

EXAMINING THE AUTOMATICITY OF A LAY THEORY OF GENERALIZED
PREJUDICE: VIGILANCE FACILITATES SOCIAL DISTANCING FOR WHITE
WOMEN IN STEM CONTEXTS

by

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ABSTRACT OF THE DISSERTATION

Examining the automaticity of a lay theory of generalized prejudice: Vigilance facilitates social distancing for White women in STEM contexts

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Science, technology, engineering, and mathematics (STEM) contexts are often imbued with identity threat cues for women, cues that signal that women may be devalued or stigmatized by others, leading to women's decreased performance and disengagement from STEM fields. Research on the vigilance-avoidance hypothesis suggests that individuals rapidly detect threat cues and subsequently avoid detected threats to mitigate experiencing the negative implications associated with the threat. Moreover, past research has demonstrated that individuals endorse a lay theory of generalized prejudice, such that White women perceive racism and sexism as co-occurring, resulting in anticipated sexism from a racist evaluator, termed *identity cue transfer*. As such, the pool of potential threat cues for women in STEM may be broader than previously theorized. Integrating these three lines of research, this dissertation explored the effect of identity cue transfer on White women's vigilance to sexism and rejection cues in STEM and evaluative settings, including the effect of vigilance on avoidance, measured via social distancing, and working memory. In Studies 1-2, White women demonstrated *greater* preconscious

attentional bias to sexism and rejection cues when anticipating an evaluation by a racist or a sexist White man, and when imagining enrolling in a STEM course with a racist or sexist White male professor, compared to a White man or professor whose intergroup attitudes were unknown. In Studies 3-4, White women demonstrated *less* preconscious attentional bias to sexism and rejection cues when anticipating completing an intelligence measure developed by a Black man or White woman or enrolling in a course with a Black male or White female STEM professor, compared to a White male STEM professor. Moreover, in Studies 2-4, greater preconscious attentional bias to sexism and rejection led to greater social distancing. Lastly, Study 5 demonstrated that White women had greater working memory when completing a task ostensibly developed by a Black man or White woman compared to a White man. Together, the present studies 1) identified vigilance as a novel, automatic process by which identity cues are associated with avoidance and cognitive performance for women in STEM contexts, and 2) demonstrate the automaticity of a lay theory of generalized prejudice by providing the first evidence of a cognitive overlap, or shared network, of beliefs about racism and sexism at the preconscious level.

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Introduction

Individuals with stigmatized identities (e.g., women, racial minorities, sexual minorities) experience identity threats, concerns that one's social identity may be devalued or stigmatized by others (Crocker, Major, & Steele, 1998; Major & O'Brien, 2005), in numerous settings, ranging from interpersonal interactions, classrooms, standardized testing, and organizations. Members of stigmatized groups scan environments in which one's ingroup typically faces negative stereotypes (e.g., women in math classrooms) and detect *identity cues*, cues which signal to individuals whether or not they should anticipate being devalued for one of their social identities, and thus serve as indicators of prejudice expectations. Identity threat cues, cues that one's social identity will be tied to negative outcomes within the context, come in many forms, such as low representation of one's ingroup (Kiefer, Sekaquaptewa, & Barczyk, 2006; Sekaquaptewa & Thompson, 2003) or environmental cues that a space is not designed for one's ingroup (e.g., masculine décor signals to women that they do not belong in computer science; Cheryan, Meltzoff, & Kim, 2011; Cheryan, Plaut, Davies, & Steele, 2009). Identity threats incur numerous negative outcomes, such that, for example, interacting with individuals who are prejudiced towards one's ingroup in threatening domains can result in lower life satisfaction and increased depression (Settles, 2004; von Hippel, Walsh, & Zouroudis, 2011), disengagement from domains in which one's social identity is negatively stereotyped (Davies, Spencer, Quinn, & Gerhardstein, 2002), and impaired cognitive performance (Schmader & Johns, 2003).

Yet, identity cues towards stigmatized outgroups may also be perceived as indicative of attitudes towards one's own stigmatized ingroup, resulting in increased

vigilance for ingroup identity threats. Such heightened vigilance to identity threat cues may negatively impact individuals' cognitive performance and result in behavioral changes. For example, White women may perceive anti-Black attitudes as indicative of negative attitudes towards women, resulting in increased vigilance to sexism and social distancing from individuals or contexts which purport anti-Black attitudes, as well as depleted cognitive resources.

Identity Cue Transfer

Research on *identity cue transfer* demonstrates that individuals hold a lay theory of generalized prejudice, such that they perceive multiple prejudices (e.g., racism and sexism) as stemming from a common ideology and thus, co-occurring. As such, Black and Latino men anticipated negative race-based treatment from a White man who endorsed sexist statements, and White women anticipated gender stigma from a White man who endorsed anti-Black statements (Sanchez, Chaney, Manuel, Wilton, & Remedios, 2017). Just as identity threat cues transfer, so do identity safety cues, cues that signal one should *not* anticipate being devalued in a context. For example, when a company's website had gender diversity awards (e.g., "One of America's Top Companies for Executive women" by the National Association for Female Executives), Black and Latino men reported greater anticipated sense of belonging at the company compared to a company with no diversity related awards (Chaney, Sanchez, & Remedios, 2016). Similarly, cis-gender people of color anticipated more equitable racial treatment at an organization with a transgender inclusive bathroom sign compared to a company with a traditional, binary bathroom sign (Chaney & Sanchez, 2018). Thus, due to identity cue

transfer, identity cues have a broad impact, signaling inclusion to not only the target group, but also other similarly stigmatized groups.

Moreover, past research has demonstrated that stigmatized individuals (e.g., White women) who more strongly endorsed a lay theory of generalized prejudice were more likely to report identity threat from an outgroup threat cue (e.g., anti-Black attitudes) and demonstrate physiological threat outcomes (e.g., decreased heart rate variability) than participants who did not strongly endorse a lay theory of generalized prejudice (Chaney, Sanchez, Himmelstein, & Manuel, 2020; Sanchez, Chaney, Manuel, & Remedios, 2018). As such, a lay theory of generalized prejudice facilitates perceptions of a broad ideology of (in)equality, and the extent to which individuals endorse a lay theory of generalized prejudice can influence their cardiovascular reactivity to threats aimed at other stigmatized, societally devalued outgroups.

Identity cue transfer occurs, in part, due to perceptions of multiple prejudices stemming from the shared ideological stance of the prejudiced perpetrators, namely Social Dominance Orientation (SDO; Sidanius & Pratto, 1999; Pratto, Sidanius, Stallworth, & Malle, 1994). SDO is defined as a preference for ingroup dominance and social inequalities, is predictive of sexist and anti-Black attitudes, and has been identified as an ideology underlying competition-based prejudices (Duckitt & Sibley, 2007). Indeed, research on identity cue transfer has identified the perceived SDO of an entity (e.g., perpetrator, managers at a company) as a key mechanism through which identity cues transfer (Sanchez et al., 2017; Chaney et al., 2016; Chaney & Sanchez, 2018). For example, White women perceived managers at an organization with racial diversity awards to be significantly lower in SDO than managers at a company with no such

awards (Chaney et al., 2016), and men of color perceived a sexist White man to be higher in SDO than a White man whose intergroup attitudes were unknown (Sanchez et al., 2017). As such, perceived SDO has been identified as an explicit set of beliefs by which identity cues transfer. Yet, I propose that there may also be an implicit method by which identity cues transfer and influence automatic stigma responses such as vigilance, behavior, and working memory.

Vigilance and Preconscious Attentional Bias

Identity cues serve as indicators of prejudice expectations, and individuals who anticipate greater prejudice demonstrate increased attention and vigilance for further cues of potential devaluation (Kaiser, Vick, & Major, 2006; Major, Quinton, & McCoy, 2002; Miller & Kaiser, 2001; Steele, Spencer, & Aronson, 2002). Vigilance to identity cues is characterized as an involuntary stigma response motivated by the desire to anticipate and avoid future discrimination (Major & O'Brien, 2005). Yet, frequently engaging in discrimination-related vigilance can increase stress, placing highly vigilant individuals at a greater risk for negative health outcomes (Clark, Benkert, & Flack, 2006; Himmelstein, Young, Sanchez, & Jackson, 2015). Moreover, vigilance requires cognitive resources and thus utilizes working memory, a limited resource that is critical for performance (see Major & O'Brien, 2005). As such, vigilance to identity cues has been identified as an automatic process by which individuals attend to ingroup identity cues and has implications for individuals' well-being and cognitive resources.

While much research on vigilance to identity cues has been conducted with self-reports, assessing vigilance is perhaps more appropriately measured via cognitive measures such as the emotional Stroop task or dot-probe paradigms (Bar-Haim, Lamy,

Pergamin, Bakermans-Kranenburg, & Van Ijzendoorn, 2007; MacLeod, Mathews, & Tata, 1986; Williams, Mathews, & MacLeod, 1996), removing self-presentation concerns and providing insight into the automaticity of vigilance. Research examining increased automatic attention to threat cues among anxious individuals has demonstrated that they are more likely to direct their attention to locations of potential threat - such as toward the direction of a fearful gaze - compared to non-anxious individuals (Fox, Mathews, Calder, & Yiend, 2007; Mathews, Fox, Yiend, & Calder, 2003). Thus, vigilance to threat cues has been characterized as a rapid, automatic attentional bias to threat cues, even those presented subliminally. Moreover, research on the vigilance-avoidance hypothesis has demonstrated that highly anxious individuals are more vigilant to threatening stimuli, attending to the threat cue quicker, but then are more avoidant of the threat cues during longer exposures (e.g., Bogels & Mansell, 2004; Mogg, Bradley, Miles, & Dixon, 2004; Terburg, Aarts, & van Honk, 2012; Weiser, Pauli, Weyers, Alpers, & Mühlberger, 2008). As such, anxious individuals both rapidly detect potential threats in an environment and subsequently avoid these social threats to reduce stress.

Notably, past research on attentional bias to *identity* threat cues has found that women demonstrated greater attention to gender stereotype words after exposure to gender stereotypical commercials (Davies et al., 2002; Davies, Spencer, & Steele, 2005). Moreover, women anticipating an interaction with a sexist man demonstrated greater *preconscious* attention to sexism words (i.e., words that were presented subliminally, for 15ms) than non-sexism threatening words (e.g., cancer; Kaiser et al., 2006). Lastly, past research on women under identity threat has demonstrated that neural networks critical to attention are biased toward negative, stereotype confirming feedback, which can

ultimately undermine later performance (Forbes & Leitner, 2014), providing evidence of attentional bias during identity threat in a testing scenario. Together, this research suggests that stigmatized individuals are prone to automatically attend to identity threat cues and such vigilance has been captured at preconscious levels.

Integrating literature on identity cue transfer, I sought to examine if outgroup identity threat cues would similarly engender increased vigilance to ingroup identity threat cues. Specifically, I proposed that White women exposed to either sexism or anti-Black prejudice would demonstrate significantly greater preconscious attentional bias to sexism cues compared to women not exposed to sexism or anti-black prejudice. Demonstrating preconscious attentional bias to ingroup threat cues in the face of outgroup identity threat cues would indicate that identity cue transfer also operates at an automatic, implicit level and would provide initial evidence of an automatic association between ingroup and outgroup threat cues, e.g., an automatic index of a lay theory of generalized prejudice.

Social Distancing

Termed “proxemics” (Hall, 1963) and more commonly approach/avoidance (Dovidio, Kawakami, & Gaertner, 2002; Goff, Steele, & Davies, 2008), measures of social distancing and nonverbal indicators of avoidance (e.g., seating distance, body orienting, eye gaze) capture automatic, less conscious attitudes as they are often associated with implicit (Amodio & Devine, 2006), but not explicit, measures of attitudes (Dotsch & Wigboldus, 2008; McCall, Blascovich, Young, & Persky, 2009). For example, people sit farther away from someone who treated them unfairly (McCall & Singer, 2015), White Americans tend to sit farther away from Black Americans (e.g., Hendricks

& Bootzin, 1976), and White Americans' seat distance from Black Americans, but not their explicit anti-Black attitudes, is associated with aggression against Black Americans (McCall et al., 2009). Indeed, individuals tend to sit farther away from someone they dislike than someone they like (Mehrabian, 1968), leading early researchers to determine that social distancing was driven by implicit attitudes. Yet, social distancing is not always due to prejudice or dislike towards a target. Instead, social distance may also capture the general avoidance of a potential identity threat. For example, White Americans sat farther away from Black Americans when a "White racist" stereotype was activated compared to when it was not in an attempt to avoid fulfilling the negative stereotype of "White racist" (i.e., an identity threat; Goff et al., 2008).

Moreover, in response to identity threats, individuals may avoid or opt out of the identity threatening context (Crocker & Major, 2003; Crocker & Major, 1989). For example, women are highly underrepresented in science, technology, engineering, and mathematic (STEM) fields due, in part, to negative stereotypes about women's brilliance (Leslie, Cimpian, Meyer, & Freeland, 2015), lack of female role models (Allen, Epps, Guillory, Suh, & Bonous-Hammarth, 2000; Beede et al., 2011; Stout, Dasgupta, Hunsinger, & McManus, 2011), and experiences of sexism (Logel et al., 2009). Indeed, STEM contexts are often filled with identity threat cues for women (e.g., Cheryan et al., 2009), and women may seek to avoid such identity threats by disengaging from the context. For example, women indicated decreased interest in attending an identity-threatening STEM conference compared to a non-identity-threatening STEM conference (Murphy, Steele, Gross, 2007). Similarly, activation of female gender stereotypes from

gender stereotypic commercials led women to avoid math items on a test and indicate less interest in entering quantitative fields (Davies et al., 2002).

As such, I sought to examine the automaticity of a lay theory of generalized prejudice in STEM and evaluative contexts. As the vigilance-avoidance hypothesis indicates that individuals are vigilant to threats in order to ultimately avoid such threat (Mogg et al., 2004), I proposed that vigilance to threat cues would be associated with greater social distancing. I further proposed that such avoidance from a potential identity threat within STEM settings can be captured in a social distancing paradigm, such that White women will select a seat farther away from a sexist or racist STEM expert than an expert whose intergroup attitudes are unknown.

Role Models

To date, research on identity cue transfer has demonstrated that stigmatized individuals can draw ideological inferences from an evaluator's outgroup attitudes (e.g., Sanchez et al., 2017), an organization's diversity structures (e.g., Chaney et al., 2016), and environmental cues (e.g., gender-inclusive restrooms; Chaney & Sanchez, 2018). Yet, research on identity safety cues for women in STEM fields has focused a great deal on the importance of ingroup role models or experts. For example, the inoculation model proposes that increasing the presence of, and exposure to, female teachers, experts, and peers, may "inoculate" or protect women against the negative effects of gender stereotypes in such environments (Dasgupta, 2011).

Exposure to female role models or experts in male dominated STEM fields can increase women's self-efficacy, positive attitudes towards STEM, and motivation to pursue a career in that field (Stout et al., 2011; Young, Rudman, Buettner, & McLean,

2013). Moreover, the presence of more women in a testing setting or having a female test administrator can mitigate the negative performance effects on math exams that occur from gender identity threats when no women are present (e.g., Inzlicht & Ben-Zeev, 2003; Marx & Roman, 2002). Minimal exposure to ingroup experts may similarly serve as a buffer against identity threats. For example, the presence of a female test administrator buffers against the negative performance effects of identity threat (Marx & Roman, 2002), such that women in a gender identity threat context performed significantly better with a female, compared to a male, test administrator.

Ingroup experts reduce identity threat concerns, in part, due to lower expectations of being negatively stereotyped by them (Wout et al., 2009). Specifically, individuals hold meta-perceptions of the test administrator's attitudes (i.e., beliefs about the test administrator's beliefs), including the extent to which the test administrator endorses stereotypes about the individual's ingroup (i.e., meta-stereotype endorsement; Sigelman & Tuch, 1997; Vorauer, Hunter, Main, & Roy, 2000). Yet, high-status women remain underrepresented in a variety of domains including STEM fields (Allen et al., 2000; Beede et al., 2011), minimizing the proposed pool of potential female inoculators (Dasgupta, 2011) against gender identity threats.

Because the presence of an ingroup expert primarily serves to reduce identity threat due to meta-stereotype endorsement, the presence of any expert (not just an ingroup expert) who is perceived as not endorsing negative stereotypes about one's stigmatized identity may reduce or eliminate the probability of being negatively stereotyped and buffer against the negative cognitive outcomes of identity threat. As women and Black Americans are similarly negatively stereotyped in intelligence domains

(e.g., Wout et al., 2009), I proposed that the presence of a Black male expert would mitigate identity threat concerns and negative cognitive outcomes for White women. Indeed, past research on identity cue transfer would suggest that an individual who is perceived to not endorse negative attitudes towards Black Americans (e.g., a Black man), would be perceived as unlikely to endorse negative attitudes and stereotypes about women.

I therefore proposed that the presence of a similarly stereotyped outgroup expert would reduce vigilance to identity threat cues resulting in less social distancing and greater working memory. Indeed, harnessing an approach motivation to mathematics can increase identification with, and positive attitudes towards, mathematics (Kawakami, Steele, Cifa, Phillips, & Dovidio, 2007), suggesting that identity safety cues may mitigate social distancing in the context. As vigilance requires cognitive resources (see Major & O'Brien, 2005), decreased vigilance to identity threat cues may also ultimately improve individuals' working memory and performance in a testing context.

Current Research

While past research on identity cue transfer has highlighted an ideology which is seen as the underlying ideology uniting multiple intergroup attitudes (i.e., perceived SDO), this research has not yet identified an automatic, cognitive mechanism which facilitates perceptions of ingroup threat (or lack of threat) from an outgroup identity cue. As such, an aim of this dissertation was to demonstrate an overlapping cognitive network of racism and sexism by examining preconscious attentional bias to identity cues after an outgroup identity cue (Studies 1-4) in order to identify an implicit, automatic component of identity cue transfer.

Aim 1 was to examine the effect of identity cues on White women's preconscious attentional bias to threat words. Study 1 sought to examine if anticipating an evaluation by a White man with either racist or sexist attitudes would significantly increase White women's preconscious attentional bias to sexism cues compared to when anticipating an evaluation by a White man whose intergroup attitudes were not known. Study 2 sought to examine if White women demonstrate significantly greater preconscious attentional bias to *rejection* cues when imagining being enrolled in a college STEM course in which the professor (White man) has purported negative attitudes towards Black Americans or women compared to an instructor whose intergroup attitudes are unknown. Notably, identity safety cues ameliorate concerns of stigmatization in classroom settings, in part by increasing sense of belonging (Kiefer et al., 2006; Sekaquaptewa & Thomson, 2003), and sense of belonging is critical for psychological health as well as motivation to pursue a career in that domain (Leary & Baumeister, 2000; Smith, Lewis, Hawthorne, & Hodges, 2013; Good, Rattan, & Dweck, 2012). Thus, Studies 3-4 sought to examine if outgroup identity safety cues serve to *ameliorate* automatic, preconscious attentional bias to cues of sexism and rejection in a STEM context.

These studies are the first to examine an overlapping cognitive network of prejudices, specifically automatic vigilance to sexism and rejection in the face of racism, and to examine if a lay theory of generalized prejudice functions at an automatic level, shifting cognitive vigilance in the face of similarly stigmatized outgroup identity cues. In doing so, the present research seeks to better understand the automaticity of a lay theory of generalized prejudice by providing the first evidence of a cognitive overlap, or shared network, of beliefs about the co-occurrence of racism and sexism at the preconscious

level. Demonstration of the automaticity of a lay theory of generalized prejudice may provide novel insights into how lay theories operate and influence behavior, while suggesting that lay theories may be learned and reinforced overtime, resulting in such automaticity. Further, by examining White women's preconscious attentional bias to sexism and rejection cues in the face of outgroup identity cues (specifically, racism and racial egalitarian cues), the present research seeks to elucidate downstream consequences of lay theories of prejudice and identity cue transfer.

Aim 2 was to demonstrate such downstream consequences by examining automatic behavioral and cognitive outcomes of identity cue transfer. Specifically, Studies 2-4 include a pseudo-behavioral measure, in which participants selected a seat in a virtual classroom mock-up, and seating distance from the expert was employed as a measure of social distance. As past research has demonstrated that identity threats in classroom settings can lead to disengagement, and avoidance is employed in response to identity threats to minimize the chances of facing those threats (Mogg et al., 2004), I proposed that White women would select a seat farther away from a racist or sexist professor compared to a professor whose intergroup attitudes were unknown. As women continue to leave STEM fields at high rates, identifying a mechanism that facilitates such avoidance, or distancing, from STEM fields and experts remains a critical step in identifying effective interventions. Thus, the present research further sought to examine vigilance to sexism and rejection, as measured by preconscious attentional bias, as an implicit, automatic process by which identity cues are associated with behavioral avoidance.

Aim 3 was to identify a broader pool of potential inoculators who serve as identity safety cues for White women in a STEM context. Specifically, I sought to demonstrate that for White women, the presence of an expert who does not hold a shared stigmatized identity (i.e., is not a woman), but is similarly stereotyped in the domain (i.e., Black Americans are also stereotyped as unintelligent), acts as a buffer against identity threat. Specifically, I proposed that White women would perceive an outgroup expert who is similarly negatively stereotyped as less likely to endorse negative stereotypes about women (Studies 3-5), ameliorating identity threat, and minimizing preconscious attentional bias to sexism (Study 3) and rejection (Study 4). In Studies 3-4, I examined whether a Black male or White woman expert served as an identity safety cue for White women in gender-threatening testing and classroom contexts, resulting in decreased preconscious attentional bias to sexism and rejections cues and less social distancing compared to a White male expert context. As vigilance requires cognitive resources, I further sought to examine if in contexts in which vigilance to identity threat cues is decreased (e.g., exposure to an expert Black man), White women would demonstrate greater working memory, indicating a positive cognitive outcome of a similarly stereotyped outgroup expert for White women in a testing setting (Study 5).

While past research has examined identity cue transfer from attitude cues (e.g., sexist statements; Sanchez et al., 2017) and organizational policies and awards (e.g., racial diversity awards; Chaney et al., 2016), the present research was the first to examine if identity cues transfer from assumed ideologies based on an individual's social identities (e.g., meta-stereotypes about Black men). As women remain underrepresented in STEM fields (Allen et al., 2000), and past research has demonstrated that vigilance to sexism

can facilitate disengagement from STEM fields (Davies et al., 2002) and impair cognitive resources (Schmader & Johns, 2003), the present research sought to identify a novel identity safety cue to mitigate vigilance, avoidance, and cognitive depletion among White women in STEM settings.

As such, the present research sought to 1) demonstrate that preconscious attentional bias to sexism and rejection cues is an automatic, implicit outcome of identity cues transfer for White women, 2) demonstrate social distancing and working memory as novel behavioral and cognitive outcomes of identity cue transfer for White women in STEM, and 3) examine the role of experts' social identities as identity safety and threat cues for White women in STEM. See Figure 1 for proposed model.

STUDY 1

Study 1 sought to determine if White women who anticipate interacting with a racist evaluator would demonstrate increased preconscious attentional bias to sexism cues, demonstrating a cognitive outcome of identity threat cue transfer. Moreover, Study 1 sought to replicate past work in which White women demonstrated increased preconscious attentional bias to sexism cues when anticipating sexism (Kaiser et al., 2006) with a new attentional bias task. As past research on identity cue transfer at times finds individuals are more sensitive to ingroup cues than outgroup cues, and at other times finds no significant difference between ingroup and outgroup cues (Chaney et al., 2016; Sanchez et al., 2017), I did not have specific hypotheses about the extent to which White women would differ in preconscious attentional bias when anticipating sexism or racism. Lastly, past research on identity cue transfer has identified perceived SDO of the evaluator as a mechanism which promotes self-reported outcomes of identity cue

transfers (Chaney et al., 2016; Sanchez et al., 2017). As such, Study 1 examined perceived SDO of the evaluator, as well as perceived sexism of the evaluator as self-report outcomes of identity threat transfer.

Method

Participants

An a priori power analysis in G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) for a one-way ANOVA with 3 cells and 80% power indicated a data collection stop point of 159 for a medium effect size. Anticipating exclusions, 188 participants who identified as White women during a large prescreen completed the in-lab study in exchange for partial course credit. However, eight participants were excluded for not identifying as White during the study, seven were excluded for failing an instructional attention check item, and 20 were excluded for low accuracy on the preconscious attention task (below 50% accuracy), leaving a final analytic sample of 153 participants ($M_{\text{age}} = 18.76$, $SE = 1.35$, range = 18-29). A sensitivity power analysis indicated that the analytic sample was sufficient to capture a medium effect ($d = 0.50$).

Procedure

After providing consent, participants learned that they would be randomly assigned a partner who was another participant in a room down the hall. After exchanging responses on psychological profile items to get to know each other, participants were told that one of them would be randomly assigned the role of the evaluator, and the other the presenter, and that the presenter would have to complete an upcoming speech task in front of the evaluator. The psychological profile manipulations and evaluator paradigm were based on past research (Sanchez et al., 2017). The

psychological profiles included basic demographics (i.e., age, gender, race) as well as filler items, specifically personality inventories (i.e., Big Five inventory). These were the only items participants who were randomly assigned to the neutral condition completed. However, participants randomly assigned to the racism condition also completed the Modern Racism Scale and the Old-Fashioned Racism Scale (McConahay, 1986). Participants randomly assigned to the sexism condition also completed the Old Fashioned and Modern Sexism Scale (Swim, Aikin, Hall, & Hunter, 1995).

After completing these items, participants received a profile packet that was completed by their partner. The demographic information always presented their partner as a 20-year-old White man and filler items were filled out with moderate responses. In the racism condition, the racism scale indicated that the partner held moderately racist attitudes towards Black Americans, and in the sexism condition, the sexist scale indicated that the partner held moderately sexist attitudes. Next, participants learned that they were randomly assigned to the role of the presenter and would engage in a mock interview with their partner, the evaluator. Participants were informed that while the evaluator received instructions and the next room was set up, they would complete a few unrelated measures. While waiting, participants were instructed to complete a measure of preconscious attentional bias to sexism, described as an unrelated task, followed by measures of perceived SDO and sexism of the evaluator (in this order; Sanchez et al., 2017) before learning there would be no speech task and being debriefed. See Appendix A for Study 1 materials.

Materials

Preconscious attentional bias task. Participants completed a modified dot-probe task that was loosely based on the emotional Stroop task of preconscious attention in Kaiser et al., 2006. Specifically, participants were informed that, “During this task you will be required to identify the side of the screen an arrow appears on while ignoring distractors. Your task is to focus on a central fixation cross (“+”), after which distractor words and non-words will appear on both the right and left side of the screen. After the distractors, an arrow will appear behind either the right or left distractor.” Participants then learned the keys they should press if the arrow appeared on the left or right side of the screen and were informed that they should respond as quickly as possible. Participants completed six practice trials during which they received accuracy feedback followed by 180 test trials with no feedback.

Each trial began with a fixation cross (1,000 ms) which was followed by the presentation of two words, one to the left of the screen and the other to the right of the screen (40 ms). These words were replaced by masks (10 ms) which were either novel words or random letter strings. These masks were then removed, and an arrow appeared on either the left or the right side of the screen for 150 ms, and participants’ task was simply to indicate, with a corresponding key, which side of the screen the arrow had appeared on. Participants had 1,500 ms to respond (see Figure 2 for sample trial). Critically, half of the trials (90) were neutral trials, i.e., both of the words were non-sexist, threatening cues (e.g., virus), while the other half of the trials (90) were critical trials, as one of the words was a sexist cue (e.g., sexism), and the other a non-sexist, threatening cue. On the critical sexism trials, the arrow always appeared on the opposite side of the screen as the sexist cue (antisaccade sexism threat trial), while on neutral trials

the side of the screen the arrow appeared on was random. The masks included randomly generated 5-6 letter strings and neutral words (e.g., circle).

The sexism and non-sexism, health threat words were adapted from Kaiser et al., (2006) and pre-tested in a separate sample of 30 White women on MTurk ($M_{\text{age}} = 38.53$, $SD = 12.39$; range: 20-67). Pre-test participants indicated on a scale from 1 (*Not at all*) to 7 (*Very*) how threatening they found several words, including six sexism words (e.g., sexism), six health threat words (e.g., disease), and six rejection words (e.g., exclude; employed in Studies 2 and 4 only; adapted from Dandeneau & Baldwin, 2004; Baldwin & Sinclair, 1996). Repeated-measures ANOVAs were conducted comparing ratings of the six sexism words, and these sexism words did not significantly differ from each other, $F(5, 145) = 1.06$, $p = .39$, $d = 0.38$. Similarly, the health threat words did not significantly differ from each other, $F(5, 145) = 1.81$, $p = .11$, $d = 0.51$, nor did the rejection words (for Studies 2, 4), $F(5, 145) = 0.60$, $p = .70$, $d = 0.29$. Mean threat levels were computed separately for the sexism, health, and rejection words, and a repeated-measures ANOVA indicated that these 3 word sets did not significantly differ in how threatening they were, $F(2, 58) = 0.78$, $p = .46$, $d = 0.33$. Means for words and composite measures are reported in Table 1 and reveal that these words were rated as moderately threatening ($M_{\text{sexism}} = 4.48$, $SD = 1.56$; $M_{\text{health}} = 4.42$, $SD = 1.43$, $M_{\text{rejection}} = 4.17$, $SD = 1.67$). See Appendix B for all words and masks in this task.

Following other dot-probe data cleaning practices, reaction times for incorrect response trials were removed from analyses (e.g., Richeson & Trawalter, 2008). Mean reaction times were computed for all correct antisaccade sexism threat trials and all correct neutral trials. An attentional bias score was calculated by subtracting the average

latency on antisaccade sexism trials from the average latency on neutral trials, such that greater scores indicated greater attentional bias to sexist cues.

Perceived SDO. Participants completed the 8-item SDO scale (Ho et al., 2015) as they believed the evaluator would complete it (Sanchez et al., 2017) on a scale from 1 (*Strongly oppose*) to 7 (*Strongly favor*). The scale was reliable ($\alpha = 0.91$).

Perceived sexism. Participants completed a 5-item measure of perceived sexism of the evaluator (Sanchez et al., 2017) on a scale from 1 (*Very slightly or not at all*) to 5 (*Extremely or a lot*), which included items such as, “How likely is this person to discriminate based on gender?”. This scale was reliable ($\alpha = 0.95$).

Results

Correlations of all measures and means by conditions are presented in Table 2. Notably, preconscious attentional bias to sexism words was associated with subsequently assessed beliefs that the evaluator had higher levels of SDO and sexism.

A one-way ANOVA (3-cell, Evaluator: Neutral, Racist, Sexist) for preconscious attentional bias to sexism revealed a significant effect of condition, $F(2, 148) = 6.45, p = .002, d = 0.59$.¹ Consistent with hypotheses, LSD post-hoc analyses revealed that participants demonstrated significantly greater preconscious attentional bias to sexism cues in the racist evaluator condition ($M = 8.22, SE = 3.40$) than the neutral evaluator condition ($M = -6.20, SE = 3.27$), $p = .003, d = 0.64$, 95% CI [5.11, 23.73]. Additionally, participants in the sexist evaluator condition demonstrated greater preconscious attentional bias to sexism cues ($M = 8.50, SE = 3.40$) than participants in the neutral evaluator condition, $p = .002, d = 0.63$, 95% CI [5.39, 24.01], and there was no

¹ Data on the preconscious attentional bias task for two participants was lost due to experimenter error.

significant difference between the sexist and racist evaluator conditions, $p = .95$, $d = 0.01$, 95% CI [-9.21, 9.77].

A one-way ANOVA for perceived SDO revealed a significant effect of condition, $F(2, 150) = 85.66$, $p < .001$, $d = 2.12$. LSD post-hoc analyses revealed that participants perceived the racist evaluator ($M = 5.71$, $SE = 0.14$) as significantly higher in SDO than the sexist evaluator ($M = 5.17$, $SE = 0.14$), $p = .009$, $d = 0.52$, 95% CI [0.13, 0.93], and the neutral evaluator ($M = 3.25$, $SE = 0.14$), $p < .001$, $d = 2.58$, 95% CI [2.06, 2.85]. The sexist evaluator was rated as significantly higher in SDO than the neutral evaluator, $p < .001$, $d = 1.87$, 95% CI [1.53, 2.31].

A one-way ANOVA for perceived sexism revealed a significant effect of condition, $F(2, 150) = 89.23$, $p < .001$, $d = 2.17$. LSD post-hoc analyses revealed that participants perceived the racist evaluator ($M = 3.40$, $SE = 0.13$) as significantly more sexist than the neutral evaluator ($M = 1.84$, $SE = 0.12$), $p < .001$, $d = 1.88$, 95% CI [1.21, 1.91], but significantly less sexist than the sexist evaluator ($M = 4.14$, $SE = 0.13$), $p < .001$, $d = 0.78$, 95% CI [0.38, 1.10]. Lastly, the sexist evaluator was rated as more sexist than the neutral evaluator, $p < .001$, $d = 2.51$, 95% CI [1.95, 2.65].²

Discussion

Study 1 is the first study to demonstrate that White women engaged in significantly greater preconscious attentional bias to sexism threat cues when anticipating an evaluation by a racist or sexist White man compared to a White man whose intergroup attitudes were unknown, and preconscious attentional bias to sexism was significantly, positively associated with perceived SDO and perceived sexism. Replicating past

² See Appendix C for Study 1 exploratory mediation models.

research, White women perceived both a racist or sexist White male evaluator as significantly higher in SDO and sexism compared to a neutral White male evaluator. These findings suggest that a lay theory of generalized prejudice may operate at an automatic level and that members of stigmatized groups may be vigilant to not only cues of ingroup bias, but also outgroup bias.

STUDY 2

Studies 2a and 2b sought to determine if White women who imagined enrolling in a STEM course with a White male professor whose Rate My Professor page indicated he had purported negative attitudes towards Black students or female students would engage in social distancing by selecting a classroom seat farther away from the professor compared to participants exposed to a professor whose intergroup attitudes were unknown.

Study 2a

Study 2a served as an initial test of the Rate My Professor review pages to ensure professor attitudes were successfully being manipulated and a first test of the virtual seating task as a measure of social distancing. Additionally, a measure of professor quality was included to ensure that manipulations of professor ideology were independent of perceived professor quality and to demonstrate that social distancing effects were a product of identity threat, not disengagement due to low perceived professor quality.

Method

Participants

An a priori power analysis indicated that a sample of 159 participants was required to detect a medium effect size for a 3-cell, between-subjects design with 80%

power and one covariate. As the present study did not include a measure of preconscious attentional bias, I anticipated low rates of exclusion and collected a sample of 160 White women on MTurk who participated in exchange for compensation. However, fifteen participants were excluded for failing multiple instructional attention checks leaving a sample of 145 ($M_{\text{age}} = 40.31$, $SD = 12.41$; range: 20-71). A sensitivity power analysis indicated that the final sample was sufficient to capture a medium effect ($d = 0.52$).

Procedure

Upon providing consent, participants were asked to imagine they were enrolling in a Chemistry course and were given Dr. Scott Walter's Rate My Professor site. All participants saw one neutral review of the professor and were randomly assigned to see one negative review. Based on random assignment, the negative review indicated that the professor had made racist jokes about Black students, sexist jokes about female students, or was a bad teacher but whose intergroup attitudes were unknown. See Appendix D for the professor site manipulation. After reviewing the site, participants completed a virtual seat task, followed by items about their perception of the professor's attitudes towards women and Black Americans, and items of professor quality (in that order) before being debriefed.

Materials

Virtual seat task. Participants completed a modified version of past seat selection paradigms (e.g., Goff et al., 2008). An image of a conference table and seats with the name of the professor at the head of the table was presented with seven seats spaced evenly apart down one side of the table and labeled 1 - 7 with 1 being the seat closest to the professor and 7 the seat farthest away from the professor. Past research has employed

a line of several chairs as in the present task (Amodio & Devine, 2006; Macrae, Bodenhausen, Milne, & Jetten, 1994). Participants were instructed to imagine that this was the classroom for the Chemistry course they were earlier instructed to imagine enrolling in and were asked to select their seat from the seven available options (see Appendix E for image of the virtual seat choice task).

Perceived sexism and racism. Next, participants indicated how likely it was the professor would treat women and Black students fairly on two items each (“How likely is it that the professor treats...” “female[Black] students fairly,” “male and female [Black and White] students equally,” $r_s(83) > .88, p_s < .001$). Items were completed on a scale from 1 (*Very Unlikely*) to 7 (*Very Likely*).

Professor quality. Lastly participants rated the professor’s quality on two items (“How likely is it that the professor is...” “a good professor,” “an engaging professor”; $r(83) = .67, p < .001$). Items were completed on a scale from 1 (*Very Unlikely*) to 7 (*Very Likely*).

Results

Correlations of all measures and means by conditions are presented in Table 3 and reveal that greater seat distance was associated with more negative anticipated treatment of women students and Black students and professor quality. A one-way ANOVA examining the effect of condition on professor quality did not reveal a significant effect of condition, $F(2,142) = 0.32, p = .73, d = 0.13$. Across conditions, participants expected the professor to be poor ($M_{\text{sexist}} = 2.79, SE = 0.20$; $M_{\text{racist}} = 2.76, SE = 0.19$; $M_{\text{neutral}} = 2.96, SE = 0.20$). Professor quality was included as a covariate in the following analyses,

though results do not significantly change when the covariate is removed (see Appendix F for analyses not controlling for professor quality).

A one-way ANCOVA for the virtual seating task revealed a significant main effect of condition, $F(2, 141) = 6.00, p = .003, d = 0.58$. Consistent with hypotheses, LSD post-hoc tests revealed that participants indicated they would sit significantly closer to the neutral professor ($M = 5.06, SE = 0.21$) compared to the racist professor ($M = 6.00, SE = 0.21$), $p = .002, d = 0.65$, 95% CI [0.35, 1.49], and the sexist professor ($M = 5.87, SE = 0.22$), $p = .007, d = 0.51$, 95% CI [0.23, 1.41]. There was no significant difference between the sexist and racist professor conditions, $p = .73, d = 0.09$, 95% CI [-0.69, 0.49].

To ensure that manipulations successfully manipulated perceptions of intergroup attitudes and that manipulations of the strength of negative attitudes towards Black students and women students did not significantly differ a 3(condition) x 2(treatment perception: women, Black students) mixed ANCOVA with treatment as a within-subject factor was conducted. The mixed ANCOVA revealed a main effect of condition, $F(2, 141) = 68.14, p < .001, d = 1.96$, no effect of treatment, $F(1, 141) = 1.09, p = .30, d = 0.18$, and a significant condition x treatment interaction, $F(2, 141) = 79.51, p < .001, d = 2.12$. Simple effect analyses by treatment revealed a significant main effect of condition on treatment of female students, $F(2, 141) = 65.10, p < .001, d = 1.92$. LSD post-hoc tests revealed that participants anticipated the sexist professor would treat female students significantly worse ($M = 2.14, SE = 0.19$) than the neutral professor ($M = 5.03, SE = 0.18$), $p < .001, d = 1.97$, 95% CI [2.38, 3.40] and the racist professor ($M = 3.26, SE = 0.18$), $p < .001, d = 0.78$, 95% CI [0.62, 1.63]. Consistent with hypotheses, White women

anticipated the racist professor would treat female students significantly worse than the neutral professor, $p < .001$, $d = 1.29$, 95% CI [1.27, 2.26].

Moreover, simple effects of condition on treatment of Black students revealed a significant effect of condition, $F(2, 141) = 75.68$, $p < .001$, $d = 2.07$. LSD post-hoc tests revealed participants anticipated that the racist professor would treat Black students worse ($M = 1.85$, $SE = 0.18$) than the neutral professor ($M = 4.97$, $SE = 0.18$), $p < .001$, $d = 2.37$, 95% CI [2.61, 3.62], and the sexist professor ($M = 3.69$, $SE = 0.19$), $p < .001$, $d = 1.41$, 95% CI [1.32, 2.35]. Moreover, participants expected the sexist professor to treat Black students worse than the neutral professor, $p < .001$, $d = 0.85$, 95% CI [0.77, 1.80].³

Discussion

Study 2a demonstrated that the reviews successfully manipulated gender and racial ideology, and White women anticipated both a racist and sexist professor would treat female students more poorly than a professor whose intergroup attitudes were unknown. While this did not affect the perceived quality of the professor, this did significantly influence how close White women would want to sit to the professor in a small classroom, such that White women indicated they would sit farther away from the racist and sexist professor compared to the neutral professor. The present study is thus the first to demonstrate social distancing as a behavioral outcome of identity threat transfer and may have implications for better understanding the processes that lead to women's disengagement from STEM fields.

Study 2b

³ See Appendix F for exploratory mediation analysis.

Study 2b sought to replicate the effect of professor reviews on social distancing and examined the effect of a STEM professor's racism or sexism on White women's preconscious attentional bias to *rejection* cues. Past research has found that individuals with low self-esteem demonstrated greater interference on a Rejection Stroop task (a modified Emotional Stroop task) compared to participants with high self-esteem, providing evidence of differential attentional bias to cues of rejection (Dandeneau & Baldwin, 2004). Heightened attentional bias to rejection occurs in environments that are believed to be threatening or unwelcoming and can negatively impact an individual's self-confidence (Dandeneau & Baldwin, 2004; Williams et al., 1996). As expressions of prejudice signal to members of stigmatized groups who is and who is not welcome in a space, Study 2b sought to examine if White women would demonstrate significantly greater preconscious attentional bias to rejection cues when anticipating enrolling in a course with either a racist or sexist White male STEM professor compared to a professor whose intergroup attitudes were unknown.

Social distancing as it relates to prejudice is more strongly associated with implicit biases than explicit biases (e.g., Dotsch & Wigboldus, 2008), suggesting that social distancing as threat avoidance may be associated with automatic processes such as vigilance. Indeed, the vigilance-avoidance hypothesis argues that increased vigilance to threat cues among anxious individuals is a precursor to avoidance (Mogg et al., 2004). I therefore proposed that increased preconscious attentional bias to rejection cues would be associated with greater social distancing. Moreover, as past research has demonstrated that people sit farther away from someone they do not like (Mehrabian, 1968), I sought to

ensure the present effects were driven by identity threat, not merely liking, by including a measure of liking of the professor which was included as a covariate in analyses.

Method

Participants

An a priori power analysis for a 3-cell between-subjects design with one covariate indicated a required sample size of 175 participants based on the effect size from Study 1's preconscious attentional bias measure ($d = 0.59$) and 95% power. Based on exclusion rates for poor performance on the preconscious attentional bias measure in Study 1, a data collection stop point was set at 200. In all, 201 participants who identified as White women during a large prescreen survey completed the in-lab study. However, eight did not identify as White during the session, one did not identify as a woman during the session, and eight did not perceive the professor to be a White man (five in the control condition, two in the sexism condition; five indicated professor was a Black man, two indicated professor was a Latino man, one indicated professor was a White woman). Moreover, four participants were less than 50% accurate on the preconscious attentional bias task and were excluded, leaving a final sample size of 180 participants ($M_{\text{age}} = 18.37$, $SD = 0.81$; range: 18-23 years).

Procedure

As in Study 2a, participants were asked to imagine they were enrolling in a Chemistry class with Professor Scott Walters and read reviews from the professor's Rate My Professor site. All participants saw the same neutral review, and participants were randomly assigned to see an additional neutral review (neutral condition), a review indicating the professor made jokes about women's intelligence (sexist condition), or a

review that indicated the professor made jokes about Black students' intelligence (racist condition) from Study 2a. After reading the reviews and indicating the professor's race and gender, participants completed a task of preconscious attentional bias to rejection, the virtual seating task from Study 2a, a novel measure of comfort in the class, and a measure of liking. Lastly, participants were probed for suspicion and completed the Study 1 measure of perceived SDO ($\alpha = 0.89$) before being debriefed.

Materials

Preconscious attentional bias to rejection. The task was identical to the Study 1 measure of preconscious attentional bias to sexism task except the sexism cues were replaced with rejection cues. Rejection words were adapted from past research (Baldwin & Sinclair, 1996; Dandeneau & Baldwin, 2004), and included words such as “unwanted” from the pretest conducted for Study 1 (see Appendix B). An attentional bias score was calculated by subtracting the average latency on antisaccade rejection threat trials from the average latency on neutral trials, such that greater scores indicate greater attentional bias to rejection cues.

Anticipated classroom comfort. Participants were asked to imagine being enrolled in a class with this professor, and indicated how comfortable they would be... “raising your hand in class,” “speaking in class,” and “attending the professor's office hours” on a scale from 1 (*Not at all*) to 7 (*Very*), $\alpha = 0.83$. See Appendix G for items.

Liking. Participants responded to three items regarding how much they would like the professor on a scale from 1 (*Not at all*) to 7 (*Very much*). Items included, “Would you enjoy chatting with Professor Scott Walters?,” “Would you enjoy an interaction with Professor Scott Walters?,” and “Would you find a conversation with Professor Scott

Walters enjoyable?” ($\alpha = 0.60$). Liking was included to ensure that effects were not simply due to a liking bonus for a non-prejudiced professor or due to a liking penalty for a prejudiced professor. See Appendix G for items.

Results

Correlations of all measures are presented in Table 4 and descriptive statistics by condition are presented in Table 5. Correlations indicated that greater preconscious attentional bias to rejection was associated with sitting farther away from the professor and greater perceived racism, sexism, and SDO of the professor. Moreover, selecting a seat farther away from the professor was associated with less comfort in the class and liking of the professor, and greater perceived sexism, racism, and SDO of the professor.

A one-way ANOVA on liking of the professor did not reveal a significant effect of condition, $F(2, 177) = 1.91, p = .15, d = 0.29$, and liking was low across conditions ($M_{\text{racist}} = 2.14, SE = 0.10$; $M_{\text{sexist}} = 2.14, SE = 0.10$; $M_{\text{neutral}} = 2.39, SE = 0.11$). Yet, liking was controlled for in all following analyses following the proposed analytic plan. As such, all analyses were conducted with one-way ANCOVAs (3-cell, Professor: Neutral, Racist, Sexist) controlling for liking.⁴

The ANCOVA on preconscious attentional bias to rejection revealed a significant main effect of condition, $F(2, 176) = 4.12, p = .018, d = 0.43$. Consistent with hypotheses, LSD post-hoc analyses revealed that participants demonstrated significantly greater attentional bias to rejection cues in the racist professor condition ($M = 4.62, SE = 3.10$) than the neutral professor condition ($M = -6.69, SE = 3.19$), $p = .01, d = 0.44$, 95% CI [2.50, 20.12]. Additionally, participants in the sexist professor condition demonstrated

⁴ Reported results do not significantly change when liking is removed from analyses and are reported in Appendix H.

significantly greater attentional bias to rejection cues ($M = 4.25$, $SE = 3.02$) than participants in the neutral professor condition, $p = .01$, $d = 0.53$, 95% CI [2.24, 19.65].

There was no significant difference between participants in the racist and sexist professor conditions, $p = .93$, $d = 0.02$, 95% CI [-8.88, 8.16].

The ANCOVA for virtual seating revealed a significant main effect of condition, $F(2, 176) = 7.25$, $p = .001$, $d = 0.57$. As in Study 2a, LSD post-hoc analyses revealed that participants indicated they would sit significantly farther away from the racist professor ($M = 4.50$, $SE = 0.17$) than the neutral professor ($M = 3.89$, $SE = 0.18$), $p = .02$, $d = 0.44$, 95% CI [0.12, 1.08]. Additionally, participants indicated they would sit significantly farther away from the sexist professor ($M = 4.81$, $SE = 0.16$) than the neutral professor, $p < .001$, $d = 0.63$, 95% CI [0.43, 1.39]. There was no significant difference between participants in the racist and sexist professor conditions, $p = .19$, $d = 0.23$, 95% CI [-0.16, 0.78].

The ANCOVA on classroom comfort revealed a significant main effect of condition, $F(2, 176) = 7.97$, $p < .001$, $d = 0.60$. LSD post-hoc analyses revealed that participants indicated lower comfort in a class with a racist professor ($M = 3.02$, $SE = 0.15$) than a neutral professor ($M = 3.55$, $SE = 0.15$), $p = .013$, $d = 0.45$, 95% CI [0.11, 0.94]. Participants also indicated lower comfort in a class with a sexist professor ($M = 2.72$, $SE = 0.14$) than a neutral professor, $p < .001$, $d = 0.66$, 95% CI [0.41, 1.23]. There was no significant difference in classroom comfort between the racist and sexist professor conditions, $p = .14$, $d = 0.26$, 95% CI [-0.70, 0.10].

The ANCOVA for perceived SDO revealed a significant main effect of condition, $F(2, 176) = 99.05$, $p < .001$, $d = 2.12$. LSD post-hoc analyses revealed that participants

perceived the neutral professor as significantly lower in SDO ($M = 3.72$, $SE = 0.11$) than the racist professor ($M = 5.65$, $SE = 0.11$), $p < .001$, $d = 2.14$, 95% CI [1.62, 2.23], and the sexist professor ($M = 5.57$, $SE = 0.10$), $p < .001$, $d = 2.08$, 95% CI [1.54, 2.15]. There was no significant difference between the racist and sexist professor conditions, $p = .59$, $d = 0.12$, 95% CI [-0.21, 0.38].

In order to test the vigilance-avoidance hypothesis as it relates to identity threat transfer for White women in a STEM context, a mediation analysis controlling for liking was conducted. Analysis revealed that condition (-1 = neutral professor; 1 = racist professor) significantly predicted preconscious attentional bias to rejection, $B = 5.49$, $SE = 2.42$, $p = .025$, 95% CI [0.69, 10.29], which in turn significantly predicted seat choice, $B = 0.01$, $SE = 0.01$, $p = .006$, 95% CI [0.004, 0.02], and the indirect effect of condition on seat choice was significant, $B = 0.07$, $SE = 0.04$, 95% CI [0.01, 0.18] (see Figure 3).⁵

Discussion

In Study 2b, White women demonstrated significantly greater preconscious attentional bias to rejection words when imagining enrolling in a Chemistry class with a White male professor who had previously made racist or sexist jokes in a classroom compared to a professor whose intergroup attitudes were unknown but was negatively reviewed. Moreover, White women indicated they would sit farther away from the racist or sexist professor and anticipated being less comfortable in a class with the racist or sexist professor compared to the professor whose intergroup attitudes were unknown. These findings were independent of liking of the professor, suggesting the social distancing from a racist or sexist professor demonstrated in the virtual seat measure is not

⁵ See Appendix H for alternative exploratory mediation analyses.

simply an indicator of liking. Rather, the social distancing demonstrated in Study 2b appeared to be a product of threat avoidance, as demonstrated in the mediation model; White women's vigilance to rejection was heightened when anticipating an interaction with a racist compared to a neutral STEM professor, which was in turn associated with greater social distancing. The present study is thus the first to support a vigilance-avoidance process in response to identity threat transfer and highlights one mechanism by which outgroup prejudice may hinder the retention of White women in STEM classrooms.

STUDY 3

In past research, attentional bias to social threats, like cues of rejection, was positively correlated with increased cortisol (a stress hormone) release, while decreased attentional bias was associated with decreased cortisol and self-reported stress related to an exam (Dandeneau, Baldwin, Baccus, Sakellaropoulo, & Pruessner, 2007). Attentional bias to rejection cues in the face of identity threats, such as White women's vigilance to rejection in a STEM context, may therefore have negative implications for their well-being and working memory. Yet, past research has demonstrated that attentional bias to rejection cues is malleable, such that a training paradigm (broadly termed Cognitive Bias Modification; see Hertel & Mathews, 2011) significantly ameliorated attentional bias to rejection cues, which in turn resulted in less self-reported stress, increased confidence, and greater work performance (Dandeneau et al., 2007). As such, I next sought to examine if White women's attentional bias to sexism and rejection cues may be ameliorated through identity safety cues, and if such identity safety cues may decrease social distancing and buffer against decreases in working memory.

Studies 3a-3b examined a test creator who was presented as an expert in measurements of intelligence and was either a Black man (similarly stigmatized outgroup expert), White woman (ingroup expert), or White man (non-stigmatized outgroup expert). Studies 3a-3b sought to demonstrate that White women in an identity threatening context would perceive both an expert White woman *and* an expert Black man as less likely to endorse negative stereotypes about women's intelligence and less likely to create a test that produces gender bias compared to a White male expert. Moreover, Study 3b sought to examine White women's preconscious attentional bias to sexism threat cues when in a testing context after exposure to either a White woman, Black male, or White male expert. I proposed that exposure to either an expert White woman or Black man would decrease White women's preconscious attentional bias to sexism cues compared to a White male expert.

Study 3a

Study 3a examined the effect of experts' social identities on White women's identity safety in an intelligence testing context. The supposed test was presented as a measure of intelligence broadly as women are stereotyped as less brilliant than men (e.g., Leslie et al., 2015). I anticipated that a Black male expert would serve as an identity threat buffer compared to a White male expert due to the shared stereotype content of low intelligence between Black men and women, and therefore examined meta-stereotype endorsement as it relates to intelligence stereotypes as an explicit, self-report outcome (e.g., the extent to which participants perceived an expert as endorsing negative stereotypes about women's intelligence).

Method

Participants

An a priori power analysis for a one-way ANCOVA with 3 conditions and one covariate, for a medium effect size with 80% power indicated a data collection stop point of 159. In anticipation of a relatively high rate of exclusions, a data collection stop point was set at 200. Two hundred and one White women were recruited to take place in a study on cognition via Amazon Mechanical Turk in exchange for compensation and were identified by a demographic prescreen completed directly before the present study. Twenty-four participants were excluded from analyses for failing instructional attention check items (e.g., “select 7 for this item”), while an additional 37 participants were excluded for incorrectly responding to manipulation check questions regarding the test creator’s race and/or gender which were asked at the end of the study, leaving a final analytic sample of 140 ($M_{\text{age}} = 37.19$, $SD = 11.58$, range: 20-66). A sensitivity power analysis indicated the final sample size was sufficient to capture a medium effect size ($d = 0.50$).

Procedure

After providing consent, participants were presented with information “about the creator of a new test measuring spatial ability and intelligence which is predictive of career success.” Following Wout et al. (2009), all participants were then threatened via an identity threat cue, which included informing them that, “There has been some controversy about whether there are gender differences in math and spatial ability. Previous research has demonstrated that gender differences exist on some tests, but not on others.” Participants were told they would review the information about the test creator, and then complete the test. Participants were randomly assigned to learn about

either a White male, a White female, or a Black male test creator. This information included an image of the test creator, their university, and research area. Images were pretested with a separate sample ($N = 21$) of undergraduate students (77.3% female; $M_{\text{age}} = 21.14$, $SD = 1.91$). The images selected did not significantly differ on attractiveness, $F(2, 20) = 0.84$, $p = .44$, $d = 0.41$, perceived intelligence, $F(2, 20) = 0.43$, $p = .66$, $d = 0.29$, or perceived friendliness, $F(2, 20) = 1.14$, $p = .34$, $d = 0.46$. See Appendix I for expert information.

Next, participants completed items regarding the extent to which they believed the test creator endorsed gender stereotypes (meta-stereotype endorsement), the likelihood the test creator would create a test on which women performed worse than men, perceived SDO of the test creator ($\alpha = .76$), and how much they would like the test creator on the liking measure from Study 2b ($\alpha = .98$). Participants were then asked to recall the test creator's race and gender before learning that there would be no task and being debriefed.

Materials

Meta-stereotype endorsement. Participants answered three questions regarding the test creator's endorsement of stereotypes regarding women's intelligence. On a scale from 1(*Not at all likely*) to 7(*Extremely likely*) participants responded to, "To what extent do you believe [test creator] believes women are intelligent?," "How likely is it that [test creator] believes women are smart?," and "How likely is it that [test creator] endorses the stereotype that women are not competent?" The first two items were reverse coded so that greater scores on the composite measure would indicate greater negative stereotype endorsement ($\alpha = .70$). See Appendix I for items.

Anticipated test bias. Participants answered two questions regarding how likely it was that the test creator created a test that produced gender differences. Items included, “How likely is it that [test creator] made a test that produces gender differences, in which women perform worse than men?” and “How likely is it that [test creator] made a test that men perform better on than women?”. Items were responded to on a scale from 1 (*Not at all*) to 10 (*Very Likely*), and were highly correlated, $r(140) = 0.88, p < .001$. See Appendix I for items.

Results

Correlations of all measures and descriptive statistics by conditions are presented in Table 6. Correlations indicated greater meta-stereotype endorsement was associated with greater anticipated test bias and perceived SDO, though these three measures were not significantly correlated with liking.

A one-way ANOVA was conducted for liking, but revealed no effect of condition, $F(2, 135) = 1.66, p = .19, d = 0.29$.⁶ Participants did not report differentially liking the White male test creator ($M = 4.36, SE = 0.24$), the White female test creator ($M = 4.83, SE = 0.19$), or the Black male test creator ($M = 4.38, SE = 0.22$). Liking is controlled for in the below analyses but not controlling for liking does not significantly change reported results.⁷

A one-way ANCOVA on meta-stereotype endorsement was significant, $F(2, 134) = 13.62, p < .001, d = 0.90$. Consistent with hypotheses, LSD post-hoc analyses indicated participants perceived the White male expert as significantly higher in meta-stereotype endorsement ($M = 2.51, SE = 0.13$) than the Black male expert ($M = 2.07, SE = 0.12$), $p =$

⁶ Two participants did not respond to the liking items.

⁷ Reported in Appendix J.

.017, 95% CI [0.08, 0.79], and the White woman expert ($M = 1.62$, $SE = 0.11$), $p < .001$, 95% CI [0.55, 1.22]. Participants perceived the White woman expert as lower in meta-stereotype endorsement than the Black male expert, $p = .006$, 95% CI [0.13, 0.77].

A one-way ANCOVA for anticipated test bias was significant, $F(2, 134) = 4.50$, $p = .013$, $d = 0.52$. LSD post-hoc analyses revealed participants perceived the White male expert as significantly higher in anticipated test bias ($M = 4.24$, $SE = 0.30$) than the Black male expert ($M = 3.21$, $SE = 0.27$), $p = .012$, 95% CI [0.23, 1.83], and the White woman expert ($M = 3.17$, $SE = 0.24$), $p = .006$, 95% CI [0.31, 1.84]. Anticipated test bias did not significantly differ between the Black male and White woman expert conditions, $p = .90$, 95% CI [-0.77, 0.68].

A one-way ANCOVA on perceived SDO was not significant, $F(2, 134) = 0.70$, $p = .50$, $d = 0.20$. Perceived SDO did not significantly differ between the White male ($M = 2.82$, $SE = 0.22$), Black male ($M = 2.47$, $SE = 0.20$), and White woman ($M = 2.58$, $SE = 0.17$) expert conditions.⁸

Discussion

Consistent with hypotheses, White women perceived a Black male or White female expert as significantly less like to endorse negative stereotypes about women's intelligence or to develop a gender biased test than an expert White man. Unexpectedly, perceived SDO did not significantly vary by condition. This may be because the present manipulation of social identities, not intergroup attitudes, did not immediately make salient broader intergroup ideologies. Instead, the manipulation of social identities, especially within a testing context, may have evoked more context-dependent beliefs,

⁸ See Appendix J for exploratory mediation analysis.

such as meta-stereotype endorsement. Study 3a is the first demonstration of identity cue transfer from a social identity cue, specifically from an inference about the stereotype endorsement of an individual based on their social identity.

Study 3b

Study 3b was identical to Study 3a but included the measure of preconscious attentional bias to sexism (as in Study 1) and the virtual seat task (as in Study 2) which participants completed prior to the measure of meta-stereotype endorsement. As perceived SDO was unexpectedly not affected by condition in Study 3a, it was not included in Study 3b, nor was liking as it was similarly not affected by condition in Study 3a. Study 3b was the first study to examine the role of identity safety cues in *decreasing* attentional bias to threat cues when anticipating completing an intelligence measure, thus highlighting a potential mechanism through which ingroup and similarly stereotyped outgroup experts may buffer against White women's avoidance or social distancing from threatening STEM contexts.

Method

Participants

An a priori power analysis for a 3-cell between-subjects with 95% power to capture the effect size of Study 1's preconscious attentional bias measure ($d = 0.59$) indicated a sample of 177. Based on rates of data exclusion in Study 2b, I sought to collect data from 200 participants who identified as White women in the prescreen. In all, 202 undergraduate participants who identified as White women during a large prescreen survey completed an in-lab study. However, five participants were excluded for not identifying as White during the study, one was excluded for not identifying as a woman

during the study, 26 were excluded for performing with less than 50% accuracy on the preconscious attentional bias task, and two were excluded for incorrectly identifying the test creator's race, leaving a final analytic sample of 168 White women ($M_{\text{age}} = 19.00$, $SD = 2.16$; range: 18-38). A sensitivity power analysis indicated that the final sample was sufficient to capture a small effect ($d = 0.24$).

Procedure

Study 3b was identical to Study 3a except for the following changes. After completing manipulation check items about the test creator's race and gender amongst filler questions about the test creator and instructions, participants were told that while the new test was being set up in another room, they were to complete a task for another, unrelated study. This task was the preconscious attentional bias task from Study 1. After completing the task, participants completed the virtual seating task from Study 2, imagining they were completing the newly developed test in a classroom with the test creator proctoring, followed by the measure of meta-stereotype endorsement from Study 3a ($\alpha = 0.83$) before learning that they would not complete the purported test and were debriefed. The seating task was adjusted from Study 2 by placing a picture of the test creator at the head of the table instead of just their name. Anticipated test bias was not measured in order to focus on the more automatic measures of preconscious attentional bias and social distancing.

Results

Correlations of all measures and means by conditions are presented in Table 7. Correlations indicated greater preconscious attentional bias to sexism was associated with

selecting a seat farther away from the test creator. Neither measure was associated with meta-stereotype endorsement.

A one-way ANOVA (Condition: White man, White woman, Black man) for preconscious attentional bias revealed a significant main effect of condition, $F(2, 164) = 3.71, p = .027, d = 0.42$.⁹ Consistent with hypotheses, LSD post-hoc analyses revealed that participants demonstrated significantly greater preconscious attentional bias to sexism cues in the White male test creator condition ($M = 5.14, SE = 3.25$) than in the Black male test creator condition ($M = -4.21, SE = 3.28$), $p = .045, d = 0.36$, 95% CI [0.23, 18.47]. Similarly, participants demonstrated significantly greater preconscious attentional bias to sexism cues in the White male test creator condition compared to the White female test creator condition ($M = -6.63, SE = 3.17$), $p = .01, d = 0.47$, 95% CI [2.81, 20.73]. There was no significant difference between the White woman and Black male expert conditions, $p = .60, d = 0.11$, 95% CI [-11.42, 6.58].

An ANOVA for the virtual seating task revealed there was a significant main effect of condition, $F(2, 164) = 8.91, p < .001, d = 0.66$.¹⁰ LSD post-hoc tests revealed that participants indicated they would sit significantly closer to the White woman expert ($M = 3.62, SE = 0.15$) than the White male expert ($M = 4.34, SE = 0.15$), $p = .001, d = 0.62$, 95% CI [0.31, 1.13], and significantly closer to the Black male expert ($M = 3.53, SE = 0.15$) than the White male expert, $p < .001, d = 0.74$, 95% CI [0.39, 1.23]. There was no significant difference in seat choice between the Black male and the White woman expert conditions, $p = .66, d = 0.09$, 95% CI [-0.32, 0.51].

⁹ Data was lost for one participant due to experimenter error.

¹⁰ One participant did not complete this question.

An ANOVA for meta-stereotype endorsement revealed a significant main effect of condition, $F(2, 165) = 34.89, p < .001, d = 1.31$. LSD post-hoc analyses revealed that participants anticipated the Black male test creator endorsed fewer negative stereotypes about women's intelligence ($M = 2.40, SE = 0.14$) than the White male test creator ($M = 3.30, SE = 0.14$), $p < .001, d = 0.77, 95\% \text{ CI } [0.51, 1.30]$. Moreover, participants anticipated the White woman test creator endorsed fewer negative stereotypes about women's intelligence ($M = 1.65, SE = 0.14$) than the White male test creator, $p < .001, d = 1.62, 95\% \text{ CI } [1.26, 2.04]$, and the Black male test creator, $p < .001, d = 0.77, 95\% \text{ CI } [0.35, 1.14]$.

A mediation analysis examining the effect of condition (-1 = White man, 1 = Black man) on social distancing via preconscious attentional bias to sexism was conducted. Condition significantly predicted preconscious attentional bias to sexism, $B = -4.97, SE = 2.47, p = .047, 95\% \text{ CI } [-9.87, -0.08]$, which in turn significantly predicted seat choice, $B = 0.01, SE = 0.004, p = .003, 95\% \text{ CI } [0.004, 0.02]$. The indirect effect of condition on social distancing was significant, $B = -0.06, SE = 0.03, 95\% \text{ CI } [-0.14, -0.01]$ (see Figure 4).¹¹

Discussion

Study 3b was the first study to demonstrate that exposure to an ingroup or similarly stereotyped outgroup expert significantly reduced White women's preconscious attentional bias to sexism compared to exposure to a White male expert, indicating that vigilance to sexism can be ameliorated upon exposure to an identity safety cue.

Additionally, in line with past research on the vigilance-avoidance hypothesis (Mogg et

¹¹ See Appendix K for alternative mediation analysis.

al., 2004), Study 3b demonstrated a novel process by which identity safety cues can mitigate avoidance, specifically, by decreasing vigilance to threat cues. Lastly, replicating Study 3a, White women perceived both a Black male and White female expert as significantly less likely to endorse negative stereotypes about women's intelligence compared to a White male expert, though they perceived a White female expert as the least likely. Together, Studies 3a-3b demonstrated social identities serve as cues of meta-stereotype endorsement, such that Black male and White women experts were viewed as identity safety cues for White women in a testing context, resulting in decreased vigilance to sexism and decreased social distancing.

STUDY 4

Study 4 sought to extend the identity safety findings from Study 3 in a STEM classroom setting by examining preconscious attentional bias to rejection and social distancing among White women who imagined enrolling in a STEM course with a White male, White woman, or Black male professor. I proposed that White women would demonstrate significantly less preconscious attentional bias to rejection cues when imagining enrolling in a course with a White female or Black male STEM professor compared to a White male STEM professor. Critically, such decreased attentional bias to rejection cues could engender positive downstream consequences for individuals with stigmatized identities. Lastly, perceived SDO of the professor was included as I anticipated that while meta-stereotype endorsement may be more integral in a testing context, perceived SDO may again be integral in a classroom environment (as in Study 2).

Method

Participants

Based on an a priori power analysis of a 3-cell between-subject study with 80% power and a medium effect size, the analytic sample of 159 was suggested and a data collection stop point was set at 180 to account for anticipated exclusions. While 180 White women undergraduates completed the in-lab study, 28 were excluded for performing with less than 50% accuracy on the preconscious attentional bias task. As all participants correctly indicated the professor's race and gender and no participants failed the instructional attention check items, the final analytic sample was 152 White women ($M_{\text{age}} = 18.84$, $SD = 1.19$). A sensitivity power analysis indicated that the final sample was sufficient to capture a medium effect ($d = 0.50$).

Procedure

As in Study 2, participants were asked to imagine they were enrolling in a Chemistry class with a professor and read a review from the professor's Rate My Professor site. All participants saw one neutral review, and participants were randomly assigned to learn that the professor was either Scott Walters, Sarah Walters, or Jamal Williams. After reading the reviews and completing questions about the review, participants indicated the professor's race and gender. All participants indicated that Scott Walter was a White man, Sarah Walters was a White woman, and Jamal Williams was a Black man. Next, participants completed the Study 2 preconscious attentional bias to rejection task, the virtual seating measure, and the measure of comfort in the class ($\alpha = 0.74$). Lastly, participants were probed for suspicion and completed the Study 1 measure of perceived SDO ($\alpha = 0.88$) before being debriefed.

Results

Correlations of all measures and means by conditions are presented in Table 8 and indicate that greater preconscious attentional bias to rejection was associated with greater social distancing, less classroom comfort, and greater perceived SDO of the professor.

The one-way ANOVA for the preconscious attentional bias task was significant, $F(2, 149) = 4.58, p = .012, d = 0.50$. Consistent with hypotheses, LSD post-hoc tests revealed that participants demonstrated significantly greater preconscious attentional bias when imagining enrolling in a STEM course with a White male professor ($M = 4.04, SE = 3.16$) than a Black male professor ($M = -7.26, SE = 3.13$), $p = .012, d = 0.47$, 95% CI [2.50, 20.09], and a White woman professor ($M = -7.99, SE = 3.13$), $p = .008, d = 0.53$, 95% CI [3.24, 20.83]. Preconscious attentional bias to rejection did not significantly differ between the Black male and White female STEM professor conditions, $p = .87, d = 0.04$, 95% CI [-8.01, 9.49].

The one-way ANOVA for the virtual seat choice task was significant, $F(2, 149) = 6.72, p = .002, d = 0.60$. LSD post-hoc tests revealed that participants indicated they would sit significantly farther away from the White male STEM professor ($M = 4.04, SE = 0.17$) than the Black male STEM professor ($M = 3.18, SE = 0.17$), $p < .001, d = 0.69$, 95% CI [0.39, 1.34], and the White woman STEM professor ($M = 3.43, SE = 0.17$), $p = .013, d = 0.49$, 95% CI [0.13, 1.09]. Seat choice did not significantly differ between the Black male and White female conditions, $p = .29, d = 0.22$, 95% CI [-0.22, 0.73].

The one-way ANOVA for classroom comfort was significant, $F(2, 149) = 3.29, p = .040, d = 0.42$. LSD post-hoc tests revealed that participants anticipated greater classroom comfort in the Black male STEM professor condition ($M = 4.42, SE = 0.15$) than the White male STEM professor condition ($M = 3.87, SE = 0.16$), $p = .012, d = 0.52$,

95% CI [0.12, 0.98]. Unexpectedly, anticipated classroom comfort in the White female STEM professor condition ($M = 4.07$, $SE = 0.15$) did not significantly differ from either the Black male STEM professor condition, $p = .11$, $d = 0.32$, 95% CI [-0.08, 0.78], or the White male STEM professor condition, $p = .36$, $d = 0.18$, 95% CI [-0.63, 0.23].

The one-way ANOVA for perceived SDO of the professor was significant, $F(2, 149) = 5.51$, $p = .005$, $d = 0.54$. LSD post-hoc tests indicated that participants perceived the Black male professor ($M = 2.62$, $SE = 0.14$) as significantly lower in SDO than the White male professor ($M = 3.27$, $SE = 0.14$), $p = .001$, $d = 0.52$, 95% CI [0.26, 1.03], but not the White female professor ($M = 2.98$, $SE = 0.14$), $p = .07$, $d = 0.32$, 95% CI [-0.84, 0.03]. There was no significant difference in perceived SDO in the White woman and White male STEM professor conditions, $p = .14$, $d = 0.18$, 95% CI [-0.09, 0.68].

A mediation analysis examining the effect of condition (-1 = White man, 1 = Black man) on social distancing via preconscious attentional bias to rejection was conducted. Condition significantly predicted preconscious attentional bias to rejection, $B = -5.65$, $SE = 2.40$, $p = .02$, 95% CI [-10.40, -0.89], which in turn significantly predicted seat choice, $B = 0.01$, $SE = 0.01$, $p = .017$, 95% CI [0.002, 0.02]. The indirect effect of condition on social distancing was significant, $B = -0.07$, $SE = 0.04$, 95% CI [-0.17, -0.01] (see Figure 5).¹²

Discussion

Study 4 was the first study to demonstrate that White women employ significantly less vigilance for rejection and less social distancing when imagining enrolling in a STEM course with a Black male or White female professor compared to a White male

¹² Alternative mediation models are presented in Appendix L.

professor. Further, White women perceived a Black male STEM professor as significantly less likely to endorse SDO than a White male STEM professor, and this was associated with greater comfort in the class, including greater comfort speaking up in class and attending office hours. Unexpectedly, participants did not perceive a White woman STEM professor as significantly lower in SDO than a White male STEM professor and did not reported greater anticipated classroom comfort with a White woman compared to a White male STEM professor. The present study thus demonstrates that Black male STEM experts are perceived as allies by White women in classroom contexts broadly, not just in the context of an intelligence test, resulting in less vigilance to rejection and less avoidance.

STUDY 5

Study 5 sought to examine a potential downstream consequence of reduced preconscious attentional bias to sexism and rejection (Studies 1-4) by examining if the presence of a similarly stereotyped outgroup expert (e.g., Black man) would also buffer against the negative cognitive effects of identity threatening situations for White women. Past research has demonstrated that identity threat can impede individuals' working memory (Jamieson & Harkins, 2007; Shapiro & Williams, 2012), caused in part by the additional cognitive effort spent considering the potential for stereotype confirmation (Schmader & Johns, 2003), increased anxiety (Keller & Dauenheimer, 2003), and greater physiological arousal (Blascovich, Spencer, Quinn, & Steele, 2001; Croizet et al., 2004). Yet, minimal exposure to relatable ingroup experts serves as a buffer against identity threats for women (Marx & Roman, 2002). Study 5 thus served as the first examination

of working memory for White women after exposure to a similarly stereotyped outgroup expert in a testing context compared to a White male expert.

As an index of working memory, the antisaccade task (Roberts, Hager, & Heron, 1994) was employed and has been used in past research as an indicator of working memory (e.g., Kane, Bleckley, Conway, & Angle, 2001) in the stereotype threat literature (Jamieson & Harkins, 2007), as performance deficits are argued to derive, in part, from depleted working memory (Schmader & Johns, 2003). The antisaccade task requires participants to inhibit a prepotent (automatic) response in order to respond quickly, and thus, participants under identity threat typically present significantly slower responses than participants not under identity threat. Notably, preconscious attentional bias to sexism or rejection cues was not included in the present study due to fatigue concerns for participants, as completing two reaction time tasks may mitigate attention, and due to the similarities between the design of the antisaccade and the preconscious attentional bias task used in Studies 1-4. As preconscious attentional bias, or vigilance, can deplete working memory, I propose that decreased preconscious attentional bias to sexism and rejection would be associated with greater working memory, but it is not measured in Study 5.

Method

Participants

An a priori power analysis for a one-way ANOVA for the smallest effect size in Study 3a ($d = 0.51$) to achieve 80% power, indicated a data collection stop point of 110. As I again anticipated high rates of exclusions, I aimed to collect 145 participants. In all, 149 participants who identified as White women during a brief demographic prescreen

completed the study via MTurk in exchange for compensation. Twelve participants who failed manipulation checks regarding the test creator's race and/or gender at the end of the survey were excluded from analyses, and two participants were excluded for incorrectly responding to attention checks, leaving a final analytic sample of 135 ($M_{\text{age}} = 39.22$, $SD_{\text{age}} = 12.91$, range = 19-67). A sensitivity power analysis indicated that the final sample was sufficient to capture a medium effect ($d = 0.54$).

Procedure

The study design was identical to Study 3a with two exceptions. Specifically, participants completed an antisaccade task after responding to the self-report items of meta-stereotype endorsement, anticipated test bias, and perceived SDO, and participants did not complete a measure of liking.

Materials

Participants completed the measure of meta-stereotype endorsement from Study 3 ($\alpha = .87$) and the two-item measure of anticipated test bias from Study 3, $r(135) = .33$, $p < .01$.

Antisaccade Task. The antisaccade task consisted of a 3-trial practice block followed by an 80-trial test block. Each trial began with a fixation cross presented in the middle of the screen for 2,000ms, followed by a cue (white square) which appeared on either the left or right side of the screen for 400ms, and which was immediately replaced by a target arrow, pointing either up, left, or right on the opposite side of the screen for 150ms before being removed. After the disappearance of the target arrow, participants had 1,500ms to indicate the direction the arrow was pointing via a key press before the next trial began. Feedback was provided on practice trials only.

Participants were instructed that they *should not* look towards the cue when it appeared, and the target arrow always appeared on the opposite side of the screen as the cue. The prepotent response to look towards the cue on antisaccade trials is incorrect, and thus working memory is required to inhibit this prepotent response to more quickly (and accurately) identify the direction of the arrow. Reaction time and responses were recorded for all trials. Design and instructions matched that of previous research employing the antisaccade task (Jamieson & Harkins, 2007). The reaction time measures were collected via QRTEngine which was integrated into the Qualtrics survey and has previously been demonstrated to collect reliable reaction time data (Barnhoorn, Haasnoot, Bocanegra, & van Steenbergen, 2015).

Results

Correlations of all measures and means by conditions are presented in Table 9. While greater meta-stereotype endorsement was associated with greater anticipated test bias and perceived SDO, meta-stereotype endorsement, anticipated test bias, and perceived SDO were not significantly correlated with antisaccade reaction times.

The one-way ANOVA for meta-stereotype endorsement revealed a significant main effect of test creator, $F(2, 131) = 13.59, p < .001, d = 0.91$.¹³ LSD post-hoc analyses revealed that participants perceived the White male test creator as endorsing more negative stereotypes about women's intelligence ($M = 2.74, SE = 0.16$) than the White woman test creator ($M = 1.69, SE = 0.14$), $p < .001, d = 1.12, 95\% CI [0.63, 1.48]$, but not more than the Black man test creator ($M = 2.46, SE = 0.16$), $p = .22, d = 0.32, 95\% CI [-0.05, 0.81]$. The White woman test creator was perceived as endorsing these negative

¹³ One participant did not complete the measure of meta-stereotype endorsement.

stereotypes significantly less than the Black man test creator, $p < .001$, $d = 0.75$, 95% CI [0.35, 1.20].

The ANOVA for anticipated test bias revealed a significant effect of test creator, $F(2, 132) = 3.60$, $p = .03$, $d = 0.47$. LSD post-hoc analyses revealed that participants perceived the White man test creator as creating a marginally more gender-biased test ($M = 3.84$, $SE = 0.29$) than the White woman test creator ($M = 3.16$, $SE = 0.25$), $p = .07$, $d = 0.38$, 95% CI [-0.07, 1.43]. Unexpectedly, the Black man test creator ($M = 4.14$, $SE = 0.29$) was seen as more likely to create a gender-biased test than the White woman test creator, $p = .01$, $d = 0.56$, 95% CI [0.22, 1.74], and there was no significant difference between the White and Black male test creators, $p = .47$, $d = 0.16$, 95% CI [-1.10, 0.51].

The one-way ANOVA for perceived SDO revealed a marginally significant effect of test creator, $F(2, 132) = 2.95$, $p = .056$, $d = 0.41$. LSD post-hoc analyses revealed that participants perceived the White male test creator as higher in SDO ($M = 3.32$, $SE = 0.13$) than the White female test creator ($M = 2.93$, $SE = 0.11$), $p = .023$, $d = 0.50$, 95% CI [0.05, 0.72], and marginally higher than the Black male test creator ($M = 2.98$, $SE = 0.13$), $p = .064$, $d = 0.39$, 95% CI [-0.02, 0.69]. There was no significant difference between the Black man and White woman test creator conditions, $p = .77$, $d = 0.06$, 95% CI [-0.28, 0.38].

Antisaccade Task

Reaction times on incorrect trials were removed, as were reaction times under 200ms and 3SD above the mean (10%). Further, participants whose accuracy was below 75% on the antisaccade block were removed from these analyses ($n = 8$; Derakshan, Ansari, Hansard, Shoker, & Eysenck, 2009; Bialystok, Craik, & Ryan, 2006), and 14

were unable to complete the task due to technological problems, leaving an analytic sample of 113.

The ANOVA on antisaccade reaction times revealed a significant main effect of test creator, $F(2, 110) = 4.54, p = .013, d = 0.57$. LSD post-hoc analyses revealed that participants were significantly slower in the White man test creator condition ($M = 552.85, SE = 21.52$) than the White woman test creator condition ($M = 471.00, SE = 17.30$), $p = .004, d = 0.71, 95\% CI [27.13, 136.56]$, and the Black man condition ($M = 489.98, SE = 20.55$), $p = .037, d = 0.50, 95\% CI [3.90, 121.85]$. There was no significant difference between the White woman and the Black male test creator conditions, $p = .48, d = 0.16, 95\% CI [-34.26, 72.20]$.¹⁴

Discussion

Study 5 demonstrated, for the first time, that the presence of either an ingroup or similarly stereotyped outgroup expert buffers against the negative cognitive effects associated with identity threat that were experienced when the expert was a White man. While the meta-stereotype endorsement effect was replicated from Studies 3-4, this was not the case for the anticipated test bias effect, perhaps due to the low correlation between the two items. While vigilance to threat cues was not measured in the present study, I propose the greater demonstrated working memory in the Black male and White woman expert conditions, compared to the White male expert condition, was due to decreased vigilance to threat cues.

General Discussion

¹⁴ See Appendix M for exploratory mediation analysis.

Past research has demonstrated that identity threat can negatively impact the working memory, health, and sense of belonging of members of stigmatized groups (e.g., Davies et al., 2002; Schmader & Johns, 2003; Settles, 2004; von Hippel et al., 2011). Moreover, vigilance to ingroup discrimination cues, such as women's vigilance to sexism, has been associated with negative health outcomes for members of stigmatized groups (Himmelstein et al., 2015) and is believed to deplete cognitive resources (Major & O'Brien, 2005). Increased vigilance to threatening cues is believed to occur so that individuals can ultimately avoid threat cues and their associated negative outcomes (Mogg et al., 2004). Moreover, the pool of identity threat cues is larger than previously theorized, as individuals generally endorse a lay theory of generalized prejudice, such that individuals perceive racism as indicative of sexism (Sanchez et al., 2017), resulting in both racism and sexism signaling gender identity threat for White women. As women frequently face gender identity threat cues in STEM contexts, leading to disengagement from STEM fields, one aim of the present research was to examine if anticipating being evaluated by, or taking a STEM course with, a racist or sexist White man would result in greater vigilance to sexism and rejection among White women compared to a White man whose intergroup attitudes were unknown. A second aim of the present research was to determine if heightened vigilance to sexism and rejection was associated with greater social distancing from the perpetrator for White women in STEM contexts.

Indeed, White women demonstrated greater preconscious attentional bias to sexism when anticipating being evaluated by a White man who endorsed either sexism or racism (Study 1), and greater preconscious attentional bias to rejection when imagining taking a course with a sexist or racist White male STEM professor (Study 2) compared to

a White man whose intergroup attitudes were unknown. Moreover, greater preconscious attentional bias was associated with greater social distancing, such that women indicated they would sit farther away from either the racist or sexist STEM professor, and reported less anticipated comfort speaking up in class or attending office hours, compared to the neutral White male STEM professor (Study 2).

Additionally, past research has demonstrated that women performed better on a cognitive test that was administered by a woman compared to a man (Marx & Roman, 2002) and that exposure to female role models in STEM can increase motivation to pursue a career in STEM (Stout et al., 2011; Young et al., 2013). Moreover, Black test administrators were associated with better performance on a cognitive test than a White test administrator among Black participants, due in part to the belief that a Black test administrator was less likely to endorse negative stereotypes about Black Americans' intelligence than a White test administrator (Wout et al., 2009). A third aim of the present research was therefore to examine if the pool of perceived allies in STEM and testing contexts was larger than previously theorized; specifically, if White women perceived Black male experts as allies.

The present research indicated that White women anticipated that a Black male or White female test creator was significantly less likely to endorse negative stereotypes about women's intelligence than a White male test creator (Study 3). White women also demonstrated significantly less preconscious attentional bias to sexism (Study 3) and rejection (Study 4) when anticipating taking an intelligence test or STEM course with a Black male or White female expert compared to a White male expert. Decreased

preconscious attentional bias to sexism and rejection were in turn associated with less social distancing (Studies 3-4) and greater comfort in the classroom (Study 4).

Lastly, past research has demonstrated that White women's working memory is depleted in response to identity threat cues (e.g., Schmader & Johns, 2003) and vigilance to threat cues is associated with decreased working memory and worse performance (Dandeneau et al., 2007; Major & O'Brien, 2005). In Study 5, White women demonstrated significantly greater working memory on a test they believed was developed by either a Black male or White female expert compared to a White male expert.

Preconscious Attentional Bias

The present findings of outgroup identity safety and threat cues on unconscious attentional bias suggests an automatic, implicit network in which racism cues sexism and gender identity threat for White women and indicates that a lay theory of generalized prejudice may also operate at an automatic level. Indeed, unconscious attentional bias in response to outgroup identity cues mediated stigma outcomes such as social distancing in Study 2 and is the proposed mechanism for the effect of an expert Black man compared to an expert White man on working memory in Study 5. While past research focused on self-reported perceived ideology of the perpetrator or entity as the mechanism by which identity cues transferred, the present research suggests a second, automatic process that may facilitate how outgroup identity cues signal information about ingroup identity threat or safety.

While the present demonstrations of unconscious attentional bias to sexism and rejection were all within evaluative contexts, I encourage future research to consider

baseline measures of preconscious attentional bias to prejudice cues and rejection as an individual difference variable that may influence the extent to which individuals are sensitive to identity cue transfer. For example, just as past research has demonstrated that individuals who are higher in trait anxiety demonstrate greater preconscious attentional bias to rejection (e.g., Mogg et al., 2004), it is possible that women, for example, who report having experienced greater sexism in the past may show higher levels of preconscious attentional bias to sexism. Higher baseline levels of preconscious attentional bias to sexism may result in important individual differences in identity threatening contexts, including for women's working memory, social distancing, and cardiovascular reactivity.

While the present research demonstrated greater preconscious attentional bias to sexism in the face of racism, I encourage future research to consider the automatic associations between prejudices in different directions and across difference prejudices. For example, do White women demonstrate greater preconscious attentional bias to racism cues in the face of sexism or racism in evaluative settings? As past research suggests that White Americans are relatively unlikely to attribute mistreatment of Black Americans to racial prejudice (e.g., Simon, Moss, & O'Brien, 2019), it is unlikely that White women would demonstrate greater preconscious attentional bias to racism. However, in an evaluative setting in which racism could signal sexism, White women may experience heightened preconscious attentional bias to racism. Moreover, manipulating an individual's endorsement of a lay theory of generalized prejudice may over time increase associations between sexism and racism, resulting in bi-directional preconscious attentional bias to sexism and racism (i.e., sexism increases attentional bias

to racism and racism increases attentional bias to sexism). Lastly, much research on a lay theory of generalized prejudice has focused on the perceived co-occurrence of sexism and racism (Chaney et al., 2016; Sanchez et al., 2017). Yet, I propose other prejudices may be perceived as co-occurring, such as anti-Semitism and anti-Black prejudice, and encourage future research to consider vigilance to other outgroup prejudice cues and among other populations, not just White women.

Role Models

An additional aim of this research was to examine the role of experts' social identities as identity safety and threat cues for women in STEM and testing contexts. Previous research examining identity cue transfer has manipulated the attitudes of a company (Chaney et al., 2016; Chaney & Sanchez, 2018) or an individual (Sanchez et al., 2017), while the demographics of the expert were manipulated in the present research (Studies 3-5). As such, the present research provides a novel extension of past research on a lay theory of generalized prejudice by demonstrating that individuals assume intergroup attitudes based on an individual's social identities. Specifically, White women in a threatening environment are sensitive to, and benefit from, similarly stereotyped outgroup identity safety cues (i.e., outgroup role models).

The present research indicates that expert Black men serve as an identity safety cue for White women due to the belief that Black male STEM experts are less likely to endorse negative stereotypes about women's intelligence compared to White male STEM experts. As such, the present research demonstrated that there is a broader pool of "inoculators" for White women in STEM. While Black male experts are also underrepresented in these settings that place a high value on "intelligence" and

“brilliance” (Allen et al., 2000), the present research suggests that other similarly stereotyped individuals may also be perceived as allies (e.g., Latino men, etc.). Notably, Asian men do not serve as an identity safety cue for White women in a testing context (Chaney, Sanchez, & Remedios, 2018), as they are perceived to endorse negative stereotypes about women’s intelligence, likely due to stereotypes that Asian men are brilliant (Fiske, Xu, Cuddy, & Glick, 1999). As the present findings are based on the assumption that members of similarly stereotyped groups do not endorse negative stereotypes about one’s ingroup, I encourage future research to examine the effects of similarly stereotyped outgroup experts when this assumption is inaccurate.

Notably, within a classroom or evaluative context, White women perceived a racist White male evaluator or professor as significantly higher in SDO than a neutral White man (Studies 1-2), and a Black male STEM professor was perceived to be lower in SDO than a White male STEM professor (Study 4). Yet, perceived SDO was only marginally (Study 5) or not at all affected (Study 3) by the racial and gender identity of a test creator. Instead, within the context of completing an intelligence test, perceptions of meta-stereotype endorsement (Study 3) may be more influenced by test creator racial and gender identity. Future research examining the role of context and role models positions (e.g., test creator, professor, peer) on shifting perceived ideologies will be integral in better understanding perceptions of ingroup and outgroup role models and allies.

As past research suggests that Black and Latino men anticipated identity safety at an organization with gender diversity awards (Chaney et al., 2016), extensions of the present research may find that Black and Latino men benefit from the presence of White women experts, expanding the pool of “inoculators.” Yet, in past research, Black women

did not perceive White women as allies unless the White women had explicitly stated they value racial diversity (Pietri, Johnson, & Ozgumus, 2018). Similarly, Black and Latina women perceived a White male professor who spoke out against sexism as more likely to treat them fairly than a White male professor whose intergroup attitudes were unknown (Chaney, Sanchez, & Remedios, 2020), suggesting Black and Latino Americans may not demonstrate identity safety simply from the presence of a White woman, but may instead require additional demonstration of ideology. I encourage future research to consider how meta-stereotypes about social groups may differ by individuals' own identities and past experiences with outgroup members.

Social Distancing and Working Memory

As past research on identity cue transfer has primarily focused on self-reported measures of anticipated stigma (e.g., Chaney et al., 2016; Sanchez et al., 2017) and cardiovascular reactivity (Chaney, Sanchez, Himmelstein et al., 2020), an additional aim of the present research was to examine social distancing and working memory as behavioral and cognitive outcomes of identity cue transfer for White women in evaluative contexts. In Study 2, White women demonstrated greater social distancing from a sexist or racist White male professor compared to a White male professor whose intergroup attitudes were unknown, and in Studies 3-4, White women demonstrated less social distancing from an expert Black man compared to an expert White man. Such social distancing appears to have been driven by avoidance of threat as liking and professor quality of the target did not significantly change the effect of social distancing in Study 2. Importantly, preconscious attentional bias mediated the effects of condition on social distancing (Studies 2-4), supporting the vigilance-avoidance hypothesis in a novel STEM

context. The present research therefore provides evidence that White women attempt to avoid or mitigate identity threat by behaviorally (though virtually) sitting farther away from a potential perpetrator, due in part to increased vigilance to threat cues.

Such social distancing in response to sexism and racism in order to avoid facing discrimination highlights a coping process which may ultimately lead to disengagement from STEM contexts. Specifically, by acting to avoid facing prejudice, individuals may be self-selecting out of such contexts. While sitting farther away from a professor may not ultimately reduce experiences of discrimination, seat choice was negatively associated with classroom comfort, such that sitting farther away from a sexist or racist professor (Study 2) or White male STEM professor (Study 4) was associated with decreased comfort attending office hours and participating in class which minimizes interactions with the perpetrator. As such, the present research provides new insights into the processes that may lead to women's disengagement from STEM contexts.

Notably, the measure of social distancing in Studies 2-4 was not a pure behavioral measure as participants merely indicated which seat they would select from an online image and were not physically choosing a seat in a classroom. Past research has measured social distancing in virtual reality paradigms (Dotsch & Wigboldus, 2008) and using seat-selection paradigms such as the one employed in Studies 2-3 (van den Berg & Cillessen, 2015). As such, I propose that the present measure of social distancing did capture a more automatic process associated with a behavioral outcome, but encourage future research to examine social distancing in an in-person setting.

Lastly, Study 5 demonstrated that White women had significantly greater working memory when completing a task ostensibly created by a Black man or White woman

compared to a White man. This effect on working memory suggests that White women may underperform on tests ostensibly developed by a White man, the group which makes up the majority of university STEM faculty (Davis & Fry, 2019). While the decrease in working memory was not associated with meta-stereotype endorsement or anticipated test bias, I propose it may be mediated by preconscious attentional bias to sexism. Measures of working memory and preconscious attentional bias were not included in a study together due to concerns about participant fatigue completing two reaction time measures and due to the similarity in the task designs, but past work has suggested that increased vigilance to threat cues is associated with decreased performance (Dandeneau et al., 2007). I therefore encourage future research to examine preconscious attentional bias and performance in future research.

Conclusion

Together, the present research is the first to identify automatic cognitive and behavioral outcomes of identity cue transfer for White women. White women demonstrated significantly greater preconscious attentional bias to sexism and rejection in the face of sexism and racism, and this shift in attention was associated with social distancing, such that White women demonstrated avoidance in the face of sexism or racism. Conversely, White women perceived similarly stereotyped outgroup role models as an identity safety cue due to the inferred stereotype endorsement of the individual and demonstrated significantly less preconscious attentional bias to sexism and rejection, as well as greater working memory when exposed to an ingroup or similarly stereotyped outgroup role model. The present research thus expands past research on identity cue transfer by demonstrating an automatic lay theory of generalized prejudice, while

expanding past research on the association between vigilance and avoidance that has implications for the behavior and cognitive performance of White women in STEM and testing contexts.

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Table 1

Pre-Test of Preconscious Attentional Bias Words

		<i>M</i>	<i>SD</i>
Sexism	Overall	4.48	1.56
	Ho	4.73	1.93
	Bitch	4.40	1.89
	Whore	4.57	1.89
	Sexist	4.27	1.82
	Sexism	4.23	1.78
	Slut	4.67	1.86
Health	Overall	4.42	1.43
	Disease	4.60	1.75
	Infection	4.60	1.65
	Virus	4.67	1.65
	Diabetes	4.17	1.70
	Sick	4.10	1.75
	Illness	4.37	1.63
Rejection	Overall	4.17	1.67
	Unwanted	4.10	2.06
	Reject	4.23	1.96
	Exclude	4.40	1.83
	Shunned	4.23	1.94
	Disliked	3.97	1.77
	Isolated	4.10	1.97

Table 2

Study 1 Overall Correlations and Descriptive Statistics by Condition

	1	2	$M_{\text{racist}} (SE)$	$M_{\text{sexist}} (SE)$	$M_{\text{neutral}} (SE)$
1. Precon. Atten. Bias (Sexism)			8.22 _a (3.40)	8.50 _a (3.40)	-6.20 _b (3.27)
2. Perceived SDO	.29**		5.71 _a (0.14)	5.17 _b (0.14)	3.25 _c (0.14)
3. Perceived Sexism	.31**	.67**	3.40 _a (0.13)	4.14 _b (0.13)	1.84 _c (0.12)

Note: ** $p < .01$; Means that do not share a subscript significantly differ at $p < .05$.

Table 3

Study 2a Overall Correlations and Descriptive Statistics by Condition

	1	2	3	$M_{\text{racist}} (SE)$	$M_{\text{sexist}} (SE)$	$M_{\text{neutral}} (SE)$
1. Virtual Seat				6.00 _a (0.21)	5.89 _a (0.29)	5.02 _b (0.27)
2. Treat Women Students	-.37**			3.22 _a (0.20)	2.11 _b (0.21)	5.09 _b (0.20)
3. Treat Black Students	-.30*	.62**		1.82 _a (0.20)	3.67 _b (0.21)	5.02 _c (0.20)
4. Professor Quality	-.28*	.40**	.35**	2.76 _a (0.19)	2.79 _a (0.20)	2.96 _a (0.19)

Note: * $p < .05$; ** $p < .01$; Means that do not share a subscript significantly differ at $p < .05$.

Table 4

Study 2b Overall Correlations

	1	2	3	4
1. Precon. Atten. Bias (Rejection)				
2. Virtual Seat	.19*			
3. Classroom Comfort	-.04	-.45**		
4. Liking	-.04	-.38**	.45**	
5. Perceived SDO	.15*	.34**	-.28**	-.20**

Note: * $p < .05$; ** $p < .01$.

Table 5

Study 2b Descriptive Statistics by Condition

	$M_{\text{racist}} (SE)$	$M_{\text{sexist}} (SE)$	$M_{\text{neutral}} (SE)$
Precon. Atten. Bias (Rejection)	4.63 _a (3.74)	4.27 _a (2.50)	-6.72 _b (2.89)
Virtual Seat	4.55 _a (0.17)	4.86 _a (0.18)	3.79 _b (0.20)
Classroom Comfort	2.97 _a (0.14)	2.67 _a (0.17)	3.66 _b (0.17)
Liking	2.14 _a (0.10)	2.14 _a (0.10)	2.39 _a (0.11)
Perceived SDO	5.66 _a (0.09)	5.58 _a (0.09)	3.70 _b (0.14)

Note: Means that do not share a subscript significantly differ at $p < .05$.

Table 6

Study 3a Overall Correlations and Descriptive Statistics by Condition

	1	2	3	<i>M</i> _{Black Man} (<i>SE</i>)	<i>M</i> _{White Woman} (<i>SE</i>)	<i>M</i> _{White Man} (<i>SE</i>)
1. Meta-Stereotype Endorsement				2.09 _a (0.12)	1.61 _b (0.10)	2.52 _c (0.13)
2. Anticipated Test Bias	.43**			3.18 _a (0.27)	3.21 _a (0.24)	4.20 _b (0.30)
3. Perceived SDO	.42**	.24**		2.49 _a (0.20)	2.56 _a (0.17)	2.78 _a (0.22)
4. Liking	-.15	.12	-.09	4.38 _a (0.22)	4.83 _a (0.19)	4.36 _a (0.24)

Note: ** $p < .01$; Means that do not share a subscript significantly differ at $p < .05$.

Table 7

Study 3b Overall Correlations and Descriptive Statistics by Condition

	1	2	$M_{\text{Black Man}} (SE)$	$M_{\text{White Woman}} (SE)$	$M_{\text{White Man}} (SE)$
1. Precon. Atten. Bias (Sexism)			-4.21 _a (3.28)	-6.63 _a (3.17)	5.14 _b (3.25)
2. Virtual Seat	.26*		3.53 _a (0.15)	3.62 _a (0.15)	4.34 _b (0.15)
3. Meta-Stereotype Endorsement	.14	.11	2.40 _a (0.14)	1.65 _b (0.14)	3.30 _c (0.14)

Note: * $p < .05$; Means that do not share a subscript significantly differ at $p < .05$.

Table 8

Study 4 Overall Correlations and Descriptive Statistics by Condition

	1	2	3	$M_{\text{Black Man}} (SE)$	$M_{\text{White Woman}} (SE)$	$M_{\text{White Man}} (SE)$
1. Prec. Attentional Bias (Rejection)				-7.26 _a (3.13)	-7.99 _a (3.13)	4.04 _b (3.16)
2. Virtual Seat	.24**			3.18 _a (0.17)	3.43 _a (0.17)	4.04 _b (0.17)
3. Classroom Comfort	-.22	-.37**		4.42 _a (0.15)	4.07 _{ab} (0.15)	3.87 _b (0.16)
4. Perceived SDO	.18*	.10	-.25*	2.62 _a (0.14)	2.98 _{ab} (0.14)	3.27 _b (0.14)

Note: ** $p < .01$; * $p < .05$; Means that do not share a subscript significantly differ at $p < .05$.

Table 9

Study 5 Overall Correlations and Descriptive Statistics by Condition

	1	2	3	$M_{\text{Black Man}} (SE)$	$M_{\text{White Woman}} (SE)$	$M_{\text{White Man}} (SE)$
1. Meta-Stereotype Endorsement				2.36 _a (0.16)	1.69 _b (0.13)	2.74 _a (0.15)
2. Anticipated Test Bias	.40**			4.14 _a (0.29)	3.16 _b (0.25)	3.84 _{ab} (0.29)
3. Perceived SDO	.54**	.28**		2.98 _{ab} (0.13)	2.93 _a (0.11)	3.32 _b (0.13)
4. Antisaccade RT	-.05	.05	.02	489.98 _a (20.55)	471.00 _a (17.30)	552.85 _b (21.52)

Note: ** $p < .01$; Means that do not share a subscript significantly differ at $p < .05$.

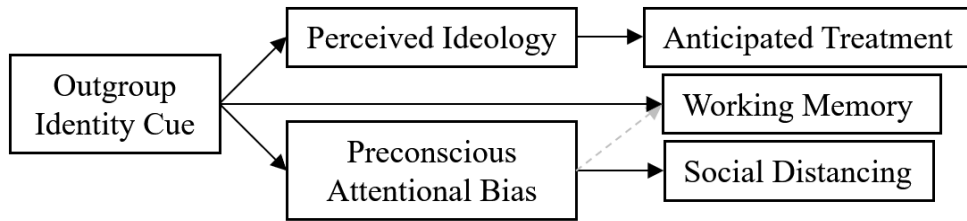


Figure 1. Proposed model examining preconscious attentional bias as a novel, automatic mechanism by which identity cue transfer effects social distancing and working memory, and perceived ideology as a mechanism by which identity cue transfer effects self-reported, explicit measures of stigma (as in past research, Chaney et al., 2016; Sanchez et al., 2017). Solid lines indicate tested pathways. Dashed line indicates a proposed process.

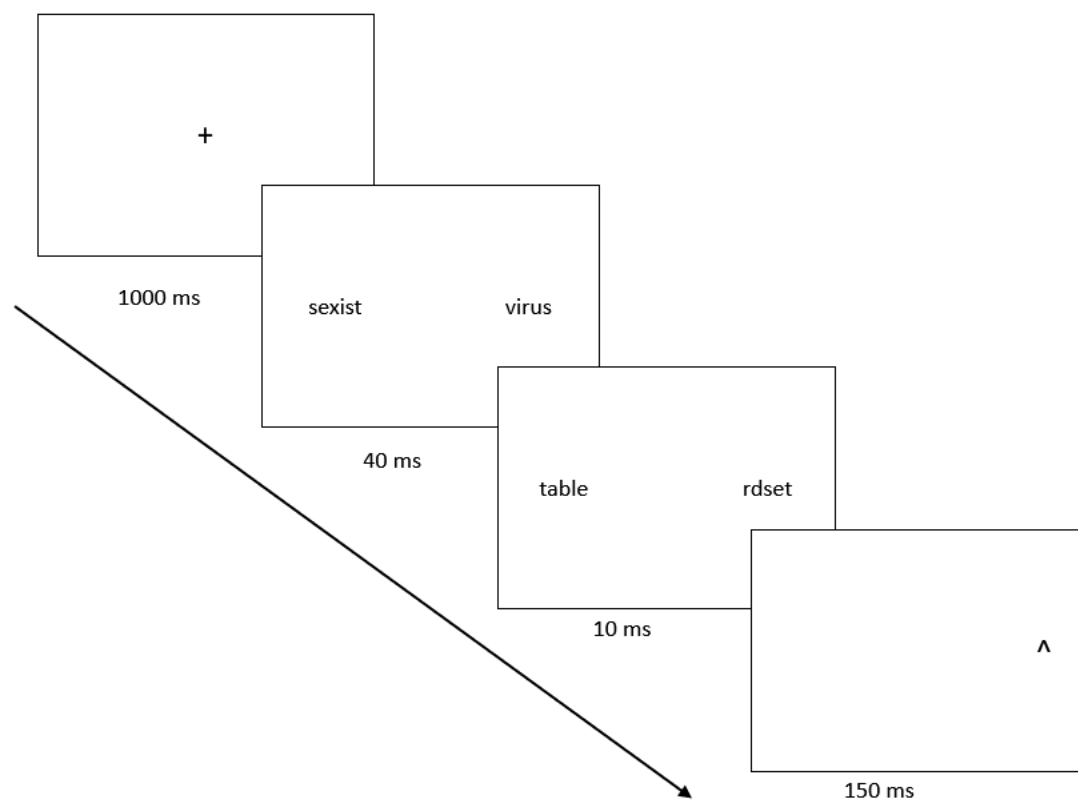


Figure 2. Sample sexism trial in preconscious attentional bias to sexism task.

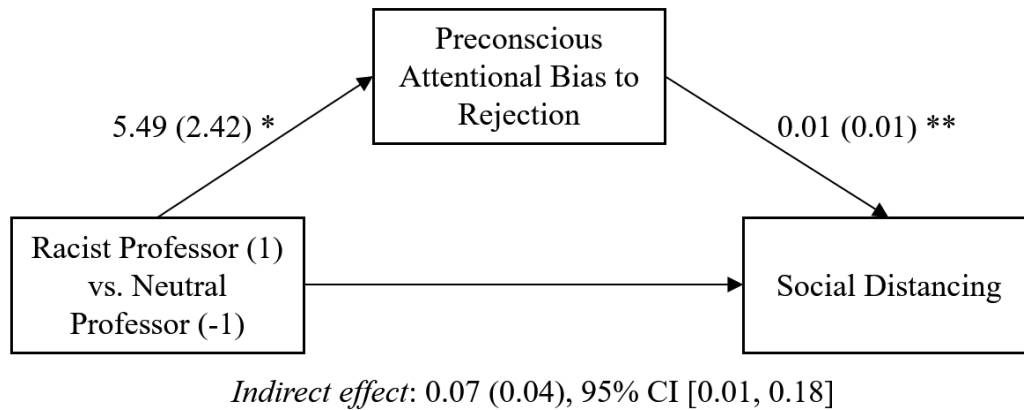


Figure 3. Mediation model of the effect of a racist vs neutral White male Professor on White women's social distancing mediated by preconscious attentional bias to rejection, Study 2b. * $p < .05$, ** $p < .01$.

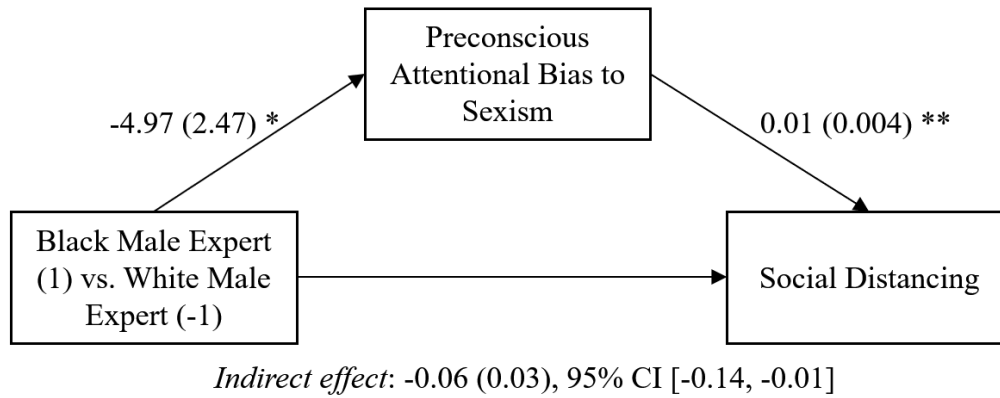


Figure 4. Mediation model of the effect of a Black male vs White male expert on White women's social distancing mediated by preconscious attentional bias to sexism, Study 3b.

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

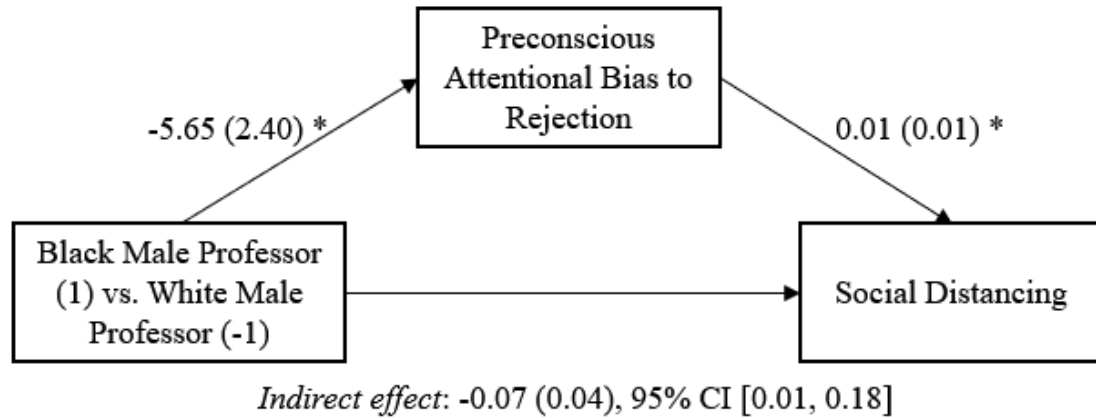


Figure 5. Mediation model of the effect of a Black male vs White male professor on White women's social distancing mediated by preconscious attentional bias to rejection, Study 4. * $p < .05$.

Appendix A

Profile Packets (Study 1)

ITEMS IN ALL PACKETS (included samples of those filled out by partner; Participants received same packets but NOT filled out)

Please complete the following items before you meet with your partner.

Please indicate your gender

- ☒ Male
☐ Female

What is your racial background?

- ☒ White/ Caucasian (e.g., Italian, Irish, German, English)
☐ Black/African American/ Caribbean American
☐ Hispanic/Latino
☐ American Indian or Alaska Native
☐ Middle Eastern/ North African
☐ Asian (South Asian, East East Asian, Southeast Asian, or Pacific Islander)
☐ Multiracial (please specify)

☐ Not listed (please specify)

Please indicate your age in years below

20

Select the statement that you agree with the most

- ☒ a. Without the right breaks one cannot be an effective leader.
- ☐ b. Capable people who fail to become leaders have not taken advantage of their opportunities.

Select the statement that you agree with the most

- ☒ a. No matter how hard you try some people just don't like you.
- ☐ b. People who can't get others to like them don't understand how to get along with others.

Select the statement that you agree with the most

- ☐ a. Heredity plays the major role in determining one's personality
- ☒ b. It is one's experiences in life which determine what they're like.

Select the statement that you agree with the most

- ☐ a. I have often found that what is going to happen will happen.
- ☒ b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

Select the statement that you agree with the most

- ☒ a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test
- ☐ b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

Select the statement that you agree with the most

- ☐ a. Children get into trouble because their parents punish them too much.
- ☒ b. The trouble with most children nowadays is that their parents are too easy with them.

Select the statement that you agree with the most

- ☒ a. Many of the unhappy things in people's lives are partly due to bad luck.
- ☐ b. People's misfortunes result from the mistakes they make.

Select the statement that you agree with the most

- ☐ a. One of the major reasons why we have wars is because people don't take enough interest in politics.
- ☒ b. There will always be wars, no matter how hard people try to prevent them

Select the statement that you agree with the most

- ☒ a. In the long run people get the respect they deserve in this world
- ☐ b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries

Select the statement that you agree with the most

- ☐ a. The idea that teachers are unfair to students is nonsense.
- ☒ b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please indicate the extent to which you agree or disagree with that statement.

I See myself as someone who...

	1 (Disagree strongly)	2 (Disagree a little)	3 (Neither agree nor disagree)	4 (Agree a little)	5 (Agree strongly)
Is talkative	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does a thorough job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Is depressed, blue	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is original, comes up with new ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Is reserved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Can be somewhat careless	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is relaxed, handles stress well	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 (Disagree strongly)	2 (Disagree a little)	3 (Neither agree nor disagree)	4 (Agree a little)	5 (Agree strongly)
Is curious about many different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Is full of energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Is a reliable worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Can be tense	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is ingenious, a deep thinker	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generates a lot of enthusiasm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Tends to be disorganized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	1 (Disagree strongly)	2 (Disagree a little)	3 (Neither agree nor disagree)	4 (Agree a little)	5 (Agree strongly)
Worries a lot	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has an active imagination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Tends to be quiet	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tends to be lazy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is emotionally stable, not easily upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Is inventive	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has an assertive personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	1 (Disagree strongly)	2 (Disagree a little)	3 (Neither agree nor disagree)	4 (Agree a little)	5 (Agree strongly)
Perseveres until the task is finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Can be moody	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Values artistic, aesthetic experiences	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is sometimes shy, inhibited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Does things efficiently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Remains calm in tense situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Prefers work that is routine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	1 (Disagree strongly)	2 (Disagree a little)	3 (Neither agree nor disagree)	4 (Agree a little)	5 (Agree strongly)
Is outgoing, sociable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Makes plans and follows through with them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Gets nervous easily	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Likes to reflect, play with ideas	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has few artistic interests	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is easily distracted	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is sophisticated in art, music, or literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Here are a number of personality traits that may or may not apply to you. Please indicate the extent to which you agree or disagree with each statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

I see myself as:

	1 (Disagree strongly)	2 (disagree moderately)	3 (Disagree a little)	4 (Neither agree nor disagree)	5 (Agree a little)	6 (Agree moderately)	7 (Agree strongly)
Extroverted, enthusiastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Dependable, self-disciplined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Anxious, easily upset	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Open to new experiences, complex	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1 (Disagree strongly)	2 (disagree moderately)	3 (Disagree a little)	4 (Neither agree nor disagree)	5 (Agree a little)	6 (Agree moderately)	7 (Agree strongly)
Reserved, quiet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disorganized, careless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calm, emotionally stable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conventional, uncreative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Old Fashioned and Modern Racism Scale (scale titles note presented to participants)

Please rate how you feel about the following items.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
Black people are generally not as smart as Whites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I would be equally comfortable having an African American as a boss as a White person	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is a bad idea for Blacks and Whites to marry one another	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
If a Black family with about the same income and education as I have moved next door, I would mind it a great deal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
It is more important to encourage White students than to encourage Black students to perform well in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
Discrimination against Blacks is no longer a problem in the United States	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
It is easy to understand the anger of Black people in America	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blacks have more influence upon politics than they ought to have	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Over the past few years, the government and news media have show more respect to Blacks than they deserve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Blacks are getting too demanding in their push for equal rights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
It is easy to understand why African American groups are still concerned about societal limitations of Black's opportunities	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over the past few years, Blacks have gotten more economically than they deserve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Blacks often miss out on good jobs due to racial discrimination	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Old Fashioned and Modern Sexism Scale

Please rate how you feel about the following items.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
Women are generally not as smart as men	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I would be equally comfortable having a woman as a boss as a man.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is more important to encourage boys than to encourage girls to participate in athletics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Women are just as capable of thinking logically as men.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When both parents are employed and their child gets sick at school, the school should call the mother rather than the father.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Discrimination against women is no longer a problem in the United States.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Women often miss out on good jobs due to sexual discrimination.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Women are getting too demanding in their push for equal rights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Over the past few years, women have gotten more economically than they deserve.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Society has reached the point where women and men have equal opportunities for achievement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
Women have more influence upon politics than they ought to have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
It is easy to understand why women's groups are still concerned about societal limitations of women's opportunities.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Over the past few years, the government and news media have been showing more concern about the treatment of women than is warranted by women's actual experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Perceived SDO (Studies 1-3a, 4-5). Participants completed the 8-item SDO scale (Ho et al., 2015) as they believed the evaluator [professor] would complete it (Sanchez et al., 2017) on a scale from 1 (*Strongly oppose*) to 7 (*Strongly favor*).

- 1) An ideal society requires some groups to be on top and other to be on the bottom
- 2) Some groups of people are simply inferior to other groups
- 3) No one group should dominate in society
- 4) Groups at the bottom are just as deserving as groups at the top
- 5) Group equality should not be our primary goal
- 6) It is unjust to try to make groups equal
- 7) We should do what we can to equalize conditions for different groups

- 8) We should work to give all groups an equal chance to succeed

Perceived sexism (Study 1). Participants completed a 5-item measure of perceived sexism of the evaluator (Manager, Study 4) (Sanchez et al., 2017) on a scale from 1 (*Very slightly or not at all*) to 5 (*Extremely or a lot*)

- 1) How likely is this person to discriminate based on gender?
- 2) How likely is it that this person treats women fairly?
- 3) How sexist do you think you will find this person?
- 4) How likely is it that this person is prejudiced against women?
- 5) How likely is it that this person is sexist?

Appendix B
Preconscious Attentional Bias Task (Studies 1-4)

Studies 1-4, non-sexist, health threat words (adapted from Kaiser et al., 2006)

1. Disease
2. Infection
3. Virus
4. Diabetes
5. Sick
6. illness

Studies 1-4, Masks

1. hjlas
2. rpwol
3. plfhps
4. asdnjk
5. gnyhlw
6. asnjls
7. circle
8. square
9. paper
10. carpet
11. pencil
12. table

Studies 1, 3, sexism words (adapted from Kaiser et al., 2006)

1. Ho
2. Bitch
3. Whore
4. Sexist
5. Sexism
6. Slut

Studies 2, 4 rejection words (adapted from Baldwin & Sinclair, 1996)

1. Unwanted
2. Reject
3. Exclude
4. Shunned
5. Disliked
6. Isolated

Appendix C

Study 1 Exploratory Mediation Analyses

While I proposed preconscious attentional bias may facilitate more automatic outcomes such as social distancing, I did not anticipate preconscious attentional bias to mediate the effect of condition on self-reported outcomes such as perceived sexism. As perceived SDO has previously mediated identity cue transfer, I conducted an exploratory parallel mediation analysis examining the effect of condition (-1 = neutral evaluator; 1 = racist evaluator) on perceived sexism via preconscious attentional bias to sexism and perceived SDO employing the PROCESS macro (Hayes, 2012) with 10,000 bootstrapped sample. Condition significantly predicted preconscious attentional bias to sexism, $B = 7.21$, $SE = 2.25$, $p = .002$, 95% CI = [2.75, 11.67], and perceived SDO, $B = 1.23$, $SE = 0.09$, $p < .001$, 95% CI = [1.05, 1.42]. Preconscious attentional bias to sexism did not significantly predict perceived sexism, $B = 0.01$, $SE = 0.003$, $p = .10$, 95% CI = [-0.001, 0.01], but perceived SDO significantly predicted perceived sexism, $B = 0.39$, $SE = 0.08$, $p < .001$, 95% CI = [0.23, 0.54]. While the indirect effect of condition on perceived sexism was significant through perceived SDO, $B = 0.48$, $SE = 0.11$, 95% CI = [0.27, 0.71], it was not significant through preconscious attentional bias to sexism, $B = 0.04$, $SE = 0.03$, 95% CI = [-0.001, 0.11].

Several alternative mediation models were also conducted. A mediation model examining the effect of condition (racism vs control) on perceived SDO via preconscious attentional bias to sexism indicated the indirect effect was not significant, $B = 0.003$, $SE = 0.03$, 95% CI = [-0.05, 0.07]. Similarly, a mediation model examining the effect of condition (racism vs control) on perceived sexism via preconscious attentional bias to

sexism indicated that the indirect effect was not significant, $B = 0.04$, $SE = 0.03$, 95% CI = $[-0.01, 0.12]$. Additionally, an alternative parallel mediation model with perceived SDO and perceived sexism mediating the effects of condition (racism vs control) on preconscious attentional bias to sexism revealed that the indirect effects of condition on preconscious attentional bias through perceived SDO, $B = -2.09$, $SE = 2.97$, 95% CI = $[-7.70, 3.84]$, and through perceived sexism, $B = 3.86$, $SE = 2.56$, 95% CI = $[-0.89, 9.31]$ were not significant.

Replicating past research, perceived SDO mediated the effect of identity threat transfer on self-report measures of perceived sexism (e.g., Sanchez et al., 2017), and preconscious attentional bias to sexism did not mediate the effect of condition on self-reported perceived sexism.

Appendix D

Rate My Professor Manipulation (Study 2; neutral review used in Study 4)

RATE MY PROFESSORS SEARCH FOR A PROFESSOR OR SCHOOL

63 PROFS

SCHOOL

RATE

BLOG

Scott Walters
Professor in the Chemistry Department

OVERALL QUALITY
3.8

WOULD TAKE AGAIN
70%

LEVEL OF DIFFICULTY
2.1

Tags for this Professor
See how other students describe this professor.

LECTURE HEAVY (5) SKIP CLASS? YOU WON'T PASS. (4) EXTRA CREDIT (3)
CARING (3) AMAZING LECTURES (2) TOUGH GRADER (2)
CLEAR GRADING CRITERIA (2) GET READY TO READ (2) TEST HEAVY (2)
INSPIRATIONAL (2) GRADED BY FEW THINGS (1) LOTS OF HOMEWORK (1)

CHOOSE YOUR TAGS

Sexism Review condition:

04/25/2018

AVERAGE

3.0 OVERALL QUALITY

2.0 LEVEL OF DIFFICULTY

For Credit: Yes
Attendance: Mandatory
Textbook Used: Yes
Would Take Again: Yes
Grade Received: A

Okay class that can be an easy B or A. If you study like a night or two before the exam and memorize everything you'll probably be fine. BUT for the professor, he is really boring because he literally just reads off of his notes word for word. Online quizzes that are pretty easy and he randomly takes attendance.

0 people found this useful 0 people did not find this useful

report this rating

04/05/2018

POOR

2.0 OVERALL QUALITY

2.0 LEVEL OF DIFFICULTY







For Credit: Yes
Attendance: Mandatory
Textbook Used: Yes
Would Take Again: No
Grade Received: N/A

This was an easy A. But the textbook (which is REQUIRED) is \$100. And the guy is really sexist. He kept trying to make jokes about how women don't belong in labs or in medical fields and that the Women's Studies building was in then next building over. Awful guy.







0 people found this useful 0 people did not find this useful

report this rating

Racism Review condition:

<p>04/25/2018</p> <p> AVERAGE</p> <p>3.0 OVERALL QUALITY</p> <p>2.0 LEVEL OF DIFFICULTY</p>	<p>For Credit: Yes Attendance: Mandatory Textbook Used: Yes Would Take Again: Yes Grade Received: A</p> <p>Okay class that can be an easy B or A. If you study like a night or two before the exam and memorize everything you'll probably be fine. BUT for the professor, he is really boring because he literally just reads off of his notes word for word. Online quizzes that are pretty easy and he randomly takes attendance.</p> <p> 0 people found this useful  0 people did not find this useful</p> <p>report this rating</p>
<p>04/05/2018</p> <p> POOR</p> <p>2.0 OVERALL QUALITY</p> <p>2.0 LEVEL OF DIFFICULTY</p>	<p>For Credit: Yes Attendance: Mandatory Textbook Used: Yes Would Take Again: No Grade Received: N/A</p> <p>This was an easy A. But the textbook (which is REQUIRED) is \$100. And the guy is really racist. He kept trying to make jokes about how African Americans don't belong in labs or in medical fields and that the gym was in the next building over. Awful guy.</p> <p> 0 people found this useful  0 people did not find this useful</p> <p>report this rating</p>

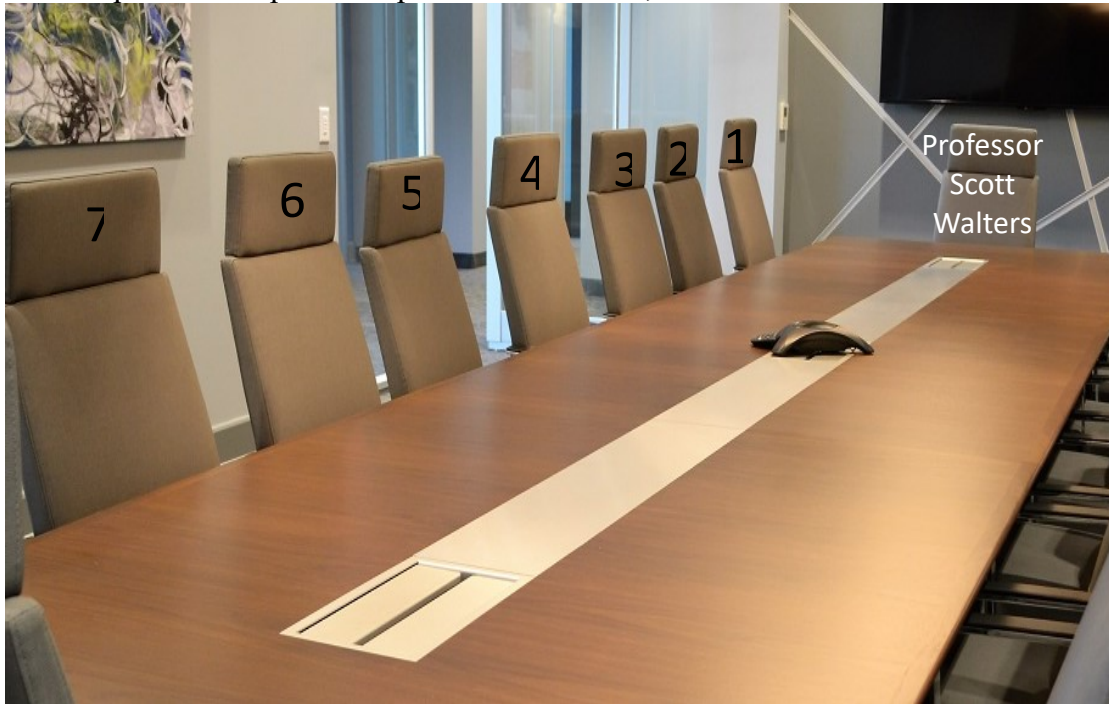
Neutral Review condition:

<p>04/25/2018</p> <p> AVERAGE</p> <p>3.0 OVERALL QUALITY</p> <p>2.0 LEVEL OF DIFFICULTY</p>	<p>For Credit: Yes Attendance: Mandatory Textbook Used: Yes Would Take Again: Yes Grade Received: A</p> <p>Okay class that can be an easy B or A. If you study like a night or two before the exam and memorize everything you'll probably be fine. BUT for the professor, he is really boring because he literally just reads off of his notes word for word. Online quizzes that are pretty easy and he randomly takes attendance.</p> <p> 0 people found this useful  0 people did not find this useful</p> <p>report this rating</p>
<p>04/05/2018</p> <p> POOR</p> <p>2.0 OVERALL QUALITY</p> <p>2.0 LEVEL OF DIFFICULTY</p>	<p>For Credit: Yes Attendance: Mandatory Textbook Used: Yes Would Take Again: No Grade Received: N/A</p> <p>This was an easy A. But the textbook (which is REQUIRED) is \$100. And the guy is super boring. His sense of humor is terrible. I have never had a prof who read word for word off of notes to teach a class and cared so little about this students. Awful guy.</p> <p> 0 people found this useful  0 people did not find this useful</p> <p>report this rating</p>

Appendix E

Example Virtual Seating Task (Studies 2-4)

Name replaced with professor picture in Studies 4, 5



Appendix F

Study 2a Analyses Without Covariate

A one-way ANOVA for the virtual seating task revealed a significant main effect of condition, $F(2, 142) = 6.37, p = .002, d = 0.60$. LSD post-hoc tests revealed that participants indicated they would sit significantly closer to the neutral professor ($M = 5.02, SE = 0.21$) than the racist professor ($M = 6.00, SE = 0.21$), $p = .001, d = 0.67$, 95% CI [0.39, 1.57], or the sexist professor ($M = 5.89, SE = 0.22$), $p = .005, d = 0.55$, 95% CI [0.26, 1.66]. There was no significant difference between the sexist and racist professor conditions, $p = .72, d = 0.08$, 95% CI [-0.72, 0.50].

To ensure that manipulations successfully manipulated perceptions of intergroup attitudes and that manipulations of negative attitudes towards Black students and women students did not significantly differ a 3(condition) x 2(treatment: women, Black students) mixed ANOVA with treatment as a within-subject factor was conducted. The mixed ANOVA revealed a main effect of condition, $F(2, 142) = 55.97, p < .001, d = 1.78$, no effect of treatment, $F(1, 142) = 0.90, p = .76, d = 0.06$, and a significant condition x treatment interaction, $F(2, 142) = 79.41, p < .001, d = 2.12$. Simple effect analyses by treatment revealed a significant main effect of condition on treatment of female students, $F(2, 142) = 53.72, p < .001, d = 1.74$. LSD post-hoc tests revealed that participants anticipated the sexist professor would treat female students significantly worse ($M = 2.11, SE = 0.21$) than the neutral professor ($M = 5.09, SE = 0.20$), $p < .001, d = 2.02$, 95% CI [2.40, 3.56] and the racist professor ($M = 3.22, SE = 0.20$), $p < .001, d = 1.37$, 95% CI [0.53, 1.69]. Consistent with hypotheses, White women anticipated the racist professor

would treat female students significantly worse than the neutral professor, $p < .001$, $d = 0.78$, 95% CI [1.31, 2.43].

Moreover, simple effects of condition on treatment of Black students revealed a significant effect of condition, $F(2, 142) = 66.14$, $p < .001$, $d = 1.93$. LSD post-hoc tests revealed participants anticipated that the racist professor would treat Black students worse ($M = 1.82$, $SE = 0.20$) than the neutral professor ($M = 5.02$, $SE = 0.20$), $p < .001$, $d = 2.41$, 95% CI [2.65, 3.75], and the sexist professor ($M = 3.67$, $SE = 0.21$), $p < .001$, $d = 1.40$, 95% CI [1.28, 2.41]. Moreover, participants expected the sexist professor to treat Black students worse than the neutral professor, $p < .001$, $d = 0.88$, 95% CI [1.28, 2.41].

Study 2a Exploratory Mediation Analysis

While I proposed that social distancing would be predicted by more automatic measures, an exploratory mediation analysis was conducted examining the effect of the racist (1) versus the neutral (-1) professor on social distancing via treatment of women while controlling for professor quality. Condition was significantly associated with negative treatment of women, $B = 0.96$, $SE = 0.16$, $p < .001$, 95% CI [0.65, 1.28]; however, seat choice was not significantly associated with treatment of women, $B = 0.10$, $SE = 0.09$, $p = .25$, 95% CI [-0.08, 0.28]. Additionally, the indirect effect of condition on seat choice was not significant through treatment of women, $B = 0.10$, $SE = 0.08$, 95% CI [-0.04, 0.25].

Appendix G

Anticipated Classroom Comfort (Studies 2b, 4). Participants completed 3 items on a scale from 1 (*Not at all*) to 7 (*Very*).

1. How comfortable would you be raising your hand in class?
2. How comfortable would be speaking in class?
3. How comfortable would you be attending the professor's office hours?

Liking (Study 2b, 3a). Participants responded to three items on a scale from 1 (*Not at all*) to 7 (*Very much*)

- 1) "Would you enjoy chatting with X?"
- 2) "Would you enjoy an interaction with X?"
- 3) "Would you find a conversation with X enjoyable?"

Appendix H

Study 2b Analyses Without Covariate

A one-way ANOVA on preconscious attentional bias to rejection was significant, $F(2, 177) = 4.27, p = .017, d = 0.44$. LSD post-hoc analyses revealed that participants demonstrated significantly less preconscious attentional bias to rejection when imagining enrolling in a course with a STEM professor whose intergroup attitudes were unknown ($M = -6.72, SE = 3.16$) compared to a racist STEM professor ($M = 4.63, SE = 3.08$), $p = .01$, 95% CI [2.64, 20.06], and compared to a sexist STEM professor ($M = 4.27, SE = 3.01$), $p = .013$, 95% CI [2.38, 19.60]. Preconscious attentional bias to rejection did not significantly differ in the racist and sexist STEM professor conditions, $p = .93$, 95% CI [-8.86, 8.13].

A one-way ANOVA on seat choice was significant, $F(2, 177) = 9.08, p < .001, d = 0.64$. LSD post-hoc analyses revealed that participants selected seats significantly closer to the STEM professor whose intergroup attitudes were unknown ($M = 3.79, SE = 0.19$) compared to the racist STEM professor ($M = 4.55, SE = 0.18$), $p = .004$, 95% CI [0.25, 1.27], and compared to the sexist STEM professor ($M = 4.86, SE = 0.18$), $p < .001$, 95% CI [0.56, 1.57]. Seat choice did not significantly differ in the racist and sexist STEM professor conditions, $p = .23$, 95% CI [-0.19, 0.81].

A one-way ANOVA on classroom comfort was significant, $F(2, 177) = 9.84, p < .001, d = 0.67$. LSD post-hoc analyses revealed that participants indicated significantly greater classroom comfort in a course with the STEM professor whose intergroup attitudes were unknown ($M = 3.66, SE = 0.17$) compared to with the racist STEM professor ($M = 2.97, SE = 0.16$), $p = .003$, 95% CI [0.24, 1.15], and compared to with the

sexist STEM professor ($M = 2.67$, $SE = 0.16$), $p < .001$, 95% CI [0.54, 1.43]. Classroom comfort did not significantly differ between the sexist and racist STEM professor conditions, $p = .19$, 95% CI [-0.74, 0.15].

A one-way ANOVA on perceived SDO was significant, $F(2, 177) = 103.67$, $p < .001$, $d = 2.17$. LSD post-hoc analyses indicated participants perceived the STEM professor whose intergroup attitude were unknown ($M = 3.70$, $SE = 0.11$) as significantly lower in SDO than the racist STEM professor ($M = 5.66$, $SE = 0.11$), $p < .001$, 95% CI [1.66, 2.27], and the sexist STEM professor ($M = 5.58$, $SE = 0.11$), $p < .001$, 95% CI [1.58, 2.18]. Perceived SDO did not significantly differ between the sexist and racist STEM professor conditions, $p = .59$, 95% CI [-0.38, 0.22]

Study 2b Alternative Mediations

While I again proposed that preconscious attentional bias would facilitate identity threat transfer for more automatic outcomes, such as social distancing, while perceived SDO would facilitate identity threat transfer for more explicit, self-report outcomes, exploratory parallel mediation analyses were conducted examining both preconscious attentional bias and perceived SDO as mediators. Two parallel mediation analyses were conducted examining the effect of condition (-1 = neutral professor; 1 = racist professor) on 1) seat choice and 2) classroom comfort, via preconscious attentional bias to rejection and perceived SDO. In all analyses, condition significantly predicted preconscious attentional bias to rejection, $B = 5.49$, $SE = 2.42$, $p = .025$, 95% CI [0.69, 10.29], and perceived SDO, $B = 0.97$, $SE = 0.08$, $p < .001$, 95% CI [0.80, 1.14].

Preconscious attentional bias to rejection significantly predicted seat choice, $B = 0.01$, $SE = 0.01$, $p = .006$, 95% CI [0.004, 0.02], and perceived SDO marginally predicted

seat choice, $B = 0.26$, $SE = 0.14$, $p = .056$, 95% CI [-0.01, 0.52]. The indirect effect of condition on seat choice was significant through preconscious attentional bias to rejection, $B = 0.07$, $SE = 0.04$, 95% CI [0.01, 0.18], and through perceived SDO, $B = 0.25$, $SE = 0.12$, 95% CI [0.02, 0.50]. As such, perceived SDO was unexpectedly also a significant mediator, such that White women perceived the racist professor as significantly higher in SDO and this was associated with greater social distancing compared to participants in the neutral, control condition.

An identical parallel mediation analysis replacing seat choice with classroom comfort revealed that neither preconscious attentional bias to rejection, $B = -0.001$, $SE = 0.004$, $p = .77$, 95% CI [-0.01, 0.01], nor perceived SDO, $B = -0.01$, $SE = 0.11$, $p = .93$, 95% CI [-0.24, 0.22], significantly predicted classroom comfort. As such, the indirect effect of condition on classroom comfort was not significant through preconscious attentional bias to rejection, $B = -0.01$, $SE = 0.02$, 95% CI [-0.05, 0.02], nor through perceived SDO, $B = -0.01$, $SE = 0.15$, 95% CI [-0.29, 0.28].

Appendix I

Expert profiles (Studies 3-5). Participants were presented with information about a test creator, specifically their name, university affiliation, and a photograph. Photographs and profiles from Chaney et al., 2018.



Test Creator: Dr. Jermaine Williams
University: Columbia University
Research: Measures of cognitive ability and intelligence

New Task: Predicts career success



Test Creator: Dr. Scott Walters
University: Columbia University
Research: Measures of cognitive ability and intelligence

New Task: Predicts career success



Test Creator: Dr. Sarah Walters
 University: Columbia University
 Research: Measures of cognitive ability and intelligence

New Task: Predicts career success

Meta-stereotype endorsement (Studies 3, 5). Participants responded to three items on a scale from 1 (*Not at all*) to 7 (*Very much*)

- 1) “To what extent do you believe [test creator] believes women are intelligent?,”
- 2) “How likely is it that [test creator] believes women are smart?”
- 3) “How likely is it that [test creator] endorses the stereotype that women are not competent?”

Anticipated test-bias (Studies 3a, 5). Participants respond to two items on a scale from 1 (*Not at all*) to 10 (*Very much*)

- 1) “How likely is it that [test creator] made a test that produces gender differences, in which women perform worse than men?”
- 2) “How likely is it that [test creator] made a test that men perform better on than women?”

Appendix J

Study 3a Analyses without Covariate

The one-way ANOVA for meta-stereotype endorsement revealed a significant effect of condition, $F(2, 137) = 15.34, p < .001, d = 0.94$. LSD post-hoc comparisons revealed that participants anticipated the White man would endorse negative stereotypes about women's intelligence ($M = 2.52, SE = 0.13$) more than the White woman ($M = 1.61, SE = 0.10$), $p < .001, d = 1.15$, 95% CI [0.58, 1.12], and more than the Black man ($M = 2.09, SE = 0.12$), $p = .02, d = 0.53$, 95% CI [0.09, 0.78]. Participants anticipated the Black man would endorse these negative stereotypes more than the White woman, $p = .003, d = 0.62$, 95% CI [0.17, 0.79].

The one-way ANOVA for anticipated test bias revealed a significant effect of condition, $F(2, 137) = 4.20, p = .017, d = 0.51$. LSD post-hoc comparisons revealed that participants anticipated greater test gender-bias from the White man ($M = 4.20, SE = 0.30$) than the White woman ($M = 3.21, SE = 0.24$), $p = .01, d = 0.54$, 95% CI [0.24, 1.74], and compared to the Black man ($M = 3.18, SE = 0.27$), $p = .01, d = 0.59$, 95% CI [0.23, 1.82]. Participants did not anticipate a significant difference in test bias between the Black man and the White woman, $p = .92, d = 0.02$, 95% CI [-0.67, 0.75].

The one-way ANOVA for perceived SDO revealed no significant effect of condition, $F(2, 137) = 0.55, p = .58, d = 0.18$. There was no significant difference between participants' perceptions of the test creator's SDO between the White male ($M = 2.78, SE = 0.22$), Black male ($M = 2.48, SE = 0.20$), or White female test creator ($M = 2.56, SE = 0.17$), $ps > .31, ds < 0.23$.

Study 3a Exploratory Mediation

While note the primary aim of the present study, a mediation model of the effect of condition on anticipated test bias via meta-stereotype endorsement was conducted to examine if meta-stereotype endorsement was associated with anticipated bias of the test creator. Condition (-1 = White man, 1 = Black man) significantly predicted meta-stereotype endorsement, $B = -0.22$, $SE = 0.09$, $p = .02$, 95% CI [-0.40, -0.04], and meta-stereotype endorsement significantly predicted anticipated test bias, $B = 1.09$, $SE = 0.21$, $p < .001$, 95% CI [0.68, 1.50]. Moreover, the indirect effect of condition on anticipated test bias was significant, $B = -0.24$, $SE = 0.11$, 95% CI [-0.48, -0.04], such that participants reported lower meta-stereotyped endorsement from the expert Black man, compared to the White man, which was predictive of less anticipated test bias.

A parallel mediation model examining the effect of condition (-1 = White man, 1 = Black man) on anticipated test bias via meta-stereotype endorsement and perceived SDO revealed that while the indirect effect through meta-stereotype endorsement was significant, $B = -0.26$, $SE = 0.12$, 95% CI [-0.54, -0.06], the indirect effect through perceived SDO was not significant, $B = 0.01$, $SE = 0.04$, 95% CI [-0.04, 0.13]. As past research has consistently demonstrated that perceived SDO mediated the effects of identity cue transfer (Chaney et al., 2016; Sanchez et al., 2017), the present finding was unexpected. Yet, the testing context may make more salient stereotype endorsement, not broader ideologies. See general discussion for a broader discussion of meta-stereotype endorsement and perceived SDO.

Appendix K

Study 3b Alternative Mediation Analysis

A parallel mediation analysis was conducted to examine the effect of condition (-1 = expert White man; 1 = expert Black man) on seat choice via preconscious attentional bias to sexism and meta-stereotype endorsement. Condition significantly predicted preconscious attentional bias to sexism, $B = -4.97$, $SE = 2.47$, $p = .047$, 95% CI [0.08, 9.87], and meta-stereotype endorsement, $B = -0.45$, $SE = 0.11$, $p < .001$, 95% CI [-0.68, -0.23]. Preconscious attentional bias to sexism predicted seat choice, $B = 0.01$, $SE = 0.004$, $p = .003$, 95% CI [0.004, 0.02], and meta-stereotype endorsement did not significantly predict seat choice, $B = 0.05$, $SE = 0.09$, $p = .57$, 95% CI [-0.12, 0.22]. While the indirect effect of condition on seat choice was significant through preconscious attentional bias to sexism, $B = -0.06$, $SE = 0.03$, 95% CI [-0.16, -0.01], but not through meta-stereotype endorsement, $B = -0.02$, $SE = 0.04$, 95% CI [-0.12, 0.05].

Appendix L

Study 4 Alternative Mediation Analysis

A parallel mediation analysis was conducted to examine the effect of condition (-1 = White male professor; 1 = Black male professor) on seat choice via preconscious attentional bias to rejection and perceived SDO. Condition significantly predicted preconscious attentional bias to rejection, $B = -5.65$, $SE = 2.40$, $p = .02$, 95% CI [-10.40, -0.89], and perceived SDO, $B = -0.32$, $SE = 0.10$, $p = .001$, 95% CI [-0.51, -0.13]. Preconscious attentional bias to rejection predicted seat choice, $B = 0.01$, $SE = 0.01$, $p = .018$, 95% CI [0.002, 0.02], but perceived SDO did not significantly predict seat choice, $B = -0.03$, $SE = 0.13$, $p = .82$, 95% CI [-0.29, 0.23]. While the indirect effect of condition on seat choice was significant through preconscious attentional bias to rejection, $B = -0.08$, $SE = 0.04$, 95% CI [-0.18, -0.004], but not through perceived SDO, $B = 0.01$, $SE = 0.04$, 95% CI [-0.06, 0.11].

A second parallel mediation analysis was conducted to examine the effect of condition (-1 = White male professor; 1 = Black male professor) on classroom comfort via preconscious attentional bias to rejection and perceived SDO. Condition significantly predicted preconscious attentional bias to rejection, $B = -5.65$, $SE = 2.40$, $p = .02$, 95% CI [-10.40, -0.89], and perceived SDO, $B = -0.32$, $SE = 0.10$, $p = .001$, 95% CI [-0.51, -0.13]. Preconscious attentional bias to rejection predicted classroom comfort, $B = -0.01$, $SE = 0.01$, $p = .026$, 95% CI [-0.02, -0.001], but perceived SDO did not significantly predict classroom comfort, $B = -0.15$, $SE = 0.11$, $p = .18$, 95% CI [-0.37, 0.07]. While the indirect effect of condition on classroom comfort was significant through preconscious attentional bias to rejection, $B = 0.06$, $SE = 0.04$, 95% CI [0.003, 0.15], but not through

perceived SDO, $B = 0.05$, $SE = 0.04$, 95% CI $[-0.02, 0.15]$. This pattern of effects does not match the findings in Study 2b examining preconscious attentional bias and perceived SDO as mechanisms of identity cue transfer as it relates to classroom comfort and is the first mediation suggesting preconscious attentional bias predicts explicit, self-report measures of identity safety. This result is thus interpreted cautiously, and future research should continue to explore the relationship between preconscious attentional bias and self-report measures.

Appendix M

Study 5 Exploratory Mediation

An exploratory serial mediation model was conducted examining the indirect effect of condition (-1 = White man, 1 = Black man test creator) on antisaccade RTs via meta-stereotype endorsement and anticipated test bias. The analyses revealed that while condition significantly predicted meta-stereotype endorsement, $B = -0.28$, $SE = 0.07$, $p < .001$, 95% CI [-0.42, -0.15], and meta-stereotype endorsement significantly predicted anticipated test bias, $B = 0.68$, $SE = 0.16$, $p < .001$, 95% CI [0.36, 1.00], anticipated test bias did not significantly predict antisaccade RTs, $B = 6.94$, $SE = 7.21$, $p = .24$, 95% CI [-7.34, 21.21], and the indirect effect through meta-stereotype endorsement and anticipated test bias was not significant, $B = -1.35$, $SE = 1.47$, 95% CI [-5.31, 0.83]. Moreover, a model examining just meta-stereotype endorsement as a mediator did not reveal a significant indirect effect, $B = 4.62$, $SE = 3.90$, 95% CI [-1.94, 13.79], nor did a model examining just anticipated test bias as a mediator, $B = -0.27$, $SE = 1.09$, 95% CI [-4.30, 0.95].

As in Study 3a, a mediation model demonstrated that the indirect effect of test creator (-1 = White man, 1 = Black man) on anticipated test bias via meta-stereotype endorsement was significant, $B = -0.25$, $SE = 0.07$, 95% CI [-0.42, -0.14], such that the Black man test creator was associated with significantly lower meta-stereotype endorsement, which was predictive of significantly less anticipated test-gender bias compared to the White man test creator.

A parallel mediation examining the indirect effect of condition (-1 = White man, 1 = Black man test creator) on antisaccade RTs via perceived SDO, meta-stereotype

endorsement, and anticipated test bias was also conducted. The indirect effect of condition on antisaccade RTs was not significant via perceived SDO, $B = -0.14$, $SE = 3.41$, 95% CI $[-5.42, 22.88]$, meta-stereotype endorsement, $B = 2.93$, $SE = 4.84$, 95% CI $[-3.90, 15.92]$, or anticipated test bias, $B = 3.06$, $SE = 3.60$, 95% CI $[-1.29, 14.52]$.

Acknowledgement of Previous Publication

Studies 3a and 5 were previously published.

Chaney, K. E., Sanchez, D. T., & Remedios, J. D. (2018). We are in this together: How the presence of similarly stereotyped allies buffer against identity threats. *Journal of Experimental Social Psychology*, 79, 410-422.