

# How the mere desire for certainty can lead to a preference for men in authority (particularly among political liberals)

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## Abstract

Women are harmed by stereotypes about their fit for positions of authority and changing these stereotypes is not a simple task. As stereotypes have strong epistemic properties, individuals with a high need for cognitive closure (NCC; i.e., the desire for epistemic certainty) can be more likely to accept these stereotypes and, consequently, to prefer men in positions of authority. Consistent with the reactive liberal hypothesis, this effect could be actually more visible among individuals with both a high NCC and left-wing political orientations. We supported these hypotheses in a series of three studies. In Study 1 ( $N = 217$ ), we found that manipulated NCC predicted preference for men in authority through stereotypes of women as not being fit for authority in a measurement-of-mediation design. In Study 2 ( $N = 151$ ), we supported this effect in a mediation-as-process design. In Study 3 ( $N = 391$ ), we found the indirect NCC effect on preference for men in authority was more visible among political liberals. A major implication of this work is that ways of changing the effect of these stereotypes should take into account the NCC, but particularly among individuals with left-wing beliefs.

## KEYWORDS

gender stereotypes, leadership, need for cognitive closure, sexism

## 1 | INTRODUCTION

Imagine any situation where leaders and other authority figures come from stereotypically non-traditional leadership backgrounds: women, people of color, non-college graduates, recent immigrants, and so on. Ideally, these individuals should be evaluated based on their ability; instead, individuals can prefer authority figures from stereotypically traditional backgrounds while setting ability to the side (e.g., Carton & Rosette, 2011; Cook & Glass, 2013; McDonald et al., 2018; Rosette & Livingston, 2012). These authority figures are often hurt by negative stereotypes—but what leads us to accept these stereotypes in the first place?

When we are under a tight deadline, when we are faced with competing answers, when we *need to be certain* about something important in our social worlds, we can crave the stability of even very harmful stereotypes—even if we are ourselves hurt by them. We propose that the mere desire for stable knowledge can help explain why we can depreciate authorities that violate traditional stereotypes; we will investigate this issue in the context of women in positions of authority and the harmful stereotypes about women that can make their position tenuous. Even if political liberals are less likely to accept these stereotypes, we argue that liberals are particularly at-risk for these outcomes when they are also driven by this desire for stable knowledge.

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### 1.1 | The desire for stable knowledge and the need for cognitive closure

This matter is closely tied to the *need for cognitive closure* (NCC; Kruglanski, 2004), also known as the desire for epistemic certainty or simply as the desire for stable and certain knowledge. The role of the NCC can be explained by the metaphor of the epistemic quest: individuals begin this quest whenever they are faced with an important question to which they do not have an answer; the quest ends whenever they find an answer or stop trying to find one. Whereas some individuals feel comfortable leaving this quest unresolved or to reassess their answer in this future, individuals with a high NCC desire to resolve this quest by arriving at the knowledge that (can be perceived to) promise stability and certainty in the present and into the future. These individuals can approach the epistemic quest in two phases: by *seizing* upon an answer that provides stability and certainty (i.e., the urgency phase) and then *freezing* upon it, giving less consideration to better, more accurate, or simply different answers (i.e., the permanence phase).

These individuals are generally more likely to be attracted to knowledge that is perceived to promise stability and certainty in many different areas—from choosing products at the supermarket (Vermeir et al., 2002) to how we perceive marginalized outgroups (Baldner et al., 2019a, 2019b; Roets et al., 2015). As long as these individuals perceive that some piece of knowledge—for instance, that Brand X is superior or that women are not good in leadership roles—then these individuals are more likely to incorporate this knowledge into their own belief systems and to hold onto this knowledge in the face of contrary evidence (e.g., Brand Y has better reviews, a lack of evidence on women's poor leadership skills). Perhaps most importantly, stability and certainty seem to be more important than the actual content of the knowledge insofar as individuals high in NCC can endorse counterproductive ideas, as long as they also promise stability and certainty (e.g., Jost et al., 2003; see also Baldner & Pierro, 2019a; Rokeach, 1960).

### 1.2 | The epistemic roles of stereotypes and political orientation

In order to understand when and why the NCC can explain discrimination against women in positions of authority, it is important to first understand two points: stereotypes about marginalized outgroups have strong epistemic properties and the NCC is associated with a shift to the right. The connection between the NCC and acceptance of stereotypes may not seem immediately obvious, as neither NCC questionnaires (e.g., “any solution to a problem is better than remaining in a state of uncertainty,” Pierro & Kruglanski, 2005) nor experimental manipulations (e.g., Baldner & Pierro, 2019a) have any kind of stereotype-related content. However, individuals with a high NCC can be attracted to outgroup stereotypes because they are stable, provide information about wide groups of people, and are resistant (but not invulnerable) to change (e.g., Charlesworth & Banaji, 2021; Ellemers, 2018). Accordingly, the relationship between the NCC and stereotypes has

been observed since the earliest days of the construct (Kruglanski & Freund, 1983). More recently, the NCC has been found to be associated with constructs related to stereotypes toward women (Baldner & Pierro, 2019a; Roets et al., 2012), as well as toward other marginalized outgroups (e.g., Baldner & Pierro, 2019b; Brizi et al., 2016).

Although the NCC is moderately associated with right-wing beliefs (Federico et al., 2012; Jost et al., 2003) there is also evidence that the NCC could lead people to these beliefs. First, Nail et al. (2009) found, in support of their *reactive liberal* hypothesis, that political liberals act more like conservatives under increased uncertainty. Second, De keersmaecker et al. (2017) found that the NCC led to increased Right-Wing Authoritarianism (RWA; Altemeyer, 1988) and concluded that the NCC could be associated with a rightward shift. Third, liberals with a high dispositional NCC and conservatives, independent of NCC, score similarly high on the binding moral foundations (Baldner et al., 2018), which are generally endorsed more by conservatives (Graham et al., 2009). Although the underlying mechanisms are not yet well-understood, it seems that self-identified liberals with a high NCC are more similar to conservatives, independent of NCC. Consequently, both conservatives and liberals with a high NCC could also depreciate individuals who violate these stereotypes.

### 1.3 | The diffusion and effect of stereotypes toward women

Even if the NCC can lead to the acceptance of stereotypes toward outgroups among liberals, there needs to be evidence that the specific stereotypes of women in authority are diffuse (i.e., so that they can be “closed” upon) and that they are associated with discrimination. The literature is clear on both of these points. Women in positions of authority can be treated less seriously and given less slack than their men counterparts (e.g., Eagly et al., 2000). There is no evidence that this effect is constrained to one particular culture; instead, this appears to be a global phenomenon (e.g., Muthi'ah et al., 2018; Sensales et al., 2020).

But which stereotypes, in particular, do people have about women in positions of authority? Of course, we can have many stereotypes about different groups, from the very general to the very specific. A very general stereotype could be that women are simply a poor fit for positions of authority; people could hold this stereotype even if they do not have a well-thought-out reason for this lack of fit.

However, there are certainly more specific stereotypes that can affect women in these roles. Two particularly important characteristics are *communality* (e.g., other-focus, care, compassion) and *agency* (e.g., self-focus, ambition, drive). According to the *Role Congruity Theory* (Eagly & Karau, 2002), the characteristics that women are supposed to have (e.g., communality) are incompatible with the characteristics that people in positions of authority are supposed to have (e.g., agency). In this case, individuals could believe that women are poor fits for these roles not simply because they are unambiguously bad in them, but because their strengths (e.g., compassion) are not compatible with the characteristics demanded by positions

of authority (e.g., drive). It could be possible that people have access to both general and more specific stereotypes. In either case, people who generally incorporate harmful stereotypes of women as authority figures into their own belief systems could be consequently more likely to prefer men in positions of authority.

#### 1.4 | Research hypotheses

Insofar as right-wing beliefs and stereotypes toward marginalized outgroups are related (e.g., Beyer, 2020; Sparkman & Eidelman, 2016) then acceptance of these stereotypes is overdetermined: it could be predicted from NCC, right-wing beliefs, or both. One potential solution is to assess NCC, stereotype acceptance, and right-wing beliefs as a part of a mediational model (e.g., De Cristofaro et al., 2019). A less studied potential solution that we will investigate is that the NCC can drive acceptance of stereotypes, and their consequences, even among political liberals.

Accordingly, we hypothesize that (a) the NCC effect on preference for men in authority will be mediated by acceptance of stereotypes of women as poor fits for authority (H1a) and as overly communal for authority (H1b); (b) the acceptance of stereotypes toward women in authority will be more visible among political liberals (H2).

We tested our hypotheses in three studies (see Figure 1). We used a measurement-of-mediation design in Study 1, a mediation-as-process design in Study 2, and a partial double randomization (i.e., statistically identical to moderation) design in Study 3. Studies 1 and 2 tested the role of general stereotypes (H1a); Study 3 tested the specific stereotypes of communality and agency (H1b). Finally, Studies 1 and 2 also tested the indirect NCC effect whereas Study 3 added the potential moderation by political orientation (H2). The data used in these studies and additional supplementary analyses can be found at [https://osf.io/89c4k/?view\\_only=ac62900f77ea47c1b2554bd2d2572fd6](https://osf.io/89c4k/?view_only=ac62900f77ea47c1b2554bd2d2572fd6).

## 2 | STUDY 1: THE MEASUREMENT-OF-MEDIATION EFFECT OF NCC

In Study 1, we investigated H1a in a measurement-of-mediation design. As we were interested in these basic effects, we did not plan our sample size around the moderating effect of political orientation; however, we included this construct as a covariate. Before conducting our main analysis, we first conducted a pilot test of our manipulation using two items as a manipulation check (see Supplementary Study 1 material); we were satisfied that our manipulation worked as intended.

## 3 | METHOD

### 3.1 | Participants and procedure

We used the Monte Carlo power analysis for the indirect effects calculator developed by Schoemann et al. (2018) in order to calculate the sample size. We assumed that there could be a strong relationship ( $r = 0.50$ ) between anti-women stereotypes and preference for men in positions of authority with a moderate relationship ( $r = 0.30$ ) between the NCC and these variables. We then slightly reduced our assumed effects (i.e., to  $r_s = 0.40$  and  $0.20$ ) to account for variance explained by participants' gender and political orientation. This gave us a sample size of 188.

Participants were recruited through MTurk; we accordingly planned on a slightly larger sample given the nature of our data collection. A total of 306 participants began the study, however, 75 participants dropped out immediately after being assigned their condition. Since these participants did not move forward, no data was recorded for their condition. Of the remaining 231 participants, 131 (56.2%) were randomly assigned to the high

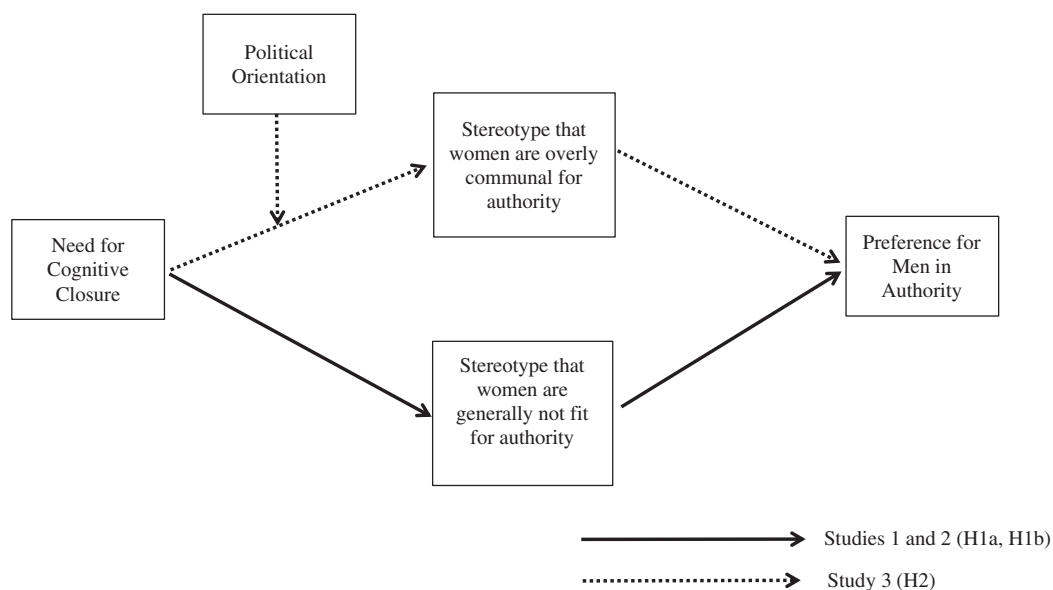


FIGURE 1 Hypotheses and Design for Studies 1-3

NCC condition. Of these participants, five did not respond to the measures for the mediator and/or the dependent variable, and an additional nine did not indicate their political orientation and/or gender. Of our final sample of 217 ( $M_{\text{age}} = 37.2$ ,  $SD_{\text{age}} = 11.9$ , 55.8% men), 123 (56.7%) were assigned to the high NCC condition. Participants were predominately university graduates (78.8%) and White (68.7%); 17.1% of participants were Black; 6.0% were Hispanic/Latino; 7.8% were Asian; 1 participant (0.5%) indicated their ethnicity as "other."

### 3.1.1 | Measures

#### *Gender stereotypes*

Participants completed the 7-item scale on negative work-related stereotypes toward women developed by McCoy and Major (2007). Items on this scale assess both career aspirations (e.g., "On average, women enjoy supervising others less than men do") as well as items that deal with emotional stability, for example, "Women on average are more likely than men to become emotional when dealing with stress"). All items are responded to on a Likert-type scale from 0 (*Strongly Disagree*) to 6 (*Strongly Agree*) and are averaged to form a single stereotypes score. In the current study, internal reliability was adequate ( $\alpha = 0.79$ ).

#### *Preference for men in authority*

Participants responded to the 15-item Gender and Authority Measure (GAM; Rudman & Killianski, 2000). Items on this scale assess the general preference to be subordinate to men (e.g., "In general, I would rather work for a man than for a woman") as well as the preference to be under the authority of men in specific professions (e.g., "If I were in serious legal trouble, I would prefer a male to a female lawyer"). All items are responded to on a Likert-type scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*) and are averaged to form a single GAM score. In the current study, internal reliability was adequate ( $\alpha = 0.81$ ).

#### *Demographic variables*

In addition to the above variables, we also assessed participants' gender and political orientation. The latter was measured by a single item, developed by Koleva et al. (2012). Responses were made on a Likert-type scale from 1 (*Strongly Liberal*) to 6 (*Strongly Conservative*).

## 4 | RESULTS AND DISCUSSION

We first assessed the effectiveness of the manipulation via the manipulation check presented near the end of the study (see Supplementary Study 1 material for more detail). There was a significant effect for condition:  $F(1,182) = 23.98$ ,  $p < .001$ , partial  $\eta^2 = 0.116$ . Scores were higher in the high condition ( $M_{\text{high}} = 4.89$ ,

$SD_{\text{high}} = 0.93$ ;  $M_{\text{low}} = 3.97$ ,  $SD_{\text{low}} = 1.57$ ,  $d = 0.72$ ). We were satisfied that the manipulation worked as intended.

As can be seen in Table 1, NCC condition was correlated with both the stereotypes and GAM measures. In order to further explore the NCC effect, we conducted two one-way ANOVAs on stereotypes and GAM, controlling for participants' gender and political orientation. Both effects were significant (Stereotypes:  $F(1,213) = 8.06$ ,  $p = .005$ , partial  $\eta^2 = 0.036$ ; GAM:  $F(1,213) = 5.31$ ,  $p = .022$ , partial  $\eta^2 = 0.024$ ).

Participants' gender and political orientation were also positively correlated with both stereotypes and GAM scores. In order to test our specific hypotheses, we conducted a mediation analysis with PROCESS macro (Hayes, 2013) model 4 with 5,000 bootstrap samples. As can be seen in Table 2 and Figure 2, NCC predicted the acceptance of stereotypes toward women, which in turn predicted a stronger preference for men in positions of authority, above the effects of gender and political orientation. Moreover, consistent with H1a, the indirect NCC effect through acceptance of gender stereotypes was significant ( $b = 0.06$ ,  $se = 0.02$ , 95% CI [0.02, 0.11]). This effect remained significant when participants' gender and political orientation were not included as covariates (see Supplementary Study 1 material for evidence of an NCC by political orientation interaction consistent with H2).

This study exclusively tested a broad stereotype of women as not wanting, and being fit for, positions of authority; naturally, there are other more specific stereotypes of women (e.g., high communality and low agency). There are three other critical limitations, all of which are connected to our method. First, we analyzed mediation in a measurement-of-mediation approach. Second, the stereotypes and GAM measures were fairly similar and could be subject to common method bias, which we have no satisfactory way of controlling (see Podsakoff et al., 2003). Third, our planned sample size was not intended to assess the moderating role of political orientation (H2). We thus planned an experiment in order to assess the indirect NCC effect through a mediation-as-process design (see Li et al., 2012). In this type of design, the mediator can be manipulated among participants who are high on the independent variable; in our case, when stereotypes are manipulated among individuals with a high NCC. This design can account for the first two limitations and can better ascertain if the basic mediation model is valid.

## 5 | STUDY 2: THE MEDIATION-AS-PROCESS NCC EFFECT

In order to further test H1a, in Study 2 we focused on the 'b' path: the effect of manipulated acceptance of stereotypes on the preference for men in positions of authority among individuals under conditions of NCC.

**TABLE 1** Bivariate Correlations and Descriptive Statistics (Study 1)

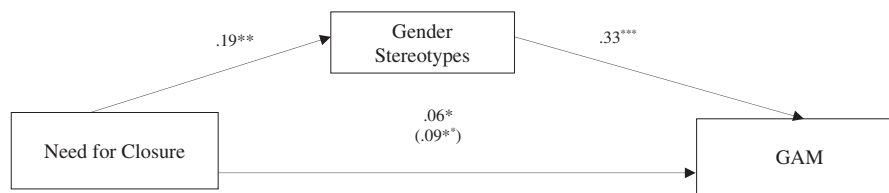
	1	2	3	4	M(SD)
1. Gender	—				—
2. Political orientation	0.09	—			3.43 (1.53)
3. NCC condition	0.13*	0.06	—		—
4. GS	0.19*	0.17*	0.21**	[0.79]	3.40 (1.01)
5. GAM	0.19*	0.23**	0.18**	0.61**	[0.81] 2.80 (0.59)

Note: NCC, Need for Cognitive Closure; GS, Gender Stereotypes; Gender (1 = Male; 0 = Female).  
 $\dagger p < 0.10$ ; \* $p < .05$ ; \*\* $p < .01$ .

**TABLE 2** GAM and Gender Stereotypes regressed on NCC (Study 1)

	Gender Stereotypes				GAM					
	<i>b</i>	<i>SE</i>	95% CI		<i>p</i>	<i>b</i>	<i>SE</i>	95% CI		<i>p</i>
			LL	UL				LL	UL	
Gender	0.316	0.134	0.051	0.582	0.019	0.078	0.065	-0.051	0.207	.234
Political orientation	0.096	0.043	-0.011	0.203	0.028	0.047	0.021	0.001	0.093	.024
NCC condition	0.191	0.067	0.057	0.325	0.005	0.026	0.032	-0.039	0.092	.416
GS	—	—	—	—	—	0.333	0.032	0.254	0.412	<.001

Abbreviations: NCC, Need for Cognitive Closure; GS, Gender Stereotypes; Gender (1 = Male; 0 = Female).



Note: \* $p < .05$  \*\* $p < .01$ ; \*\*\* $p < .001$ . NCC (1=High; -1=Low)

**FIGURE 2** Unstandardized coefficients representing effects of Need for Closure on gender stereotypes and GAM scores (Study 1). Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . NCC (1 = High; -1 = Low). The total effect is in parentheses. To simplify the presentation, the control variables (gender and political orientation) have been omitted

## 6 | METHOD

### 6.1 | Participants and procedure

As in Study 1, we recruited participants from MTurk. Assuming a moderate effect size ( $d = 0.50$ ), we sought a sample size of about 140 participants. A total of 213 participants began the study; 60 participants dropped out immediately after being assigned their condition and a further two did not complete all measures. Thus, our final sample consisted of 151 participants ( $M_{\text{age}} = 38.3$ ,  $SD_{\text{age}} = 11.97$ , 51% men; one participant apiece indicated their gender as "neither" and "binary," respectively). Participants were predominately university graduates (66.9%) and White (71.5%);

11.3% of participants were Black; 6.0% were Hispanic/Latino; and 10.6% were Asian; one participant did not identify their ethnicity.

Consistent with the mediation-as-process design used by Li et al. (2012), we first presented all participants with the instructions of the high NCC condition that was used in Study 1 with a brief manipulation check. We took this step in order to reasonably ascertain that our participants were effected by an NCC. We then randomly assigned all participants to a condition which either enforced, or debunked, stereotypes of women as not wanting, and not being good at, demanding positions of authority. Finally, we asked our participants for their preference for either men or women in authority, and solicited their responses to the same demographics questions as were used in Study 1.

## 6.2 | Design

### 6.2.1 | NCC

All participants responded to the high NCC instructions as were used in Study 1. Afterward, they were asked the extent to which they agreed with these instructions, on a scale from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Responses were slightly above the midpoint: 3.66 (1.42); 87 of 151 participants (57.6%) indicated a response above the midpoint.

### 6.2.2 | Stereotypes

Participants were randomly assigned to conditions that either enforced (coded -1), or debunked (coded +1), stereotypes of women as not being fit for authority. If Conditions were unbalanced, despite our random assignment ( $N_{\text{enforce}} = 60$ ;  $N_{\text{debunk}} = 91$ ). As a manipulation check, participants responded to five items that reflected attitudes toward women as not wanting, or being good at, positions of authority (e.g., “if we’re being honest, women, compared to men, have less pleasure in holding positions of authority”). All items were responded to on a scale from one to six, with higher scores representing higher agreement (see Supplementary Study 2 material for more detail).

### 6.2.3 | Preference for men in authority

In Study 2, we took a simpler approach to assess if our participants preferred men authority figures. We first asked our participants to imagine that they needed to follow the advice or orders of an authority figure and that they could choose who this person was. We gave them four options: A woman or man who either had experience in this role or was relatively new but had good qualifications. A preference for either man (woman) candidate was coded as 1 (0). The experienced/inexperienced dimension was added in order to present a more realistic choice to participants; results did not meaningfully change when the preference for different men and women candidates were aggregated.

### 6.2.4 | Demographic variables

As in the previous studies, participants also reported their age, gender, and political orientation.

## 7 | RESULTS AND DISCUSSION

We first investigated whether our manipulation function as anticipated. There was a significant effect for condition:  $F(1,149) = 7.45$ ,  $p = .007$ , partial  $\eta^2 = 0.048$ . Scores were lower in the debunk

stereotypes condition ( $M_{\text{debunk}} = 3.02$ ,  $SD_{\text{debunk}} = 0.98$ ;  $M_{\text{enforce}} = 3.49$ ,  $SD_{\text{enforce}} = 1.07$ ,  $d = 0.46$ ). This difference remained significant,  $p = .015$ , when gender and political orientation were entered as covariates. We were thus satisfied that this manipulation worked as we intended.

We then conducted a chi-square test of independence in order to ascertain if our condition had an effect on preference for men in positions of authority under a condition of NCC. Twenty-five of the 60 participants (41.7%) randomly assigned to the enforce stereotypes condition preferred one of the two women candidates, as opposed to 59 of the 91 participants (64.8%) randomly assigned to the debunk stereotypes condition. This difference was significant:  $\chi^2(1) = 7.86$ ,  $p = .005$ . We then conducted a binary logistic regression, controlling for political orientation and gender. Consistent with H1a, the effect of stereotype condition remained significant:  $\beta = -0.47$ ,  $\chi^2(1, N = 151) = 6.59$ ,  $p = .010$ ,  $e\beta = 0.62$ , 95% CI [0.43, 0.89]. This effect remained significant in the subsample of participants who scored above the midpoint on the NCC manipulation check (see Supplementary Study 2 material).

Even though Studies 1 and 2 used different dependent variables, analyzed together these studies could provide evidence for H1a: Study 1 showed that NCC had direct effects on acceptance of harmful gender stereotypes and a preference for men in authority and Study 2 showed that acceptance of these stereotypes can also lead to a preference for men in authority under a condition of NCC. There are, however, areas that could and should be improved upon. Although Study 2 is consistent with previously-used mediation-as-process designs (e.g., Li et al., 2012), in effect we only directly assessed the effect of one particular kind of gender stereotype under a high NCC condition. As we proposed in H2, people could see women in authority as overly communal, and not sufficiently agentic, even if they would not explicitly agree with the idea that women are unambiguously bad in these roles. Moreover, neither Study 1 nor Study 2 used a baseline condition for NCC, and one could naturally ask whether this effect could be explained by individuals who are high on NCC (vs. low on NCC). Finally, our designs in Studies 1 and 2 did not allow us to effectively test H2, or that the indirect effect would be more visible among political liberals. In order to take these limitations into account, we conducted a third study which used a partial double randomization design, analyzed stereotypes of women authority figures as too communal and insufficiently agentic (H1b), and collected a reasonable sample size that allows for a moderating role for political orientation (H2).

## 8 | STUDY 3: THE MODERATING ROLE OF POLITICAL ORIENTATION

We conducted a final study to test H1b and H2 in a design that also experimentally manipulated NCC and gender stereotypes. We assessed H2 with a three-way interaction of NCC condition, stereotypes condition, and self-reported (continuous) political orientation. However, unlike the previous studies, we investigated the effects

**TABLE 3** Preference for Men in Authority regressed on NCC and Stereotype conditions (Study 3)

	<i>b</i>	OR	SE	95% CI		<i>p</i>
				LL	UL	
Gender	1.00	2.71	0.22	0.571	1.439	<.001
Political orientation (PO)	0.39	1.47	0.09	0.214	0.575	<.001
NCC condition	-0.17	0.84	0.23	-0.638	0.298	.476
Stereotype condition	0.67	1.95	0.23	0.212	1.147	.004
NCC × stereotype	0.32	1.37	0.48	-0.617	1.266	.499
NCC × PO	-0.27	0.76	0.18	-0.639	0.089	.122
Stereotype × PO	-0.05	0.95	0.18	-0.413	0.311	.787
NCC × stereotype × PO	-0.73	0.48	0.37	-1.470	-0.002	.049

Note: NCC, Need for Cognitive Closure; GS, Gender Stereotypes; Gender (1 = Male; 0 = Female)

**TABLE 4** Effect of Stereotype condition (vs. control) on preference for men in authority across NCC and political orientation (Study 3)

NCC condition	Political orientation	<i>b</i>	OR	SE	<i>p</i>
High	+1 SD (Conservative)	0.24	1.28	0.46	.588
High	Mean	0.85	2.35	0.35	.017
High	-1 SD (Liberal)	1.46	4.33	0.58	.011
Control	+1 SD (Conservative)	0.91	2.48	0.45	.044
Control	Mean	0.53	1.70	0.31	.094
Control	-1 SD (Liberal)	0.15	1.16	0.45	.735

Note: Gender was included as a covariate.

of the NCC and stereotype conditions versus control conditions in order to observe individuals' baseline preferences. Furthermore, we changed our stereotypes manipulation to reflect two specific stereotypes raised by Role Congruity Theory (Eagly & Karau, 2002): communality and agency. We first conducted two pilot tests for our new NCC and stereotypes manipulations (see Supplementary Study 3 material); we were satisfied that they worked as intended.

## 9 | METHOD

### 9.1 | Participants and procedure

For Study 3, we recruited participants from Prolific. In order to test a double randomization design that included political orientation as a moderator, we sought a sample that was approximately double that of Study 1. A total of 424 participants began the study; 13 participants dropped out immediately after being assigned their condition and a further 5 did not complete all measures. Of the remaining 406 participants, an additional 15 participants did not respond correctly to an attention check which assessed if they understood the meaning of communal characteristics. We were thus left with a final sample of 391 participants ( $M_{age} = 32.4$ ,  $SD_{age} = 12.7$ , 45.0% men). Participants were predominately university graduates (53.0%) and White (67.8%); 6.4% of participants were Black; 7.4% were Hispanic/Latino; and 15.3% were Asian; 9 participants (2.3%) listed their ethnicity as "other." Participants

were randomly assigned in the following way: 26.6% to the double baseline condition, 28.1% to the High NCC/Baseline stereotype condition, 20.7% to the Baseline NCC/Stereotype condition, 24.6% to the NCC/Stereotype condition.

## 9.2 | Design

### 9.2.1 | NCC and stereotypes

Participants were randomly assigned to an NCC condition and then to a stereotypes condition. Similar to Study 2, we then presented participants with a choice of an authority figure to whom they would be subordinate. Unlike Study 2, in Study 3 we presented participants with only two choices for the authority figure: a "typical man" (coded 1) and a "typical woman" (coded 0).

### 9.2.2 | Demographic variables

As in the previous studies, participants also reported their age, gender, and political orientation. As in the previous studies, low scores on the item for political orientation represent a more liberal political orientation, whereas higher scores represent a more conservative political orientation.

At the end of their participation, we presented all participants with actual information about men and women's capabilities in

positions of authority in order to counteract the information in the manipulation.

## 10 | RESULTS AND DISCUSSION

In order to test our hypothesis, we conducted a three-way interaction between the NCC and stereotypes conditions with continuous political orientation as a moderator; gender was entered as a covariate; preference for a man in authority (Man = 1; Woman = 0) was entered as a dichotomous dependent variable. Data were analyzed with the SPSS PROCESS macro Model 3 (Hayes, 2013). Results are displayed in Tables 3 and 4 and Figure 3. As can be seen, in addition to significant main effects of political orientation, stereotype condition, and gender, there was a significant three-way interaction—albeit one which barely passed the criteria for significance.

In order to interpret the three-way interaction, we then assessed the simple slopes at one SD below the mean (i.e., more liberal) and above the mean (i.e., more conservative) political orientation. The NCC by stereotype interaction among more politically liberal participants was positive and marginally significant ( $b = 1.31$ ,  $se = 0.74$ ,  $p = .076$ , 95% CI [-0.14, 2.76]); however, the interaction was negative

but clearly nonsignificant among more politically conservative participants ( $b = -0.66$ ,  $se = 0.64$ ,  $p = .30$ , 95% CI [-1.92, 0.60]). The meaning of this interaction could be more visible in Table 4 and Figure 3. As seen in Figure 3, preference for a man in a position of authority is generally higher among conservatives than liberals. However, this preference is higher among liberals assigned to both the NCC and stereotypes conditions. This general pattern can also be observed in Table 4, in which the effect of the stereotype condition is only significant for liberals assigned to the NCC condition. It is also apparent in both Table 4 and Figure 3 that conservatives assigned to both the stereotypes and NCC control conditions have a higher preference for men in authority. It is possible that NCC and political orientation can also interact beyond the ways we hypothesized and could be further explored in future research.

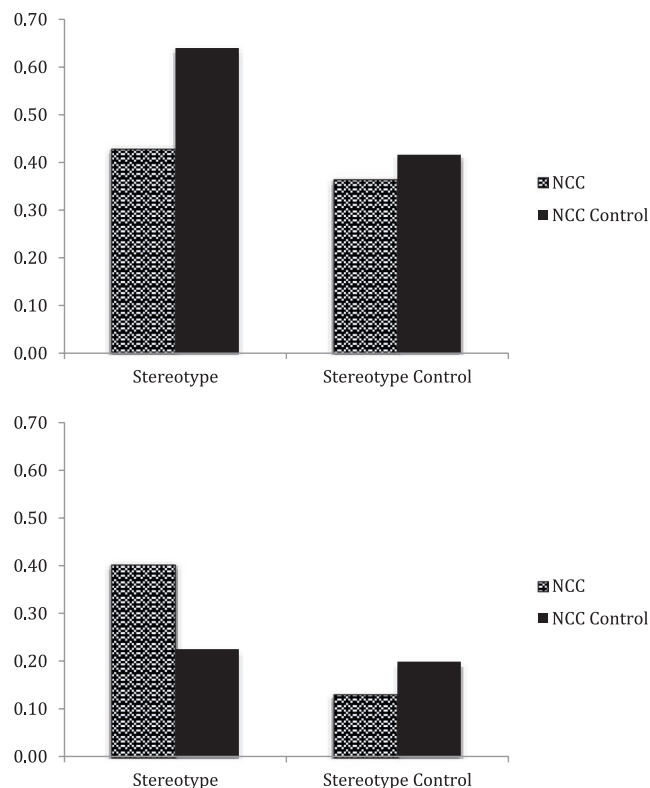
## 11 | GENERAL DISCUSSION

Virtually all individuals are aware of the content of stereotypes about women, even if they do not accept them. What this, and related research (Baldner & Pierro, 2019a, 2019b; Roets et al., 2012), posit is that individuals with a high NCC are more likely to accept these stereotypes and consequent discrimination. Although in this research we focused on women in positions of authority, there is nothing in the NCC that is specific to women—nor to any other group—and so there is no visible reason why these results could not also be applied to other groups that face discrimination (e.g., Baldner & Pierro, 2019b).

We also had evidence, particularly from Study 3, that the NCC effect was actually more visible among more liberal participants, consistent with the reactive liberal hypothesis (Nail et al., 2009; see also Baldner et al., 2018; De keersmaecker et al., 2017). This could shift attention to an important point: political orientation is typically not included, either as an interaction term or as a covariate, in NCC studies. These models could be dangerous in the sense that they can turn our focus away from individuals who are at-risk for the discrimination and other NCC-related outcomes. In the present case, this means individuals from the left-wing can also be at-risk to hold harmful stereotypes toward women. This research turns the focus back onto a group that has received less attention in the NCC literature.

Although there are a number of interesting future directions, we would like to focus on three in particular: the phenomenon of the “glass cliff,” the potentially differing effects of “seizing” and “freezing,” and the mechanisms underlying the “rightward shift” of liberals with a high NCC. A particularly interesting case is that of the glass cliff, or when women are promoted to precarious leadership roles—for instance, that of a CEO of a struggling company. This is not necessarily beneficial for women in the long run as continued organizational failures, even if they are not related to leadership, can lead to blame placed on these women (e.g., Ryan et al., 2016).

In one sense, the glass cliff is also based on stereotypes, albeit those which are superficially “positive” (e.g., think crisis-think female; e.g., Ryan et al., 2011). Insofar as organizational threat provokes



**FIGURE 3** The effect of NCC and Stereotype conditions on preference for men in positions of authority (Study 3). Higher values on the y-axis represent the proportion of participants who preferred a “typical man” in a position of authority. The top panel represents this relationship at high (+1 SD) political orientation (i.e., more conservative participants); the bottom panel represents this relationship at low (-1 SD) political orientation (i.e., more liberal participants)



uncertainty (e.g., will I be laid off?) and that the NCC reflects an aversion to epistemic uncertainty, individuals with a high NCC could more strongly “seize” and “freeze” upon stereotypes associated with “think crisis-think female.” On the other hand, given the rightward shift of NCC, we could instead expect that individuals with a high NCC could entrench their preference for men in authority and that this effect could be more visible among liberals. As this question has not yet been studied, we cannot conclude if either of these hypotheses is correct.

In addition, we mentioned earlier that the NCC consists of “seizing” and “freezing” phases. An assumption in this approach is that these phases have equivalent effects—but is this valid? That one seizes or freezes upon a stereotype implies that they have already accepted this stereotype (in the case of freezing) or that they have not (in the case of seizing). It could be possible that counter-stereotypical information could be more effective for individuals in the seizing phase; these individuals could quickly incorporate this information into their own belief systems, as long as this information can supply stable and certain information. On the other hand, it could be possible that individuals in the freezing phase could reject this counter-stereotypical information, as it could be perceived to attack knowledge that provides them with epistemic certainty. This question could be relevant for any discussion of the NCC and acceptance of stereotypes and we think that it is a very important future direction.

Finally, it seems possible that there is a fundamental difference between liberals across high and low NCC. However, even though liberals with a high NCC can think and act like conservatives, they nonetheless describe themselves as “liberal” when given the opportunity. A simple answer for the current results is that liberals momentarily assigned to an NCC condition were not sufficiently motivated to change their political orientation. However, past research assessing a high dispositional NCC has found conceptually similar effects (e.g., Baldner et al., 2018). The mechanisms underlying this phenomenon are not yet well-understood and deserve further study.

### 11.1 | Limitations

There are a number of limitations in our studies that can be addressed by further research. First, even though we observed the effects of the NCC and stereotype acceptance manipulations, it is not known how long these effects last. It is possible that they have only transitory effects. However, this can also be fairly realistic; we experience many transitory effects in our day-to-day lives and these can influence our attitudes and behavior. Second, our conditions in some studies were somewhat imbalanced. As condition data for participants that immediately left the study were not saved, we cannot ascertain if our conditions were randomly imbalanced or if there were features of our conditions that led potential participants to leave the study. The instructions for our conditions may need to be slightly changed. Third, we had no knowledge of the extent of our participants’ interactions with women in positions of

authority, nor how they acted if and when they are in these situations. Future research should assess the NCC effect in these contexts. Fourth, past research has argued for the phenomenon of internalized sexism (e.g., Bearman et al., 2009), or when women accept harmful stereotypes and discrimination of other women. In order to test for this possibility in the current research program, we would need to assess a four-way interaction including NCC and gender stereotypes as well as political orientation and gender. This would require a very large sample which we were not able to collect but could provide an interesting future direction. Fifth, our results from Study 3 also showed that conservatives assigned to both the stereotypes condition and the NCC control condition had a higher preference for men in authority. Our hypotheses did not predict this result; if this pattern holds, it could signify that NCC and political orientation could interact in additional ways which should be subsequently investigated.

## 12 | CONCLUSIONS

Previous research has found that a high NCC is associated with negative attitudes toward various marginalized outgroups, including women managers and other “nontraditional” women. However, relatively less research has explicitly studied the role of stereotypes, as sources of certain knowledge, in this process. In the current research, we have found that NCC leads to increased acceptance of general and specific stereotypes of women which can lead to an increased preference for men in these roles. Moreover, this process may be actually more prominent among individuals from the political left, as long as they have a high NCC, consistent with the rightward shift of the NCC and the reactive liberal hypothesis.

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