However, none of the self-reported elaborations contained thoughts about figuring out Mike's intentions. Additionally, only 13 participants reported thinking about the interaction with Mike. Further, the research that has found exposure to ambiguous sexism can impair cardiovascular recovery (Salomon, Burgess, & Bosson, 2015; Kiebel et al., in preparation) used male confederates who made a sexist comment face-to-face to participants, who participants knew they were going to see again. If participants anticipated interacting with Mike again, they would have more reason to be self-conscious about their performance during the recovery period or disambiguate his intentions, in order to best interact with him.

Additionally, the hypothesis that sexist humor would elicit greater rumination was not supported. The way that rumination was measured could explain the lack of condition effect, as well as why rumination did not mediate a relationship between sexism condition and CV recovery. Although the number of types of rumination were summed to create a "total rumination" variable, scores still only ranged from 0 to 2. This coding may have prevented

necessary variation in the measure. For example, there were only 4 participants who ruminated about both Mike's sexism *and* their performance, so there were only 4 participants who scored a 2. Further, only 11 out of 164 participants mentioned Mike's remark or any negative feelings toward him, which also limited the variability of the total rumination variable. Future analyses may create new coding of the rumination that not only captures the presence of rumination, but the severity as well.

Evaluations

It was hypothesized that women would evaluate Mike more positively in the sexist joke condition and no sexism conditions compared to the sexist statement condition. Evidence for this hypothesis was mixed. The results for study 1 support the hypothesis: women in the sexist joke condition had more positive impressions of Mike and wanted to affiliate with him more compared to the sexist statement condition. Strikingly, women in the sexist joke and no sexism conditions wanted to affiliate with Mike equally. Results from Study 1 support the idea that humor can defend a speaker's reputation by preventing targets from making an attribution to harmful intent (Raskin & Attardo, 1994). Humor in sexist communication can even lead women to want to affiliate with sexist men to the same extent as non-sexist men.

On the other hand, results from Study 2 do not support the hypothesis that humor protects speakers from more negative evaluations, but nonetheless bring forth interesting questions. Women had better impressions of Mike in the no sexism condition compared to both sexism conditions, but they had equally positive impressions of Mike between the sexist joke and sexist statement conditions. In other words, even though the manipulation check showed that women perceived Mike as more sexist in the sexist statement condition than the sexist joke condition, women's impressions of him did not differ. A similar effect was also found in Study 1: although

women perceived Mike as more sexist in the sexist joke condition than the no sexism condition, participants wanted to affiliate with him at the same rate. These results suggest that even when women make attributions of sexism, they do not necessarily change their global evaluations of men. There are several explanations that could explain both findings for Study 1 and 2 regarding women's reluctance to change their judgments of men based on sexist behavior.

It is possible that Mike was perceived to be intelligent and warm, which could have prevented the influence of a negative behavior, such as making a sexist remark, into overall evaluations of him. Positive information has a larger influence on impression formation than negative information, given that positive qualities attributed to individuals are diffuse, whereas negative information is relatively specific (Gräf & Unkelbach, 2016). Thus, overall positive impressions made of an individual can ward off the influence of additional negative information. Given that participants may have perceived Mike to demonstrate several positive qualities during the conversation, the more specific dimension of sexist behavior may not have been integrated into their global evaluations of Mike. For example, Mike was likely perceived as intelligent; during the chat, Mike mentioned an interest in neuroscience and experience on the debate team. Men are also often perceived as intelligent by default (Storage, Charlesworth, Banaji, & Cimpian, 2020). Individuals are more willing to interact with sexist men if they perceive them as intelligent (Agadullina, 2020). Additionally, according to the shifting standards model, attributes, or behaviors that individuals exhibit that are non-stereotypical of their group are overemphasized in subsequent judgments about them (Biernat & Vescio, 2002). Participants may have perceived Mike to be warmer than was otherwise warranted, given that the format of the online chat required Mike to ask participants questions about themselves, as well as divulge personal

information about himself. Given that men are not stereotyped to be warm, this ounce of warmth could have been overemphasized in the overall evaluations of him.

Additionally, the archetype of a "bumbling" man (O'Driscoll, 2019) may illustrate how attributions of sexism do not necessarily lead to greater anger toward, worse impressions of, or less willingness to affiliate with a sexist man. Within the last 80 years, stereotypes of men shifted, which have resulted in the majority of Americans reporting they believe men are less intelligent than women (Eagly, Nater, Miller, Kaufmann, & Sczesny, 2019). This may appear to contradict well-known gender stereotypes. However, given that high-status groups shift strategies over time to maintain power (Jackman, 1994), it's possible that this shift could function to alleviate blame toward men who perpetuate sexism. To demonstrate, when an individual behaves in a way that causes harm, but was not aware of the potential for harm, they are absolved of responsibility for their action (Malle, Guglielmo, & Monroe, 2014). A lack of knowledge is perceived as "external" to an actor, and therefore, the actor receives less blame for harm caused. If women attribute a man's sexist remark to men's perceived ignorance, this may suppress the otherwise downstream effects on anger, overall impressions of a man, or willingness to further engage with him.

Self-conscious Emotion

Across two experiments, exposure to sexism, whether ambiguous or blatant, did not affect performance self-esteem or negative self-conscious emotion. This finding contrasts with extant research on prejudice exposure and self-esteem. The amount of time between when the manipulation occurred and the point in which measures of self-esteem and negative self-directed emotion were collected may have been too long to find condition effects. The self-report measures were completed approximately 20 minutes after the manipulation (2 minutes for speech

instructions, 3 minutes for speech preparation, 3 minutes to give speech, 10 minutes to measure cardiovascular recovery, 2 minutes for instructions for self-report measures). It is possible that this large time frame provided enough time to cope with the stressor they experienced, preventing condition differences in performance self-esteem and negative self-conscious emotion. Additionally, the instructions also asked participants to report their state, in-the-moment feelings, which would have referred to 20 minutes after the manipulation. Effects may have been found if instructions asked about how participants felt immediately after the speech. Further, many self-report emotion measures were created for the purposes of this study and lack validation (which is a problem in self-report emotion research in general; Harmon-Jones, Bastian, Harmon-Jones, 2016). It may be beneficial to use implicit measures of emotionality in the future, especially if measured after a lengthy cardiovascular recovery period.

It is also possible that mere exposure to prejudice, as was manipulated in the current studies, does not affect self-directed emotion or performance self-esteem. Much of the research that finds these effects expose people to ambiguous and blatant prejudice in addition to discrimination (Cihangir et al., 2010; Hoyt, Aguilar, Kaiser, Blascovich, & Lee, 2007; Crocker, Voelkl, Testa, & Major, 1991). In this literature, feedback is given to participants about themselves by someone who previously expressed blatant or ambiguous prejudice. For example, if a study uses a job interview paradigm, the interviewer makes a blatant or ambiguous sexist comment. Then, when participants learn they were not chosen for the job, self-esteem and negative self-directed emotion are affected in the ambiguous condition because they are more likely to feel the decision could be based on their abilities or performance. In contrast, the feedback in the blatant sexism condition is not considered self-relevant because it was ostensibly caused by sexism, protecting self-esteem and warding off negative self-directed thoughts.

Because the present studies did not explicitly provide feedback or information that could be considered self-relevant, this may have prevented differences in performance self-esteem or negative self-directed emotion. Future research could use feedback from Mike containing a negative evaluation to better test if sexist humor affects performance self-esteem and negative self-directed emotion.

Internal and External Attributions

Results for internal and external attributions were contrary to hypotheses: women in the sexist statement condition reported greater internal attributions than the sexist joke and control conditions and women in the two sexism conditions reported equal levels of external attributions. It is difficult to interpret what these results might mean. In order to answer affirmatively to the attribution items, participants would have had to believe their partner said something inappropriate to them ("If your partner said anything inappropriate to you, this event happened because of something about (*you* personally (such as your personality, or something you did or said)/*your partner* personally (such as their personality, etc.)). At first glance, it may appear as though the sexist statement condition had higher internal attributions simply because participants in that condition were more likely to report that their partner said something inappropriate. However, there were no differences in external attributions between the sexism conditions. Therefore, the results cannot be explained by lack of recognition of an "inappropriate" comment. It is possible that the sexist statement condition yielded greater reports of internal attributions because they perceived Mike's comment to be more intentional, and thus more personal. Additionally, these results might simply support existing research that shows both internal and external attributions to mistreatment occur when faced with prejudice (Matheson & Anisman, 2009; Blodorn, Major, & Kaiser, 2016; Schmitt & Branscombe, 2002).

It is also possible that the measures used to assess internal and external attributions were insufficient for how they were used in the current study. Although they were adapted from a measure of mistreatment attributions (Blodlorn et al., 2016), the measure referred to experiences of mistreatment in general, and not in a specific context. Further, measures of internal or external attributions broadly, are scant in extant research. Future research could examine qualitative data regarding internal and external attributions to sexism in order to better create quantitative measures of attributions to sexism.

Misconduct Reports

As was hypothesized, women were more likely to make a report of Mike's behavior in the blatant sexism condition, compared to the sexist joke condition. This finding supports the idea that humor in sexist communication suppresses women's motivation to take direct action against sexism, as well as extent research on the de-motivating effect of ambiguous sexism (Cihangir et al., 2014; Kuchynka et al., 2018; Nguyen & Ryan, 2008). This result is especially striking, given that participants had no connection to Mike, the fictitious male speaker and the report was virtually anonymous. Therefore, humor may have a larger role in suppressing stands against sexism in spaces where women may face interpersonal or professional backlash, such as workplaces. It is also of great importance that, although humor in sexist communication did not uniquely affect impressions of or anger toward Mike in Study 2, humor in sexist communication *did* suppress behavioral responses to report the sexist male's misconduct. This may provide evidence for future research to use more behavioral measures when examining how women respond to sexism.

Attitudes Toward Women

There was a pattern of results that indicate experiencing sexist humor may lead women to psychologically distance themselves from their stigmatized ingroup; there was a lower correlation between self-perceptions and perceptions of women in the sexist joke condition (0.09) compared to that of the control (0.25) and sexist statement conditions (0.26), although the overall effect was not only marginally significant, The humor in the sexist communication may have prevented women from rejecting a sexist message as biased, given the message with communicated in jest. Therefore, women may have been more motivated to separate themselves from the stigma of being a woman. In contrast, women in the sexist statement condition may not have felt the need to separate themselves from the negative stereotype, given that the bias was more obvious, and thus, more easily rejected. These findings reflect extant research that shows ambiguous prejudice and discrimination can lead to ingroup distancing (Woodcock et al., 2012). Further, this measure similar to the current self-stereotyping measure has been shown to capture group identity (Chen, Chen, & Shaw, 2004). Given that group identity predicts collective action, receiving social support, and can buffer against negative psychological effects of prejudice and discrimination (Van Zomeren, Postmes, & Spears, 2008; Hercus, 1999; Mossakowski, 2003), sexist humor may have downstream consequences for the collective.

The lack of significance may have been due to participant fatigue. Given the measures were exploratory, both were completed last, at the end of an intensive, two-hour study. Additionally, completing the measures at the end of the study meant that much more time had passed between when the manipulation was delivered and when these dependent variables were measured. It is possible that the effects of the manipulation did not last long enough to be reflected in these measures. Further, for the gender self-stereotyping measures, participants

completed a total of 58 items, which were decreased after factor analysis, given a validated measure of self-stereotyping did not previously exist. Future research might use this shorter measure in examining the effects of ambiguous and blatant sexism on self-stereotyping. Although the condition difference was not statistically significant, the previously mentioned factors may have played a role in contributing error variance, thus concealing the effect. A condition effect was also not found for sexual harassment tolerance, which might be due to the timing of the study, similarly to that of the self-stereotyping measure.

Strengths

The present studies utilized an immersive, ecologically valid setting wherein women were exposed to sexism. The use of an online chat paradigm to deliver the manipulation also provides further evidence that face-to-face interactions are not required for sexism to cause increases in cardiovascular reactivity, mediated by anger. Further, the cardiovascular measures used in Study 2 allow for the online measurement of cardiovascular stress responses during and recovery from a performance-based task.

Limitations

Study 1 and Study 2 were slightly underpowered, as the Covid-19 pandemic prevented data collection from reaching the required sample size to detect a medium effect. Study 2 did not include the measure of "partner affiliation," which prevented the opportunity to see if the results from Study 1 with that dependent variable replicated. Further, the length of the experiment may have obscured the opportunity to find condition effects that were measured by several dependent variables over 20 minutes after the manipulation occurred.

Future Research

In the future, I will investigate potential performance differences of the speech task, using a composite measure of linguistic markers of persuasiveness (given that participants were informed they would be evaluated on the persuasiveness of their speeches). Using the existing data collected in Study 2, I also plan to investigate how cardiovascular responses to sexism might differ by gender identity and feminist identity, given that identification with a stigmatized group is a large indicator of downstream responses to prejudice and discrimination.

The current studies raised several questions and topics of further investigation. First, women's cardiovascular responses to sexist humor ought to be explored whereby women experience sexist humor face-to-face. Future research also should investigate how women affiliate and navigate friendships with men who they perceive are sexist. Building on the evidence that sexist humor causes cardiovascular threat in women, additional ways of measuring psychological threat could be implemented in future studies. Lastly, future research could examine why women seem to "suppress" their attributions to sexism from affecting their anger responses and impressions of men who they perceive as sexist.

Conclusion

Although sexism is expressed less blatantly in the United States than in previous years, sexism expressed in a way that subverts egalitarian norms, such as with through humor, does not necessarily mean women do not experience psychological consequences from more common and covert expressions. In fact, the current studies suggest that sexist humor may pose greater threat to women than blatant sexism, in that sexist humor may function to psychologically disarm women. Compared to that of blatant sexism, sexist humor undermines women's approach motivation to take direct action against sexism. Additionally, humor in sexist communication can

prevent women from forming negative impressions of sexist men, as well as cause women to want to have a friendship with them. Additionally, patterns of results found suggest that sexist humor may psychologically threaten women during task performance and elicits psychological distance from the stigmatized ingroup. In sum, perceptions of women's societal progress do not necessarily mirror psychological and behavioral outcomes for women; subtle sexism is not necessarily better for women than overt.

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Appendices

Appendix A: Supplemental Tables

Table 1A
Pilot Study Pool of Jokes & Statements

Comment	Sample Size	Abbreviation	name
"Hey, wanna hear a joke? What's the difference between a woman's argument and a knife? ...A knife has a point."	17	"Knife" joke	KJ
"I don't think women are good at debating. Their arguments are usually pointless."	18	"Knife" statement	KS
"Hey, wanna hear a joke? What do you call a woman who just passed the bar exam? A barista. ...Because she's only useful for getting coffee."	18	"Bar" joke	BJ
"Women who work at law firms would probably be more useful for things like getting coffee than actually being lawyers."	16	"Bar" statement	BS
"Hey, wanna hear a joke? Why wasn't there a president of the women's group on campus? ...Because they were all secretaries."	18	"President" joke	PJ
"I don't think a group with a female president could get much done. Women are better as secretaries than leaders."	17	"President" statement	PS
"Hey, wanna hear a joke? Why is arguing with a woman like reading a software license agreement? In the end, you ignore it all and click 'I agree.'"	15	"Software" joke	SJ
"I hate debating with women, I can't handle the nagging. I just end up ignoring what they say and just telling them that I agree."	16	"Software" statement	SS
"Hey, wanna hear a joke? Why haven't any female astronauts ever been on the moon? ...Because it doesn't need cleaning yet."	17	"Astronaut" joke	AJ
"I think it's a woman's role to do household chores rather than focusing on STEM-heavy careers."	16	"Astronaut" statement	AS
"Hey, wanna hear a joke? If women ruled the world, why wouldn't there be any wars? ...Wars require strategy and logic."	18	"Leader" joke	LJ
"I think women lack the strategy and logic required to be effective leaders."	17	"Leader" statement	LS
"I wonder what else they're going to have us do."	18	Control message	CM

Table 2A
Pilot Study Dependent Measures: Means and Standard Deviations

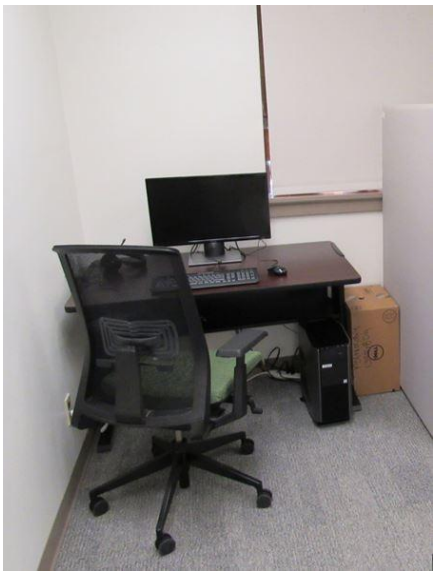
	Sexist		Funny		Offensive		Perceived HS		Perceived BS		Believable		Likely	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
KJ	6.41	0.87	1.65	1.22	6.24	1.15	2.89	1.90	4.37	1.20	4.35	1.97	5.06	1.43
KS	6.50	0.79	1.50	1.47	6.22	1.40	3.09	1.58	4.53	1.20	4.67	1.81	4.39	1.79
BJ	6.11	1.64	1.67	1.19	5.50	1.82	2.63	1.58	3.94	0.98	4.06	1.80	4.78	1.48
BS	6.88	0.50	1.00	0.00	6.75	0.58	2.29	1.01	3.55	1.23	4.50	1.63	4.50	1.37
PJ	6.00	1.37	1.83	1.29	4.78	1.80	3.26	1.20	3.78	1.01	3.61	1.72	4.83	1.29
PS	6.82	0.53	1.35	0.61	6.47	0.80	2.96	1.81	3.97	1.12	3.76	1.92	4.41	1.23
SJ	5.87	1.36	2.07	1.58	5.13	1.64	3.45	1.52	3.58	1.20	3.80	1.78	4.40	1.18
SS	5.75	1.84	1.50	1.03	5.50	2.03	2.84	1.87	4.22	1.60	4.69	1.74	4.56	1.86
AJ	6.59	0.87	1.35	0.79	6.18	1.01	2.33	1.35	3.21	1.53	3.35	2.03	4.76	1.60
AS	6.50	1.10	1.50	1.55	6.13	1.36	3.39	2.35	4.39	1.64	3.56	2.03	4.31	1.54
LJ	6.33	1.41	1.17	0.38	5.94	1.47	2.81	1.82	3.81	1.63	3.00	1.85	4.50	1.69
LS	6.82	0.53	1.35	1.22	6.41	1.06	2.93	1.61	3.76	1.41	3.59	1.73	4.18	1.24
CM	1.33	0.97	1.83	1.47	1.28	0.75	3.01	1.12	3.52	1.30	5.39	1.33	4.67	1.28

Appendix B: Pilot Study Details

Manipulation comments used in subsequent in-person studies were selected from a pilot test, of which aimed to control for perceived sexism and offensiveness of the joke and statement used in the present study (see Appendix A). The researcher found six sexist jokes through internet searches. For each joke, the researcher wrote a blatantly sexist statement that corresponded to each joke with the intention of capturing the message the joke communicated. Then, using University of South Florida's psychology participant pool, using an online survey platform, undergraduate women were presented with the scenario in which the in-person study would take place: "Imagine that you are in a psychology research lab participating in an experiment about online communication." Participants were then instructed to imagine themselves using an online chat program to speak to another participant who is participating in the same study. They were then randomly presented with a sexist comment and asked to imagine that their online communication partner sent that to them. Two independent samples t-tests were conducted to compare how sexist and offensive the comments were, which were measured on a Likert scale of 0 (not at all) to 6 (extremely). The chosen joke-statement pairing did not significantly differ on perceived sexism between the joke ($M = 6.41$, $SD = .87$, $N = 17$) and the statement ($M = 6.50$, $SD = .79$, $N = 18$); $t(33) = .32$, $p = .94$. The joke ($M = 6.24$, $SD = 1.15$, $N = 17$) and the statement ($M = 6.22$, $SD = 1.40$, $N = 18$) also did not differ on perceived offensiveness; $t(33) = .03$, $p = .61$. Furthermore, the joke-statement pairing possessed the highest believability ratings. When asked "how believable is this scenario?" participants, on average, rated the joke a 4.35 ($SD = 1.96$) and the statement a 4.67 ($SD = 1.81$) on a Likert scale of 0 (not at all) to 6 (extremely).

Appendix C: Pilot Stimuli and Instructions

Imagine that you are in a psychology research lab in PCD participating in an experiment about online communication. A researcher leads you to a seat at a computer.



Now, imagine you will be using Google Chat to talk to a participant who is participating in this study in a lab next door.

(sample picture)

The researcher says after the online chat, both you and your partner will participate in a performance-based task in which your abilities will be evaluated. The researcher tells you your assigned topics to talk about are your **academics** and **majors**.

Imagine that you chat with your online partner, Mike. He mentions he was captain of his high school debate team.

Imagine that Mike says the following statement:

Participants were randomly presented with 1 of the 13 statements in Appendix A.

Appendix D: Perceived Hostile Sexism

How likely would your male partner in this scenario be to agree with the following statements?

Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."

Most women interpret innocent remarks or acts as being sexist.

Women exaggerate problems they have at work.

When women lose to men in a fair competition, they typically complain about being discriminated against.

Feminists are making unreasonable demands of men.

Appendix E: Partner Affiliation

I feel like my partner and I have similar opinions.

I have things in common with my partner.

My partner likes me.

I like my partner.

My partner and I would get along well.

If given the chance, I could see myself becoming friends with my partner.

Our conversation went well.

Appendix F: Negative self-conscious emotion measures

State Performance Self-esteem

Each item is scored on a 5-point scale (1 = not at all, 2 = a little bit, 3 = somewhat, 4 = very much, and 5 = extremely).

I feel confident about my abilities.

I feel frustrated or rattled about my performance. R

I feel that I am having trouble understanding things.

I feel as smart as others.

I feel confident that I understand things.

I feel that I have less ability right now than others. R

I feel like I'm not doing well. R

Negative Self-directed Emotion

7-point Likert scales (from '1' not at all to '7' very much)

I want to sink into the floor and disappear.

I feel like I am a bad person.

I feel small.

I feel self-assured (reverse-scored).

I feel strong (reverse-scored).

I feel self-confident (reverse-scored).

Appendix G: Backward Digit Span Task Example

name: Hailey Condition: (S J C)

2 name: _____ Date: 7/3 Time: 11:00 a.m. Participant #: 86

Mark item with a question mark (?) if you aren't sure of or misheard participant's answer.

Backward Digit Span

Online Comm study

Practice				Real Task			
Audio	Correct Answer	Participant Answer	(× if wrong)	Audio	Correct Answer	Participant Answer	(× if wrong)
Span = 3				**Span = 4**			
247	742	742		6321	1236	1236	
429	924	924		4926	6294	6294	
735	537	537		2476	6742	6742	
681	186	186		9735	5379	5739	X
				7392	2937	2937	
Span = 4				6539	9356	9356	
7392	2937	2937					
5316	6135	6135		**Span = 5**			
3945	5493	5493		62143	34126	34126	
4615	5164	5164		84132	23148	23148	
7452	2547	2457	X	27865	56872	56872	
9638	8369	8369		89756	65798	65798	
				86937	73968	73698	X
Span = 5				82431	13428	13428	
91653	35619	35619		49261	16294	16294	
16592	29561	29561		15782	28751	28451	X
79514	41597	41597		74529	92547	92547	
82691	19628	19628		18472	27481	24—	X
				42785	58724	48724	X
				28653	35682	35682	
				42973	37924	37924	
				65792	29756	29765	X
				23896	69832	68—	X
				48239	93284	93824	X
				97438	83479	847—	X
				65148	84156	8148-	X
				75468	86457	865417	X
				Span = 6			
				587261	162785	162785	
				261384	483162	483162	

Appendix H: Online Chat Script

hey. I'm Mike

...participant response…

nice to meet you. I'm a psych major, hbu [how about you]?

...participant response…

nice. What do you want to do with that?

...participant response…

oh cool. I'm not entirely sure what I want to do with psychology, but I want to go to grad school and I'm into neuroscience.

So are you involved with anything on campus?

...participant response…

oh nice. I'm in the debate club. So far, it's been good. I'm on the executive board and I've made a lot of friends.

...participant response…

so how has [insert extracurricular activity here] been so far?

...participant response…

Study 1 manipulation segue

so what happened when you had a conflict with a group of people?

...participant response…

lol gotcha. We had a lot of issues with our club president being on top of things she was supposed to do. And a few of us talked to her and she decided to step down.

...participant response…

yeah she was just too busy for her position. PLUS her arguments in debate weren't even good anyway lol

...participant response…

[insert manipulation here]

Study 2 manipulation segue

so… how do you feel about the speech we have to give?

...participant response…

[insert manipulation here]

Additional responses (based on participant messages)

If participant asked what they did on the debate team:

we have political/philosophical topics that we set up before our meetings. but it's also partly a social club

If participant asked what year they were:

I'm a sophomore, what about you?

If participant was talkative, Mike volunteered additional information to match the responsiveness of the participant:

I also played flag football last year but want to start back soon.

If participant indicated how they felt about the upcoming speech before Mike asked about it:

[insert manipulation] (without asking, "so… how do you feel about the speech we have to give?")

Appendix I: Subjective Reactions to the Experimenter (Departmental Review)

Researcher(s): _____ C J S

Date: _____ Participant #: _____

Time: _____ Partner #: _____

Research Experience Report

You have just participated in a research study which involved more than the normal level of interaction with researchers or other participants. This may have been because the environment or the data collected involved personal information. Due to the nature of the research, you are requested to evaluate the behavior and interactions with the participants or researchers involved. Mandatory Safe Environment Training requires that participants complete a research experience report for research that involves more than minimal interaction with researchers or other participants to ensure participants have positive research experiences. Please answer the following questions honestly and accurately about both the researchers and research.

Please do NOT put your name on this form in order to keep the evaluations anonymous. If items do not pertain to your experience during this research, please mark 1 for "not applicable".

We want to ensure participants are having positive experiences during their research participation. Please answer the questions as accurately and honestly as possible.

Please answer every question item. If a question does not apply, answer with, "1".

1) Did a **researcher** make you feel any the following?

1 2 3 4 5 6 7 8 9
Not at all Very Much

_____ Annoyed
_____ Frustrated
_____ Angry
_____ Disgusted
_____ Hostile
_____ Resentful
_____ Surprised
_____ Self-conscious
_____ Embarrassed
_____ Ashamed
_____ Sad
_____ Doubtful of myself
_____ Anxious
_____ Guilty

2) Did a **participant** make you feel any the following?

1 2 3 4 5 6 7 8 9
Not at all Very Much

_____ Annoyed
_____ Frustrated
_____ Angry
_____ Disgusted
_____ Hostile
_____ Resentful
_____ Surprised
_____ Self-conscious
_____ Embarrassed
_____ Ashamed
_____ Sad
_____ Doubtful of myself
_____ Anxious
_____ Guilty

Potential Negative Experiences During Research

The Psychology department aims to ensure that research environments are safe and inclusive to for all groups of people.

3) During your interaction(s) with the **researcher,** did any of these thoughts cross your mind?

1 2 3 4 5 6 7 8 9
Not at all

Very
Much

_____ I disagree with the researcher.

_____ I questioned something that the researcher said.

_____ I feel uncomfortable.

_____ I have a feeling the researcher may be prejudiced.

_____ I have a feeling the researcher may be racist.

_____ I have a feeling the researcher may be sexist.

_____ I have a feeling the researcher may be homophobic.

_____ I disagree with his/her considerations about my race.

_____ I disagree with his/her considerations about my sexual orientation.

_____ I disagree with his/her considerations about my gender.

_____ I disagree with his/her considerations about my [insert identity here: _____].

In your own words, please comment about your interaction with the researcher:

_____

_____

_____

_____

4) During your interaction(s) with your **communication partner,** did any of these thoughts cross your mind?

1	2	3	4	5	6	7	8	9
Not at all								Very Much

_____ I disagree with my partner.

_____ I questioned something that my partner said.

_____ I feel uncomfortable.

_____ I have a feeling my partner may be prejudiced.

_____ I have a feeling the researcher may be racist.

_____ I have a feeling my partner may be sexist.

_____ I have a feeling my partner may be homophobic.

_____ I disagree with his/her considerations about my race.

_____ I disagree with his/her considerations about my sexual orientation.

_____ I disagree with his/her considerations about my gender.

_____ I disagree with his/her considerations about my [insert identity here: _____].

If your partner said anything inappropriate to you, this event happened because of something about *you* personally (such as your personality, or something you did or said).

1	2	3	4	5	6	7
Strongly disagree			Neither agree nor disagree			Strongly agree

If your partner said anything inappropriate to you, this event happened because of something about *your partner* personally (such as their personality, etc.).

1	2	3	4	5	6	7
Strongly disagree			Neither agree nor disagree			Strongly agree

In your own words, please comment about your interaction with your partner:

_____

_____

_____

_____

Appendix J: Health Questionnaire

1 Age: _____

2 How would you describe your race or ethnicity?

□ American Indian or Alaska Native
□ Asian or Asian-American
□ Arab or Middle Eastern
□ Black or African American
□ Hispanic or Latino
□ Native Hawaiian or Other Pacific Islander
□ White or Caucasian
□ Mixed/Multiracial
□ Other, Non-specified

3 Have you ever been diagnosed with any of the following conditions:

□ Heart disease □ Hypertension (high blood pressure) □ Arrhythmia (irregular heartbeat)
□ High cholesterol
□ Heart Valve Problems □ Stroke □ Diabetes

4 Please list all prescription and non-prescription medications that you are currently taking. Be sure to also include any medications you have taken in the last 48 hours, even if it is something you do not regularly take (such as aspirin or cold medicine).

_____

5 When did you last eat? _____ am / pm (circle one)

a. What did you eat? _____

6 Do you drink beverages containing caffeine? □Yes □No (check one)

a. If yes, when did you last drink a caffeinated beverage?

Time: _____ am / pm (circle one)

b. How many caffeinated drinks have you had today? _____

c. How many servings (8 oz.) of "energy drinks" (e.g., Redbull, Rockstar, etc.) do you consume in a typical day?

Regular: _____ Diet: _____

d. How many servings (8 oz.) of soda do you consume in a typical day?

Regular: _____ Diet: _____

1. Do you smoke nicotine cigarettes? If yes, when did you last smoke? Time: _____ am / pm (circle one)

a. If yes, when did you last smoke? Time: _____ am / pm (circle one)

b. How many nicotine cigarettes have you smoked today? _____

c. How many nicotine cigarettes do you normally smoke in a day? _____

2. Which of the following describes your typical diet?

□ Omnivore (Meat, etc.) □ Vegetarian □ Vegan

□ Pescetarian (only fish, no other meat) □ Other: _____

3. When did you last exercise? Please consider any activity that elevated your heart rate for 30 or more minutes.

Date: _____ Time: _____ Activity: _____

4. When was the first day of menstruation during your last cycle (mm/dd/yyyy)? _____
5. Are you pregnant? □Yes □ No □ Not Sure (check one)

Appendix K: Speech Task Stimuli

Your 3 minutes of speech preparation time has started.

Points to include in your speech:

1) The events that led up to the officer giving you a ticket.

2) Whether you think you should or should not have been given a ticket.

3) The extent of the city's responsibility in keeping road signs in good view.

Please begin your 3-minute speech.

Appendix L: Public Speaking Self-esteem

My self-esteem is influenced by my public speaking abilities.

I feel better about myself when I know I'm doing well at public speaking.

Doing well in public speaking gives me a sense of self-respect.

I feel bad about myself whenever my public speaking performance is lacking.

My opinion about myself isn't tied to how well I do in public speaking (reverse-coded).

Appendix M: Self-stereotyping Items

Rate yourself on the following traits using a scale from "not at all true of me" (1) to "very true of me" (7).

Warm	Possesses business sense
Kind	Athletic
Sensitive	Possesses leadership ability
Friendly	Self-reliant
Clean	Ambitious
Pays attention to appearances	High self-esteem
Patient	Assertive
Polite	Decisive
Cheerful	Strong personality
Cooperative	Rational
Wholesome	Competitive
Expresses emotion	Willing to take risks
Spiritual	Aggressive
Excitable	Intense
	Forceful

Consider the following traits and indicate the percentage of women (0%-100%) who possesses each characteristic.

Same items as above

Appendix N: Sexual Harassment Tolerance

Please read the following scenario. We are interested in people's opinions on social interactions. There are no right or wrong answers.

Anne is a sophomore at her university, and she is really struggling with writing papers for classes. She went to the student resource center and applied for weekly tutoring sessions to improve her writing skills. John, a senior graduating with honors in English, was assigned as her tutor. He started tutoring through the Student Resource Center last semester because he needed some extra cash, and they pay a decent amount for the work he does.

John has now been tutoring Anne for about half of the semester, once a week. In almost every session, John makes some kind of comment to Anne about how attractive she is, usually noting her hair, her outfit, or her eyes. Anne always smiles and thanks John for the compliment. Anne has just filed a complaint with John's supervisor about the comments that John has been making to her after class.

John isn't the only man who has commented on Anne's appearance. Many other men have told Anne how beautiful they think she is. She always changed the subject, getting them back on the topic they were supposed to be discussing. John has been tutoring for the Student Resource Center for over a year, and he has tutored many women during this time. He often commented to each of them in tutoring sessions that they are attractive women. None of these women ever complained about John, and all of them recommend him as a tutor to others.

John's actions were beyond the limits of acceptable behavior (reverse-coded).

Anne may have encouraged John.

John's behavior was totally unacceptable (reverse-coded).

Anne is partly to blame for the situation.

Anne's complaint is totally justified (reverse-coded).

John's behavior was not so unusual that Anne should have complained.

Anne is completely innocent of wrongdoing (reverse-coded).

This wasn't sexual harassment.