

Bias Literacy for Gender Equity: A Brief Intervention

Carol Isaac, Joseph Balloun, Tracey Wofford

Department of Educational Leadership, Mercer University, Atlanta, Georgia, USA

Email: isaac_ca@mercer.edu

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Abstract

Although higher education promotes the advancement of women, the number of women in executive leadership positions has remained stagnant over the last decade. Research has suggested that gender inequity frequently arises from implicit or unconscious bias. This mixed-methods study illustrates the results of a 1-hour bias literacy workshop that provided strategies to mitigate unconscious bias for 67 graduate students, including K-12 and higher education administrators. Results demonstrated significant pre-post differences for the Perceived Constraints Scale ($p = .05$) which suggested that one month after the workshop, participants still perceived greater constraints with implicit bias and decision-making. Qualitative findings indicated that participants reported increased awareness because of the use of the implicit association test, illustrating Stage 2 (Contemplation) within Prochaska's Stages of Change model. This study suggests that the strategies provided by this brief workshop are important for future interventions regarding implicit bias.

Keywords

Bias Literacy, Implicit Bias, Intervention, Training, Mixed Methods

1. Introduction

Although companies promote programs to advance women, the number of women in executive leadership has remained stagnant over the last decade (Wynn & Correll, 2018). There are numerous articles depicting the leaky pipeline for women in masculine fields, including leadership (Good et al., 2008; Justice, 2009; Kaatz & Carnes, 2014). Pew Research reported that women hold only 10% of the top positions in U.S. companies in 2017 and only 5.1% of CEO's of S&P 1500 companies (DeSilver, 2018).

Research has rejected the suggestion that fewer women enter the pipeline or

are less committed to careers (National Academy of Engineering, 2006). Instead, research has suggested that gender inequity arising from implicit bias or frequently unconscious bias creates the greatest barriers in leadership (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015; Isaac et al., 2009). These biases are ingrained into society's cultural fabric and these differentiated gendered responses are habitual (Devine et al., 2012).

2. Literature Review

Prejudiced behaviors occur via unconscious (implicit) cognitive mechanisms that often contradict individual's conscious (explicit) beliefs (Devine, 1989, 2001). Devine (1989) further described these implicit mechanisms as "habits of mind." Explicit bias may be deliberately expressed and controlled (Greenwald & Banaji, 1995); however, implicit actions are automatically activated implicitly (Greenwald et al., 1998). Devine (1989) contended that stereotypes influence an individual's judgment about others and this judgment can be unconscious.

Studies have used the Implicit Association Test (IAT) to help increase the awareness of implicit bias (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015; Dasgupta & Asgari, 2004; Devine et al., 2012). While there has been some controversy regarding the validity of this test, research indicates that the IAT is predictive of the prevalence of mental processes of automatic and unconscious behaviors (Chugh, 2004; Greenwald et al., 1998; Nosek et al., 2009). This dual categorization task increases the motivation to change, and measures the strength of association between multiple attributes (i.e. race, weight, age, sexuality) (Nosek et al., 2011). One research study demonstrated the predictive validity of the IAT for managers' egalitarian efforts with interactions with others and their decision-making processes (Chugh, 2004). In the current study, the Gender-Career IAT established to participants their association between gendered names and career and family.

Research suggests that brief interventions can mitigate implicit bias in individuals (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015; Devine et al., 2012). Carnes and colleagues (2012, 2015) suggest specific strategies to mitigate bias including stereotype replacement, counter-stereotype imaging, individuating, perspective-taking, and increasing opportunities for contact. Stereotype replacement recognizes that a personal response is stereotypical and then replacing it with nonstereotypical response (Devine et al., 2012). Counter-stereotype imaging involves imaging positive exemplars, for example an effective woman leader either in abstract or a personal connection (Blair et al., 2001). Individuation prevents stereotypic inaccurate assumptions by gathering specific details, focusing on the personal rather than a general evaluation of a group category of an individual (Heilman, 1984). Perspective taking involves increasing the psychological closeness of someone in a marginalized group, mitigating automatic group associations (Galinsky & Moskowitz, 2000). Increasing opportunities for contact with exemplars of out-group members alters cognitive mechanisms by

improving group evaluations (Allport et al., 2015; Pettigrew et al., 2011). Even with knowledge of these strategies, active learning is needed to evoke change (Boonyasai et al., 2007), and learning requires reflection with practice (Behar-Horenstein et al., 2009). With a commitment to change, practice is required to initiate new habitual behavior (Plant & Devine, 2009).

Bias literacy is a prerequisite for action and was a term first used by Sevo and Chubin (2008). A Bias Literacy Workshop, which furnishes opportunities for participants to engage in self-reflection and critical thinking, “adheres to the tenets of an effective group process” and intentional behavioral change and has been implemented to raise awareness of bias (Carnes et al., 2012: p. 66). Prochaska and DiClemente (1983) created a framework describing behaviors for five “stages of change” where individuals transcend from negative to positive behaviors. They include pre-contemplation, contemplation, preparation, action, and maintenance. Initially healthcare professionals developed this model for smoking cessation, and the model was further developed for applications to gender equity and advancement (Isaac et al., 2012; Prochaska et al., 2006; Prochaska et al., 2001). “Pre-contemplation” in terms of gender equity denies that personal bias exists. “Contemplation” is where participants increase their awareness of individual and professional bias. “Preparation” consists of participants describing plans to change or have taken “action” to change. The last stage, “Maintenance,” identifies actions taken for more than six months.

This paper is a description of a brief form of a bias literacy workshop, initially spearheaded at the University of Wisconsin-Madison as a workshop lasting 2.5 hours (Carnes et al., 2012; Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015). From observational research of critical incidents occurring between participants (Isaac, 2016), the workshop was shortened to one hour. The research question for this study is, will there be a statistically significant difference in participants’ personal mastery, perceived constraint and leadership self-efficacy scores after the participation of a bias literacy workshop, and will the qualitative data reflect Prochaska’s Stages of Change model?

3. Methods

The Institutional Review Board (IRB) at Mercer University approved this study. The workshop activities included taking the gender-career implicit association test (IAT) on Harvard’s Project Implicit website (Nosek et al., 2011), research regarding discrimination, implicit bias characteristics, bias malleability and strategies to mitigate implicit bias (Carnes, Devine, Baier Manwell, Sheridan et al., 2015; Isaac, 2016). Participants engaged in a quantitative pretest-posttest design (Field, 2013) with open-ended questions utilizing mixed methods (QUAN → qual) to determine whether this workshop raised awareness of the role of bias within participants’ experiences. Reasons for mixed methods (QUAN → qual) include triangulation and validity, where the qualitative findings ask clarifying questions to expand the breath of the study (Greene et al., 1989; Hesse-Biber &

Nagy Leavy, 2011).

This workshop was presented at an annual leadership conference for 2015, 2016 and 2017, and in graduate introductory research courses in 2018. All participants were graduate students, scholar educators or administrators from a large urban area in the southeast United States. Over the four-year period, 67 participants attended the workshop and completed the post-tests, 23 males and 44 females; and 50 graduate students, 16 post-graduates and one undergraduate (professional status). After the participants completed their informed consent, they took three written self-administered questionnaires regarding psychological well-being (Lachman & Weaver, 1998). Psychological well-being was divided into two subdomains including Perceived Mastery (Cronbach's $\alpha = .73$) and Perceived Constraints (Cronbach's $\alpha = .86$). A leadership self-efficacy questionnaire also was included (Cronbach's $\alpha = .90$) (Hoyt & Blascovich, 2007: p. 601). After the workshop, they also completed evaluations and commitment to change statements that research shows and improves retention (Lockyer et al., 2001). Demographic data included gender and professional status. Post-tests given one month later included the questionnaires and open-ended questions that included "What do you remember from the workshop?" and "Can you recall any incidents since the workshop where you saw evidence in practice?" Previous research used this combination of questionnaires (Carnes et al., 2012). Analysis included both descriptive and inferential statistics to analyze the quantitative results using SPSS, and deductive thematic content analysis to analyze the responses from the open-ended questions and workshop evaluations (Boyatzis, 1998; Grbich, 2013). We used NVivo for data retrieval and organization. The two types of data collected provided triangulation for this study, and peer review and debriefing occurred through discussions between the investigators (Glesne, 2015).

4. Results

4.1. Workshop Evaluation

Of the 67 participants that attended, 39 (58%) completed hardcopy evaluation forms immediately after the workshop. Of these evaluations, 88% ranked the quality of content at least at a "4" and 25 (64%) of these scored it at a "5" or "excellent" then 93% rated the relevance of the topic at least at a "4" with 23 (54%) scoring it at a "5." Of importance, 45% ranked the usefulness of the topic at their workplace at least at a "4" with 33% giving it a "5," and 45% also scored the increase in content knowledge at least at a "4" with 38% ranking at a "5." The commitment to change responses from 39 participants indicated that 87% planned to implement at least one strategy at work and 77% planned to do so at home. Strategies that were the most referenced were "counter-stereotypic imaging," "individuating," and "stereotype replacement." Only three of the participants did not complete the gender-science IAT according to the evaluations.

In past research, the IAT results did not show any change after the interven-

tion (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015) so the IAT pre-tests were not collected but used to raise “awareness” of bias.

4.2. Quantitative Results

Of the 67 participants that attended, 26 (39%) completed the post-test one month after the workshop. After entering data into SPSS, analysis included both descriptive and inferential statistics using repeated measures t tests to analyze the differences between the pretest and posttest group responses. Cronbach’s alpha was computed to estimate the internal consistency of the measures for comparison to the established values (Table 1).

There were differences in the mean scores for the Personal Mastery Scale (pretest $M = 1.64$, posttest $M = 1.73$) Perceived Constraints Scale (pretest $M = 5.58$, posttest $M = 6.00$) and the Leadership Self-Efficacy Scale (pretest $M = 2.02$, posttest $M = 1.96$) (Table 2). The Kolmogorov-Smirnov test demonstrated that the pretest and posttest scale distributions were not normally distributed except for Leadership Self-efficacy Posttest (Table 3). Correlations were done between gender and professional status and the dependent scales of mastery, constraint, and leadership scales. Graduate versus post-graduate status but not gender were correlated with one or more of the dependent scales (Table 4).

Group statistics (Table 5) and a multivariate-test (Table 6) were done for graduate versus post graduate participants. A multivariate model indicated a main effect for the Perceived Constraints Scale (Wilkes lambda ($p = .01$; $\eta^2 = .26$)). In this model the interaction with professional status was not significant ($p = .08$; $\eta^2 = .13$). A simple t-test confirmed significance for the Perceived Constraints Scale ($p = .01$) (Table 7).

Table 1. Cronbach’s alpha for current study.

Scales	Occasion	Cronbach’s Alpha	Cronbach’s Alpha Based on Standardized	Number of Items
Personal Mastery Scale	Pre	.48	.50	4
	Post	.48	.50	
Perceived Constraints Scale	Pre	.83	.84	8
	Post	.83	.84	
Leadership Self-Efficacy	Pre	.92	.93	8
	Post	.65	.69	

Table 2. Descriptive statistics pre- vs. posttest results.

Survey	Pre- v. Posttest	<i>SD</i>	<i>N</i>	<i>M</i>
Personal Mastery	Pre	.78	26	1.64
	Post	.53	26	1.73
Perceived Constraints	Pre	1.03	26	5.58
	Post	.78	26	6.00
Leadership Self-Efficacy	Pre	.74	26	2.02
	Post	.75	26	1.96

Table 3. Kolmogorov-smirnov (KS) tests of normality.

Survey	Pre- v. Posttest	KS D Statistic	Significance
Personal Mastery	Pre	.15	.001
	Post	.26	.001
Perceived Constraints	Pre	.15	.001
	Post	.22	.002
Leadership Self-Efficacy	Pre	.19	.001
	Post	.14	.20

Table 4. Correlation results.

	Gender	Graduate	Postgraduate	Mastery_Pre	Mastery_Post	Constraints_Pre	Constraints_Post	Leadership_Pre	Leadership_Post
Gender	1.00	.08	-.05	.04	.07	.12	.26*	.11	.24
Graduate		1.00	-.96**	-.25*	.00	.11	-.40*	.26*	.32*
Postgraduate			1.00	.28*	.01	-.14	.40*	-.24	-.32*
Mastery_Pre				1.00	-.02	-.08	-.04	.01	.09
Mastery_Post					1.00	-.11	-.04	.09	.24
Constraints_Pre						1.00	.37	-.23	-.19
Constraints_Post							1.00	-.18	-.29
Leadership_Pre								1.00	.76**
Leadership_Pos									1.00

Table 5. Group statistics for graduate versus post graduate participants.

Survey	Pre- v. Posttest		M	SD
Personal Mastery	Pre	Graduate	1.76	.55
		Post-Grad	2.30	1.37
	Post	Graduate	1.71	.49
		Post-Grad	1.71	.67
Perceived Constraints	Pre	Graduate	5.67	.89
		Post-Grad	5.36	1.33
	Post	Graduate	5.84	.83
		Post-Grad	6.52	.32
Leadership Efficacy	Pre	Graduate	2.35	1.04
		Post-Grad	1.82	.49
	Post	Graduate	2.07	.82
		Post-Grad	1.55	.35

Table 6. Paired samples statistics.

Survey	Pre- v. Posttest	Mean	SD
Personal Mastery	Pre	1.64	.78
	Post	1.73	.53
Perceived Constraints	Pre	5.58	1.03
	Post	6.00	.78
Leadership Self-Efficacy	Pre	2.02	.74
	Post	1.96	.75

Table 7. Pretest and Posttest t-test results.

	<i>t</i>	<i>df</i>	Significance (2-tailed)
Personal Mastery	-.46	25	.65
Perceived Constraints	-2.06	25	.05
Leadership Self-Efficacy	.62	25	.54

4.3. Qualitative Results

Of the 67 responses, the 26 (39%) of participants that completed the post-test also completed the two open-ended questions. The questions included: “What do you remember from the workshop?” and “Can you recall any incidents since the workshop where you saw the evidence in practice?” The content thematic analysis used Prochaska’s five Stages of Change as the framework for deductive analysis as used and contextualized in a previous study (Isaac et al., 2012). None of the participants denied that bias existed so no text was coded in Stage 1: pre-contemplation. However, the following narrative illustrates the results of the other stages.

Two participants stated that they did not remember anything from the workshop, and one responded “What workshop?” None of the participants could name specific strategies presented in the workshop. However, 15 out of 26 participants specifically reported remembering their results from the IAT, consistent with Stage 2: contemplation. The participants described the workshop as “a very enlightening experience” specifically their reaction to taking the IAT. One participant was “disturbed but also inspired to be more aware of my bias.” Taking the IAT was:

Owning my score (:))—I always thought that I was open to all, yet, I am not. My background has still molded me, despite the educated liberalism of my upbringing. (...) The workshop has made my “box” of knowledge rearrange and grow. This is uncomfortable, yet freeing!

For several participants, they reframed this discomfort into a positive experience. Only nine of the 26 participants could think of a specific incident as one recounted, “While I do not recall a concrete example, I am more aware of the presence of this bias around me at all times.” Participants seemed to accept their

IAT results because the workshop stressed the ubiquity of bias without “finger-pointing” (Isaac et al., 2016). One participant reflected on her relief, “understanding that my implicit bias is part of me and yet malleable.”

There were few illustrations of the other stages. One participant described a future action (Stage 3: preparation) nonspecifically with “we can work to change [stereotypes] or adapt to them by identifying them and working around them.” For Stage 4, the action stage, one participant reflected,

I tend to notice bias on a daily basis; however, instead of being judgmental, I find myself fascinated with the background to comments—why would they say that? Where did that assumption come from? It is becoming like a treasure hunt, (...) spotting skewed thinking.

This was an example of the strategy of “individuating” from the workshop where participants learned not to make snap decisions based on a stereotype (Carnes et al., 2012; Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015). Another participant could not identify the construct, but could describe the implementation.

I have been much more aware of what words I use in meetings and importantly where I interact with students. We had a great discussion with a small student group about gender bias, which surprised me as the kids come from very conservative Christian families, yet showed me a desire to step aside from prejudice.

Not only did this participant take action by changing her use of language (stereotype replacement), but also initiated a discussion about bias with her students.

Finally, only one participant illustrated Stage 5: maintenance (action over six or more months). She had routinely taken the IAT and other implicit bias trainings over the course of her professional life:

Every day I have to remind myself in my job to set aside implicit biases—men should be strong, mothers with multiple children and no means to support them, alcoholics/drug users, mental illness etc. I make conscious effort to recognize my own biases, think about them, and then set them aside.

This participant demonstrated the strategy of stereotype replacement and perspective taking, the practice of replacing stereotypic thoughts and taking the perspective of others.

5. Discussion

Implicit bias is an important topic in the United States and finding evidenced-based interventions is critical (Chapman et al., 2013; Green et al., 2007). The results of the nonparametric test demonstrated statistical significance between the pretest and posttest results for the Perceived Constraints Scale. The

increase in the mean indicates to the extent participants believe that there are obstacles out of one's control that create barriers to reaching goals (Lachman & Weaver, 1998). In conjunction, the qualitative findings indicate that participants had increased awareness of their own bias, Stage 2: contemplation (Prochaska et al., 2006). The results of this intervention suggest that the IAT and the workshop influenced participants' perceptions; at least that they are more aware of how bias affected their decision-making.

The qualitative results illustrated that the IAT seemed to have the most effect on participants' perspectives of bias, although the workshop itself perhaps served to buffer their negative responses. The workshop evoked strong some reactions including statements of remorse but also awareness of bias. While the IAT seemed to be what participants remembered, their reaction to that promoted active learning (Mezirow, 1990). Previous research indicated that the IAT serves as a tool that demonstrates that implicit bias is not of malicious intent but is inherent in both genders (Isaac et al., 2016). This realization serves as a neutralizing effect that diminishes defensiveness, a critical element that can reduce backlash toward diversity initiatives (Ng & Wiesner, 2007; Rosen & Mericle, 1979; Windscheid et al., 2016).

Previous research has shown that this intervention led to positive changes in perceptions of department climate, the valuing of women's research, and promoting individual needs (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015). This study lends evidence that having participants take the IAT in conjunction with a brief workshop that unpacks the IAT may be a successful intervention for implicit bias. This study's limitations include the lack of longitudinal data and the analysis did not control for data collection across multiple cohorts, although this probably would have improved the significance in other constructs. In addition, knowing the ethnicity of participants might have provided different perspectives, although this demographic was not included due to the sensitive nature of the topic. The 58 percent response rate for evaluations was obtained because hard copies were immediately available after the workshop. This was much better than the 39 percent of post-tests completed; however, both exceeded an average response rate of 30% (Creswell, 2014).

Despite limitations, other research suggests that short bias literacy interventions can mitigate implicit bias (Carnes, Devine, Baier Manwell, Byars-Winston et al., 2015; Devine et al., 2012). While this workshop provided little evidence of later stages of change, it is important that educators understand that the first mechanism for change is awareness (Carnes et al., 2012; Prochaska et al., 2006). This research contributes to supporting evidence that a brief workshop can provide bias literacy. The significance of this work centers around the fact that as women continue to enter leadership roles, evidence-based strategies are needed to prevent and understand the activation of implicit bias.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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