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The indirect Need for Cognitive Closure effect on preference for men in authority

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Abstract

A recent research has found an effect of the need for cognitive closure, or the desire for stable and certain knowledge, on the acceptance on stereotypes of women as not wanting, and not being good at, roles involving authority. This study found an indirect, experimentally manipulated (i.e., acute) NCC effect, through these harmful gender stereotypes, on preference for men in positions of authority. According to NCC theory, individuals who have either an acute or chronic desire for stable and certain knowledge can accept many kinds of stereotypes, given that stereotypes themselves are perceived to be sources of stable and certain knowledge. As the NCC can be acute as well as chronic (i.e., an individual difference), we sought to assess the indirect effect of chronic NCC on preference for men in authority through acceptance of harmful gender stereotypes. We conceptually replicated this finding in a sample of 199 participants recruited from the United States. Given these results, we suggest avenues for future research.

Keywords: Need for Cognitive Closure; Sexism; Management

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Outcomes related to harmful stereotypes about women exist in many domains—including representation in roles that have been traditionally held by men, like management and leadership roles—and appears to be a global phenomenon (World Economic Forum, 2021). There is a substantial literature on this topic that dates back to the 1970s (for a handful of examples see Eagly & Karau, 2002; Glick & Fiske, 2011; Spence & Helmreich, 1972). For example, Role Congruity Theory, a principle theory in this field, states that stereotypes of how women *should* act are incompatible with stereotypes of how leaders *should* act; consequently, women leaders can be harmed by this stereotype incongruity (Eagly & Karau, 2002).

Only recently has research asked whether harmful gender stereotypes—particularly about women in the “nontraditional” domains of management and leadership—are more accepted when individuals have a need for stable and secure knowledge about their social worlds. This *need for cognitive closure* (NCC; Kruglanski, 2004) motivates individuals to find desired stable and certain knowledge about the world, first by *seizing* upon knowledge (i.e., the urgency phase) and then by *freezing* upon it (i.e., the permanence phase). The NCC can be either chronic (i.e., an individual difference) or acute (i.e., the consequence of a particular state). According to NCC theory, any source of information can be seized and frozen upon, as long as it is perceived to offer the desired stability and certainty. For instance, individuals high in either a chronic or acute NCC can be more likely to engage in system justification (e.g., Jost, 2019), as the status quo can provide stable and certain knowledge about our social worlds (e.g., Jost & Hunyady, 2005).

Likewise, there is an interesting potential link between the NCC and stereotypes. Even though there is no stereotypical content in the NCC construct itself, stereotypes themselves are sources of knowledge that apply to large groups and are resistant to change and, thus, can provide desired stability and certainty in knowledge. The potential for stereotypes to grant perceived stable and certain knowledge can be referred to as its *epistemic property*. Given stereotypes’ epistemic property, they could be very attractive to individuals with a chronic or acute NCC. According to this argument, harmful stereotypes about women in leadership and management can be accepted because they provide perceived stability and certainty. Consequently, individuals with a chronic or acute NCC could also be more likely to prefer men in authority as a result of their acceptance of these stereotypes.

Although early research with small samples found a relationship between NCC and stereotypes (Kruglanski & Freund, 1983), and more recent research has found an NCC effect on different types of behavior consistent with stereotypes (Baldner et al., 2021a; Baldner & Pierro, 2019a, Study 1; Baldner & Pierro, 2019b; Roets, Van Hiel, & Dhont, 2011), there has been very little modern research that has directly assessed the relationship between NCC and work-related gender stereotypes. The little research that exists regards perceptions of women as being incompatible with leadership and authority. For instance, (1) chronic NCC had an effect on gender stereotype-congruent memories among individuals confronted with women leaders, (2) chronic NCC had an indirect effect on the acceptance of

these stereotypes (Baldner & Pierro, 2019a, Study 2), and (3) acute NCC had an indirect effect on preference for men in roles of authority through these specific stereotypes (Baldner et al., 2021b). These studies included gender as a covariate; there is not yet evidence that are meaningful gender differences among individuals with an NCC. These findings are consistent with the research conducted by Roets and colleagues (2011): although these researchers did not specifically investigate stereotypes of women in positions of authority, they nonetheless found an indirect effect of chronic NCC on sexism through various right-wing attitudes, controlling for participants’ gender.

Given that the NCC can be both acute and chronic, and given the importance of replication in modern social psychology (Świątkowski & Dompnier, 2017), it is important to conceptually replicate the direct effect of chronic NCC on acceptance of these stereotypes as well as the indirect effect of chronic NCC on women’s outcomes through these stereotypes. In the current work, we will focus on the replication of the indirect NCC effect on preference for men in authority through acceptance of these stereotypes (Baldner et al., 2021b); this could have practical importance for women’s outcomes in many roles, from management to technical and expert roles.

Hypotheses, Research Plan, and Power Analysis

The primary objective of this research was to assess the indirect effect of self-reported (e.g., chronic) NCC on the preference for men in positions of authority through acceptance of stereotypes of women as not wanting, and not being good at, these types of positions. We also considered participants’ age, gender, and political orientation as potential covariates that could influence this relationship. Power analysis for the indirect NCC effect was assessed through a Monte Carlo simulations application developed by Schoemann, Boulton, & Short (2018). This application takes, as input, the correlations between variables as well as the standard deviation of each variable. For the purposes of the power analysis, we initially assumed a moderate relationship ($r=.30$) between our measures of NCC and preference for men in authority, as well as a strong relationship ($r=.50$) between our measure of gender stereotypes and preference for men in authority. We then reduced these assumptions, to $r=.20$ and $.40$, respectively, in order to account for the potential effect of our covariates. Standard deviations for each variable were set to 1. Given power and alpha of 80% and 5%, respectively, we would need a sample of at least 188 participants. Supplementary power analyses for correlations were conducted with G*Power 3.1 (Faul et al., 2009). Setting alpha to 5%, we have the power to observe correlations of .19, .22, and .25 at 80%, 90%, and 95% power, respectively. The research was approved by the university ethical committee and informed consent was asked of all participants before data collection; participants had the option to withdraw from the study without penalty at any time. Data for our analyses can be found at https://osf.io/3wk4m/?view_only=91c932eff1554cfcb78c2777aa785996.

Methods

Participants

Given the online nature of our data collection, we wanted to recruit a slightly larger sample than what was required by our power analysis in order to account for participants who did not complete all tasks. We recruited 223 participants through Amazon Mechanical Turk, 199 of which completed all tasks. These 199 participants ($M_{age}=40.8$, $SD_{age}=13.3$; 60.8% women) were our final sample. Participants were predominantly university graduates (59.3%) White (76.9%); 7.5% were Black, 8.5% Latino, 6.0% Asian; 2 participants indicated their ethnicity as “other.”

Measures

Need for Cognitive Closure. Participants completed the 14-item NCC scale (Pierro & Kruglanski, 2005). Items on this scale measure both the seizing (e.g., “In case of uncertainty, I prefer to make an immediate decision, whatever it may be”) and freezing (e.g., “Generally, I do not search for alternative solutions to problems for which I already have a solution available”) tendencies. All items are responded to on likert-type scale from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*) and are averaged to form a single NCC score. In the current study, internal reliability was adequate ($\alpha=.79$).

Gender Stereotypes. Participants completed the 7-item scale on negative work-related stereotypes towards 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 (e.g., “Women on average are more likely than men to become emotional when dealing with stress”). All items are responded to on 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 ($\alpha=.83$).

Preference for men in authority. Participants responded to the 15-item Gender Authority Measure (GAM; Rudman & Kilianski, 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 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 ($\alpha=.84$).

Covariates. In addition to the above variables, we also assessed participants’ gender, as well as their political orientation. The latter was measured by a single item, developed by Koleva and colleagues (2012). Responses were made on a likert-type scale from 1 (*Strongly Liberal*) to 6 (*Strongly Conservative*).

Results and Discussion

As can be seen from Table 1, the measures for NCC, gender stereotypes, and GAM were all intercorrelated. All correlations

were sufficiently strong to be visible at 95% power. The very large correlation between GAM scores and the measure of gender stereotypes, $r(197)=.60$, $p<.001$, 95% CI [.50, .68] allows to state with 97.5% confidence that this effect has at least a large magnitude (i.e., $r=.50$). The large-to-moderate correlation between NCC and the measure of gender stereotypes, $r(197)=.40$, $p<.001$, 95% CI (.27, .51), allows us to state with 95% confidence that the effect is approximately between moderate (i.e., $r=.30$) and large in magnitude (i.e., $r=.50$). The fairly moderate correlation between NCC and GAM scores, $r(197)=.35$, $p<.001$, 95% CI (.22, .46), cannot rule out the possibility of a small-to-moderate effect. These correlations were slightly larger than what we assumed for the purposes of our power analysis.

Tab. 1. Bivariate Correlations and Demographic Statistics (n=199)

	1	2	3	4	5	M	SD
1. NCC	(.79)					3.74	0.70
2. GS	.40**	(.83)				3.31	1.18
3. GAM	.35**	.60**	(.84)			2.94	0.66
4. PO	.13†	.18**	.36**	-		3.56	1.58
5. Gender	-.07	-.16*	-.23**	-.03	-	-	-
6. Age	-.15*	-.21**	-.09	.14*	-.06	40.84	13.30

Note. PO=Political Orientation; higher values indicate more conservative orientations; Gender (1 = Man; 2 = Woman); Internal reliabilities on the diagonal

† $p<.10$; * $p<.05$; ** $p<.01$

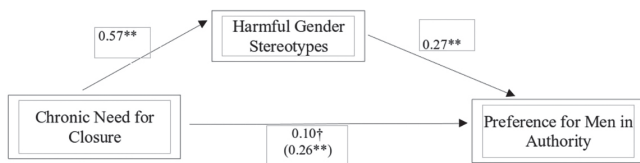
In addition, there were weaker correlations between other variables. Particularly noteworthy correlations were between political orientation and gender stereotypes (i.e., higher gender stereotypes associated with more politically conservative belief), $r(197)=.18$, $p=.009$, 95% CI (.04, .31); and between gender and gender stereotypes (i.e., higher gender stereotypes among men), $r(197)= -.16$, $p=.009$, 95% CI (-.29, -.02). There were also significant correlations between age and both NCC, $r(197)= -.15$, $p=.031$, 95% CI (-.28, -.01) and gender stereotypes, $r(197)= -.21$, $p=.003$, 95% CI (-.33, -.07). Although these correlations are interesting in that their respective confidence intervals cannot rule out moderate effects, only the correlation between age and gender stereotypes is sufficiently large to be detected at 80% power given our sample, notwithstanding the statistical significance.

We followed up this analysis by assessing the indirect NCC effect on preference for men in authority through gender stereotypes, controlling for participants’ age, gender, and political orientation. The indirect effect was assessed through the SPSS PROCESS macro version 4.0 with 5,000 bootstrapped samples. As can be seen from Table 2 and Figure 1, NCC had a significant effect on the measure of gender stereotypes ($b=0.57$, $t=5.30$, $p<.001$, 95% CI [0.36, 0.79]) and gender stereotypes had a significant effect on preference for men in authority ($b=0.27$, $t=8.08$, $p<.001$, 95% CI [0.20, 0.33]), controlling for NCC. The NCC effect on the dependent variable fell below significance when the gender stereotypes measure was included in the model ($b=0.10$, $t=1.94$, $p=.053$, 95% CI [-0.001, 0.21]). The indirect effect was significant, $b=0.15$, $se=0.03$, 95% CI (0.09, 0.22).

Tab. 2. Indirect NCC on GAM scores through Gender Stereotype acceptance (n=199)

	Gender Stereotypes				GAM					
	b	t	95% CI		p	b	t	95% CI		p
			LL	UL				LL	UL	
NCC	0.57	5.30	0.36	0.79	<.001	0.10	1.94	-0.001	0.21	.053
GS	-	-	-	-	-	0.27	8.08	0.20	0.33	<.001
PO	0.12	2.52	0.02	0.21	.012	0.10	4.72	0.06	0.15	<.001
Gender	-0.36	2.39	-0.66	-0.06	.017	-0.18	-2.57	-0.33	-0.04	.010
Age	-0.01	-3.00	-0.03	-0.004	.003	-0.0009	-0.30	-0.006	0.004	.757

Fig. 1. Indirect NCC effect on preference for men in authority through gender stereotypes



Note. †p<.10; *p<.05; **p<.01

Exploratory Analysis: The potential moderating role of gender in the relationship between NCC and acceptance of work-related gender stereotypes

Although previous research has not found evidence of any interaction effect between NCC and gender on stereotype-related outcomes, this dataset provided the opportunity to test for this possibility. In order to do so, we used PROCESS model 8; this allows for a NCC x gender interaction on both the mediator (i.e., acceptance of harmful gender stereotypes) and the outcome (i.e., preference for men in authority). Results are displayed on Table 3. As can be seen, neither interaction was significant. The simple effects on NCC on the mediator were significant among both men (effect= 0.65, se=0.16, p<.001) and women (effect= 0.52, se=0.13, p<.001). However, the simple effects of NCC on the outcome were only significant among men (effect= 0.18, se=0.08, p=.02) but not women (effect= 0.05, se=0.06, p=.41).

Tab. 3. Exploratory NCC x Gender Moderated Mediation Analysis (n=199)

	Gender Stereotypes				GAM					
	b	t	95% CI		p	b	t	95% CI		p
			LL	UL				LL	UL	
NCC	0.57	5.27	0.36	0.79	<.001	0.10	1.94	-0.001	0.21	.053
GS	-	-	-	-	-	0.27	8.03	0.20	0.33	<.001
Int.	0.13	0.63	-0.29	0.56	.524	0.12	1.27	-0.07	0.33	.205
PO	0.12	2.52	0.02	0.21	.012	0.10	4.74	0.06	0.15	<.001
Gender	-0.36	2.37	-0.66	-0.06	.018	-0.18	2.55	-0.32	-0.04	.011
Age	-0.01	-3.02	-0.028	-0.006	.002	-0.001	-0.37	-0.006	0.004	.708

Note: Int= NCC x Gender interaction

General Discussion

There has not been much research on the relationship between the need for cognitive closure, acceptance of harmful gender stereotypes in the workplace, and their outcomes. The little research exists, however, has focused more on the effect of acute NCC even though NCC can be both acute and chronic. The primary objective of the current study was to conceptually replicate a past finding: that there is an indirect effect of chronic NCC on a preference for men in authority through the acceptance of stereotypes of women as not wanting, and not being good at, these types of roles (Baldner et al., 2021a). We replicated this result with an appropriately powered sample. According to our theory, individuals with a chronic or acute NCC can seize and freeze upon stereotypes, as they represent knowledge that is perceived to bestow the desired stability and certainty. Individuals who incorporate these stereotypes into their own belief systems can then act upon them—in our case, by preferring men over women in authority. We also briefly tested, in an exploratory analysis, the potential moderating role of gender in the relationship between NCC and acceptance of harmful gender stereotypes. We did not find evidence for this effect. On one hand, this is consistent with past research that has found that both men and women with an NCC can have harmful attitudes and behaviors towards women in authority (Baldner et al., 2021a; Baldner & Pierro, 2019a; Baldner & Pierro, 2019b; Pica et al., 2018; Roets et al., 2011).

This research has practical implications that could be critical in furthering our understanding of the discrimination that women face in the workplace. If our conclusions are generally correct, then variables such as gender and political orientation, although important, cannot be sufficient to explain attitudes towards men and women in authority. Instead, it is possible that women and/or individuals on the political left can also have these harmful attitudes as long as they have a desire for stable and certain knowledge that can be satisfied by accepting harmful stereotypes about women in positions of authority. This could turn the spotlight to overlooked groups who are nonetheless at risk for holding negative views to women. Moreover, it could present a way to reverse these attitudes, inasmuch as it is possible to either change individuals' need for closure or to use this need in the service of women in these roles—for instance, by presenting individuals with information about women in roles of authority that reflects positive and important information that is also relatively stable and certain.

However, there is other interesting research to be done on this topic. In the current study, we found weak but potentially interesting correlations involving gender, age, and political orientation. Indeed, the study that inspired this work (Baldner et al., 2021a) also found evidence for a possible moderating effect of political orientation, such that the relationship between NCC and acceptance of these stereotypes was actually stronger among political liberals. Likewise, there were interesting correlations involving both gender and age. It is feasible that men and women could differ on the perceptions of women in authority; given that gender stereotypes change over time (e.g., Charlesworth & Banaji, 2021), it could also be possible that older individuals are more accepting of older stereotypes that have lost some of their popularity. On the other hand, given

that individuals high in either an acute or chronic NCC can engage in system justification, it could be possible that these factors would not influence the NCC effect. Taking all of these factors together, it could be interesting to study the NCC effect among a sample of young, left-wing women to assess the extent of the NCC effect.

Another important direction for future research on the relationship between NCC and acceptance of gender stereotypes regards its cross-cultural impact. Research has also studied gender stereotypes, more broadly, in cross-cultural designs (for a recent example, Obioma, Hentschel, & Hernandez Bark, 2021), as well as in understudied cultures (for a recent example, Shafi, 2021). There is a great need for this kind of cross-cultural research, as studying a construct in different cultures can test it in under different influences and, ultimately, can tell us more about the construct (Wang, 2016). However, the NCC has not yet been studied in cross-cultural designs.

Research on the NCC is often conducted in Italy, Belgium, and the United States, three WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries that nonetheless differ for outcomes for women in roles of authority. For instance, in the most recent Global Gender Gap Report (World Economic Forum, 2021), the United States ranked 29th of 156 countries on the proportion of women legislators, senior officials, and managers—the data most related to outcomes for women in “nontraditionally feminine” roles. On the other hand, Italy ranked 98th. Understanding the differences between these two countries would be of great help and the possible role of the NCC should be investigated. Of course, this effect could be studied in many other countries.

This study had limitations which should be noted and that can be addressed in future research. Inherent in the nature of the chronic (i.e., self-report) NCC is that the current study used a completely self-report design. Any correlational design brings with it two general possibilities: that one of the variables causes the other or that both are caused by a third variable. Although we have causal evidence for the NCC effect from the research that inspired this study (Baldner et al., 2021a), this causal pathway itself could benefit from further study. Indeed, it would be both interesting and informative if an experimental mediation design, in which both the NCC and acceptance of harmful gender stereotypes would be experimentally manipulated, was a focus of subsequent research. In this way, we could more fully establish the causal path from NCC to preference for men in authority through acceptance of these stereotypes. We are also not aware of any research on variables that could cause NCC, acceptance of harmful stereotypes, and preference for men in authority. Moreover, as mentioned above, we cannot make strong conclusions about the potential roles played by participants' age, gender, and political orientation; future work can investigate the NCC effect in more focused samples.

Author Contributions

The first author (CB) primarily wrote the manuscript and conducted analyses

The second author (MV) assisted with writing and analyses

The third paper (AP) developed hypotheses and edited the manuscript

Conflict of interest

The authors have no conflicts to present

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Ethical Approval

This research was approved by the departmental ethics committee, protocol number 0000570

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