

Research Article

Simulation-Based Behavioral Experiments on Active Representation

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Abstract: This article tests the implications of linking active representation in representative bureaucracy with social identity theory through experiments using a resource allocation simulation. The simulation places participants in the role of a health care manager who can improve overall health network performance by sharing resources with other clinics. Empirical results do not support the preregistered hypotheses stating greater sharing will occur when individual characteristics of a manager match the client. However, post hoc analysis reveals a contradiction of active representation for black females, highlighting the importance of considering more complex interactions when examining the mechanisms associated with representative bureaucracy.

Keywords: Representative bureaucracy, experiments

Supplements: Available on Journal Website

The term ‘representative bureaucracy’ was originally coined regarding an upper-class bias associated with the British civil service (Kingsley, 1944). Since that time, it has been heavily applied to the context of race and gender in many other countries (Krøtel et al., 2019; Meier 2019; Dantas Cabral et al., 2022; Xu & Meier, 2022). At its core, the concept suggests that the idealized bureaucracies proposed by Weber do not exist in the real world but instead are populated by human beings with values and attitudes that inevitably impact their roles and the political context of public bureaucracies (Mosher, 1968; Krislov, 1974). Since its inception, a strong normative focus, supported by empirical work, suggests that public bureaucracies that do not represent the populations they serve will underperform (Mosher, 1968; Meier, 1975; Selden, 2015), be inequitable (Mosher, 1968; Krislov, 1974; Meier et. al. 1996; Riccucci et. al., 2017), and be viewed as illegitimate (Krislov, 1974; Riccucci et. al., 2014).

Two causal arguments have been put forth as to how this process operates at the micro-level. Passive representation suggests that the mere presence of formally underrepresented classes within a public bureaucracy can produce changes in performance (Hindera, 1993; Meier et al., 1999; Hong, 2016) and legitimacy (Theobald & Haider-Markel, 2009; Riccucci et al., 2014) through spillover effects on attitudes and external views of the organization (Li, 2021). Recent work uses the term ‘symbolic’ representation to capture this idea empirically (Riccucci et. al., 2014; 2017, Van Ryzin et al., 2017, Keiser & Haider-Markel, 2022). Furthermore, passive representation is often viewed as a necessary requirement for the second mechanism, active representation (Hindera, 1993; Meier, 1993; Keiser et al., 2002). Active representation suggests that individuals of different groups actively represent the interests of their group in formation of policy and implementation.

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A number of empirical articles try to identify how passive representation becomes active through consideration of the number or extent (critical mass) of the groups within the organization. For the vast majority of these studies, the unit of analysis is the organization and the focus on aggregate effects (Hindera, 1993; Brudney et al., 2000; Keiser et al., 2002; Wilkins & Keiser, 2006; Meier & Nicholson-Crotty, 2006; Andrews & Johnston, 2013; Andrews et al., 2014). A much smaller number of studies have focused on the individual bureaucrat and clients (e.g., Sowa & Selden, 2003; Bradbury & Kellough, 2008). While these individual-level studies provide evidence consistent with the general requirement of active representation – namely, that attitudes about government action held by an underrepresented group correspond with the attitudes of public administrators from the same group – research that more directly examines the actions that must accompany attitudes and beliefs have produced more mixed results, especially across contexts. For example, Guul (2018) found positive effect for citizen outcomes when gender matching occurred between young job seekers and vocational trainers. In contrast, Watkins-Hayes' (2011) qualitative study on providers and recipients of public cash benefits and food stamps showed that although Black and Latino bureaucrats recognize that their experience contributes to understanding their clients, their interventions rarely go beyond giving words of encouragement. Additionally, the focus of current empirical research in representative bureaucracy has been almost exclusively on the discretion exercised by minoritized public servants – such as racial minorities and women. While of course of great importance, this emphasis runs the risk of ignoring organizational dynamics and context crucial to interpreting the results of that discretion (Lim, 2006; Gilad & Dahan, 2021; Portillo et al., 2022). Indeed, recent work examining the spillover effects of minority representation on the majority group highlights the importance of conducting additional research on the micro-level mechanisms of active representation (Li, 2021).

To address these limitations, we position the concept of active representation as an application of social identity theory (Hogg & Terry, 2014; Ashforth et al. 2008). Social identity theory describes how people integrate their personal identities with that of a salient group, as well as the behavioral consequences of that integration (Tajfel & Turner, 1979; Tajfel, 1981; Turner et al. 1987). In a typical application to an organizational setting, the salient group may be the organization or a specific team, and the extent to which an individual identifies with the group, one of the objects of study. In the representative bureaucracy context, the salient group crosses organizational boundaries and assumed to be defined by race or gender. Its application to representative bureaucracy highlights that the mechanism underlying representative bureaucracy theory can work in two ways. If underrepresented bureaucrats can support underrepresented citizens, overrepresented bureaucrats may similarly provide differential support to their perceived constituencies. This perspective is consistent with work that links active representation to 'unconscious' or 'implicit' bias (Akram, 2018), representative bureaucracy research that foregrounds broader conceptions of social identity (Gade & Wilkens, 2013), and is responsive to calls to acknowledge the role of historical overrepresented groups in public organizations in order to provide a deeper understanding of race and gender in public administration (Portillo et al., 2022).

We examine the primary implications of viewing active representation through the lens of social identity theory using a novel approach for testing public administration theories – the use of simulation-based tasks in behavioral experiments (Maroulis et al., 2020). The simulation places the participant in the role of a health clinic manager, whose clinic belongs to a health care network attending to a population of a specific race and gender. The participant must decide how many staff resources to keep for their own clinic or share with other clinics within the network, with the aim of generating as many services as possible for the network as a whole. We provide insight into the individual-level decision-making underlying active representation by examining the extent to which participants' allocation decisions differ when there is a match between their race or gender and that of the clients they serve.

Active Representation and Social Identity

Social identity theory (Hogg & Terry, 2014; Ashforth & Mael, 1989) suggests that individuals develop a perception of oneness with a group of persons associated with the categorization and distinctiveness of the group. One important feature of the theory is that individuals can identify with multiple social groups with varying degrees of intensity. An individual's social identity intensity likely links to various social contexts, such

as being part of a minoritized group, and varies with different individual experiences with those and other identity groups. Applications of social identity theory have focused largely on explaining various forms of internal organizational behaviors. For instance, social identity theory has been used to study intergroup conflict in organizations (Hogg & Abrams, 2007), communication within organization (Postmes et al., 2001) and organizational commitment (Fuller et. al, 2003). Within public administration, social identity theory has been used to examine the role of in-group affiliation in the coproduction of public services (Nicholson-Crotty, Nicholson-Crotty, & Li, 2023), as well as the basis for expanding the conceptualization of representative bureaucracy to groups defined by characteristics other than gender or race (e.g., Veteran status, p. 273, Gade & Wilkins, 2013).

Emphasizing the general human tendency for in-group preference foregrounds consideration of how a dominant social group might exhibit ‘active’ representation of their own group, just as an underrepresented social group would. Moreover, it does so without precluding the possibility that a minoritized social group, in response to their underrepresentation, might pursue a stronger active representation than privileged groups. Relatedly, contrasting different social groups and their actions enables sorting through the intensity of the ‘representative’ behavior, including the effects of intersectionality (Bearfield, 2009; Breslin et al., 2017). People identify themselves with multiple interconnected social categories, such as gender and race, which lead to different positions in a dimension of power (Else-Quest & Hyde, 2016). Considering these two dimensions separately without taking their intersection into account, can hide the diverse experiences of the different groups, especially groups who are in a doubly unprivileged position (Crenshaw, 1997). In the representative bureaucracy literature, it has been pointed out that bureaucrats with multiple minoritized identities may represent differently the need of clients matching one or more parts of their identity (Fay et al. 2021). If there are strong identity bonds within intersectional groups, we might expect to see individuals show even greater support for clients they match with on two or more identities.

The following four hypotheses derive from our application of social identity theory as the basis for the active form of representation, such as the differential allocation of resources, we typically associate with representative bureaucracy.

H1: *When an individual manager is matched with a citizen group of the same race or gender, they will actively represent them more than if they are not matched.*

This first hypothesis applies to any form of social identification, even majority group identification. The next two hypotheses focus on how this would work when considering social identification with racial minority or women groups.

H2: *When a minority manager is matched to a minority citizen group, they will actively represent them more than similarly matched non-minority managers to non-minority citizen groups.*

H3: *When a female manager is matched to a female citizen group, they will actively represent them more than similarly matched male managers to male citizen groups.*

Our final hypothesis considers the potential amplification of social identification when an individual matches on more than one dimension with the client group. While we have phrased the hypothesis around increased overall support, that assumes that multiple group effects stack. This may not be true. It is possible that individuals might favor one group over another resulting in the possibility that this effect could be like one or the other group identity.

H4: *When a manager is matched on multiple dimensions (e.g., race and gender) to citizen groups they will more actively represent them when compared to managers that are matched on only a single dimension.*

Methods

Simulation and Task

To test our hypotheses, we constructed a web-based simulation game where the participant took on the role of a health clinic manager who had to make monthly decisions about how to allocate the counselors within a health network comprised of five health care clinics. Upon entry into the simulation, participants were randomly assigned to a condition that determined the race and gender of clients served by the health care network. To keep the combinations of race and gender to a manageable level, we decided to constrain the options to four client conditions: black women, black men, white women, or white men. We initiated the

recruitment of 3,226 participants using CloudResearch, a third-party vendor that assists conducting research on the online crowdsourcing platform Mechanical Turk (MTurk) (Litman et al., 2017).¹ Although our intention was to recruit an equal number of white and black participants, obtaining participation by black participants proved to be much more difficult than white participants. After applying all the data suitability filters², our final sample was comprised of 404 black women (13.6%), 204 black men (6.9%), 1405 white women (47.3%), and 955 white men (32.2%).

In the simulation game, each clinic had 10 staff counselors to allocate per month. The participant was assigned to one of the five clinics and given the following instruction: *“Your objective is to use your 10 counselors to generate as many services as possible for the network as a whole, while providing at least some services for your unit. The directors of the other facilities in the network will also face the same decision for their 10 counselors.”* To provide incentive for sustained engagement to the task, participants were also told that individuals who finished in the top 10 of all participants in the simulation exercise would receive a \$2 bonus in addition to their base payment.

The clinics varied in productivity, measured as the rate at which counselors were converted to counseling sessions (e.g., one clinic may convert 10 counselors into 100 monthly counseling sessions, while another clinic may convert 10 counselors into 130 sessions). The productivity of the participant’s clinic was below average for the network – three of the other clinics in the network had higher productivities, one had lower. As long as they kept one counselor in their own clinic, the participants could otherwise allocate their counselors to any of the 5 clinics in their network in each round, or “month”, of the simulation. The other four clinics made automated, randomly determined allocation decisions.³

Participants entered their allocation decisions by interacting with a version of the custom interface shown in Figure 1. Once the participants submitted their decision for a given month, the simulation reported back to them the number of counselors used and sessions delivered by all five clinics that month, as well as a network-wide summary indicating the full use of all 50 staff counselors. The process then repeated itself for 12 rounds. Note that each clinic’s productivity was not displayed in the experimental interface, but participants could estimate it by using the number of sessions and counselors per clinic resulting from the allocation of resources decisions. This decision was made with the purpose of immersing the participants in an experience that makes them feel that they were actively engaged in the managerial decision making. At the completion of the 12th month, participants are directed to a survey that included several recall questions, attention checkers, and demographics.

The primary outcome of interest in our experiment was the extent to which participants shared resources with other clinics. More specifically, we use four measures to characterize the participants’ sharing behavior: the sum of all staff counselors given to other clinics during the twelve rounds of the task (sum gives), the average per period staff counselors given to other clinics (mean gives), the single largest number of staff counselors given away in any one period (max gives), and the number of staff counselors given away in the last period (last gives).⁴ We focus on sharing behavior because it reflects participant commitment to the well-being of the collective under several different decision-rules that participants could potentially use when making their allocations. For example, one rule we would expect participants who desired to actively represent their population to use is to allocate counselors to the most productive clinics, as participants were instructed to generate as many services as possible at the network level.⁵ Alternatively, it is possible that for some participants the desire to actively represent may manifest itself in a concern for fairness in the distribution of counselors across clinics rather than attempting to maximize the system’s productivity. In both cases, active representation corresponds with the act of sharing counselors.

Finally, we also note that although the task presented to participants foregrounds performance, our research objective was to observe participant sharing behavior. This is because we intentionally wanted participants to be engaged in task that felt “managerial” but yet was not overtly about active representation. Facilitating the creation of such tasks highlights one of the affordances of simulation-based experiments.

Figure 1. Interface for Executing Experimental Task as Presented in Instructions

The interface displays the Men's Health Network logo and four client testimonials. Below this, a table shows counseling sessions and counselors used for 'YOU' and four clinics. A green box highlights the counselor allocation section for Month 1, with a note to make decisions by entering values in five boxes that must sum to 10.

	YOU Valley Men's Health	Clinic #1 Summit Male Medical Center	Clinic #2 Phoenix Men's Health Center	Clinic #3 Men's Vitality Center	Clinic #4 Royal Men's Medical Center	Entire Network
Counseling Sessions in Previous Month:	You: 1198	Clinic-1: 720	Clinic-2: 637	Clinic-3: 2399	Clinic-4: 641	Entire Network: 5595
Counselors Used in Previous Month:	You: 10	Clinic-1: 9	Clinic-2: 8	Clinic-3: 15	Clinic-4: 8	Entire Network: 50

Month 1:
Please examine the previous month's results, and allocate your counselors below.

Counselor allocation to each clinic:	Keep	Clinic-1	Clinic-2	Clinic-3	Clinic-4
	10	0	0	0	0

Make your decision by entering values in these 5 boxes. Total must add up to 10.

Press to Enter Decision

Experimental Conditions

The task was purposefully designed to engage participants in a routine managerial activity that does not explicitly inquire about or particularly highlight issues of race and gender. We instead manipulate the race and gender of clients served by the health care network by changing aspects of the simulation instructions and interface. First, after providing informed consent, the participants were directed to a page of simulation instructions which welcomed them to either the “Men’s Health Network” or the “Women’s Health Network.” Second, the introductory instructions were accompanied by an image of three client testimonials which contained pictures of the patients making the testimonials, as well as the logo of the health clinic (Men’s or Women’s Health Network). The patients displayed in the pictures all had the same race and gender, which was determined depending on the assigned condition (Figure 2). Third, the logo and the pictures remained in the simulation interface during the display of an instructional video that followed the introductory instructions, as well as for all 12 rounds of subsequent decision-making. 80.4% of the participants in our final sample identified the race of the health care network clients correctly, and 95.9% identified the gender correctly (see Supplemental Information Section 2).

Using self-reported race and gender information collected in our exit survey, we identified when participants matched the race, gender, or both race and gender of the clients in the assigned condition.

Figure 2. Testimonials Used in Experimental Conditions



Estimating Effects

Our primary outcome of interest from the experiment is how much a participant is willing to share counselors with other clinics. This was measured through the four output variables mentioned above: sum gives, mean gives, max gives, and last gives.

To test our first and fourth hypotheses we used the following statistical model:

$$Y_i = \beta_0 + \beta_1 G_i + \beta_2 R_i + \beta_3 [G_i * R_i] + \epsilon_i \quad (1)$$

where

Y_i is a measure of individual i 's giving behavior (sum, mean, max, or last gives)

G_i is binary variable indicating gender identity matched to treatment

R_i is a binary variable indicating racial identity matched to treatment

$\beta_0, \beta_1, \beta_2$, and β_3 are parameters estimated from the data, and

ϵ_i is the population random error term

Positive estimates of β_1 , and β_2 , support H1; a positive estimate of β_3 , supports H4.

To test H2 on differential effects of identifying with a minority racial group we used the following model, which added a binary variable indicating the subject self-identified as black, B_i :

$$Y_i = \beta_0 + \beta_1 G_i + \beta_2 R_i + \beta_3 [G_i * R_i] + \beta_4 B_i + \beta_5 [B_i * G_i] + \beta_6 [B_i * R_i] + \beta_7 [B_i * G_i * R_i] + \epsilon_i \quad (2)$$

Positive estimates of β_5 , β_6 , and β_7 , support H2.

Finally, to test H3 we use the following model, which added a binary variable indicating the subject self-identified as female, F_i :

$$Y_i = \beta_0 + \beta_1 G_i + \beta_2 R_i + \beta_3 [G_i * R_i] + \beta_4 F_i + \beta_5 [F_i * G_i] + \beta_6 [F_i * R_i] + \beta_7 [F_i * G_i * R_i] + \epsilon_i \quad (3)$$

Positive estimates of β_5 , β_6 , and β_7 , support H3.

Results

Hypotheses Testing

In this section, we report statistical results of the three models using the total number of workers that a participant shared with other units as a dependent variable (sum gives). Table 1 shows the estimations for Models 1, 2 and 3. Results for the other output variables are given in Supplemental Information Section 3.⁶

We use Model 1 in Table 1 to evaluate Hypotheses 1 and 4. The coefficients for Race Match and Gender Match indicate the extent to which matching on either of those characteristics increases giving. Although both coefficients are positive, which is consistent with expectation of Hypothesis 1, neither estimate was statistically significant. We also did not find evidence in support of Hypothesis 4. The coefficient on Both Match is not statistically significant. Moreover, the negative coefficient of Both Match suggests that matching on both race and gender decreases giving to other clinics, which is contrary to the expectation of Hypothesis 4.

Model 2 allows us to evaluate Hypothesis 2, which predicts that the increase in sum gives resulting from matching on race would be greater for black participants than for white participants. We instead observe that the coefficient on Race Match * Black is negative and not statistically significant. As in Model 1, we observe that coefficients associated with matching on both race and gender (for white and black participants) are contrary to our expectation, but not statistically significant.

Model 3 allows us to evaluate Hypothesis 3, which predicts that the increase in sum gives from matching on gender for female participants would be greater than that for male participants. As with race, we do not find support for this hypothesis. The coefficient on Gender Match * Female is positive, but not statistically significant. The negative coefficient on Both Match * Female, although not statistically significant, further suggests that matching on both race and gender for female participants decreases sum gives. In addition, the negative coefficient for Female suggests that unmatched women participants gave 5 less workers over the entire 12 rounds.

Table 1. Estimated Coefficients for Models Testing Hypotheses 1-4. (N=2,968)

	Sum of Gives (Mean = 65.5, Std. Dev. = 36.4)		
	Model 1	Model 2	Model 3
Gender Match	0.319 (1.896)	1.182 (2.124)	-1.475 (3.048)
Race Match	1.846 (1.874)	2.877 (2.109)	-0.325 (2.980)
Both Match	-1.781 (2.673)	-1.085 (2.995)	2.647 (4.276)
Black		2.760 (3.239)	
Gender Match * Black		-4.136 (4.708)	
Race Match * Black		-4.858 (4.586)	
Both Match * Black		-3.461 (6.623)	
Female			-4.942* (2.723)
Gender Match * Female			3.108 (3.892)
Race Match * Female			3.675 (3.832)
Both Match * Female			-7.533 (5.477)
Constant	64.858*** (1.337)	64.259*** (1.510)	67.806*** (2.103)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test). Standard errors in parentheses.

In sum, we did not find evidence in support of our initial hypotheses. Most unexpected was that the coefficients related to matching on both race and gender suggested that a double match decreased giving to other clinics. Although the negative coefficients are not statistically significant, this counterintuitive observation with respect to the effect of matching on both race and gender occurs in the overall sample (Both Match, Model 1), for white participants (Both Match, Model 2), black participants (Both Match * Black, Model 2), and female participants (Both Match * Female, Model 3) and warrants further exploratory investigation.

Exploratory Post Hoc Analysis

To further investigate the unexpected direction of the coefficients for cases when both race and gender matched, we conducted a more nuanced analysis of race-gender participant categories and matching conditions. More specifically, we generated a table of descriptive statistics for the dependent variable, sum of gives, cross tabulated by the four possible categories; and by the three possible treatment situations, no match, one match on either race or gender, or matched on both race and gender. Table 2 summarizes these

results. It is worth noting that in this exploratory analysis, the sample sizes for black participants are small, especially for black males matched on both race and gender.

Table 2. Ex-Post Analysis of Subgroup Cases - Sum of Gives by Treatment

		Treatment condition			Total
		Untreated	One Match	Both Match	
Black Female	Mean	67.22	63.50	54.43	62.06
	St. Dev.	36.59	37.18	35.13	36.73
	Sample Size	102	196	106	404
Black Male	Mean	66.68	66.66	65.19	66.35
	St. Dev.	34.04	35.52	36.77	35.20
	Sample Size	59	102	43	204
White Female	Mean	61.56	65.86	65.71	64.78
	St. Dev.	36.49	37.03	37.37	37.00
	Sample Size	340	736	329	1405
White Male	Mean	68.08	66.99	69.25	67.85
	St. Dev.	35.19	35.60	35.58	35.47
	Sample Size	240	467	248	955
Total	Mean	64.86	65.96	65.24	65.51
	St. Dev.	35.96	36.49	36.64	36.39
	Sample Size	741	1501	726	2968

The cross-tabulated data in Table 2 suggest that black females are behaving differently from the other groups. In contrast to the other three groups which showed rather small differences in means across treatment conditions, “both matched” black females generated 19% fewer sum gives on average than entirely unmatched black females, and 14% fewer than black females that matched on either race or gender only. To further evaluate this pattern, we estimated an additional model that treated black females as a single, indivisible category of participants, and compared their behavior in the experiment to the behavior of all the other participants (Table 3, Model 4). The results confirm our observation in Table 2. The coefficient for matched black females is negative and statistically significant. Black female subjects matched on both race and gender with their clients on average gave 12 fewer staff to others over the 12 rounds of the experiment, or approximately 18% of the base case of giving 65 staff.⁷

Table 3. Estimated Coefficients for Model with the Interaction of Both Match and Black Females (N=2,968)

	Sum of Gives (Mean = 65.5, Std. Dev. = 36.4)
	Model 4
Both Match	1.369 (1.676)
Both Match * Black Female	-11.707*** (4.438)
Black Female	-0.949 (2.260)
Constant	65.721*** (0.824)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (two-tailed test). Standard errors in parentheses.

Discussion and Conclusion

Our study demonstrates how simulation-based behavioral experiments provide a distinctive new avenue for testing public administration theories.. Using an online simulation experiment that cued decisions to lend out staff to other clinics, we tested the implications of linking theories of social identification with active forms of representative bureaucracy. Our central hypothesis was that when participants matched with clients of the same race, gender, or race and gender, they would have greater incentive to lend staff to others. No statistically significant differences were found around our original set of four hypotheses. However, several coefficients related to being matched on both race and gender suggested the need for a more nuanced definition of subgroups. When conducting this post hoc analysis, one strong and unexpected empirical result emerged: Black females on average generated 12 fewer total ‘gives’ over time when matched with health care networks serving other black females, a number 18% smaller than the average number of ‘gives’ across all participants. This finding is in direct contradiction of the standard expectation for active representative behavior.

We can only speculate on the reasons for the unanticipated results. With respect to our initial preregistered hypotheses, existing theory provides at least two possible explanations. One explanation is that neither race nor gender were salient characteristics in this task (Meier 1993; Selden, 1997, Keiser et al., 2002). A second possibility is that race and gender were salient characteristics, but the context was not deemed as being inequitable enough to warrant action (Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011). In our experiment, participants faced no trade-off between benefiting one client group above others. While many real-world scenarios are consistent with this assumption, it is possible the participants active representation behavior would have been different if they were faced with having the benefit to one group coincide with relative harm to another. In either case, we caution to not overinterpret null results from a single experiment.

Regarding the even more surprising finding regarding black female behavior in the experiment, extant literature puts forth the possibility that public servants from underrepresented groups may feel a greater need to act impartially -- a feeling hypothesized to come from institutional factors such as increased scrutiny of their actions or socialization to strong organizational norms (Wilkins & Williams, 2008; Gilad & Dahan, 2021). A second conjecture is that the black female participants so strongly identified with the needs of black female clients, that they either implicitly or explicitly assumed that they would be better served by their own clinic. While we cannot test whether either of these reasons is responsible for our unexpected observation about black females, the second explanation would be much more consistent with the negative coefficient in

our analysis, than an explanation rooted in institutional reasons for impartiality. Relatedly, it is also possible that matching on race and gender in our experiment prompted reflection on participants' own social positions. If that were the case, black females, when reminded of their own disadvantaged position, might perceive their own clinic as more threatened; and therefore, prioritize its needs above the other clinics. For example, in an open-ended question in our exit survey inquiring about how participants made their allocation decisions, one black female participant stated, "I really just wanted to focus on my own hospital" and another "What my clinic needed was most important to me."

Regardless of the underlying reason, the more salient point that emerges from our post hoc analysis, and the most important implication of our study, is that defining social groups on the basis of a single demographic characteristic may be problematic when investigating identity-related questions. The naïve notion that racial and gender identities would simply stack did not hold up to empirical scrutiny in this experiment. In this sense, our findings are consistent with public administration research that highlights the importance of intersectionality (Bearfield, 2009; Breslin et al., 2017; Fay et al. 2021; Baumgartner et al., 2021), and suggest that we need to consider complex subgroup dynamics when interpreting the actions of individuals who may engage in active representation.

Several limitations should be made clear when interpreting our results. First, despite reaching our target total sample size, we were not able to obtain an equal number of black and white participants. While this did not greatly impact our anticipated ability to detect relatively small effects of matching on race or gender across the entire sample (Hypothesis 1), our ability to detect a small differential matching effect by race (Hypothesis 2), by gender (Hypothesis 3), and by both race and gender (Hypothesis 4), was more greatly impacted (see Supplemental Information Table S1). Second, limitations associated with sample selection derived from use of Mechanical Turk subjects are well documented (Berinsky et al., 2012; Jilke et al., 2016; Marvel, 2016). Those limitations focus on the potential generalizability concerns of the population, but other sources of selection are important. In particular, selection related to the nature of the task, reward, and time commitments posed by the experiment may be salient in our case, as using a computer simulation made it more complex than the typical public administration experiments run on the MTurk platform.

Our study underscores the importance of understanding the micro-level mechanisms that underlie representative bureaucracy theory. All humans are a complex overlay of multiple identities leading to highly varied responses. Furthermore, these responses, while conditioned on multiple overlays of identity such as race and gender, are likely also conditioned on numerous situational factors. Computational modeling has proven particularly fruitful in studying such social systems, offering ways to simulate complex interactions that would be difficult to isolate empirically (Maroulis, 2016). Combining such modeling approaches with behavioral experiments provides a promising way to test the theoretical predictions of complex interaction patterns, but no single study can capture all the important contingencies involved. To better understand the potentially complex interaction of these factors, future work in representative bureaucracy must continue to investigate the micro-level mechanisms responsible for active representation.

Notes

¹ A power analysis assuming an alpha level of 5% and a power level of 90% suggest a target of 2668 total participants. We increased the suggested sample size by 20% to account for dropping cases due to attention screens or rejected VPNs. Please see Supplemental Information Section 2 for more details.

² This included attention checking questions in the post-simulation survey, as well as an investigation of the time spent on each round of the simulation by every participant for completion times we deemed impossible. Please see Supplemental Information Section 2 for details.

³ Within a given round, clinics were randomly selected one at a time to allocate one staff counselor to another randomly selected organization. This process continued until a total of 6 staff resources were reallocated across all clinics. Like the participants, automated clinics always kept a minimum of one staff counselor.

⁴ Last gives was added as an outcome after preregistration. It can be thought of as capturing the “steady state” decision-making of a participant after experiencing any potential learning effects during the previous rounds of the simulation.

⁵ The data collected from the experimental trials confirm the expected high correlation (0.62) between the sum of the counselors given to other clinics and the system productivity in our results.

⁶ Results for mean and last gives mirror those presented for sum gives (Supplemental Information, Table S2). Max gives did not have enough variance to be a helpful measure. Nearly half of the participants had at least one round where they gave the maximum permissible amount in the simulation. We also reproduce results for all output variables controlling for the ages of the participant and client (Supplemental Information, Tables S3 and S4).

⁷ See Supplemental Information Table S2 for estimation of Model 4 using the alternate giving measures.

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