

## **THE SCIENCE OF EQUALITY, VOLUME 2:**

# THE EFFECTS OF GENDER ROLES, IMPLICIT BIAS, AND STEREOTYPE THREAT ON THE LIVES OF WOMEN AND GIRLS



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## FOREWORD

I am a movement baby. I was born in 1972, just five months before *Roe v. Wade* and well after the landmark victories of the Civil Rights Movement—somewhere between second-wave feminism and the peak of black power. My parents were boldly black and proud. They wore dashikis, sported big afros, and organized community meetings and breakfasts as we trailed along in tow. Professionals by day, they spent evenings and weekends strategizing with friends about how to ensure newly enacted federal legislation would become local reality. I am pretty sure I learned the words to *We Shall Overcome* before I learned the Pledge of Allegiance.

Race was always the dominant frame in my house; gender roles were often stereotypical, yet they pushed boundaries. My mother, for instance, began her career as an entry-level secretary at AT&T Bell Laboratories and retired 40 years later as a Director of Human Resources and Labor Negotiations. Inside the company, she was a proud race woman and agitator, building one of the first black executive affinity groups in corporate America. At home, she took more pride in her role as a 1950s-style housewife, deferring to her husband on major financial decisions, even though she brought in more resources. She claimed *womanism* (as distinct from mainstream feminism, seen by some women of color as a movement for white women) and raised me and my three sisters to be intersectional long before there was ever a name for it. To me, she moved seamlessly between race and gender frameworks, albeit with choices that were clunky, compartmentalized, and often contradictory.

By the time I reached Princeton in the late 1980s, many of the legal battles against explicit discrimination on the basis of race and gender had been “settled.” Judging from the dreams that my peers and I held for ourselves and the vigor with which we pursued them, it was clear that my generation was the first generation to be raised with gender and racial equality as core American values. We knew we were part of an enduring struggle—centuries of marginalization would not yield easily to change, and longstanding informal practices of bias meant that many people of color and women likely would never reach full equality. But for a privileged few, success was ours for the taking; inclusion and belonging were a function of our ability to seize the opportunities our parents and their forebears created through their sacrifices.

And yet, decades later, data on racial and gender inclusion in leadership reveals more paradox than paradigm shift.

- ◆ Across all Fortune 500 companies, fewer than 5% of the CEOs are women—of these 24 women, only three are not white.
- ◆ In the nation’s top 200 law firms, women occupy only 17% of the highest positions.

- ◆ Only 19% of congressional representatives, 12% of state governors, and 18% of the mayors in our largest cities are women.
- ◆ Of the 104 women in Congress, only 33 are women of color.

That data depicts our path to representation and leadership. On paths elsewhere, women of color are the fastest growing group to be incarcerated and to be diagnosed with new HIV/AIDS cases. Disparities abound, despite our best intentions.

We know from the mind sciences that the values we hold as a society can exist in tension, even conflict, with our outcomes. From my vantage point at the Perception Institute, I understand intellectually how stark gendered disparities stem not from a disparate talent pool but rather from well-documented patterns of structural discrimination. And yet, I can't help but wonder how many women in my generation and those that have come after continue to labor under deep-seated hopes and myths about individual success. For decades, we've simultaneously been primed with opportunities that didn't exist for previous generations and undermined by social stereotypes that both limit those very possibilities and create identity traps that weaken our individual ability to perform to our potential.

When the gender lens includes race, as it should, the paradox gets more layered and complicated. The very access we rely on to create both gender and racial progress continues to depend not just on how we perform or who we know, but rather on how the mass majority of society perceives our capabilities through both lenses.

Perception matters.

Perception Institute's work rests on a foundation of empirical science. In 2014, under the guidance of Research Director and Co-Founder, Rachel D. Godsil, Perception released *The Science of Equality, Vol. 1*, a collaboration with leading social psychologists Linda R. Tropp, Professor of Psychology and Brain Sciences at the University of Massachusetts Amherst; Phillip Atiba Goff, President of the Center for Policing Equality; and John A. Powell, Director of the Haas Institute for a Fair and Inclusive Society at the University of California, Berkeley. The report delved deeply into translating and synthesizing insights from the sciences to develop a framework for understanding how the unconscious phenomena of implicit bias, racial anxiety, and stereotype threat interact and become actualized in individual behavior and systems.

*The Science of Equality, Vol. 2* is written by the same set of advisors, along with Perception's Research Associate Jessica MacFarlane, and focuses specifically on gender bias as viewed through an intersectional lens and its implications for the academic and professional achievements of women. Drawing on research across numerous fields, this report explains challenges that women face as we navigate workplaces, leadership roles, and educational settings—from implicit biases that shape how we are perceived to the environments that encourage sexual harassment. It concludes with evidence-based strategies to override these phenomena at the individual and institutional level and to promote the full participation and potential of all women.



*All women.*

The category all women, not surprisingly, poses methodological challenges. As the report draws largely upon extant research, the authors were confronted with the question of how to identify mechanisms of gender bias for all women without equating women with white women. Are gender stereotypes and their resulting biases, for example, experienced in the same way by women of different races and ethnicities? Are all women presumed to be the “fairer” sex, or just white women?

At the suggestion of co-author Phillip Atiba Goff, the authors combed through every study included in the report to both identify the race and ethnicity of the study participants and determine whether the analyses accounted for potential race or ethnicity-based differences. The process revealed that many of the studies either included only white participants, included very few participants of color, or neglected to specify the race or ethnicity of participants at all. As a result, the authors could not definitively conclude that the findings presented apply equally to all women and girls. In the name of transparency and in an effort to avoid misleading readers, this report specifies when the sample is either all white or ambiguous, in contrast to those studies that include more representative samples.

This approach, rarely seen in large research syntheses, added depth to this report, making it more reflective of, and applicable to, the lived experiences of women of various races and ethnicities. Ironically, the extra effort to view the data with an intersectional lens underscored just how invisible women of color are within research methodologies and metrics. Research with an intersectional lens not only creates stronger empiricism but can help us develop more trusted interventions.

While empiricism is at its core, the work of this report has also brought an emotional reckoning for me as I reflect on my own movement choices.

Since 2010, I have been deeply invested in shifting perceptions of boys and men of color in collaboration with the Campaign for Black Male Achievement and the Executives’ Alliance to Expand Opportunities for Boys and Men of Color. The unspeakable tragedies of police-involved shootings of unarmed black men, in particular, have made this work unrelenting. Meaningful conversations about the “role” of black women in this space abound but rarely incorporate our own complicity with and reification of gender constructs. Because race is “genderized,” the fact that black women with darker skin are also in jeopardy of state violence often gets masked. Intersectional work is hard—particularly in the face of such urgency.

For about the same period of time, I have served on the national board of a reproductive rights organization and as a leader in the reproductive rights movement, where white women dominate leadership and funding; meanwhile women of color disproportionately experience limits on access to reproductive healthcare, are more broadly demonized for their reproductive choices, and are limited in their opportunities to grow and develop women-of-color-led organizations to fight back. Although the concepts of intersectionality and reproductive justice, developed by women of

color, have gained incredible traction, making those concepts meaningful and holding mainstream organizations accountable to those principles lags behind.

In spite of my value for intersectionality, in practice, race continues to be operationalized as black men, and gender equals white women. As such, I remain in perpetual search of frameworks and metrics to help me make meaning and make a difference.

But I remain hopeful.

Our first volume of *The Science of Equality* felt ironic—we were celebrating an historic presidency of an African American man while bearing the countless deaths of African American men throughout our nation. We are publishing the second volume of *The Science of Equality* on gender almost 100 years after women's suffrage, and just a few short weeks before we vote in another historic election: the first woman is leading the ticket of a major party.

But most important, young women of all races and gender identities—who are unapologetic, queer, and unafraid—are powering movements from Black Lives Matter to immigration reform to reproductive justice to minimum wage and beyond. They are living both at an intersection and intersectionally—centering the voices of the most marginal. It is our job as researchers to ensure that we support their progress with metrics that capture the spirit they are building. I hope *The Science of Equality, Vol. 2* makes a contribution in that vein.



Alexis McGill Johnson  
Executive Director, Perception Institute

**WOMEN**  
BY ALICE WALKER

They were women then  
My mama's generation  
Husky of voice—stout of  
Step  
With fists as well as  
Hands  
How they battered down  
Doors  
And ironed  
Starched white  
Shirts  
How they led  
Armies  
Headragged generals  
Across mined  
Fields  
Booby-trapped  
Ditches  
To discover books  
Desks  
A place for us  
How they knew what  
we  
*Must* know  
Without knowing a page  
Of it  
Themselves.

## TABLE OF CONTENTS

<b>FOREWORD</b>	1
<b>WOMEN by Alice Walker</b>	5
<b>TWO STORIES</b>	9
<b>EXECUTIVE SUMMARY</b>	11
<b>INTRODUCTION</b>	19
<b>PART I: GENDER STEREOTYPES AND GENDER ROLES</b>	25
A. Gender as a "Category"	25
B. Source of Gender Stereotypes	27
C. Norms of Beauty, Femininity, and Sexuality	28
<b>PART II: THE OPERATION OF GENDER BIAS</b>	31
A. Automatic Processing of Stimuli into Categories	31
B. In-group Preference	33
C. Measuring Implicit Bias	34
D. How Bias Impacts Behavior	36
E. Incongruity Theory of Bias	38
F. Hostile and Benevolent Sexism	40
G. Sexual Harassment	42
H. Interventions for Gender Bias	44
1. <i>Change the Local Environment</i>	45
2. <i>Practices to Override Bias</i>	45
<b>PART III: NAVIGATING THE COMPLEXITIES OF GENDER BIAS</b>	49
A. Awareness of Gender Stereotypes	49
B. Stereotype Threat	51
1. <i>The Behavioral Effects of Stereotype Threat</i>	52



2. <i>Stereotype Threat and the Intersection of Race, Ethnicity, and Gender</i> .....	53
C. Reducing Stereotype Threat among Women .....	53
1. <i>The Stereotype Inoculation Model &amp; Critical Mass: The Need to Increase Diversity</i> .....	53
2. <i>The Importance of In-group Peers</i> .....	55
3. <i>The Importance of "Experts"</i> .....	56
4. <i>Provide a Successful Task Strategy</i> .....	56
5. <i>Reduce the Stereotype Relevance of the Task</i> .....	57
6. <i>Acknowledge the Potential for Stereotype Threat</i> .....	58
7. <i>Use Gender-inclusive Language</i> .....	59
D. Reducing Stereotype Threat among Girls in Education .....	59
1. <i>Parental Encouragement</i> .....	60
2. <i>Remove Triggers on Standardized Tests</i> .....	60
3. <i>Collaborative Learning</i> .....	60
4. <i>Applied Learning</i> .....	60
5. <i>Extracurricular Engagement</i> .....	61
6. <i>Intersectional Interventions for Stereotype Threat</i> .....	61
a. <i>Social Belonging Intervention</i> .....	61
b. <i>Communicate High Standards</i> .....	62
c. <i>Growth Mindset</i> .....	63
d. <i>Value-Affirmation</i> .....	63
<b>CONCLUSION</b> .....	65
<b>REFERENCES</b> .....	66



## TWO STORIES

She is poised to enter the board room. Only the third president since the not-for-profit's founding 30 years ago, she embodies a series of firsts for the organization. She is the first president to be hired from outside the organization, the first woman president, and, as a Latina, the first person of color to hold the post. She knows that the board members—several of whom were among the original board—are both enthusiastic and somewhat anxious about the changes. When she was hired, the board chair clearly conveyed to her that she should choose her executive team from among current employees, rather than bringing anyone from the outside, as a signal that she respected their knowledge and experience. Compiling a team has been a challenge, particularly because part of her vision and—she thought—reason she was hired was to champion diversity and the senior staff are primarily male and all white. Despite the difficulties, she is looking forward to sharing her ideas with the board and explaining how she hopes to carry them forward in the upcoming two years. To prepare for her first meeting, she has pored over the financial materials, the programmatic reports, and outside consultants' analyses of the organization's assets and deficits. She had not had access to this material when she was initially hired and was frustrated when she realized that her incoming salary was lower than her predecessor's had been, even though she was equal to him in seniority. But she is determined to make this work. Just as she is about to open the door, the chair of the board steps out to speak with her. "Don't worry too much about this meeting," he puts his arm around her shoulders and says in a kindly voice, "everyone knows you are new and so no one expects you to know every detail." She forces a smile. "I'll be fine."

The 11<sup>th</sup> grade math teacher is making recommendations for next year's Advanced Placement (AP) Calculus course. Most of the decisions were fairly straightforward – students who had performed very strongly and students who struggled in Pre-calculus. He is torn about two students, Jack and Sarah. They ended the semester with the same final grade—right on the cusp of suggesting that they were likely to succeed in the very difficult AP course. However, even though they got the same grade, they were very different students. Jack seemed very confident and willing to take risks. Sarah often seemed unsure of herself and only answered questions when she was absolutely sure she was right. After a lot of deliberation, the teacher decides to recommend Jack for AP Calculus and Sarah for the standard Calculus course.

He shares his recommendations with the head of the math department and mentions the difficulty of the decision. "In the end, I thought Jack would be more comfortable with the material and I worry that Sarah would be overwhelmed," he explained. The head of the department, a woman new to the school, looked at him skeptically. "So if I am hearing you right, you are deciding to keep a female student from taking AP Calculus because she is cautious in class? I guess this helps explain why the ratio of male to female students in our higher-level math classes is so skewed." The teacher is taken aback at the suggestion that Sarah's gender had anything to do with his decision and is even more stung at the suggestion that he is preventing females from higher-level math. "No, no. I just don't want her to be in over her head," he protests. The department head responds, "If Sarah's work is at the level necessary for AP Calculus, don't think you are doing her a favor by protecting her from challenges."



## EXECUTIVE SUMMARY

Most Americans agree in principle that people of different genders should be treated equally and fairly. Beyond principle, gender equity has significant benefits to both men and women, to the success of companies, and even to the annual GDP of countries (Johnston, 2016). It is true that open misogyny continues to exist and that a vocal minority continue to press for “traditional” gender norms. But even in contexts in which most people reject those views, gender equality in the United States has yet to be fully realized.

Gender shapes our experiences in many ways, and it never operates in isolation—our race, ethnicity, sexual orientation, religion, class, and other identity characteristics affect how we navigate the world. In the media, workplaces, communities, schools, and homes, issues of gender, race, ethnicity, and class can be polarizing. We see extraordinary promise in our movement toward gender equity, but with each new “first,” we also see backlash. As we work through the challenges of everyday life, the obstacles created by gender inequity can seem like insurmountable barriers.

Social science provides both important insights that help us understand how gender, race, ethnicity, and other identity characteristics operate and interventions that can move us closer to achieving equity, as well as espousing it. This report provides a detailed synthesis of the social science describing the development of gender stereotypes (Part I) and the operation of gender bias (Part 2). In addition, the report describes the research documenting the challenges women face as they navigate gender bias, such as stereotype threat, gender stigma consciousness, and fear of backlash (Part 3). Most important, in each part, the report sets forth clear strategies for institutions and individuals to address the operation of bias and the harm caused by gender stereotypes.

### PART I: GENDER STEREOTYPES AND GENDER ROLES

Part I describes the formation and function of gender stereotypes, norms, and roles within society. Enduring gender stereotypes, intertwined with racial stereotypes, shape automatic associations about women and have led to distinct norms of femininity. These phenomena culminate in different expectations of the temperament, behavior, and career choices of women and men.

- ♦ Gender stereotypes grow out of our historical and cultural understanding of the roles of men and women in society—many, or even most, of which are outmoded but continue to be powerful.

- ◆ Automatic associations about a gender group are established early in life and are consistently reinforced by cultural experiences, further entrenching gender-based stereotypes.
- ◆ Most traditional stereotypes of femininity are drawn from an idealized images of white women. These narrow categorizations are harmful to all women but are particularly pernicious for women of color.
- ◆ Definitions of beauty have significant impacts upon women in many realms. Women who do not conform to beauty norms often experience a cascade of negative consequences, in large part due to strong cultural associations of beauty with capability and positive personality traits.
- ◆ Stereotypes about gender roles also affect men who deviate from the idealized version of masculinity. Men who experience “male identity threat” may be more apt to engage in behavior, such as gender harassment, that is intended to bolster the perception of their masculinity.

## **PART II: OPERATION OF GENDER BIAS & INTERVENTIONS TO OVERRIDE BIAS**

Part II details the mechanisms by which gender biases are formed, are reinforced over the life course, and, most importantly, shape women’s experiences. We review the social science research on implicit bias to understand the enduring bias against women, despite society’s commitment to gender equity. We highlight the complicated experience of women in leadership, who must grapple with the consequences of defying gender stereotypes, and bring attention to the trap of traditional roles, which limit all of us.

### ***Implicit Bias, Women in Leadership, the Trap of Traditional Roles, and Sexual Harassment***

#### **Implicit Bias**

The science of implicit bias shows us how gender stereotypes affect our responses and assumptions even when we consciously disagree with them. These stereotypes are not identical for all women or girls—different races and ethnicities are characterized in our culture in distinct ways.

- ◆ Our brains automatically organize the stimuli we encounter, drawing on stereotypes when we lack full information or we need to make quick decisions.
- ◆ Popular culture plays an important part in reinforcing these gendered associations.
- ◆ Implicit biases are not the result of individual psychology—they are a social phenomenon that affects us all. As a result, implicit gender bias affects both men and women, including those with deeply held feminist convictions.
- ◆ Implicit biases are powerful predictors of our behavior; among other things, research has shown that they can affect how we judge women’s competence for



particular jobs, what salaries are offered in a negotiation, the level of respect given to women in workplace interactions, and whether girls are selected for an honors math class.

#### Women in Leadership

The experience of women leaders provides important insight into the operation of gender bias and its perpetuation by both women and men.

- ◆ The “incongruity theory of bias” explains what we see play out in politics, within the corporate world, and in Hollywood: women in leadership positions are whipsawed by the need to prove their competence as leaders and the need to conform to traditional norms of femininity.
- ◆ Agentive women are evaluated more negatively than women who exhibit stereotypical behaviors. Gendered expectations of female friendliness and gentleness penalize women who counter them.
- ◆ Women in leadership roles who do not conform to gender expectations often face significant backlash.

#### Trap of Traditional Roles

The roles women have traditionally played, as mothers, wives, and caregivers, and the expectation to be nurturing and selfless can present a gendered trap, limiting possibilities for both men and women.

- ◆ The characterization of women as more giving, loving, and loyal, and the treatment that goes along with these presumptions, has been described as “benevolent sexism” and can undermine women’s efficacy in non-traditional roles
- ◆ Both hostile sexism and benevolent sexism position women as subservient to men, thus confining women to stereotypically feminine roles. However, benevolent sexism can be more difficult to identify as “sexism” and so can be doubly pernicious.
- ◆ Social norms about appropriate interests, roles, and behaviors for women and girls can shape their educational and career trajectories in meaningful ways.
- ◆ Girls’ tendency to have a weaker identification with mathematics and science is not innate but stems from culturally communicated messages linking math to boys, rather than girls.

#### Sexual Harassment

Sexual harassment occurs in environments in which victims’ complaints are not taken seriously, the victims may experience retaliation for complaining, the sanctions for sexual harassment are low to nonexistent, and where other males are engaging in such behaviors. Recent research on masculinity threat provides an additional explanation for the prevalence of sexual harassment—when feeling undermined, men may reaffirm their masculinity and assert their dominance in ways that harm women.

### ***Interventions to Override Gender Bias***

Gender bias does not operate identically in every environment. When women of different racial and ethnic groups are fully integrated into workplaces, and particularly when they are in leadership roles, bias is far less likely to be present. If girls are equally represented in science, technology, engineering, and mathematics (STEM) classes and engaged in a range of activities, teachers will be less likely to act in line with gendered assumptions. As various institutions work toward these ideals, we can draw upon a set of evidence-based practices to override bias.

- ◆ **Accountability:** When decision-makers and those in positions of power are accountable for outcomes and behaviors that stem from biased behavior, they are more likely to put in place specific systems and practices that prevent the behavior from occurring.
- ◆ **Culture of fairness:** Because implicit biases are cultural rather than individual, the cues within a particular environment will effect whether implicit biases are triggered.
- ◆ **Bias screens:** In some instances, it is possible to *completely* eliminate gender cues and therefore to prevent the operation of gender bias. For this to be effective rather than counterproductive, the screen must prevent against subtle suggestions of gender which may be even more likely to lead to implicit bias.
- ◆ **Question objectivity:** Assuming that we are objective and without bias allows biases to operate without inhibition and increases biased behavior and decision-making. Recognizing that we all are likely to hold certain gender stereotypes is crucial and is the first step in preventing bias from affecting our behavior.
- ◆ **Increase internal motivation to be fair:** Not surprisingly, those who are simply trying to respond to external pressures to be fair are less likely to reduce their biased behavior than are those who are internally motivated by their own desire to be unprejudiced.
- ◆ **Think slow to improve the conditions of decision-making:** Our biases are most likely to be activated when we are acting quickly and our minds are engaging in rapid, automatic processing that relies upon implicit associations. Engaging in mindful processing allows us to focus on the information present, rather than drawing upon stereotypic assumptions.

## **PART III: NAVIGATING GENDER BIAS—GENDER STIGMA CONSCIOUSNESS, BACKLASH, AND STEREOTYPE THREAT**

Part III discusses the complex challenges women face as they navigate gender bias. Women and girls are subject to gendered stereotypes and traditional notions of femininity that continue to permeate society. As a result, women and girls often hold themselves to stereotypes in ways that harm themselves and lead them to be implicitly biased against other women or girls. The nature of gender stereotypes is

often different depending on race or ethnicity because these identity groups carry stereotypes of their own, which intersect with gender in unique ways.

#### ***Navigational Challenges***

- ◆ **Stereotype threat:** Decades of research has confirmed that performance can be undermined when a person fears confirming a negative stereotype about their identity group when that identity is salient. Stereotype threat results in cognitive depletion, which can lead to underperformance when a person's full capacities are required. Women and girls of color may face stereotype threat related to their gender, their race, or both, depending on the context.
- ◆ **Gender stigma consciousness:** Women's and girls' awareness of stigmas linked to gender in a particular context, or their concern that stigma may be present, can trigger feelings of anxiety and activate coping mechanisms such as self-silencing, isolation, and disengagement.
- ◆ **Backlash:** Women and girls can experience backlash for violating gender norms. Women's fear of backlash often acts as an obstacle to behavior that defies stereotypes, such as negotiating for a higher salary, and may lead to avoidance of some fields of study and employment, particularly in the STEM fields.

#### ***Interventions to Prevent the Effects of Stereotypes***

The research demonstrating how best to protect against the impact of stereotypes is abundant, particularly for stereotype threat. Most of the interventions that have been identified are geared toward institutional practices, in order to improve the overall climate for women. Institutions seeking to ensure that gender stereotypes do not undermine both women's performance and their sense of inclusion have a broad array of tools available.

#### ***Workplace Strategies***

- ◆ **Stereotype inoculation:** Increasing the number of members of underrepresented groups in the workplace leads to greater social belonging and resilience among those underrepresented. In particular, exposure to successful women in positions of authority undermines gender stereotypes and increases motivation and a sense of self-efficacy for other women.
- ◆ **In-group peers:** The existence of a community of women, ideally from multiple race and ethnicity groups, within a particular institution has been shown to increase women's sense of belonging and improve the chances that newly hired women will remain at their jobs. As women move through their careers, networking with other women in the field also provides important social support and professional connections.
- ◆ **Experts:** Having interpersonal relationships or mentorships with aspirational, successful female figures encourages women to view the achievements of these

“experts” as attainable and affirms for them that women are not out of place, even in male-dominated fields.

- ◆ **Successful task strategy:** Working harder does not decrease stereotype threat, but having clearly defined goals can. Research shows that women who are told explicitly about gender stereotypes are able to develop a strategy to counteract them and thereby improve performance.
- ◆ **Reducing the stereotype relevance of tasks:** If a particular task is associated with gendered outcomes—such as the male advantage of being assertive in a negotiation—emphasizing the importance of qualities that are understood to be possessed by both men and women can relieve the threat of the situation, eliminating gender differences in performance.
- ◆ **Acknowledging potential for stereotype threat:** Offering a thorough explanation of stereotype threat, or providing an alternative explanation for task difficulty that is not linked to gender stereotypes, can affirm one’s personal ability and prevent stereotype threat.
- ◆ **Gender-inclusive language:** The consistent use of male pronouns and reliance on masculine qualities can result in others feeling excluded or ignored. While minor language changes may seem inconsequential, the use of gender-inclusive and gender-neutral pronouns in a job description have been shown to trigger higher response levels among women.

#### Education Strategies

In recent years, girls have generally outperformed boys in school; however, this performance gap flips on standardized tests involving math and science. Girls’ engagement in STEM subjects decreases as they enter middle and high school. Efforts to address these phenomena at the institutional level are particularly effective, but *parental encouragement* has also been shown to be useful. For example, girls are more likely to become interested in math when parents provide encouragement and materials and jointly participate in mathematics.

#### STEM Interventions

- ◆ **Removal of triggers on standardized tests:** Simply moving demographic questions to the end of an exam immediately decreases gender gaps triggered by stereotype threat.
- ◆ **Collaborative learning:** Classroom collaboration between girls on STEM subjects has been shown to result in increased interest, improved grades, and higher aspirations in math.
- ◆ **Applied learning:** Unlike boys, girls are most engaged in STEM subjects when educational activities include communal work, hands-on learning, applied knowledge tasks, relevant applications, and problem solving.

- ◆ **Extracurricular engagement:** STEM-related clubs, groups, and activities expose girls to tactile learning, which has been shown to be a successful approach for maintaining girls' interest and engagement in STEM.

#### *Intersectional Interventions*

Stereotype threat in STEM fields affects girls of every race and ethnicity; however, black and Latina girls may experience stereotype threat in other fields because of stereotypes linked to race and ethnicity. Addressing race-based stereotype threat is an important institutional strategy to support girls of color in school.

- ◆ **Social belonging interventions:** Increasing social belonging reduces feelings of exclusion linked to identity. In particular, research has shown that engaging students in reflection exercises helps them contextualize social adversity, resulting in the development of resilience in the face of difficulties and an improved school experience.
- ◆ **Communicating high standards:** Racial anxiety often leads teachers to give students of color excessive praise and less criticism. Communicating high standards and confidence in students' capability of meeting teachers' expectations leads to a significant increase in schoolwork participation among students of color.
- ◆ **Growth mindset:** Instead of conceptualizing abilities as a stagnant entity, which can lead to feelings of inadequacy in the event of poor performance, abilities should be conceptualized as malleable. This way, a poor outcome will not function as confirmation of a negative stereotype.
- ◆ **Value-affirmation:** Affirming positive values and skills for students of color helps to defy detrimental stereotypes, increase self-confidence, and increase resilience.

## CONCLUSION

This report is addressed to those who are committed to gender equity but are aware that a commitment to this value alone has been wholly inadequate in achieving our aspirations. Social science provides ample evidence that, even when we consciously endorse egalitarian values, implicit bias, ambivalent sexism, and the challenges of navigating bias remain significant obstacles. It is our hope that the research detailed in this report will validate the experience of women, both in the workplace and in education, and clarify why we continue to see gendered gaps across these sectors. The interventions outlined in this report can be of value to institutions and individuals seeking to align their behavior with their ideals of equality.

Just shy of a century since the triumph of women's suffrage, our cultural climate is ready again for a broad cultural shift. Commitment to challenging the status quo and overriding institutional practices will move us in the direction we have always sought, in which women can be both mothers and leaders—without being penalized.





## INTRODUCTION

Countries, corporations, and courts across the world now have women at the helm. In this country, more than 80% of Americans believe in gender equality (Brownstein, 2015) and similar percentages think women and men are equally capable of being effective leaders (Pew Research Center, 2015). Yet progress toward gender equity in the United States is decidedly mixed. At the same time, as the country wrestles with expanding definitions of gender, it is evident that gender equity as a reality has proven far more elusive than gender equality as a value.

On the one hand, we have made enormous strides in increasing the opportunities and achievements of women and girls in this country. The most remarkable shift has been in education. Today, women are more likely than men to complete high school, attain bachelor's degrees, and earn advanced degrees (Aud et al., 2011)—and even within racial and ethnic groups, college enrollment and completion is consistently higher among women. In addition, increasingly egalitarian norms and economic pressures (e.g., the need for families to have dual incomes) have radically altered attitudes toward working women (Rudman & Phelan, 2008; Spence, 1999), paving the way for their growing involvement in the workplace. Women now make up 47% of U.S. managers (U.S. Bureau of Labor Statistics, 2015). Legislative changes have chipped away at forms of sex discrimination such as sexual harassment and discriminatory hiring, pay, and promotional practices (U.S. Equal Employment Opportunity Commission, 2010). Now, in the 21<sup>st</sup> century, women are gaining entry into the upper levels of organizational power and making meaningful contributions across all fields (Stroh, Langlands, & Simpson, 2004).

And yet, economic indicators confirm that significant gender inequities persist. A majority (65%) of low-wage workers are women (National Women's Law Center, 2014; United States Congress Joint Economic Committee, 2010)—and they are the overwhelming majority in positions that lack mobility, such as restaurant servers, cashiers, home health aides, and childcare workers (U.S. Bureau of Labor Statistics, 2015). For some women, the challenges are particularly profound; almost one-third of employed Latina women are employed in a service position, a higher share than any other racial or ethnic group (U.S. Bureau of Labor Statistics, 2015). Even within industries that have leadership opportunities, women wait longer than men for managerial promotions (Maume, 1999; Williams, 2013). In addition, there is a substantial gender-based gap in wages, which widens over career spans (Lips, 2013; Olson, 2013). On average, women in the United States earn 79 cents for every dollar men earn (Proctor, Semega, & Kollar, 2016). The inequity is further exacerbated by race and ethnicity: white women earn 86 cents to the dollar, Asian American women earn 84 cents, black women earn 60 cents, and Latina women earn 55 cents (Proctor

et al., 2016). Not surprisingly, then, women of all races and ethnicities are extremely underrepresented in the top income brackets, and women of color are disproportionately represented at the bottom brackets (National Women's Law Center, 2014). Even among top earners, the disparities are stark: the earnings share of women in the top 1% of earners is only 11% (Guvenan, Kaplan, & Song, 2014). These data on employment and wages exemplify the divergent career tracks of men and women, as a result of innumerable structural and social factors.

Gender disparities in occupation and income become more obvious when we begin to look at the relative absence of women in high-powered positions, as well as their absence in the fields of science and engineering. Across all Fortune 500 companies, fewer than 5% of the CEOs are women (Bellstrom, 2015)—and of these 24 women, only three are not white. While half of the undergraduate degrees in science, technology, engineering, and math (STEM) go to women, women make up only 24% of the STEM workforce (U.S. Department of Commerce, 2011). Similarly, in the

"There are many wonderful things that are positively correlated with increased gender equality ... the gender gap in life-expectancy decreases. There is less domestic violence. Companies with more women on the board have higher financial returns and greater levels of innovation. Countries with greater gender parity have higher annual GDP ... Gender equality lifts us all." (Johnston, 2016)

nation's top 200 law firms, women occupy only 17% of the highest positions (Stiller Rikleen, 2015). Within politics, women currently make up only 19% of congressional representatives, 12% of state governors, and 18% of the mayoral seats in the country's largest cities (Center for American Women and Politics, 2016). Of the 104 women in Congress, 33 are women of color (Center for American Women and Politics, 2016).

Men also dominate creative spaces; for the nation's top 100 grossing films in 2015, only 7% of directors were women—and only 22% of the protagonists in these films were women (Lauzen,

2016a, 2016b). Notably, of these 22%, the vast majority are white: 76% of all female characters were white (13% were black, 4% were Latina; 3% were Asian; 2% were another race, and 2% were non-human; Lauzen, 2016a). The gross underrepresentation of women in general and women of color in particular in key positions throughout society perpetuates the notion that leadership is a man's space

This report has a particular audience and mission: to address why those of us who espouse gender equity often fail to adhere to those values and why our social institutions fall so short of reflecting them. We contend that the ideals of full gender (and racial) equity have become sufficiently prevalent in society that the failure of our institutions to adhere to such standards presents both a paradox and an opportunity. This report provides insights to better understand this paradox and tools to upend it, so we

can align our behavior and practices with our values. While the report does not focus specifically on structural challenges to gender equity, when our politics, workplaces and schools reflect our egalitarian goals, the efforts toward necessary structural change will be far more likely to be successful.

We expressly recognize that gender is not experienced independently of other aspects of our identities. Race, ethnicity, age, sexual orientation, religion, and class intersect with gender to affect how we navigate the world—as well as affecting the

This report has a particular audience and mission: to address why those of us who espouse gender equity often fail to adhere to those values, and why our social institutions fall so short of reflecting them.

stereotypes that are applied to us. In the United States, the intersection of race, ethnicity, and gender tends to be particularly salient. We don't see people simply in terms of gender or race; we typically process multiple categories at once—we see a white woman, a black woman, an Asian man, or a Latino man. Race is “gendered” and gender is “racialized,” and this intersection makes for different experiences, opportunities, privileges, and disadvantages for all groups (Crenshaw et al., 2015; Amott & Matthaei, 1991; Browne & Misra, 2003; Collins, 1999;

Essed, 1991; Glenn, 1999; Higginbotham & Romero, 1997; Hondagneu-Sotelo, 1994; Kibria, 1990; Landrine, 1985).

Moreover, we seek to prevent this report from falling into the trap of presuming that studies of “women” accurately reflect the experiences of women of all races and ethnicities, particularly as research studies often draw upon samples that are predominantly white. We reject the idea that “women” means “white women”—with modifiers necessary only for those who are not white—and accordingly, in describing the research studies that form the basis for our discussion, we specify the demographics of study participants wherever possible. However, a significant number of studies fail to state the race or ethnicity of the women in the participant group or to report whether any of the outcomes differ for racial or ethnic groups. We hope that the practice of specifying when race and ethnicity are not identified will be part of the broader movement to encourage social scientists to recognize the importance of disaggregating claims linked to gender by race and ethnicity. Similarly, we follow the same practice when comparing women and men, noting if the comparison group is “men of all races and ethnicities” or specifically “white men.”

While our report is directed toward institutions that seek to realize the goals of equity, we are not naive. This goal is not shared by all; gender inequities in some contexts reflect old-school misogyny rather than the lack of alignment between values and behavior. Some investment banks, hedge funds, and other sectors continue to be unabashedly dominated by men and prize the exclusion of women. A former hedge fund trader, Sam Polk, recently described the “bro talk” that typifies daily interactions and permeates the culture—from bosses to interns—of those environments (Polk, 2016 writes). In an op-ed in the *New York Times*, Polk (2016) writes:

*During my first summer as a trading desk intern at Credit Suisse First Boston, I was walking through Midtown with a managing director when he sped ahead of me to look at a woman. “I had to get a look at those tits,” he said. I often heard men say about female colleagues, “I’d like to get behind that.”*

Changing a culture of misogyny requires a different set of tools than the research summarized in this report.

Gender-based violence is the most extreme manifestation of the power imbalance between men and women. While rape, domestic violence, and sexual harassment are experienced by men as well as women, these forms of violence fall overwhelmingly on women (Black et al., 2011). We recognize the significance of violence in the overall challenge of pursuing gender equity, but we know that the research we highlight in this report does not address mechanisms or interventions to counteract violence and that an issue of such significance demands a dedicated report. The aim of this report is to examine the social psychological research explaining why and how gender bias remains a challenge, *despite* egalitarian values. Acts of physical and sexual violence against women, in our opinion, fall outside the bounds of this research and are the result of a range of social, economic, interpersonal, and individual factors.

We also recognize that the notion of gender has expanded beyond the binary of male and female—and that specific challenges are experienced by those who are gender nonconforming and transgender, as well as those who identify as lesbian, bisexual, or queer (LBQ). A growing body of literature that is developing to address these challenges is sufficiently distinct to warrant its own report as well.

This report shares recent advances in neuroscience, social psychology, and other “mind sciences,” which help to provide insight into otherwise confounding contradictions between our stated values and our behaviors and outcomes. As a result of this research, various institutions, organizations, and corporations have begun to engage in efforts to address the effects of gender bias. Formerly highly male industries such as tech are promoting their efforts to change. As Elizabeth Olson writes in *Fortune Magazine*, “Google, along with companies like BAE Systems, Exel, Genentech, T. Rowe Price and Roche Diagnostics, are among those who are moving to overcome their workplace biases” (Olson, 2015).

This work confirms that women who report experiencing bias at work and in their everyday lives are not being oversensitive and explains why people may sometimes act in ways that do not seem to align with their egalitarian values. The authors have been working with such institutions and organizations to devise training programs, propose structural changes, and address the dynamics that undermine fairness and equal treatment.

Gender bias exists both at a broad, structural level and within individual interactions. We contend that bias at both levels cannot be successfully challenged without an understanding of how bias and gender categories operate psychologically. First, lawmakers are often influenced by bias or other gendered phenomena that operate implicitly (Messey, 2011; see also Powell & Godsil, 2011), driving their policy decisions. Structural change then requires that we address the biases that have the

potential to affect political choices. Second, institutional operations invariably involve human behavior and interaction; we must recognize that bias plays out in individual behaviors and that these behaviors, too, can be altered to reduce gender inequities in schools, workplaces, and other settings (Grant-Thomas & Powell, 2014). Our experiences, motivations, and emotions are also integral to how we navigate gender (Wood et al., 2010) and the intersection of gender, race, and ethnicity. As this report will show, many psychological phenomena, including *gender stereotypes*, *gender roles*, *ambivalent sexism*, *stereotype threat*, and *gender stigma consciousness*, and for women of color particularly, *racial anxiety*, also create obstacles for institutions and individuals seeking to promote gender equity (Roberson & Kulik, 2007).

Advocates have been especially interested in social psychological research focusing on *implicit bias*—the automatic association of stereotypes or attitudes with particular social groups (Banaji & Greenwald, 2013; Greenwald & Krieger, 2006; The Kirwan Institute, 2013). Research has established both the prevalence of implicit biases, and their ability to influence behavior (Devine, 1989; Jost et al., 2009). Understanding implicit bias can help to explain why women earn less than men and why women are so poorly represented in politics, STEM careers, and the top positions in law and business. Implicit bias can also help explain why even women who are successful at the very highest levels of their careers may be viewed negatively by colleagues (Rudman & Phelan, 2007).

This report demonstrates how we can use social science research to better understand and address the persistence of gender disparities in the face of egalitarian values and summarizes cutting-edge research explaining gender-based biases and their consequences for women in the United States. Importantly, social scientists have begun to identify interventions that have shown success in preventing the behavioral effects of gender bias and stereotyping. As we will discuss, these interventions have been leveraged to identify best practices for institutions, policy makers, and individuals working toward gender equality.





## PART I

### GENDER STEREOTYPES AND GENDER ROLES

*Masterful, assertive, competitive. Friendly, unselfish, emotionally expressive.* Though common adjectives, these are not gender-neutral terms. Both men and women are more likely to describe the first set of traits as masculine and the second set as feminine (Wood et al., 2010). These findings are a reflection of the broader theme that men are more commonly thought of as *agentic* (possessing agency, or self-assertion). Women are thought of in rather different terms: they are typically believed to be *communal*, or connected with others (Bakan, 1966; Wood et al., 2010). These male- and female-specific traits are *gender stereotypes*, and they grow out of our cultural understanding of men's and women's respective roles in society. When we've grown up seeing, both in the media and in our daily lives, women take care of children and the home and men go off to work, we come to understand these as *gender roles*. Like other social roles, gender roles specify what people—specifically, men and women—typically do, as well as what they should do (Wood et al., 2010). In other words, such roles are both descriptive and prescriptive—and in this respect, they can be limiting.

#### A. GENDER AS A "CATEGORY"

Adjectives linked to gender are salient because gender, like race and age, is often a primary basis for categorizing people (Fiske, Haslam, & Fiske, 1991; Stangor et al., 1992). In fact, people consider the male-female dichotomy as the most “natural, necessary, immutable, discrete, and stable” of social categories (Haslam, Rothschild, & Ernst, 2000). In addition, stereotypical beliefs about gender are generally supported by social consensus; broad endorsement makes them seem valid and pressures us to comply with them (Crandall & Stangor, 2005). We note, however, that even in the decade since Crandall and Stangor's work, we have seen dramatic shifts in attitudes toward the perceived gender binary and a recognition of the need to develop more expansive notions of gender expression (e.g., Rudin et al., 2016)—viewing gender as a spectrum is gaining traction.

Despite these shifts, gender roles are enduring, in part, because we constantly reinforce them. From childhood through adulthood, men and women who conform to gender roles receive positive reinforcement and too often those who counter them are penalized. We can see this, for instance, in how parents tend to encourage activities and toys that are deemed typical for a child's sex (Lytton & Romney, 1991; Pasterski et al., 2005). As early as age three, children begin to show disapproval of another child's violation of these gender norms—be it a little boy wearing a pink T-shirt, a little girl with a buzz cut, a little girl playing football, or a little

boy caring for a baby doll (Blakemore, 2003). Conformity to gender roles garners rewards because it validates shared beliefs about women and men and promotes social interaction that is easy to follow and understand (Wood et al., 2010). Patterns of disapproval and approval about gender-based behavior continue into adulthood, where women who behave in a dominant or very competent manner tend to lose likability and influence (Carli, 2001; Eagly & Karau, 2002; Rudman & Phelan, 2008; Shackelford, Wood, & Worchel, 1996), while modest and unassuming men are viewed as insufficiently competent for leadership roles (Rudman, 1998; Rudman & Glick, 2001). Researchers have found that even when highly qualified women are judged to be just as competent as men, these women still may be less liked and less likely to be hired than men (Rudman, Moss-Racusin, Phelan, & Nauts, 2012).

It is important to note that traditional stereotypes of femininity are often stereotypes specifically of white women (Browne & Misra, 2003; Armstrong et al., 2014). For women who are not white, gender stereotypes are interwoven with stereotypes about their race and ethnicity (Ferdman, 1999). The result is a differing set

Traditional stereotypes of femininity are often stereotypes specifically of white women. For women who are not white, gender stereotypes are interwoven with stereotypes about their race and ethnicity.

of stereotypes that characterize femininity for women of color. For instance, dominant culture has traditionally depicted black women within specific tropes, leaning on offensive stereotypes that include the asexualized Mammy, the promiscuous Jezebel, and the profligate welfare queen (Browne & Misra, 2003). Such narrow characterizations of womanhood for black women play out in distinct ways; one study that found employers stereotyped low-skill black women as single mothers who are either distracted or desperate for a paycheck (Kennelly, 1999). Asian American women face a different

set of stereotypes, which depict them as perpetual foreigners, not fully American, excessively submissive, and hyper-feminine (Kim & Chung, 2005). These perceptions emphasize Asian American women's out-group status and place them at a disadvantage in a work culture where the typically masculine traits of assertiveness and decisiveness are most valued. Stereotypes of Latina women dichotomize them either as a loud, passionate, hot-blooded spitfire or as a dutiful, asexual, Madonna-type mother (Vargas, 2010). Stereotypical popular culture depictions of Latinas as curvaceous, Spanish-speaking, heterosexual women significantly contribute to the conflation of numerous Latina identities into a sexualized caricature (Guzmán & Valdivia, 2004).

While women of color are often characterized in distinct ways, rooted in racial stereotypes, they are nonetheless compared to white normative femininity. In the workplace, a failure to adhere to such norms may mean that women who are not white are less likely to be viewed as professional (Browne & Misra, 2003).

## B. SOURCE OF GENDER STEREOTYPES

Gender roles do not spring out of nowhere. They are rooted in a given society's division of labor. Because it is still often the case that men and women engage in different work, play, and roles in the home, we develop beliefs about their respective

While gender roles are rooted in a historical division of labor, they breed gender stereotypes that continue to constrict opportunities in the present.

attributes—particularly their personality traits (Eagly, Wood, & Diekmann, 2000; Murdock & Provost, 1973; Wood et al., 2010). This process of inferring traits from people's activities is known as *correspondence bias*—in other words, the idea that people are what they do (Gilbert, 1998). If a woman is weaving baskets, the thinking might go, she must be patient and docile. Then, after observing just one member of a group, it's very easy to generalize the traits of an entire group of people (Wood et al., 2010). When we perceive one woman as patient

and docile, we have no trouble assuming other women possess the same traits. In fact, research has demonstrated this phenomenon: in one study, participants who observed Person A behave deferentially to Person B (a person with higher status), they assumed that all members of Person A's group were deferential and all members of Person B's group were of higher status (Ridgeway & Erickson, 2000). Correspondence bias also leads us to link traits back to functions: for instance, women are patient and docile, thus only suited for weaving baskets. The end result is that we assume, and expect, men and women to exhibit particular characteristics and behaviors, which further distinguish their gender roles.

Because women continue to do more work in the home and men are often seen primarily as wage earners (Bianchi, Robinson, & Milkie, 2006), we have plenty of opportunities to observe women and men engaging in behaviors that are distinct from one another. Even when women work, often they are engaged in occupations, such as teaching or nursing, that emphasize communal characteristics (Cejka & Eagly, 1999; England, Budig, & Folbre, 2002). Conversely, we often see men in family roles of provider and head of household, as well as in occupations that emphasize assertive, task-oriented behaviors (Cejka & Eagly, 1999). Given repeated observations of men and women engaging in different types of behaviors, gender roles effortlessly emerge and are solidified (Wood et al., 2010).

And while gender roles are rooted in a historical division of labor, they breed gender stereotypes that continue to constrict opportunities in the present. When, for example, we often see men in higher-status roles and women in lower-status roles—such as male executives interacting with female secretaries—we infer that men have the correspondent traits of agency and competitiveness, while we ascribe compliance and supportiveness to women (Wood & Karten, 1986). One result is that it is more difficult for both employers and women themselves to perceive women as suited for higher-status positions, which may contribute to the current dearth of women

in leadership positions (see, for example, Center for American Women and Politics, 2016; Olson, 2015; Stiller Rikleen, 2015; Rudman & Phelan, 2008; U.S. Bureau of Labor Statistics, 2015). As we know, all 44 of our nation's presidents have been men, and despite the fact that the current Congress is heralded as the most diverse in our history, women hold only 20% of the seats (Manning, 2015).

Gender stereotypes affect how we perceive men and women's abilities, as well as how we interpret their achievements.

Gender stereotypes affect how we perceive men and women's abilities, as well as how we interpret their achievements. Research suggests that we have different standards for men's and women's abilities; stereotypes lead to low expectations of women compared to men (Biernat & Fuegen, 2001). As a result, we have entirely different evaluative scales of what qualifies as adequate, depending on gender (Biernat & Fuegen, 2001). Research shows that women must be 2.5 times more productive than men to be rated equally as competent (Wenneras & Wold, 2001). When it comes to hiring, leadership potential is valued over leadership performance among male applicants, but the opposite is true for women (Player, 2015). Essentially, given existing gender stereotypes, we are inclined to need more proof of women's abilities, while we have more trust in what men may do in the future.

Moreover, even when gender roles shift, they have a lasting impact on our attitudes and expectations. For instance, the culturally prevalent idea through the 1970s that women weren't suited to be doctors or lawyers meant that, until current generations, we saw few women in those positions. Now, these attitudes have changed, but it is very likely that we still tend most immediately to envision a man when we hear the word "doctor" or "lawyer"—which means that women in these positions are still upending stereotypes.

### **C. NORMS OF BEAUTY, FEMININITY, AND SEXUALITY**

Gender roles have also created an almost unbreakable association between women and beauty (Craig, 2006): a "proper woman" is expected to exude attractiveness. This standard can be detrimental. It essentially sets beauty as an indicator of successful gender role fulfillment—thus, women who lack beauty are considered to be flawed as women (Craig, 2006). Furthermore, researchers have established that attractiveness, like gender and race, evokes stereotype-based expectations (Hosoda, Stone-Romero, & Coats, 2003). For instance, individuals who are deemed attractive are considered to be more socially and intellectually competent and more likely to succeed (Parks & Kennedy, 2007; Hosoda, Stone-Romero, & Coats, 2003).

This bias plays out in very real ways. Research shows that attractiveness influences the hiring process: candidates considered more traditionally attractive are perceived to be more qualified, are more likely to be recommended for hiring, are thought to have greater potential for success, and are even compensated more generously (Hosoda, Stone-Romero, & Coats, 2003). Similarly, teachers' perceptions of students' physical

attractiveness are associated with their judgments of students' social and academic capabilities, including leadership potential and intelligence (Parks & Kennedy, 2007). Dion, Berscheid, and Walster (1972) termed this the “what is beautiful is good” phenomenon: beauty carries with it numerous tangible social advantages.

But the standard for beauty is not universal. Researchers have demonstrated racial bias in conceptions of attractiveness (Lewis, 2011; Wade, Irvine, & Cooper, 2004; Rudman & McLean, 2016). For instance, when asked to rate the attractiveness of images during laboratory studies, participants, regardless of their race, are more likely to rate white faces as more attractive than black faces (Lewis, 2011; Wade, Irvine, & Cooper, 2004; Rudman & McLean, 2016). The mechanism underlying this bias may be that the beauty ideal for women is often tied to stereotypical standards based on characteristically white features (Craig, 2006; Goff, Thomas & Jackson, 2008). The American conception of beauty idealizes light skin, small noses, and straight, flowing hair (Robinson, 2011; Rudman & McLean, 2016). All women face substantial pressure to conform to these standards, yet women of color are, in a sense, pitted against them.

The racialized standards of beauty are likely to be linked to what academics call “white normative femininity” (Deliovsky, 2008). Within American culture, women of all races and ethnicities are judged by men, by other women, and by even themselves against a standard linked to a particular vision of white women, which encompasses both physical appearance and demeanor (Deliovsky, 2008). Women of any race or ethnicity who are more closely aligned with the norm are judged more positively. Yet, the standard is extremely limiting. Within the black community, women characterize femininity as encompassing expressiveness, instrumentality, and resilience (Cole & Zucker, 2007). Yet, black women are often penalized for being too masculine (Goff, Thomas, & Jackson, 2008). Similarly, in relation to this white, Western ideal, Asian women are often characterized as too submissive (Kim & Chung, 2005).

Gender roles are also deeply intertwined with norms about sexuality, such that women are held to distinct standards regarding sexual expression and behavior. Rooted in a norm of heterosexuality, we generally characterize women's sexuality in relation to men—specifically, women are expected to be submissive to men. This power dynamic between men and women set forth by sexual norms can be identified in situations wherein there are severe consequences. Research has shown the extent to which one believes that sexual relationships are inherently exploitative and untrustworthy (adversarial sexual beliefs) is related to the extent to which one is likely to sexually harass (Burt, 1980). That is, formed norms and beliefs about male sexuality, female sexuality, and the interaction of the two may prime certain people to justify their sexual harassment. While these norms are often at the root of detrimental issues such as domestic violence, sexual harassment and assault, and assaults on reproductive freedom, they shape contexts that should, in theory, be detached from sexuality, such as the office or the classroom. In these spaces, women encounter expectations regarding their appearance (e.g., appropriateness of clothing) and interactions with colleagues. As with gender norms, violations of sexual standards can result in shaming from men—and other women—in forms such as name-calling and reputation degradation (Armstrong et al., 2014).

As we will see, these socially ingrained beliefs about gender roles result in biased behaviors that are harmful to women and girls. However, these behaviors are so subtle, or so socially accepted, we have trouble recognizing them, despite their substantial impact on women.



## PART II

### THE OPERATION OF GENDER BIAS

As we noted at the outset, a significant majority of Americans have consciously egalitarian values with respect to gender—for example, about three-quarters of men and women say that women and men make equally good political leaders (Pew Research Center, 2015). However, explicit, conscious values do not always translate into behaviors and actions.

In a recent Pew Research Center poll (2013), roughly half of men said that women and men are treated equally by society. However, only 34% of the women polled agreed. At the elite level of business, a recent survey of Harvard Business School

While 75% of female Harvard business School alumni believe that an inhospitable work culture contributes to women's lagging career advancement, only about half of male alumni think so.

alumni (Harvard Business School, 2015) echoed this disparity in perception: while three-quarters of female alumni believed that an inhospitable work culture, such as one that includes dismissive behaviors and biased preconceptions, contributed to women's lagging career advancement, only about half of the male alumni thought such bias was a problem.

While women may be aware of at least some of the biases they face from others, they are not always aware of gender biases they themselves hold. Numerous studies demonstrate that not just men, but also women of various races implicitly associate men with the workplace

and women with home and family (Levinson & Young, 2010) and are likely to react negatively to women in positions of authority and those who succeed at stereotypically male jobs (Heilman et al., 2004; see also Eagly & Karau, 2002; Rudman & Kilianski, 2000). This research substantiates the power of society's gender roles in shaping our beliefs and shows how deeply they can become engrained in our minds, despite our stated values.

These sorts of biases are significant because, as we discuss below, they can shape people's attitudes and behaviors toward women and, ultimately, contribute to gender disparities. The mind sciences provide substantial insight into the root of these biases and the ways in which they manifest in behavioral outcomes.

#### A. AUTOMATIC PROCESSING OF STIMULI INTO CATEGORIES

Implicit bias is perhaps best described as a bias we aren't aware of having. Our minds process the enormous amount of stimuli we encounter every day with great efficiency. We unconsciously sort things into "schema," or categories (a cell phone, a chair, a cup of coffee), which allows us to respond accordingly with limited conscious attention or thought (pick up the buzzing phone, sit in the chair, drink the coffee)

(Tajfel & Forgas, 2000). We also come to associate particular attitudes—feelings or evaluations—with the categories we have created. For instance, the category of “exercise” might consistently connote positive feelings for some of us and negative feelings for others.

These instant processes of categorization and attitude association apply to the people we encounter, too (child, adult, student, teacher), guiding our social interactions. Such automatic organization of the stimuli we encounter, while efficient, is not without its potential for bias. In some instances, associations are neutral (e.g., “one

While relatively few of us in the United States today consciously believe that all women must be caregivers, automatic associations of women with traits such as “emotional” do arise in many of us.

who teaches” and “adult” are neutral attributes associated with the category of “teacher”), but many social categories are widely associated with attributes that aren’t necessarily neutral and are, in fact, limiting. For instance, the social category of “woman” is typically associated with the attributes “emotional,” “submissive,” and “dependent.” While relatively few of us in the United States today consciously believe that all women must be homemakers or caregivers, automatic associations of women with traits such as “emotional” and “pleasant”

do arise in many of us. Such automatic associations may make us more inclined, for instance, to select a male candidate instead of an equally qualified female candidate for a job that calls for traits such as “assertiveness” and “decisiveness” (Gorman, 2005).

We hold implicit attitudes about people who are different from us, as well about those like us. Consider, for instance, the gender stereotype that women are less suited for professional leadership and more suited for caretaking as compared to men. It’s a stereotype that both most men and women reject consciously, but is implicitly held not just by men, but by women, too (Dickman & Eagly, 2008; Eagly & Carli, 2007; Eagly & Karau, 2002; Rudman & Kilianski, 2000; Swim & Hyers, 2009; Dasgupta & Asgari, 2004; Rudman & Glick, 2001).

A fundamental point is that implicit biases are not a consequence of an individual’s psychology—they are social phenomena that manifest in the minds of individuals. The social environment around us shapes our implicit attitudes, whether or not we are aware of their effects, leading us to hold unconscious assumptions about the abilities, competencies, and characteristics of other people. Gendered associations are learned early in life (Levinson & Young, 2010; see also Bridge, 1997) and are reiterated in the popular media. On prime-time TV, for example, women are more frequently associated with “romance,” “home,” and “family,” than men are (Lauzen, Dozier & Horan, 2008). Researchers have begun to assess the impact of magazine advertisements, which critics argue are infantilizing, unrealistic, and damaging to women. A recent content analysis of 790 ads from top magazines demonstrates that women are portrayed as more submissive than men (Conley & Ramsey, 2011). The authors assert that the advertisements depict women as perfect and passive, and the content encourages women to take up less space. Importantly, the depiction of women

in magazine advertisements differs by race. In an analysis of 600 advertisements from eight leading magazines geared specifically toward a white or black audience, Baker (2005) found that the portrayal of white women conformed to the traditional image of female sexuality as submissive and dependent on men, while black women were portrayed as independent and dominant. Greater emphasis was placed on the physical attractiveness of the white women, which the author argues, reinforces a white standard of sexuality. In sum, these elements of popular culture play a role in strengthening existing gender biases.

## **B. IN-GROUP PREFERENCE**

Implicit bias can also manifest as a result of comparatively positive preferences for a group we are a part of—what social scientists call “in-group” bias or preference (Brewer, 1999; Tropp & Molina, 2012). People experiencing in-group bias tend to be more “comfortable with, have more trust in, hold more positive views of, and feel more obligated to members of their own group,” whether that group consists of people from the same country, people with the same interests, or people of the same gender (Reskin, 2000).

In-group bias typically results in seeking out people from one’s own group over other groups, whether at work, at school, or in a social setting. In any first-year law class, it is generally assumed that male and female students will bunch together in class, finding those who most resemble themselves. This division of students by gender is frequently subdivided by race, with white students sitting together and separate from black and Latino students. This sort of in-group gathering may seem inconsequential, but in doing this, we tend to avoid people from other groups. Such avoidance often leads to distortions in perception and bias in evaluation of our in-group and of members of the out-group, simply due to our level of interaction. These attitudes can further entrench preference for our in-group, and can result in discrimination against out-groups, however subtle (Reskin, 2000; see also Brewer & Brown, 1998).

Although we tend to think of discrimination primarily as treating a particular person or group worse than others, treating a favored group better essentially results in the same outcome (Reskin, 2000). For instance, a study in the Netherlands found that when participants were asked to allocate rewards or resources to others, they overwhelmingly favor people who shared their social identity (Stroebe, Lodewijkx, & Spears, 2005). This sort of preference has substantial real-world implications. For example, a 2005 study of law firms, which did not consider race or ethnicity in its study design, found that when the hiring partners were all male, they were more likely to hire candidates from their in-group—that is, other men (Gorman, 2005).

Thus, in-group preferences coupled with group differences in status and power can contribute to social environments that ultimately reinforce gender and racial stereotypes. For example, women in business, law, medicine, science, and politics, where their in-group is scarce, consistently face subtle stereotypes that signal who belongs and is likely to succeed in these environments and, conversely, whose success is in doubt (Cheryan et al., 2009; Logel et al., 2009; Settles, 2004; Spencer, Steele,

& Quinn, 1999; Steele, James, & Barnett, 2002; Stout et al., 2011; Walton & Cohen, 2007, 2011). The significant consequence is that many of these high-performing women will in fact choose to leave their professional trajectory and opt for a path where they aren't in the minority (Ceci & Williams, 2011; Ceci, Williams, & Barnett, 2009; Pinker, 2009; Rosenbloom et al., 2008).

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Research spanning nearly a decade has found that both black and white women feel isolated in a corporate environment where most of the managers are white men; the white male culture feels inhospitable and alien to them (Bell & Nkomo, 2001). However, black women may feel particularly outside the lines; one study found that, compared with the white women, black women had fewer resources, such as network contacts, to help them fit into the organization. They also felt greater pressure to perform better than their (mostly white) male colleagues, and were much less likely to have role models who reflected their own gender

and race (Bell & Nkomo, 2001). These disadvantages appear to take their toll: black women were given fewer promotions than any other group, moving laterally instead of upward (Bell & Nkomo, 2001). And while it is true that both black men and black women encounter the stereotype of "incompetent and unqualified" (Bell & Nkomo, 2001), black men have been more successful in rising to upper managerial positions, which highlights the consequences of the intersecting identities as female and a racial minority (Morrison & von Glinow, 1990).

## C. MEASURING IMPLICIT BIAS

The instinctual grouping of others, coupled with the subtle preference for in-group members, contribute to deeply entrenched attitudes related to gender. These attitudes are often in conflict with our explicit attitudes, and we are only able to access them because of the increasingly sophisticated ways social scientists can now identify and measure the presence of these automatic stereotypes and attitudes that exist beyond our conscious awareness.

The Implicit Association Test (IAT) developed by social psychologists Anthony Greenwald and Mahzarin Banaji and housed at Harvard's ProjectImplicit.org, is a well-known and widely validated tool for assessing implicit bias (Greenwald & Banaji, 1995). The IAT measures reaction times between a person's ability to associate different social categories with concepts that reflect favorable stereotypes or attitudes; faster associations suggest a more common or natural pairing of a social category and particular attributes. A gender stereotype version of the IAT, measures the latency between a person's association of male or female names with words representing either career or home (see Levinson & Young, 2010).

The IAT is a revolutionary tool because it not only provides insight about individuals' biases, but also reveals patterns of associations among large groups of people (Kang et al., 2010). Therefore, results from the IAT can be used to explain differences in decision-making and treatment linked to factors such as gender, race, or sexual orientation at the group level (Banaji & Greenwald, 2013).

The IAT has demonstrated the prevalence of implicit gender biases. In a 2010 study, a diverse sample of law students was asked to group together traits and attributes—words representing judges and paralegals with male and female names—as quickly as possible. The law students, half of whom were women, were more likely to associate the traits of a judge with male names and to associate the traits of a paralegal with female names. A similar test showed the same level of association between “career” and “male” (Levinson & Young, 2010).

Different parts of the brain are activated when we process information that is congruent with gender stereotypes and when we process information that is incongruent.

Scientists are also beginning to use physiological tools to measure implicit responses to gender, including functional Magnetic Resonance Imaging (fMRI) and electroencephalography (EEG) that are used to record electrical activity in the brain in response to specific stimuli (Quadflieg & Macrae, 2011; Sur & Sinha, 2009). For instance, using fMRI technology, researchers have demonstrated that two entirely different parts of the brain are activated when we make socially relevant

judgments (e.g., state the gender of a person in an image) versus non-social judgments (e.g., determine the color of a dot on a screen) (Quadflieg et al., 2011). These physiological tools provide additional insight into our reactions specifically related to gender; growing evidence suggests that our perceptions of individuals who adhere to gender stereotypes and those who don't are mediated by two different brain mechanisms (Knutson, Mah, Manly & Grafman, 2007; Quadflieg et al., 2011b).

For instance, in one study, researchers analyzed the brain activity of a small, mostly-white sample of men and women as they completed the gender IAT. The results suggest that different parts of the brain are activated when we process information that is congruent with stereotypes (e.g., classify the name “Mary” with the word “weak”) and when we process information that is incongruent (e.g., classify the name “Mary” with the word “strong”) (Knutson et al., 2007). Similarly, in a study with white undergraduates, participants were asked to identify the gender of people in images—all of whom were white—engaged in stereotypically masculine or feminine activities (e.g., dressed as a judge with a gavel or wearing an apron and cutting flowers) (Quadflieg et al., 2011b). The images that were incongruent with gender stereotypes showed greater activation in the participants' brains, which the authors suggest reflects the brain's attempt to override and correct its automatic, stereotypic response (Quadflieg et al., 2011b). In addition, a series of studies with male and female participants revealed that stereotype-incongruent auditory content (e.g., a male voice stating, “I like to wear lipstick”), caused distinct patterns of

electrical activity in parts of the brain that are typically activated when we hear violations of basic linguistic rules, like poor sentence structure (Lattner & Friederici, 2003; Osterhout, Bersick, & McLaughlin, 1997; White et al., 2009). Strikingly, in male patients with damage to a part of the brain where aspects of social knowledge, such as stereotypes, are stored, implicit gender bias was greatly diminished (Milne & Grafman, 2001; see also Cattaneo, Mattavelli, Platania, & Papagno, 2011).

These tools allow us to quantify and assess implicit biases, though they exist beyond our conscious awareness. The ability to measure implicit biases is particularly important, however, because they have been linked to meaningful behavioral outcomes.

## D. HOW BIAS IMPACTS BEHAVIOR

Researchers have amassed powerful evidence that implicit bias does not simply remain in the unconscious, but translates into a wide range of attitudes and behaviors that have significant effects on women.

Implicit attitudes about women have the potential to affect their professional opportunities by shaping employer's hiring and promotion decisions (Moss-Racusin et al., 2012). In fact, researchers have found that women receive more praise but fewer resources than comparable men (Vescio et al., 2005), are commended in terms less likely to indicate extraordinary accomplishment (such as "hardworking" rather than "brilliant;" Madera, Hebl, & Martin, 2009), and are less likely to have access to discretionary career-enhancing opportunities (such as mentoring; Valian, 2007) (London et al., 2012).

These differences cannot be explained by differences in women's performance relative to men. In one study, researchers asked science faculty from research-intensive

Implicit bias does not simply remain in the unconscious, but translates into a wide range of attitudes and behaviors that have significant effects on women.

universities to rate the application materials of a student, randomly assigned either a male name (John) or female name (Jennifer), for a lab manager position. The only difference in the application materials was the gender of the applicant. These faculty participants rated the male applicant as significantly more competent and hireable than the female applicant, also offering the male applicant a higher starting salary and more career mentoring (Moss-Racusin et al., 2012). Similarly, researchers

in another study examined how faculty from top universities responded to email requests from fictitious prospective doctoral candidates (names were selected to make their race and gender clear). The requests either asked for a meeting on the same day or in one week. The researchers found that when the requests were for a future date, white males were granted access to faculty members 26% more often than women and racial minorities, and they also received more and faster responses (Milkman, Akinola, & Chugh, 2012). These differences did not appear, however, when the request was for a meeting on the same day. The researchers argue that this "temporal



discrimination effect” arises because in the face of abstract constraints (e.g., is this meeting worthwhile?), as opposed to concrete constraints (e.g., when am I available?), a decision-maker relies more on stereotypes (Milkman, Akinola, & Chugh, 2012). In the academic context, such gender and racial stereotypes favor white men, who may be perceived as having greater academic or professional potential.

Beyond the lab, studies reveal how implicit bias manifests in real-world decisions. For instance, one study counted the number of stereotypically masculine (e.g., “assertive,” “decisive”) and stereotypically feminine (e.g., “cooperative,” “friendly”) traits in published hiring standards for more than 700 law firms. The researchers found that the average firm listed over two and a half times as many male criteria (ambitious, assertive, independent) as female criteria (cooperative, friendly, verbally-oriented) (Gorman, 2005). With each masculine characteristic listed by a firm, a woman’s chance of being hired decreased by approximately 5%. The study suggests that when a hiring committee implicitly views a position in terms of masculine criteria, male candidates appear to be better suited for it and are thus more likely to be selected. A number of other studies have found that male applicants were preferred over identically qualified female applicants for jobs considered to be traditionally male (Faigman, Dasgupta, & Ridgeway, 2007). In all of these instances, what seems to be at work is the implicit stereotype that women lack assertiveness and decisiveness.

Further, researchers suggest that we evaluate others’ abilities differently based on their gender or race (Biernat & Fuegen, 2001; Biernat et al., 2010). This “shifting

One study suggests that when a hiring committee implicitly views a position in terms of masculine criteria, male candidates appear to be better suited for it and are thus more likely to be selected.

standards” phenomenon is a result of low expectations and high demands (Biernat & Fuegen, 2001). First, due to negative stereotypes about competence, we have low expectations of women as compared to men, as well as of black people as compared to white people (Biernat et al., 2010), which leads to low minimum standards for these groups. Yet at the same time, the negative stereotypes also mean that we need more evidence of competence to confirm their abilities and overcome the stereotypes (Biernat et al., 2010).

Another significant consequence of shifting standards is that evaluations cannot be compared across groups—“good” for a man is not the same as “good” for a woman (Biernat & Fuegen, 2001). Seemingly objective assessments are actually subjective because the nature of the evaluation differs based on the person being evaluated. For example, a man and a woman could both be characterized as “very good” leaders, but due to our different standards, the man would be assumed to be a better leader than the woman (Biernat & Fuegen, 2001).

Implicit bias is not limited to evaluation and to assessments of others. It is also replicated in everyday micro-behaviors (Basford, Offermann, & Behrend, 2014; Benokraitis, 1997). Implicit gender bias exists in the assumption that a judge or a doctor will be a man, not a woman. It occurs when a female colleague is interrupted

by her male colleagues without their even realizing it. It exists in the assumption that a working mother who is away from her desk is caring for her children, while a man, who is also a parent, is away from his desk because he is in a meeting. And it exists in separating toys in a store by gender due to the assumption that girls like to play dress-up and boys like to build Legos.

In addition, by allowing biases to shape our behavior, we effectively transfer these biases to others. For instance, a wide range of studies have supported the conclusion that girls' tendencies to have weaker identification with math derive from culturally

While there is an overarching cultural message linking men and STEM fields, the gender-stem bias is not universal.

communicated messages linking math to boys rather than to girls (Dweck, 2008; Eccles, 2007; Guiso et al., 2008; Steele, 2003). These gender stereotypical messages have the effect of reducing interest in future academic courses and occupations that are math-related because these areas are perceived as incompatible with girls' concepts of themselves (Denissen, Zarrett,

& Eccles, 2007; Frome et al., 2006; Killen, Margie, & Sinno, 2006; Liben, Bigler, & Krogh, 2001; Malcom et al., 2005). As a result, girls may be steered away from STEM fields before they have even developed their interest. While there is an overarching cultural message linking men and STEM fields, the gender-STEM bias is not universal. A recent study found that black women have weaker gender-STEM biases than white women and that black college women choose STEM majors more often than white college women (O'Brien et al., 2015). The researchers' findings demonstrate the importance of an intersectional approach—one that examines gender and race in conjunction rather than separately—to reflect the lived experiences of women of different race and ethnicities, rather than applying a standard that is based on the norms of a predominant group. The researchers argue that differential conceptions of gender and masculinity may be at the root of women's attitudes toward and participation in STEM fields: the traits of independence and agency linked to STEM fields may be more at odds with traits for femininity for white women than for black women (O'Brien et al., 2015). In sum, the effects of stereotypes, and by extension biases, are far-reaching as they influence and shape career goals, performance, and interests of men and women in stereotype-consistent ways (O'Brien et al., 2015).

## **E. INCONGRUITY THEORY OF BIAS**

Gender roles and corresponding gender stereotypes are extremely constricting. For example, as discussed, in light of stereotypes that characterize women as less competent, less ambitious, and less competitive (i.e., less agentic) than men, women may be overlooked for leadership positions. On the other hand, when women do present themselves as agentic, they can elicit hostile reactions (Rudman et al., 2012a; Eagly & Karau, 2002; Rollero & Fedi, 2014; Rudman & Phelan, 2008). The hostile reaction—or backlash—often translates into social or economic penalties against those who engage in counter-stereotypical behavior (Rudman, 1998). Thus, women



(or men) are often penalized when they do not conform to stereotypes that legitimize existing status hierarchies (Rudman et al., 2012a).

As we have seen, gender roles and stereotypes guide our beliefs about the traits men and women possess and the positions for which they are most suited. Leadership is compatible with the agentic qualities attributed to men, but not with the communal (care-giving) traits we attribute to women. Since we are at ease when people conform to conventional roles and behaviors, a male leader does not make us uncomfortable. A female leader, on the other hand, does (Forster, Higgins, & Werth, 2004; Eagly & Karau, 2002).

One study, for instance, found that when female applicants for a managerial position presented themselves as agentic, both male and female participants evaluated them negatively, suggesting that the expectation of female “niceness” penalizes women who counter it (Rudman & Glick, 2001). Another series of studies examined reactions to women who succeed at stereotypically male jobs, such as leadership positions in finance and in aircraft sales. Participants (again, both male and female) deemed these successful women less likable and were more likely to disparage them—reactions that were not elicited by the successful men (Heilman & Okimoto, 2007; Heilman et al., 2004; see also Eagly & Karau, 2002). From the perspective of those evaluating them, the women in these studies did not fit with expected gender roles and traits. Further research is needed to understand how such gendered expectations impact women of varying racial and ethnic groups.

As a great deal of research has shown, those who violate gender stereotypes may elicit backlash from others (Rudman & Fairchild, 2004). Backlash can negatively affect women in virtually all aspects of the workplace, including hiring, salary negotiations, promotion, and leadership evaluations (Rudman, Moss-Racusin, Glick, & Phelan, 2012). In the workplace, where operations are often predicated upon hierarchy and power dynamics, women in authority positions have increased risk of

Women (and men) who defy gender stereotypes may face backlash, in the form of social or economic penalties.

being sexually harassed, likely due to gender role backlash effects (McLaughlin, Uggen, & Blackstone, 2012). Backlash can take the form of social or economic penalties against “vanguards”—those whose actions are inconsistent with societal stereotypes, such as excelling at particular activities or playing roles generally dominated by people in other groups (Rudman & Fairchild, 2004). The harmful effects of

backlash are both direct, as penalties experienced by the vanguards and obstacles to their further success, and indirect, as the fear of backlash creates disincentives for others to behave in ways that counter stereotypical norms. Either way, these backlash effects serve to reinforce the power of gender stereotypes.

The experience and perpetration of backlash related to gender stereotypes occurs for both women and men. Rudman and Fairchild (2004) found that both women and men suffer from and engage in backlash designed to punish gender-atypical behavior. Their study involved a two-part computer knowledge test between two parties—one

of whom was a study participant. The participant always lost the first round and the opportunity to win a cash prize but was given the opportunity to select the test items for their opponent's second round. The premise was that if the opponent succeeded in answering a particular number of questions, his or her name would be publicized on a website. The researchers found that participants were more likely to sabotage their opponent by choosing a higher number of difficult questions when the opponent succeeded in a gender-atypical knowledge domain than when they succeeded in a gender-typical domain (Rudman & Fairchild, 2004). In other words, a woman who did well on a test in a gender-atypical domain (such as football) was given many more difficult questions for the second round than a woman who did well on a test in a gender typical domain (child development). The gender of the participant choosing the questions was found to be irrelevant. Rudman and Fairchild (2004) also observed that the participants were trying to undermine their opponent. The difficulty of the selected questions was not a sign of respect; rather, they were aware that their actions would prevent the opponent from receiving public acclaim on the website. Significantly, fewer participants sabotaged opponents who did well in a gender-typical domain on a test. Researchers posit that the results of this study confirm earlier research that punishing “vanguards” whose actions dismantle stereotypes is experienced as a societally positive act (Rudman et al., 2012b citing Brewer, 1988; Fiske & Neuberg, 1990).

Rudman and colleagues (2012) found that women in traditionally male roles do not necessarily experience backlash if they display stereotype-consistent behaviors. Traits such as warmth and communal tendencies can be affirmed when women exhibit them, and correspondingly, counter-stereotypical traits such as “dominance” can be punished; thus, people whose actions penalize vanguards can rationalize their behavior, seeing it as “legitimate” rather than as “prejudiced” against women.

## **F. HOSTILE AND BENEVOLENT SEXISM**

We may not like to believe that we have such strict criteria for what a woman can and should be, or that we actively punish women who do not adhere to these standards. However, these tendencies are bolstered by the combination of *hostile sexism* and *benevolent sexism*, which together characterize much of the contemporary bias against women.

A conventional understanding of sexism is that it is always *hostile sexism*, expressing an attitude that women are inferior to men and unfit for positions of leadership, especially those involving power over men (Hebl & O'Brien, 2010). In this conventional understanding, a sexist attitude pits women against men—it is based on the notion that the two genders are opponents, as women threaten to control men through marriage and sexual deceit or through fighting them in a battle of the sexes in the workplace (Yzerbyt & Demoulin, 2010). These sorts of attitudes are easy to identify as sexism.

At the same time, there is a prevailing *benevolent* view of women that idealizes them as mothers, wives, and caregivers who stand by their men and nurture their children. This view is seemingly benevolent, as it characterizes women as giving, loving, and

loyal. However, it is rooted in the notion that women are the “fairer sex”—they have a purity that men do not and need to be protected against those who might do them wrong (Hebl & O’Brien, 2010). This, too, is sexism. Rather than overtly disapproving of women, as hostile sexism does, *benevolent sexism* works more subtly, confining women to domestic and maternal realms where they can be protected and provided for by men (Hebl & O’Brien, 2010). Both types of sexism serve to justify relegating women to stereotypically feminine roles in society (Glick & Fiske, 2001; Yzerbyt & Demoulin, 2010). Although they may seem to exist at opposite poles, hostile and benevolent sexism are actually closely connected, each reinforcing the other. In fact, most people hold these dual attitudes toward women, though they may be implicit (Glick & Fiske, 1996; Glick & Fiske, 2011).

Taken together, the effect of these seemingly divergent views of women is called *ambivalent sexism*. That is, the hostile, contemptuous attitude that women are inferior to men is held simultaneously with the (benevolent) attitude that, as social psychologists Alice Eagly and Antonio Mladinic (1994) put it, “women are wonderful.” While both attitudes are very real, benevolent sexism actually masks the more obvious signs of hostile sexism by offering caring, well-intentioned reasons for discriminating against women (Hebl & O’Brien, 2010). One might, for example, bypass a woman for a promotion because she is “too nice” to take on a leadership position or because of the assumption that she would probably prefer to spend more time with her children. In this respect, women as a group evoke warm feelings but are seen as incompetent in traditionally male domains (Fiske et al., 2002; Fiske, 2012). The other side of this coin is that when women counter the benevolent sexist view and assume more stereo-

Benevolent forms of sexism are rarely discussed in popular culture, and thus they continue, unchallenged.

typically male behaviors, such as assertiveness and competitiveness, they trigger hostile responses (Heilman et al. 2004; Eagly & Karau, 2002; Rudman & Phelan, 2008). In either case, it is clear that ambivalent sexism influences our evaluations of women, even when these women have proven themselves to be successful and have demonstrated their academic or professional competence (Heilman et al., 2004).

Benevolent sexism is perhaps the more insidious of the two poles of ambivalent sexism in that it is often not perceived as sexism, even by women. Benevolent forms of sexism are rarely discussed in popular culture, and thus they continue, unchallenged. It is nonetheless important to see benevolent sexism as sexism, since it can have significant negative effects on women’s lives.

Research has shown that benevolent sexism can undermine women’s abilities (Dardenne, Dumont, & Bollier, 2007). For instance, in one study conducted in France, a cohort of women was given a set of “benevolently” sexist instructions, such as “You’ll work with men only, but don’t worry,” or “They will cooperate and help you to get used to the job. They know that the new employee could be a woman, and they agreed to give you time and help” (Dardenne, Dumont, & Bollier, 2007). Another group of women was given instructions that expressed hostile sexism, referring to women as

“the weaker sex,” complaining about women’s tendency to get upset, and dismissing feminists as untrustworthy and underhanded. The researchers found that benevolent sexism was even more problematic for the women in the study than the more traditional “hostile” sexism. Although the women found both forms unpleasant, it was much easier for them to see the hostile sexism for what it was and discount it. When faced with benevolent sexism, however, the women were less certain of how to react. Because they could not dismiss them as outright sexism, these remarks planted actual doubt in their minds about their own competence (Dardenne, Dumont, & Bollier, 2007). This subtle form of sexism led women to question their own abilities, decreasing their self-esteem and self-confidence. These intrusive thoughts about their competence interfered with working memory capacity, and as a result, their performance suffered.

In a similar study conducted in the Netherlands, researchers found that women often reacted to benevolent sexism by conforming to stereotypes: they emphasized their communal qualities (their ability to get along with and care for others) and downplayed their competence, competitiveness, and academic achievement (Barreto, Ellemers et al., 2010).

As is the case with biases and stereotypes, benevolent sexism is not a product of individual psychology, but rather an individual materialization of larger, societal determining forces. But, that is not to say that benevolent sexists do not bear individual responsibility. In regards to sexual harassment, high levels of benevolent sexism correspond with low levels of tolerance of sexual harassment (Russell & Trigg, 2004). This finding highlights the paradox wherein one can hold sexist beliefs while reporting intolerance of sexual harassment, substantiating the insidiousness of ambivalent sexism and the need for appropriate institutional interventions.

Ambivalent sexism as a whole can place women in a double bind in the workplace and other important settings. When a woman’s behavior runs counter to the stereotype that sees her as sweet and maternal, she may just as readily be perceived as threatening and experience backlash—from both men and women (Rudman et al., 2012a).

## **G. SEXUAL HARASSMENT**

The translation of gender bias into sexual harassment, even by men who proclaim egalitarian values, can be particularly confusing. Sexual harassment can be understood differently, so for clarity’s sake, we are using the following definition: (Willness, Steel, & Lee, 2007):

*(a) gender harassment, the most common form of which includes “verbal, physical, or symbolic behaviors that convey hostile, offensive, and misogynist attitudes” (Fitzgerald, Swan, & Magley, 1997); (b) unwanted sexual attention, which includes both verbal and nonverbal incidents such as sexual imposition, touching, or repeated requests for dates (Gelfand et al., 1995); and (c) sexual coercion, where the target’s job or rewards are contingent on sexual cooperation (Fitzgerald et al., 1997)*

Gender harassment—which is a form of ridicule rather than an attempt to gain sexual access—is the most commonly reported form of harassment (Hitlan et al., 2009). The harassment often takes the form of sexist verbal behavior, including teasing, jokes, comments or questions. This form of harassment is often assumed to be minor; however, research shows that gender harassment can have both negative personal and professional consequences for women (Hitlan et al., 2009). The effect on women may include diminished psychological well-being and psychological stress symptoms (Hitlan et al., 2009).

Researchers have found that sexual harassment usually occurs when individual men possess a combination of implicit attitudes about gender and contextual cues. Pryor and colleagues (1993) explain the presence of sexually harassing behavior (i.e., unwanted sexual attention) using the Person X Situation Model. Based on the model, when men who are identified as having individual characteristics suggesting they are more likely to engage in sexual harassment are exposed to authority figures who displayed such behaviors, the men are more likely to engage in sexual harassment. Thus, the interaction between a person and situational factors is crucial to producing sexual harassment. As Pryor and colleagues have found: sexual harassment is most likely to occur when men with a proclivity to sexually harass are placed in a situation amenable to such behavior.

"Sexual harassment is a behavior that some men do some of the time."  
(Pryor, LaVite, & Stoller, 1993)

The Person X Situation Model is useful because it emphasizes the role of environmental norms. In fact, context has been found to be a critical factor for predicting whether women will be subject to sexual harassment. In a meta-analysis, Willness and colleagues (2007) found that "the existence of a social climate that is permissive of [sexual harassment] may be a necessary condition for such behaviors to occur." Conditions of permissiveness include environments in which victims' complaints are not taken seriously, the victims may experience retaliation for complaining, the sanctions for sexual harassment are low to nonexistent, and where other males are engaging in such behaviors (Willness et al., 2007; Williams, Fitzgerald, & Drasgow, 1999; Pryor, 1987; Pryor et al., 1993).

In addition to a climate of permissiveness, the gendered nature of the workplace has also been found to be relevant to experiences of sexual harassment (Willness et al., 2007). Researchers have found that "gendered behavior, cultural symbols of masculinity, male superiority, and sexual bravado" (Willness et al., 2007 citing Glick, 1991; Stockdale, 1993) are more likely in environments where women represent the numerical minority or where the occupations are deemed traditionally "masculine."

Another key contributor to sexual harassment is masculinity threat, which helps to explain the prevalence of unwanted behaviors or inappropriate comments, even when men hold egalitarian values. Research suggests that in situations in which a man's sense of masculinity is threatened, he may attempt to recover by exaggerating his masculinity. For instance, in a series of laboratory experiments with male college

students, Cheryan and colleagues (2015) undermined some participants' masculinity by giving them falsely low scores on a strength test. The men whose masculinity was threatened responded by exaggerating their height, reported having more romantic relationships, and claimed to be more aggressive and athletic in a self-report survey. Under conditions of threat, the researchers argue, men attempt to correct the image they are projecting through compensation (Cheryan et al., 2015), repositioning themselves in the gendered hierarchy. While being misleading about one's height may seem innocuous, past research has found that men attempt to compensate for low masculinity by being more assertive, acting more aggressively, harassing women, and belittling other men (Cheryan et al., 2015).

Sexual harassment arises, in part, because certain environments grant permission to men with sexist beliefs to act on them, and encourage other men to join in. Recent research on masculinity threat provides an additional explanation for the prevalence of sexual harassment—when feeling undermined, men may re-affirm their masculinity and assert their dominance in ways that harm women.

## **H. INTERVENTIONS FOR GENDER BIAS**

The challenge of addressing implicit bias is due in part to the fact that implicit bias is unconscious, so that those who hold these biases are wholly unaware that their behavior is inconsistent with the egalitarian values they may consciously hold. Unfortunately, the result of this disconnect is often that the consequences of their biased behavior are presumed to be the fault of the people affected—for instance, a professor may preferentially call on the male students in his class, then deem his female students as less participatory.

Fortunately, implicit biases are far from intractable. Researchers and practitioners have developed interventions to reduce bias that institutions can adopt to “override” bias—and even prevent it in the first place.

Interventions to either reduce implicit bias or to prevent it from manifesting in behavior are best set at the societal or institutional level.

It's important to remember that implicit biases are not a consequence of an individual's psychology—they are socially shared phenomena that manifest in the minds of individuals. As a result, interventions to either reduce implicit bias or to prevent it from manifesting in behavior are best set at the societal or institutional level.

At the same time, though, we as individuals can accept responsibility and adopt practices to counter implicit biases, in order to shift norms of gendered expectations. Implicit attitudes and

beliefs toward social groups are mirror-like reflections of the local environments and communities in which we as individuals are immersed (Dasgupta, 2013). In other words, attitudes are situational—that is, dependent upon the environments in which we spend our time. It follows, then, that changes in these environments can result in changes in our implicit attitudes. Even changes in the media we consume can have



a significant impact on our attitudes (Godsil, Gonzales, & Balcetis, 2015). It is a mistake to think of implicit bias as only internal. It is the result of internal processes interacting with external stimuli; therefore, there is not a sharp distinction between environment or structural processes and implicit bias.

### **1. Change the Local EnvironmentA**

Relevant changes in the local environment include increasing the prominence of out-group individuals. In particular, the depictions that counter negative stereotypes create new implicit associations between those positive attributes and the out-group as a whole (Dasgupta, 2013; Gawronski & Bodenhausen, 2006). One study, for instance, exposed participants to images and brief biographies of famous, admired individuals who also belonged to historically disadvantaged social groups, such as women and people of color. The result was a significant lowering of participants' implicit biases toward these groups, as measured by the IAT (Dasgupta, 2013). What's more, the effect was still there 24 hours later, suggesting that the impact of even brief media exposure isn't fleeting. Over time, immersion in counter-stereotypic environments may reduce how readily we access stereotypes and may increase the ease with which we access counter-stereotypes (Dasgupta, 2013).

Altering people's local environments, even through media, can not only make a positive difference in people's implicit biases toward out-groups, but can also reduce the bias a person may hold against their own group. Thus, shifting the local environment to counter gender stereotypes and promote egalitarian gender norms can impact both men's and women's implicit gender biases. Furthermore, changes in the local environment are an important avenue to achieve structural change, as they can increase people's support for public policies and institutional practices that fix structural bias and extend equal rights to all groups.

### **2. Practices to Override BiasA**

Because it will likely take time to eliminate or significantly diminish the role of implicit gender bias, it is crucial for institutions to set into place practices that will minimize the effects of such bias. For instance, recent work by Shelley J. Correll, a professor of sociology at Stanford University, has focused on how workplace structures and practices can be reconfigured to be more inclusive of women (Correll et al., 2014). She has identified specific measures organizations can take to minimize

While these tools are critical for important decision-making contexts, they can also be employed in everyday interactions to prevent the perpetuation of constricting gender norms.

gender bias, addressing problem areas in typical evaluation processes and decision-making, as well as emphasizing the importance of measuring and reporting an organization's progress in gender fairness. Correll highlights six key solutions: educate employees about bias and how it impacts decision-making, establish clear criteria for evaluation to reduce the impact of bias, scrutinize existing criteria to identify the potential for differential outcomes, hold

decision-makers accountable to ensure that stereotypes are not used as a shortcut, be transparent—particularly when it comes to diversity in hiring—and vouch for the competence of women leaders in order to directly combat stereotypes (The Clayman Institute, 2013).

Below, we describe evidence-based strategies that individuals and institutions can use to mitigate the impact of gender bias. While these tools are critical for important decision-making contexts, such as in the workplace, they can also be employed in everyday interactions in order to prevent the perpetuation of constricting gender norms.

- ◆ **Accountability:** Not surprisingly, when decision-makers and those in positions of power are accountable for outcomes and behaviors that stem from biased behavior, they are more likely to put in place specific systems and practices that prevent the behavior from occurring.
- ◆ **Culture of fairness:** Because implicit biases are cultural rather than individual, the cues within a particular environment will affect whether implicit biases are triggered.
- ◆ **Bias screens:** In some instances, it is possible to completely eliminate gender cues and therefore to prevent the operation of gender bias. For this to be effective rather than counterproductive, the screen must prevent against subtle suggestions of gender which may be even more likely to lead to implicit bias.
- ◆ **Question our objectivity:** Somewhat ironically, evidence suggests that when people assume they are objective, they are at a greater risk of inadvertently allowing bias to influence their decision-making (Pronin, 2007). Indeed, inviting people to affirm their objectivity actually has the effect of increasing their discrimination (Uhlmann & Cohen, 2007). By contrast, teaching people about how the unconscious mind operates and the challenges of behaving objectively may lead them to be more skeptical of their own objectivity and better able to guard against biased evaluations (Pronin, 2007). Furthermore, drawing people's attention to the many opportunities for bias to influence their decisions may help them recognize situations in which bias may be at play and think more critically about these circumstances. Keep in mind that this intervention may not necessarily decrease implicit bias itself (Lai et al., 2014), but rather it can be effective in reducing discriminatory behavior that results from such bias.
- ◆ **Increase motivation to be fair:** Simply telling someone to be “non-biased” is not likely to lead to behavior change if a person does not develop an internal motivation to be fair. A large body of research shows that those who are internally motivated by the desire to be unprejudiced rather than “externally” motivated by a concern about social disapproval are better able to control prejudiced behavior (see for example Devine et al., 2002; Klonis, Plant, & Devine, 2005; Peruche & Plant, 2006). In other words, holding equal treatment as an important personal value is linked with less discriminatory behavior.
- ◆ **Think slow: Improve conditions of decision-making:** As we have discussed, implicit biases are a function of automatic processes (Kahneman, 2011). In



contrast, “thinking slow,” by engaging in mindful, deliberate processing, reduces the likelihood that our implicit schema will kick in and determine our behaviors. Ideally, when an important decision is to be made—such as selecting between applicants for school or work—clear criteria will have been established in advance to guide the choice. The criteria themselves should be evaluated for potential bias, and the context should be one in which the decision-maker is accountable for the outcome.

- ◆ **Count: Identify disparities:** Implicitly biased behavior is best detected by using data to determine whether patterns of behavior are leading to disparate outcomes across genders. Research has shown that people are more likely to detect discrimination when it is presented in the aggregate rather than on a case-by-case basis (Crosby et al., 1986). Therefore, tracking outcomes—in education, employment, etc.—is critical to unveiling the role of bias across circumstances. Once people are aware that decisions or behavior are having disparate outcomes, they are more likely to consider whether and how the outcomes are linked to bias. Demonstrating disparities is a fundamental step toward engaging people in all facets of society in preventing biased behaviors.



## PART III

### NAVIGATING THE COMPLEXITIES OF GENDER BIAS

Powerful and entrenched stereotypes about gender have effects beyond how others see women—they also affect how women experience their own identity. Their presence can discourage both women and men from engaging in activities that are inconsistent with gendered norms.

Researchers have identified several mechanisms through which women experience the prevalence of gendered stereotypes. Stereotype threat has been most thoroughly studied, but we highlight other processes associated with awareness of gender stereotypes to add richness to the discussion of their impact and to encourage further research to understand their effects and to identify interventions to address them.

#### A. AWARENESS OF GENDER STEREOTYPES

Many women are aware of stereotypes about their gender (Pinel, 1999), and this awareness can have substantial implications for social relations and behavior in contexts like the workplace or the classroom. For instance, a woman who is

Interfering thoughts  
about gender  
stereotypes can impact  
women's performance  
in the workplace.

presenting in front of an audience may have intrusive thoughts about whether the men in the room are paying more attention to her body than to the content of her presentation (Pinel, 1999). These thoughts may arise from norms about women's sexuality and lack of respect for women in leadership positions. The experience can cause anxiety, and the interfering thoughts about gender may detract from her

performance. In a more general sense, gender stigma consciousness can lead a woman to fear that devaluation in a professional setting is attributed to her gender rather than her work performance.

Anxiety related to gender stigma consciousness does not only arise from awareness of stereotypes; it can also be triggered by the behavior of others or by institutional practices. Researchers also suggest that institutions that have historically limited women's participation activate gender anxieties among their female members, and women in these contexts are more likely to detect biased behavior (London et al., 2012). In reaction to gender stigma consciousness, women often use coping strategies such as self-silencing, isolation, and disengagement (London et al., 2012; Pinel, 1999). Unfortunately, these self-protective responses often reduce opportunities for professional engagement and advancement (London et al., 2012) and result in feelings of low self-esteem and loss of control (Pinel, 1999). They also may inadvertently reinforce gendered notions of lack of ability or assertiveness, thereby exacerbating the gendered divide.

## RACIAL ANXIETY

As a general phenomenon, racial anxiety refers to the discomfort about the experience and potential consequences of interracial interactions (Stephan & Stephan, 1985). Racial anxiety can arise for both people of color and white people but stems from different underlying concerns: people of color may be anxious that they will be the target of discrimination, hostile or distant treatment, or invalidation, while white people may be anxious that they will be assumed to be racist or that they will be met with distrust or hostility (Devine & Vasquez, 1998).

These anxieties can have the counterintuitive effect of undermining cross-racial interactions. Anticipatory racial anxiety leads individuals to act in ways that actually reinforce the other person's perceptions of them, which magnifies the source of the anxiety. For instance, Bergsieker, Shelton, and Richeson (2010) found that when a white person fears that they will be perceived as racist, they try to get the person of color to like them by projecting warmth. When a person of color fears that they will be perceived as less competent, they try to gain the white person's respect by projecting seriousness. When these two approaches come together in an interaction, the white person is perceived as disrespectful because they don't reciprocate formality, and the person of color is perceived as unfriendly. The divergent goals mean that neither party is satisfied—both individuals come away frustrated by the interaction, and feel like their concerns have been confirmed (Bergsieker et al., 2010). In contrast, research shows that when an individual feels their group identity is affirmed during an interaction, they show more willingness to engage (Shnabel et al., 2009).

Racial anxiety is experienced as a physiological threat (Blascovich et al., 2001; Page-Gould et al., 2008) and can result in cognitive depletion (Richeson & Shelton, 2003; Richeson et al., 2003; Richeson & Shelton, 2007), making it more difficult to salvage an interaction once anxiety has set in. Not surprisingly, racial anxiety undermines the quality of interracial interactions and can lead people to avoid such encounters. The harm of racial anxiety is both the immediate effect felt by the anxious person, as well as any consequences of this anxiety the other person may be subject to. So, if one person in an interaction experiences racial anxiety, the other person also suffers, regardless of whether they were racially anxious.

Acknowledging the impact of racial anxiety within a gendered context is critical, as women of color may face compounded anxieties related to their gender and their racial identity. With this in mind, we refer readers to our previous report, *Science of Equality, Vol. 1*, which discusses racial anxiety and corresponding interventions in greater depth (Godsil et al., 2014).

Concern about backlash triggered by violating gender norms can also be a powerful inhibitor of performance. Women (and men) may avoid displays of excellence in gender atypical activities, may hide talents that are inconsistent with stereotypes, or may quit an activity in contexts in which backlash might be expected (Rudman, Moss-Racusin, Phelan, & Nauts, 2012). The fear of backlash has been linked to concern about social rejection, which threatens self-worth (Leary & Baumeister, 2000). Like gender stigma consciousness, backlash concern has the effect of preserving cultural stereotypes by inhibiting the behavior of those who may otherwise challenge those norms.

Fear of backlash can have significant consequences for professional women. Women in business settings may feel trapped: behaving in stereotypically feminine ways (warm, communal) risks being perceived as “too nice” or unable to work independently, yet behaving in stereotypically masculine ways (independent, assertive) risks being perceived as abrasive or “not a team player.” Although “masculine” traits are highly desired in many professional settings, the fear of backlash may keep women from displaying them (Rudman & Glick, 2001).

In fact, researchers suggest that the effects of backlash may hinder efforts to eradicate the gender pay gap. It is well known that men initiate salary negotiations more often—up to four times more often—than women (Babcock & Laschever, 2009). Numerous advocates and women in business have vocally encouraged women to negotiate their salaries. Interestingly, though, negotiation recommendations from institutional-organizational scientists suggest that women achieve more success if they approach the negotiation using stereotypically feminine traits rather than a more “masculine” approach. In other words, if a woman approaches negotiation with a communal, relational approach (i.e., legitimizing compensation requests and communicating concern for organizational relationships in mutually compatible terms), she will reap more positive negotiation and social outcomes (Bear & Babcock, 2012). Essentially, women are not encouraged to approach the conversation as men do—with assertion and valuing of self—but rather to use stereotypically feminine qualities to their advantage in strategic ways. While proven effective, these recommendations feed into and reinforce structured gender norms, maintaining a gendered divide in professional conduct.

## **B. STEREOTYPE THREAT**

*Stereotype threat* describes a person’s fear of substantiating negative generalizations about their group—e.g., that women are bad at math and technical work (Steele & Aronson, 1995). Stereotype threat requires individuals to split their energy between the task at hand—be it social, academic, or professional—and their concern about confirming a negative stereotype. The physiological effects of this anxiety are detectable in both the body (in an increased heart rate and rising blood pressure), as well as in brain regions that regulate emotion. Energy is diverted toward cognitive reactions and affective responses, such as vigilant self-monitoring and suppressing self-doubt. Typically, stereotype threat is induced on difficult or critical tasks, when the person

is engaged and the outcome matters (Roberson & Kulik, 2007). Cumulatively, these effects divert cognitive resources that could otherwise be used to maximize one's performance (Schmader & Johns, 2003).

### **1. The Behavioral Effects of Stereotype Threat**

One understanding of stereotype threat is that it involves the activation of three conflicting beliefs (Schmader, Johns, & Forbes, 2008; Wood et al., 2010): (a) the group stereotype of inferior ability (e.g., women cannot read maps), (b) identification with the group (e.g., I am a woman), and (c) knowledge of one's own ability (e.g., I am good at map reading).

Targets of negative stereotypes are generally motivated to try to disprove the group's negative reputation and thus go out of their way to avoid failure—but if the task is sufficiently complex and demanding, this attempt to transcend the negative stereotype creates an extra cognitive burden (Spencer, Steele, & Quinn, 1999). The all too common result is failure to successfully perform (Wood et al., 2010).

Most stereotype threat studies in the United States have focused on the effects of stereotype threat in academic settings for at-risk groups, including women in the STEM

When faced with a difficult task, the attempt to disprove negative stereotypes can create an extra cognitive burden.

fields. One study demonstrated that in situations where math skills are exposed to judgment—whether in a formal test, through classroom participation, or simply when calculating a waiter's tip—women bear the extra burden of a stereotype of sex-based inability (Spencer et al., 1999). Building on earlier studies of this particular stereotype threat, researchers found

that even women who were otherwise strong math students were susceptible to stereotype threat. On a difficult math test, female participants did worse than equally qualified men. When the women were told that the test produced gender differences, they performed even worse. These findings suggest that attempting to grapple with a negative stereotype can significantly undermine performance. However, when the women in the study were explicitly told that the test did not produce a gender difference, the underperformance disappeared (Spencer et al., 1999; see also Kray, Galinsky, & Thompson, 2002, for the positive effects of “stereotype regeneration”). Essentially, eliminating the stereotype also eliminated the threat.

This basic research finding regarding women's performance compared to men's and the activation of stereotype threat has been replicated in hundreds of studies (see for example Brown & Day, 2006; Ben-Zeev, Fein, & Inzlicht, 2005; Davies et al., 2002; Schmader, Johns, & Forbes, 2008; Schmader & Johns, 2003). The research demonstrates the powerful potential for gender-based stereotypes to influence performance, without our even realizing it.

Recent research also suggests that the presence of stereotype threat may have an effect on overall psychological well-being. For instance, a 2016 study asked female surgical residents whether they think there is an expectation that men are better doctors than women. The women who endorsed this notion had greater

psychological distress than women who did not (Salles, Mueller, & Cohen, 2016). The researchers suggest that simply acknowledging the presence of the negative stereotype may act as a stressor for women, above and beyond the impact of stereotype threat on performance.

## **2. Stereotype Threat and the Intersection of Race, Ethnicity, and Gender**

The experience of gender-based stereotype threat may be different depending upon other aspects of identity. Ethnicity and race in particular can intersect with gender to alter the effects of the threat, depending upon the stereotypical traits associated with the ethnicity or race.

For example, Asian Americans are often assumed to have strong math and science skills as compared to other races, while women are assumed to have weaker math and science skills than men. Among samples of Asian American girls, these stereotypes have been shown to effectively cancel each other out, depending upon which aspect of identity is made salient. Researchers found that Asian American girls perform better on math tests if they are asked to identify their ethnicity prior to taking a test than if they are asked to identify their gender (Shih, Pittinsky, & Ambady, 1999).

However, the challenges of stereotype threat are often compounded when a person has multiple identities that are associated with negative stereotypes. Social scientists call this experience the *double-minority effect*—the psychological state created when two identities interact to influence a person in a way that is greater than the sum of the independent effects of those identities (Gonzales et al., 2002). For example, a 2002 study found that Latina undergraduates experienced much more intensely the symptoms of stereotype threat, such as cognitive interference and self-doubt, than did their white female counterparts or their Latino counterparts (Gonzales, Blanton, & Williams, 2002). The findings suggest that, for a Latina woman, awareness of the negative stereotypes associated with her minority ethnicity may make her more sensitive to negative stereotypes of her gender (Gonzales et al., 2002). At the intersection of race and gender, the effects of these stereotypes are intensified.

## **C. REDUCING STEREOTYPE THREAT AMONG WOMEN**

A significant body of research has demonstrated how stereotype threat operates, as well as the conditions that both trigger and mitigate it. Social scientists have drawn upon this research to develop an array of interventions that have been found to prevent or significantly lessen the effect of stereotype threat (Dasgupta & Stout, 2014; Erman & Walton, 2014).

### **1. The Stereotype Inoculation Model & Critical Mass: The Need to Increase Diversity**

There are important ways to counter conditions that seem unfriendly to women, and thus make it more likely that women of all races and ethnicities will feel comfortable staying on the academic or professional path they've chosen. One fundamental method for positively altering an environment is to increase the presence of women of

all races and ethnicities (Salles et al., 2016). Increasing representation of women, or of racial and ethnic minorities, is not only about making women more comfortable—it also has the potential to reduce the likelihood of implicit bias (Pettigrew & Tropp, 2006) and of stereotype threat (Walton & Cohen, 2011).

This strategy of increasing representation is supported by the Stereotype Inoculation Model, developed for workplaces. The Stereotype Inoculation Model, created by Nilanjana Dasgupta, acts as a social vaccine, working to “inoculate” outgroup individuals’ sense of self against harmful stereotypes, thereby increasing their sense of social belonging and building resilience in the face of stereotypes (Dasgupta, 2011).

For all of us, career aspirations are very much influenced by whom we see in successful roles and professions and whether we relate to those individuals (Asgari,

For members of a negatively stereotyped group, seeing members of their group who are successful in the same field defies the negative stereotype, thereby strengthening their belief in their own ability to achieve, as well as their motivation to do so.

Dasgupta, & Cote, 2010; Asgari, Dasgupta, & Stout, 2012; Dasgupta & Asgari, 2004; Gibson, 2004; Lockwood & Kunda, 1997, 1999).

Unfortunately, this influence often works to a negative effect, so that out-group individuals who have the skills and ability to succeed in a particular field withdraw because they see few others like them (Dasgupta, 2011). As we have discussed, a lack of women in a professional field, compounded with gender roles and their resulting stereotypes, is extremely salient in guiding women’s professional trajectories.

However, the Stereotype Inoculation Model draws on the research finding that contact in the workplace with both role models (“experts”) and peers who belong to one’s in-group can go a long way toward

making individuals feel that they do belong in the environment (Dasgupta, 2011). For members of a negatively stereotyped group, seeing members of their group who are successful in the same field defies the negative stereotype, thereby strengthening their belief in their own ability to achieve, as well as their motivation to do so (Dasgupta, 2011; Blanton, Crocker, & Miller, 2000).

Unsurprisingly, when individuals have “solo” or “token” status in the workplace—when they are the only member of their social group, or one of few members—it typically reduces their sense of belonging, their belief in their own ability to achieve, their willingness to express their viewpoints, their performance, and their work satisfaction (Dasgupta, 2011; powell, 2012). It is well-known that in business settings, women who are tokens often feel overly visible, boxed into a gender stereotype, socially isolated, and under more pressure to perform (Kanter, 1977). Similarly, individuals who are tokens are also highly susceptible to stereotype threat, since their identity is particularly salient.



To understand the nature of sufficient representation, researchers have begun to explore the concept of “critical mass”—essentially, the proportion of a group needed to eliminate the experience of tokenism and to attain the benefits of diversity (Kramer

Increasing representation of women in professional spaces is good business: corporate boards with a critical mass of women are more innovative.

et al., 2007; powell, 2012). While critical mass cannot be characterized by a “magic number” of women in a room, studies have documented the shift in women’s experiences when they are one of many rather than one of few. For instance, qualitative research with high-level female staff at Fortune 1,000 companies found that when a woman is the only woman on a board of directors she is considered a token (Kramer et al., 2007). When there are two

women on a board, the women still face challenges: they may feel it is necessary to team up with each other, and if they both agree on something, they may be viewed as conspirators by the men (Kramer et al., 2007). In addition, in any instance in which one of the women is absent, the other becomes a token. In contrast, women in the study reported shifts in the group dynamic and professional hierarchy with the presence of three or more women on a board, and as their numbers increased, women felt more comfortable supporting each other (Kramer et al., 2007). Increasing representation of women in professional spaces is also good business: research suggests that corporate boards with a critical mass of at least three women are more innovative (Tochia, Calabro & Huse, 2011), and there is a growing body of research documenting the link between the (gender and racial) diversity of groups and innovation (see for example Bianchini, 2013), which provides further motivation for proactive efforts to reduce tokenism.

## **2. The Importance of In-group Peers**

In fields where women are underrepresented, hiring women in clusters or cohorts can be especially beneficial because it creates a community of in-group peers, fostering feelings of belonging and, in the long run, improving the chances that newly hired women will remain at their jobs (Dasgupta, 2011).

Furthermore, much research has shown the positive effects of work teams where those in nondominant groups (by gender, race, or ethnicity), are in the majority on a particular work team (Dasgupta, 2011; Harskamp, Ding, & Suhre, 2008; Robinson, Schofield, & Steer-Wentzell, 2005; Sackett, DuBois, & Noe, 1991; Springer, Stanne, & Donovan, 1999; Webb, 1984), which suggests that creating opportunities for women to meet and collaborate with other women in their field, if not in the same office, can be particularly effective.

In addition, in settings with few women, networking opportunities are essential to build connections across institutions. Peer mentoring, in which women who are somewhat more advanced in their professions form professional and/or social relationships with newcomers, can foster a sense of community across a field more broadly (Dasgupta, 2011).

### **3. The Importance of “Experts”<sup>A</sup>**

Relatable “experts” in the field serve as important aspirational figures, as well as potential mentors for newcomers. Significantly, individuals are more likely to benefit if they feel a sense of personal connection or identification with members of their group who are in expert positions. Identification can result from even small connections with the expert; having attended the same college as the expert can create a sense of identification for an individual who is just starting out in a profession, making the path from one’s present self to a future “expert” self seem more attainable (Dasgupta, 2011; Markus & Kunda, 1986; Markus & Wurf, 1987). Interpersonal contact and mentoring relationships with women in these expert positions are likely to be most effective; such contact personalizes these experts, making it easier for newcomers to identify with them and see their achievements as attainable (see for example Asgari, Dasgupta, & Cote, 2010; Stout et al., 2011).

Institutions should make concerted efforts to make experts visible. Professional conferences, workshops, guest lectures, and similar opportunities can incorporate the contributions of women in a field where they are usually invisible because of their small numbers (Dasgupta, 2011).

Ultimately, encouraging and supporting women, particularly women of color, in academic and professional settings where they are underrepresented is beneficial for the individuals themselves and for others who may look to them as peers or experts. Efforts to combat tokenism are likely to increase women’s sense of belonging, belief in their abilities, and commitment to their field. Moreover, research demonstrates that these efforts are beneficial for the productivity and success of institutions as a whole (Dasgupta, 2011).

### **4. Provide a Successful Task Strategy<sup>A</sup>**

Evidence suggests that stereotype-threatened individuals seek to distance themselves from the stereotype by acting in opposition to it (Aronson, 2002). They often work harder and longer to prove the stereotype wrong and show that it doesn’t apply to them (Roberson & Kulik, 2007). Unfortunately, because stereotype threat is typically induced only on very difficult tasks, working harder won’t necessarily improve a person’s performance (Steele & Aronson, 1995). What they need is an effective strategy for solving problems.

One study examined the impact of having a strategy to successfully counteract stereotype threat—in this case, the stereotype that women are poor negotiators. First, the women in the study were explicitly told about gender stereotypes suggesting that women are less assertive than men and tend not to act in their own self-interest, thus reducing their effectiveness in negotiations. The women in the study were then able to develop a strategy to counteract these stereotypes, and this improved their performance in the negotiation task (Kray, Thompson, & Galinsky, 2001).

Transferring these findings to the workplace means teaching effective behavioral strategies to any employees who may be affected by stereotype threat. Because task difficulty is one of the major conditions for stereotype threat, having sound coping

strategies makes the task seem less difficult and less frustrating. Managers should throw out the “sink or swim” attitude toward difficult, or “stretch” assignments, which can be particularly detrimental to stereotype-threatened individuals. Instead, managers should set manageable goals and help employees develop strategies for attaining them (Roberson & Kulik, 2007). These strategies can help women combat stereotype threat, whether it pertains to gender, race, or both.

### ***5. Reduce the Stereotype Relevance of the Task***

Evidence also shows that people experience stereotype threat when performance on a task is believed to reflect an ability or trait that differentiates stereotyped and non-stereotyped groups, such as women and men (Roberson & Kulik, 2007). Thus, diminishing the relationship between the stereotype and the task is a critical strategy for eliminating the effects of stereotype threat. In the following paragraphs, we discuss research studies in which gender-based stereotype threat was effectively eliminated through targeted strategies. It is noteworthy that these studies did not examine differences based on the race of participants, so it is unclear whether or how race-based stereotype threat may have been at play. Nevertheless, these studies provide critical insight into concrete strategies to mitigate the salience of gender stereotypes for women.

The most obvious way to break the link between a stereotype and performance is to proactively defy the stereotype, as in the study discussed above where women’s underperformance disappeared when they were told that a math test did not reflect gender differences in scores (Spencer et al., 1999).

Another method to reduce the relevance of a stereotype is to emphasize characteristics shared by both the in-group and the out-group. In one study, researchers set up a negotiation exercise between men and women (Kray, Thompson, & Galinsky,

Identifying characteristics important for task success that are not linked to group stereotypes creates an environment that focuses on actual, rather than perceived, capabilities.

2001). They told all participants that “rational and assertive” people do better at negotiating than “emotional and passive” individuals. For a subgroup of participants, they added, “People who are in competitive academic environments, like you, do exceptionally well in the negotiation. This is true for men and women alike.” Among participants in the subgroup, gender differences in performance were eliminated. By highlighting characteristics important for performance that were shared by

both men and women, the researchers diminished the stereotype relevance of the task, which effectively prevented gender-related stereotype threat (Kray et al., 2001).

Based on this research, professors in a classroom or supervisors in a workplace could make gender differences irrelevant by stressing common characteristics of students or employees that are pertinent to performing specific tasks. For instance, a manager might remind all employees that they were hired precisely because they have the skills needed to do well on the project in question (Roberson & Kulik, 2007).

By identifying characteristics important for task success that are not linked to group stereotypes, the person in power helps to create an environment that focuses on actual, rather than perceived, capabilities.

Other research suggests that reframing the stereotypes linked to a task has the potential not just to eliminate stereotype threat but to actually promote women's performances. With the example of negotiation, while success in negotiation is typically linked to stereotypical masculine traits (Kray et al., 2001), many of the traits regarded by experts to be advantageous for negotiators are in fact stereotypically feminine—effective communication and listening skills, as well as being insightful and emotionally expressive (Raiffa, 1982; Kray, Galinsky, & Thompson, 2002). After explaining the advantages of these traits to both male and female participants, researchers found that women actually outperformed men at the bargaining table (Thompson et al., 2002). By highlighting the stereotypically feminine skills valuable to a negotiator, the researchers effectively “re-generated” the stereotype, defying the notion that an effective negotiator is usually male. Through this strategy, the researchers drew out the women's best performances. (For more on how negotiation can be reframed, specifically with regard to its effect on salary, see Small, Gelfand, Babcock, & Gettman, 2007.)

## **6. Acknowledge the Potential for Stereotype Threat**

Task difficulty is a trigger for stereotype threat because in many instances, people try to explain their difficulty to themselves—and they are likely to think of the stereotype as a potential explanation. The resulting anxiety and distress then disrupts performance (Roberson & Kulik, 2007). However, several studies have shown that stereotype threat can be reduced when people are offered an explanation for task difficulty besides the stereotype (Brown & Josephs, 1999; Good, Aronson & Inzlicht, 2003). With this in mind, identifying real-life factors that might constrain performance (e.g., a difficult client, limited resources, or a tight deadline) could be useful (Roberson & Kulik, 2007).

Another strategy for providing an alternative explanation is to address the phenomenon of stereotype threat itself (Salles et al., 2016). Johns, Schmader, & Martens (2005) found that women performed better on a set of difficult math problems when the researcher described stereotype threat and suggested the following to them:

*“It’s important to keep in mind that if you are feeling anxious while taking this test, this anxiety could be the result of these negative stereotypes that are widely known in society and have nothing to do with your actual ability to do well on the test.”*

While it may seem that raising the issue of stereotype threat with a potentially affected employee could make matters worse, the research suggests that this is not the case (see also Brown & Josephs, 1999; Stone et al., 1999). Telling someone that stereotype threat can happen and that they should be aware of it gives them a different attribution for their difficulty and anxiety (it's not the stereotype—it's the stereotype

threat). This strategy could be particularly useful for women of color in academic or professional spaces in which they are in the minority, since those environments make identity markers particularly salient.

### 7. Use Gender-inclusive Language

Something as small as the pronouns we use every day can have a significant effect on women's sense of belonging in a setting, and their motivation to engage in the

The everyday repetition of masculine pronouns may not be done with any malicious intent, but it can have the result of making women feel ignored or excluded.

activities of the setting (Stout & Dasgupta, 2011). Gender bias exists in our everyday language, whether we are aware of it or not. Consider that masculine pronouns (he, him) are the default, even when we are talking about both women and men or girls and boys (e.g., "An ideal student is one who sets goals for *himself*"). This gender-exclusive language can function as a kind of ostracism; there is no explanation or explicit attack, simply an omission. The everyday repetition of masculine

pronouns may not be done with any malicious intent, but it can have the result of making women feel ignored or excluded (Stout & Dasgupta, 2011).

Furthermore, gender-exclusive language can draw attention to women's gender in what should ideally be a gender-neutral setting. Whether or not the gendered nature of the language is acknowledged by men or women in a particular context, it nevertheless creates conditions that may induce stereotype threat for women.

Research has established that gender-exclusive language can reduce a person's sense of belonging (Stout & Dasgupta, 2011). Three recent studies found a difference between young women's responses to a description of a job and work environment, depending on which pronouns were used. When gender-exclusive pronouns (only he, him) were used in the description and during a mock job interview, women expressed a lower sense of belonging, less motivation, and less expected identification with the job (Stout & Dasgupta, 2011). In a sense, women self-selected themselves out of the job. On the other hand, when gender-inclusive pronouns (both *she* and *he*) or gender neutral pronouns (*one*) were used, women responded more positively to the position (Stout & Dasgupta, 2011).

Fortunately, these studies also show the power of *gender-inclusive* language: simple word choices can significantly change the way women perceive and engage with an environment and can be a tool to reduce stereotype threat. In the context of the workplace or the classroom, the impact of these choices can be particularly meaningful.

## D. REDUCING STEREOTYPE THREAT AMONG GIRLS IN EDUCATION

Gender roles and stereotypes develop early, which means that interventions should too. Research suggests a number of ways that parents and teachers can encourage

young girls' interest in STEM and build their confidence in general in order to combat harmful stereotypes that limit educational opportunities for girls.

### ***1. Parental EncouragementA***

Parents can have a significant impact on increasing girls' engagement in the STEM fields. A first step is simple encouragement. A longitudinal study of primarily white middle-class families in Michigan found that when parents encourage their daughters' engagement in math, provide activity-related materials, and participate with them, the girls are more likely to become interested in math and to take math courses (Simpkins, Davis-Kean, & Eccles, 2006). This encouragement can go a long way: in fact, a synthesis of nine meta-analyses of parental influence on child's academic achievement found that parental involvement was significantly related to achievement across all grade levels and that parental expectations were the strongest predictor of academic success (Wilder, 2014). That study noted the relationship between parental involvement and academic achievement was significant across ethnic groups (Wilder, 2014), though researchers suggest the role and impact of parental encouragement may vary depending on cultural norms (Simpkins et al., 2006; Wang, 2012).

### ***2. Remove Triggers on Standardized TestsA***

Because standardized tests are typically understood as intended to evaluate students' intellectual ability, they are likely to trigger stereotype threat as a default (Walton & Spencer, 2009), placing students under stress to defy relevant stereotypes. Minimizing the impact of these threats can be achieved by reducing the salience of identity factors during test taking. In fact, in a field experiment of the Advanced Placement (AP) Calculus test, researchers found that moving demographic questions from immediately before the test to after the test raised girls' scores. The researchers estimate that, if implemented nationwide, this change would cause 4,700 additional girls each year to receive AP Calculus credit (Danaher & Crandall, 2008).

### ***3. Collaborative LearningA***

Within the classroom, there are methods to engage girls' interest in STEM subjects. Because peer acceptance is a central concern in adolescence (Brown, 2004), and peers can influence a classroom climate, collaborating with other girls in STEM subjects can make a big difference for female students, especially in math. A large longitudinal study among predominantly white students in Michigan found that when girls collaborate in math, they show more interest in math, better math grades, and stronger math aspirations (Wang, 2012).

### ***4. Applied LearningA***

Research suggests that, as compared to boys, girls are more engaged when STEM subjects are taught from an applied perspective, via hands-on projects, academic tasks that are relevant to their lives, and visits to science and technology museums that are aligned with lesson plans (Gentry & Owen, 2004; Hidi & Harackiewicz, 2000; Geist & King, 2008; Halpern, 2004).

Since communal goals typically interest women more than men (Su, Rounds, & Armstrong, 2009), young women often move away from STEM fields, which are often seen as antithetical to these goals (Diekmann, Brown, Johnston, & Clark, 2010) and more aligned with traditionally masculine values of risk-taking and power (Eccles, 1994; Konrad et al., 2000; Post-Kammer, 1987). However, using an applied, personally relevant way of teaching also encourages girls and young women to consider STEM as something that might coincide with their broader goals. Museum exhibitions can demonstrate how science and technology improve people's lives, solve real-world problems, and require collaboration (Dasgupta & Stout, 2014).

Relationships between schools and colleges/universities can also be fruitful, bringing girls face-to-face with real-life scientists for demonstrations and workshops. Female role models have a significant impact on girls pursuing STEM fields; thus, a significant portion of these classroom visitors should be female scientists, engineers, and graduate students from STEM programs (Dasgupta & Stout, 2014; Dasgupta, Scircle, & Hunsinger, 2015; Stout et al., 2011). These women can be particularly influential in defying stereotypes about STEM fields and demonstrating that the physical and life sciences, engineering, and technology involve collaboration within teams and are critical to solving real problems that help people and society (Dasgupta & Stout, 2014).

### **5. Extracurricular EngagementA**

Extracurricular projects have proven to be another effective way of attracting girls to STEM. Activities such as coding clubs, robotics clubs, and science-art camps allow girls to explore science and technology as enjoyable pastimes and open up opportunities to explore these fields through “doing” (Dasgupta & Stout, 2014). Girls are also likely to be attracted to informal STEM activities that are communally oriented—that is, organized around real-world problems and helping people (Diekmann et al., 2010). It's important to keep in mind that, when extracurricular projects in STEM involve teamwork, girls are most eager and participate most fully in teams that are at least 50% girls and are far less engaged in teams where girls are in the minority, making up 25% or less of the team (Dasgupta & Stout, 2014; Dasgupta et al., 2015).

### **6. Intersectional Interventions for Stereotype ThreatA**

Because girls of color may also experience stereotype threat linked to their racial or ethnic identity, we describe below the interventions that have been developed to address race-based stereotype threat. While these interventions were developed in the context of race and ethnicity, they may be of value for women of all races and ethnicities as well.

#### **a. Social Belonging Intervention**

When we feel out of place or as though we aren't valued because of race, ethnicity, or gender, we are at risk of interpreting any negative experiences in our environment as evidence that we don't belong and are unlikely to succeed. The simple act of assuring



girls of color that they are valued can mitigate the detrimental impact of experiences of gender or racial bias and stereotype threat.

In a study of a “social belonging” intervention, both black and white students were told that students of all races felt out of place when they began in school, but that the feeling abated over time (Walton & Cohen, 2007). The students then completed a series of reflection exercises, and the researchers tracked their grades over time. The intervention resulted in significant improvement in the grades of black students and had no effect on the grades of white students (Walton & Cohen, 2007). This simple intervention was intended to provide context for the black students; in effect, it protected them “from inferring that they did not belong in general on campus when they encountered social adversity” (Erman & Walton, 2014). Rather, the students were

able to contextualize the adversity as a passing experience; they developed resilience in the face of these difficulties, and as a result, they had an improved school experience.

Communicating high expectations to girls of color, as well as expressing confidence in their abilities, may be an effective strategy to promote students' continued academic engagement at a high level.

#### **b. Communicate High Standards**

A significant challenge for people of color in school or work settings is determining whether negative feedback is a result of bias or, just as detrimentally, whether positive feedback is a form of racial condescension. This uncertainty—termed attributional ambiguity (Crocker et al., 1991)—can have the effect of making it less likely that a student will work to address negative feedback (which may be

biased) and also less likely that the student will feel a positive lift from praise (which may be false).

In order to address this quandary, Cohen, Steele, and Ross (1999) developed an intervention used with college students in which teachers and supervisors communicated both high expectations and confidence that the individual is capable of meeting those expectations. The results were very positive: black students who received this message were significantly more likely to work to respond to critical feedback and to think of the person providing the feedback as unbiased (Cohen, Steele, & Ross, 1999).

The high-standards intervention (also known as *wise feedback*) has been tested in other contexts, including criticism of middle school essays (Yeager et al., 2014). In that experiment, when students received a note on a paper which read, “I’m giving you these comments so you have feedback on your essay,” 17% of black students chose to revise and resubmit their essay a week later. When the note read, “I’m giving you these comments because I have high standards and I know that you can meet them”—thereby disambiguating the reason for the critical feedback—71% of black students revised and resubmitted their essay (Yeager et al., 2014).



Thus, communicating high expectations to girls of color, as well as expressing confidence in their abilities, may be an effective strategy to promote students' continued academic engagement at a high level—one which is reflective of their true abilities.

**c. Growth Mindset**

The “growth mindset” is based on work by Carol Dweck (2006) showing that abilities can be conceptualized as either an entity (“you have it or you don’t”) or an increment (“you can learn it”). If one holds the former concept, then poor performance simply confirms inadequacy; however, if one holds the latter view, then poor performance simply means one has more work to do.

The growth mindset is applicable to stereotype threat because it can prevent any one particular performance from serving as “stereotype confirming evidence” (Carr & Steele, 2010). Thus, teachers who purposefully emphasize that skills can be learned by everyone may effectively reduce stereotype threat among their female students and their students of color.

**d. Value-Affirmation**

Students experiencing stereotype threat often lose track of “their broader identities and values—those qualities that can make them feel positively about themselves, and which can increase their resilience and help them cope with adversity” (Erman & Walton, 2014). Affirming positive values and skills for students of color works to defy detrimental stereotypes, bolsters their self-confidence in their abilities, and increases their resilience in the face of adversity. In fact, a study of students of color interested in STEM fields demonstrated that students' perception of their math and science abilities was a significant predictor of whether they pursued STEM studies (Lewis, 2003). Teachers, parents, and other important adults can be instrumental in affirming these strengths, particularly among girls of color.



## CONCLUSION

This report is addressed to the many individuals and institutions committed to egalitarian values but cognizant that those values alone have been insufficient to achieving equity. Ample evidence documents the effects of implicit gender and racial bias, benevolent sexism, and stereotype threat—even among people who do not consciously endorse sexist stereotypes. We hope that the social science research described in this report will help people understand why inequitable behaviors persist, even when people’s intentions are good.

The interventions suggested by the research cited here can be of value to institutions and individuals seeking to align their behavior with their ideals—however, their efficacy will require institutions to do the work of integrating them into contextual systems and structures. Ultimately, the broader culture and sources of opportunity need to be broadened and changed in order to maximize the effectiveness and potential success of these interventions.

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# Science is nothing but perception.

~Plato

**T**he *Science of Equality, Volume 2* focuses specifically on gender bias as viewed through an intersectional lens and its implications for the academic and professional achievements of women. Drawing on research across numerous fields, this report explains challenges that women face as we navigate workplaces, leadership roles, and educational settings—from implicit biases that shape how we are perceived to the environments that encourage sexual harassment. It concludes with evidence-based strategies to override these phenomena at the individual and institutional level and to promote the full participation and potential of all women.

Young women of all races and gender identities are living both at an intersection and intersectionally—centering the voices of the most marginal. It is our job as researchers to ensure that we support their progress with metrics that capture the spirit they are building. We hope *The Science of Equality, Volume 2* makes a contribution in that vein.

— from the Foreword