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LAKE FOREST COLLEGE

Senior Thesis

Sexism Goes Underground:
The Development of a Neosexism Scale Catered to College Student Populations

by

Kayla A. Huber

April 18, 2016

The report of the investigation undertaken as a
Senior Thesis, to carry two courses of credit in
the Neuroscience Program

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Krebs Provost and Dean of the Faculty	
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	Douglas B. Light

Abstract

Cultural and political changes in the last century have made it largely socially unacceptable to overtly discriminate against women. Such pressures may have forced sexist beliefs to be expressed in more covert forms. This study aimed to develop a psychometric scale that assesses such covert, or *neosexist*, beliefs in college student populations and to analyze the relationship between neosexism and gender egalitarian beliefs, feminist awareness, social desirability, and an existing scale of neosexism. Similar to previous research, a series of exploratory and confirmatory factor analyses yielded a one-factor model of neosexism. This model was invariant across gender and race. Scores on the old neosexism scale, gender egalitarianism, and feminist revelation were all significant predictors of scores on the new neosexism scale. This new scale may prove useful in assessing the anatomical and neurological correlates of contemporary attitudes toward women.

For Jyothis James.

May our dialectic never stagnate.

Acknowledgments

This work would not have been possible without the continuous support of Dr. Susan Long. Thank you for your guidance, critiques, support, wit, and patience. After hours of watching videos by James Gaskin and restarting Amos, you managed to keep the faith alive. Thank you for empowering me as a student and giving me a model for the type of professor I would like to become.

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Last but not least, thank you to my mother. It has been an honor to be raised by someone so selfless, supportive, driven, and resilient. My education would not be possible without your tireless efforts. I love you very much.

List of Abbreviations

ASI	Ambivalent Sexism Inventory
ATLG	Attitudes Toward Lesbians and Gay Men Scale
CFA	Confirmatory factor analysis
CFI	Comparative fix index
CMIN/DF	Relative chi-square
dACC	Dorsal anterior cingulate cortex
DLPFC	Dorsolateral prefrontal cortex
EFA	Exploratory factor analysis
FIDS	Feminist Identity Development Scale
fMRI	Functional magnetic resonance imaging
FWM	Attitudes Toward Feminism and the Women's Movement Scale
GRAS	Gender Roles Attitude Scale
IAT	Implicit Association Test
MRI	Magnetic resonance imaging
MSS	Modern Sexism Scale
NNS	"New" Neosexism Scale
ONS	"Old" Neosexism Scale
PCC	Posterior cingulate cortex
RMSEA	Root mean square error of approximation
rGMD	Regional gray matter density
SDS	Social Desirability Scale—Short Form
SESRA-S	Scale of Egalitarian Sex Role Attitudes—Short Form
SRMR	Standardized root mean square residual

TLI	Tucker-Lewis Index
VMPFC	Ventromedial prefrontal cortex

Table of Contents

Sexism Goes Underground:

The Development of a Neosexism Scale Catered to College Student Populations

Historical Underpinnings of Neosexism Research

Prejudices can be thought of as malleable, mutating like viruses in order to survive in their current sociopolitical environments (Gaertner & Dovidio, 1986). Prejudice against women, or *sexism*, has traditionally been characterized by the promotion of strict gender roles (whereby women are submissive caregivers and men are dominant providers), belief in the incompetency of women, and differential treatment of men and women (Cameron, 1977; Swim, Aikin, Hall, & Hunter, 1995). However, cultural and political changes in the last century have now made it both illegal (Civil Rights Act of 1964; The Pregnancy Discrimination Act of 1978) and largely socially unacceptable to overtly discriminate against women. In fact, polls indicate that 82 percent of Americans believe that men and women should be social, political, and economic equals (Swanson, 2013).

Despite the promotion of equality between the sexes (both individually and institutionally), women are far from being on equal footing with their male counterparts. For example, as of 2014, women possessed nearly 60 percent of undergraduate and master's degrees, yet they accounted for less than 9 percent of those in top management positions. At this rate of change, women will not reach parity with men in their leadership roles in the United States until 2085 (Dezso, Ross, & Uribe, 2013; Warner, 2014). Such a dismal statistic indicates that discrimination against women has yet to be purged from American society. It appears as though sexism has taken on a new, covert form, a form that can still exist in a society that claims to support equality. The aim of this study is to

refine a psychometric scale that measures these contemporary, or *neosexist*, beliefs in college student populations.

In 1995, Tougas and colleagues coined the term "neosexism" to describe a set of beliefs that arise from the tension between one's gender egalitarian values (which may be socially prescribed) and residual negative feelings toward women (Tougas, Brown, Beaton, & Joly, 1995). In this, individuals may "feel pressured to maintain a liberal self-image," either to avoid social stigmatization or to feel good about oneself, which forces them to express their prejudices in more covert forms (Breinlinger & Kelly, 1996, p. 97). For example, one can claim to support equality between the sexes, yet disapprove of any measures intended to reduce inequalities between the sexes (such as affirmative action or paid maternity leave programs). In order to resolve this cognitive dissonance (Festinger, Riecken, & Schachter, 1956), one may state that discrimination does not exist in contemporary society or that individuals can easily overcome discrimination if they work hard enough; therefore, equity measures are unfair and bestow undeserved advantages upon those who belong to historically marginalized groups (Tougas et al., 1995). By both positing *equity* measures as inconsistent with *equality*, and attributing the lower status of women in society to personal failings rather than systematic disenfranchisement, individuals can continue to think of themselves as "egalitarian" or "non-sexist" while being unsupportive of measures intended to improve women's position in society.

Tougas and colleagues' (1995) theory of neosexism emerged from the large body of work conducted on the topic of *modern racism*. According to a model advanced by McConahay (1986), modern racism is characterized by three main beliefs:
1) discrimination is no longer a problem, 2) racial minorities are asking far too much in their push for equality, and 3) many of the gains made by minorities are undeserved.

Contemporary forms of racism hinge not upon the overt expression of prejudice; rather, it involves the denunciation of anti-Black statements (e.g., "Blacks are less intelligent than Whites") while objecting to measures intended to 'level the playing field,' such as affirmative action and school busing policies (Bobo, 1983; Tougas et al., 1995).

There appears to be a relationship between individuals' attitudes toward racial minorities and their attitudes toward women. Studies have consistently found a significant and positive correlation between racism and sexism scores (Henley and Pincus, 1978; Sidanius, 1993). Conversely, three separate elements have been found to be positively related to woman-supportive attitudes: individuals' endorsement of racial acceptance, comprehension of institutional racism through a belief in White privilege, and belief in the necessity of institutional policies to level an uneven playing field. These three elements were positively correlated with: 1) the acknowledgement of sexism, 2) valuing female-centered spaces and social activism, and 3) rejecting traditional gender roles for women (Wolff & Munley, 2012). It has even been found that scores on scales of prejudice against women, immigrants, persons with disabilities, and homosexuals are all positively and significantly correlated with one another, indicating that individuals' prejudice (or acceptance) may be generalized across many targets (Akrami, Ekehammar, & Bergh, 2011; Ekehammar & Akrami, 2003).

Due to the fact that the two domains are strongly correlated, Tougas and colleagues (1995) postulated that sexist ideologies had evolved over the years in a manner similar to that of racist ideologies. Thus, they wished to develop a scale of neosexist beliefs based off of McConahay's (1986) Modern Racism Scale. In order to establish discriminant validity, participants were given both the neosexism scale and a scale of old-fashioned sexist beliefs (Rombough & Ventimiglia, 1981). Both scales were

analyzed (through path analysis) in terms of their ability to predict participants' attitudes toward affirmative action policies. In a sample of 130 Canadian male college students, they found that both old-fashioned sexism and neosexism were positively linked (β = 0.52), but only *neosexism* impacted the support given to affirmative action policies (β = -0.46). Traditional sexism was not associated with support levels of affirmative action policies. In addition, the researchers evaluated a variable termed *men's collective interest*, which asked participants to both assess the impact of affirmative action policies upon the situation of men (e.g., "These programs disadvantage men, compared to women, in terms of their chances of getting a job") and indicate their level of satisfaction with each situation. They found that considerations of men's collective interest positively influenced both old-fashioned sexism and neosexism and negatively influenced the amount of support given to affirmative action programs. Together, these results demonstrated that men's collective interest and neosexism were better predictors of attitudes toward affirmative action policies than old-fashioned sexism.

In the second part of Tougas and colleagues' (1995) study, the impact of neosexism and men's collective interest was evaluated with a group of 149 Canadian male workers who were employed at a firm with an established affirmative action program for women and racial minorities. As expected, regression analyses revealed that support of affirmative action in general, support of the specific affirmative action program in place, and the evaluation of women's qualifications were all negatively influenced by both neosexism and men's collective interest. Taken together, those that harbor neosexist beliefs are likely to be displeased with affirmative action programs and find those who are helped by such programs to be less competent and qualified for their positions. Such beliefs may contribute to a hostile working environment for women and

negatively impact their ability to earn raises and promotions within their workplace, particularly if their evaluators are men (Tougas et al., 1995).

In 1999, Tougas and colleagues attempted to expand their model by incorporating the neosexist beliefs held by women. They postulated that the more frequently women attempted to access nontraditional fields of work the more they encountered discrimination. Personal experiences of discrimination would produce feelings of "collective relative deprivation," which was defined as discontent derived from comparing the social situation of women to that of men. Tougas and colleagues hypothesized that the more women felt deprived due to their social situation, the less they would endorse neosexist beliefs. Data were collected from 335 secretaries at a Canadian federal agency that had implemented both an affirmative action program and a bridging program, which provided career advancement activities for secretaries who wished to move into management positions.

Using structural equation modeling, they found support for their original model: experiencing barriers to accessing nontraditional fields of work was positively related to feelings of collective relative deprivation. Feelings of collective relative deprivation were negatively related to endorsement of neosexist beliefs and positively related to support of affirmative action programs. Finally, endorsement of neosexist beliefs was negatively related to the support given to affirmative action programs. The only deviation from their original model was that the number of times women attempted to access nontraditional fields of work was negatively associated with neosexism, rather than the "perceived barriers" variable. In sum, women who had difficultly breaking into fields traditionally occupied by men tended to feel disadvantaged compared to their male counterparts, which led them to hold less neosexist beliefs (i.e., more aware of the existence of the

discrimination against women) and become more supportive of affirmative action programs in the workplace.

Additional Measures of Contemporary Sexism

There are a multitude of scales that aim to assess individuals' attitudes toward women. This section will first introduce Brofenbrenner's original ecological systems theory, and then modify said theory in order to help categorize these various scales. The scales most relevant and with the most background research related to neosexism will be described and subsequently compared to one another in the following section.

In his seminal paper, *Toward an Experimental Ecology of Human Development*, Bronfenbrenner (1977) attempted to broaden the scope of research conducted by developmental psychologists. Although behavioral theorists had analyzed humans in small settings and anthropological theorists had analyzed humans on a larger scope, Bronfenbrenner contended that researchers ought to consider the interrelationships between individuals and the *many* environments that they occupy throughout their lives. Within his model, Bronfenbrenner (1977) proposed that the development of a human (located at the center of the model) is influenced by: 1) *microsystems*, which are the environments with which an individual has the most direct contact (such as the home, school, or workplace), 2) *mesosystems*, which are connections between two or more microsystems (such as the relationship between a child's teachers and their parents), 3) *exosystems*, which are social structures with which the individual does not directly interact, but nevertheless affects an individual's microsystem in some way (such as governmental policy or a child's parents' professions), and 4) *macosystems*, which are overarching cultural values, customs, and laws, from which all other systems derive (for

example, a federal Medicare program would not exist unless the United States valued the wellbeing of the elderly).

The collective influence of these environments has been shown to affect both neurocognitive development (Dishion, 2016) and the beliefs individuals hold about themselves, other groups of people, and social institutions (Oppliger, 2006; Wolff & Munley, 2012). A myriad of psychometric scales have been created to analyze such beliefs, with a specific focus on gender. At the *individual level*, such scales attempt to measure personal adherence to gender roles (such as the Bem Sex Role Inventory (Gaudreau, 1977) or the Conformity to Masculine Norms Inventory (Hsu & Iwamoto, 2014)). At the *group level*, scales assess personal endorsement of gender roles and sex stereotypes (such as the Attitudes Towards Women Scale (Spence, Helmrich, & Stapp, 1978) or the Sex-Role Egalitarianism Scale (Beere et al., 1984)). At the *exosystem* level, such scales aim to tap into individual's attitudes toward policies designed to enhance the position of women in society (namely, the Neosexism Scale (ONS; Tougas et al., 1995), the Modern Sexism Scale (Swim et al., 1995), and the hostile sexism portion of the Ambivalent Sexism Inventory (Glick & Fiske, 1996)). Due to the fact that the aim of this study is to analyze college student's attitudes toward policies and movements intended to reduce inequalities between the sexes, I will only be discussing the relationship between scales in the exosystem category.

The Ambivalent Sexism Inventory. The Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996) stems from Katz and colleagues' (1986) theory of ambivalent racism and is based upon the theory that modern sexism is a multidimensional construct characterized by both positive *and* negative affect toward women. This construct includes two distinct types of sexist attitudes: hostile sexism and benevolent sexism. Hostile

sexism includes antagonistic attitudes toward women, who are viewed as trying to assert power over men through feminist ideology (e.g., "Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for 'equality'") or sexual seduction (e.g., "Once a woman gets a man to commit to her, she usually tries to put him on a tight leash") (Glick & Fiske, 1996, p. 512; Plous, 2015). Such attitudes allow men to deny their privileges, belittle women's attempts to achieve equality, and posit women as unable to succeed by their own merits in the workforce.

In contrast, benevolent sexism includes a set of "positive" attitudes, in which women are characterized as individuals that ought to be the recipients of men's protection, idealization, and affection (Glick & Fiske, 1996). Benevolent sexism appears to be composed of three subfactors: Complementary Gender Differentiation (e.g., "Women, compared to men, tend to have a superior moral sensibility"), Heterosexual Intimacy (e.g., "No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman"), and Protective Paternalism (e.g., "Women should be cherished and protected by men") (Glick & Fiske, 1996, p. 512). Although many individuals may find nothing wrong with benevolent sexism, such attitudes can still be damaging in that they posit men as dominant providers who must protect women, and women as objects of male desire who are inherently weak, pure, and unable to provide for themselves. Such attitudes could further justify men's power interpersonally, while confining women to a submissive, domestic role (Barreto & Ellemers, 2005).

The Modern Sexism Scale. The Modern Sexism Scale (MSS; Swim et al., 1995) is derived from the work on modern racism by McConahay (1986) and is based upon the theory that at present, individuals are less likely to endorse "old-fashioned" sexist beliefs (including support for traditional gender roles, differential treatment of women and men,

and stereotypes about female competence); rather, individuals may express their sexist beliefs in more covert ways. The MSS incorporates five items that measure Old-Fashioned Sexism (e.g., "Women are generally not as smart as men") and eight items that measure Modern Sexism, which can be categorized into three groups: denial of continuing discrimination (e.g., "Society has reached the point where women and men have equal opportunities for achievement;" reverse coded), antagonism toward women's demands (e.g., "It is easy to understand the anger of women's groups in America;" reverse coded), and resentment about special favors for women (e.g., "Over the past few years, the government and news media have been showing more concern about the treatment of women than is warranted by women's actual experiences") (Swim et al., 1995, p. 212). Two sets of confirmatory factor analyses conducted by Swim and colleagues (1995) indicated a two-factor solution, which supported the theory that Old-Fashioned Sexism and Modern Sexism are distinct constructs.

Comparing Scales of Contemporary Sexism

The ONS, ASI, and MSS each assess perceptions of the exosystem because they measure individuals' attitudes toward policies designed to enhance the position of women in society. Previous research has examined the relationship between these three scales. The following section will describe the commonalities and differences between these measures in an attempt to describe what unique space neosexism fills.

Neosexism Scale vs. Modern Sexism Scale. Campbell, Schellenberg, and Senn (1997) presented 106 Canadian college students with both the ONS and the MSS. In addition, the students were presented with the Attitudes Toward Feminism and the Women's Movement Scale (FWM; Fassinger, 1994) and Attitudes Toward Lesbians and Gay Men Scale (ATLG; Herek, 1988, 1994) (in order to assess the validity of such scales

in their prediction of other gender-related political attitudes) as well as the Protestant-Ethic and Humanitarian-Egalitarian scales (Katz & Hass, 1986, 1988), which the authors thought might elucidate what value systems underlie current prejudicial attitudes.

Analyses revealed that the ONS had a far higher internal reliability and displayed stronger differences in responses by gender (as compared to the MSS), with men being more neosexist than women. As expected, both scales of sexism were significantly and positively correlated with one another, though only 35 percent of variance in one scale could be explained by variance in the other. A confirmatory principal components analysis with all of the items from both scales yielded a two-factor solution. The two factors were weakly correlated with one another, and a majority of ONS items (i.e., 9 of 11) loaded on one factor, while a majority of the MSS items (i.e., 6 of 8) loaded on the other factor. This indicates that the scales are measuring related, but largely unique constructs. This finding could be explained by the fact that a disproportionate number of the items in the MSS (i.e., 5 of 8) deal with the first tenant of McConahay's (1986) theory of modern racism, which is the denial that discrimination still exists. In contrast, the ONS deals with both denial that discrimination still exists *and* issues surrounding women's engagement in the labor force.

The ONS and MSS were equally good at predicting participants' attitudes toward the feminist movement and gay and lesbian individuals on the FWM and ATLG, respectively. However, the scales differed in their association with value systems. Those who scored high in neosexism typically rejected an egalitarian value system and supported an individualistic system (i.e., the belief in "hard work" and "self-reliance" rather than "equality of opportunity" and "social justice"), whereas those who scored high on modern sexism displayed no preference for a particular value system. All of the

aforementioned results indicate that, contrary to belief, the ONS and MSS measure different but related constructs, though the ONS may be the preferred measure for contemporary sexist beliefs due to its broader scope, strong gender differences in responding, and clearer prediction of value orientation.

Neosexism Scale vs. Ambivalent Sexism Inventory. Utilizing data from samples of high school students, undergraduate students, and full-time employed British citizens, Massaer and Abrams (1999) attempted to distinguish the ONS from the ASI. Analyses revealed a strong and positive relationship between neosexism and hostile sexism. When hostile sexism was accounted for in regression analyses, however, the relationship between neosexism and benevolent sexism became weaker and nonsignificant in two of the three samples. From this, the authors postulated that, "the relationship between benevolent sexism and either modern sexism or neosexism is almost wholly attributable to the variance benevolent sexism shares with hostile sexism" (Massaer & Abrams, 1999, p. 5). Thus, the overlapping relationship between hostile sexism and neosexism is present in both adults and high school aged populations.

When assessing the relationship between the two scales of contemporary sexism and value orientation, it was found that both hostile sexism and neosexism were negatively and significantly associated with the Humanitarian-Egalitarian Scale. In contrast to the findings of Campbell and colleagues (1997), there was a small positive correlation between neosexism and the Protestant Ethic Scale, though this relationship failed to reach significance. Therefore, one can tentatively conclude that those who hold contemporary sexist beliefs are more likely to display a higher Protestant ethic orientation and a lower humanitarian-egalitarian orientation (Massaer & Abrams, 1999).

Ambivalent Sexism Inventory vs. Modern Sexism Scale. Utilizing four samples of undergraduate students and two samples of Massachusetts citizens, Glick and Fiske (1996) assessed the relationship between the ASI and the MSS. First-order correlations revealed a positive and significant relationship between the two scales. Second, partial correlations for each of the ASI subscales (hostile sexism and benevolent sexism) were conducted, in which the effects of one subscale was removed from the other. When controlling for benevolent sexism, the relationship between hostile sexism and the MSS continued to be positive and significant. In contrast, controlling for hostile sexism made the relationship between benevolent sexism and the MSS slightly negative and nonsignificant. This indicated that the relationship between the ASI and the MSS could be entirely ascribed to the hostile sexism subscale. Thus, it appears as though benevolent sexism is a unique construct that is not evaluated by existing measures of sexism (including the Attitudes Toward Women Scale (Spence & Helmreich, 1972) and the Rape Myth Acceptance Scale (Burt, 1980), which were also analyzed in the aforementioned study). See Figure 1 for a visual summary of the hypothetical shared variance between the ASI, MSS, and ONS.

The Neuroscience of Prejudice and Stereotyping

Psychological tasks and scales of attitudes toward women have also been utilized in neuroscientific research in an attempt to elucidate what brain areas or circuits are involved in the prejudice and stereotyping of women. This area of research is based upon the premise that socially prescribed gender egalitarian values have forced gender-based prejudices to ‘go underground,’ operating at a level that is largely unconscious and difficult to detect or control (Amodio, 2014). The following section will highlight studies

that not only implicate certain brain areas in the *production* of prejudice and stereotyping, but in the *suppression* of such attitudes.

Stereotypes are useful in that they allow individuals to make assumptions about the personality and behavior of others, which eliminates the necessity of spending lengthy periods of time getting to know every person with which an individual interacts (Quadflieg et al., 2009). Although gendered stereotypes—*women are passive nurtures who enjoy shopping, and men are aggressive leaders who enjoy sports*—appear relatively benign, their "indiscriminate application…promotes judgmental inaccuracy, societal inequality, and intergroup conflict" (Fiske, 1998; Quadflieg et al., 2009, p. 1560). In order to assess the neuroanatomy associated with social stereotyping, Quadflieg and colleagues (2009) asked 20 male undergraduates to perform a simple judgment task while their brain activity was monitored with an fMRI machine. Participants were asked if particular behaviors (such as mowing the lawn or watching talk shows) were more likely to be performed by men or women or were equally likely to be performed by both sexes. In addition, participants were asked if particular behaviors were typically performed indoors or outdoors. This judgment task allowed the researchers to determine if inferences about people and places activated different brain areas, and if stereotyped responses about human behaviors differed neurologically from responses about nonstereotyped behaviors. Finally, participants were asked to complete both implicit and explicit measures of gender attitudes (i.e., a gender-based Implicit Association Test (IAT) (Rudman, Greenwald, & McGhee, 2001) and the Attitudes Toward Women Scale (Spence & Helmreich, 1972), respectively)) to examine if the strength of such attitudes affected the level of brain activity in any way.

Results indicated that right amygdala activity was positively correlated with the strength of participants' explicit and implicit gender attitudes. In addition, in the gender stereotyping condition participants displayed activation in regions associated with evaluative processing (e.g., amygdala, ventromedial prefrontal cortex) and action knowledge, or the motor-based knowledge of object utilization (e.g., left middle temporal gyrus, left supramarginal gyrus). From this, the researchers postulated that our knowledge of actions may not only be composed of the *physical movements* associated with certain activities or objects, but also information about *who* is most likely to perform a particular action. It bears noting, however, that gender stereotypes about appearance or personality are likely to activate different brain areas than those involved in gender stereotypes about behavior, such as the ventral temporal cortex (which is implicated in visual memories) and the anterior superior temporal gyrus (which is found in a pathway with the amygdala and prefrontal cortex, all of which are involved in social cognition).

Further substantiating the role of the ventromedial prefrontal cortex (VMPFC) in gender stereotyping, patients with VMPFC lesions demonstrated a lessened IAT effect for stereotypic associations about gender (i.e., they did not take significantly longer to pair female names with words associated with "strength" than they did with words associated with "weakness"). Such a result was not found in patients with dorsolateral prefrontal cortex (DLPFC) lesions or healthy volunteers (Milne & Grafman, 2001), indicating that the VMPFC is critical in "accessing certain aspects of overlearned social knowledge," such as stereotypes about individuals' behavior or qualities based on their sex (Milne & Grafman, 2001, p. 1). However, no between-group differences in *explicit* judgments of gender stereotypes were found (as measured on the Attitudes Toward Women Scale (Spence & Helmreich, 1972)), which indicates that impairments in

automatically accessing stereotyped social knowledge can be compensated by making an explicit conscious judgment.

In order to identify which brain areas are involved with both implicit stereotyping and the *suppression* of such attitudes, Knutson and colleagues (2007) conducted fMRI scans as participants completed a gender- and race-based IAT. Analyses revealed that when participants made associations *congruent* with gender and racial stereotypes (e.g., female name—weak words; Black name—unpleasant words), there was higher activation of the anteromedial prefrontal cortex and the rostral anterior cingulate cortex, as well as the amygdala in the gender condition (bolstering Quadflieg and colleagues' (2009) finding that the amygdala plays a role in stereotypical attitudes about women). In contrast, participants making associations *incongruent* with gender and racial stereotypes (e.g., female name—strong words; Black name—pleasant words) caused higher activation in the DLPFC. Taken together, this study indicated that the prefrontal cortex, often viewed as the 'hub of social cognition,' contains different areas that are responsible for either *activating* or *inhibiting* stereotypical attitudes about particular groups of people.

Gendered stereotypes can contribute to the formation of sex roles, which are sets of societal norms that dictate what type of behavior is considered appropriate for a person based on their sex. In a study conducted by Takeuchi and colleagues (2015), it was examined whether the brains of those who endorse strict sex roles differ anatomically from those who are more gender egalitarian. The researchers asked 681 Japanese university students to complete the Scale of Egalitarian Sex Role Attitudes-Short Form (SESRA-S; Suzuki, 1994; higher scores indicate higher levels of gender egalitarianism) and a questionnaire about aggressive tendencies prior to undergoing an MRI. Voxel-

based morphometry was then used to determine whether individual differences in gender egalitarianism were associated with variations in regional gray matter density (rGMD).

It was found that SESRA-S scores were positively and significantly correlated with rGMD in the right amygdala, which has been implicated in social stereotyping (as previously discussed) and emotional processing (Phelps & LeDoux, 2005). In addition, SESRA-S scores were negatively and significantly correlated with rGMD in the anterior part of the posterior cingulate cortex (PCC), an area associated with emotion-related cognition, including anger, fear, and pain (Vogt, 2005). The mean rGMD for the PCC also had a significant and positive correlation with scores of competitive achievement motivation, which is the "desire to handle and succeed in difficult tasks, and is directed at seeking social prestige by defeating and achieving better results than others" (Takeuchi et al., 2015, p. 4). While these results are purely correlational in nature, it is plausible that individuals who are fearful of increased competition are less likely to endorse gender egalitarianism, as to avoid putting women on equal footing with themselves.

Neosexist beliefs are unique in that they can *coincide* with gender egalitarian beliefs. The promotion of equality between the sexes while simultaneously disapproving of any measures intended to reduce inequalities between the sexes is likely to result in cognitive dissonance (Festinger, Riecken, & Schachter, 1956). In order to examine the neural correlates of this phenomenon, van Veen and colleagues (2009) placed 53 college students in an fMRI machine (which are notoriously uncomfortable) to complete a monotonous task for 45 minutes. Following this, the participants were asked to respond to sentences presented on a screen, some of which assessed their attitudes toward the scanner and the task ("pretest"). In the control group, participants were told that they would be paid an additional dollar for every time they responded that the experience was

enjoyable (as previous studies have demonstrated that individuals experience little cognitive dissonance when they can attribute their counter-attitudinal behavior to payment (Festinger & Carlsmith, 1959)). In the dissonance group, participants were asked if they would be willing to respond as though they enjoyed the experience in order to quell the anxiety of an upcoming participant (who could allegedly see their responses in the scanner control room). At the conclusion of the experiment, participants responded to the sentences once again, but they were allowed to state how they actually felt about their experience in the scanner ("posttest").

Results indicated that, on average, scanner enjoyment was significantly greater for the dissonance group than the control group on the posttest, confirming the notion that individuals tend to modify their attitudes in order to be congruent with their behavior. Participants in the dissonance group displayed high levels of activity in the dorsal anterior cingulate cortex (dACC) and anterior insula when responding to sentences about the scanner, and the level of activity in these two regions predicted participants' attitude change from pre- to posttest. Such effects were not present in the control group.

The dACC and anterior insula have previously been implicated with negative affect and autonomic arousal, and activity tends to be higher in these regions when participants are making errors (Critchley, 2005; Hajcak, McDonald, & Simons, 2004) or are processing incompatible pieces of information (such as in the Stroop task, when the name of a color is printed in a color not denoted by the name (van Veen & Carter, 2005)). From this, it can be inferred that holding two conflicting beliefs (e.g., 'Men and women ought to be equals in the labor force, but I don't support affirmative action policies') produces some level of distress in individuals, which motivates them to modify their

beliefs (e.g., 'Men and women are already equals, that's why I think affirmative action policies are unnecessary') in order to mitigate this distress.

Limitations of Current Neosexism Research

Tougas and colleagues have clearly demonstrated that neosexist beliefs are a better predictor of one's attitudes toward affirmative action policies than old-fashioned sexist beliefs, though it is unclear whether their scale is capable of *accurately* measuring neosexist beliefs in all populations. When assessing the external validity of their newly developed Neosexism Scale, Tougas and colleagues found that workers and managers, on average, had significantly higher neosexism scores than university students. This was taken as "proof" that neosexist beliefs "matter in the 'real world' of workers and managers," though Tougas and colleagues failed to consider the fact that such a statistic may be artificially skewed due to university students' lack of workplace experience (Tougas et al., 1995, p. 847).

Undergraduate students may not yet have definitive opinions about questions such as, "It is difficult to work for a female boss" or "I consider the present employment system to be unfair to women." In order to more accurately assess the difference between students and workers in terms of their subscription to neosexist beliefs, it is necessary to develop a scale of neosexism that is more relevant to the experiences of undergraduate students (it is especially important due to the fact that a vast majority of psychological research utilizes undergraduate samples). For example, students will be asked about their attitudes toward feminists on campus, affirmative action programs for college admissions, and the existence of discrimination in terms of hiring, payment, and tenure of female professors.

The current literature on neosexism is also limited in that it only utilizes White samples (though oftentimes the race of participants is not even mentioned). Such demographically skewed sampling reduces our ability to make claims about how other races express neosexist beliefs. This study will utilize a much more diverse sample of college-aged students in order to see if any such differences exist.

The vague nature of some of the items in the existing Neosexism Scale is concerning. For example, the item "Women shouldn't put themselves where they are not wanted" makes no reference to *where* women are putting themselves or by *whom* they not wanted by. Another item, "Over the past few years, women have gotten more from the government than they deserve," does not explicitly state *what* women have received. Construct validity may be compromised at the point where participants are given too much room to interpret questions as they see fit. This study will attempt to increase specificity by asking participants to assess *particular* equity measures in higher education, such as paid maternity leave for female professors and recruitment of women to the sciences.

Tougas and colleagues found in their initial study that their scale of neosexism did not possess a definitive factor structure. While it is entirely possible that "neosexism" is a singular construct without any subdimensions, it is also possible that 1) the questions that they utilized did not tap into such subdimensions or 2) a factor structure may emerge in a population different than the one used in their initial study. This study tested the hypothesis that neosexism is composed of three distinct factors, namely: the denial that discrimination against women exists, lack of support for equity measures, and hostility toward the feminist movement.

Method

Participants and Recruitment

A convenience sample of 535 students was obtained through the Lake Forest College Introduction to Psychology subject pool, in-person recruitment on the Lake Forest College campus, and distribution of the survey on social media outlets such as Facebook. All participants were at least 18 years of age, all were currently enrolled as undergraduate students, and 94.8% (n = 507) had resided in the United States for a minimum of four years. The sample was 61.9% female (n = 331) and 37.6% male (n = 201). Three participants did not disclose their gender (0.6%). The ethnic composition of the sample was as follows: 63.2% White (n = 338), 10.3% Hispanic (n = 55), 9.7% multiethnic (n = 52), 8.4% Asian (n = 45), 6.0% Black (n = 32), and 1.7% Other (n = 9). Four participants did not disclose their ethnicity (0.7%).

Participants were assured of the anonymity of responses (both on the consent and debriefing form) and participation was voluntary. Most participants were not compensated, however, Introduction to Psychology students received extra credit for their participation in this study.

Instruments

Participants were asked to complete one survey (see Appendix A), containing five scales, which are described below:

Neosexist beliefs. Tougas and colleagues' (1995) Neosexism Scale (ONS) is an 11-item Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) that aims to tap into a covert form of gender prejudice, which is characterized by the denial that discrimination against women exists (e.g., "Discrimination against women in the labor force is no longer a problem in [the United States]"), hostility toward women's demands

(e.g., “Women will make more progress by being patient and not pushing too hard for change”), and the belief that women receive more than they are due (e.g., “In order to not appear sexist, many men are inclined to overcompensate women”). Higher mean scores indicated higher levels of neosexism.

Gender egalitarian beliefs. Zeyneloglu and Terzioglu’s (2011) original Gender Roles Attitude Scale (GRAS) is a 38-item Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*) that assesses university students’ attitudes toward gender roles. Higher mean scores indicated higher levels of gender egalitarianism. The scale was found to consist of five factors: egalitarian gender roles, female gender roles, marriage gender roles, traditional gender roles, and male gender roles. For the purposes of this study, a 21-item version of the scale was utilized, consisting of items from the ‘egalitarian gender roles’ subscale (e.g., “Housework should be shared equally between spouses in the family”) and the ‘female gender roles’ subscale (e.g., “A woman’s basic task is motherhood”). As the scale was originally developed in Turkey, the phrasing of some items was slightly modified for the purposes of clarity.

Social desirability. A short form of Marlow and Crowne’s (1960) Social Desirability Scale (SDS), developed by Reynolds (1982), assesses whether participants are responding truthfully or misrepresenting themselves in order to either maintain a positive self-image or appear more favorable to the researcher. The scale contains 13 true-false statements and higher scores indicate higher levels of social desirability. Examples of items included in the scale are: “I am always willing to admit when I make a mistake,” “I am always courteous, even to people who are disagreeable,” and “I have never deliberately said something that hurt someone’s feelings.” Higher summed scores indicate higher levels of social desirability.

Neosexist beliefs of college students (NNS). The scale developed for this study is a 16-item Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*) that attempts to assess a covert form of gender prejudice in specifically college student populations. This covert form of prejudice is characterized by the denial that discrimination exists (e.g., "I don't believe a female professor would have any more difficulty earning tenure at my college than a male professor"), lack of support for equity measures (e.g., "I think it is unfair that colleges invest so much time and energy in attracting women to the sciences"), and hostility toward the feminist movement (e.g., "The feminists on campus always find something to complain about"). Higher mean scores indicate higher levels of neosexism.

Feminist ideology. Bargad and Hyde's (1991) Feminist Identity Development Scale (FIDS) assesses the maturation of a person's identity as a feminist, a process that is divided into five stages (Passive Acceptance, Revelation, Embeddedness-Emanation, Synthesis, and Active Commitment). Only the 7-item Revelation subscale was utilized in this study, which evaluates whether individuals have had a series of "consciousness-raising experiences" that allowed them to recognize the existence of discrimination against women. Such recognition has been related to a feminist attitude (Downing & Roush, 1985; Myaskovsky & Wittig, 1997). Examples of items included in this scale are: "I used to think that there isn't a lot of sex discrimination, but now I know how much there really is" and "Recently, I read something or had an experience that sparked a greater understanding of sexism." Answers were recorded on a 5-point Likert-type scale where 1 indicated strong disagreement and 5 indicated strong agreement. Higher mean scores indicated a greater awareness of discrimination against women.

Demographics. Participants were asked to select their gender (Male, Female) and ethnicity (Asian, Black/African American, Hispanic, White/Caucasian, Other). Participants were also asked if they had resided within the United States for at least four years, if they were between the ages of 18 and 25, and if they were currently enrolled as an undergraduate student.

Procedure

Participants were directed to the survey by a link sent through the social media site Facebook. After being presented with the recruitment script, confirming that they were at least 18 years of age, and giving their consent, participants were asked to complete the survey (containing the five aforementioned scales). Upon completion of the survey, a debriefing statement appeared that informed the participants about the purpose of study, provided on-campus resources to Lake Forest College students who may experience lingering distress, and included two resources for students who were interested in learning more about the topic of neosexism and the status of women in contemporary society.

A paper version of the survey was also administered to Lake Forest College students at various locations on the campus as well as in class. The procedure was identical to the one above, with the exception that a paper consent form was attached to the front of the survey and a paper debriefing form was handed to students after the completion of the survey.

Results

Data Cleaning and Analysis Plan

Prior to running analyses, the data were checked for entry errors. No such errors were found. Two ONS items, ten GRAS items, and two NNS items were reversed coded

in order to reflect their intended meaning. The item mean was substituted for any missing data only if less than 10% of a participant's data needed to be imputed for a particular scale (excluding the SDS because it was decided not to impute the mode on this dichotomous scale). Item means were imputed for 18 participants on the ONS, 25 participants on the GRAS, 10 participants on the NNS, and 8 participants on the FIDS. Participants missing more than 10% of data did not have scores imputed (4 participants on the ONS, 16 participants on the SDS, and 2 participants on the FIDS).

Using a random number generator, participants were assigned to one of two groups. Group 1 (n = 260) would be used for an exploratory factor analysis and Group 2 (n = 275) would be used for a confirmatory factor analysis. Two versions of each group's data were created—one that included univariate outliers ("uncleaned") and one with all outliers removed ("cleaned").

Outliers and normality were determined through examining skewness, kurtosis, and standardized scores. As shown in Table 1, the sums of the NNS, ONS, and GRAS were extremely skewed (i.e., $|S| > 2$) and the sum of the FIDS was moderately skewed (i.e., $1 < |S| < 2$) in the uncleaned data. In addition, the sums of the ONS and SDS were extremely kurtosed (i.e., $|K| > 2$) and the sums of the GRAS and FIDS were moderately kurtosed (i.e., $1 < |K| < 2$) (Stern, 2010).

Exploratory factor analysis is most reliable on data that are normally distributed. Thus, to fully examine normality properties of the NNS, standardized scores (i.e., z-scores) were created for every item. In the cleaned data, observations that laid ±3 standard deviations from the mean were removed (n = 60 observations, across 42 participants). This eliminated the issue of skewness (S = 0.40), but caused the data to become extremely kurtosed (K = 2.93), indicating that the removal of outliers had

substantially reduced the amount of variability in the data. Finally, a P-P plot was examined to determine the presence of multivariate outliers. There were no significant departures from normality.

An exploratory factor analysis was conducted using SPSS and a series of confirmatory factor analyses were performed using AMOS. Due to the fact that the cleaned data essentially eliminated data from any participants who selected 4 or 5 on the NNS items, this greatly reduced the amount of (presumably conceptually meaningful) variability in the data (as further evidenced by the newly high kurtosis in the cleaned dataset). In order to preserve the full range of participants' attitudes, the exploratory and confirmatory factor analyses were conducted using both cleaned and uncleaned data. To examine whether the factor structure of the NNS differs across groups, we also tested for evidence of measurement invariance across gender (male/female) and race (White/Non-White). Analyses using both cleaned and uncleaned data will be presented throughout the Results section.

Exploratory Factor Analysis

In order to examine the factor structure underlying the 16-item NNS, we performed an exploratory factor analysis (EFA) in IBM SPSS Statistics 23. A principle components analysis with promax oblique rotation was conducted. A promax oblique rotation was primarily used because it was presumed that the factors would be highly correlated with one another (Osborne, 2015). This analysis yielded three factors with eigenvalues greater than 1.0, in accordance with the Kaiser-Guttman rule (Kaiser, 1991).

Using 0.35 as the factor loading criteria (Plucker, 2003), all 16 of the original NNS items loaded significantly on one of the three factors. No items loaded above 0.35 on more than one factor (see Tables 2 and 3). In the *cleaned* data, Factor 1 (eigenvalue =

6.24) accounted for 38.98% of the total variance and contained 9 items. Factor 2 (eigenvalue = 1.42) accounted for 8.85% of the total variance and contained 4 items. Factor 3 (eigenvalue = 1.05) accounted for 6.53% of the total variance and contained 3 items (see Table 4). In the *uncleaned* data, Factor 1 (eigenvalue = 6.75) accounted for 42.21% of the total variance and contained 8 items. Factor 2 (eigenvalue = 1.32) accounted for 8.22% of the total variance and contained 6 items. Factor 3 (eigenvalue = 1.02) accounted for 6.35% of the total variance and contained 2 items (see Table 5).

Confirmatory Factor Analysis

From the EFA, we developed the hypothesis that there were three factors underlying the NNS. We tested the validity of this hypothesis by running a confirmatory factor analysis (CFA) in IBM SPSS AMOS 23, for which we constrained the model to be composed of the three factors indicated by the EFA results. Model fit statistics were then evaluated to see how well our model captured the covariance between the NNS items. Poor model fit statistics indicate that the constraints we imposed on the model are inconsistent with the sample (Group 2) data. All analyses were run with both cleaned and uncleaned data.

The fit of the CFAs were evaluated with six different fit indices. Comparative fit index (CFI) and Tucker-Lewis Index (TLI) values greater than 0.95, standardized root mean square residual (SRMR) values less than 0.08, root mean square error of approximation (RMSEA) values less than 0.05, and relative chi-square (CMIN/DF) values between 1.0-3.0 were considered adequate fitting (Hu & Bentler, 1999). All models tested revealed significant chi-square values, which on the surface indicates that they replicated the variance-covariance matrix poorly. However, chi-square tests are altered by sample size, leading to frequent rejections of the null hypothesis in large

samples (Kline, 2005). Group 2 had 275 participants, so the significant chi-square values were not unexpected, nor a cause for serious concern.

As noted by Bollen (1989), the aforementioned rules of thumb for acceptance of model fit are rather arbitrary. Although it may be preferable to compare this study's fit indices to that of prior models of neosexism, no such models exist. Tougas and colleagues (1995) conducted an EFA on the original neosexism scale and the only model fit information presented was that "no definite structure was obtained." This study therefore relied on the comparison of fit indices of equivalent models as guided by the current set of analyses.

Analyses were initially run with cleaned data. Two models were tested with the 16-item NNS—one that contained three factors (as would be expected from the EFA) and one that contained one factor (as would be expected from previous studies). Items 5 and 9 loaded poorly on Factors 2 and 3, respectively (i.e., below 0.50; Hair, Black, Babin, Anderson, & Tatham, 2006). These items were removed and the one- and three-factor models were run once again, resulting in slightly more preferable fit indices (see Table 6). Of the four models, the trimmed one-factor model displayed the best fit with the highest CFI and TLI and lowest SRMR value.

Analyses were then conducted with uncleaned data for the basis of comparison. Once again, two models were tested with the 16-item NNS—one that contained three factors and one that contained one factor. Three poorly loading items (3, 5, and 9) were then removed from Factor 2 (items 3 and 5) and Factor 3 (item 9). It was necessary to remove item 14 as well, because the third factor was initially composed of only two items (9 and 14), so the removal of item 9 left Factor 3 composed of one item. Two- and one-factor models were run with the remaining 12 NNS items. While a two-factor solution

had the highest CFI and TLI and lowest RMSEA value, it was found that the two factors were very highly correlated with one another ($r = 0.92$). Due to this, the final model was collapsed into a one-factor solution, which still exceeded all minimum fit statistic criteria (see Table 6). This one-factor, 12-item model was the final model retained for subsequent analyses. Figures 2 and 3 display the two- and one-factor models, respectively. See Appendix B for a copy of the 12-item NNS.

Testing for Measurement Invariance Across Gender and Race

In order to evaluate whether individuals belonging to different groups interpreted the NNS in a conceptually similar way, measurement invariance was assessed across two covariates: gender and race. Both covariates were assessed dichotomously (male/female, White/Non-White) due to the sample being disproportionally White. All analyses used the one-factor model created with uncleaned data.

Configural invariance was tested in the second and fourth models, in which all factor loadings and error covariances were allowed to vary between the groups. Weak factor invariance was then tested in the third and fifth models, in which all factor loadings and error covariances were constrained to be equal across the groups. Measurement invariance was evaluated through chi-square difference tests. Significant chi-square differences indicate that the constrained model fits significantly worse and that the hypothesis of measurement invariance across groups ought to be rejected. As shown in Table 7, the comparison of models was not statistically significant, indicating that all factor loadings and error covariances are invariant across both gender and race.

Assessing Measurement Reliability and Validity of the NNS (12)

The next set of analyses assessed the relationship between the measured variables in order to examine the validity of the NNS. See Table 8 for means, standard deviations,

and Cronbach's alphas of all scales. Though there is no universally accepted standard of internal reliability, a majority of psychometric scales used in psychological research have Cronbach's alpha values between 0.75 and 0.83 (Nunnally, 1978). The NNS displayed very high internal reliability ($\alpha = 0.91$), as did the ONS ($\alpha = 0.83$), GRAS ($\alpha = 0.86$), and the FIDS ($\alpha = 0.77$), albeit to a lesser extent.

All correlations between the measured variables were in the expected directions (see Table 9). Scores on the new neosexism scale had a strong, positive, and significant relationship with scores on the old neosexism scale ($r = 0.815$), providing evidence of convergent validity. A near-zero correlation ($r = 0.051$) between the new neosexism scale and the social desirability scale provided one indication of discriminant validity (interestingly, social desirability was positively and significantly correlated with the *old* neosexism scale). In addition, both gender egalitarian beliefs and feminist revelation were moderately negatively and significantly related to the new neosexism scale, further bolstering the scale's discriminant validity.

Due to the presence of a nonsignificant correlation between the social desirability scale and the new neosexism scale, social desirability was not used as a control variable in the following analyses. Table 10 reports results for a series of simple linear regressions between the NNS and three of the study variables. The ONS was a strong, positive, and significant predictor of the NNS ($\beta = 0.815$), providing additional evidence of convergent validity. The GRAS ($\beta = -0.676$) and FIDS ($\beta = -0.581$) were moderate, negative, and significant predictors of the NNS, indicating the discriminative capacity of the new neosexism scale.

In order to determine whether there were statistically significant differences between the means of men and women as well as White and Non-White participants on

the five scales, a series of independent t-tests were run. Group means are reported in Table 8. There were statistically significant differences between men and women on the NNS ($t(528) = 7.92$, $p < .001$, $d = 0.69$), ONS ($t(362.92) = 7.79$, $p < .001$, $d = 0.82$), GRAS ($t(370.47) = -7.42$, $p < .001$, $d = 0.77$), and FIDS ($t(527) = -6.84$, $p < .001$, $d = 0.60$). Men, on average, showed higher levels of neosexism on both the NNS and ONS and lower levels of gender egalitarianism and feminist revelation, as compared to women. The effect sizes associated with the NNS, GRAS, and FIDS were medium to medium-large (i.e., $0.5 \leq d < 0.8$; Cohen, 1994), and the effect size associated with the ONS was large (i.e., $d \geq 0.8$). There were no statistically significant differences between men and women on the SDS ($t(512) = -0.88$, $p = 0.382$, $d = 0.08$). Interestingly, there was only a statistically significant difference between White and non-White participants on the GRAS ($t(527) = 3.669$, $p < .001$, $d = 0.32$), with White participants showing slightly higher levels of gender egalitarianism. The effect size of this difference, however, was quite small.

Discussion

The purpose of this study was to develop a scale of neosexism relevant to the experiences of college students and to analyze its factor structure. In accordance with previous studies (Campbell et al., 1997; Masser & Abrams, 1999; Tougas et al., 1995), neosexism was found to be a unidimensional construct, centering on the denial that discrimination against women exists, hostility toward female authority figures and the feminist movement, and a lack of support for equity measures. This scale deviated from Tougas and colleagues' Neosexism Scale in that it included items that assessed participants' attitudes toward feminism, which is a political movement intimately tied with the promotion of equity measures. While antagonism toward feminism is certainly

not a new phenomenon, individuals may presently argue that they support women in general, but disapprove of those types of women who are 'too radical,' insinuating that their support is only extended to those who are not making efforts to mitigate societal inequalities. Thus, hostility toward a minority of activists can be a sign of a much wider hostility toward women (Nelson, 2009).

The 12-item scale of neosexism developed in this study appears to have good psychometric properties, including a high level of internal consistency, a lack of contamination by social desirability bias, and an adequate level of convergence with the existing scale of neosexism. This study was the first to evaluate measurement invariance across gender and race, and it was found that the scale fit equally well for men and women as well as White and non-White participants. Finally, the new scale of neosexism was found to have a moderate and negative association with both gender egalitarianism and feminist revelation, indicating that not supporting strict gender roles and recognizing the existence of discrimination against women are necessary but not sufficient conditions for disavowing neosexist beliefs.

In line with the three tenants of McConahay's (1986) theory of modern racism, it was expected that the NNS would be composed of three distinct factors—denial that discrimination exists, lack of support for equity measures, and hostility toward the feminist movement. The EFAs conducted with both cleaned and uncleaned data appeared to support this claim, though two aspects of the initial 3-factor structure are worth noting: 1) Factor 1 accounted for roughly four times more variance than Factor 2 and six times more variance than Factor 3, and 2) the items that loaded strongly on Factor 1 were conceptually different from one another. This indicated that Factor 1 captured a majority of the variance in the data, and that participants were responding to items on the NNS

that referenced the feminist movement, equity measures, and contemporary discrimination in a similar manner. Subsequent CFAs reaffirmed the notion that "neosexism" is a singular latent construct that underlies a diverse array of attitudes toward women. Such a result raises the question—what are the definitive bounds of "neosexism"? What beliefs or attitudes can be classified as neosexist, and which ones cannot?

Neosexism is most easily defined by what it is not. It is *not* the endorsement of traditional gender roles, in which women are bound to the domestic sphere; it is *not* the explicit statement that women are less competent or capable; it is *not* the belief that women should be deprived of self-expression, jobs, leadership positions, resources, or access to the public sphere by virtue of their sex. To the contrary, neosexism is the belief that women have already achieved equality with men, so feminist advocacy is not necessary, and equity measures are both unnecessary and unfair. In addition, it is belief that women with authority are inadequate by some measure, whether it be their manner of speech, dress, grading policy, leadership, or emotional expression. Such beliefs are wolves dressed in sheep's clothing, as they allow men to deny their systematic privileges as well as stagnate and belittle women's attempts to better their position within society.

The ways in which neosexist beliefs distinguish themselves from 'traditional' sexist beliefs also exposes gaps in our knowledge of the neuroscience of prejudice. In the work conducted by Takeuchi and colleagues (2015), participants' scores of gender egalitarianism were correlated with regional gray matter density in areas previously implicated with prejudice (such as the right amygdala and anterior PCC). The results of the present study, however, indicated that participants were, on average, moderately neosexist while being highly gender egalitarian. Relying on measures of 'traditional'

sexism (such as the Attitudes Toward Women Scale or Gender Roles Attitude Scale) in neuroscientific research may stunt our understanding of how *contemporary* attitudes toward women are represented neurologically, attitudes that are increasingly covert and convoluted. In addition, neuroscientific work conducted on cognitive dissonance has relied upon simple activities such as the Stroop task or the assessment of change in fairly simplistic attitudes (e.g., 'I feel calm in the scanner'). Due to the difficulty of studying the formation of complex beliefs in artificial lab settings, it still remains to be seen if some neosexist beliefs are formed in an effort to reduce the distress associated with cognitive dissonance.

Limitations

This study is limited in that it relied upon a convenience (rather than a random) sample of college students, which limits our ability to generalize these results to the general population. The sample was also disproportionately White and female (which is not unexpected, as a vast majority of college campuses in the United States are predominantly White and female (National Center for Education Statistics, 2014)). Tests of measurement invariance indicated that the NNS items loaded well for both male and non-White groups, though additional studies are needed in order to validate this claim.

Due to both time constraints and the anonymous nature of the online survey, we were unable to assess the test-retest reliability of the NNS. Time constraints also limited our ability to test an extremely large pool of potential NNS items (either with a pilot group or with the entire sample). A majority of the retained items reference hostility toward feminism and equity measures, and fewer refer to the denial that discrimination against women exists or hostility toward female authority figures. In future studies, a

larger pool of items ought to be used in order to more fully study the nature of neosexist beliefs, and to see if a more defined factor structure might emerge.

Future Research

Despite these limitations, this new scale of neosexism may prove useful not only for psychological research, but also for neuroscientific studies of gendered prejudice and stereotyping. In line with the work conducted by Quadflieg and colleagues (2009), college students could take the NNS and a gender-based IAT prior to entering an fMRI machine and completing a simple judgment task. The strength of right amygdala activity could be subsequently compared to participants' scores on the NNS and IAT. A modified version of the study by Takeuchi and colleagues (2015) could also be conducted, in which individual differences in neosexism could be correlated with variations in regional gray matter density. It may be the case that high levels of neosexism is associated with variations in gray matter in areas of the brain not previously implicated with prejudice.

Finally, the study conducted by van Veen and colleagues (2009) could be adapted in order to assess the neurological correlates of cognitive dissonance in more complex attitudes. In this, the participant pool could be screened by administering the NNS prior to the study. Only those who show low levels of neosexism would be selected to participate. While in the fMRI machine, participants in the dissonance group would be instructed to strongly affirm sentences such as "Discrimination against women is no longer problem in the United States," even if they did not agree in reality. Finally, participants would be allowed to respond truthfully to the sentences after exiting the fMRI machine. Such a study would allow researchers to determine if grappling with more complex counter-attitudinal sentences activates the same areas previously implicated in cognitive dissonance (e.g., dACC and anterior insula) and if participants in the

dissonance group are more likely to endorse neosexist beliefs at the conclusion of the study.

It remains to be seen whether neosexist beliefs are actively or passively maintained. It may be the case that individuals are readily exposed to information about the ways in which women are presently marginalized, and such information is regarded as invalid or the product of women's personal failings. It is more likely the case that individuals are unaware of the (often subtle) ways women are discriminated against, which would lead one to dismiss the necessity of equity measures. This provides one means of potentially reducing the strength of neosexist beliefs. Within institutions of higher learning, it may do well to expose both students and administrators to studies that depict the disparities female academics face in terms of student evaluation (Boring, Ottoboni, & Stark, 2016; MacNell, 2015), sexual harassment and assault (Clancy, Nelson, Rutherford, & Hide, 2014; Flaherty, 2015; Grauerholz, 1989; Witze, 2016), and wage, tenure, faculty rank, and administrative rank (Johnson, 2016). Such information may 'awaken' individuals to the notion that the playing field has yet to be leveled, and proactive measures must be taken in order to do so, lest our society conduct business as usual. In order to study the effect of exposing individuals to information about contemporary discrimination against women, college students could take the NNS prior, immediately after, and three months after attending a program that discusses such discrimination. This methodology could also be applied to individuals taking courses such as Introduction to Women's and Gender Studies.

Information alone, however, may not be enough to remedy neosexist beliefs. Combatting one set of beliefs may force them to mutate yet again, perhaps into a form that is even more convoluted and subtle. In *Faces at the Bottom of the Well*, Derrick Bell

(1992) argues that racism is a permanent fixture of the world, deeply embedded in its economy, psychology, and culture. From this, Bell calls not for apathy, but action: "Armed with this knowledge, and with the enlightened, humility-based commitment that it engenders, we can accept the dilemmas of committed confrontation with evils we cannot end. We can go forth to serve, knowing that our failure to act will not change conditions and may very well worsen them" (Bell, 1992, p. 198). While racism and sexism operate both distinctly and in conjunction with one another (Collins, 2012; hooks, 1981), they are both forms of prejudice that will always find ways to survive in their current sociopolitical environments. Therefore, it will always be the challenge of those committed to justice to develop new tools to combat the prejudice in our world.

As prejudice against women becomes increasingly more covert over time, psychometric scales such the one developed in this study are integral in identifying such prejudicial attitudes and beliefs, evaluating their severity, and assessing their change in response to policy initiatives. It would be rash to assume that a select set of questions is capable of accurately assessing the beliefs of all populations. This study furthers our knowledge of neosexism by creating a scale that is specifically catered to the experiences of college students, who are by in large the most substantial contributors to psychological and neuroscientific research. A problem cannot be combatted without first identifying its existence. Now that neosexism can be identified, we are able to move toward resolution.

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Table 1

Skewness and Kurtosis for All Study Variables (Uncleaned Data)

Variable	Skewness	Kurtosis
NNS	2.79	0.25
ONS	8.18	3.92
GRAS	6.61	1.43
SDS	0.03	3.56
FIDS	1.97	1.14

Note. NNS = New Neosexism Scale; ONS = Old Neosexism Scale; GRAS = Gender Roles Attitude Scale; SDS = Social Desirability Scale; FIDS = Feminist Identity Development Scale.

Table 2

Pattern Matrix for EFA with Cleaned Data

	Component		
	1	2	3
NNS 15	**.988**	-.391	-.116
NNS 16	**.738**	-.172	.238
NNS 8	**.711**	.073	.042
NNS 7	**.655**	.165	.012
NNS 10	**.654**	.109	.143
NNS 4	**.588**	.157	-.205
NNS 13	**.492**	.154	-.077
NNS 12	**.486**	.430	-.218
NNS 3	**.485**	.051	.155
NNS 5	-.266	**.767**	.051
NNS 11	.114	**.763**	-.012
NNS 2	.124	**.727**	-.024
NNS 6	.149	**.414**	.258
NNS 9	-.008	-.136	**.900**
NNS 14	-.124	.182	**.748**
NNS 1	.310	.171	**.353**

Note. Extraction method: principle components analysis; rotation method: promax with Kaiser normalization.

Table 3

Pattern Matrix for EFA with Uncleaned Data

	Component		
	1	2	3
NNS 15	**.990**	-.184	-.275
NNS 13	**.809**	-.148	-.005
NNS 7	**.700**	.119	.052
NNS 16	**.695**	-.004	.142
NNS 10	**.617**	.193	.096
NNS 6	**.489**	-.046	.396
NNS 8	**.479**	.323	.038
NNS 1	**.409**	.063	.390
NNS 11	-.030	**.831**	.054
NNS 3	-.248	**.816**	-.002
NNS 2	.033	**.739**	.054
NNS 12	.243	**.655**	-.155
NNS 4	.382	**.466**	-.224
NNS 5	-.084	**.410**	.315
NNS 9	-.137	.012	**.823**
NNS 14	-.015	-.073	**.823**

Note. Extraction method: principle components analysis; rotation method: promax with Kaiser normalization.

Table 4

Rotated Factor Structure and Total Variance Explained for 16-Item NNS (Cleaned Data)

	Extraction sums of squared loadings		
Factor	Eigenvalue	% Variance	Cumulative %
1	6.24	38.98	38.98
2	1.42	8.85	47.84
3	1.05	6.53	54.37

Table 5

Rotated Factor Structure and Total Variance Explained for 16-Item NNS (Uncleaned Data)

	Extraction sums of squared loadings		
Factor	Eigenvalue	% Variance	Cumulative %
1	6.74	42.21	42.21
2	1.32	8.22	50.42
3	1.02	6.35	56.78

Table 6

Model Fit Statistics

Model	X^2	CMIN/DF	CFI	SRMR	TLI	RMSEA
Desired fit	*ns*	1.0-3.0	≥ 0.95	≤ 0.08	≥ 0.95	≤ 0.05
			Cleaned data			
3 factor, full NNS scale	250.602 *df* = 100 *p* < .001	2.51	0.90	0.06	0.88	0.08
1 factor, full NNS scale	244.821 *df* = 102 *p* < .001	2.40	0.91	0.06	0.89	0.07
3 factor, items 5 and 9 removed	191.828 *df* = 73 *p* < .001	2.63	0.92	0.06	0.90	0.08
1 factor, items 5 and 9 removed	179.580 *df* = 75 *p* < .001	2.40	0.93	0.05	0.91	0.07
			Uncleaned data			
3 factor, full NNS scale	218.758 *df* = 99 *p* < .001	2.21	0.93	0.05	0.92	0.07
1 factor, full NNS scale	231.651 *df* = 101 *p* < .001	2.29	0.93	0.06	0.91	0.07
2 factor, items 3, 5, 9, and 14 removed	96.989 *df* = 51 *p* < .001	1.90	0.97	0.04	0.96	0.06
1 factor, items 3, 5, 9, and 14 removed	**111.456 *df* = 52 *p* < .001**	**2.14**	**0.96**	**0.04**	**0.95**	**0.07**

Note. X^2 = chi-square; CMIN/DF = relative chi-square; CFI = comparative fit index; SRMR = standardized root mean square residual; TLI = Tucker-Lewis Index; RMSEA = root mean square error or approximation. Bolded model indicates the retained model.

Table 7

Goodness-of-Fit Statistics for Tests of Invariance

Model description	Groups	X^2	*df*	ΔX^2	Δdf	*p*-value
Hypothesized model	All	111.465	52	--	--	--
No constraints	Men, Women	179.427	104	67.971	52	*ns*
Constrained all parameters	Men, Women	197.057	118	85.601	66	*ns*
No constraints	White, Non-White	168.300	104	56.844	52	*ns*
Constrained all parameters	White, Non-White	185.781	118	74.335	66	*ns*

Table 8

Descriptive Statistics and Internal Reliability Coefficient for All Study Variables

Variable	Sample mean	Male	Female	White	Non-White	Cronbach's alpha
NNS (12)	2.10 (0.68)	2.39 (0.68)	1.93 (0.62)	2.09 (0.67)	2.12 (0.69)	0.91
ONS	2.35 (0.86)	2.71 (0.89)	2.12 (0.76)	2.34 (0.85)	2.36 (0.88)	0.83
GRAS	4.26 (0.43)	4.09 (0.44)	4.37 (0.38)	4.31 (0.42)	4.17 (0.44)	0.86
FIDS	3.47 (0.71)	3.20 (0.67)	3.62 (0.69)	3.45 (0.70)	3.48 (0.73)	0.77
SDS	5.91 (2.91)	5.76 (2.90)	5.99 (2.92)	5.86 (2.89)	6.01 (2.95)	--

Note. NNS (12) = 12-item New Neosexism Scale; ONS = Old Neosexism Scale; GRAS = Gender Roles Attitude Scale; FIDS = Feminist Identity Development Scale; SDS = Social Desirability Scale. Standard deviations are found in parentheses.

Table 9

Correlation Matrix Between All Study Variables

	NNS (12)	ONS	GRAS	FIDS	SDS
NNS (12)	---	.815**	-.676**	-.581**	.051
ONS		---	-.675**	-.539**	.090*
GRAS			---	.421**	-.074
FIDS				---	-.123**

Note. NNS (12) = 12-item New Neosexism Scale; ONS = Old Neosexism Scale; GRAS = Gender Roles Attitude Scale; FIDS = Feminist Identity Development Scale; SDS = Social Desirability Scale. * = statistically significant at the .05 level; ** = statistically significant at the .01 level. Correlations performed with variable means and SD sum.

Table 10

Simple Linear Regressions Predicting Neosexism (NNS 12)

Variable	β	SE_β	p-value	R^2
ONS	0.815	0.020	< .001	0.663
GRAS	-0.676	0.051	< .001	0.456
FIDS	-0.581	0.034	< .001	0.338

Note. β = standardized regression coefficient; SE_β = standard error. ONS = Old Neosexism Scale; GRAS = Gender Roles Attitude Scale; FIDS = Feminist Identity Development Scale.

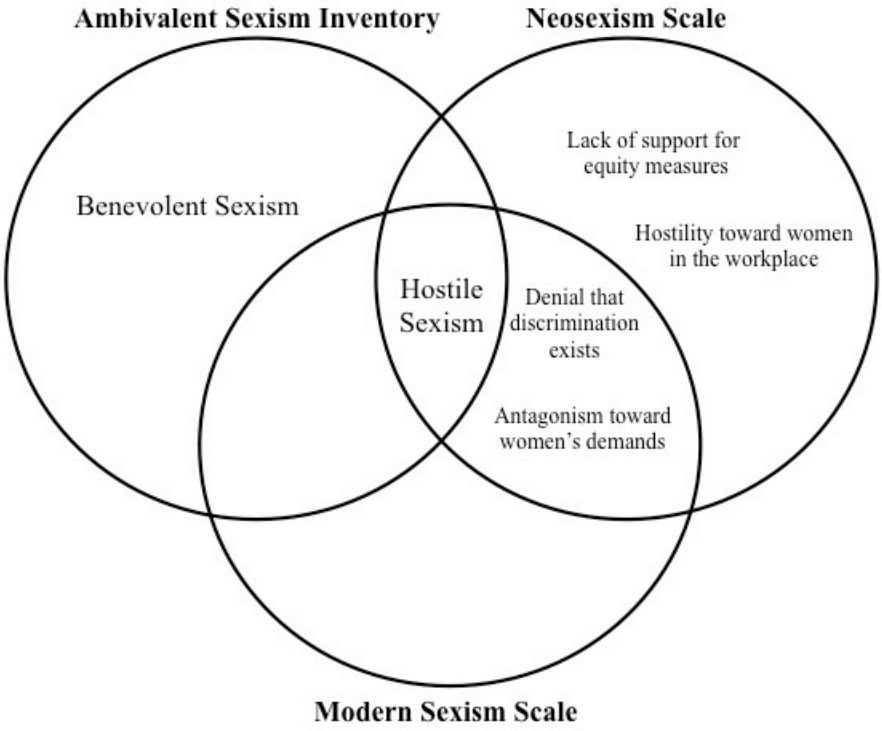

Figure 1. Hypothetical shared variance between the ASI, MSS, and ONS.

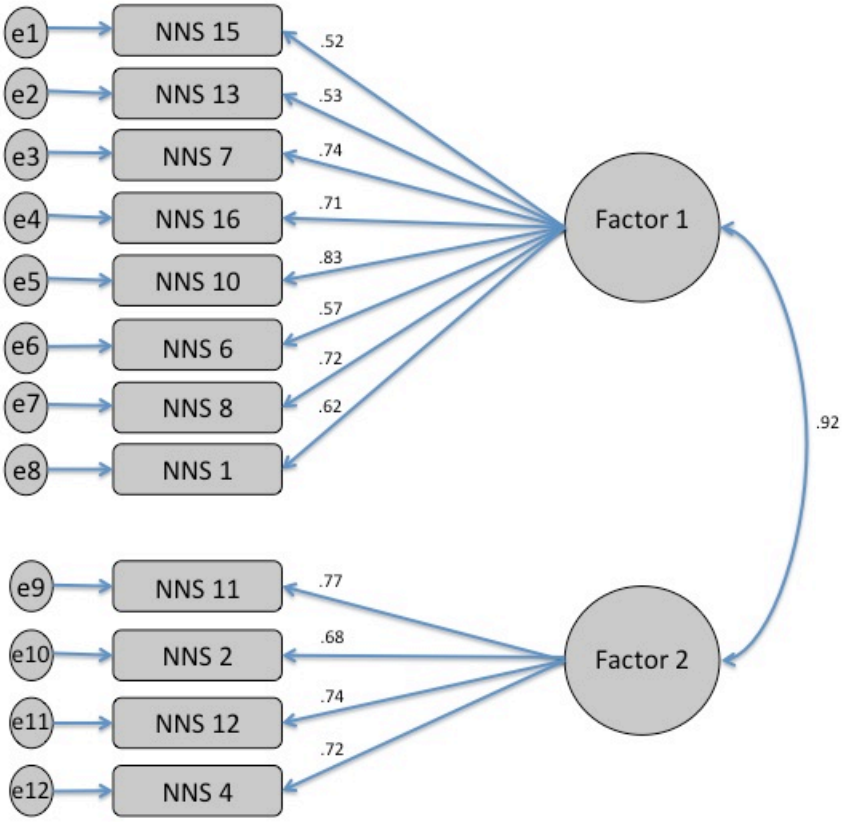

Figure 2. Structure and standardized loadings of two-factor model (uncleaned data).

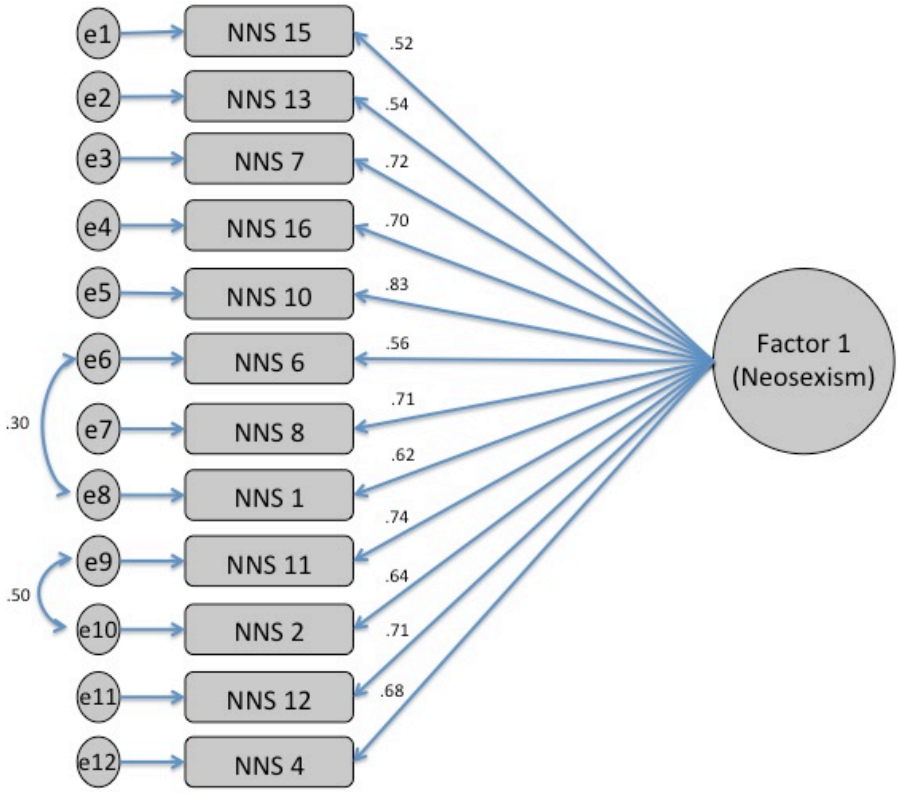

Figure 3. Structure and standardized loadings of one-factor model (uncleaned data). Errors 6 and 8 as well as errors 9 and 10 are constrained due to a high level of covariance (i.e., modification indices greater than 20).

Appendix A

Informed Consent

Lake Forest College

You are invited to participate in a study about contemporary attitudes toward women. The following survey asks you questions about your opinions. You are reading this form to understand what the study entails, and by signing this form, you agree to participate, too. The primary investigator is Kayla Huber, a senior at Lake Forest College. You may contact her at huberka@mx.lakeforest.edu, or her supervisor Dr. Susan M. Long, at long@lakeforest.edu. If you have any questions about your rights as a research participant, please feel free to contact the co-chairs of the Human Subjects Review Committee, Dr. Sergio Guglielmi, at guglielm@lakeforest.edu (847-735-5260), or Dr. Naomi Wentworth, at wentwort@lakeforest.edu (847-735-5256).

What procedures are involved?

You will read your rights outlined on this form and sign the form if you agree to them. You will then complete a survey. The survey will ask about your beliefs regarding opportunities for women, feminism, gender roles, and discrimination against women.

What are the potential risks or discomforts?

There are no right or wrong answers. You may skip any question at any time. However, this survey may cause you to consider your past experiences or actions, which could lead to minimal discomfort. If you feel too uncomfortable to complete the survey, you may stop answering the questions without any consequences. You will be provided a list of appropriate resources you can contact if your feelings of discomfort linger.

Are there benefits to participating in this research?

There are no direct benefits to participating in this research.

What are the costs of participating in this research?

There are no costs to you for participating in this research. The survey will take you about 10 minutes to complete.

What about privacy and confidentiality?

You will not write your name on the survey. Your name will never be associated with your responses. You will only be identified by a number. Results of this research will be reported in aggregate form only, and no individually identifiable information will be presented.

Will I be paid for my participation in this research?

You will not be paid for your participation in this research.

Can I withdraw from the study?

You may stop participating in the study at any time. You may stop answering the survey questions at any time.

☐ I am at least 18 years old today.

I consent to participate in this study:

Signature **Name**

_____ _____

(Please print)

Signature of Researcher

_____

Thank you for agreeing to participate in this study. Please answer the following questions as honestly as possible, by circling the number that best represents your answer. Do not write your name on this survey. If you feel uncomfortable answering any question, please skip it and go onto the next question.

The following questions ask about your beliefs regarding women's participation in the labor force. Please indicate your level of agreement with the following statements.	**Strongly Disagree**	**Disagree**	**Slightly Disagree**	**No Opinion**	**Slightly Agree**	**Agree**	**Strongly Agree**
1. Discrimination against women in the labor force is no longer a problem in America.	1	2	3	4	5	6	7
2. I consider the present employment system to be unfair to women.	1	2	3	4	5	6	7
3. Women shouldn't push themselves where they are not wanted.	1	2	3	4	5	6	7
4. Women will make more progress by being patient and not pushing too hard for change.	1	2	3	4	5	6	7
5. It is difficult to work for a female boss.	1	2	3	4	5	6	7
6. Women's requests in terms of equality between the sexes are simply exaggerated.	1	2	3	4	5	6	7
7. Over the past few years, women have gotten more from the government than they deserve.	1	2	3	4	5	6	7
8. Universities are wrong to admit women in costly programs such as medicine, when in fact, a large number will leave their jobs after a few years to raise children.	1	2	3	4	5	6	7
9. In order to not appear sexist, many men are inclined to overcompensate women.	1	2	3	4	5	6	7
10. Due to social pressures, firms frequently have to hire underqualified women.	1	2	3	4	5	6	7
11. In a fair employment system, men and women would be considered equal.	1	2	3	4	5	6	7

This section asks about your beliefs regarding men and women's roles in society and the family. Please indicate your level of agreement with the following statements.	**Strongly Disagree**	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1. A woman should experience sexual encounters only after she is married.	1	2	3	4	5
2. A man's future wife should be a virgin.	1	2	3	4	5
3. Daughters should be able to live by themselves once they gain their economic freedom.	1	2	3	4	5
4. A woman should be able to go out by herself at night.	1	2	3	4	5
5. A woman should consult a female doctor when at a hospital.	1	2	3	4	5
6. Families should allow girls to flirt.	1	2	3	4	5
7. The final decision regarding the choice of a husband should be made by a girl's father.	1	2	3	4	5
8. A woman's basic task is motherhood.	1	2	3	4	5
9. Men should decide how to use family income.	1	2	3	4	5
10. Men should be employed in high status professions.	1	2	3	4	5
11. Boys' education should be prioritized in the family.	1	2	3	4	5
12. Within a marriage, the education level of the man should be higher than the woman.	1	2	3	4	5
13. Men should be older than women in marriages.	1	2	3	4	5
14. The decision to have a child should be made by both spouses in a marriage.	1	2	3	4	5
15. Men and women should be paid equally for their professional employment.	1	2	3	4	5
16. A widowed woman should be able to live by herself.	1	2	3	4	5
17. Assets should be shared equally when spouses divorce.	1	2	3	4	5
18. Men and women should have equal opportunities for professional development.	1	2	3	4	5
19. Housework should be shared equally between spouses in the family.	1	2	3	4	5
20. Daughters and sons should benefit equally from the family's economic means.	1	2	3	4	5
21. Spouses should make decisions together for the family.	1	2	3	4	5

Listed below are a number of statements concerning personal attitudes and traits. Please read each item and decide whether the statement is true or false as it pertains to you personally.

1.	It is sometimes hard for me to go on with my work if I am not encouraged.	True	False
2.	I sometimes feel resentful when I don't get my way.	True	False
3.	On a few occasions, I have given up doing something because I thought too little of my ability.	True	False
4.	There have been times when I felt like rebelling against people in authority even though I knew they were right.	True	False
5.	No matter who I'm talking to, I'm always a good listener.	True	False
6.	There have been occasions when I took advantage of someone.	True	False
7.	I am always willing to admit it when I make a mistake.	True	False
8.	I sometimes try to get even rather than forgive and forget.	True	False
9.	I am always courteous, even to people who are disagreeable.	True	False
10.	I have never been irked when people expressed ideas very different from my own.	True	False
11.	There have been times when I was quite jealous of the good fortune of others.	True	False
12.	I am sometimes irritated by people who ask favors of me.	True	False
13.	I have never deliberately said something that hurt someone's feelings.	True	False

The following questions ask about your beliefs regarding women's interest groups on campus and policies directed toward female students and professors. Please indicate your level of agreement with the following statements.		**Strongly Disagree**	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1.	The feminists on campus always find something to complain about.	1	2	3	4	5
2.	Affirmative action programs disadvantage men, compared to women, in terms of their chances of getting into college.	1	2	3	4	5
3.	It would be fair for a female professor to ask for paid maternity leave.	1	2	3	4	5
4.	Due to social pressures, colleges frequently have to hire underqualified women.	1	2	3	4	5
5.	I don't think it is necessary for female students to receive extra mentoring throughout college.	1	2	3	4	5
6.	Feminists aren't going to get anywhere by constantly viewing themselves as victims.	1	2	3	4	5
7.	Many women nowadays are just asking for handouts or special treatment.	1	2	3	4	5

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
8. Female professors who complain about not being paid as much as their male peers are probably not working hard enough.	1	2	3	4	5
9. A woman would probably have more trouble getting hired as a professor at my college than a man.	1	2	3	4	5
10. I think feminists are just trying to gain control over men.	1	2	3	4	5
11. Affirmative action programs disadvantage men, compared to women, in terms of their chances of getting a job after college.	1	2	3	4	5
12. I think it is unfair that colleges invest so much time and energy in attracting women to the sciences.	1	2	3	4	5
13. My female professors tend to play favorites.	1	2	3	4	5
14. I don't believe a female professor would have any more difficulty earning tenure at my college than a male professor.	1	2	3	4	5
15. I sometimes find it difficult to take my female professors seriously.	1	2	3	4	5
16. Most female students who report sexual harassment are just being overly sensitive.	1	2	3	4	5

This is the last section. The following questions ask about your attitudes toward women's treatment in society. Please indicate your level of agreement with the following statements.	**Strongly Disagree**	**Disagree**	**No Opinion**	**Agree**	**Strongly Agree**
1. I used to think that there isn't a lot of sex discrimination, but now I know how much there really is.	1	2	3	4	5
2. It only recently occurred to me that I think it's unfair that men have the privileges they have in this society simply because they are men.	1	2	3	4	5
3. When you think about most of the problems in the world—the threat of nuclear war, pollution, discrimination—it seems to me that most of them are caused by men.	1	2	3	4	5
4. It makes me really upset to think about how women have been treated so unfairly in society for so long.	1	2	3	4	5
5. Recently, I read something or had an experience that sparked a greater understanding of sexism.	1	2	3	4	5
6. When I see the way most men treat women, it makes me so angry.	1	2	3	4	5
7. I am angry that men have taken advantage of women.	1	2	3	4	5

Demographic Information

Gender	**Ethnicity** (check all that apply)	**Have you resided within the United States for at least four years?**	**Are you between the ages of 18 and 25?**	**Are you currently enrolled as an undergraduate student?**
M F	☐ Asian ☐ Black/African American ☐ Hispanic ☐ White/Caucasian ☐ Other	Yes No	Yes No	Yes No

Thank you for your participation!

Appendix B

1. The feminists on campus always find something to complain about.
2. Affirmative action programs disadvantage men, compared to women, in terms of their chances of getting into college. (Tougas et al., 1995)
3. Due to social pressures, colleges frequently have to hire underqualified women. (Tougas et al., 1995)
4. Feminists aren't going to get anywhere by constantly viewing themselves as victims.
5. Many women nowadays are just asking for handouts or special treatment.
6. Female professors who complain about not being paid as much as their male peers are probably not working hard enough.
7. I think feminists are just trying to gain control over men.
8. Affirmative action programs disadvantage men, compared to women, in terms of their chances of getting a job after college. (Tougas et al., 1995)
9. I think it is unfair that colleges invest so much time and energy in attracting women to the sciences.
10. My female professors tend to play favorites.
11. I sometimes find it difficult to take my female professors seriously.
12. Most female students who report sexual harassment are just being overly sensitive.