

The Effects of Gender Cues and Political Sophistication on Candidate Evaluation: A Comparison of Self-Report and Eye Movement Measures of Stereotyping

Communication Research

2016, Vol. 43(7) 922–944

© The Author(s) 2015

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/0093650215604024

crx.sagepub.com

Jason C. Coronel¹ and Kara D. Federmeier²

Abstract

Gender-based political stereotypes pervade the media environment in the United States, and this may cause voters to automatically activate these stereotypes while evaluating politicians. In the research reported here, we investigate whether voters are able to reduce the automatic activation of unwanted stereotypes and how political sophistication influences this capacity. The current experiment uses self-reports to measure controlled stereotyping, and we develop a new eye movement metric to measure automatic stereotyping. We find that political sophisticates are more effective than novices at reducing unwanted gender-based political stereotypes. This study has two main implications for communication research. First, the results suggest that the effects of gender-based automatic stereotyping—induced by the information environment—on political judgments may not be as powerful as some of the current literature portrays them to be. Second, this study adds eye movements to the arsenal of tools available to communication scholars interested in measuring covert forms of stereotyping.

Keywords

political sophistication, media gender stereotypes, eye movements, automatic stereotyping, stereotype inhibition

¹The Ohio State University, OH, USA

²University of Illinois Urbana–Champaign, IL, USA

Corresponding Author:

Jason C. Coronel, The Ohio State University, 154 N Oval Mall, Columbus, OH 43210, USA.

Email: coronel.4@osu.edu

The idea that people should make political judgments based on careful and deliberative thinking dates as far back as Plato's *Republic* and is currently embedded in prominent normative theories of democracy (Dewey, 1927; Fishkin, 1993; Habermas, 1984). However, recent work in public opinion and political communication has challenged the notion that individuals have the capacity to meet this ideal by showing that political beliefs and decisions are often the product of effortless and impulsive responses that are beyond people's intentional control or awareness (for a review, see Lodge & Taber, 2013). Some of the most important data used to argue for this claim have come from studies showing that voters may unintentionally, and without their awareness, use stereotypes when forming judgments of political candidates—despite *not* condoning these stereotypes (Berinsky & Mendelberg, 2005; Terkildsen, 1993; Valentino, Hutchings, & White, 2002). For example, voters evaluating a female candidate may unintentionally use the stereotype that women are more liberal than men to infer that the candidate possesses liberal policy stances even if the voter does not intentionally endorse this association.

These results are related to a large body of work in social cognition that identifies two forms of stereotyping: automatic and controlled (Devine, 1989). Automatic stereotyping refers to mental associations between a group and some traits, which are activated in an involuntary and effortless manner when encountering a member of a particular group. These associations are formed via repeated exposure to biased patterns in one's information environment (Devine, 1989). Indeed, multiple converging lines of evidence from communication research show that different stereotypes (gender, race, age, etc.) are learned from, and sustained by, people's mass-mediated and interpersonal environments (Dixon & Linz, 2000; Ivory, Gibson, & Ivory, 2009; Lauzen, Dozier, & Horan, 2008).

In contrast, controlled stereotyping refers to the intentional and deliberate endorsement of—or opposition to—a stereotype. This account has two important implications. First, it suggests that people will form automatic stereotypical associations as long as they are exposed to stereotypes in their environment. Second, although people may intentionally choose *not* to endorse a specific stereotype, such stereotypes can still be automatically activated and influence behavior. Indeed, automatically activated stereotypes have been shown to influence behaviors across various domains, including the evaluation of political figures, even under conditions in which people do not intentionally endorse the activated stereotypes (for a review, see Greenwald & Banaji, 1995).

However, in the research reported here, we investigate the possibility that some voters are able to reduce the automatic activation of unwanted (i.e., intentionally not endorsed) stereotypes. More specifically, our primary objective in this study is to investigate *which* individuals are more or less likely to show reduced activation of unwanted stereotypes. As we discuss in greater detail below, we expect that those who are most interested in and know the most about politics—that is, political sophisticates—are best able to diminish unwanted automatic stereotypical responses, as compared with political novices. To find that people can reduce unwanted automatic stereotypes suggests that the effects of stereotypes on political judgments may not be as powerful as the current literatures in public opinion and political communication recognize.

We test this prediction in the context of gender-based political stereotypes (e.g., female politicians are more likely to support abortion, male politicians are more likely to support increases in military spending). A large body work suggests that gender-based political stereotypes pervade the media environment in the United States (Braden, 1996; Bystrom, Robertson, Banwart, & Kaid, 2004; Kahn & Goldenberg, 1991). Thus, we expect most of our participants to have been exposed to these stereotypes and to have thereby developed automatic stereotypical associations. We measure participants' intentional endorsements of gender-based political stereotypes using a self-report measure, and we develop a novel eye movement measure of automatic stereotyping. We then examine the extent to which gender-based political stereotypes that people *do not* intentionally endorse (measured using self-reports) elicit automatic gender stereotyping (measured using eye movements) among political sophisticates and novices.

Our discussion proceeds as follows. The first section discusses the theory behind why we expect political sophisticates to be more effective at reducing unwanted automatic stereotype-based responses. The second section describes our novel method for using eye movements as a measure of automatic stereotyping. We then present our study that compares results from self-report and eye movement measures of gender-based political stereotyping among novices and sophisticates. Finally, we discuss the broader implications of this research for the study of public opinion and political communication and the conceptualization and measurement of stereotypes more generally for communication research.

Political Sophistication and Reducing Unwanted Automatic Stereotypes

Political sophistication is an important concept in public opinion and political communication research as it has a powerful influence on how voters digest information from the media environment and plays a key role in shaping political judgments (Delli Carpini & Keeter, 1996; Lau & Redlawsk, 2006; Taber & Lodge, 2006). Although scholars have not always agreed on one definition of political sophistication, a common characterization is that sophisticated citizens possess a large and wide-ranging base of knowledge about politics and are engaged with, and motivated to learn about, the political system (Converse, 1964; Delli Carpini & Keeter, 1996; Luskin, 1987). In contrast, political novices lack both the extensive political knowledge and motivation/interest of their more sophisticated counterparts.

There are reasons to believe that political sophisticates would be more effective than novices at reducing unwanted automatic stereotypical responses. In particular, an emerging body of research suggests that although stereotypes can be activated automatically and unintentionally, there are also several processes that can counteract this automatic activation (Gilbert & Hixon, 1991; for a review, see Blair, 2002). Two processes in particular warrant special attention.

The first involves a person's capacity to retrieve counterstereotypes. Individuals can bring to mind counterexamples of group stereotypes in order to challenge automatic stereotyping responses. One theory about how automatic stereotypes are represented in

the mind suggests that they consist of a set of semantic (i.e., conceptual) associations between a group (e.g., female candidates) and some trait (e.g., supporting abortion) in long-term memory (Collins & Loftus, 1975). When a concept is encountered, its corresponding node becomes active and that activation spreads automatically to surrounding nodes within the network¹ (Collins & Loftus, 1975). Although these associations constitute the core of the stereotype, several studies have shown that people also possess representations of subtypes that are counterexamples of the group stereotype (e.g., Sarah Palin and Kelly Ayote as politicians who oppose abortion; Coats & Smith, 1999; Green & Ashmore, 1998). While these counterstereotypes are unlikely to be automatically activated, certain conditions may increase the accessibility and influence of counterstereotypes. For instance, several studies have demonstrated that deliberately imagining or being exposed to images of counterstereotypical exemplars of a stereotyped social group or having counterstereotypical expectancies can decrease the automatic activation of stereotypes (as measured using response time-based methods such as the Implicit Association Test [IAT]; Blair & Banaji, 1996; Blair, Ma, & Lenton, 2001; Dasgupta & Asgari, 2004). Thus, processes such as bringing to mind or imagining exemplars of counterstereotypes, can moderate the influence of automatically activated stereotypes.

The second relevant factor involves one's experience in making counterstereotypical judgments. Studies have shown that extensive training in deliberately making counterstereotypical judgments can be successful in moderating automatic responses. For example, in one study, participants who had been trained to say "no" to stereotypical events and "yes" to nonstereotypical events produced significantly lower levels of automatic stereotypical responses related to race, compared with participants who had received no training or who had been trained to affirm the stereotypes (Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000). Furthermore, some researchers theorize that these corrective strategies can also become automated with motivation and practice (Blair, 2002; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999; Moskowitz, Salomon, & Taylor, 2000). Indeed, a large body of work in the skills acquisition literature shows that constant repetition of an intentional action increases the likelihood of such action becoming automatized (for a review, see Logan, 1988). As the new nonstereotypical response is strengthened through extensive practice, it may become automatic and dominate the old stereotype-based response.

Thus, via these two processes—retrieval of counterstereotypes at the time of evaluation and a history of practice in making counterstereotypical judgments—the influence of automatic stereotypes can be moderated. These two processes are distinct in that they are likely to influence different stages of automatic stereotyping. In the first case, counterstereotypical exemplars can be retrieved at the time of evaluation and used to suppress the automatic activation of stereotypes presumably after some level of automatic activation has already occurred. In the second case, however, a history of practice automatizes counterstereotyping such that stereotypes may never be activated.

It follows, then, that people's capacities to successfully retrieve counterstereotypes and make counterstereotypical judgments in order to weaken unwanted automatic stereotypical responses will depend on two critical factors. First, successfully retrieving

counterstereotypes requires that individuals do, in fact, possess credible *knowledge* of counterstereotypes. Second, individuals must also possess the *motivation* to retrieve counterstereotypes or engage in the repeated practice of making counterstereotypical judgments. If one asks which individuals in the political domain are more likely to (1) possess knowledge of political counterstereotypes and (2) possess the motivation and interest to frequently engage in counterstereotypical political judgments, sophisticates are those more likely to satisfy these two conditions than novices. By definition, sophisticates are more likely than novices to have been exposed to, and possess knowledge of, counterstereotypes, given their greater interest and motivation to learn about politics. Furthermore, as sophisticates are more motivated to engage in political judgments (Delli Carpini & Keeter, 1996), we expect them to be more likely to devote the cognitive resources necessary to stop unwanted automatic stereotypical responses by either retrieving counterstereotypes or engaging in a history of counterstereotypical judgments.

Because we expect political sophisticates to possess more knowledge of counterstereotypes and more motivation to repeatedly make counterstereotyping judgments, they should show weakened automatic stereotypical responses for *unwanted* stereotypes compared with novices. However, we expect no such relationship to exist between political sophistication and the strength of automatic stereotypical responses for deliberately/intentionally endorsed stereotypes. For endorsed stereotypes, both sophisticates and novices are unlikely to counteract automatic responses as they, by definition of intentional stereotypes, believe such stereotypes to be true. Based on these expectations, we posit the following hypotheses:

Hypotheses 1: Both sophisticates and novices will show automatic activation of intentionally endorsed stereotypes.

Hypotheses 2: An increase in political sophistication will be associated with a decrease in automatic stereotyping for stereotypes that are not endorsed but not for endorsed stereotypes.

Eye Movement Measure of Automatic Political Stereotyping

Communication research has recognized the utility of measures that can tap into automatic processes (for reviews, see Goodall, 2011; Hefner, Rothmund, Klimmt, & Gollwitzer, 2011; Lang, Potter, & Bolls, 2009), and several recent investigations have used response time-based measures of automatic stereotypical associations (e.g., priming, IAT, etc.; Arendt & Northup, 2015; Brown Givens & Monahan, 2005; Burgess, Dill, Stermer, Burgess, & Brown, 2011). However, some have criticized the validity of these measures as metrics of automatic stereotypical associations (Rothermund & Wentura, 2004; for a review, see Fazio & Olson, 2003). Converging evidence from other methods, such as eye movement monitoring, therefore, is especially critical. Even though we focus primarily on eye movement measures here, we subscribe to the view that when results from various methods with different strengths/weaknesses and

assumptions all converge on the same conclusion in regard to measurement of a concept, such findings provide stronger evidence in support of that conclusion. Thus, we develop an eye movement measure of automatic stereotypical responses here as an alternative or complementary method to existing metrics. As we discuss in greater detail below, eye movements are a promising alternative method for measuring automatic stereotypical responses as they can (1) tap into the mental representations theorized to underlie automatic stereotypical associations and (2) reveal cognitive processes that are not available for conscious report.

Movements of the eyes across the visual world can be influenced by two important factors. The first is the physical properties of the stimulus itself (for a review, see Findlay & Gilchrist, 2003). These include differences in hue and luminance of elements in a visual array. The second, and more critical factor, concerns cognitive processes such as perception, attention, and—of special interest here—general knowledge (i.e., semantic memory) that individuals bring to bear on a given situation (for reviews, see Hannula et al., 2010; Liversedge & Findlay, 2000). Once a researcher has controlled for the physical properties of a set of stimuli, he or she can examine the effects of cognitive processes, such as semantic processing (e.g., the association between traits and a social group), on eye movements.

Indeed, the sensitivity of eye movements to semantic memory has been documented in several studies (Cooper, 1974; Huettig & Altmann, 2005; Moores, Laiti, & Chelazzi, 2003; Yee & Sedivy, 2006). In many of these experiments, participants are presented with photos of four objects in a visual display. Two of the objects are semantically related to each other (e.g., a key and a lock): One of these objects is designated the “target” while the other the “semantic lure.” The remaining two objects are usually not semantically related to any elements in the visual array—they serve as “controls” (e.g., deer and an apple). Collectively, these studies have shown that when participants hear part or all of a target word (e.g., “lock”), they direct most of their viewing to the target image. However, they also show greater directed viewing to the semantic lure (in the example used here, the key) compared with controls (deer and apple). These data suggest that eye movements can reflect the activation of semantically related concepts (e.g., key and lock) in long-term memory. In addition, the effects of semantic information on eye movements can be expressed even in the absence of any other behavioral responses (e.g., pressing a button or a verbal response)—making them well-suited as an additional nonobtrusive measure of political stereotyping.

Finally, a large body of work has demonstrated that eye movements can reveal cognitive processes that are not available for conscious report. For example, eye movements can reveal memory for past experiences even when people are unable report those memories (for a review, see Hannula et al., 2010). Indeed, converging evidence from electrophysiological investigations have shown that people are often unaware of their erroneous eye movements (as defined by a given task), and that these instances generate a different neural signature (measured using event-related potentials) than erroneous eye movements that reach conscious awareness (Nieuwenhuis, Ridderinkhof, Blom, Band, & Kok, 2001). Furthermore, people are typically unaware of making eye movements and the location of their fixations while looking at visual

stimuli (Tanenhaus, Magnuson, Dahan, & Chambers, 2000). Given evidence that eye movements can be used to measure the activation of semantically related concepts in long-term memory and that eye movements can reveal cognitive processes that are unavailable to conscious self-report, we suggest that eye movements constitute a promising approach to measuring automatic stereotypical associations. In a later section, we present our novel design for the use of eye movements as a measure of automatic gender political stereotypes.

Method

Participants

We ran 108 participants who were recruited from a large, public Midwestern university and compensated with money or course credit. We excluded 7 participants who wore contacts or reading eyeglasses that interfered with eye calibration or ones who fell asleep during the eye tracking portion of the study. We analyzed data from 101 participants (50 females, M age = 21, SD age = 2.9; age range = 18-32).² All participants answered a political knowledge questionnaire after completing the experiment. The questionnaire consisted of 20 multiple-choice questions (that did not include “don’t know” as an option; see Mondak, 2000), which tested the participant’s knowledge about general and policy specific facts (i.e., names of political figures currently holding office, basic workings and rules of certain government institutions; political knowledge score, M = 11.03, score SD = 4.2, range = 3-20); these items were inspired by ones developed by Delli Carpini and Keeter (1996).

We used a political knowledge questionnaire as measures of political knowledge are the best single predictor and measure of political sophistication (Delli Carpini & Keeter, 1996; Luskin, 1987; Neuman, 1986). More specifically, political knowledge functions as the best predictor of the multiple facets of political sophistication. These include interest and attentiveness toward politics, understanding of relevant political issues and events, and cognitive capacities (Neuman, 1986). Furthermore, objective measures of political knowledge are less susceptible to the influence of social desirability norms. In particular, participants may overestimate their self-reported levels of attentiveness and interest toward politics (two other ways of measuring political sophistication; Zaller, 1992).

Materials

The stimuli consisted of 24 policy statements. The statements were pretested in order to ensure that they were strongly associated with either the Democratic or Republican Party (i.e., more than 80% of pretest participants rated a policy statement as being associated with one of the parties).³ Twelve of the policy statements were associated with the Democratic Party while the remaining 12 were associated with the Republican Party.

In addition, 12 of the 24 statements were “gender-stereotype issues” in that they were ones that are either stereotypically associated with male or female candidates

Table 1. Issues Used in the Study.

Female stereotypes (Democrat stances)	Gender neutral (Democrat stances)
This candidate supports allowing gay couples to adopt children.	This candidate supports affirmative action.
This candidate supports government-funded birth control programs.	This candidate supports giving illegal aliens a path to citizenship.
This candidate supports increasing government funding for early childhood and higher education.	This candidate supports giving reparations to descendants of slaves.
This candidate supports increasing welfare funds for families with children.	This candidate supports increasing visas for skilled workers.
This candidate supports public funding of abortions.	This candidate supports physician-assisted suicide.
This candidate supports universal health care.	This candidate supports removing "God" from the pledge of allegiance.
Male stereotypes (Republican stances)	Gender neutral (Republican stances)
This candidate supports a military strike against Iran.	This candidate supports an amendment banning flag burning.
This candidate supports allowing electronic surveillance without a warrant.	This candidate supports building a fence along the Mexican border.
This candidate supports banning homosexuals from joining the military.	This candidate supports giving federal funds to faith-based organizations.
This candidate supports increasing the number of military bases around the globe.	This candidate supports hanging the Ten Commandments in public school classrooms.
This candidate supports military recruitment on college campuses.	This candidate supports making English as the official language of the United States.
This candidate supports the use of torture in the interest of national security.	This candidate supports mandatory prayer in public schools.

(6 policy issues for each; see Table 1; Huddy & Terkildsen, 1993; Sanbonmatsu, 2002). Female stereotypical policies consisted of Democratic positions in policy domains such as social welfare, abortion, education, children-related issues (e.g., "This candidate supports increasing welfare funds for families with children"). Male stereotypical policies consisted of Republican positions in domains associated with the military, foreign policy, defense, and so on (e.g., "This candidate supports increasing the number of military bases around the globe"). The remaining 12 stances were "gender-neutral issues" that consisted of stances in other domains (e.g., religion) that are not strongly associated with a specific gender (e.g., "This candidate supports mandatory prayer in public schools"). The gender-neutral issues served as foils that helped conceal the true purpose of the study from participants.

Candidates were represented by 96 unique color photographs of middle-aged Caucasian males and females (48 males and 48 females), obtained from the websites

of law firms and corporations, that were matched at the group level on attractiveness.⁴ All photos were standardized for background color (i.e., black background), size, and luminosity.

Procedure

Participants were tested individually in a quiet room, where they were seated 100 cm away from a 22-inch Cornerstone P1750 monitor (resolution 1,024 × 768), with a refresh rate of 60 Hz. Before the experiment began, the desktop-mounted SR Research EyeLink 1000 eye tracker was fitted and calibrated for each subject with a 9-point calibration system. A chin rest was used to reduce head movements. Drift correction was done at the beginning of each trial. Recordings were monocular, taken from the right eye.

Participants were told that they would be learning about real candidates and their issue positions. They were instructed to pay attention to each candidate's issue positions as they would be asked to "vote" between pairs of candidates after the study. Each trial began with an issue position presented in the middle of the screen for 4 seconds (see Figure 1). Afterwards, participants saw a drift-check target, in the form of a fixation cross in the middle of the screen (+). Participants controlled the time spent on this screen by fixating on the target while pressing the advance button on the left side of the hand-held controller. This ensured that all participants were looking in the middle of the screen before advancing to the critical part of the trial. Participants then saw photos of four unique candidates for 15 seconds. Each trial always contained unique photos of two males and two females. The locations of the male and female candidates on the screen were counterbalanced within participants. Participants were told that these four candidates competed against one another at some point in their career. Afterwards, participants saw a drift-check target. They then saw a candidate photo from the initial four. They were told that this candidate was the one associated with the policy issue. Thus, the issue and the single candidate photo constitute the relevant parts of the trial from the participants' perspective. However, as we explain later, we are most interested in participants' eye movements when the four candidates are simultaneously displayed on the screen.

For both gender-stereotype and gender-neutral issues, half of the statements were matched with a male candidate and another half were matched to a female candidate. Following the studies that have examined the effects of semantic associations on eye movements (Yee & Sedivy, 2006; for a review, see Tanenhaus & Brown-Schmidt, 2008), we operationalized directed viewing as the proportion of fixations (i.e., discrete pauses of the eyes) directed toward photos of the male or female candidates when the four candidate photos were shown on the screen.

After the eye movement study, participants then took part in a self-report version of the task (see Figure 1).⁵ They were shown each issue again and asked to indicate which gender (male, female, or both) was likely to support the issue. Thus, participants could provide either a gender-biased (saying male or female) or a non-gender-biased (saying both) response. The non-gender-biased responses for gender-stereotyped issues constitute the unwanted stereotypes (i.e., intentionally not endorsed). Critically, we then

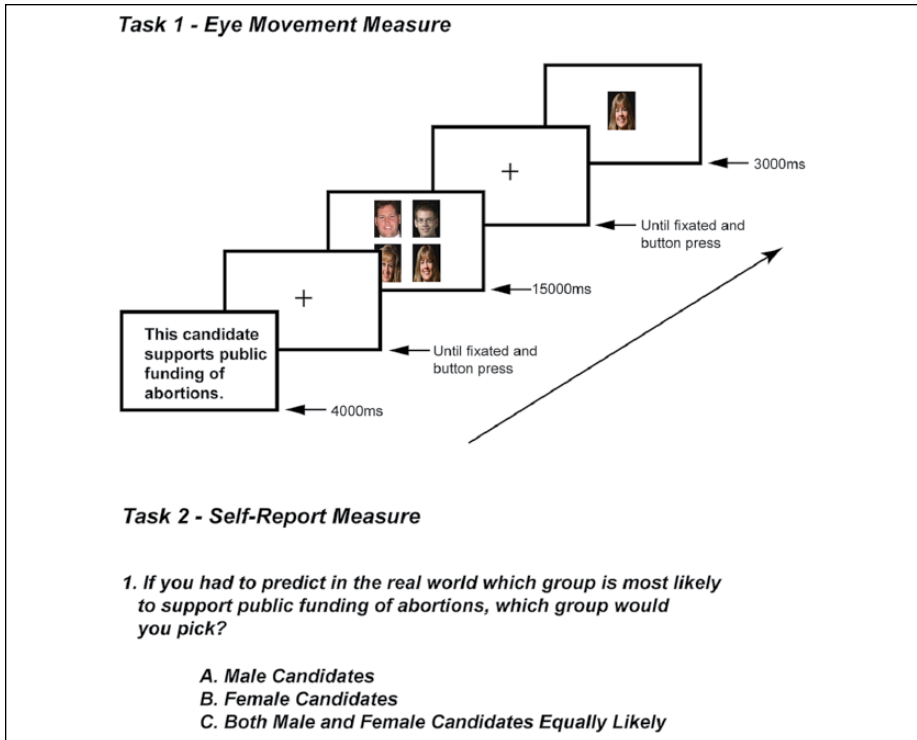


Figure 1. Schematic design of the study.
Note. Photos in the figure were not the actual ones used in the study.

compared participants’ self-reported responses with the eye movement results for each issue to examine the degree of consistency between the two metrics and how political sophistication moderates this relationship (i.e., For issues in which self-report responses do not show a gender bias, do sophisticates show lower automatic stereotypical responses—as indicated by eye movements—compared with novices?). The self-report task also included questions that asked participants’ beliefs about the likelihood of specific groups in three categories—partisan ID (Democrat, Republican), race (White, Black), and age (Old, Young)—endorsing each of the issues. We included these additional questions in order to prevent participants from inferring that we were specifically interested in their beliefs about gender.

Results

Self-Report Responses

For the self-report responses, we coded gender-biased responses (picking a male or female option) to each issue as “1” and non-gender-biased responses (picking both

male and female) as “0.”⁶ We then calculated the proportion of gender-biased responses that were elicited by gender-stereotype and gender-neutral issues. Gender-based stereotype issues were more likely to elicit gender-biased responses ($M = .61$, $SD = .21$) compared with gender-neutral issues ($M = .33$, $SD = .24$), $t(100) = 12.79$, $p < .001$.

In order to examine the relationship between political sophistication and self-reported endorsement of gender stereotypes for the subset of gender-stereotype issues, we analyzed the data using logistic regression with political knowledge score as an independent variable. The dependent variable was whether the participant provided either a gender-biased (coded as “1”) or a non-gender-biased response (coded as “0”). There was no significant main effect of political sophistication ($z = .35$, $p = .73$). Thus, in these data, there was no relationship between political sophistication and likelihood of endorsing a gender stereotype as measured via self-report. This pattern of result is consistent with the notion that, for our sample, both groups were equally likely to be knowledgeable about gender political stereotypes.

We also examined the relationship between participants’ political knowledge score and whether the participant provided either a gender-biased (coded as “0”) or a non-gender-biased response (coded as “1”) for each of the 12 gender-stereotype issues using logistic regression, in order to determine the extent to which political sophisticates and novices differed in their endorsement of gender stereotypes for specific issues. With the exception of one issue, there was no relationship between political knowledge and likelihood of endorsing a gender stereotype (p values $> .30$). For the question asking which group was more likely to support government-funded birth control programs, political sophisticates were more likely to provide a gender-biased response compared with novices ($z = -2.25$, $p = .03$). Thus, sophisticates were equally likely as novices to endorse gender stereotypes for all but one issue.

Comparing Eye Movement and Self-Report Measures

To examine directed viewing patterns, we created two regions of interest encompassing the two male and the two female candidates’ photos. For a given item, the male or female faces were classified as either stereotypically “congruent” or “incongruent” with the preceding issue. For example, if the issue was “This candidate supports public funding of abortions,” the two female faces would be classified as “congruent” and the male faces as “incongruent.” On the other hand, if the preceding issue was “This candidate supports a military strike against Iran,” the female faces were classified as “incongruent” and the male faces as “congruent.” Across issues, eye movement data for the congruent and incongruent male and female faces were then combined as responses to different male or female stereotypes were not of theoretical interest here. Similar to previous studies examining the effects of semantic memory on eye movements (Yee & Sedivy, 2006; for a review, see Tanenhaus & Brown-Schmidt, 2008), we used proportion of fixations as a measure of directed viewing.⁷ Proportion of fixations was calculated by dividing the total number of fixations to a given interest area by the combined number of fixations for both regions. This measure was calculated for each trial, beginning from the onset of the four candidate faces and terminating after 15,000 ms.⁸

In order to compare the consistency between self-report and eye movement measures across sophisticates and novices, our analytical strategy involved (1) determining whether a specific policy was associated with a gender-biased or a non-gender-biased response in the self-report task and (2) identifying the trial associated with the *same policy* in the eye movement task and examining the proportion of fixations directed to either the male or female candidates. For issues that participants self-report to be gender-biased (e.g., saying that female candidates are more likely to support public funding of abortions), we expect to see disproportionate viewing (greater than 50%) to the two candidates whose gender matches the one identified in the self-report task (e.g., show greater directed viewing to photos of female candidates for “support public funding of abortions”) for both sophisticates and novices (Hypothesis 1). This would show that endorsed stereotypes become active during passive viewing of candidates and influence eye movements.

Of critical interest for this study, then, is what the eye movement pattern reveals for issues that participants self-report to be unbiased (e.g., saying that both male and female candidates are equally likely to support an invasion of Iran) and how political sophisticates differ from novices in their eye movement responses. If sophisticates are characterized by reduced automatic stereotypical responses for unwanted stereotypes compared with novices, then we expect an *increase* in political knowledge to correspond to a *decrease* in the amount of viewing directed to the stereotype-congruent candidates for intentionally not endorsed stereotypes, but we do not expect to see such a relationship for endorsed stereotypes (Hypothesis 2).

First, we tested our expectation that individuals are unlikely to counteract automatic responses for intentionally endorsed stereotypes. We predicted that both sophisticates and novices will show gender-biased responses in their eye movements for endorsed stereotypes. In this context, a gender-biased eye movement response means that participants direct a disproportionate amount of fixations (greater than 50%) to stereotype-congruent candidates. Indeed, a one-sample *t* test confirms that participants directed a disproportionate amount of viewing ($M = .54$, $SD = .06$), to the stereotype-congruent candidates $t(98) = 7.09$, $p < .001$.⁹ In addition, as can be seen from Figure 2A, the slope of the estimated regression line (based on ordinary least squares [OLS] Model 2) for intentionally not endorsed stereotypes does not change across political knowledge scores, and its 95% confidence interval does not cross and is greater than 50%. This outcome provides some validation for our eye movement measure, as this represents a condition in which participants should have no desire to inhibit their automatic responses given that they intentionally endorsed the stereotype. Therefore, to the extent that eye movements are measuring automatic responses, we should expect a similar gender bias in their eye movement patterns.

In order to test Hypothesis 2, we initially used OLS regression to analyze our data. We used political knowledge score and self-report response type (endorse gender stereotype = 0, not endorse stereotype = 1) along with their interaction as independent variables. We then used the proportion of fixations directed at the stereotype-congruent candidates as a dependent variable. As can be seen in Table 2 (OLS Model 2) and Figures 2A and 2B,¹⁰ a significant and negative coefficient for the Political

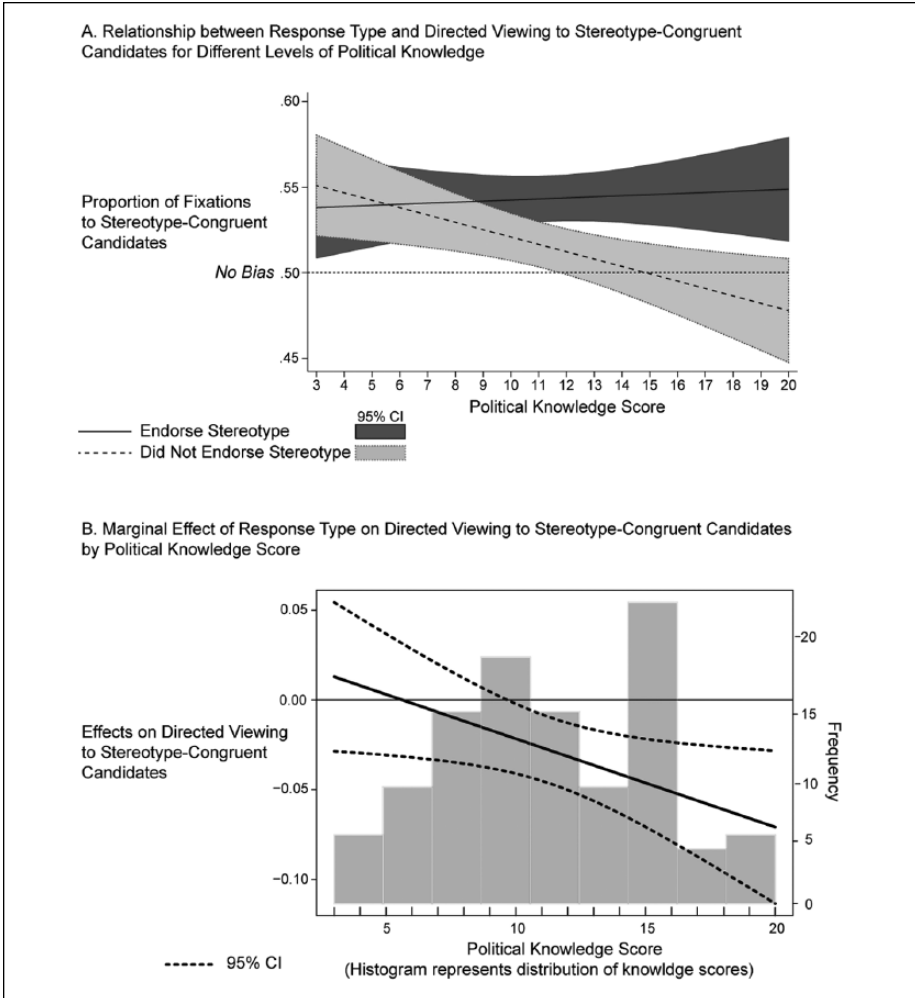


Figure 2. Interaction and marginal effect plots.

Note. CI = confidence interval.

Knowledge \times Self-Report response type interaction supports Hypothesis 2: An increase in political knowledge had a greater negative impact on directing attention to the stereotype-congruent candidates for trials in which participants provided a non-gender-biased self-report response compared with a gender-biased response. Furthermore, looking at Table 2 (comparing OLS Models 1 and 2), adding the interaction improves the fit of the model ($F = 4.73, p = .03$).

We also estimated a third model that included participant’s sex (female coded as “0”) as a control variable given the relationship between political knowledge and sex

Table 2. The Effect of Response Type and Political Knowledge on Stereotype-Congruent Directed Viewing.

	OLS			Beta regression						HLM		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Knowledge	-.002 (.001)	.001 (.002)	.001 (.002)	-.008 (.004)	.002 (.006)	.002 (.006)	-.001 (.001)	.001 (.002)	.0005 (.002)	-.001 (.001)	.001 (.002)	.0005 (.002)
Response	-.03** (.009)	.028 (.027)	.028 (.027)	-.112** (.038)	.116 (.109)	.116 (.109)	-.03** (.008)	.028 (.024)	.028 (.024)	-.03** (.008)	.028 (.024)	.028 (.024)
Knowledge x Response	—	-.005* (.002)	-.005* (.002)	—	-.02* (.009)	-.02* (.009)	—	-.005* (.002)	-.005* (.002)	—	-.005* (.002)	-.005* (.002)
Sex	—	—	.003 (.01)	—	—	.012 (.039)	—	—	—	—	—	.003 (.01)
R ²	.06	.08	.08	—	—	—	—	—	—	—	—	—
Pseudo R ²	—	—	—	.05	.08	.08	—	—	—	—	—	—
Conditional R ²	—	—	—	—	—	—	.27	—	—	.31	—	.32

Note. Dependent variable is proportion of fixations to stereotype-congruent candidates. "Knowledge" = political knowledge score; "Type" = self-report response type; "Sex" = participant's sex; Conditional R² = the proportion of variance explained by fixed and random effects (participants) combined; OLS = ordinary least squares; HLM = hierarchical linear model.
 *p < .05. **p < .01.

(Delli Carpini & Keeter, 1996), and the interaction between political knowledge and self-report response type remained significant (see Table 2). Finally, for these data, we recognize there is not necessarily a single best model, but, rather, several competing approaches that vary in which feature of the data they deal with. Thus, we also estimated models using beta regression, given that our continuous dependent variable is restricted to the (0,1) interval (Ferrari & Cribari-Neto, 2004; Smithson & Verkuilen, 2006), and a hierarchical linear model treating knowledge and response type as fixed effects and participants as random effects (see Table 2). We found substantively similar results using these other approaches. Our results, therefore, are robust across different statistical approaches and model specifications.

Lastly, we further probed this interaction using the Johnson-Neyman technique (see Hayes & Matthes, 2009). This technique allowed us to determine the range of political knowledge scores at which there is a statistically significant difference ($\alpha = .05$ criterion) in the value of the dependent variable (i.e., proportion of fixations to stereotype-congruent candidates) between endorsed and nonendorsed stereotype responses. This analysis identifies a political knowledge score of 9.7 as the transition point. More specifically, the predicted value of the dependent variable is statistically significant between endorsed and nonendorsed stereotype responses for political knowledge scores above 9.7, and there exists no difference between these responses for knowledge scores below 9.7. In our sample, approximately 38% of our participants fall below this score and 62% are above it.

Discussion

Much of the research in public opinion and political communication has not examined the extent to which automatic political stereotypes can be reduced. We theorized, based on previous studies in social cognition, that several processes—retrieval of counterstereotypes and a history of practice in making counterstereotypical political judgments—can moderate the activation of unwanted stereotypes. We expected political sophisticates to be better at engaging in these processes than novices given that they are likely to possess both knowledge of political counterstereotypes and the motivation to frequently engage in counterstereotypical political judgments. We used self-report responses to measure intentional/controlled stereotyping, and we developed a novel eye movement metric to measure automatic stereotyping. Our results support Hypothesis 1: Policy issues in the self-report task for which individuals provided gender-biased responses also showed gender-biased fixations in the eye movement task. As we mentioned above, this result provides validity for our eye movement measure. Given that they intentionally endorsed the stereotype, participants should have no desire to either retrieve counterstereotypes or engage in repeatedly making counterstereotypical judgments. Therefore, we should expect a similar gender bias in their eye movement patterns for this subset of trials.

Importantly, we also found support for Hypothesis 2: An increase in political sophistication was associated with a decrease in directed viewing for stereotype-congruent candidates for trials in the self-report task for which people gave a non-gender-biased

response but not for gender-biased self-report trials. Consistent with our theoretical framework, we interpret these results to mean that for unwanted stereotypes, sophisticates were more successful at weakening their automatic stereotypical responses than novices.

Taken together, our results suggest a dissociation between self-report and eye movement measures that varied between novices and sophisticates. As political sophistication increased, policy issues in the self-report task for which individuals provided non-gender-biased responses were more likely to elicit equal amounts (50%) of gaze for male and female candidates in the eye movement task (see Figure 2A). Thus, political sophistication seems to be associated with increased alignment between eye movement and self-report measures. In contrast, as sophistication decreased (i.e., novices), policy issues in the self-report task for which individuals provided non-gender-biased responses tended to elicit gender-biased responses in the eye movement task (Figure 2A). Thus, novices' eye movements did not match their self-report responses for issues to which they reported no gender bias. Finally, for both groups, we found that when participants self-reported a gender-bias, their eye movements were also biased (Figure 2A).

Our behavioral data also revealed findings for which we did not have any a priori expectations. Our self-report data showed that there were no differences in the rate at which sophisticates and novices endorsed gender policy stereotypes ($M = 61\%$; even at an-issue-by-issue level, with the exception of one issue). One potential explanation for this outcome is that sophisticates and novices in our sample have been exposed to these stereotypes despite differences in the groups' interest in politics—implying that gender policy stereotypes are prevalent enough in the information environment that even novices may be incidentally exposed to them. Furthermore, the high rate of endorsement may suggest that participants were not particularly susceptible to social desirability biases. This outcome may be due to the fact that associating policy positions to gender groups is less likely to be a sensitive issue than, for example, ascribing personality characteristics (e.g., warm, competent) to male/female politicians. This is an advantage for our study as it provides greater validity to our participants' non-gender-biased self-report responses. In particular, it suggests that these non-gender-biased self-report responses are accurate expressions of their true beliefs as opposed to ones induced by social desirability concerns.

Our work has several implications for studies on stereotyping in public opinion and communication research. For example, media effects scholars have shown that exposure to counterstereotypical information, such as counterstereotypical exemplars, across various mediums can discourage the use of stereotypes shortly after the time of exposure (Covert & Dixon, 2008; Power, Murphy, & Coover, 1996; Ramasubramanian, 2011; Ramasubramanian & Oliver, 2007). The first mechanism described above suggests that people may be able to retain this counterstereotypical information in memory and, if motivated to do so, retrieve it at a later time in order to reduce stereotype responses. If true, this suggests that the effects of counterstereotypical information disseminated across mass-mediated forms of communication can extend beyond the time of exposure and may have a much larger cumulative effect than previously

thought. However, if stereotype reduction largely occurs via the automatization of counterstereotyping through practice, then exposure to messages containing counterstereotypical exemplars may not be enough to decrease automatic stereotyping unless certain message features can somehow encourage practice in counterstereotyping.

The results of this study also point to the viability of eye movements as an alternative measure of the psychological processes that voters employ while evaluating political candidates. They constitute a natural response, require no behavioral reaction that can interrupt the ordinary flow of cognition (as characteristic of response time-based methods), are relatively easy to measure compared with other psychophysiological measures of stereotyping (e.g., event-related potentials; Hehman, Volpert, & Simons, 2014), and provide an alternative or complementary measure to other behavioral metrics of automatic associations (e.g., IAT).

Finally, some caution is in order in terms of drawing out the general implications of this study. Our participants are not a representative national sample. In addition, we used only one domain of stereotyping (e.g., gender-based policy stereotypes). The political informational environment is usually saturated with multiple cues (e.g., race/ethnicity, religious affiliation, partisanship, etc.) that may simultaneously activate distinct stereotypes about different groups. The extent to which voters can dampen automatic stereotypes triggered by multiple and distinct cues is for future work to investigate.

There are also several questions that are not directly addressed by this study that future research can examine. First, our design does not allow us to distinguish whether the reduced stereotype response, as measured by eye movements, for sophisticates relative to novices was due to sophisticates activating counterstereotypical exemplars at the time of candidate evaluation or whether a history of practice in making counterstereotypical political judgments eliminated the automatic activation of the stereotypes. Our design does not have the temporal resolution to distinguish between these mechanisms, but this is an important issue for future research to address given its implications for research on stereotypes in communication science.

Second, although the eye movement metric presented in this study is a useful first step, further research needs to be conducted to determine the extent to which the eye movement measure developed here taps primarily into automatic processes. As we discussed above, there are several *a priori* reasons to expect eye movement metrics to be valid measures of automatic cognitive processes (e.g., they reveal information inaccessible to conscious self-reports and measure conceptual/semantic associations). Furthermore, our finding that the convergence in outcomes between the eye movement and self-report measures are higher for sophisticates than novices parallels other findings in the literature showing that correlations between the IAT and self-report measures of political orientations are also stronger for sophisticates than novices (Choma & Hafer, 2009). Despite these promising convergent findings, further investigations need to be conducted in order to strengthen assessments of the validity and specificity of eye movement patterns as a measure of automatic stereotyping.¹¹

In summary, there has been an emerging view in public opinion and political communication scholarship advancing the claim that political beliefs and decisions are

largely the product of forces often beyond citizens' control (Lodge & Taber, 2013). The literature on automatic political stereotypes has provided some of the critical data used to support this claim. The data reported here suggest that automatic political stereotypes are malleable and may not be as powerful as some of the current literature portrays them to be. More generally, our work implies that the influence of automatic processes on political thinking is conditional and that future research must address the individual characteristics and the informational environments that can moderate the effects of automatic processes on political behavior.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by a National Science Foundation SBE Postdoctoral Research Fellowship (SMA#1360732) to Jason C. Coronel.

Notes

1. By “weakening” or “reduction” of automatic stereotypical responses, we refer to processes that can moderate or decrease the level of activation of that information within the semantic network.
2. Figure 2B shows the distribution of political knowledge scores. The bimodal nature of the distribution is likely due to the fact that we recruited from the general university population, and we also selectively recruited from upper level political science courses in order to get politically sophisticated participants.
3. There were 77 pretest participants (45 females, M age = 19.8, age SD = 1.9, age range = 18-24) that rated the issues.
4. There were 58 pretest participants (27 females, M age = 19.1, age SD = 1.88, age range = 18-27) that rated the faces.
5. The self-report task occurred approximately 5 minutes after completion of the eye movement task.
6. Note that for the self-report task, two individuals lacked gender-biased trials (i.e., individuals provided all non-gender-biased responses) and two individuals lacked non-gender-biased trials (i.e., individuals provided all gender-biased responses).
7. Fixations are one of several ways of operationalizing directed viewing in eye movement studies (for a review, see Hannula et al., 2010). Another common measure is gaze (i.e., length of time eyes are fixated to an area of interest). Number of fixations and gaze are often highly correlated. In these data, the correlation between number of fixations and length of gaze is $r = .89, p < .001$.
8. We excluded trials in which participants provided the “wrong” gender-biased response (e.g., indicating that men are more likely to support public funding of abortions). On average, only 2% of trials were ones in which participants provided an unexpected gender-biased response, and only 16 participants out of 101 made these mistakes.
9. This test yields 98 degrees of freedom given that two participants did not endorse any of the stereotypes.

10. The interaction and marginal effect plots were constructed using parameter estimates from ordinary least squares (OLS) Model 2. Following Brambor, Clark, and Golder (2006), we also include a marginal effects plot (Figure 2B). They argue that it is difficult to make meaningful inferences about conditional effects based on the magnitude and significance of an interaction term's coefficient typically presented in a table. Indeed, it is possible for the marginal effect of an independent variable X on a dependent variable Y to be significant for values of the moderating independent variable Z even if the coefficient on the interaction term is insignificant (Brambor et al., 2006). They recommend examining a plot of $\partial Y / \partial X$ and its 95% confidence interval over the range of the moderator Z . If the confidence interval does not include zero for any value of Z , one can infer that X and Y are statistically associated at that value of Z . We also superimposed a histogram in the figure to give readers a general overview of the frequency distribution and a sense of the number of observations that fall into various regions.
11. Even if one were to find that eye movements were reflecting largely controlled processes in this design, eye movements would still be a promising measure for studies on stereotyping in communication research. In particular, this would suggest that eye movements can reveal information of which participants are consciously aware but intentionally choosing not to disclose. Eye movement measures would then be useful when participants choose not to reveal their preferences/choices due to task or experimenter demands (a common problem in many studies of stereotyping).

References

- Arendt, F., & Northup, T. (2015). Effects of long-term exposure to news stereotypes on implicit and explicit attitudes. *International Journal of Communication, 9*, 732-752.
- Berinsky, A. J., & Mendelberg, T. (2005). The indirect effects of discredited stereotypes in judgments of Jewish leaders. *American Journal of Political Science, 49*, 845-864. doi:10.2307/3647701
- Blair, I. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review, 6*, 242-261. doi:10.1207/S15327957PSPR0603_8
- Blair, I. V., & Banaji, M. R. (1996). Automatic and controlled processes in stereotype priming. *Journal of Personality and Social Psychology, 70*, 1142-1163. doi:10.1037/0022-3514.70.6.1142
- Blair, I. V., Ma, J. E., & Lenton, A. P. (2001). Imagining stereotypes away: The moderation of implicit stereotypes through mental imagery. *Journal of Personality and Social Psychology, 81*, 828-841.
- Braden, M. (1996). *Women politicians and the media*. Lexington: University Press of Kentucky.
- Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis, 14*, 63-82. doi:10.1093/pan/mpi014
- Brown Givens, S. M., & Monahan, J. L. (2005). Priming mummies, jezebels, and other controlling images: An examination of the influence of mediated stereotypes on perceptions of an African American woman. *Media Psychology, 7*, 87-106. doi:10.1207/S1532785XMEP0701_5
- Burgess, M. C. R., Dill, K. E., Stermer, S. P., Burgess, S. R., & Brown, B. P. (2011). Playing with prejudice: The prevalence and consequences of racial stereotypes in video games. *Media Psychology, 14*, 289-311. doi:10.1080/15213269.2011.596467
- Bystrom, D. G., Robertson, T., Banwart, M. C., & Kaid, L. L. (Eds.). (2004). *Gender and candidate communication: Videostyle, webstyle, newstyle*. New York, NY: Routledge.

- Choma, B. L., & Hafer, C. L. (2009). Understanding the relation between explicitly and implicitly measured political orientation: The moderating role of political sophistication. *Personality and Individual Differences, 47*, 964-967. doi:10.1016/j.paid.2009.07.024
- Coats, S., & Smith, E. R. (1999). Perceptions of gender subtypes: Sensitivity to recent exemplar activation and in-group/out-group differences. *Personality and Social Psychology Bulletin, 25*, 516-526. doi:10.1177/0146167299025004009
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review, 82*, 407-428. doi:10.1037/0033-295X.82.6.407
- Converse, P. E. (1964). The nature of belief systems in mass publics. In D. E. Apter (Ed.), *Ideology and discontent* (pp. 164-193). New York, NY: Free Press.
- Cooper, R. (1974). The control of eye fixation by the meaning of spoken language: A new methodology for the real-time investigation of speech perception, memory, and language processing. *Cognitive Psychology, 6*, 84-107. doi:10.1016/0010-0285(74)90005-x
- Covert, J. J., & Dixon, T. L. (2008). A changing view representation and effects of the portrayal of women of color in mainstream women's magazines. *Communication Research, 35*, 232-256. doi:10.1177/0093650207313166
- Dasgupta, N., & Asgari, S. (2004). Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping. *Journal of Experimental Social Psychology, 40*, 642-658. doi:10.1016/j.jesp.2004.02.003
- Delli Carpini, M. X., & Keeter, S. (1996). *What Americans know about politics and why it matters*. New Haven, CT: Yale University Press.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*, 5-18. doi:10.1037/0022-3514.56.1.5
- Dewey, J. (1927). *The public and its problems* (1st ed.). Athens, Greece: Swallow Press.
- Dixon, T., & Linz, D. (2000). Overrepresentation and underrepresentation of African Americans and Latinos as lawbreakers on television news. *Journal of Communication, 50*(2), 131-154. doi:10.1111/j.1460-2466.2000.tb02845.x
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review Psychology, 54*, 297-327. doi:10.1146/annurev.psych.54.101601.145225
- Ferrari, S., & Cribari-Neto, F. (2004). Beta regression for modelling rates and proportions. *Journal of Applied Statistics, 31*, 799-815. doi:10.1080/0266476042000214501
- Findlay, J. M., & Gilchrist, I. D. (2003). *Active vision: The psychology of looking and seeing*. New York, NY: Oxford University Press. Retrieved from <http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198524793.001.0001/acprof-9780198524793>
- Fishkin, J. S. (1993). *Democracy and deliberation: New directions for democratic reform*. New Haven, CT: Yale University Press.
- Gilbert, D. T., & Hixon, G. J. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology, 60*, 509-517. doi:10.1037/0022-3514.60.4.509
- Goodall, C. E. (2011). An overview of implicit measures of attitudes: Methods, mechanisms, strengths, and limitations. *Communication Methods and Measures, 5*, 203-222. doi:10.1080/19312458.2011.596992
- Green, R. J., & Ashmore, R. D. (1998). Taking and developing pictures in the head: Assessing the physical stereotypes of eight gender types. *Journal of Applied Social Psychology, 28*, 1609-1636. doi:10.1111/j.1559-1816.1998.tb01692.x
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4-27. doi:10.1037//0033-295X.102.1.4

- Habermas, J. (1984). *The theory of communicative action, volume 1: Reason and the rationalization of society* (T. McCarthy, Trans.). Boston, MA: Beacon Press.
- Hannula, D. E., Althoff, R. R., Warren, D. E., Riggs, L., Cohen, N. J., & Ryan, J. D. (2010). Worth a glance: Using eye movements to investigate the cognitive neuroscience of memory. *Frontiers in Human Neuroscience, 4*, 166. doi:10.3389/fnhum.2010.00166
- Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*, 924-936. doi:10.3758/BRM.41.3.924
- Hefner, D., Rothmund, T., Klimmt, C., & Gollwitzer, M. (2011). Implicit measures and media effects research: Challenges and opportunities. *Communication Methods and Measures, 5*, 181-202. doi:10.1080/19312458.2011.597006
- Hehman, E., Volpert, H. I., & Simons, R. F. (2014). The N400 as an index of racial stereotype accessibility. *Social Cognitive and Affective Neuroscience, 9*, 544-552. doi:10.1093/scan/nst018
- Huddy, L., & Terkildsen, N. (1993). Gender stereotypes and the perception of male and female candidates. *American Journal of Political Science, 37*(1), 119. doi:10.2307/2111526
- Huetig, F., & Altmann, G. T. M. (2005). Word meaning and the control of eye fixation: Semantic competitor effects and the visual world paradigm. *Cognition, 96*(1), B23-B32. doi:10.1016/j.cognition.2004.10.003
- Ivory, A. H., Gibson, R., & Ivory, J. D. (2009). Gendered relationships on television: Portrayals of same-sex and heterosexual couples. *Mass Communication and Society, 12*, 170-192. doi:10.1080/15205430802169607
- Kahn, K. F., & Goldenberg, E. N. (1991). Women candidates in the news: An examination of gender differences in U.S. senate campaign coverage. *Public Opinion Quarterly, 55*, 180-199. doi:10.1086/269251
- Kawakami, K., Dovidio, J. F., Moll, J., Hermsen, S., & Russin, A. (2000). Just say no (to stereotyping): effects of training in the negation of stereotypic associations on stereotype activation. *Journal of Personality and Social Psychology, 78*, 871-888. doi: 10.1037/0022-3514.78.5.87
- Lang, A., Potter, R., & Bolls, P. (2009). Where psychophysiology meets the media: Taking the effects out of mass media research. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (pp. 185-206). New York, NY: Taylor & Francis.
- Lau, R. R., & Redlawsk, D. P. (2006). *How voters decide: Information processing in election campaigns*. Cambridge, UK: Cambridge University Press.
- Lauzen, M. M., Dozier, D. M., & Horan, N. (2008). Constructing gender stereotypes through social roles in prime-time television. *Journal of Broadcasting & Electronic Media, 52*, 200-214. doi:10.1080/08838150801991971
- Liversedge, S. P., & Findlay, J. M. (2000). Saccadic eye movements and cognition. *Trends in Cognitive Sciences, 4*, 6-14. doi:10.1016/S1364-6613(99)01418-7
- Lodge, M., & Taber, C. S. (2013). *The rationalizing voter*. Cambridge, UK: Cambridge University Press.
- Logan, G. D. (1988). Toward an instance theory of automatization. *Psychological Review, 95*, 492-527.
- Luskin, R. C. (1987). Measuring political sophistication. *American Journal of Political Science, 31*, 856-899. doi:10.2307/2111227
- Mondak, J. (2000). Reconsidering the measurement of political knowledge. *Political Analysis, 8*, 57-82. doi:10.1093/oxfordjournals.pan.a0298051

- Moores, E., Laiti, L., & Chelazzi, L. (2003). Associative knowledge controls deployment of visual selective attention. *Nature Neuroscience*, *6*, 182-189. doi:10.1038/nn996
- Moskowitz, G. B., Gollwitzer, P. M., Wasel, W., & Schaal, B. (1999). Preconscious control of stereotype activation through chronic egalitarian goals. *Journal of Personality and Social Psychology*, *77*, 167-184. doi:10.1037/0022-3514.77.1.167
- Moskowitz, G. B., Salomon, A. R., & Taylor, C. M. (2000). Preconsciously controlling stereotyping: Implicitly activated egalitarian goals prevent the activation of stereotypes. *Social Cognition*, *18*, 151-177. doi:10.1521/soco.2000.18.2.151
- Neuman, W. R. (1986). *The paradox of mass politics: Knowledge and opinion in the American electorate*. Cambridge, MA: Harvard University Press.
- Nieuwenhuis, S., Ridderinkhof, K. R., Blom, J., Band, G. P., & Kok, A. (2001). Error-related brain potentials are differentially related to awareness of response errors: Evidence from an antisaccade task. *Psychophysiology*, *38*, 752-760. doi:10.1111/1469-8986.3850752
- Power, J. G., Murphy, S. T., & Coover, G. (1996). Priming prejudice how stereotypes and counter-stereotypes influence attribution of responsibility and credibility among ingroups and outgroups. *Human Communication Research*, *23*, 36-58. doi:10.1111/j.1468-2958.1996.tb00386.x
- Ramasubramanian, S. (2011). The impact of stereotypical versus counterstereotypical media exemplars on racial attitudes, causal attributions, and support for affirmative action. *Communication Research*, *38*, 497-516. doi:10.1177/0093650210384854
- Ramasubramanian, S., & Oliver, M. B. (2007). Activating and suppressing hostile and benevolent racism: Evidence for comparative media stereotyping. *Media Psychology*, *9*, 623-646. doi:10.1080/15213260701283244
- Rothermund, K., & Wentura, D. (2004). Underlying processes in the implicit association test: Dissociating salience from associations. *Journal of Experimental Psychology: General*, *133*, 139-165. doi:10.1037/0096-3445.133.2.139
- Sanbonmatsu, K. (2002). Gender stereotypes and vote choice. *American Journal of Political Science*, *46*(1), 20-34. doi:10.2307/3088412
- Smithson, M., & Verkuilen, J. (2006). A better lemon squeezer? Maximum-likelihood regression with beta-distributed dependent variables. *Psychological Methods*, *11*, 54-71. doi:10.1037/1082-989X.11.1.54
- Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, *50*, 755-769.
- Tanenhaus, M. K., & Brown-Schmidt, S. (2008). Language processing in the natural world. *Philosophical Transactions of the Royal Society of London, Series B: Biological Sciences*, *363*, 1105-1122. doi:10.1098/rstb.2007.2162
- Tanenhaus, M. K., Magnuson, J. S., Dahan, D., & Chambers, C. (2000). Eye movements and lexical access in spoken-language comprehension: Evaluating a linking hypothesis between fixations and linguistic processing. *Journal of Psycholinguistic Research*, *29*, 557-580.
- Terkildsen, N. (1993). When white voters evaluate black candidates: The processing implications of candidate skin color, prejudice, and self-monitoring. *American Journal of Political Science*, *37*, 1032-1053. doi:10.2307/2111542
- Valentino, N. A., Hutchings, V. L., & White, I. K. (2002). Cues that matter: How political ads prime racial attitudes during campaigns. *American Political Science Review*, *96*, 75-90.
- Yee, E., & Sedivy, J. C. (2006). Eye movements to pictures reveal transient semantic activation during spoken word recognition. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *32*, 1-14.

Zaller, J. (1992). *The nature and origins of mass opinion*. Cambridge, UK: Cambridge University Press.

Author Biographies

Jason C. Coronel (PhD, University of Illinois at Urbana-Champaign) is an assistant professor in the School of Communication at The Ohio State University. His research uses methods from cognitive psychology and neuroscience to examine how the information environment and psychological processes influence political decision making.

Kara D. Federmeier (PhD, University of California at San Diego) is a professor in the Department of Psychology at the University of Illinois at Urbana-Champaign. Her research examines the nature and organization of semantic memory.