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Gender Identification Moderates Social Identity Threat Effects on Working Memory

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Abstract

This investigation examined whether gender identification moderates women's working memory following exposure to situations that threaten the integrity of their gender group. Young adults read sentences that either threatened women's gender identity (in the social identity threat condition) or did not threaten this identity (in the control condition). During this sentence-reading task, participants were also asked to remember numerous neutral words. Women who were more strongly gender-identified recalled fewer of the neutral words when these words were presented in conjunction with sentences that threatened women's gender identity compared to when the words were presented with non-identity threatening sentences. More weakly gender-identified women, as well as men, did not show working memory impairments when exposed to threatening as compared to nonthreatening sentences. This study provides insight into who is most vulnerable to experiencing working memory impairments following a threat to their social identity. It also has practical implications for promoting environments that increase the likelihood that members of devalued groups can more optimally draw on their reserves of memory. For instance, workplaces that permit the expression of sexism may find that this behavior actually decreases the performance of female employees who identify with their gender group.

Keywords

social identity, group identity, cognitive processes, performance, sexism, threat

Social identity threat is the broad concern that one's social group is devalued (Major & O'Brien, 2005; Steele, Spencer, & Aronson, 2002). Social identity threat can manifest in many forms, and for women, can include negative expectations about their abilities in stereotyped domains (e.g., stereotype threat in math), gender-based exclusion and rejection, not being taken seriously, and generally being viewed and treated as second-class citizens (for reviews, see Major & O'Brien, 2005; Steele et al., 2002). The present investigation examines how women respond to social identity threat, and in particular, how social identity threat affects their executive function, that is, their ability to exert self-control over their attention, cognitions, and behavior (Muraven, Tice, & Baumeister, 1998). We hypothesize that social identity threat (i.e., anti-female insults) will impair executive function, specifically working memory capacity, among women who are strongly identified with their gender group, but not among women who are weakly identified with their gender group.

Scholars have observed that women experiencing a variety of types of social identity threat incur impairments in executive function, a resource that is critical for effectively carrying out all types of controlled processes and higher-order cognition (see Schmader, Johns, & Forbes, 2008, for a review). For example, women who are exposed to social identity threat by being reminded of negative stereotypes about their group experience decreased working memory capacity (Beilock, Rydell, & McConnell, 2007; Schmader & Johns, 2003)—a type of executive function that involves the ability to hold one's attention on task-relevant information while simultaneously inhibiting attention toward task-irrelevant information (Engle, 2002). Additionally, women show memory impairments in their ongoing group interactions when they are solo members of a group compared to when they are in the numerical majority (Lord & Saenz, 1985). Impairments in executive function based on social identity threat are also observed on a wide variety of self-regulatory behaviors. For instance, women who are asked to think about experiences with sexism make poorer decisions and fail at inhibiting aggression compared to women who are not thinking about sexism (Inzlicht & Kang, in press). Many of these social identity threat-driven

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impairments in executive function have also been observed among members of racial minority groups (e.g., Bair & Steele, 2010; Deaux et al., 2007; Inzlicht, McKay, & Aronson, 2006; Salvatore & Shelton, 2007; Schmader & Johns, 2003)

Although social identity threat impairs executive function among women in general, social identity threat does not affect women in a uniform fashion. Specifically, research has begun to identify personal, situational, and structural factors that moderate the effects of social identity threat on its targets (for reviews, see Major & O'Brien, 2005; Steele et al., 2002). Much of this theorizing has applied models of stress and coping (e.g., Lazarus, 1999) to the predicament of experiencing social identity-related stress (e.g., Kaiser, Major, & McCoy, 2004; Major & O'Brien, 2005; Miller & Kaiser, 2001). A central tenet of stress and coping perspectives is that individuals display variability in their responses to stress, with some showing vulnerability and others exhibiting resilience. In this manuscript, we examine how variability in women's gender identification—specifically, the importance of one's gender to the self-concept (Correll & Park, 2005; Luhtanen & Crocker, 1992; McCoy & Major, 2003; Tropp & Wright, 2001; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987)—moderates the effects of stress stemming from social identity threat on working memory.

There are several theoretical reasons why strongly group-identified women should show impaired working memory following social identity threat. Relative to weakly identified women, the strongly identified are more likely to perceive threats against their group as self-relevant and meaningful (Ellemers, Spears, & Doosje, 2002; Smith, 1993) and subsequently experience stress when faced with social identity threat (McCoy & Major, 2003). When stressors are appraised as self-relevant, people experience physiological arousal, negative thoughts and emotions, become preoccupied with the stressor, and engage in a variety of coping strategies to mitigate these reactions (Major & O'Brien, 2005; Miller & Kaiser, 2001; Schmader et al., 2008). All of these reactions to stress require resources and attention, and depletion of these resources impairs performance on all types of domains that rely on working memory (Schmader et al., 2008). Thus, when they encounter situations that threaten their gender group, strongly identified women should be particularly likely to show impaired working memory capacity.

Some intriguing evidence shows that strongly identified women are particularly susceptible to experiencing stereotype threat-based performance deficits on cognitive tasks. For example, Schmader (2002) exposed women to conditions that made gender differences in math performance salient or not, and then assessed performance on a diagnostic math test. Strongly identified women performed more poorly on the math problems when gender differences were salient relative to when they were not salient. Weakly identified women performed similarly across the two conditions. Likewise, in another stereotype threat study, only women who were strongly identified with their gender group showed performance decrements when told that

their score on a diagnostic math test would be used in a comparison of whether women or men perform better on the test (Wout, Danso, Jackson, & Spencer, 2008). Collectively, these studies suggest that strongly identified women are particularly susceptible to experiencing performance impairments in domains in which they are subjected to sexist stereotypes about their abilities (see Eriksson & Lindholm, 2007, for an exception).

The present investigation extends upon this research to examine whether women's gender identification moderates their cognitive performance in contexts in which there are no stereotypes suggesting that women should do poorly. Specifically, we wondered whether strongly identified women would show more general impairments in working memory (as opposed to impairments in stereotype-relevant performance) following exposure to social identity threatening contexts relative to nonidentity threatening contexts. This research would be the first, to our knowledge, to test whether gender identification moderates working memory when women are faced with social identity threatening environments. In this study, we induced social identity threat by exposing women to sexist insults.

Women are an important social group among which to investigate responses to prejudicial insults. Stereotypes about women are so deeply ingrained in social roles in our society that they are often legitimized and become part of the cultural fabric of everyday life (Eagly, 1987; Glick & Fiske, 1996). Prejudice and discrimination against women are also perceived as more humorous and acceptable to express than prejudice and discrimination against racial groups (Czopp & Monteith, 2003; Rodin, Price, Bryson, & Sanchez, 1990), suggesting that the expression of sexist attitudes may be more common. Furthermore, women who advocate on behalf of their gender group, or attempt to speak up about prejudice and discrimination that they experience, are often treated negatively and punished for their behavior (Roy, Weibust, & Miller, 2009). Thus, it is likely that women will be exposed to social identity threatening insults across many contexts and will often be constrained with respect to the options they have available for dealing with social identity threats. This pervasiveness is apt to cause women, and in particular, strongly identified women, frustration and stress.

In this investigation, we operationalize executive function as working memory capacity. We focus on working memory capacity because it underlies all types of higher-order cognition (Engle, 2002), and social identity threat is known to impair this type of executive function (Beilock et al., 2007; Schmader & Johns, 2003). Whereas past research demonstrates that social identity threat impairs working memory among devalued groups more generally, the present research argues that these impairments will best characterize the reactions of group members who are strongly identified, and they will not characterize the reactions of group members who are weakly identified.

In our within-subject experimental design, women and men who had completed a gender identification measure prior to the laboratory session engaged in working memory tasks when both under and not under anti-female social identity threat. We hypothesized that strongly gender-identified women would display impaired working memory capacity following exposure to anti-female social identity threat compared when they were not under social identity threat. We anticipated that weakly identified women would not be affected by the social identity threat manipulation. We also hypothesized that social identity threat should not adversely impact the working memory of strongly or weakly identified men, because anti-female identity threat is not self-relevant to men. We did not predict stereotype lift effects for men (enhanced performance in the presence of anti-female social identity threat; Walton & Cohen, 2003) because our study did not examine performance on a domain where men are stereotyped to excel.

Before proceeding, it is also important to note that this study examined reactions to overt types of social identity threat (i.e., blatant sexist insults). We made this decision because of our theoretical interest in understanding how the experience of social identity threat affects working memory. Thus, it was essential that all women, regardless of identification level, were equally likely to detect social identity threat. Because weakly identified women are less sensitive than strongly identified women at detecting social identity threats (Major, Quinton, & Schmader, 2003), the use of ambiguous or less overt identity threats could result in strongly identified women experiencing social identity threat and weakly identified women potentially failing to detect the threat altogether.

Method

Participants

A total of 61 male and 69 female undergraduates, $M_{age} = 20.47$, $SD = 1.92$, participated in exchange for course credit in an introductory psychology class. Participants were predominately European American (65.6%), with the remainder reporting African American (18%), Asian American (4.7%), Latino American (1.6%), Native American (0.8%), and multiracial/other (9.4%) backgrounds. Three participants were excluded for failing to follow the instructions.

Procedures

Prior to the laboratory session, participants completed a web-based version of Luhtanen and Crocker's (1992) 4-item gender identification measure that assesses the centrality of one's gender group to the self. Sample items include "The gender group I belong to is an important reflection of who I am" and "Overall, my gender-group membership has very little to do with how I feel about myself" (reverse coded). Scales end points were 0 (strongly disagree) and 6 (strongly agree), $\alpha = .71$.

At the laboratory session, participants were met by an experimenter who explained that the study addressed how people simultaneously complete two different computerized cognitive tasks. Participants first completed a working memory task, modeled on Schmader and Johns' (2003) paradigm, in which participants viewed sets of sentences (one sentence presented at a time; set sizes ranged from four to seven sentences per set) and counted the number of vowels in each sentence (the computer recorded vowel counting time). After participants recorded their vowel response, a one-syllable neutral word (from La Pointe & Engle, 1990) appeared on the screen for 2 s. Participants were told to examine the neutral word as they would be asked to recall it later. At the end of each set of sentences, participants were asked to recall the one-syllable neutral words that previously appeared on the screen for 2 s (the computer recorded the amount of time participants engaged in recall activity after each set). After participants provided their response, the phrase "Next Set" appeared on the screen for 3 s and was followed by a new set of sentences.

Participants viewed four sets of 4, 5, 6, and 7 sentence sets, for a total of 16 sets containing 88 unique sentences. Half the sentence sets (two sets of each set size) induced anti-female social identity threat, and the other half were control sets that did not induce social identity threat (i.e., sets were blocked by type of sentence: threat vs. no threat). The sexist sentences reflected stereotypes about women's roles in society, their abilities and attributes, as well as sexualized attitudes. Sample sentences included "Women should cook and clean for men," "I hope a woman will never be president," "Women athletes should wear much shorter shorts," "Women are annoying as they whine so much," "Women don't have the genes to be scientists," and "Women are the worst drivers on the road."

Sample control set sentences were topically related to illness and included "The stomach flu is going around now," "The doctor treated the patient's scratched eye," "The kidney stones caused lots of discomfort," "She was admitted to the emergency room," "Doctors used x-rays to check for broken arms," and "The infected tonsils were taken out promptly." The inclusion of illness-related sets allows for a comparison of working memory following sexist stimuli relative to stimuli that are unpleasant but not sexist (Kaiser, Vick, & Major, 2006). The sexist and illness sets were equivalent in sentence length (ranged from 7 to 11 words) and number of vowels per sentence (ranged from 8 to 14 vowels). Presentation of sentence sets was randomized across participants, and within each set the sentence order was randomized.

After this task, participants completed a 6-item measure assessing preoccupation with sexist thoughts (e.g., "Images related to sexism are popping into my mind," "I am trying not to think about sexism"; $\alpha = .94$). Participants also completed a 4-item anxiety measure (i.e., feeling worried, anxious; $\alpha = .79$) and a 4-item anger measure (i.e., feeling mad, angry; $\alpha = .89$). Finally, participants were debriefed.
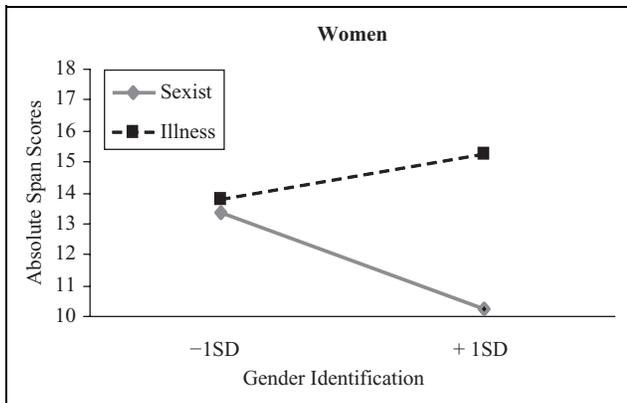
Figure 1. Women's level of gender identification moderates the effects of social identity threat on working memory.

Figure 2. Men's level of gender identification does not moderate the effects of social identity threat on working memory.

Results

Working Memory

Working memory was operationalized with the working memory absolute span score. This score represents the total number of neutral words recalled correctly from sets in which all the words were perfectly recalled and spelled, known as "all or none load scoring" (Conway et al., 2005). The absolute span score is a more precise and sensitive measure of working memory than simply counting the number of words correctly recalled across the blocks (La Pointe & Engle, 1990). In addition, this approach allows for direct comparison with other social identity threat research that has examined absolute span scores (i.e., Schmader & Johns, 2003; Trawalter & Richeson, 2006).

Before the analyses, all dependent variables were trimmed within gender so that no score was more than 2 *SD*s from the measure's mean (Tabachnick & Fidell, 2007). We used a mixed model analysis with participant gender (0 = *male*, 1 = *female*) and continuous gender identification (centered using the grand mean) as between-subject predictors, and sentence type (0 = *illness sentences*, 1 = *sexism sentences*) as the repeated measures factor. The predicted three-way interaction approached significance, $b = -2.28$, $SE = 1.33$, $t(123) = -1.71$, $p = .09$ (post hoc power for the interaction effect is .50). Because the overall F is not particularly sensitive to the interactive pattern underlying our predictions, we probed the three-way interaction for each gender separately.

For women, the predicted Gender Identification × Sentence Type interaction was significant, $b = -2.07$, $SE = 0.85$, $t(123) = -2.43$, $p = .02$. We probed this interaction by comparing the effect of sentence type on the absolute span score for women who were weakly gender identified (1 *SD* below the gender identification mean), moderately gender identified (at the gender identification mean), and strongly gender identified (1 *SD* above the gender identification mean). Both moderately, $b = -2.72$, $SE = .97$. $t(123) = -2.81$, $p = .01$, and strongly gender-identified, $b = -4.99$,
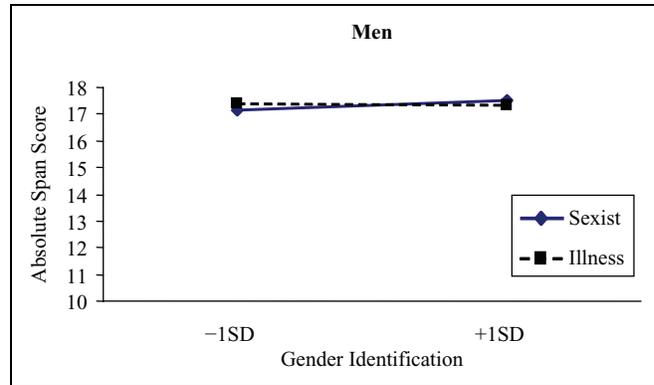
$SE = 1.20$, $t(123) = -4.17$, $p = .001$, women displayed poorer working memory capacity following exposure to the sexism sentences compared to the illness sentences (see Figure 1). In contrast, for weakly gender-identified women, the sentence type manipulation had no effect on their working memory capacity, $b = -.45$, $SE = 1.48$, $t(123) = -.30$, $p = .76$. For men, the Gender Identification × Sentence Type interaction was not significant, $b = .22$, $SE = 1.03$, $t(123) = 0.21$, $p = .83$. The sentence type manipulation had similar effects on strongly and weakly gender-identified men's working memory capacity (see Figure 2).

Social Identity-Related Thoughts and Mood

We used a Participant Gender (0 = *men*, 1 = *women*) × Continuous Gender identification hierarchical regression analysis to examine preoccupation with social identity-related thoughts. Women, regardless of their gender identification level, reported being more preoccupied with sexism-related thoughts than men, $b = .63$, $SE = .32$, $t(124) = 1.96$, $p = .05$. Thus, there is no evidence that women's level of gender identification moderated the extent to which they reported being preoccupied with thoughts about sexism. Separate hierarchical regressions on anxiety and anger produced no significant main effects or interactions ($ps > .35$). This pattern indicates that women's level of gender identification did not moderate the extent to which they reported feeling anxious or angry following the experimental tasks.

Motivational Accounts

We next conducted supplemental analyses to examine the alternative explanation that more strongly identified women experienced impaired working memory under social identity threat because more strongly identified women withdrew effort when completing the sexist blocks. Withdrawal of effort could stem from motivated avoidance of the sexist sentences or psychological reactance against the experimental instructions. If this were the case, women's gender

identification would be associated with less time spent vowel counting, less time engaged in free recall of the neutral words, and more vowel counting errors on sexist sentence blocks relative to illness sentence blocks.

Vowel counting duration. We used a mixed model analysis with participant gender and continuous gender identification as between-subject predictors, and sentence type as the repeated measures factor predicting vowel counting duration. The three-way interaction was not significant, $b = -203.39$, $SE = 141.16$, $t(123) = -1.44$, $p = .15$, providing evidence against the possibility that more strongly identified women would be particularly unmotivated when counting vowels after the sexist sentences compared to the illness sentences. The only lower-order effect to approach significance was a Gender Identification × Sentence Type marginal interaction, $b = 186.42$, $SE = 108.80$, $t(123) = 1.71$, $p = .09$, which indicated that more strongly identified participants spent longer counting vowels after sexist sentences compared to illness sentences ($p = .05$).

Free recall duration. We next examined the amount of time participants spent free recalling the neutral words on the social identity threat blocks and the illness blocks. The three-way interaction was not significant, $b = -149.20$, $SE = 466.62$, $t(123) = -0.32$, $p = .75$. Thus, the motivation of men and women to recall the neutral words after each sentence type was not differentially shaped by their identification level. There was a marginally significant lower-order Gender Identification × Sentence Type marginal interaction, $b = 627.99$, $SE = 359.65$, $t(123) = 1.75$, $p = .08$, which indicated that more strongly identified participants spent longer recalling neutral words after sexist sentences compared to illness sentences ($p = .01$).

Vowel counting errors. The mixed model analysis on vowel counting errors revealed a significant three-way interaction, $b = 1.17$, $SE = .55$, $t(123) = 2.12$, $p = .04$. For women, there was no Sentence Type × Gender Identification interaction, $b = .39$, $SE = .35$, $t(123) = 1.10$, $p = .27$, suggesting that gender identity was not associated with vowel counting errors in both category blocks. In contrast, for men, the Sentence Type × Gender Identification interaction was marginally significant, $b = -.78$, $SE = .43$, $t(123) = -1.84$, $p = .07$. More strongly gender-identified men (1 SD above the gender identification mean) tended to make fewer errors following sexist sentences compared to illness sentences ($b = -1.36$, $SE = .73$, $t(123) = -1.67$, $p = .06$). More moderately and weakly identified men did not show differential error rates across the two sentence types ($ps > .26$).

Discussion

This investigation builds upon recent research showing that social identity threat does not affect its targets in a uniform fashion (Major & O'Brien, 2005; Steele et al., 2002). Our research demonstrates that gender-based social identity threat is particularly detrimental to the working memory of women who are more identified with their group. More gender-identified women perceive threats against the group as self-relevant, which leads to stronger stress reactions to threats—in the present case, evidenced by impaired working memory capacity. In contrast, less gender-identified women's working memory capacity was unaffected by social identity threat. This observation extends prior research on the effects of social identity threat by demonstrating that simply being a woman is not sufficient for showing working memory impairments when faced with gender-based social identity threat. Furthermore, whereas past research has documented the role of gender identification in moderating cognitive reactions in stereotyped domains (e.g., Schmader, 2002; Wout et al., 2008), the current research demonstrates that these impairments are more general, affecting executive function in performance domains not characterized by stereotypes. The current findings are consistent with Inzlicht's (Inzlicht et al., 2006; Inzlicht & Kang, in press) suggestion that social identity threat has far-reaching effects for its targets, and the findings further show that this is particularly the case for more gender-identified women.

Although more gender-identified women tended to show greater susceptibility to social identity threat-related effects on working memory, the process responsible for this effect remains to be identified. The supplemental analyses demonstrate that the effect is unlikely a result of motivated disengagement from the task, as women, irrespective of their identification level, approached the task similarly. On the same note, more gender-identified women reported being no more preoccupied with sexist thoughts, nor more anxious or angry after the experimental tasks, compared to less gender-identified women. It is possible that self-reports of preoccupation with sexist thoughts and mood were insufficiently sensitive for assessing these constructs. Specifically, more gender-identified women may have lacked awareness into the extent to which the sexist sentences lingered in their thought or affected their mood. Or, both less and more gender-identified women may have thought the words would have distracted them or detracted from their mood, and they drew on this causal theory when providing self-reports, despite the fact that only the strongly identified women experienced preoccupation (Nisbett & Wilson, 1977). Future research could investigate several additional possible processes, including implicit preoccupation with social identity threat, implicit mood, physiological arousal, and various coping strategies (such as thought suppression aimed at mitigating stress responses to social identity threat).

Although one could contend that the differential impairments observed across working memory tasks stemmed from more gender-identified women becoming especially reactive toward the overt sexist stimuli used in this study, relative to less gender-identified women, we suspect it is unlikely that only more identified women would be concerned with the

blatant sexist insults. If this were the case, we should have observed more gender-identified women approach the experimental task differently than less gender-identified women. As the supplemental analyses described above illustrate, this pattern clearly was not the case. More gender-identified women did not withdraw their effort when faced with sexist sentences, because they did not show reductions compared to less gender-identified women in the amount of time they spent counting vowels and attempting to recall the neutral words, nor did they make more errors while vowel counting in the social identity threat blocks compared to illness blocks. One might argue that the absence of moderation of identification on women's vowel errors is inconsistent with the working memory findings. However, vowel counting (while the sentences sit in plain view of the person counting) is an easy task. Social identity threat impairs performance on difficult tasks and does not impair performance on easy tasks (Beilock et al., 2007; O'Brien & Crandall, 2003; Quinn & Spencer, 2001; Spencer, Steele, & Quinn, 1999).

Together, these data argue against interpreting the findings as stemming from more gender-identified women reacting against the overt social identity threat stimuli used in our study. Nonetheless, in future research it would be useful to employ situations where the overt sexism is introduced in a separate context from the experimental task (for example, with an overheard comment in the lab waiting room).

At first glance, the current findings showing that women experience impairments in working memory following exposure to blatant sexism seems inconsistent with Salvatore and Shelton's (2007) research in which Black participants experienced depleted executive function following exposure to subtle, but not blatant, forms of racism. Because women's experiences with sexism are often minimized and even perceived as humorous compared to Blacks' experiences with racism (Czopp & Monteith, 2003), more gender-identified women might indeed find blatant sexist insults to be particularly stressful because others fail to validate the damage inflicted by these comments. In contrast, Blacks might experience subtle racism as particularly stressful because it often goes unrecognized as problematic, compared to blatant racism.

Our use of a within-subject design allowed us to examine whether women under social identity threat could shift between showing threat effects on the experimental trials and not on the control trials. Although within-subject designs are not the normative approach for examining social identity threat effects on cognition (see Logel et al., 2009, for an exception), this approach has benefits. For example, by highlighting how certain types of individuals behave across various situations, this approach has the potential to help better understand for whom and under what circumstances social identity threat affects its targets (e.g., Mischel & Shoda, 1995). Furthermore, consistent with a recent study that utilized a within-subject design for examining social identity threat (Logel et al., 2009), our findings demonstrate how the same individual can show cognitive impairment on threatening tasks and no impairment on other ongoing cognitive tasks that do not invoke social identity threat.

The present research raises the possibility that social identity threat effects on cognition can be mitigated through mind-control strategies. This speculation would be consistent with research on stress, which demonstrates that distractions that involve moderate amounts of cognition can reduce the negative psychological and physiological effects of stress (for reviews, see Compas et al., 2006; McCaul & Malott, 1984). Whereas other strategies for keeping stressful thoughts at bay, such as denial or thought suppression, have notoriously negative psychological consequences (Wegner, 1994), distraction, when used in moderation, might be an important tool in one's repertoire of strategies for coping with social identity-related stress. Nonetheless, social identity threat research using a within-subject design is rare, and the effects we observed here should be replicated to better understand how quickly social identity threat can be turned on and off.

One unexpected finding was that more gender-identified men made somewhat fewer vowel counting errors when presented with the sexist sentences compared to the illness sentences. Although this effect was not predicted, we have some thoughts on why it may have occurred. More gender-identified men may have viewed the sexism sentences as less problematic than less gender-identified men, causing the former to be more attentive to the vowel counting part of the task, leading to fewer vowel counting errors. This interpretation is speculative and could be examined with future research.

Finally, these data have practical implications. For instance, if workplaces permit the expression of sexist thoughts and behaviors, they may find that their female employees (particularly the strongly identified) do not perform optimally on all types of work tasks that require executive function. Because optimal performance is important to the bottom line, it would behoove employers to rid their places of people and things that trigger social identity threats that might otherwise occupy the minds of those they target. Furthermore, because it is difficult to speak up about sexism in the workplace (Kaiser & Miller, 2001), companies might not realize that their female employees are experiencing social identity threat, and they could be missing out on opportunities to maximize the potential productivity of their workplace.

In this research, we adopted a self-concept approach to gender identification. This approach is consistent with other scholarship that conceptualizes group identity as the centrality or importance of a group to one's sense of self (Correll & Park, 2005; Luhtanen & Crocker, 1992; McCoy & Major, 2003; Tropp & Wright, 2001; Turner et al., 1987). This approach also allows for more direct comparison of our research with related gender social identity threat research that has employed a self-concept approach to identification (e.g., Schmader, 2002; Wout et al., 2008). Nonetheless,

there are other approaches to defining identification (e.g., Ellemers, Kortekaas, Ouwerkerk, 1999; Leach et al., 2008), and it will be important to examine how these various conceptualizations of identification moderate cognitive reactions to social identity threat.

It is important to recognize that our research does not imply that strong gender identification is, on the whole, a liability for women. It is possible, for example, that even though more gender-identified women showed fairly immediate social identity threat effects on working memory, they may have a strong reserve of coping resources for dealing with sexism that would lead them to be particularly resilient in the more long-term relative to less gender-identified women (Foster, 2009; Miller & Kaiser, 2001). Furthermore, as ingroups confer a sense of self-worth (Tajfel & Turner, 1979), reduce uncertainty (Hogg, 2000), imbue the social world with meaning (Correll & Park, 2005), and fulfill both distinctiveness and acceptance needs (Brewer, 1991), identifying with one's group is undoubtedly beneficial. Rather, our research highlights the complexity of group identification. It can serve as a source of both vulnerability and resilience, and the nature of this effect will depend upon the context and level of analysis.

In sum, our research provides greater understanding of working memory among group members who are socially devalued in society. In many ways, social identity threats pose an ever-present potential drain on working memory of strongly identified group members, and this distraction can prevent them from adequately accessing the resources they need to meet the demands of daily life. We suspect that the potential impact of social identity threats on working memory encompasses many important domains, including the ability to make good life decisions, character judgments, and to resist persuasion and temptation, and more generally perform at one's full potential (see Inzlicht & Kang, in press). Reducing social identity threatening environments has the potential to alleviate this burden and create an environment where all people are able to more effectively function.

Authors' Note

Declaration of Conflicting Interests

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