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"I am not sexist:" application of the Dunning-Kruger effect to perceptions of one's own sexism

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“I AM NOT SEXIST:” APPLICATION OF THE DUNNING-KRUGER EFFECT TO
PERCEPTIONS OF ONE’S OWN SEXISM

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By

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ABSTRACT

“I AM NOT SEXIST:” APPLICATION OF THE DUNNING-KRUGER EFFECT TO
PERCEPTIONS OF ONE’S OWN SEXISM

by

Marysa K. Rogozynski

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In America, a large population of people believe that sexism does not exist, while sexism researchers would disagree with this sentiment. One possible explanation for this discrepancy is the Dunning-Kruger effect. The Dunning-Kruger effect states that individuals may experience insufficient knowledge about a subject to recognize and acknowledge their own deficits in that domain. Thus, individuals who lack an understanding of sexism may be unable to recognize it in themselves and others. The current study extended prior research (West & Eaton, 2019) to examine whether the Dunning-Kruger effect applies to sexism in this manner. In doing so, this study examined four different types of sexism: old-fashioned, modern, benevolent, and hostile. It was hypothesized that participants who were among the most sexist people would be the same individuals who underestimated their levels of sexism the most. Additionally, to investigate the role of knowledge, it was predicted that knowledge regarding what constitutes sexism would mediate the effect of objective sexism on the miscalibration of self-assessments of sexism. Therefore, participants who had the lowest level of knowledge were expected to be among the most sexist individuals. This study also explored the new proposed analyses of Gignac and Zajenkowski (2020), who pointed out the limitations of the traditional analyses used to test the Dunning-Kruger effect. A

sample of 221 participants completed four traditional measures of sexism. They also completed a self-assessment of their perceived level of sexism and a measure of sexism knowledge, for which they asked to assess beliefs as either sexist or not. The results generally supported the hypothesis that the most sexist individuals also underestimated their level of sexism. Moreover, the most sexist individuals did, indeed, have the least amount of knowledge regarding sexism. However, knowledge regarding sexism did not mediate the effect of objective sexism level on miscalibration of self-perceptions of sexism. Only partial support for the Dunning-Kruger effect was found using the newer proposed analyses. Further investigations are warranted to explore the potential role of ignorance or other potential mediating variables in explaining why more sexist people may underestimate their sexism the most.

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“I Am Not Sexist:” Application of the Dunning-Kruger Effect to Perceptions of One’s Own Sexism

Dating back to 1776, women in America have fought for equal rights. From the first women's rights convention in 1848 to the election of the first female U.S. Vice President in 2020, women have made their mark on history (Johnson, 2022). Despite women's progress, they continue to face adversity and oppression. Persistent obstacles to women’s success continue in the workplace (e.g., problematic hiring and promotion practices, male-dominated corporate cultures, and gendered expectations (Cundiff & Vescio, 2016; Parmer, 2021). Within athletics, female athletes and coaches struggle to be accepted, respected, and valued in their field (Hebl et al., 2004; Tjønndal, 2019). In medicine, 63.7% of physicians are male, and there are higher dropout rates for female practitioners due to the unfair assessment of their abilities and a male-centered curriculum (Scully, 2020; Yut-Lin, 2009; Association of American Medical Colleges, 2019). Moreover, there is an underrepresentation of female political leaders in the U.S. due to stereotypical beliefs by American voters (Brescoll, 2016; Giacomini et al., 2021; Johnson et al., 2008).

Despite multiple studies showing sexism in modern society, a portion of the population believes sexism has been eradicated. A study conducted in 2015 by the Pew Research Center showed that 34% of women and 56% of men believed that the obstacles and problems that had hindered women’s abilities to progress in society have been mostly eliminated (Fingerhut, 2020; Pew Research Center, 2015).

One possible explanation for why some people do not believe that sexism exists in modern society is that they may not be aware of their own sexist attitudes, behaviors,

or beliefs. Using one of the most widely used measures of sexism, the Ambivalent Sexism Inventory (ASI) (Glick & Fiske, 1996), Edwards and Schaffner (2020) identified that approximately 75% of Americans endorse sexist statements. While this disparity between perception and actuality of sexism in society exists, perhaps a lack of individual knowledge of what constitutes sexism hinders the potential to change the status quo. This lack of knowledge could cause people to be unable to recognize their own sexist attitudes and behaviors and thus exhibit meta-ignorance (the ignorance of one's own ignorance).

This study aimed to investigate the role of an individual's meta-ignorance regarding their own level of sexism and, thus, their ability to acknowledge and identify it in their own attitudes. Although the current research on this topic is limited, this study builds on the findings of West and Eaton (2019), who first applied the Dunning-Kruger model to the concepts of racism and sexism. The Dunning-Kruger effect states that individuals who lack knowledge and skill also lack the ability to acknowledge these deficits, thus leading to overestimating that skill (Kruger & Dunning, 1999). West and Eaton's (2019) findings showed that some participants underestimated their levels of prejudice and, therefore, showed ignorance and overconfidence regarding their attitudes related to sexism and racism. The current study corroborates the research by West and Eaton (2019), proposing that the Dunning-Kruger effect (which is the overestimation and misinterpretation of an individual's abilities) could explain individuals' lack of awareness and lack of knowledge related to sexism (Kruger & Dunning, 1999). In addition, this study expands upon that research by examining multiple forms of sexism and testing an underlying mechanism for the Dunning-Kruger effect.

The Dunning-Kruger Effect

Because many Americans believe that sexism no longer exists, one might wonder whether or not people are aware of their own sexist attitudes, behaviors, and beliefs. Would someone be able to identify their own sexism in common situations (e.g., sports, workplace, or school), or are they lacking the necessary knowledge about sexism to make an accurate judgment of their own sexism?

Kruger and Dunning (1999) suggested that in life, humans strive for two main things: success and satisfaction. Both of these things rely on the foundation of knowledge, which can later be developed into various skills. Without knowledge and skills, individuals' abilities to make sound and logical decisions are at risk of incompetence and failure. Therefore, individuals experience a “dual burden;” the skills needed to be competent are usually the same as the skills for recognizing competence. A lack of skill coupled with a lack of awareness influences a person’s ability to make accurate judgments about those abilities (Kruger & Dunning, 1999).

Throughout four studies, Kruger and Dunning (1999) sought to assess the miscalibration of people’s perceptions of their skills and, therefore, their lack of ability to acknowledge their potential flaws. Specifically, they found that incompetence in a domain, such as grammar, is associated with the greatest overestimation of their ability. Kruger and Dunning (1999) utilized a quartile ranking system to categorize participants’ competence levels after assessing participants’ perceptions of their abilities. They found that those who scored within the first quartile (bottom 25 percent) on the relevant skill (humor, logical reasoning, and English grammar) mostly overestimated that skill level in

comparison to participants in the other three quartiles, especially the fourth quartile (top 25 percent), who underestimated their skill level in that domain.

In these studies, Kruger and Dunning (1999) examined several types of skills, including both objective tasks (e.g., English grammar and logic-based inquiry) and subjective tasks (e.g., identifying humor). Their results demonstrated the predicted patterns, where participants in the top quartile underestimated their ability, and those in the bottom quartile most overestimated it. Kruger and Dunning believed that the participants' ignorance regarding their skills contributed to the miscalibration of their self-perception.

Once it was established that some participants lacked self-awareness regarding their lower skill levels due to meta-ignorance, Kruger and Dunning (1999) attempted to provide participants insight into their ignorance, with the goal of increasing the accuracy of their self-assessments. To do this, some participants were provided feedback or training related to the domain (e.g., English grammar training, logic-based inquiry) after completing the objective skills-based task (e.g., grammar test, logic-based test). The hope was to increase awareness of their competency in the skill by providing increased knowledge, thus decreasing ignorance. Kruger and Dunning were attempting to increase knowledge in two ways. The first directly compared participant's skill to other participants (Study 3). This allowed participants to grade their colleagues' grammar tests and assess their incompetence, thus exploring the participants' failure in gaining insight into their own skill level. Contrary to the prediction, for the bottom quartile participants, grading fellow participants' tests did not improve awareness of their own grammar

abilities. In comparison, the top-quartile participants could reassess their own abilities in grammar and, therefore, demonstrated a decrease in their meta-ignorance.

The second attempt at recalibrating participants' skill level and self-assessment was provided through a short training on logic-based reasoning (Study 4). After completing the logic-based component of the Wason selection task, participants were asked to assess their ability to use these skills. After completing their assessments, half of the participants received a short training focused on logic-based reasoning skills.

Upon reevaluation, the results indicated that participants who originally overestimated their skill the most (bottom 25% of participants) and received training in the domain could identify those skills more clearly and thus were more aware of their deficits, increasing the accuracy of their self-assessments. Those participants in the bottom quartile who did not receive training continued to grossly overestimate their skill level. Participants in the top quartile who received training similarly saw an increase in the accuracy of their self-assessments due to a validation of their correct answers associated with the training. Similar to the bottom quartile control group, there was no change in the self-assessment of the top quartile control group that received no training. These results demonstrated that one approach to reducing overestimations (and underestimations) of ability is to provide individuals with the tools for gaining competence (Kruger & Dunning, 1999). However, specific training in the domain may be required, as opposed to mere comparison with others.

Upon completing four studies, Kruger and Dunning (1999) concluded that individuals, regardless of their quartile scores, face the dilemma of a "dual burden." Therefore, individuals are susceptible to making outlandish statements regarding their

abilities, knowledge, or beliefs regarding a specific domain. This meta-ignorance continues to provide an explanation for why participants are unaware of their abilities and thus may provide insight into the lack of awareness regarding sexism in society.

Application of the Dunning-Kruger Effect to Sexism

It is possible that an individual's attitudes and beliefs about sexism may be susceptible to the dual burden of the Dunning-Kruger effect. Indeed, West and Eaton (2019) proposed that both racism and sexism could be applied to the Dunning-Kruger model. They hypothesized that the least egalitarian (i.e., most prejudiced) individuals are more likely to overestimate their egalitarian abilities, and the most egalitarian (i.e., least prejudiced) are more likely to underestimate their egalitarianism. Being non-prejudiced or egalitarian is thus thought of as a skill. One needs knowledge of what constitutes prejudice to accurately assess one's skill at being nonprejudiced. As such, West and Eaton predicted that additional training regarding diversity would lead to more accurate self-assessments regarding potentially biased attitudes and reduce overestimation for people in the bottom quartile (of egalitarian ability).

West and Eaton (2019) took a multistep approach to the study. Participants were first asked about their perceptions related to gender using two sliding scale questions: (1) “How egalitarian you are about gender compared to the other people in this programme,” and (2) “How egalitarian you are about gender compared to other people in the UK.” Next, participants were evaluated on their actual attitude towards gender equality through an explicit measure (e.g., “on a scale from 0 to 99, how you feel about women in the workplace”) and an implicit measure (The women in the workplace Implicit Attitudes Test (IAT); Greenwald et al., 1998). Upon completion, participants were asked to

complete diversity training and repeat the two questions evaluating their own levels of gender-based egalitarianism to evaluate a change in overestimation.

As predicted, the least egalitarian individuals were the same individuals who overestimated their abilities. Thus, their research supported applying the Dunning-Kruger model to sexism and racism. However, contrary to their predictions, the additional egalitarianism training did not impact the overestimation of participants' gender-based egalitarianism (West & Eaton, 2019).

The present study aims to expand West and Eaton's (2019) examination of sexism. Because West and Eaton (2019) did not have supporting evidence for increasing awareness through training, this study will take a step back and directly investigate participants' initial understanding of sexism to better gauge whether people's poor self-assessments are due to meta-ignorance (a lack of awareness of their abilities in a domain due to a lack of knowledge/skill in the domain). The present study also adds to prior work by investigating different forms of (explicit) sexism. West and Eaton (2019) focused only on implicit (unconscious) sexism attitudes, and specifically sexism that involved associating different careers with different genders.

Forms of Sexism

Research on sexism has shifted from examining general sexism to understanding the different forms of sexism, such as old-fashioned, modern, and ambivalent sexism. Following the second wave of feminism between the 1960s and 1980s, additional forms of sexism were identified (Burkett, 2023; Glick & Fiske, 1996; Swim et al., 1995; Tougas et al., 1995). Old-fashioned sexism consists of overt stereotypes and discrimination against women (Swim et al., 1995). Modern sexism is often subtle and built into the

societal structure to deny the existence of discrimination or limit support for women's growth within a society or culture (Swim et al., 1995).

Ambivalent sexism is a multidimensional approach that includes two forms of sexism: hostile and benevolent (Glick & Fiske, 1996). Benevolent sexism is defined as the perceived positive attributes of stereotypical women's roles and the attitudes related to such behaviors, including, but not limited to, helping and nurturing behaviors in line with traditional gender roles (Fiske & North, 2015; Glick & Fiske, 1996). The definition of hostile sexism involves negative attitudes towards women due to perceptions of women who directly violate traditional gender roles in perceived aggressive ways (Becker & Wright, 2011; Glick & Fiske, 1996). Based on these definitions and historical frameworks, researchers across disciplines have identified that women are the targets of both benevolent and hostile sexism in relationships, at work, and throughout various other activities (Brescoll, 2016; Cundiff & Vescio, 2016; Giacomini et al., 2021; Hebl et al., 2004; Johnson et al., 2008; Parmer, 2021; Scully, 2020; Tjønndal, 2019; Yut-Lin, 2000).

The Current Investigation

The present study examines four types of sexism: old-fashioned, modern, benevolent, and hostile. Three hypotheses were tested. First, participants with the most sexist attitudes (the least egalitarian participants) are expected to underestimate their level of sexism towards women. These participants will be identified as those who receive scores in the top quartile on established explicit measures of sexism (i.e., the bottom quartile concerning egalitarianism). Second, these individuals are predicted to have the lowest level of knowledge regarding the definition of sexism. Knowledge will be

assessed based on the ability to determine whether the sentiment in items from established sexism measures represents sexist or non-sexist beliefs/behaviors. Third, sexism knowledge is hypothesized to mediate the effect of skill level on the miscalibration of self-assessment of sexism. This study also builds on past research (e.g., West & Eaton) by including newer statistical approaches for examining the Dunning-Kruger effect (Gignac & Zajenkowski, 2023).

Method

Participants

Participants ($n = 240$) were recruited from Eastern Washington University undergraduate courses ($n = 170$) and social media outlets online (Facebook, Instagram, Twitter, Reddit, and Discord; $n = 51$). Students could receive credit in their courses in exchange for their participation. Online participants participated voluntarily. Data from 16 participants were excluded due to failing to complete over half of the data checking points (e.g., “Please mark option 1 (strongly disagree) for this item for data checking purposes”) correctly ($n = 13$), having incomplete data (e.g., failing to complete one or more full measure) ($n = 9$), acquiescence (e.g., having the same response for all items on one or more full measures) ($n = 2$), completing the study previously ($n = 2$), or had an outlandish idea of the true purpose of the study, suggesting inattentiveness ($n = 1$).

The final sample consisted of 221 participants, with 37 identifying as male, 175 identifying as female, and 9 identifying as other genders. There were 170 participants from Eastern Washington University, and 51 were from social media. The majority of participants resided in the United States ($n = 216$), primarily Washington ($n = 182$), but also various other states ($n = 34$). The mean age of the participants was 24.55 ($SD =$

8.41). The sample was 71% Caucasian, 10% Hispanic/Latino, 9% Mixed Ethnicity, 4% Asian American/Asian, 2% African American/Black, 1% Native American/Pacific Islander, and less than 1% Middle Eastern, with 2% of participants choosing not to answer or indicating a non-race (e.g., American).

Materials and Procedure

After reading an informed consent page, participants completed this study on “Social Perceptions of People.” Most participants independently completed the study online through SurveyMonkey ($n = 201$). However, participants in introductory psychology and children’s studies classes were provided an alternative option of completing the survey on paper ($n = 20$). Those who participated were instructed to complete a series of tasks related to their attitudes, beliefs, and perceptions. These tasks assessed attitudes, beliefs, and perceptions about sexism, as well as some unrelated filler measures for the purpose of distraction. All responses were anonymous, and measures were completed in the order that they are described below.

Measure of Sexist Attitudes

Participants' sexist attitudes were first assessed by having them complete the “Old-Fashioned and Modern Sexism Scale” (Swim, et al., 1995). Five items assessed old-fashioned sexism (e.g., “It is more important to encourage boys than to encourage girls to participate in athletics”). Modern sexism was assessed with five items measuring denial of continuing discrimination, two measuring antagonism towards women’s demands, and one measuring resentment about special favors for women. Participants responded to each item on a 5-point Likert scale, from 1 (strongly agree) to 5 (strongly disagree). Nine items were reverse-scored, and scores were calculated by averaging the items for each of

the two subscales (Swim et al., 1995a). This measure has been widely used in sexism research, showing internal consistency reliability for both old-fashioned sexism ($\alpha = .65$ and $.66$) and modern sexism ($\alpha = .75$ and $.84$; Swim et al., 1995). Additionally, construct validity was found by observing predicted patterns involving gender differences, the relevance of individualistic and egalitarian values to modern sexism, and perceptions of job segregation. Participants' scores were averaged separately for modern sexism ($n = 8$, $M=2.01$, $SD = 0.64$, $\alpha = .85$) and old-fashioned sexism ($n = 5$, $M = 1.61$, $SD = 0.49$, $\alpha = .47$).

Next, participants also completed the Ambivalent Sexism Inventory (ASI). This scale was developed by Glick and Fiske (1996a, 1996b) to measure hostile and benevolent sexism. The ASI asks participants to indicate their degree of agreement with 22 items on a 6-point Likert Scale from 0 (disagree strongly) to 5 (agree strongly).

The hostile sexism subscale comprised 11 items (e.g., “Women are too easily offended”). The benevolent sexism subscale consisted of 4 protective paternalism items (e.g., “In a disaster, women ought not necessarily to be rescued before men”), 3 complementary gender differentiation items (e.g., “Women, as compared to men, tend to have a more refined sense of culture and good taste”), 4 heterosexual intimacy items (e.g., “People are often truly happy in life without being romantically involved with a member of the other sex”; Glick & Fiske, 1996a, 1996b). Five items were reversed scored; then the hostile and benevolent sexism items were averaged separately (Glick & Fiske, 1996b). The measure exhibits high reliability of hostile sexism ($\alpha = .85$) and benevolent sexism ($\alpha = .80$; Glick & Fiske, 1996b).

While the ASI has become popular within sexism research, it has posed problems when measuring sexist attitudes in some populations. Cross, Muise, and Hammond (2021) investigated sexist attitudes across different genders and sexual identities. The (ASI) was found to be problematic when evaluating sexual minorities' perceptions of sexism because it implies all persons have identical characteristics (e.g., all relationships must be heterosexual; Cross et al., 2021). Despite concerns about this measure, it continues to have support for validity (Glick & Fiske, 1996). Moreover, its popularity persists. However, for the present study, 5 items were modified to be more inclusive and/or less presumptuous about participants' sexual orientation (e.g., the addition of "in a male-female relationship" in the following item: "A good woman, in a male-female relationship, should be set on a pedestal by her man"). The addition of the word "(heterosexual)" in the sample statement about heterosexual intimacy above is another example. The present study averaged items separately for benevolent ($n = 11$, $M = 1.98$, $SD = .91$, $\alpha = .83$) and hostile ($n = 11$, $M = 1.48$, $SD = 1.03$, $\alpha = .91$) sexism.

Next, participants completed a filler task as a distraction. Participants were given 16 words (e.g., play, charisma, orange), for which they were to indicate the first word that popped into their minds. Participants were then provided 7 sentence starters, which they were asked to complete (e.g., "Last night, the two cats outside...").

Measure of Perceived Sexism

To measure the participants' self-perceived level of sexism, participants were first asked to indicate their own level of sexism against women via three items on sliding scale from 0 (not at all) to 100 (completely): (1) "indicate your general level of sexism against women," (2) "indicate how much a person's gender seems to influence your impressions

of them and your attitudes towards them, all else equal” and (3) “indicate how much a person’s gender seems to influence how you behave towards them.”

The second contained three questions where participants compared their level of sexist attitudes to those of others using an 11-point Likert scale from 0 (among the very least sexist people) to 10 (among the very most sexist people). These items were “How sexist (against women) are your attitudes compared to those of other college students?” and “How sexist (against women) are your attitudes compared to those of the average American?” and “How sexist (against women) are your attitudes compared to those of other people in general?” These three were averaged together for a single sexism comparison score ($M = 2.28$, $SD = 1.53$, $\alpha = .92$). Due to much missing data on the first set of perceived sexism items, this measure was used as the sole score for perceived sexism.

Next, participants were asked to complete an additional 16-item word association task (e.g., Sparkle, Swing, Visible) followed by 7 sentence starters to complete (e.g., “At the library, everything was quiet, but all of a sudden...”) as another distraction similar to the previous filler task.

Measure of Knowledge of Sexist Attitudes

The final task was used to determine knowledge of what constitutes sexist attitudes. This Knowledge of Sexist Attitudes Measure utilized a modified version of the 35 total statements from the Old-Fashioned and Modern Sexism scale (Swim et al., 1995a) and the Ambivalent Sexism Inventory (Glick & Fiske, 1996a). The statements were modified by adding the phrase “the belief that...” to the beginning of each item

from the above measures. Participants were asked to select “sexist” if they thought the belief was sexist and select “non-sexist” if they thought the belief was not sexist.

Items from the Old-Fashioned and Modern Sexism scale were modified and presented first (e.g., “The belief that it is more important to encourage boys than to encourage girls to participate in athletics”) followed by modified items from the Ambivalent Sexism Inventory (e.g., “The belief that “Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives”). Previously reversed items were phrased in the direction of sexism for ease of interpretation and to prevent acquiescence. For example, “I would be equally comfortable having a woman as a boss as a man” was changed to “I would be more comfortable having a man as a boss than a woman.” As previously mentioned, all beliefs were considered sexist. Therefore, a more accurate definition of sexism would correspond to a larger percentage of “yes” responses among completed items. An accuracy percentage was computed separately for Old-Fashioned Sexism ($M = 88.07$, $SD = 19.51$, $\alpha = .59$), Modern Sexism ($M = 61.03$, $SD = 30.68$, $\alpha = .81$), Benevolent Sexism ($M = 67.17$, $SD = 28.33$, $\alpha = .84$), and Hostile Sexism ($M = 81.10$, $SD = 25.39$, $\alpha = .87$). Scores on a scale were excluded if participants did not complete at least half of the relevant items.

Participants then completed two items included to determine the participants' awareness, attention, and comprehension of the study (“Now please describe below what you believe to be the purpose of this study” and “Please note anything that you may have found unusual, confusing, frustrating, or suspicious within this study”). Participants who

exhibited awareness of the hypotheses or lack of attention were excluded from the analyses, as noted previously.

Participants then concluded the study by completing six “demographic questions” and three supplemental questions about their values and beliefs. Upon completion, participants were debriefed on the purpose of the study, given study credit (if relevant), and provided the necessary contact information for questions or concerns.

Results

Objective sexism quartiles (see Table 2 for frequencies, minimums, and maximums per quartile) were determined for each measure of sexism (old-fashioned, modern, benevolent, hostile), such that participants in the top quartile (quartile 4) were the most sexist (least egalitarian) based on their sexism attitudes score. These participants were predicted to underestimate how sexist they are (i.e., overestimate their ability). The bottom quartile participants (quartile 1) were the least sexist (most egalitarian), and were expected to overestimate their sexism (i.e., underestimate their ability). To determine the level and direction of bias, difference scores were computed as subjective sexism score minus objective sexism score per type of sexism, which we will refer to as sexism estimation index. A positive score would indicate overestimation of their sexism (believing they are more sexist than they are), and a negative score would indicate their underestimation of sexism (believing they are less sexist than they are). Subjective and objective sexism measures were first converted to z-scores to put them on the same measurement scale.

Dunning-Kruger Effect Main Analyses

A one-way ANOVA was performed to examine the effect of sexism quartile (objective sexism group) on the sexism estimation index. The ANOVA revealed a significant main effect on the old-fashioned sexism estimation index, *Welch's* $F(3, 97.70) = 33.82, p < .001$. Because the assumption of homogeneity of variance was not met for these data, Levene's $F(3, 216) = 42.52, p < .001$, we used the obtained Welch's adjusted F ratio, followed by Games-Howell post-hoc tests to compare the means. There was no difference in the estimation index between quartiles 2 ($M = 0.06, SD = 0.77$) and 3 ($M = -0.25, SD = 1.18$), $p = .414$, whose scores were close to 0, which indicates no bias at all. The bottom quartile, or least sexist participants, had a significantly higher sexism estimation index ($M = 0.94, SD = 0.91$) than the other three quartiles, $ps < .001$, as predicted. Also, as hypothesized, the top quartile, or most sexist participants, had a significantly lower mean ($M = -1.37, SD = 1.37$) than the other three quartiles, $ps < .001$.

One-sample t-tests were used to examine whether there was significant overestimation or underestimation of sexism. The estimation index scores were tested against 0, which reflects no bias. This is effectively the same as testing subjective sexism versus objective sexism. Figure 1 presents the subjective and objective sexism means from which we computed the estimation index scores. A one-sample t-test found that quartile 1 participants had a significant overestimation of their sexism, $t(64) = 8.31, p < .001$. Thus, as expected, the least sexist participants thought they were more sexist than they were (i.e., underestimated their egalitarianism ability). In contrast, quartile 4 participants significantly underestimated their level of sexism, $t(34) = -6.26, p < .001$. In other words, the most sexist participants thought they were less sexist than they were (i.e., overestimated their

egalitarianism ability), as predicted. There was no difference from 0 for quartiles 2 ($M = 0.06$, $SD = 0.77$), $p = 0.515$ and 3 ($M = -0.25$, $SD = 1.18$), $p = .167$, indicating that there was no significant bias in their perceptions of their own level of sexism against women.

The next one-way ANOVA revealed a significant main effect on the modern sexism estimation index, *Welch's* $F(3, 114.15) = 23.63$, $p < .001$. Again, the assumption of homogeneity of variance was not met; Levene's $F(3, 217) = 30.29$, $p < .001$. Due to this significant heterogeneity, Games-Howell post-hoc tests were again used to compare the z-score estimation indexes. Similar to old-fashioned sexism, there was no difference between quartiles 2 ($M = 0.29$, $SD = 0.68$) and 3 ($M = -0.10$, $SD = 1.13$), $p = .106$. As before, quartile 4, the most sexist participants, had significantly lower scores ($M = -1.14$, $SD = 1.46$) than the other three quartiles, $ps < .001$, whereas quartile 1, the least sexist participants, had significantly higher scores ($M = 0.76$, $SD = 0.82$), than the other three quartiles, $ps < .001$.

Again, one-sample t-tests comparing these index scores against 0 were used to determine if there was significant bias in each quartile (see Figure 2 for the subjective and objective sexism means from which we computed the estimation index scores for modern sexism). The least sexist participants, quartile 1, significantly overestimated their level of sexism in relation to their actual modern sexism views, $t(57) = 7.10$, $p < .001$. Participants in quartile 2 also had a mean greater than 0, indicating that they were also susceptible to the overestimation of their bias against women, $t(52) = 3.13$, $p = .007$. Quartile 3 exhibited no evidence of biased self-perception of sexism, as the mean was not different from 0, $t(62) = 3.13$ $p = .494$. Participants in quartile 4, the most sexist individuals, underestimated their level of modern sexism, $t(46) = -5.36$, $p < .001$.

A one-way ANOVA examining benevolent sexism also revealed a significant main effect of benevolent sexism quartiles on the benevolent sexism estimation index, $F(3, 217) = 46.99, p < .001$. Tukey post-hoc tests were used to compare the means. Quartile 1 index had a significantly greater score ($M = 1.11, SD = 0.92$), and quartile 4 ($M = -1.14, SD = 1.23$) had a significantly lower score than the other three quartiles, $ps < .007$. Participants in quartile 2 ($M = 0.27, SD = 0.92$) had a higher mean than quartile 3 ($M = -0.47, SD = 1.12$), $ps < .001$. See Figure 3 for the objective and subjective benevolent sexism means per quartile.

Additionally, one-sample t-tests supported the prediction of overestimation of sexism among quartile 1 participants, $t(60) = 9.45, p < .001$, and an underestimation of sexism among quartile 4 participants, $t(49) = -6.47, p < .001$. Though not as much as quartile 1 participants, participants in quartile 2 also significantly overestimated their sexism, $t(54) = 2.17, p = .035$. Quartile 3 significantly underestimated their level of sexism, just not as much as quartile 4, $t(57) = -3.15, p = .003$. Thus, with regard to benevolent sexism, all quartiles exhibited miscalibration in one direction or the other.

Lastly, an ANOVA showed a main effect on perceived hostile sexism (as calculated by the sexism estimation index), *Welch's* $F(3, 113.96) = 32.62, p < .001$. Due to the assumption of homogeneity of variance not being met, Levene's $F(3, 217) = 31.43, p < .001$, *Welch's* adjusted F and Games-Howell post-hoc tests were used. Once again, the quartile 1 index ($M = 0.77, SD = 0.55$) was significantly higher than that of all other quartiles, $ps < .013$, and the quartile 4 index ($M = -.91, SD = 1.40$) was significantly lower than the other three quartiles, $ps < .050$. Quartile 2 ($M = 0.38, SD = 0.78$) had a higher score than quartile 3 ($M = -0.30, SD = 0.99$), $p < .001$.

See Figure 4 for mean scores for objective and subjective hostile sexism. Based on one-sample t-tests, the sexism estimation index for quartile 1 participants' scores was significantly greater than 0, showing a significant overestimation of their sexism, $t(55) = 10.49, p < .001$. Quartile 2 participants also had a significant overestimation of their sexism, $t(55) = 3.58, p < .001$, though not as much. The one-sample t-test indicated a significant underestimation of quartile 3 participants' hostile sexism, $t(56) = -2.25, p = .028$. Similar to the other forms of sexism, quartile 4 participants continued the pattern of significantly underestimating their sexism, $t(51) = -4.69, p < .001$. Thus, the main analyses for the Dunning-Kruger effect consistently supported our predictions for all four types of sexism.

Meditation Analyses

It was expected people who were the most sexist to be those who had the lowest level of knowledge regarding the definition of sexism. When investigating the correlations between objective sexism and knowledge, significant relationships were found across all forms of sexism in the predicted direction, $ps < .001$ (see Table 1). Specifically, there was a negative correlation between objective sexism and sexism knowledge for old-fashioned, modern, benevolent, and hostile sexism, supporting the hypothesis that the more sexist the individuals were, the less likely they were to accurately recognize sexism against women.

I also expected that greater knowledge of sexism would be associated with higher sexism estimation scores (more recognition or even inflation of their own level of sexism). Consistent with this idea, significant positive relationships were found between knowledge of sexism and sexism estimation index for modern, hostile, and benevolent

sexism, $ps < .001$ (see Table 1). Specifically, participants who were more accurate in their recognition of sexist attitudes (i.e., had more sexism knowledge) were more likely to overestimate their own level of sexism towards women for modern, hostile, and benevolent sexism, whereas participants who were less accurate in their recognition of sexism (i.e., had less sexism knowledge) were more likely to underestimate their own level of sexism. However, this correlation was not significant for old-fashioned sexism ($p = .201$).

I hypothesized that sexism knowledge would be a mediating variable for the effect of objective sexism on the sexism estimation index. The correlations reported above support this possibility. To test the mediation hypothesis directly, PROCESS Model 4 was used to analyze the potential role of knowledge of sexism (the recognition of sexism items as sexist) in the relationship between objective lack of skill (level of sexism - continuous variable) and the sexism estimation index. I performed this analysis separately for each of the four forms of sexism. Knowledge of sexism did not significantly mediate the relationship between objective sexism and the sexism estimation index for hostile, benevolent, or modern sexism. The indirect effect was marginally significant for old-fashioned sexism, $B = .044$, $SE = .025$, 95% CI [0.00, 0.10], but one of the expected relationships was not in the predicted direction.

Newer Proposed Analyses for Testing the Dunning-Kruger Effect

Recent critiques by (e.g., Gignac & Zajenkowski, 2020) suggest that many Dunning-Kruger effects are actually just statistical artifacts. Some researchers (e.g., (Krajc & Ortmann, 2008; Krueger & Mueller, 2002) believe that regression towards the mean and the “better than average” effect may provide alternative explanations for the

findings that emerged from traditional analyses. The “better than average” effect suggests that people in general tend to view themselves as better than average. Therefore, individuals who fall far below the average in objective ability would naturally have a higher discrepancy between objective and subjective ability compared to those whose actual ability is near average, and especially those whose actual ability is above average, which is where people tend to see themselves. When paired with regression towards the mean, which causes individuals who score low or high on one assessment to potentially have a score closer to the mean on another evaluation, the Dunning-Kruger effect has been critiqued by some to constitute more of a statistical artifact (Gignac & Zajenkowski, 2020; Krajc & Ortmann, 2008; Krueger & Mueller, 2002). Gignac and Zajenkowski (2020) proposed two statistical approaches, the Glejser test of heteroscedasticity and nonlinear (quadratic) regression, that would rule out the potential issues described above. Therefore, we employed both of these statistical approaches as supplemental analyses, given that they are novel approaches that have not yet received wide acceptance.

The Glejser Test of Heteroscedasticity

The first alternative test involved conducting the Glejser test for heteroscedasticity. In heteroscedasticity, the distance of individual data points from the line of regression are asymmetric (Kaufman, 2013). Gignac and Zajenkowski (2020) suggested that when examining the regression residual scores from an analysis examining the regressed subjective sexism on objective sexism effects of subjective sexism on objective sexism, participants at with lower ability (more sexist individuals) would have more inaccuracy in self-assessment than those with higher ability (less sexist individuals). This would be indicated by larger absolute residuals (i.e., larger distances from the

regression line and more dispersed), suggesting more miscalibration of subjective sexism. These inconsistent residuals across levels of the predictor are the reason that heteroscedasticity is predicted.

To test for heteroscedasticity using the recommended method, we first ran a regression analysis examining the effect of objective sexism (continuous variable) on subjective sexism for each form of sexism and saved the residual scores. These residuals were converted into absolute values. The Glejser test involved correlating these residuals with objective sexism as a test for heteroscedasticity.

Significant positive correlations were found between the absolute residuals and objective old-fashioned sexism, $r(218) = .20, p = .003$, modern sexism, $r(219) = .35, p < .001$, benevolent sexism, $r(219) = .25, p < .001$, and hostile sexism, $r(216) = .43, p < .001$, showing the predicted heteroscedasticity via the Glejser test. For the test of heteroscedasticity to support the Dunning-Kruger effect, the Glejser correlations would typically be negative. However, since in the current study we assessed individuals' level of sexism rather than egalitarianism, the correlations should be in the positive direction instead. In other words, participants with higher levels of sexism should be expected to have higher residual scores due to more error in estimating their level of sexism. Since the correlations were significant and in the correct direction for this study for all forms of sexism, these analyses were consistent with the Dunning-Kruger Effect, given that the more sexist participants were, the more miscalibrated they were in their self-assessments.

Nonlinear Regression

The second analysis suggested by Gignac and Zajenkowski (2020) was a nonlinear regression examining, in this case, the relationship between the objective

sexism (predictor) on subjective sexism (outcome variable) for each form of sexism. According to Gignac and Zajenkowski (2020), the results would show significant support for the Dunning-Kruger effect if there was a positive U-shaped effect. However, the present study would predict an inverted U-shape because we assessed sexism instead of egalitarianism. This is because individuals who have high levels of objective sexism should underestimate their sexism the most, causing them to have a relatively low subjective sexism score. Individuals who are low in sexism should also have a low subjective sexism score, but for a different reason: because they are actually very low in sexism. Thus, despite overestimating their level of sexism, their actual subjective estimate would still be low. Each analysis was conducted using the curve estimation regression option in SPSS, including both the linear and quadratic terms. The quadratic (nonlinear effect) term was nonsignificant for old-fashioned, $F(2, 218) = 2.89, \beta = -.13, p = .091$, modern sexism, $F(2, 218) = 2.25, \beta = -.12, p = .135$, benevolent sexism, $F(2, 218) = 0.42, \beta = .04, p = .518$, and hostile sexism, $F(2, 218) = 0.03, \beta = -.01, p = .872$. In sum, the nonlinear tests did not provide evidence for the Dunning-Kruger effect, though evidence was found using traditional analyses and heteroscedasticity tests.

Discussion

Expanding upon the ideas of West and Eaton (2019), the current study explored how the Dunning-Kruger effect could be applied to four types of sexism: old-fashioned, modern, benevolent, and hostile. Consistent with the findings of West and Eaton (2019), using traditional data analysis techniques, the present study confirmed that participants who were considered to be the least egalitarian (most sexist) underestimated their level of

sexism toward women. Those considered to be the most egalitarian (least sexist) overestimated their level of sexism towards women.

The Dunning-Kruger effect suggests that individuals with lower skill in an area experience “meta-ignorance,” in which they lack the expertise and knowledge related to the skill, thus leaving them vulnerable to incorrect beliefs, decisions, and self-assessments (Dunning, 2011; Kruger & Dunning, 1999). Although the knowledge regarding what constitutes sexism was related to objective sexism level and degree of miscalibration of self-perception in the predicted directions, knowledge was not responsible for the effects of objective sexism on miscalibration. If lack of knowledge is not responsible for the distorted self-evaluations of sexism stemming from being more sexist, this could explain why West and Eaton’s (2019) sexism training did not improve low egalitarian participants' distorted self-assessments of sexism.

Instead, other factors, such as motivation, should be considered as possible mediating variables for and the effect of ability on warped self-perceptions. Motivation may be a factor which inhibits an individual’s inclination to accurately assess their sexism. As humans, we often prefer to see ourselves in a positive light rather than a negative one because we like to be in a state of “psychological homeostasis” (Alicke, Sedikides, & Zhang, 2020). Alicke, Sedikides, and Zhang (2020) suggest that “psychological homeostasis” is the process by which people find ways to tolerate negative emotions and experiences, such as perceiving oneself as less sexist than they actually are. Therefore, individuals who are among the most sexist, would ultimately prefer to view themselves as among the least sexist people, to maintain their state of homeostasis. Maintaining a level of homeostasis is more important for those among the

most sexist people, because they are at risk of having more negative emotions or experiences based on their actual levels of sexism. By responding in a more favorable way, participants who are among the most sexist individuals are able to avoid stress which would inhibit their ability to function properly biologically, psychologically, and socially.

Supplemental Findings

Over the last ten years, the question of whether or not the Dunning-Kruger Effect is a mere statistical artifact has arisen. As a result, numerous researchers have explored the effectiveness of traditional statistical analyses and data collection methods in detecting the true effect (Gignac & Zajenkowski, 2020; Hofer, Mraulak, Grinschgl, Neubauer, 2022; Krueger & Mueller, 2002; Pennycook, Ross, Koehler, & Fugelsang, 2017). Most recently, Gignac and Zajenkowski (2020) have proposed two alternative statistical approaches, which they believe can rule out the statistical artifact problem. While our results fully supported our predictions using the original analyses by Kruger and Dunning (1999) and West and Eaton (2019), they were only partially supported using the two newer approaches. If the present findings were, in fact, due to the better than average effect and statistical regression, as suggested by Gignac and Zajenkowski (2020), then this could be another reason why the hypothesized mediation effect was not supported. Unfortunately, with the mix of statistical analyses and the partial support of the new approaches, it is uncertain if the Dunning-Kruger effect observed in the present study was a statistical artifact. As research continues to explore this topic, further review may be considered.

Limitations

This current research had other limitations as well. While the Old-Fashioned and Modern Sexism Scale (Swim et al., 1995) has been widely used in sexism research, cited more than 690 times in the PsycINFO database, researchers have questioned its low reliability, generalizability, and factor structure. The measure as a whole consistently has low reliability, with alpha levels at .65 and .66 for old-fashioned sexism and .75 and .84 for modern sexism (Morrison et al., 1998; Swim et al., 1995). Additionally, Davis, Papp, Baker, McClelland (2023) found that the Modern Sexism subscale should be reevaluated to look at the impact of different races' and ethnicities' views on the statements, as it may not be as inclusive as originally intended. Morrison, Morrison, Pope, and Zumbo (1998) found that the Modern Sexism subscale did not fit a unidimensional model and, therefore may be assessing other components. However, the Old-Fashioned Sexism subscale did meet the criteria for a unidimensional model.

Similarly, the Ambivalent Sexism Inventory (Glick & Fiske, 1996) has been questioned for its inclusivity of language, as its primary focus is on heterosexual relationships. Cross, Muise, and Hammond (2021) found that the ASI does not evaluate the components related to sexual minorities, and therefore the evaluation of sexism related to sexual minorities may be misrepresented. Regardless of these concerns, the Ambivalent Sexism Inventory has been cited over 2000 times in PsycINFO and has been a reference point for creating a newer measure of Neosexism (Masser & Abrams, 1999). It is reassuring that the same results were obtained across all four sexism assessments in the present study, despite the limitations of these measures.

Another limitation of the study was the missing data from certain measures, specifically the measures of perceived sexism. Participants were asked to assess their levels of perceived sexism in two different ways; however, only one was used for the final analysis due to the extensive missing data. Although both measures were missing data, more participants answered the questions with the Likert-type scales, so only those responses were used. It is possible that the participants who did not respond to one or both measures may have viewed themselves as among the least sexist individuals based on the assumption that no answer may have appeared to be equivalent to zero. If this assumption were to be true, then these people could be amongst the most sexist people. Thus, their exclusion could have weakened the results of the present study.

This study was also limited in that the majority of participants were woman. Perhaps a bigger range of both objective and perceived sexism would have emerged if the sample were more gender balanced.

Future Research

Future research could continue to explore the potential role of knowledge to determine its involvement. Another way to test the role of knowledge of sexism is to try to increase knowledge to see how it affects accuracy of self-perceptions of sexism. West and Eaton (2019) attempted to do this by providing a two-hour diversity training related to sexism. Within the training, participants were provided an explanation of their results, bias theories, and alternative options to biased behaviors. As mentioned previously, West and Eaton (2019) did not find improvement with additional training and feedback. However, future research could employ other methods of increasing knowledge.

One study found that training can improve self-assessment accuracy in an area related to bias. Specifically, Li, Lindsay, Szeto, and Dobson (2022) explored how knowledge of mental health is related to how individuals respond to mental health stigmas, whether positively or negatively. Participants were provided one of two types of feedback. They received either personalized feedback (i.e., “Out of the 14 items in the knowledge test you have just answered, there was/were N item(s) that you answered Incorrectly/Wrong,” Li et al., 2022, p.170), or generalized feedback (i.e., only stating “incorrect/wrong”). When participants were provided generalized feedback, their self-assessment of their stigmas surrounding mental health did not improve. However, when participants with higher levels of stigma and ignorance received personalized feedback, they were more accurate in their self-assessment of their mental health stigmas, thus exhibiting negative stigma (Li et al., 2022). If participants are not aware of the inaccuracy of their knowledge on a topic (e.g., sexism), then they would be unable to accurately assess their own abilities and unable to correct current behaviors as well. Perhaps if instead of a general diversity training, West and Eaton (2019) took a more personalized approach to providing individual feedback as Li et al. did (2022), there may have been an increase in awareness of participants’ own level of sexism.

Future research can also continue to expand upon the ideas of applying the Dunning-Kruger effect by looking at components of sexism related to behaviors, not just attitudes. Although attitudes may be a catalyst to our decision-making, behaviors should also be considered when evaluating a person’s sexism. Previous research has revealed that attitudes and behaviors are not always aligned (Allen, et al., 1992; Klein, Snyder, & Livingston, 2004; Schwartz, 1978), so they should be examined separately. I would

predict that, just like with sexist attitudes, participants who have more sexist behaviors would underestimate their level of sexist behavior and those who had less sexist behaviors would overestimate their level of sexist behavior. It is important to examine behaviors, specifically, because sexist behaviors constitute discrimination. Having a lack of awareness regarding how much we discriminate against others could lead to problematic outcomes, such as more violence and inequality.

Implications

The Dunning-Kruger effect explores the idea of the dual-burden, in which individuals make erroneous statements of their ability and are unable to accurately assess their abilities based on their lack of insight (Kruger & Dunning, 1999). When an individual is unable to identify their deficits, their behaviors and attitudes may reflect upon these inaccuracies. Although sexism knowledge may not have been responsible for the results of the present study, the least accurate self-assessments of sexism, and the least knowledge regarding the definition of sexism, were still observed among the most sexist participants.

These more sexist individuals may constitute the large population of people in the United States who continue to believe that sexism does not exist (Fingerhut, 2020; Pew Research Center, 2015). If the results of the present study can be trusted, then there is an opportunity for individuals to gain further insight into their biases and make the necessary adjustments to their personal biases and behaviors. There may be a potential to identify opportunities to provide education regarding one's own and others' sexist behaviors, attitudes, and beliefs, which inhibit progress toward equality within society.

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TABLES AND FIGURES

Table 1

Correlation table for objective sexism scores averages, subjective sexism scores, and recognition of sexism scores (knowledge).

Variables	<i>n</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Objective Old Fashioned Sexism	220	-											
2. Objective Modern Sexism	221	.55**	-										
3. Objective Benevolent Sexism	221	.36**	.29**	-									
4. Objective Hostile Sexism	221	.52**	.67**	.40**	-								
5. Knowledge of Old-Fashioned Sexism	218	-.30**	-.37**	-.22**	-.29**	-							
6. Knowledge of Modern Sexism	221	-.33**	-.51**	-.18**	-.40**	.34**	-						
7. Knowledge of Benevolent Sexism	221	-.29**	-.32**	-.58**	-.32**	.42**	.45**	-					
8. Knowledge of Hostile Sexism	221	-.39**	-.56**	-.28**	-.55**	.54**	.56**	.55**	-				
9. Sexism Estimation Index: Old-Fashioned Sexism	217	-	-	-	-	.09	.15*	.18*	.14*	-			
10. Sexism Estimation Index: Modern Sexism	221				-	.15*	.29**	.20**	.28**	.71**	-		
11. Sexism Estimation Index: Benevolent Sexism	221				-	.03*	.03	.38**	.05	.63**	.57**	-	
12. Sexism Estimation Index: Hostile Sexism	221				-	.09	.22**	.21**	.29**	.68**	.77**	.62**	-

**Correlation is significant at the 0.01 level (2-tailed)

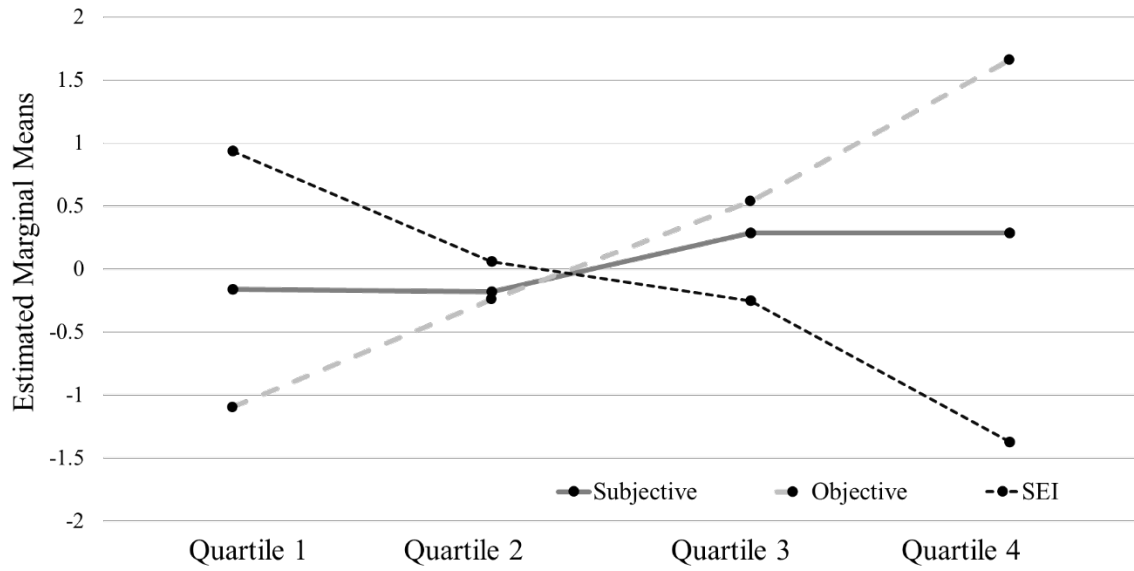
* Correlation is significant at the 0.05 level (2-tailed)

Correlation table for objective sexism scores averages, subjective sexism scores, and recognition of sexism scores (knowledge). Bolded values indicate primary correlations.

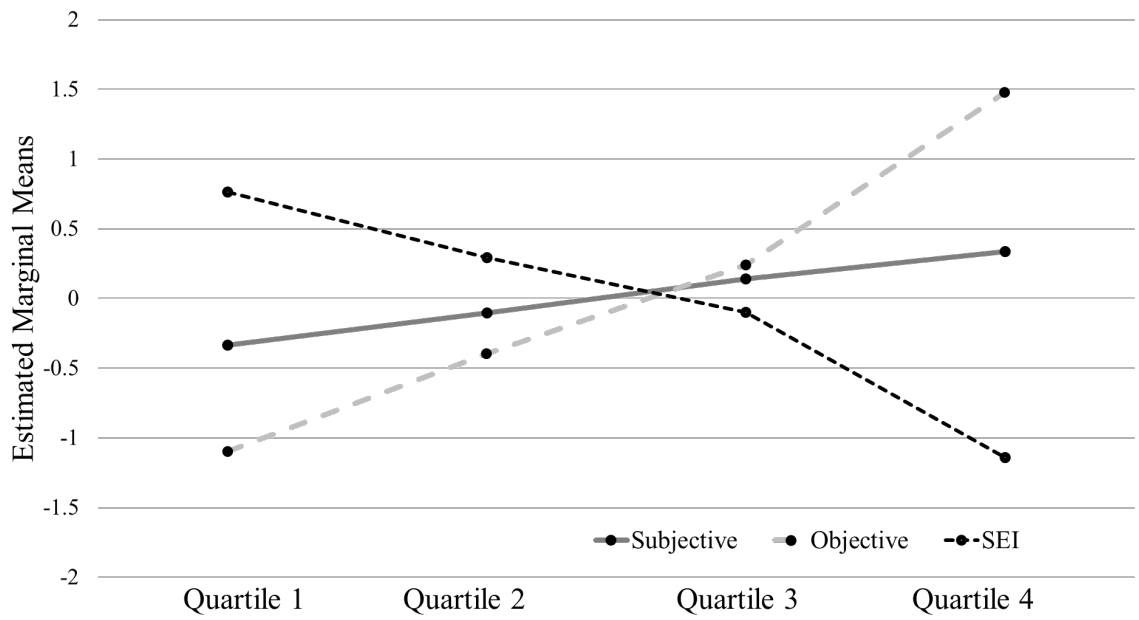
Table 2

Frequency table for objective sexism quartiles. Frequencies represent the number of participants per quartile.

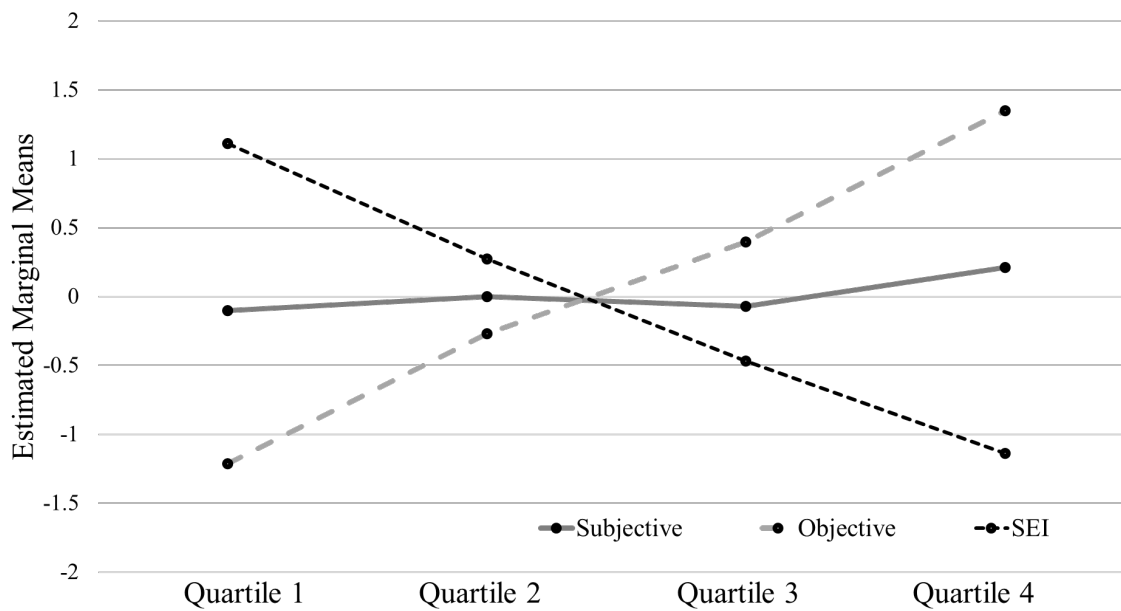
Sexism Quartiles	<i>Frequency</i>	<i>%</i>	<i>Min</i>	<i>Max</i>
Objective Old-Fashioned Sexism Quartile 1	65	29.4	1.00	1.20
Objective Old-Fashioned Sexism Quartile 2	72	32.6	1.21	1.60
Objective Old-Fashioned Sexism Quartile 3	44	19.9	1.61	2.00
Objective Old-Fashioned Sexism Quartile 4	39	17.7	2.01	3.40
Objective Modern Sexism Quartile 1	58	26.2	1.00	1.50
Objective Modern Sexism Quartile 2	53	24.0	1.51	1.88
Objective Modern Sexism Quartile 3	63	28.5	1.89	2.38
Objective Modern Sexism Quartile 4	47	21.3	2.38	4.13
Objective Benevolent Sexism Quartile 1	61	27.6	0.00	1.36
Objective Benevolent Sexism Quartile 2	54	24.4	1.37	1.91
Objective Benevolent Sexism Quartile 3	57	25.8	1.92	2.64
Objective Benevolent Sexism Quartile 4	49	22.2	2.65	4.73
Objective Hostile Sexism Quartile 1	56	23.5	0.00	0.55
Objective Hostile Sexism Quartile 2	56	25.3	0.56	1.45
Objective Hostile Sexism Quartile 3	57	25.8	1.46	2.18
Objective Hostile Sexism Quartile 4	52	23.5	2.19	4.60

Figure 1*Old-Fashioned Sexism*

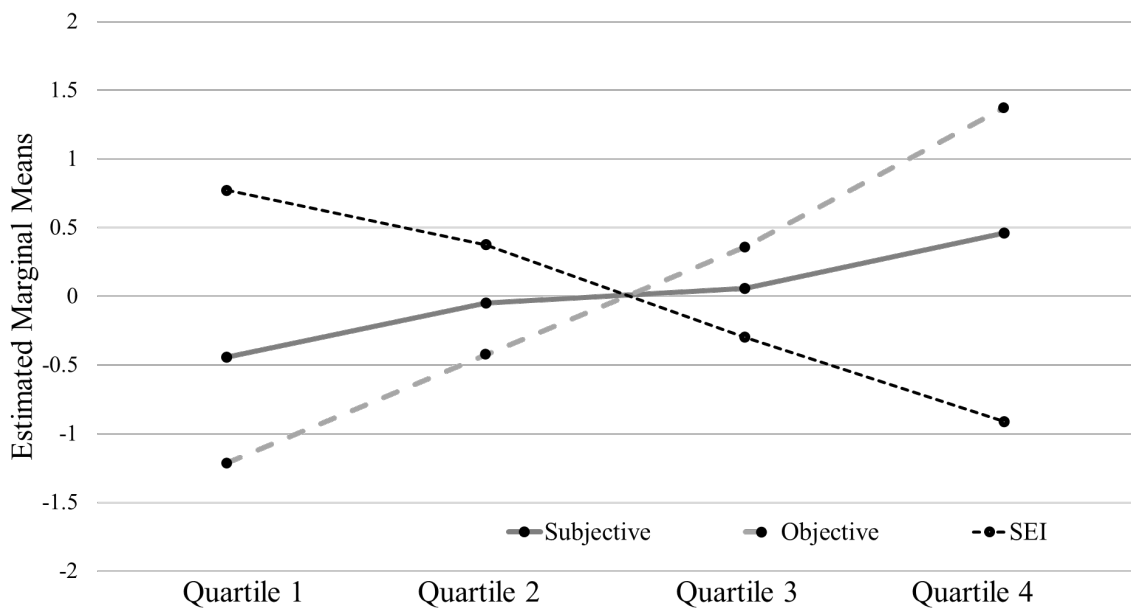
Note. Perceived and actual old-fashioned sexism as a function of the actual old-fashioned sexism quartile. Z-scores for ‘objective’ and ‘subjective’ old-fashioned sexism scores are plotted.

Figure 2*Modern Sexism*

Note. Perceived and actual modern sexism as a function of actual modern sexism quartile. Z-scores for 'objective' and 'subjective' modern sexism scores are plotted.

Figure 3*Benevolent Sexism*

Note. Perceived and actual benevolent sexism as a function of actual benevolent sexism quartile. Z-scores for ‘objective’ and ‘subjective’ benevolent sexism scores are plotted.

Figure 4*Hostile Sexism*

Note. Perceived and actual hostile sexism as a function of actual hostile sexism quartile. Z-scores for ‘objective’ and ‘subjective’ hostile sexism scores are plotted.

VITA

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Presentations

Rogozynski, M., Billena, D., Smith, A., Douglas, L., & El-Alayli, A. (April 2019). Influence of Self-Proclaimed Political Affiliations and Presentation of the American Flag on Perceptions of an Individual's Traits and Behaviors. Poster presented at the annual meeting of the Western Psychological Association, Pasadena, CA.

Billena, D., **Rogozynski, M.**, Douglas, L., Smith, A., & El-Alayli, A. (April, 2019). Effects of American and Confederate Flags Presentation with Facebook Profile Pictures on First Impressions. Poster presented at the annual meeting of the Western Psychological Association, Pasadena, CA.

Douglas, L., Smith, A., Billena, D., **Rogozynski, M.**, & El-Alayli, A. (April, 2019). Relative Believability of Misinformation in Memes versus Plain Text. Poster presented at the annual meeting of the Western Psychological Association, Pasadena, CA.

Mehrnoosh, N., **Rogozynski, M.**, Anderson, J. (April, 2019). The Disparity between Conception and Knowledge of Traumatic Brain Injury. Poster presented at the annual meeting of the Western Psychological Association, Pasadena, CA.

Rogozynski, M., Baum, J., Ross, J., Islam-Zwart, K., (April, 2019). EWU Faculty and Staff's Perceptions and Knowledge of Title IX. Poster presented at the annual meeting of the Rocky Mountain Psychological Conference, Denver, CO.

Mehrnoosh, N., **Rogozynski, M.**, Anderson, J. (March, 2019). The Regulation of Self: A Socio-Neuro Model of Traumatic Brain Injury. Poster presented at the biennial meeting of the International Convention of Psychological Science, Paris, France.

Rogozynski, M., Smith, A., Douglas, L. (May 2018). Gender stereotyping of professors may impact student-professor interactions. Presented at the Eastern Washington University Research and Creative Works Symposium, Cheney, WA

Ross, J., **Rogozynski, M.**, Islam-Zwart, K. (May 2018). Perception and knowledge on Title IX by faculty and staff. Poster presented at the annual meeting of the Association for Psychological Science, San Francisco, CA.

Rogozynski, M., Bresslin-Kessler, K., Ross, J., Evans, M., Sands, A., & El-Alayli, A. (April, 2018). Masculine stereotypes of lesbians and masculine-looking women: Potential advantages of assumed agentic qualities in employment. Poster presented at the annual meeting of the Western Psychological Association, Portland, OR.

Rogozynski, M. & Wallace, D. (April, 2017). Group perspectives: The facial attractiveness of an individual. Poster presented at the Red River Conference, Moorhead, MN.

Rogozynski, M. & Kirkeby, B. (April, 2014). Effects of personality and body type when forming relationships. Poster presented at the annual academic symposium, Jamestown, ND.

Professional Affiliations

Psi Chi Affiliate, The International Honor Society in Psychology

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Student Affiliate, Society for the Teaching of Psychology

Student Affiliate, Society for Personality and Social Psychology

Student Affiliate, American Psychological Association