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RESEARCH

Effects of Benevolent and Hostile Sexism on Women's Verbal and Quantitative Performance

Korumacı ve Düşmanca Cinsiyetçiliğin Kadınların Sözel ve Sayısal Performansı Üzerindeki Etkileri

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Abstract

The aim of this study is to examine the effects of benevolent and hostile sexism (BS, HS) on women's cognitive performance (CP) and the variables playing role in these effects. Two of the three views about the impacts of BS and HS on CP (activation of stereotypes, mental intrusions) predict that exposure to BS would lead to decrease in CP, but they rationalized it differently. Anger-based reaction view predicted that exposure to HS would increase in CP. The main purpose of this study including two experiments is to test which of these three views is valid in Turkey. 80 women participated in the Experiment#1, 159 women in the Experiment#2. Participants were assigned to one of the BS, HS and Control Conditions in these experiments and verbal and quantitative tests were used for measuring CP. In the Experiment#1, quantitative performance of groups didn't differ from each other, while verbal scores of women confronting with HS were higher than those in the BS condition. The moderator role of gender identification and self-esteem in the relationship between sexism and verbal score was tested and found to be non-significant. As the anger-based reaction view was the only one predicting higher CP in HS condition, this view was examined in Experiment#2 in detail. In the Experiment#2, the quantitative performance of the groups didn't differ, but the verbal performance of women in the HS condition was higher than the performance of women in the other conditions, and anger was mediated in this relationship. Shortly, findings support the anger-based reaction view and reveal that the effects of sexism on CP depends performance domain.

Keywords: Hostile sexism, benevolent sexism, verbal performance, quantitative performance, anger

Öz

Çalışmada amaç, kadınların bilişsel performansları (BP) üzerinde korumacı ve düşmanca cinsiyetçiliğin (KC, DC) etkilerini ve bu etkide rol oynayan değişkenleri incelemektir. KC ve DC'ye maruz kalmanın BP'ye etkisine dair üç farklı görüşten ikisinde (kalıpyargıların aktivasyonu ve istenmeyen düşünceler görüşleri), KC'ye maruz kalmanın BP'de düşüşe yol açacağı öngörülür ancak bunun nedeni olarak öne sürdükleri açıklamalar açısından bu görüşler birbirinden ayrılır. Öfke temelli tepki görüşünde ise DC'ye maruz kalmanın BP'yi yükselteceği öngörülür. İki deneyi içeren mevcut çalışmanın temel amacı, Türkiye bağlamında bu üç görüşten hangisinin geçerli olduğunu sınamaktır. Birinci deneye 80, ikinci deneye 159 kadın katılımcı dâhil oldu. Bu deneylerde katılımcılar KC, DC ve Kontrol koşullarından birine atandı ve BP, sözel ve sayısal testleriyle ölçüldü. İlk çalışmada, deney gruplarının sayısal performansının birbirinden farklılaşmadığı görülürken, DC koşulundakilerin sözel puanının KC koşulundakilerden yüksek olduğu bulundu. Cinsiyetçiliğe maruz kalmanın sözel puanla ilişkisinde cinsiyetle özdeşleşme ve benlik saygısı değişkenlerinin düzenleyici rolü sınandı ancak anlamlı olmadığı anlaşıldı. DC'nin bilişsel performansı artıracağına dair öngörü sadece öfke-temelli tepki görüşünde var olduğundan, bu görüş 2. deneyde daha detaylı incelendi. İkinci çalışma bulgularında, deney gruplarının sayısal performansının birbirinden farklılaşmadığı, fakat DC koşulunda yer alan katılımcıların sözel performansının diğer iki koşula kıyasla daha yüksek olduğu ve öfke duygusunun bu ilişkiye aracılık ettiği görüldü. Özetle, mevcut çalışmadan elde edilen bulgular üç görüş arasından öfke temelli tepki görüşünü destekledi ve cinsiyetçiliğin bilişsel performansa etkisinin performans alanına bağlı olduğunu ortaya koydu..

Anahtar sözcükler: Düşmanca cinsiyetçilik, korumacı cinsiyetçilik, sözel performans, sayısal performans, öfke

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SEXISM persists in the daily lives with its overt and vulgar form as well as its implicit and insidious form, and in various studies it has been shown that exposure to any of these two types of sexism negatively affects women in many aspects, including their health status and cognitive performance (Dardanne et al. 2007, Burgess 2013). Glick and Fiske (1996) introduced two different types of sexism in the Ambivalent Sexism Theory, and provided explanations about the psychological processes that these two sexisms affect women through. The current study includes two experiments in which the influences of exposure to two different types of sexism conceptualized by Glick and Fiske on women's verbal and quantitative academic performance are questioned.

According to the Ambivalent Sexism Theory (Glick and Fiske 1996), classical definitions of prejudice and discrimination are inadequate in explaining sexism because experiences of discrimination generally are observed between groups which are in unilateral dependence; however, sexism is usually experienced between groups of men and women in mutual dependence. The interdependence of men and women for sexuality and reproduction requires these groups to approach each other with positive feelings. Therefore, instead of accepting a single definition of sexism in a negative tone, in this theoretical perspective, it is argued that there are two different types of sexism complementing each other with both positive and negative arguments. Hostile sexism (HS), which corresponds to classical explanations of sexism, encompasses negative and rigid attitudes towards women on the basis that they are worthless. Attitudes and behaviors emphasizing that men are stronger than women in social, economic and political issues are also regarded as HS. The other form of sexism, benevolent sexism (BS), includes the beliefs that women are a pure, lovable and protected gender group; and those behaviors exhibited based on such beliefs. Although benevolent sexism sometimes seems favoring women due to its positive intonations, its underlying assumption is that women are weaker and less adequate compared to men. There are important differences between these two types of sexism although both types are biased against women. The most obvious difference is observed in the way they are expressed. While HS is expressed quite explicitly; BS is communicated in an implicit way and even with a positive language favoring woman (Connelly and Heesacker 2012).

In the literature, there are some studies examining how being exposed to BS versus HS affected women, and how women reacted to those types of sexism. In a study, it was found that being exposed to either HS or BS predicted alcohol consumption of women (Hamilton and DeHart 2020). On the other hand, some other studies showed that the effects of HS and BS on women were not the same. More specifically, it was revealed that HS led to more negative and harsh reactions than BS (e.g. Dardenne et al. 2007); it is even seen that BS were sometimes internalized by the targeted women or the society (e.g. Glick and Fiske 1996, Glick et al. 2000). It is difficult to recognize that BS is a form of sexism since BS which seems to provide some sort of gains for women, deviates from the general prototype of sexism with its positive language (Barreto and Ellemers 2005). Becker and Wright (2011) examined the relationship between individuals' exposure to ambivalent sexism and their collective action orientation. Researchers found that women exposed to BS had an increase in their tendency to justify the gender system and perceived advantages of being a woman, and in turn, their participation in collective action against gender inequality was decreased. On the other hand, for women exposed to HS, the belief in injustice of the system was increased, their perceived personal advantage of being a woman was decreased and in turn, their participation in collective

action was enhanced. In another study examining the influences of exposing women to BS or HS, Dardenne et al. (2007) randomly assigned female university students to one of three conditions (BS, HS and a control condition involving no sexism) in an experimental study with a job application setup. Depending on which experimental group participants were assigned to, they first ensured that women were exposed/not exposed to some sexist expressions, then applied a cognitive performance (CP) test to women in all three groups as part of the job application scenario and compared their performance. In this study, the researchers tested which of these three different views on how exposure to BS and HS might affect women's CP was valid:

1. Activation of stereotypes argument: According to this approach, activating stereotypes about a particular social group causes members of that group to behave in a way which confirms these constructs. Therefore, it's predicted that the effects of BS and HS, which trigger different stereotypes, on CP would differ from each other. Specifically, in a woman who is exposed to BS that implicitly indicates the inadequacy of the gender group, stereotypes regarding inadequacy will become active; the person will act in harmony with these stereotypes, and as a result, a decrease in the CP level will be observed. On the other hand, it's predicted that HS, which is associated with beliefs that women are considered miserable and worthless by men rather than being weak, would not activate stereotypes about the inadequacy of the women's group; therefore, HS would not have a reducing effect on women's CP level.
2. Anger-based reaction argument: According to this approach, the open nature of HS lead women to feel anger, have a desire to unjustify such sexism and reveal their motivation to outperform men. As a result, it's predicted that a rise in their CP levels would be observed. On the other hand, women exposed to BS are not expected to have such effects on their feelings, motivations, and CP levels.
3. The mental intrusions argument: In this argument, exposure to BS rather than HS- just as with the stereotypes activation view- is expected to lower women's CP. According to this view BS, which is insidious unlike HS would lead negative feelings and thoughts in women. However, women would not attribute this negativity to the sexism of the counterpart; because they do not recognize that they are being exposed to sexism. Thus, women would use most of their cognitive capacities to cope with undesirable thoughts that they are inadequate, weak, or unsuccessful; which in turn lead to decrease in their test performance. On the other hand, women's CP level would not be affected by those attitudes as they can easily attribute the negative thoughts and feelings that arise when they are exposed to HS to being exposed to sexism.

Dardenne and colleagues' (2007) study demonstrated that BS affected women's cognitive performance more negatively than HS does. Moreover, women who were exposed to BS exhibited anxiety, self-doubt, and lack of self-confidence during their performance more than those women in the control and HS conditions. As supporting the mental intrusions argument, this association between BS and CP was mediated by the intrusive thoughts. In another study, where a similar experimental paradigm was used, Dumont et al. (2010) again revealed findings supporting the mental intrusions argument.

The current study was conducted to investigate the effects of BS and HS on women's performance in two different fields (verbal and quantitative). Using data collected from Turkey, it was examined which argument described by Dardenne et al. (2007) was valid on explaining the effects of sexism on CP. Individuals' behaviors are shaped by their culture, and in turn, cultures influence how their members think, feel and behave. Therefore, even though the mental intrusions argument has been found to be valid in Belgium, there is a need for a revalidation in a non-Western culture such as Turkish culture. Turkey is a traditional society in which the meaning of being a man versus a woman is determined strictly through gender roles (Sakallı-Uğurlu 2010). There are serious differences between Turkey and Belgium in terms of the social hierarchical structure and gender equality. Economic and political inequalities between genders and the acceptance of the BS and HS are lower in Belgium compared to Turkey (Glick et al. 2000). In the gender equality report published by the World Economic Forum in 2018, in which countries were compared according to some criteria such as women's participation in the economy, equality in opportunities, educational potentials and political positions, Belgium ranked 32nd among 149 countries, while Turkey ranked 130th (World Economic Forum 2018). Therefore, it is valuable to test whether the influences of BS and HS on women's CP, previously observed in a European society, are valid in Turkish society as well, in which traditional gender roles are much stricter and gender inequality is higher than in Europe. Also, in previous studies conducted in Turkey, the cases of BS and HS were generally considered as permanent individual characteristics through survey studies (e.g. Sakallı-Uğurlu and Glick, 2003, Sakallı-Uğurlu and Ulu 2003) and the relationships of these components with various variables were questioned. However, to the knowledge of authors, no previous experimental study in which women were exposed to BS and HS was found. Thus, an experimental study on a Turkish data would contribute to fill this gap.

In the current study, two experiments were conducted using the experimental paradigm developed by Dardenne et al. (2007). Cognitive performance tests were administered to the participants as part of a job application set-up. Verbal and quantitative ALES (Academic Personnel and Graduate Education Exam) questions were used to measure CP- unlike the study of Dardanne et al. (2007). Considering that many university graduates in Turkey apply to government positions with their ALES score, it was thought that presenting ALES questions to the participants who were asked to take the role of job applicant in the research would increase the ecological validity of the study. Besides, examining the influences of BS and HS on CP not through a single test but through a performance test in two different fields-verbal and quantitative- could enable the researchers testing the hypothesis that the effects of sexism on performance will vary according to the performance field. There are widely accepted stereotypes ("women are more successful than men in the verbal field" and "men are more successful than women in the quantitative field") regarding the expected competency of women and men in the verbal and quantitative fields (Brannon 2010). It has been shown in the previous studies that stereotypes about social groups affect group members' performance in the relevant field (e.g. Schmader and Johns 2003). Based on the knowledge that the stereotypes regarding the competencies of women in the areas of quantitative and verbal performance are different, in the current study the claim that the influences of BS and HS on these areas may be different from each other will be tested. The predictions of

each argument in verbal and quantitative fields were arranged as follows based on the arguments described by Dardenne et al. (2007):

1. Activation of stereotypes argument: According to this approach, the reason why sexism lowers women CP level is that sexism activates negative stereotypes. This stereotype activation occurs not with HS exposure but with BS exposure; because the implicit expression of benevolent attitudes makes it difficult to attribute the situation to the sexism of the counterpart. As stated above, while women's quantitative skills are generally underestimated, women are considered more skilled than men in the verbal field. If the stereotype activation view is valid, it would be expected that women's exposure to BS would negatively affect their quantitative performance, but no such effect would occur on their verbal performance.
2. Anger-based reaction argument: According to this argument, exposure to HS would lead women to feel anger and enhances their motivation for success. HS would have different effects on verbal and quantitative performance. The main reason behind this expectation is that there are gender stereotypes about men's and women's performances on those two fields. First of all, the woman participants of the study may believe that- because of gender stereotypes- the extra efforts they will put on the verbal questions will be more beneficial to raise their overall test performance than the efforts they will put in the quantitative questions. Therefore, with the motivation of increasing their overall success in the test, they might invest in the verbal questions where they might have higher confidence, rather than the quantitative questions where they might be thinking they have less knowledge and skills to solve. As a result, it is expected that the anger caused by being exposed to HS will only augment the performance in the verbal test.
3. The mental intrusions argument: In this argument, being exposed to BS is expected to negatively affect both verbal and quantitative performances of women. It's expected that since women exposed to BS usually do not know whom they could attribute their feelings of inadequacy and self-doubt to, their performance would decline on both verbal and quantitative tests.

In the current study, the validity of those three arguments was tested by two experiments. In the experiments, the roles of various mediator and moderator variables in the associations between exposure to sexism and performance were examined. Previous research findings suggest that exposure to sexism do not affect all women alike; the reactions of women to the sexism they experienced depend on the levels of their self-esteem and gender identification (e.g. Moradi and Subich 2004, Dardenne et al. 2007). Self-esteem and gender identification are individual characteristics that varies from person to person. These personal characteristics are among the main factors that determine how individuals will react to the sexism exposure. For example, it was shown in various studies that high self-esteem has a protective function for women against detrimental effects of sexism. More specifically, the relationship between perceived gender inequality and depression was found to be stronger in women with low self-esteem than in women with high self-esteem (Corning 2002). Similarly, the relationship between perceived gender discrimination and stress was found to vary according to the level of self-esteem of women (Moradi and Subich 2004). More specifically, it was seen

that the aforementioned relationship was significant and positive for women with low self-esteem while the same relationship was insignificant for women with high self-esteem. Specifically, women with feelings of worthlessness had difficulty in coping with being exposed to sexism and suffered from its negative consequences (Moradi and Subich 2004).

Level of ingroup identification is another individual characteristic that may have an effect on individuals' responses to social discrimination. In a study investigating the association of exposure to sexism with depression and with self-esteem, it was seen that those associations were depended to the gender identification level (McCoy and Major 2003). In that study, a group of women were exposed to a negative evaluation by a man, whom was introduced as either sexist or non-sexist. It was found that if women's gender identification was low, the ones whom were told that their evaluator was sexist felt less depressed and had higher self-esteem than the ones who were told that the evaluator was nonsexist whereas there was no such effect among the women with high level of gender identification (McCoy and Major 2003). The level of gender identification also affects the extent to which women will be resistant to the stereotype threat after sexism. For example, in a study conducted by Schmader (2002), it was shown that women with high level of gender identification performed lower than men did when they were informed that their math performance would be compared with men's, that is, when their gender identity was made salient. However, increasing the salience of gender identity did not produce any performance drop among women with low level gender identification.

In addition to studies showing that women with a high level of gender identification are negatively affected by exposure to sexism, there are also findings showing that strong identification with the gender identity provides resilience to women exposed to sexism. For example, Dardenne et al. (2007) demonstrated that women with a high level of gender identification, who were faced with openly expressed sexism, had less intrusive thoughts lowering their CP, and those women exhibited higher performance compared to the ones with a low level of identification. The gender identification, in a way, functioned as a factor that protected them against sexism. When these conflicting findings from the literature are brought together, the need for doing further research to figure out whether the identification with gender identity makes women more vulnerable to either form of ambivalent sexism, or it protects women from the negative effects of sexism becomes evident.

Based on the research findings mentioned above, in both experiments of the current study, the level of gender identification and self-esteem were discussed as factors that could play a moderator role in the relationship between women's exposure to sexism and their cognitive performance.

Experiment 1

In Experiment 1, the main purpose is to retest the influences of BS and HS on CP using an experimental paradigm similar to the one in the study of Dardenne et al. (2007). As mentioned above, Dardenne et al. presented the expectations of three different arguments about how ambivalent sexism effect CP of women and the results supported the mental intrusions argument: Exposure to BS had a negative effect on CP by increasing women's intrusive thoughts, such as self-doubt and anxiety about performance. In the first experiment of the current study, it was examined how female

participants from Turkey, who were put into similar experimental conditions, would react to the sexist expressions. Participants received a test having two sections, verbal and quantitative, unlike the one in the study of Dardanne et al. Since there are stereotypical beliefs about gender difference in these two performance fields, sexist expressions were expected to influence women's performance in those areas differently.

Experiment 2

In line with the findings obtained from the Experiment 1, Experiment 2 was designed. This study was planned to test the validity of the findings of the Experiment 1 in another sample and also search the mediator role of various emotions (especially anger) and performance motivation in the effects of BS and HS on CP.

Because being the target of sexism is a threat towards both personal and social identities of women, it is inevitable that these experiences lead them to have various emotional reactions. In the literature, there are studies showing that the emotional reactions of women exposed to BS are different than the ones exposed to HS (e.g. Barreto and Ellemers 2005, Bosson et al. 2010). As expressed in the anger-based reaction argument, these two types of sexism are different from each other in terms of the level of anger they evoked as women's reaction to sexism. Specifically, women were exposed to HS reported to feel more anger than women who were exposed to BS (Barreto and Ellemers 2005).

An individual's emotional reaction to a certain situation affects both his/her behavioral response and information processing system (Schwarz 1990, Bodenhausen et al. 1994). According to the Cognitive Tuning Model, while the individual feels negative emotions when encountered with a distressing situation or any threat; experiences positive emotions when they do not perceive threats or encounter positive events. The triggered emotions provide individuals with important cues about the setting that they are in, and its level of safety. In the model a relationship between emotions and cognitions are established: Triggeration of positive emotions clues a safe environment, and the use of a short thinking style, whereas triggeration of negative emotions clues an analytical way of thinking, in which the person will process information extensively (Schwarz 1990).

Based on the findings from the Experiment 1 and the anger-based reaction argument, in the Experiment 2, HS was expected to lead to raise verbal test performance of women. Also, taking the ideas and information from the anger-based reaction argument proposed by Dardenne et al. (2007), the Cognitive Tuning Model and the studies on the emotions triggered as a reaction to ambivalent sexism are combined, it is predicted that the emotions (especially anger) will mediate the relationship between sexism exposure and the academic performance. Specifically, it was predicted that women who were exposed to HS would feel a higher level of anger and due to this change in anger level, their test performance would increase. It is also expected that the aforementioned effect will be higher in the verbal test as compared to quantitative test, and this prediction was tested on participants in different departments.

According to the Reactance Theory presented by Brehm (1996, as cited in Thacker 1992), when the individual evaluates a situation or environmental limitations as injustice, he/she experiences a psychological process called reactivity. Reactivity motivates the person to work on eliminating injustice. The fact that women become the targets of

unfair attitudes and behaviors only because of their gender will lead them to experience reactivity (Zawadzki et al. 2012). Dardenne et al. (2007) stated that increased reactivity caused by the sexism that women are exposed to may enhance their anger and performance motivation. Importantly, BS and HS differ in their potential to raise anger emotion and performance motivation. Based on the anger-based reaction argument, it was predicted that women who were exposed to HS would experience more anger, and more performance motivation, and through the mediation of those two, exposure to sexism will lead to higher test performance.

Method

Sample

80 female undergraduate students aged between 18-30 years (M = 20.81; SD = 2.22) from Sociology Department at Bursa Uludag University participated in the Experiment 1. Twenty-eight participants were assigned to the BS condition, 27 were assigned to the HS condition and 25 were assigned to the control condition.

The sample of Experiment 2 consisted of 159 female undergraduate students aged between 18-39 years (M = 20.59, SD = 2.23) studying at Bursa Uludag University. In the Experiment 2, an effort was put to collect data in a balanced way from the departments of Psychology, Turkish Language and Literature, History, Mathematics and Philosophy in the Faculty of Arts and Sciences (18.2%, 21.4%, 17.6%, 18.9%, and 23.9%, respectively). In order to prevent the differences in test performances in the three experimental conditions due to the participants coming from different departments, the number of assigned participants from each department within each experimental condition was tried to be kept close to equal to each other. Three participants were excluded from the study because their data had missing, and the number of remaining participants was 156. 54 of them were assigned to the BS condition, 49 to the HS condition and 53 to the control condition.

The sample size to be reached in the study was calculated by using the G Power 3.1 (Faul et al. 2007) power analysis method. As a result of the analysis, the sample size to be reached was found as 66 for one-way ANOVA at 0.05 significance level (α), 80% statistical power and .04 effect sizes. Therefore, the number of participants in each experiment of this study is sufficient.

Measures

Experiment 1

Sexist/nonsexist comments for experimental manipulation

Sexism was manipulated in the first phase of the study through a text given to the participants in which they were asked to imagine themselves in a job application situation. The text varied in the three experimental groups. Those three texts were prepared on the basis of earlier studies in the literature (Dardenne et al. 2007, Dumont et al. 2010). In the control condition, the text included the description of the job and the qualifications sought in the personnel to be recruited without any sexist expression (e.g. Our company is a chemical factory and we are looking for female colleagues who are cooperative, strong in communication, attentive to customers and caring about their

needs). In the HS condition, there were some added statements reminding the common beliefs about that in a workplace, women are easily disturbed by environmental factors because they are weaker than men, and they tend to exaggerate the difficulties they face and want to gain power over men (e.g. We hope that the women who would be hired will not exaggerate the problems they face at work and will not try to gain power and control over men). In the BS condition, there were some added statements which imply that women are fragile, weak and in need of help from men (e.g. All our male employees are aware of the importance of helping female colleagues and they will provide the necessary assistance for them to handle their jobs).

Performance test

Performance test includes ten questions from each of the verbal and mathematical domain which consist of questions that were previously asked in the ALES exam administered by YÖK (Council of Higher Education) between the years 2006-2013. After the pilot study applied to 60 students from the Department of Psychology in Uludag University, 20 questions at medium difficulty level were chosen.

Additional comments

After the performance tests, participants were informed that the task for the first study was completed, and next, be asked to fill in some items for another study. They were also told that the aim for the second study as examining participants' opinions on some social issues. Before they were given the items, some additional comments were given which are either sexist/nonsexist depending on the experimental group they were involved in the first part of the study.

Demographic ınformation form

With three open-ended items in this form, the participants were asked how old they were, what department they were studying in, what grade they were in, also with one yes/no question whether they had taken ALES before were asked.

Measurement for the acceptance of gender stereotypes

Four items with a 7 point Likert format were used to measure participants' acceptance of the gender stereotypes in related domains (To what extent do you think women are successful at math/verbal domain? To what extent do you think men are successful at math/verbal domain?). Since the activation of stereotypes argument was based on the assumption that there is a common belief that women are more successful in the verbal field and men in the quantitative field, before testing whether this common belief is effective in explaining the effects of sexism, we examined women's acceptance level of gender stereotypes in the present study.

Measurement for perception of sexism manipulation

As a manipulation check question, it was examined whether the participants perceived the instructions given to them as sexist or not, with the question: Do you think there were sexist elements in the instructions given at the beginning of the study?" (Yes/No/I'm not sure). The objective of this question is to test whether the instructions

given to the participants assigned to the sexism conditions were effective in creating the perception that they were exposed to sexism, unlike those in the control condition.

Gender Identification Scale

Eight items of the Collective Self-Esteem Scale developed by Luhtanen and Crocker (1992), which are related to the subscales of Private Collective Self Esteem and Importance to Identity, were used to measure the extent to which the participants were attached to their gender identity (e.g. "I feel good about being a woman", "Being a woman is an important part of my self-image"). The items of the scale, which was adapted into Turkish by Amanvermez (2007, as cited in Günsoy 2011) are in 7-point (1 = Not at all, 7 = Extremely) Likert form. In the current study, The Cronbach alpha reliability coefficient of eight items used to measure the level of gender identification scores was found to be .68. This scale was included in the study to test the moderator role of gender identification in the relationship between women's exposure to sexism and their cognitive performance.

Rosenberg Self Esteem Scale

The self-esteem level of the participants was measured using the Self-Esteem Scale developed by Rosenberg (1965). The scale consists of 10 items with 4-point (1= Strongly agree, 4= Strongly disagree) Likert form (e.g. "I feel that I am a person of worth, at least on an equal plane with others", "On the whole, I am satisfied with myself"). The Cronbach Alpha reliability coefficient of the scale, which was adapted into Turkish by Çuhadaroğlu (1986, as cited in Yumşak 2004), was found to be .90 in the current research. This scale was included in the study to test the moderator role of self-esteem in the relationship between women's exposure to sexism and their cognitive performance.

Performance Self Esteem Scale

The State Self-Esteem Scale, developed by Heatherton and Polivy (1991), measures the short-lived (state) self-esteem levels of individuals. In the current study, the Performance Self-Esteem Scale sub-scale of the State Self-Esteem Scale was used to search the self-evaluations of the participants related to their performance. This subscale includes 7 items with 5-point (1 = Strongly disagree, 5 = Strongly agree) Likert-type (e.g. "I feel frustrated or rattled about my performance", "I feel confident that I understand things"). The scale was adapted to Turkish by Balkıs and Duru (2010), and its internal consistency coefficient in the current study was found to be.71. This scale was included in the current study for the use of testing the moderator role of performance self-esteem in the relationship between women's exposure to sexism and their cognitive performance.

Experiment 2

The materials used in the Experiment 1 were also used in the Experiment 2. In the Experiment 2, the Cronbach's Alpha values of the Gender Identification Scale, Rosenberg Self-Esteem Scale and Performance Self-Esteem Scale were found to be .72, .87, and .79, respectively.

In addition to the materials used in the Experiment 1, measurements regarding the emotions and performance motivation levels were added to the Experiment 2.

Furthermore, two items with 7-point Likert form were used for measuring to what extent the participants perceived the instructions as sexist and annoying.

Measurement of performance motivation

Participants' motivation to perform was measured by five items with 7 point Likert type items derived from the questions used in study of Dardanne et al. (2007). Three of the items (e.g. "To what extent were you motivated to be accepted to the job during the research?", "How much did you try to prove yourself during the research?", "How much would you like to know your score on the tests?") were related with the general motivation level of the participants, one item was related to measure the level of motivation in the quantitative test ("How much effort did you pay to answer the math questions in for being able to get the job?") and the last item was related to measure the level of motivation of the verbal test ("How much effort did you pay to answer the verbal questions in for being able to get the job?"). Reliability coefficient value of questions about motivation level was found to be .74.

Measurement of the emotions felt after exposure to the test instructions

Drawing on the previous research examining the emotions that are leaded by sexism (e.g. Frijda et al. 1989, Schwarz 1990, Swim et al. 2001), eight emotions (anger, secure, comfort, discomfort, anxiety, despised, happiness, and humiliation) were identified as the most commonly expressed emotions of women as a reaction to being exposed to sexism. The participants were asked to rate on a 7 point Likert scale to what extent they have felt each of the emotions when they had read the test instructions in the previous study.

Measures about annoyingness of instructions and perceived sexism

Participants were asked to rate on 7-point Likert scale (1 = Not at all, 7 = Extremely) how sexist and annoying they thought the instruction were. The purpose of those two items were testing how effective the instructions in the sexism conditions were in making participants feel exposed to sexism and disturb.

Procedure

This study was approved by the Human Research Committee of METU Applied Ethics Research Center with the number 28620816/10 on 03.03.2015. The data was collected after obtaining the informed consent from the participants. In both experiments, data were collected from small groups brought together in a classroom setting. Firstly, the participants were informed that the data collection process consisted of two consecutive sessions: The first session would be for an applied research where they would have the opportunity to gain experience with job applications, and the second session would be for another study based on the measurement of their attitudes on various issues. Then, data collection process was started. During the first session, participants were asked to imagine that they were job applicants and they were to complete a performance test involving two subtests which will be used as a basis for hiring decisions. Then, the participants were presented with an instruction varied according to which of the three experimental groups they were assigned to. After the manipulation of sexism, the CP

measurement phase was started and half of the participants were made to solve the math test first while the other half to solve the verbal test first.

After taking the verbal and math tests, the participants were informed that the first session was over and the second session would be for a different research about social issues. Finally, the relevant scale items and demographic information form were presented.

Statistical analysis

Statistical analysiss were performed using the SPSS 22 program. In both experiments, the extent to which the participants perceived women as competent in verbal and quantitative domains was compared by Paired Sample T-Test; the result of this analysis was used to decide whether the traditional gender stereotypes about women's skills in those domains were accepted by the participants. Similarly, in order to decide whether the gender stereotype that men's quantitative skills are higher than their verbal skills is accepted by the participants, a paired Sample T-Test was conducted through which the extent to which they perceive men as competent in verbal and quantitative domains was compared. In addition, the influences of experimental manipulation on outcome variables were examined with a series of one-way analysis of variance. In both of the experiments, mediating and moderating role of certain variables in the relationship between exposure to sexism and test performance were tested with Hayes' (2013) PROCESS for SPSS.

In addition to the analyzes common in the two experiments, in the Experiment 1, Chi-Square Independence Test was used in order to test whether the participants evaluated the instructions presented to them as sexist.

In the Experiment 2, the extent to which the participants in different experimental groups perceived the instructions presented to them as sexist and annoying were analyzed using a one-way analysis of variance. Pearson correlation analyzes were applied to examine the relationship between all variables in the Experiment 2. Finally, the relationship between the intensity of various emotions that emerged as a result of exposure to sexism and participants' gender identification was examined separately for three different experimental conditions with Pearson correlation analysis.

Results

Experiment 1

Perception of sexism

In order to test whether the women who were exposed to BS or HS through various instructions perceived the sexism in those instructions, their assessments of how sexist the instructions were compared with the assessments of the participants in the control condition by using Chi-Square Independence Test, $\chi 2(4) = 15.40$, $p < .05$. Analyzes showed that experimental condition that the participants were in was significantly related to their evaluation of the instruction as sexist or nonsexist. Compared to those in the control condition (20%), the women in the BS (47%) and HS (33%) conditions reported to perceive the instructions as sexist.

Acceptance of gender stereotypes

In order to examine the extent to which women in the study endorse the gender stereotypes regarding verbal and quantitative skills of men and women, a Paired Groups T-Test was used through which their ratings to the items about how skilled they perceive men's and women in those fields were compared. The results demonstrated that participants perceived women (M = 6.11; SD = 0.94) as more competent than men (M = 4.50; SD = 1.29) in verbal domain, while they perceived men (M = 5.88; SD = 0.88) as more competent than women (M = 4.93; SD = 1.09) in quantitative domain, $t(79) = 9.92$, $p < .05$; $t(79) = 7.08$, $p < .05$, respectively. These results made it clear that the gender stereotypes regarding men and women's competency in verbal and quantitative domains were largely endorsed by the participants of the current study.

Effects of sexism exposure on tests performance

The main purpose of the study is to test whether exposure to BS and HS has a significant effect on women's verbal and quantitative test performances. For this purpose, the effects of the manipulation on participants' verbal test scores were examined with one-way analysis of variance (ANOVA), and then the same analysis was repeated on the quantitative test scores. As it can be seen in the Table 1, participants' number of correct answers in the verbal test was varied according to the experimental conditions they were in, ($F\_2,77= 7.82$, $p < .01$, $\eta^2= .17$). According to Tukey test, participants who were in the HS condition (M = 6.18; SD = 1.84) performed better in verbal test than did participants in the BS condition (M = 4.42; SD = 1.67). Verbal performance of participants in the control condition (M = 5.16; SD = 1.40) did not differ from participants in the other conditions. Analysis on the quantitative test performance revealed that the main effect of experimental condition on it was not significant, $F2, 77 = 0.70$, $p > .05$.

Moderating effects of gender identification and self esteem

As it seen above, the results of the ANOVA showed that the experimental groups differed only in the verbal test performance. Following this, analyzes were conducted to answer the question of whether gender identification and self-esteem levels of participants had a moderator role in the relationship between exposure to sexism and verbal performance. The findings demonstrated that gender identification did not significantly moderate the relationship between the type of sexism and verbal performance, $\beta = .05$; $t(76) = 1.21$, $p > 0.05$. According to results of analyzes about moderator role of self-esteem, neither general self-esteem [$\beta = .08$; $t(76) = 1.77$, $p > 0.05$] nor performance self-esteem [$\beta = .11$; $t(76) = 1.95$, $p > 0.05$] moderated the effects of sexism on academic performance.

Experiment 2

Perceived sexism and annoyingness of the instructions

ANOVA was used to determine whether the participants' assessment of the instructions presented to them as sexist and annoying differed according to which experimental condition they were in. One-way ANOVA analysis on the perceived sexism showed that how sexist the instructions were perceived were found to be dependent to the

experimental conditions, ($F2, 153 = 6.65$, $p < .05$, $\eta 2=.08$). According to the results of Tukey analysis, women in the HS ($M = 4.86$, $SD = 1.90$) and BS conditions ($M = 4.70$, $SD = 2.05$) perceived more sexism than women in control condition did ($M = 3.47$, $SD = 2.38$). Similarly, analyses on annoyingness of the instructions revealed a significant effect of the sexism manipulation, $F2, 153 = 4.81$, $p < .05$, $\eta 2=.06$. Women in the HS ($M = 2.73$, $SD = 2.07$) and BS ($M = 2.63$, $SD = 1.72$) conditions perceived the instructions more annoying than the women in CS condition ($M = 1.79$, $SD = 1.25$).

Acceptance of gender stereotypes

The results of the Paired Sample T-Test done for the examination of to what extent the participants endorsed gender stereotypes about men's and women's competence in verbal and quantitative domains were consistent with the results obtained from the Experiment 1. Participants believed that women ($M = 6.06$, $SD = 0.87$) were better than men ($M = 4.06$, $SD = 1.34$) in verbal domain and men ($M = 5.63$; $SD = 1.14$) were better than women ($M = 4.74$, $SD = 1.27$) in quantitative domain, $t(155) = 14.73$, $p < .01$; $t(155) = 6.53$, $p < .01$, respectively.

Relationship of test performances with other variables

Correlation analysis was done to examine the relationships of verbal and quantitative test performances with the other study variables. As it can be seen from Table 2, a significant relationship was found between feeling anger and higher verbal performances of women, $r(154) = .20$, $p < .05$. Also, verbal performance and motivation to perform was positively related, $r(154) = .18$, $p < .05$. However, the performance in the quantitative test was not significantly associated to any of the variables. In summary, the results of the correlation analysis revealed that as the angriness that women feel after being exposed to sexism rises, their motivation towards the tests and their performance in the verbal test increases as well whereas there was no change in their quantitative test performance.

In order to understand the relationships among verbal performance, anger and motivation level further, the correlations among these variables were examined separately in each experimental condition. It was found that the relationship between anger and verbal performance was not the same for participants in different experimental conditions. The correlation of anger and verbal performance was insignificant for the participants in the BS and control conditions, $r(54) = .06$, $p > .05$; $r(53) = .02$, $p > .05$, respectively. However, the association was found to be positive and significant for women exposed to HS, $r(49) = .32$, $p < .05$. Similarly, the relationship between verbal performance and motivation level was not significant for women in the BS and control conditions, $r(54) = .03$, $p > .05$; $r(53) = .15$, $p > .05$. For women exposed to HS, the relationship was statistically significant and positive, $r(49) = .27$, $p < .05$.

Effects of sexism on verbal and quantitative performance

One way ANOVA was conducted to examine whether the type of sexism women exposed to have a significant effect on their test performances. Results revealed that verbal performances of the women in different experimental conditions differed significantly, $F2, 153 = 4.42$, $p < .05$, $\eta 2=.06$. As it can be seen in the Table 1, women in HS condition ($M = 5.41$, $SD = 1.55$) performed better in verbal test than did women in BS ($M = 4.59$, $SD = 1.56$) and control conditions ($M = 4.60$, $SD = 1.62$). Parallel

findings with Experiment 1 were obtained for quantitative test performances in Experiment 2. Namely, the quantitative test performances of the participants in the three experimental conditions were not different from each other, F2, 153 = 1.46, p > .05.

Table 1. Performances of experimental groups on verbal and quantitative tests in the experiment 1 and experiment 2

		Benevolent (SS)	Control (SS)	Hostile (SS)	Benevolent (SS)	p	Eta value η^2
Experiment 1	Verbal Performance	4.42[a] *(1.67)*	5.16[ab] *(1.40)*	6.18[b] *(1.84)*	7.82	0.01	0.17
	Quantitative Performance	3.82[a] *(1.59)*	3.32[a] *(1.31)*	3.70[a] *(1.84)*	0.70	0.50	0.02
Experiment 2	Verbal Performance	4.59[a] *(1.56)*	4.60[a] *(1.62)*	5.41[b] *(1.55)*	4.42	.01	0.06
	Quantitative Performance	3.55[a] *(2.31)*	3.06[a] *(2.62)*	3.92[a] *(2.73)*	1.46	.23	0.02

. Means with different superscripts are significant at the p < .01 level

Table 2. Correlation of variables in the experiment 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Annoyingness		.33**	.30**	-.32**	-.24**	.51**	.25**	.52**	-.27**	.44**	-.14	-.11	-.18*	-.13	-.01	.01
Sexism perception		1.00	.11	-.14	-.24**	.22**	.27**	.31**	-.14	.30**	-.01	-.06	-.05	-.20*	.01	.06
Anger			1.00	-.02	.01	.35**	.10	.31**	.01	.40**	-.05	-.04	-.02	.04	-.01	.20*
Secure				1.00	.78**	-.34**	-.01	-.27**	.68**	-.24**	.24**	.16	.39**	.18*	-.11	-.07
Comfort					1.00	-.31**	-.04	-.21**	.75**	-.16	.24**	.13	.36**	.29**	-.10	-.04
Discomfort						1.00	.40**	.34**	-.25**	.32**	-.18*	-.09	-.23**	-.07	-.07	.05
Anxiety							1.00	.14	-.03	.16*	-.16*	-.16*	.04	-.06	-.07	-.05
Despise								1.00	-.14	.47**	-.11	-.10	-.14	-.10	.06	.05
Happiness									1.00	-.10	.26**	.12	.43**	.22**	.02	.05
Humiliation										1.00	-.13	-.14	-.03	-.20*	.14	.06
General Self Esteem											1.00	.69**	.16*	.39**	.10	-.06
Performance Self Esteem												1.00	.10	.20*	.15	-.01
Motivation Level													1.00	.15	.15	.18*
Gender Identification														1.00	-.03	.07
Quantitative Performance															1.00	.15
Verbal Performance																1.00

*p <.05, **p <.01

Effects of sexism exposure on emotions and motivation to perform

Whether the women's levels of experiencing eight emotions (anger, secure, comfort, discomfort, anxious, being despised, happy, and humiliated) varied according to which experimental condition they were in was investigated using a series of ANOVA, and the results are presented in Table 3. According to the findings, participants' feelings of anger, being despised and humiliation feelings were affected by the experimental conditions that they were in; specifically, for anger ($F2, 153 = 7.00$, $p < .05$, $\eta 2 = .08$); for despise ($F2, 153 = 4.22$, $p < .05$, $\eta 2 = .05$); for humiliation ($F2, 153 = 6.14$, $p < .05$, $\eta 2 = .07$). Tukey comparisons demonstrated that women in the HS condition ($M = 3.57$; $SD = 2.28$) reported experience of more anger than did women in the BS ($M = 2.59$; $SD = 1.82$) and control conditions ($M = 2.16$; $SD = 1.67$). Also, women exposed to HS ($M = 2.35$; $SD = 1.95$) reported feeling more humiliation than those in control conditions did ($M = 1.32$; $SD = 1.08$). The level of humiliation reported by the participants in the BS condition ($M = 1.72$; $SD = 1.32$) did not differ significantly from those of women in the other conditions. According to the results, women in the BS condition ($M = 2.35$; $SD = 1.90$) experienced a higher degree of being despised than those in the control condition ($M = 1.49$; $SD = 0.95$). The intensity of feeling of being despised by the participants in the HS condition ($M = 2.04$; $SD = 1.63$) was not significantly different from the feeling of those in the other two conditions.

The ANOVA results regarding the effects of sexism manipulation on women's performance motivation showed that the motivations of the participants did not depend on the experimental group they were in, $F2, 153 = 0.87$, $p > .05$.

Table 3. Mean values of emotions experienced by experimental groups and analysis of variance results in the Experiment 2

	Benevolent Sexism (SD)	Control Condition (SD)	Hostile Sexism (SD)	F	
Anger	2.59^{a} *(1.82)*	2.16^{a} *(1.67)*	3.57^{b} *(2.28)*	7.00	.084
Secure	4.50^{a}*(1.82)*	4.74^{a}*(1.98)*	4.57^{a}*(1.76)*	0.23	.003
Comfort	3.91^{a}*(1.44)*	4.25^{a}*(2.07)*	3.98^{a}*(1.89)*	0.51	.007
Discomfort	3.11^{a}*(1.89)*	2.49^{a}*(1.55)*	3.04^{a}*(1.93)*	1.89	.024
Anxiety	3.87^{a}*(1.98)*	3.62^{a}*(1.95)*	3.63^{a}*(1.82)*	0.28	.004
Despise	2.35^{a} *(1.90)*	1.49^{b} *(0.95)*	2.04^{ab} *(1.63)*	4.22	.052
Happiness	3.83^{a}*(1.70)*	4.04^{a}*(1.96)*	3.78^{a}*(1.78)*	0.30	.004
Humiliation	1.72^{ab} *(1.32)*	1.32^{a} *(1.08)*	2.35^{b} *(1.95)*	6.14	.074

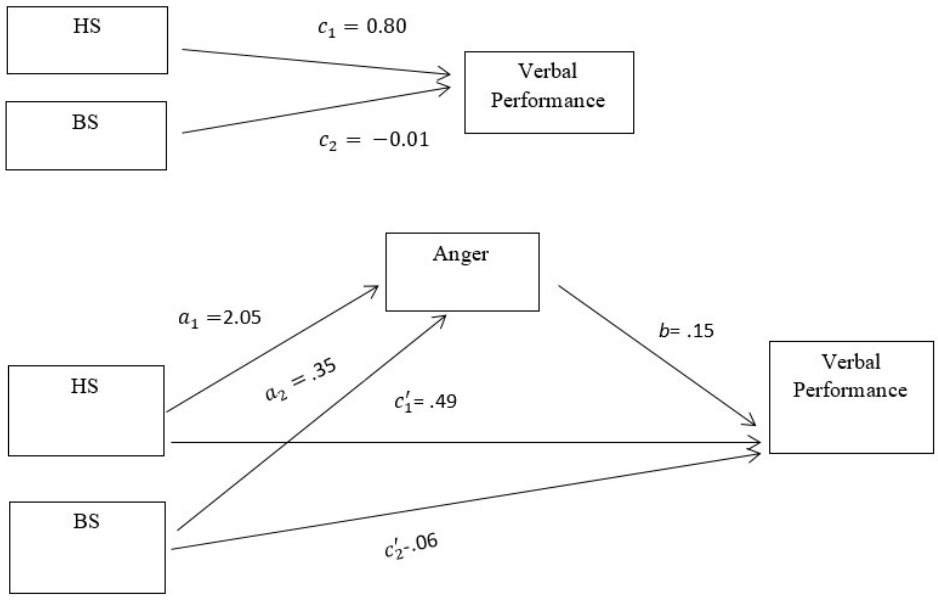
Means with different superscripts are significant at the $p < .01$ level r.

Mediator role of anger

The findings of the study showed that, the only emotion affecting the verbal performance of the participants is anger. Therefore, we examined the mediator role of anger in the relationship between exposure to sexism and test performance by SPSS Macro Analysis (Figure 1). We first used dummy codes setting the control condition as the reference group. Women exposed HS performed better on the verbal test than the participants exposed to nonsexist instructions ($c\_1 = 0.80$, $p = .01$). On the other hand, no difference found between performances of women exposed to BS and women in the

control conditions, (c_2 = -0.01, p > .05). Additionally, when compared to participants with the control condition, women in the HS conditions reported more anger after experimental manipulation (a_1 = 2.05 p < .001). And there was no difference between anger levels of women who exposed to BS and women in control conditions, (a_2 = 0.35 p > .05).

The examination of anger felt by participants after exposure to sexism reveals that, the women in HS condition did not perform better on verbal test than the women in the control condition, (c'1=0.49, p=,14). Also no significant difference was revealed between the performances of women in BS condition and women in control conditions when their level of anger was controlled (c'2 = -0.06, p > .05). Additionally, it was seen that those who experienced more anger after exposure to sexism performed relatively better on the verbal test (b = 0.15, p < .05). In sum, women exposed to HS experienced anger more than the women in the control condition which in turn led to an rise in their verbal test performance (point estimate= 0.306, 95% CI: 0.331 to 0.6614). Therefore no direct effect of anger was found on verbal performance. Also, mediation analysis results showed that the feeling of anger did not mediated the effect of benevolent sexism on verbal performance (point estimate= 0.032, 95% CI: -0.028 to 0.125).



a1 and a2: Effects of HS and BS on anger
c1 and c2: Relative total effects of HS and BS on verbal performance
c'1 and c'2 : Relative direct effects of HS and BS on verbal performance
a1b and a2b: Relative indirect effects of HS and BS on verbal performance through anger

Figure 1. Results of (relative) total, direct, and indirect effects in mediation analysis

Moderating effects of gender identification and self esteem

Because the variation in test performances of the experimental groups was found only in the verbal performance, the moderator roles of gender identification and self-esteem were examined only for the relationship between sexism exposure and the verbal test.

Results demonstrated that moderator role of gender identification on the effects of self-esteem on verbal performance was not significant, $\beta = .02$, $t(152) = .63$, $p > 0.05$. Furthermore, neither general self-esteem nor performance self-esteem moderate the effects of sexism on verbal performance, $\beta = -.01$, $t(152) = -.34$, $p > 0.05$; $\beta = .06$, $t(152) = 1.88$, $p > 0.05$, respectively.

Relationship between gender identification and experienced emotions in each experimental condition

Because emotions felt by women after being exposed to sexism might vary with their gender identification level, the relationships between the intensity of emotions felt and the level of gender identification were examined separately in each experimental group. As it can be seen from the Table 4, for women who were exposed to HS, gender identification was correlated with feelings of humiliation ($r = .30$, $p < .05$) and discomfort ($r = -.32$, $p < .05$). As the level of gender identification strengthened, the humiliation felt after being exposed to sexism increased whereas the feeling of discomfort has decreased. For control condition, gender identification positively correlated with feeling secure ($r = .34$, $p < .05$), comfort ($r = .43$, $p < .01$) and happiness ($r = .41$, $p < .01$).

Table 4. Correlation between emotions and gender identification of experimental groups in the Experiment 2

	Anger	Secure	Comfort	Discomfort	Anxiety	Despise	Happiness	Humiliation
Benevolent Sexism	.07	-.04	.17	.10	.02	-.01	.00	.-17
Hostile Sexism	.06	.23	.21	-.32*	-.16	-.24	.20	.30*
Control Group	.02	.34*	.43**	.01	-.05	.02	.41**	.09

*$p < .05$, **$p < .01$

Discussion

Firstly, whether manipulations in the Experiment 1 had the intended effects were checked. For that purpose, the participants in the three experimental conditions were compared in terms of how sexist they perceived the instructions presented to them. The findings revealed that experimental manipulation was working. Specifically, it was seen that compared to the instructions in the control condition, the instructions in both hostile and benevolent sexism conditions were evaluated as more sexist. On the other hand, because that the yes/no question format used for the manipulation check questions in the Experiment 1 was regarded as too directive and restricting, in the Experiment 2, a Likert-style item was used. Findings of the Experiment 2 regarding the participants' perceived sexism were similar to the results of the Experiment 1. Briefly, women in HS and BS conditions evaluated the instructions as more sexist and annoying than women in the control condition. Expressing sexism implicitly did not prevent women from

recognizing it. In the literature, there are studies supporting the claim that women are not aware of the relationship between BS and HS (Kilianski and Rudman 1998), as well as research supporting the argument that women are aware of the coexistence of these two type of sexism (Bohner et al. 2010). The current study supported the latter claim. The results are promising, as they indicate that women are vigilant against all forms of sexism.

Another result common in the two experiments is that participants endorse the gender stereotypes about men's and women's levels of competence on verbal and quantitative fields. In the current research, these two performance fields were chosen for an examination of the reflections of sexism on women's cognitive performance because there are widely accepted stereotypes regarding the gender difference in competency in these fields. The findings from the two experiments demonstrated that the stereotypes in those fields were endorsed by the participants, and supported that those selected performance fields were appropriated for the purpose of the research.

Findings of the Experiment 1 about the influences of benevolent and hostile sexism on cognitive performance -unlike the findings of Dardenne et al. (2007)- did not support the view of mental intrusion argument. In the Experiment 1, the verbal and quantitative scores of women in neither the BS nor the HS conditions were different from those in the control condition; however, verbal performance of women in HS condition was higher than those exposed to BS. The fact that the performance difference only appeared in the verbal field, and that the scores of those exposed to HS were higher can be accepted as partial support for the anger-based reaction view. Therefore, a need for a new study had emerged in order to further examine whether reaction to the exposure to sexism was leaded by those emotions, thus, the second experiment of the current study was carried out with the use of the experimental paradigm same with the first experiment. In the Experiment 2, the influence of sexism on test performance was dependent on the performance field. Specifically, while women in different experimental conditions had similar performances on quantitative test, their performances on verbal test were quite different: The women in HS condition had higher verbal performance than those in the other experimental conditions. Based on these results, it was understood that the effects of sexism on performance were not same for all cognitive performance fields.

The findings of the Experiment 2 on the relationship between exposure to sexism and its subsequent emotions are consistent with the findings of the previous studies (e.g. Barreto and Ellemers 2005, Becker and Wright 2011). Women who were exposed to HS were found to experience higher levels of anger than those in the other two conditions, as expected. In addition, women encountered with BS reported a higher level of being despised, while those in the HS condition reported a higher level of humiliation than women in the control condition. The results obtained regarding exposure to sexism and subsequent emotions are considered to be in line with the expectations of the Cognitive Tuning Model (Schwarz 1990). Just as suggested in the model, women in the HS and BS conditions, who faced with an important threat, felt many of the negative emotions presented to them (anger and humiliation for HS; being despised for BS) more intensely than women in the control group. Based on the assumptions of the model, it was examined how the emotions revealed by sexism affect women's performance in the tests. According to the findings, no emotion was associated with math performance and the only emotion correlated with verbal performance was anger.

As the sense of anger experienced by women faced with HS was increased, their verbal performance was also augmented.

In the second experiment, analyzes conducted to explore the relationship between anger and performance in more detail revealed that the relationship between these variables was significant only for women in the HS condition among the three experimental groups: As the anger felt by the women exposed to HS increased, their verbal performance improved. The findings of the analyses examining the relationship between exposure to sexism and test performance revealed that the anger experienced by women mediated the relationship between their exposure to HS and verbal performance. That is, unlike the results obtained from the study of Dardenne et al. (2007), women's performance was related to HS exposure, not BS. While the findings from the study of Dardenne et al. (2007) supported the mental intrusion argument, the results obtained from the present study are most compatible with the anger-based reaction argument. The aforementioned outcomes become meaningful when they are evaluated on the basis of Reactance Theory. Although the women in the BS condition were able to recognize the sexism in the expressions they were exposed to, it is possible that HS and BS may affect their perceptions of fairness differently. HS –in which sexist attitudes are expressed in a very direct language- can be evaluated as unfairness more quickly and easily compared to BS in which sexist attitudes are expressed implicitly. Therefore, it is possible for women who are exposed to HS to feel anger in response to injustice and, in a way, to make more efforts to eliminate this injustice. This effect occurred only in the verbal field where women usually perceive themselves as more competent. One possible reason why there is no difference in quantitative test performance among the experimental groups is the participants' endorsement of the traditional gender roles about quantitative and verbal performances of women. Feeling anger after exposure to HS, women tried to prove themselves in a field they thought they were already good at, instead of exerting effort in a field in which they feel less self-confidence.

A point worth to discuss about the current study is the difference between the findings of the current study and the study of Dardanne and colleagues (2007): The outcomes of their study supported the mental intrusion argument whereas the findings of the current study supported the anger-based response approach. There may be several explanations for this inconsistency. According to the first explanation, the source of the inconsistency is the fact that the women in both BS and HS conditions of the current study perceived the expressions in the instructions as sexist, while in the study of Dardenne and colleagues participants in the HS condition, but not BS, perceived the expressions given to them as sexist. Because that the participants in the BS condition of the current study could recognize the implicit sexism, they possibly attributed the discomfort caused by being exposed to sexism to the source of sexism, whereas participants in the study of Dardanne et al. attributed the same discomfort to themselves. The fact that the performance of women in the BS condition did not differ from those in the control group in the present study may be explained by not carrying a cognitive burden on unwanted thoughts.

The second possible explanation about why the relationship between exposure to sexism and cognitive performance is so different in two studies is related to in which cultures these studies were conducted. The level of reactance shown by people in a case of threat and frustration varies from culture to culture (Miron and Brehm 2006). In the literature, there are findings showing that members of individualistic cultures are more

sensitive to the threats directed to their individual identities while members of collectivist cultures are more sensitive to the threats targeting their social identities (e.g. Jonas et al. 2009). Given that Turkey and Belgium are different in terms of the levels of individualism/collectivism (Phalet and Claeys 1993), it is not surprising that women from these two cultures react differently to the experience of sexism. Women in collectivist societies such as Turkey, as compared to women in individualist cultures such as Belgium, prioritize group goals over individual goals, and demonstrate more reactions to the sexism. Another reason why the results of the present research differ from those of Dardenne et al. (2007) may be more technical. Perhaps, the different tests used to measure cognitive performance in studies led to the difference in results.

The present research and the study of Dardanne et al. (2007) also differ in terms of the findings on the role of gender identification of women. In the study of Dardanne et al. (2007), HS was found to negatively affect the cognitive performance of the participants who identified only with low level of gender identity. In the HS condition, the emergence of intrusive thoughts was less for the women with high gender identification. The researchers interpreted this result such that gender identification protects women from the negative consequences of discrimination. In the current study, however, the level of gender identification was not found to be related to women's test performances. On the other hand, the results of the Experiment 2 revealed that the level of gender identification may be having role in another process: It affects which emotions women would feel after the experience of discrimination. An examination of the emotions reported by women in each of the experimental conditions revealed that in the control (no exposure to sexism) condition, women's level of gender identification was associated to positive emotions such as comfort, secure and happiness. Based on this finding, it may be argued that the high level of gender identification eases women's experience of positive emotions – in a context where there is no sexism. In addition, there was no significant relationship between gender identification and emotions in the BS condition. Although gender identification was related to the positive feelings of women in nonsexist situations, this relationship has disappeared in the face of being exposed to BS. In the HS condition, gender identification was associated with negative emotions: Specifically, for women with high level of gender identification as compared to for women with low gender identification, feeling discomfort was less after HS, while the feeling humiliation was more. Although both of these emotions are negative, the sources and consequences of emotions may differ from each other. Humiliation is an external feeling, which usually occurs as a result of an attitude or behavior exhibited by other people (Fernández, Halperin, & Saguy, 2015). However, discomfort may be considered as an emotion more closely related to one's internal processes, and when discomfort is experienced, it is less clear to what or whom the emotion should be attributed. Therefore, it is possible to expect that the feeling of humiliation, which has a source easily recognizable, may be more motivating than the feeling of discomfort. The findings about the associations among the level of gender identification, emotions and test performances may be summarized such that gender identification has no direct association to test performances, but associated to some emotions which may affect performances.

Some other findings of the current study that are worth to discuss are related to the moderator and mediator role of some variables in the relationship between sexism exposure and cognitive performance. In both of the experiments, the moderator roles of

the self-esteem and gender identification in the effects of women's exposure to HS and BS on their test performances were examined. The findings indicated that neither had a significant moderator effect in this process. The inconsistent results regarding the moderating role of self-esteem might be due to the experimental design. As participants were told to pretend to be job applicants, they may have filled in the scales biasly in order to present a better impression of themselves. Also, it was revealed that the gender identification did not moderate the relationship between exposure to sexism and test performance. However, gender identification had a role on the emotions experienced by women after being exposed to sexism. As seen in the results of the Experiment 2, the emotions of women after sexism exposure was depended on the extent to which they identify with their gender group.

Previous studies on the effects of BS and HS on women's CP have addressed those effects with only on one single cognitive test and found out that exposure to BS reduces women's performance (e.g. Dardenne et al. 2007). However, those studies failed to consider the possibility that the effects of sexism on performances in different cognitive skills might vary depending on the type of skills. In both experiments in the current research, such possibility was recognized, and the results demonstrated that the effects of the sexism on CP depended on the test field. According to the findings, while the quantitative performance of the experimental groups did not vary from each other significantly, there was a variation between the verbal test performances of those groups. To summarize, one critical results of the study is that the effects of sexism on the performance vary according to the type of sexism exposed and that effect is in the direction of supporting the anger-based reaction view and secondly the effect of the sexism also varies according to the performance field tested.

The findings of the current study demonstrating how being exposed to hostile sexist expressions improve verbal performance of women through increasing the feeling of anger, could provide useful insights for developing ideas on how to protect women from the negative effects of the sexism. In the literature, the studies examining how being target of sexism negatively affects women's psychological well-being through processes such as depression, anxiety (Borgogna and Aita 2020) and self-efficacy (Jones et al. 2014) can be easily found. The finding of the current study, however, is valuable because it demonstrates that one way to protect oneself from the negative effects of sexism is to recognize the sexist attitudes and behaviors and attribute the discomfort felt after being exposed to them to the sexist person rather than to oneself. In order to avoid the negative effects of discrimination, being able to recognize the discriminatory attitudes is necessary, if not sufficient.

There are some limitations in both experiments of the current study. The most important limitations of the Experiment 1 are the small sample size and the data being collected only from students at the Sociology Department. In the Experiment 2, the limitations of the Experiment 1 were tried to be eliminated, thus, data were collected from a larger sample and from various departments. Although students from different departments were reached in order to increase the representativeness of the study, the majority of the data were collected from the students in the verbal departments in the Experiment 2. This study, which is quantitative and verbal test performance was examined as an outcome variable, the fact that the data were not collected in a balanced way from participants studying in different fields is one of the important limitations of

the research. In future studies, it would be useful to collect data in a balanced way from students of quantitative and verbal departments.

Conclusion

With all these limitations of the research, the present study makes important contributions to the literature. Most of the previous studies on BS and HS in Turkey are relational studies, and these research generally yielded valuable findings about the antecedents of discrimination (e.g. Sakallı-Uğurlu and Glick, 2003, Sakallı-Uğurlu and Ulu 2003). The current study differs from the previous studies conducted in Turkey in that it examined the consequences of discrimination, and it has an experimental research design. Although the effects of sexism on women's verbal and quantitative performances, and the processes that may be responsible for these effects had been previously tested on samples from Europe sample the current study contributes to the literature by retesting it on data from Turkish samples. An aspect that distinguishes this study from the earlier research is that the effects of sexism on cognitive performance are examined in two different fields. It is noteworthy that the finding that the influences of sexism on women were depended on the field of performance has been consistently found in both experiments in the current study. Besides, the current study enriches the literature by taking various processes such as emotions and motivation level into account as the processes influencing the effects of HS and BS on cognitive performance. With all these features, the current study could be accepted as a modest step moving the literature to further..

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