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Which Visuals Really Matter? Effects of (Counter) Stereotypical Visual Information on Candidate Evaluations

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Abstract

Building on research on gender stereotypes and a parallel-constraint-satisfaction theory on impression formation, this project investigates the effects of gender stereotypical and counter-stereotypical visuals on voters' evaluations of political candidates with two pre-registered experimental studies. Study 1 ($N = 1,225$) is a conceptual replication of an online experiment on the effect of visual communication of fictional U.S. candidates, testing main assumptions in the context of real-world German candidates on X (formerly Twitter). In contrast to the original study, we find that visuals reinforcing masculine as well as feminine stereotypes can be detrimental to men candidates. Evaluations of women candidates were not affected by (counter) gender stereotypical visual information. Study 2 ($N = 1,058$) repeats Study 1 outside of an election context. Findings differ from the first study. Moreover, no effects of visual communication are found when prior attitudes are controlled. The project highlights the importance of replicating experimental findings in different contexts.

Keywords

visual communication, gender and politics, stereotypes, experimental research, replication

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Politicians are strategists who try to win the favor of voters with every appearance during an election campaign. However, extant research in the field has shown that different rules exist for women and men in political competitions (e.g., Conroy et al., 2020; Winfrey & Schnoebelen, 2019). Gender stereotypes, that is, cognitive structures that associate men and women with supposedly representative character traits and issue competencies (Hayes, 2005), favor the evaluation of men politicians (e.g., Bauer, 2015; Turska-Kawa & Olszanecka-Marmola, 2018). Men are associated with character traits related to competence and agency, such as being intelligent and knowledgeable (Connor & Fiske, 2018). These traits overlap with perceived qualities of strong political leaders (e.g., Conroy, 2015). Men are also considered to be a good fit for issues such as defense and economy (Bauer & Carpinella, 2018; Hayes, 2011). Women score high on qualities such as friendliness and sociability (Connor & Fiske, 2018) and are associated more with issues such as social welfare and education (Bauer & Carpinella, 2018; Hayes, 2011). While voters do value such warm traits (Bishin et al., 2006), they are considered as less relevant for strong leadership (Anabo, 2021; Schneider & Bos, 2014). Thus, it seems reasonable for women candidates to adopt a masculine, counter-stereotypical communication style to underline their competence to voters and achieve political success.

Although modern political campaigning relies heavily on visuals to shape the image of candidates (e.g., Bossetta & Schmøkel, 2023; Haßler et al., 2023; Parmelee et al., 2023; Schill, 2012), the impact of visual information on candidates has only recently attracted widespread academic interest (e.g., Brands et al., 2021; Jungblut & Haim, 2021). The few existing studies find that counter-stereotypical visual information does not affect men (Bauer & Carpinella, 2018; Lindholm et al., 2020) and yield heterogenous findings for women in politics. Counter-stereotypical visual information has been found to improve, harm, or not affect evaluations of women politicians (Bauer & Carpinella, 2018; Boussalis et al., 2021; Lindholm et al., 2020). Hence, for political strategists who rely heavily on visual communication, the question arises whether gender stereotypical or counter-stereotypical visual campaigns improve evaluations among voters. Our study aims to answer this research question by assessing the impact of (counter) gender stereotypical visual campaign strategies on voters. Based on the parallel-constraint-satisfaction theory on impression formation (PCS; Kunda & Thagard, 1996) and assumptions of a double bind for women in politics/leadership positions (Jamieson, 1995), we argue when and why (counter) stereotypical information should affect the evaluation of men and women politicians. We test our expectations in a research program consisting of two pre-registered experimental studies inside (Study 1) and outside (Study 2) the context of the German general election 2021. *Study 1* is a conceptual replication and extension of an online experiment by Bauer and Carpinella (2018) who investigated the effect of gender stereotypical visual communication strategies on evaluations of politicians during election campaigns which we transferred to a German context. To our knowledge, this was the first of only two existing studies to analyze effects of stereotypical visual communication styles at the time of project preparation. We conduct a replication study as such studies are considered an important part of the research process to gain confidence in findings and

to identify generalizable patterns (Dienlin et al., 2021). Our *Study 2* was a replication of Study 1 outside of a campaign context.

Effects of Gender Stereotypical Visual Information

The parallel-constraint-satisfaction theory of impression formation (Kunda & Thagard, 1996) posits that stereotypes, that is, assumptions based on memberships to certain groups, as well as individuating information, that is, additional information about a specific person, jointly and simultaneously influence the evaluation of that person. Kunda and Thagard (1996) describe this as a spreading activation network in which stereotypes and individuating information are arranged as individual units. These units are incorporated in the evaluation process depending on their activation or deactivation. Thus, the formation of impressions about a politician's character and skills could be constrained by stereotypes as well as individuating information, such as visual campaign information, depending on whether they activate associated evaluations in the cognitive network. Kunda and Thagard (1996, p. 288) call this "knowledge representation." The question, then, is how and when are evaluations based on gender stereotypes and visual individuating information.

Visuals Depicting Masculine Stereotypes

Following research on gender stereotypes, men are associated with traits related to competence, such as being intelligent and knowledgeable (e.g., Conroy, 2015; Schneider & Bos, 2014), and perceived a good fit for stereotypical masculine domains, such as economics (Hayes, 2011). Research shows that these associations also apply to *men politicians* (Schneider & Bos, 2014). Connecting these findings to the PCS theory, we theorize that impressions of men politicians are shaped by masculine stereotypes in terms of ascribed traits and issue competencies (i.e., competency-related associations in the knowledge representation network are activated), while warm traits and issues that are considered stereotypically feminine are deactivated. We expect that when a voter is also confronted with visual information depicting masculine stereotypes, such as the men politician portrayed with members of the armed forces (Bauer & Carpinella, 2018), no additional unit in the knowledge representation network is activated, and thus the impression formation of the politician is not altered.

Women politicians are not assigned stereotypical masculine qualities (Connor & Fiske, 2018; Schneider & Bos, 2014). However, there is empirical evidence that women in politics are also not readily associated with the warm qualities stereotypically attributed to women (Bauer, 2015; Schneider & Bos, 2014). This is probably the case because their profession is much different from the traditional feminine stereotype (Schneider & Bos, 2014). Thus, observing a women politician should decrease competence-related—stereotypical masculine—associations while possibly not activating stereotypical feminine associations either. Based on the PCS theory, we assume that visual information about women politicians who display masculine stereotypes leads to a parallel activation of competence-related evaluations in the spreading

activation network due to the association of masculine visuals with competence. In other words, visual information depicting masculine stereotypes should lead to women politicians being attributed a higher level of competence-related traits and proficiency in stereotypically masculine domains, thus improving their overall evaluation. And indeed, empirical findings of Bauer and Carpinella (2018) show that stereotypical masculine visuals do not affect men politicians but improve the evaluation of women politicians' qualifications for issues associated with masculine stereotypes while not affecting those for issues associated with feminine stereotypes (Bauer & Carpinella, 2018). These effects are also in line with studies on effects of verbal communication (Schneider, 2014). Against this background, we repeat the major assumptions by Bauer and Carpinella (2018) by assuming that:

*H*1: Masculine visuals will not affect evaluations of men politicians.
*H*2: Masculine visuals will have a positive effect on evaluation of (*H*2a) issue competency and (*H*2b) character traits of women politicians.

According to a double bind for women in leadership positions (Jamieson, 1995), communicating counter-stereotypical visuals comes with a risk for women in politics as stereotypes include expectations of appropriate behavior (Rudman & Glick, 2001). The violation of such behavioral expectations can trigger so-called backlash effects: Studies found that behavior that contradicts feminine, warm stereotypes can have negative consequences for women (Rudman & Phelan, 2008), such as decreased likeability (Heilman et al., 2004; Wen et al., 2020). This suggests that counter-stereotypical information can not only increase, but simultaneously decrease positive evaluations. Previous studies analyzed possible backlash effects on both a political dimension—vote choice or *electoral viability*, that is, attributed chances in an electoral contest (Bauer & Carpinella, 2018)—as well as general evaluations of politicians, that is, their *favorability* (Bauer & Carpinella, 2018). Although visuals depicting masculine stereotypes may positively affect the evaluation of women politicians' traits and issue competency, they can still result in reduced electoral viability (Bauer & Carpinella, 2018). There is also evidence that counter-stereotypical behavior negatively affects voters' overall evaluation of a women candidate (Krupnikov & Bauer, 2014) or reactions to candidates speaking in televised debates (Boussalis et al., 2021). However, Bauer and Carpinella (2018) found that counter-stereotypical visuals do not decrease women politicians' favorability. Taken together, there is some support for the assumption that while women politicians can improve their evaluation of traits and issue competencies by communicating counter-stereotypical information, this can simultaneously have negative consequences for their actual chances in the electoral contest. Against this background, we formulate expectations regarding a possible backlash effect on both electoral viability and favorability. We include favorability despite contrary findings on counter-stereotypical visuals because this variable might be more relevant in the context of real politicians and because electoral viability might be less relevant in the German multiparty system. We thus assume that

*H*3: Masculine visuals will have a negative effect on evaluation of (*H*3a) electoral viability and (*H*3b) favorability for women politicians.

An individual can be associated with multiple social stereotypes due to membership in different social groups. Politicians, for example, are usually stereotyped based on their gender as well as their party membership (Hayes, 2011). Research from the US suggests that gender and party stereotypes overlap in that Democrats are associated with feminine, warm qualities while Republicans score high on the masculine competence dimension (Hayes, 2005; Winter, 2010). Thus, women from center-left parties may face a stronger backlash effect when communicating visuals depicting masculine stereotypes, because they not only break with gender, but also with party stereotypes (Bauer & Carpinella, 2018). Indeed, Bauer and Carpinella (2018) found that counter-stereotypical visuals resulted in negative evaluations for women Democrats but not for Republicans. Transferred to the German context of our study, we assume stronger backlash effects for women politicians of the political center-left:

*H*4: The effect postulated in *H*3 is stronger for women center-left politicians than for women far-right populist politicians.

Visuals Depicting Feminine Stereotypes

The mechanism for visuals displaying feminine stereotypes is less clear than for masculine stereotypes. As theorized before, observing a man politician should activate competence-related associations regarding traits and issues while deactivating associations related to warmth, that is, stereotypical feminine traits and issues (Connor & Fiske, 2018). Thus, counter-stereotypical visuals (e.g., being pictured with children or the elderly) could improve men politicians' evaluations by additionally activating traits and issues related to warmth. However, Bauer and Carpinella (2018) found that visuals displaying feminine stereotypes had no effects on evaluation of men candidates. Theoretical considerations and empirical findings thus diverge when it comes to counter-stereotypical visual information about men in politics.

Since research suggests that women in politics are not readily associated with feminine, warm traits (Bauer, 2017; Schneider & Bos, 2014), they could benefit from gender-stereotypical visual information activating these associations (Bauer, 2015). However, Bauer and Carpinella (2018) found that visuals depicting feminine stereotypes do not affect the evaluation of (fictional) women politicians. In contrast, Bast et al. (2022) found that women of the populist far-right can improve their warmth evaluation by displaying a gender-stereotypical visual communication style, possibly because these politicians are subject to different stereotypical expectations than women politicians from other parties: As members of "Männerparteien [Men's parties]," which are defined as "political parties of men, by men, and for men" (Snipes & Mudde, 2019, p. 2), they may differ even further from the feminine stereotype than other women politicians (Bast et al., 2022). These findings suggest that stereotypes based on gender and party affiliation interact. Given the lack of theoretical explanation

and thin empirical base, we formulate research questions to explore the effects of visuals depicting feminine stereotypes on all dependent variables as well as the potential moderating role of party affiliation:

*RQ*1: How do feminine visuals affect the evaluation of issue competency and character traits of women and men politicians?
*RQ*2: How do feminine visuals affect the evaluation of electoral viability and favorability of women and men politicians?
*RQ*3: How does the party affiliation of women and men politicians influence the effects of feminine visuals?

Method Study 1

Overview

Study 1 is a conceptual replication of Bauer and Carpinella's (2018) experimental online survey in a $2 \times 2 \times 3$-design. We manipulate politicians' gender (woman/man) and party background (far-right populist/center-left). The visual information consists of either visuals displaying feminine stereotypes, masculine stereotypes, or a control group without any visuals. A *conceptual replication* differs from a direct replication in that it is a "repetition of a test of a hypothesis or a result of earlier research work with different methods" (Schmidt, 2009, p. 91). Conceptual replications are a suitable method to validate previous findings because they allow for tests in different contexts. Since behavior is contextual (Derksen & Morawski, 2022), conceptual replications are "the proper way to bolster and extend a theory" (Derksen & Morawski, 2022, p. 1491).

The main objective of our study was to test the assumptions of the original study in a real-world context. Our conceptual replication therefore modified the experiment in two aspects: (a) To increase the external validity, we compared real German politicians from *Bündnis 90/Die Grünen* as an example of a center-left party with those from the far-right populist party *AfD* instead of using fictional politicians. (b) We used X (then still Twitter) profiles as stimuli as this channel is now of greater importance for the strategic communication of political actors than candidate websites (Jungherr, 2016). Moreover, we chose to extend the original design to consider a previous limitation: Whereas Bauer and Carpinella (2018) focus on effects on evaluation of politicians' issue competencies, we also included character traits as dependent variables to draw a more complete picture. This addition does not substantially change the experimental design and is thus considered an extension rather than a modification. IRB approval was obtained prior to data collection by the Local Ethics Committee of the Department of Psychology, RPTU Kaiserslautern-Landau. The study was preregistered via the Open Science Framework (OSF): https://osf.io/z2t87. Stimuli, questionnaire as well as data and syntax for the analyses are shared for transparency and future studies: https://osf.io/wyhz6/.

Recruiting and Participants

We estimated the required sample size of $N = 1{,}195$ participants using a power analysis with power $(1 - \beta)$ set at 0.80 and $\alpha = .008$ based on effects sizes for the dependent variables (issue competency, character traits, electoral viability, and favorability).[1] Participants were recruited via the crowdsourcing platform "Clickworker".[2] A total of 1,293 participants completed the survey from September 6 to 13, 2021. We removed 64 participants due to numerous missing answers and/or rapid questionnaire completion based on quality criteria indicators embedded in the SoSciSurvey survey tool used for data collection (Leiner, 2021). The final sample consisted of $N = 1{,}225$ participants aged 18 to 73 ($M = 37.10$, $SD = 11.76$) who were highly educated (31% had a university degree) and balanced regarding gender (54% men)[3]and political orientation (1 = *left*, 11 = *right*, $M = 5.27$, $SD = 2.02$).

Stimulus

We manipulated X (then Twitter) profiles in terms of gender (woman/man), party (AfD, Bündnis 90/Die Grünen), and visual information (feminine/masculine/control) as our stimulus material. The politicians selected were Annalena Baerbock/Robert Habeck (Bündnis 90/Die Grünen) and Alice Weidel/Tino Chrupalla (AfD) as the dual leaders of each party. Each profile included a picture of the respective politician and a biographical note ("Politician for [respective party] in the German Parliament."). The header included a collage of several images representing either masculine or feminine stereotypes. Participants in the control group without visuals saw a monochrome header without images.

We decided on presenting the gender stereotypical visuals in the background of the politicians rather than images of the politicians themselves engaging in gender-stereotypical behavior for three reasons: First, politicians' use visual cues, that is, "tiny bits of information embedded by politicians in their communication" (Dan & Arendt, 2021, p. 23), to create a desired impression goes beyond depictions of themselves or their nonverbal behavior (von Sikorski & Brantner, 2019). Such cues include, for example, "images of social groups that remind viewers of themselves and their own lives" (Swigger, 2012, p. 367). Shots of such social groups can be included "on their own," that is, not alongside the respective candidate (Swigger, 2012). These cues can be used as implicit claims by association (Dan & Arendt, 2021; Grabe & Bucy, 2009, Chapter 1). Anecdotal evidence shows that such politicians' use images not of themselves, but of social groups and visual symbols in their X headers, similar to our stimulus material. Thus, our choice of visuals reflects real-world campaign content. Second, it is often assumed that visuals are processed based on associations (Geise & Baden, 2015; von Sikorski & Brantner, 2019), suggesting that "not only the representation or staging of political actors themselves, but also the context in which they are seen, is of great importance" (von Sikorski & Brantner, 2019, p. 196, translated from the German original). It is thus reasonable to assume that recipients process the profiles we used as stimuli by forming

associations of the depicted politician and visual cues presented in the background. This assumption is supported by empirical evidence that visual communication influences evaluations of politicians beyond their non-verbal behavior (Dan & Arendt, 2021; Swigger, 2012). Third, using images of the politicians themselves in gender-stereotypical poses could introduce confounding variables. Two images from two different politicians may look, on first glance, similar, but differences in nonverbal behavior, attire, or other subtle cues between politicians' images could affect recipients' interpretations (Grabe & Bucy, 2009, Chapter 3), limiting comparability. This methodological choice thus ensured that observed effects could be attributed to the visual communication style and were not affected by additional visual cues.

The stimulus material was pretested with a convenience student sample ($N = 58$, $M = 23.98$ years, $SD = 3.18$, 57% women) to ensure that it elicited the respective stereotypes. Each participant was randomly presented with two X headers from two of the four politicians. One header included visuals depicting feminine stereotypes, the other (from a different politician) visuals representing masculine stereotypes. Participants rated each profile for traits associated with masculine (e.g., assertive and tough) and feminine stereotypes (e.g., gentle and sensitive; 1 = *"does not apply at all"*, 7 = *"fully applies"*) (Huddy & Terkildsen, 1993). A mean index was calculated for feminine and one for masculine stereotypical characteristics. Manipulation was successful as visuals displaying feminine stereotypes were evaluated as more feminine ($\alpha = .93$, $M = 4.38$, $SD = 1.37$) than masculine ($\alpha = .91$, $M = 2.67$, $SD = 1.14$, $t\,(57) = 6.202$, $p < .001$), and vice versa for visuals displaying masculine stereotypes (masculine: $\alpha = .75$, $M = 4.73$, $SD = 0.90$; feminine: $\alpha = .80$, $M = 4.03$, $SD = 0.88$, $t\,(57) = -4.445$, $p < .001$). The stimulus material can be found on OSF (https://osf.io/wyhz6).

Procedure

Respondents were invited to participate in an online survey assessing how people evaluate the self-representation of political candidates on social media. They were randomly assigned to one of the twelve treatment groups. No systematic differences were detected for age, $H(11) = 8.36$, $p = .681$; gender, Cramér's $V = .10$, $p = .285$; education, Cramér's $V = .10$, $p = .847$; or political orientation, $H(11) = 10.82$, $p = .459$, indicating a successful randomization. Respondents completed a post-exposure questionnaire evaluating the politician's issue competencies, character traits, electoral viability, and favorability and asking for the respondents' socio-demographics as well as political orientation and party identification.

Measures

Evaluation of Issue Competencies: Stereotypical Masculine and Feminine Issues. We adapted the items from Bauer and Carpinella (2018) to the German context to measure how competent participants rate the politicians in issues associated with masculine (defense, foreign affairs, economy) and feminine stereotypes (social welfare, healthcare, education; 1 = "*not competent at all*," 7 = "*very competent*." We built two mean

indices for stereotypical masculine (α = .89, *M* = 3.62, *SD* = 1.45) and feminine issues (α = .91, *M* = 3.81, *SD* = 1.49).

Evaluation of Character Traits: Competence and Warmth. We measured participants' evaluation of politicians' character traits by asking how they rate the politicians in terms of characteristics related to warmth (likeable, friendly, conscientious, caring) and competence (intelligent, competent, knowledgeable, credible; 1 = "does not apply," 7 = "fully applies") (Pedersen, 2017). Next, we built two mean indices, one for competence-related traits (α = .93, *M* = 4.12, *SD* = 1.46) and one for warmth-related traits (α = .90, *M* = 3.80, *SD* = 1.45).

Evaluation of Electoral Viability. The original study measured electoral viability by asking how likely it was that the politician would win the election. We adapted this question for the German multi-party system and asked how likely it is that the politician will be a top candidate for their party in the future (1 = "*not at all likely*," 11 = "very likely," *M* = 7.32, *SD* = 3.00).

Evaluation of Favorability. We asked participants what they think of the politician in the profile with an item from the German Longitudinal Election Study (GLES, 2021) (1 = "do not think highly at all of the person," 11 = "think very highly of the person," *M* = 5.04, *SD* = 3.23).

Political Orientation. We measured participants' political orientation on an 11-point Likert scale (1 = "left," 11 = "right," *M* = 5.27, *SD* = 2.02).

Data Analysis

We extend the analysis of Bauer and Carpinella (2018) to test our hypotheses and research questions. We conducted separate multivariate multiple regression analyses for men and women politicians comparing their evaluations with the control group. We included participants' gender and political orientation as control variables to increase the precision of the estimated treatment effects (Robinson & Jewell, 1991) as they have been shown to affect the evaluation of candidates (Bast et al., 2022; Brooks, 2011).[4] Next, we included politicians' party background as a moderator variable to test for the interaction effect postulated in *H*4 and *RQ*3. We calculated robust standard errors (*HC*3) for all models and applied *p*-value corrections according to the procedure as described by Benjamini et al. (2009) for all regression coefficients to account for multiple comparisons. Moreover, we rely on confidence intervals to test for the absence of a meaningful effect as expected in *H*1 (Rainey, 2014).

Results Study 1

We begin by describing the dependent variables by group to illustrate our data (Table T1 on OSF). The mean evaluation of politicians' competence for issues related

to masculine stereotypes is higher among participants who saw visuals displaying masculine stereotypes than those who saw visuals displaying feminine stereotypes. The reverse is true for issues associated with feminine stereotypes. Visuals that depicted feminine stereotypes correspond with higher mean ratings of warm character traits than those displaying masculine stereotypes. Thus, we can see plausible patterns of gender stereotypical visuals on evaluations. In the next step, we test our hypotheses with a multivariate analysis.

Visuals Depicting Masculine Stereotypes

*H*1 postulated that visuals displaying masculine stereotypes will not affect evaluations of men candidates. Regressions were conducted with the evaluation of stereotypical masculine and feminine issues, evaluation of competence and warmth traits, electoral viability, and favorability as dependent, the visual information as independent variable and controlling for politicians' party background, participants' gender, and political orientation. Results (Table 1, Model 1) show that respondents, on average, evaluated the two men politicians 0.41 units less competent for stereotypical feminine issues (b=-0.41, p_{adjusted}=.015) than those in the control group, what corresponds to a relatively small effect (Cohen's d=−0.28) [5] and contradicts *H*1. While effects of masculine visuals on evaluation of men politicians on the other dependent variables were not statistically significant, this cannot be interpreted as the true effect being zero. Following Alter and Counsell (2023) and Rainey (2014), we thus calculated 98.2% confidence intervals[6] to check for negligible effects.[7] There was insufficient evidence to reject meaningful effects of stereotypical masculine visuals on the other dependent variables because the confidence intervals consistently contained the SESOIs (masculine issues: b=−0.04, $p_{adjusted}$=.905, 98.2% *CI* [−0.36, 0.27], character traits (competence: b=−0.18, $p_{adjusted}$=.412, 98.2% *CI* [−0.49, 0.13], warmth: b=-0.08, $p_{adjusted}$=.769, 98.2% *CI* [−0.38, 0.22]), electoral viability: b=-0.67, $p_{adjusted}$=.095, 98.2% *CI* [−1.37, 0.03], favorability: b=−0.69, $p_{adjusted}$=.051, 98.2% *CI* [−1.32, −0.06]). Thus, *H*1 was rejected.

*H*2 predicted that visuals depicting masculine stereotypes will have a positive effect on evaluation of (*H*2a) issue competency and (*H*2b) character traits of women politicians. Results (Table 2, Model 1) show that these visuals did not significantly affect issue competency (masculine: b=−0.03, $p_{adjusted}$=.968; feminine: b=−0.27, $p_{adjusted}$=.204) or character traits (competence: b=−0.19, $p_{adjusted}$=.413; warmth: b=−0.11, $p_{adjusted}$=.709) compared to the control group. Thus, *H*2a and *H*2b were rejected. *H*3 postulated that visuals depicting masculine stereotypes will have a negative effect on the evaluation of (*H*3a) electoral viability and (*H*3b) favorability for women politicians. However, the results show no statistically significant effect on electoral viability (b=0.03, $p_{adjusted}$=.984) or favorability (b=−0.12, $p_{adjusted}$=.878) of the two women politicians (compared to the control group), leading to the rejection of *H*3.

We estimated an additional model for women politicians including the interaction of visual information and party background (Table 2, Model 2) to test *H*4, which predicted that the effect postulated in *H*3 is stronger for women center-left politicians than

Table 1. Multiple Multivariate Regression Models Estimating Men Politicians' Issue Competency, Character Traits, Electoral Viability, and Favorability Evaluation, from Visual Information (Feminine/Masculine/Neutral), Party Background, and Participants' Gender and Political Orientation (Study 1).

	Masculine issues			Feminine issues			Competence traits			Warmth traits			Electoral viability			Favorability		
Model 1																		
Variable	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$
Constant	3.23	0.20	.000	2.91	0.20	.000	3.42	0.21	.000	2.77	0.19	.000	7.13	0.46	.000	3.10	0.41	.000
Feminine visual	−0.39	0.13	.019	0.08	0.14	.769	−0.18	0.14	.413	0.21	0.13	.309	−0.18	0.29	.769	−0.29	0.28	.515
Masculine visual	−0.04	0.13	.905	−0.41	0.13	.015	−0.18	0.13	.412	−0.08	0.13	.769	−0.67	0.30	.095	−0.69	0.27	.051
Green party	0.19	0.11	.250	0.97	0.11	.000	0.84	0.11	.000	0.86	0.11	.000	0.52	0.24	.124	2.86	0.23	.000
Women participant	0.22	0.11	.183	−0.01	0.11	.984	−0.04	0.11	.882	−0.14	0.11	.422	−0.42	0.25	.264	−0.02	0.23	.984
Participants' political orientation	0.08	0.03	.039	0.09	0.03	.015	0.07	0.03	.085	0.10	0.03	.009	−0.03	0.07	.867	0.19	0.06	.024
Adjusted R^2		.03			.14			.09			.12			.01			.22	
Model 2																		
Constant	3.15	0.21	.000	2.85	0.20	.000	3.30	0.22	.000	2.73	0.21	.000	7.02	0.50	.000	2.78	0.42	.000
Feminine visual	−0.23	0.19	.423	0.20	0.19	.515	−0.00	0.20	.992	0.24	0.19	.422	−0.07	0.41	.984	0.16	0.38	.878
Masculine visual	0.01	0.19	.991	−0.35	0.18	.184	−0.01	0.19	.984	0.01	0.18	.991	−0.46	0.43	.515	−0.25	0.36	.757
Green party	0.33	0.18	.209	1.08	0.18	.000	1.07	0.18	.000	0.94	0.17	.000	0.74	0.41	.244	3.46	0.37	.000
Women participant	0.22	0.11	.184	−0.01	0.11	.984	−0.05	0.11	.868	−0.15	0.11	.412	−0.44	0.25	.250	−0.05	0.23	.968
Participants' political orientation	0.09	0.03	.035	0.09	0.03	.015	0.08	0.03	.077	0.10	0.03	.009	−0.03	0.07	.878	0.19	0.06	.019
Feminine visual*Green party	−0.32	0.26	.422	−0.23	0.27	.669	−0.35	0.27	.413	−0.07	0.26	.945	−0.23	0.58	.878	−0.91	0.56	.280
Masculine visual*Green party	−0.10	0.27	.878	−0.11	0.26	.878	−0.33	0.26	.422	−0.17	0.25	.760	−0.43	0.59	.718	−0.89	0.54	.280
Adjusted R^2		.03			.14			.09			.12			.01			.22	

Note. Analysis with robust standard errors (*HC3*) and adjusted *p*-values (Benjamini-Hochberg-procedure) for regression coefficients. Model 1: $N = 615$; masculine issues: $F(5,609) = 4.85$, $p < .001$; feminine issues: $F(5,609) = 20.75$, $p < .001$; competence traits: $F(5,609) = 13.68$ $p < .001$; warmth traits: $F(5,609) = 17.6$, $p < .001$; electoral viability: $F(5,609) = 2.8$, $p = .016$; favorability: $F(5,609) = 36.02$, $p < .001$. Model 2: $N = 615$; masculine issues: $F(7,607) = 2.68$, $p = .001$; feminine issues: $F(7,607) = 14.9$, $p < .001$; competence traits: $F(7,607) = 10.08$, $p < .001$; warmth traits: $F(7,607) = 12.60$, $p < .001$; electoral viability: $F(7,607) = 2.08$, $p = .044$; favorability: $F(7,607) = 26.31$, $p < .001$.

Table 2. Multiple Multivariate Regression Models Estimating Women Politicians' Issue Competency, Character Traits, Electoral Viability, and Favorability Evaluation, from Visual Information (Feminine/Masculine/Neutral), Party Background, and Participants' Gender and Political Orientation (Study 1).

	Masculine issues			Feminine issues			Competence traits			Warmth traits			Electoral viability			Favorability		
Model 1																		
Variable	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$
Constant	3.46	0.23	.000	3.20	0.22	.000	3.79	0.23	.000	3.05	0.22	.000	7.72	0.44	.000	3.31	0.47	.000
Feminine visual	−0.26	0.15	.255	0.29	0.15	.184	−0.16	0.15	.494	0.10	0.14	.757	0.08	0.30	.941	0.02	0.32	.984
Masculine visual	−0.03	0.15	.968	−0.27	0.14	.204	−0.19	0.15	.413	−0.11	0.14	.709	0.03	0.29	.984	−0.12	0.32	.878
Green party	−0.30	0.12	.070	0.73	0.12	.000	0.19	0.12	.288	0.87	0.12	.000	0.61	0.24	.051	2.00	0.26	.000
Women participant	0.36	0.12	.019	0.14	0.12	.422	0.21	0.12	.251	−0.01	0.12	.984	0.01	0.24	.992	0.35	0.26	.412
Participants' political orientation	0.02	0.04	.760	0.04	0.03	.412	0.06	0.04	.298	0.08	0.03	.084	−0.04	0.07	.816	0.09	0.08	.422
Adjusted R^2		.02			.08			.01			.09			.00			.09	
Model 2																		
Constant	3.56	0.26	.000	3.23	0.24	.000	3.82	0.25	.000	3.05	0.24	.000	7.90	0.48	.000	3.19	0.51	.000
Feminine visual	−0.39	0.22	.250	0.25	0.21	.447	−0.25	0.21	.447	0.08	0.20	.878	−0.31	0.42	.718	0.18	0.45	.878
Masculine visual	−0.18	0.21	.669	−0.31	0.19	.280	−0.16	0.20	.702	−0.10	0.20	.854	0.01	0.39	.992	0.07	0.44	.984
Green party	−0.49	0.21	.085	0.67	0.20	.009	0.16	0.21	.717	0.86	0.20	.000	0.33	0.43	.718	2.24	0.46	.000
Women participant	0.36	0.12	.019	0.15	0.12	.422	0.20	0.12	.271	−0.01	0.12	.984	−0.01	0.24	.991	0.34	0.26	.412
Participants' political orientation	0.02	0.04	.769	0.04	0.03	.412	0.05	0.04	.333	0.08	0.03	.085	−0.04	0.07	.760	0.10	0.08	.422
Feminine visual*Green party	0.26	0.31	.673	0.07	0.30	.945	0.16	0.30	.816	0.04	0.29	.984	0.80	0.59	.412	−0.31	0.64	.856
Masculine visual*Green party	0.30	0.30	.547	0.08	0.29	.927	−0.07	0.30	.967	−0.03	0.28	.984	0.05	0.59	.984	−0.39	0.64	.769
Adjusted R^2		.02			.08			.01			.09			.00			.09	

Note. Analysis with robust standard errors (*HC3*) and adjusted *p*-values (Benjamini-Hochberg-procedure) for regression coefficients. Model 1: $N = 610$; masculine issues: $F(5,605) = 3.67$, $p = .003$; feminine issues: $F(5,605) = 11.384$, $p < .001$; competence traits: $F(5,605) = 2.04$, $p = .071$; warmth traits: $F(5,605) = 13.63$, $p < .001$; electoral viability: $F(5,605) = 1.41$, $p = .219$; favorability: $F(5,605) = 13.04$, $p < .001$. Model 2: $N = 610$; masculine issues: $F(7,602) = 2.78$, $p = .007$; feminine issues: $F(7,602) = 9.35$, $p < .001$; competence traits: $F(7,602) = 1.55$, $p = .149$; warmth traits: $F(7,602) = 9.71$, $p < .001$; electoral viability: $F(7,602) = 1.35$, $p = .225$; favorability: $F(7,602) = 15.72$, $p < .001$.

for women in far-right populist parties. However, we found no statistically significant interaction effect of visual information and politicians' party background for any of the dependent variables. Thus, *H*4 was also rejected.

Visuals Depicting Feminine Stereotypes

RQ1 asked how feminine visuals affect the evaluation of issue competency and character traits of politicians. Results (Table 1, Model 1) show that for men politicians, visuals depicting feminine stereotypes decreased the evaluation of stereotypical masculine issue competency compared to the control group, while stereotypical feminine issue competencies and character traits were unaffected. However, the effect was relatively small. Participants who saw the header with feminine stereotypes rated the competence of men politicians for stereotypical masculine topics on average 0.39 units lower than the participants in the control group ($b = -0.39$, $p_{\text{adjusted}} = .019$, Cohen's $d = -0.29$) on a scale ranging from 1 to 7.

For women politicians (Table 2, Model 1), there was no statistically significant effect on issue competency or character traits. RQ2 asked how visuals depicting feminine stereotypes affect the evaluation of electoral viability and favorability of politicians. Our results show that they affected neither men nor women politicians' electoral viability and favorability ratings compared to the control group. RQ3 looked at the connection between party affiliation of politicians and the effects of visuals depicting feminine stereotypes. A multivariate multiple regression model for men politicians including the interaction of visual information and party background (Table 1, Model 2) showed no statistically significant interaction effect for any of the dependent variables. The same was true for women politicians (Table 2, Model 2).

Results furthermore indicate a relationship between evaluations and party affiliation. The green politicians were perceived as more favorable (men: $b = 2.86$, $p < .001$, women: $b = 2.00$, $p < .001$), warm (men: $b = 0.86$, $p < .001$, women: $b = 0.87$, $p < .001$), and better suited for feminine issues (men: $b = 0.97$, $p < .001$, women: $b = 0.73$, $p < .001$) than politicians from the far-right AfD. The Green politician Robert Habeck was also perceived as more competent ($b = 0.84$, $p < .001$) than the AfD politician Tino Chrupalla. Overall, party background had the strongest effects on the evaluation of the politicians in our models; the strongest effect was found on the evaluation of favorability (Cohen's $d = 1.02$ for men and $d = 0.63$ for women politicians). Moreover, we observed some differences regarding participants' profile and the evaluation of the politicians. There was no statistically significant relationship between participants' gender and the evaluation of the two men candidates, but women participants evaluated women politicians' competency for stereotypical masculine issues slightly higher than men participants ($b = 0.36$, $p = .019$, Cohen's $d = 0.24$). Moreover, the more participants identified themselves as politically right, the higher were the ratings of men—but not women—politicians' issue competency (masculine: $b = 0.08$, $p = .039$, feminine: $b = 0.09$, $p = .015$), warmth ($b = 0.10$, $p = .009$), and favorability ($b = 0.19$, $p = .024$). Effects were, however, very small (Cohen's $d = 0.02$).

Discussion Study 1

We hypothesized that counter-stereotypical visual information activates additional evaluations to those inferred from a politician's gender and thus beneficially influences the evaluation of politicians, whereas gender stereotypical information does not. However, Study 1 provides only marginal support for our assumptions. It appears that the two women candidates in our sample are not influenced by their visual communication, while the men only experience negative effects, if any. Thus, it was not possible to clearly replicate the findings of the original study in our adapted design in a real-world context.

We assume that participants hold prior attitudes toward the politicians that influence the effect of visual information. Whether a visual strategy activates additional associations when evaluating a politician may depend on what perception voters already have of that politician. For example, if voters perceive a women politician as rather stereotypical masculine–that is, competence-related evaluations are already activated–then visual information displaying masculine stereotypes should have no additional effect in the activation network. Against our theoretical background, we suggest that the spreading activation network postulated by the parallel-constraint-satisfaction theory of impression formation (Kunda & Thagard, 1996) includes not only gender stereotypical associations, but additional attitudes. Thus, Study 2 that aimed to replicate Study 1 outside an election context will also take prior attitudes into consideration when re-examining the effects of visual campaign strategies on candidates' evaluations.

Study 2

Study 2 replicates the study outside of an election context and additionally considers participants' prior attitudes toward the politicians to explore findings from Study 1 that were not in line with our theoretical assumptions. Building on the discussed considerations and findings of Study 1, we adapted our hypotheses and research questions to consider the moderating role of prior attitudes.

*H*5: Masculine visuals will not affect evaluations of men politicians among participants who view the politicians as stereotypically masculine.
*H*6: Masculine visuals will have a positive effect on evaluation of (*H6*a) issue competency and (*H*6b) character traits of women politicians *among participants who view the politicians as stereotypically feminine.*
*H*7: Masculine visuals will have a negative effect on evaluation of (*H*7a) electoral viability and (*H*7b) favorability for women politicians *among participants who view the politicians as stereotypically feminine.*
*RQ*4: How do gender stereotypical attitudes influence the effect of feminine visuals on the evaluation of issue competency and character traits of women and men politicians?
*RQ*5: How do gender stereotypical attitudes influence the effect of feminine visuals on the evaluation of electoral viability and favorability of women and men politicians?

Method Study 2

Study 2 is a direct replication of Study 1 that is extended by an analysis of the effects of prior attitudes. Stimulus material and procedure were exactly the same. The adapted hypotheses were preregistered: https://osf.io/cemnr.

Recruiting and Participants

Sample sizes and recruiting procedure were comparable to those in Study 1.[8] A total of 1,114 Clickworker participants completed the survey between September 16 and October 10, 2022, about one year after data collection for Study 1. We removed 51 participants due to extensive missing answers or rapid questionnaire completion (Leiner, 2019). The final sample consisted of $N = 1{,}058$ participants aged 18 to 72 ($M = 35.96$, $SD = 11.35$), highly educated (39% had a university degree), and balanced regarding gender (53% men)[9] and political orientation (1 = "left," 11 = "right," $M = 5.37$, $SD = 2.02$). The sample did not differ significantly from the first study in any of these categories.

Procedure

The procedure was the same as in the first study. No systematic differences were detected for age, $H(11) = 17.79$, $p = .087$; gender, Cramér's $V = .10$, $p = .429$; education, Cramér's $V = .10$, $p = .131$; or political orientation, $H(11) = 12.40$, $p = .334$, indicating a successful randomization.

Measures

Evaluation of competence for stereotypical masculine ($\alpha = .89$, $M = 3.59$, $SD = 1.60$) and feminine issues ($\alpha = .91$, $M = 3.55$, $SD = 1.51$), evaluation of competent ($\alpha = .93$, $M = 4.07$, $SD = 1.53$) and warm ($\alpha = .90$, $M = 3.83$, $SD = 1.48$) character traits, electoral viability ($M = 7.32$, $SD = 2.96$), favorability ($M = 5.02$, $SD = 3.38$), and participants' political orientation ($M = 5.37$, $SD = 2.02$) were measured as in Study 1. Figure F1 on OSF displays changes in the dependent variables between the survey dates by politician.

Prior Attitudes Toward Politicians. We incorporated a composite measure indicating whether participants perceive a politician as rather stereotypical feminine or masculine (Bauer, 2020; Krupnikov & Bauer, 2014; Rudman et al., 2001). Prior attitudes were measured before treatment but after randomization to ensure that respondents reported their prior attitudes toward the politician for whom they subsequently saw the visual stimuli. We included four items corresponding to stereotypical masculine traits on a seven-point semantic differential: weak–strong, lenient–harsh, submissive–dominant, and soft–hard (Bauer, 2020; Rudman et al., 2001). Strong, harsh, hard, and dominant align with masculine stereotypes (high competence), whereas weak, lenient, soft, and submissive correspond with feminine stereotypes (low competence). Sim-

ilarly, we measured four items related to stereotypical feminine traits: warm–cold, supportive–detached, trusting–skeptical, and caring–distant (Rudman et al., 2001). Warm, supportive, trusting, and caring represent feminine stereotypes (high warmth), the opposite poles masculine stereotypes (low warmth). We then calculated mean indices for both set of traits for participants who rated the politicians on at least two warmth and/or two competence items (warmth: $\alpha = .93$, $M = 3.54$, $SD = 1.62$; competence: $\alpha = .74$, $M = 4.65$, $SD = 1.20$).

Data Analysis

First, we repeated the analysis from Study 1 and conducted multivariate multiple regression separate analyses for men and women politicians comparing their evaluations with the control group. We included participants' gender and political orientation as control variables.[10] Next, we included prior attitudes toward the politicians as control variables and, in a second step, their interaction with the visual information. We calculated robust standard errors (*HC*3) for all models and applied p-value corrections according to the procedure as described by Benjamini et al. (2009) for all regression coefficients to account for multiple comparisons.

Results Study 2

Replicating the findings of Study 1 outside of the election context, the mean evaluation of politicians' competence for stereotypical masculine issues is higher among participants who saw visuals displaying masculine stereotypes than those who saw visuals displaying feminine stereotypes. The reverse is true for stereotypical feminine issues (Table T5 on OSF). Moreover, visuals depicting masculine stereotypes correspond with higher mean ratings of competence traits.

Visuals Depicting Masculine Stereotypes

Consistent with Study 1, but contradicting *H*1, there was insufficient evidence to reject meaningful effects of stereotypical masculine visuals on the evaluation of men politicians on all dependent variables because the confidence intervals consistently included the SESOIs[11] (issues (stereotypical masculine: $b = 0.02$, $p_{adjusted} = .944$, 97.6% *CI* [−0.35, 0.39], stereotypical feminine: $b = -0.08$, == .821, 97.6% *CI* [−0.42, 0.27]), character traits (competence: $b = 0.07$, $p_{adjusted} = .826$, 97.6% *CI* [−0.28, 0.42], warmth: $b = 0.06$, $p_{adjusted} = .840$, 97.6% *CI* [−0.26, 0.38]), electoral viability: $b = 0.11$, $p_{adjusted} = .869$, 97.6% *CI* [−0.60, 0.82], favorability: $b = -0.42$, $p_{adjusted} = .437$, 97.6% *CI* [−1.19, 0.36]). Thus, consistent with Study 1, there is insufficient evidence to support *H*1.

Findings on women politicians are also broadly in line with Study 1 (Table 4, Model 1). Overall, visuals displaying masculine stereotypes hardly affected the evaluation of the two women in our experiment. We found one statistically significant effect that we did not observe in Study 1: Participants who saw images with masculine stereotypes

evaluated the women politicians, on average, 0.46 units lower regarding their qualification for stereotypical feminine issues ($b=-.46$, $p_{adjusted}=.021$) compared to the control group, which corresponds to a relatively small effect (Cohen's $d=-0.29$).[12] There was no statistically significant effect on masculine issues ($b=-0.25$, $p_{adjusted}=.342$), character traits (competence: $b=-0.31$, $p_{adjusted}=.219$, warmth: $b=$-0.28, $p_{adjusted}=.202$), electoral viability ($b=0.02$, $p_{adjusted}=.968$), and favorability ($b=-0.60$, $p_{adjusted}=.266$). Thus, *H*2 and *H*3 are again rejected.

Visuals Depicting Feminine Stereotypes

The findings for visuals displaying feminine stereotypes show a similar pattern to Study 1, with one exception: The statistically significant negative effect of visuals on the evaluation of proficiency for stereotypical masculine topics of men politicians observed in Study 1 disappeared. There was insufficient evidence that evaluations of men politicians (Table 3, Model 1) were affected by feminine visuals (masculine issues: $b=-0.40$, $p_{adjusted}=.050$, feminine issues: $b=0.12$, $p_{adjusted}=.664$; character traits, competence: $b=$-0.22, $p_{adjusted}=.322$, warmth: $b=0.09$, $p_{adjusted}=.740$) electoral viability: $b=-0.32$, $p_{adjusted}=.548$; favorability: $b=-0.65$, $p_{adjusted}=.150$). Similarly, the only statistically significant effect on evaluation of women politicians (Table 4, Model 1) was a negative effect that wasn't observed in Study 1: They were, on average, rated 0.45 units lower regarding competence traits among participants who saw visuals with feminine stereotypes (compared to those in the control group; $b=-.45$, $p_{adjusted}=.033$).

Overall, there was a consistent pattern in Study 2 compared to Study 1. Politicians' evaluations were mainly unaffected by visual information. However, we observed some differences: In Study 2, it is the two men candidates in our sample are not influenced by their visual communication, while the women only experience negative effects, if any. Those differences presumably resulted from changes in the political context over time and the new roles of the Green politicians Annalena Baerbock and Robert Habeck as members of the newly formed government. The advantage of Green politicians identified in Study 1 was now only apparent for warm traits (men: $b=0.39$, $p_{adjusted}=.006$, women: $b=0.66$, $p_{adjusted}<.001$) and favorability (men: $b=1.68$, $p_{adjusted}<.001$, women: $b=2.03$, $p_{adjusted}<.001$), and effect sizes were generally smaller than in Study 1 (Table T9 in OSF). The finding from Study 1 that Green politicians are rated better than AfD politicians with regard to stereotypically feminine issues was no longer observed in Study 2.

The statistically significant relationship between participants' gender and the evaluation of women politicians remained constant. Women participants rated their proficiency for masculine issues ($b=0.49$, $p_{adjusted}=.004$) and–new in Study 2–feminine issues ($b=0.46$, $p_{adjusted}=.004$) higher than men participants. We also found differences regarding participants' political orientation. In contrast to the election context in Study 1, results show that subjects further to the right rated women, not men, politicians somewhat higher in terms of issues (masculine: $b=0.11$, $p_{adjusted}=.035$, feminine: $b=0.14$, $p_{adjusted}=.001$), warm traits ($b=0.12$, $p_{adjusted}=.006$), and favorability ($b=0.25$, $p_{adjusted}=.007$).

Table 3. Multiple Multivariate Regression Estimating Men Politicians' Issue Competency, Character Traits, Electoral Viability, and Favorability Evaluation, from Visual Information (Feminine/Masculine/Neutral), Party Background, and Participants' Gender, Political Orientation, and the Interaction of Visual Information and Prior Attitudes (Study 2).

	Masculine issues			Feminine issues			Competence traits			Warmth traits			Electoral viability			Favorability		
Model 1																		
Variable	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$
Constant	3.72	0.27	.000	3.15	0.25	.000	3.98	0.25	.000	3.30	0.23	.000	7.13	0.49	.000	4.64	0.51	.000
Feminine visual	−0.40	0.16	.050	0.12	0.16	.664	−0.22	0.15	.322	0.09	0.14	.740	−0.32	0.33	.548	−0.65	0.33	.150
Masculine visual	0.02	0.16	.944	−0.08	0.15	.821	0.07	0.15	.826	0.06	0.14	.840	0.11	0.31	.869	−0.42	0.34	.437
Green party	−0.25	0.13	.175	0.14	0.13	.510	0.17	0.12	.370	0.39	0.12	.006	0.50	0.26	.175	1.68	0.27	.000
Women participant	0.01	0.13	.951	0.10	0.13	.657	0.11	0.12	.607	−0.02	0.12	.940	−0.19	0.27	.687	−0.05	0.27	.940
Participants' political orientation	0.01	0.04	.940	0.04	0.04	.485	−0.02	0.04	.842	0.04	0.03	.523	−0.07	0.07	.536	−0.03	0.08	.846
Adjusted R^2		0.01			0.00			0.00			0.01			0.00			0.07	
Model 2																		
Constant	−0.20	0.40	.624	0.36	0.39	.357	1.23	0.52	.017	0.75	0.50	.135	1.58	1.26	.211	−2.52	0.94	.007
Feminine visual	0.07	0.46	.940	−0.46	0.46	.548	−0.90	0.56	.280	−0.28	0.61	.826	1.30	1.69	.657	−0.49	1.02	.825
Masculine visual	0.56	0.50	.484	−0.38	0.47	.657	0.16	0.66	.926	0.44	0.63	.687	1.01	1.54	.710	-1.10	1.12	.548
Warm prior attitudes	0.73	0.06	.003	0.73	0.05	.000	0.52	0.07	.000	0.46	0.06	.000	0.75	0.16	.000	1.68	0.09	.000
Competent prior attitudes	0.29	0.08	.003	0.05	0.07	.665	0.19	0.09	.140	0.21	0.09	.093	0.64	0.23	.028	0.32	0.17	.175
Green party	−0.70	0.12	.000	−0.33	0.11	.016	−0.17	0.14	.415	−0.03	0.13	.922	0.13	0.33	.857	0.31	0.23	.370
Women participant	0.09	0.10	.609	0.16	0.10	.278	0.14	0.11	.437	0.02	0.11	.940	−0.08	0.26	.888	0.23	0.18	.415
Participants' political orientation	0.03	0.03	.482	0.06	0.02	.089	0.01	0.03	.940	0.05	0.02	.111	−0.05	0.06	.657	−0.01	0.04	.940
Feminine visual*warm attitudes	−0.04	0.08	.778	−0.11	0.07	.280	0.07	0.09	.657	0.17	0.08	.111	0.03	0.22	.940	−0.03	0.12	.917
Masculine visual*warm attitudes	−0.14	0.08	.249	−0.15	0.07	.148	−0.07	0.10	.710	0.03	0.09	.869	−0.16	0.21	.657	−0.05	0.12	.842
Feminine visual*competent attitudes	−0.02	0.11	.940	0.26	0.10	.035	0.15	0.11	.415	−0.01	0.12	.968	−0.34	0.32	.517	0.10	0.21	.823
Masculine visual*competent attitudes	0.02	0.12	.940	0.21	0.10	.116	0.05	0.13	.851	−0.09	0.12	.657	−0.02	0.29	.957	0.25	0.23	.489
Adjusted R^2		0.48			0.47			0.34			0.36			0.17			0.65	

Note. Analysis with robust standard errors (HC3) and adjusted *p*-values (Benjamini-Hochberg-procedure) for regression coefficients. Model 1: $N = 528$; masculine issues: $F(5,522) = 2.6$, $p = .025$; feminine issues: $F(5,522) = 1.01$, $p = .411$; competence traits: $F(5,522) = 1.38$, $p = .229$; warmth traits: $F(5,522) = 2.49$, $p = .031$; electoral viability: $F(5,522) = 1.47$, $p = .199$; favorability: $F(5,522) = 8.62$, $p < .001$. Model 2: $N = 485$; masculine issues: $F(11,473) = 42.26$, $p < 001$; feminine issues: $F(11,473) = 39.24$, $p < .001$; competence traits: $F(11,473) = 23.32$, $p < .001$; warmth traits: $F(11,473) = 25.27$, $p < .001$; electoral viability: $F(11,473) = 9.69$, $p < .001$; favorability: $F(11,473) = 82.57$, $p < .001$.

Table 4. Multiple Multivariate Regression Estimating Women Politicians' Issue Competency, Character Traits, Electoral Viability, and Favorability Evaluation, from Visual Information (Feminine/Masculine/Neutral), Party Background, and Participants' Gender, Political Orientation, and the Interaction of Visual Information and Prior Attitudes (Study 2).

	Masculine issues			Feminine issues			Competence traits			Warmth traits			Electoral viability			Favorability		
Model 1																		
Variable	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$	Coeff.	*SE*	$p_{adjusted}$
Constant	3.02	0.28	.000	2.66	0.26	.000	3.82	0.27	.000	2.98	0.25	.000	8.41	0.46	.000	2.86	0.52	.000
Feminine visual	−0.43	0.18	.063	−0.16	0.17	.552	−0.45	0.17	.033	−0.04	0.16	.925	0.03	0.29	.954	−0.63	0.36	.215
Masculine visual	−0.25	0.18	.342	−0.46	0.16	.021	−0.31	0.18	.219	−0.28	0.16	.202	0.02	0.32	.968	−0.60	0.36	.266
Green party	0.12	0.15	.657	0.28	0.14	.126	0.07	0.14	.812	0.66	0.13	.000	−0.27	0.25	.510	2.03	0.29	.000
Women participant	0.49	0.15	.004	0.46	0.14	.004	0.29	0.14	.138	0.17	0.13	.437	−0.12	0.25	.812	0.60	0.29	.135
Participants' political orientation	0.11	0.04	.035	0.14	0.04	.001	0.07	0.04	.172	0.12	0.04	.006	−0.08	0.07	.458	0.25	0.08	.007
Adjusted R^2		0.04			0.06			0.02			0.07			0.00			0.11	
Model 2																		
Constant	−0.98	0.45	.031	−0.24	0.40	.556	0.00	0.51	.996	−0.19	0.44	.664	2.92	1.33	.029	−5.68	0.86	.000
Feminine visual	0.25	0.48	.812	0.45	0.51	.605	0.16	0.66	.926	0.93	0.64	.327	1.14	1.48	.657	2.07	1.05	.150
Masculine visual	0.25	0.55	.834	0.74	0.55	.386	0.08	0.65	.944	0.97	0.61	.280	0.34	1.67	.940	1.77	1.14	.280
Warm prior attitudes	0.72	0.05	.000	0.73	0.05	.000	0.54	0.06	.000	0.60	0.06	.000	0.47	0.13	.001	1.72	0.08	.000
Competent prior attitudes	0.48	0.08	.000	0.26	0.07	.003	0.51	0.08	.000	0.36	0.07	.000	0.87	0.21	.000	0.96	0.15	.000
Green party	−0.45	0.13	.005	−0.50	0.13	.001	−0.24	0.15	.280	0.12	0.14	.603	−0.26	0.32	.657	0.36	0.23	.280
Women participant	0.16	0.10	.313	0.24	0.10	.078	0.01	0.12	.944	−0.03	0.11	.900	−0.51	0.23	.093	−0.02	0.17	.944
Participants' political orientation	0.01	0.03	.843	0.04	0.03	.280	0.01	0.03	.885	0.05	0.03	.280	−0.13	0.07	.150	0.00	0.04	.966
Feminine visual*warm attitudes	0.08	0.07	.482	0.01	0.07	.940	0.02	0.09	.926	−0.06	0.09	.660	0.08	0.16	.812	−0.02	0.11	.940
Masculine visual*warm attitudes	−0.05	0.08	.781	−0.12	0.08	.280	0.03	0.09	.888	−0.05	0.08	.757	0.12	0.18	.687	0.02	0.11	.940
Feminine visual*competent attitudes	−0.16	0.10	.280	−0.10	0.10	.523	−0.11	0.11	.548	−0.12	0.11	.484	−0.25	0.25	.545	−0.46	0.19	.068
Masculine visual*competent attitudes	−0.03	0.11	.885	−0.13	0.10	.437	−0.07	0.11	.706	−0.19	0.10	.180	−0.12	0.28	.842	−0.41	0.20	.140
Adjusted R^2		0.57			0.53			0.40			0.40			0.17			0.71	

Note. Analysis with robust standard errors (HC3) and adjusted *p*-values (Benjamini-Hochberg-procedure) for regression coefficients. Model 1: $N = 529$; masculine issues: $F(5,523) = 5.11$, $p < .001$; feminine issues: $F(5,523) = .83$, $p < .001$; competence traits: $F(5,523) = 3.19$, $p = .008$; warmth traits: $F(5,523) = 8.41$, $p < .001$; electoral viability: $F(5,523) = 0.58$, $p = .712$; favorability: $F(5,523) = 13.77$, $p < .001$. Model 2: $N = 514$; masculine issues: $F(11,502) = 62.53$, $p < .001$; feminine issues: $F(11,502) = 53.41$, $p < .001$; competence traits: $F(11,502) = 32.39$, $p < .001$; warmth traits: $F(11,502) = 32.05$, $p < .001$; electoral viability: $F(11,502) = 10.77$, $p < .001$; favorability: $F(11,502) = 115.3$, $p < .001$.

The Role of Prior Attitudes

Next, we examined the role of prior attitudes on the impact of visual information on voters' evaluations of the politicians. Looking at the descriptive statistics (Table T6 in OSF), we can see that participants rate politicians similarly on the warmth dimension, irrespective of their gender (women: $M = 3.52$, $SD = 1.69$; man: $M = 3.56$, $SD = 1.55$), but the two women politicians receive slightly higher ratings regarding competence ($M = 4.86$, $SD = 1.21$) than the men ($M = 4.42$, $SD = 1.14$). This suggests that evaluations of well-known candidates do not necessary adhere to gender stereotypical evaluations, which might, in turn, have an influence on effects of gender stereotypical communication. To better understand the relationship of prior attitudes and politicians' evaluations, we introduced participants' prior attitudes regarding politicians' warmth and competence as control variables in our models. Overall, and in line with our conclusion after Study 1, participants' prior attitudes toward the politicians substantially affect their evaluation of the politicians (Tables T10 and T11 on OSF). The warmer and more competent the politicians were perceived, the more positive was the evaluation for all dependent variables. Moreover, there are no statistically significant effects of the visual stimuli on any of our dependent variables after controlling for prior attitudes.

For our adapted hypotheses, the interactions between visual information and prior attitudes are central, which we introduced into our models in a next step. As can be seen in Tables 3 and 4, we find no statistically significant interaction effects of visuals depicting masculine stereotypes and prior attitudes. Thus, *H*5, *H*6, *H*7 were rejected. Regarding *RQ*4 and *RQ*5, we observed an interaction between feminine visuals and prior attitudes ($b = 0.26$, $p_{adjusted} = .035$). The positive effect of visuals displaying feminine stereotypes on men politicians' evaluation of stereotypical feminine issue competency increases with higher prior evaluations of politicians' competence (Figure 1), supporting the assumption that these visuals affect men politicians who are associated with masculine stereotypical characteristics.

General Discussion

This project aimed to answer the research question to what extent gender stereotypical and counter-stereotypical visual information affects the evaluation of politicians. We designed a research program consisting of two pre-registered experimental studies. Study 1 presents a conceptual replication and extension of an online experiment by Bauer and Carpinella (2018). We examined how visuals depicting feminine and masculine stereotypes affect the evaluation of real German politicians from the Bündnis 90/Die Grünen and the far-right populist party Alternative für Deutschland [Alternative for Germany], AfD, during a campaign period. Study 2 replicated Study 1 outside of the election context.

Learnings From Replication in a Real-World Context

Results from the original study could hardly be replicated in our real-world context. Contradicting our expectations and the original study, there was insufficient evidence

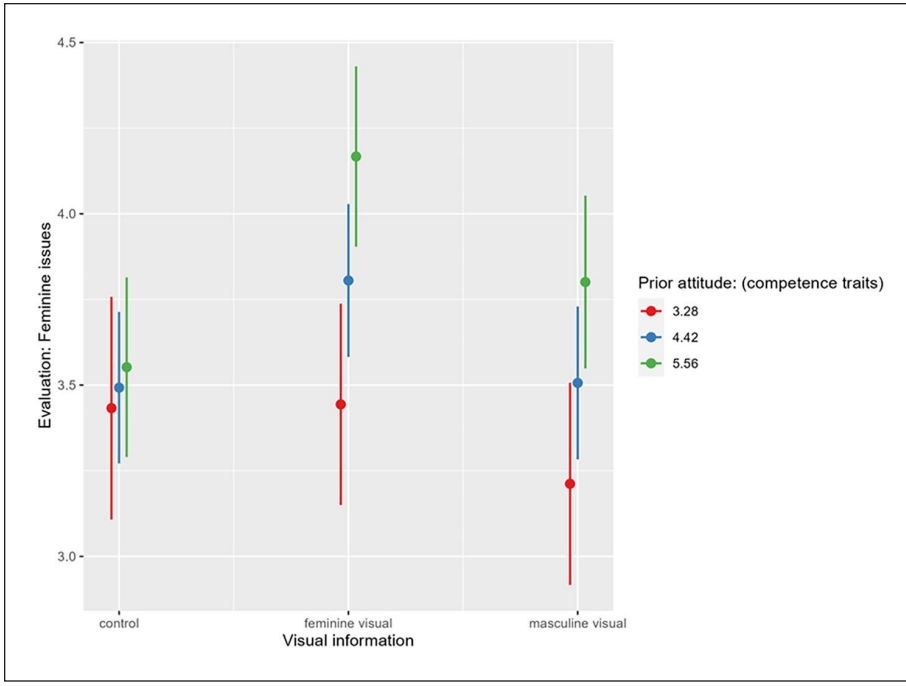

Figure 1. Plot depicting the interaction effect of visual information and prior attitudes related to politicians' competence on evaluation of men politicians' competence for feminine issues.

to conclude that men politicians were unaffected by stereotypical masculine visual communication. Moreover, in contrast to the original study, we found that feminine visual information had a negative effect on the evaluation of men politicians' competency for stereotypical masculine issues. Although effect sizes are small, the finding is quite remarkable. It means that the evaluation of two well-known politicians can, on average, be decreased by almost half a point on a 7-point-scale through visuals. This suggests that men candidates should think carefully about how they present themselves online and for which topics they wish to be considered competent.

Women politicians were unaffected by visual information representing feminine or masculine stereotypes. The lack of effect of the stereotypically masculine visuals is particularly astonishing, as these represent counter-stereotypical information about women candidates that violates stereotypical expectations of how their gender should behave (Rudman & Glick, 2001). However, this finding is in line with more recent studies (e.g., Bast et al., 2022) which refute the assumptions of the double bind (Jamieson, 1995) that women are punished for counter-stereotypical behavior. Moreover, we were not able to replicate results regarding stronger backlash effects for women politicians of center-left parties. This contradicts the assumption that an overlap of gender and party stereotypes means that women from

left-wing parties are particularly affected by the negative consequences of counter-stereotypical behavior.

Context as Key to Non-replicability

Reflecting on the diverging results, we suspect 'context', more specifically, three types of context (real-world, country, and time passed since the original study) as the central reasons why the findings from the original study did not replicate. First, the most striking difference between the original and our modified design is that we used well-known instead of fictional political candidates to test the findings in a realistic setting. We interpret our deviating results to the extent that gender stereotypes play a subordinate role in their evaluation as voters already hold prior attitudes toward them. Our expectations for Study 1 build on the parallel-constraint-satisfaction theory of impression formation (Kunda & Thagard, 1996), which posits that stereotypes as well as individual information jointly affect the evaluation of individuals and either activate or constrain certain associations. For example, we assumed that when voters observe a man politician, associations of stereotypically masculine (competence-related) characteristics and issues are activated. Visual representations of masculine stereotypes activate similar associations and thus should not influence the perception of men politicians. Based on the parallel-constraint-theory and on the original study, we further assumed that visual information influences the evaluation of candidates when they present new or counter-stereotypical information. However, if well-known politicians are not perceived in terms of these stereotypical attributions, i.e., a man politician being perceived with warm (stereotypically feminine) attributes, the premise does not hold true. These results tie in with research on effects of gender stereotypical visual communication on evaluations of real-world politicians (Lindholm et al., 2020), indicating that voters do not necessarily draw on gender stereotypes. Rather, individual information seems to be of importance. In the framework of the parallel-constraint-satisfaction theory of impression formation, this means that certain politicians activate associations that do not necessarily conform to gender stereotypes, due to further information that voters hold about that politician and that constrain these associations.

Second, against the strong demand for equal opportunities for all genders, as well as the increasing number of women in politics worldwide, stereotypical feminine role perceptions have become weaker in the last couple of years (e.g., Eagly et al., 2020). Even without exact information about the conduction of the original study, we can well assume that there are at least 5 years between the data collections. It can thus well be the case that attitudes changes toward gender roles have contributed to the different results observed.

Third, following up on the previous argument, research suggests that gender stereotypes can develop differently depending on the development of social roles in different countries (Wilde & Diekman, 2005). Consequently, there could be differences in this respect between the US and Germany.

Temporal Stability of the Findings of Study 1

Study 2 was designed to explore the impact of prior attitudes and replicated Study 1 outside of election time. Re-running the same analyses, findings of Study 1 did broadly but not fully replicate in Study 2. These findings provide further evidence that prior attitudes and context influence the impact of visual information on the evaluation of politicians. If attitudes or context change, effects of visual information should change too. And indeed, we find that the perception of the politicians in our sample is different in Study 2 than in Study 1. In Study 1, both candidates of the Green Party were rated higher on their competence on feminine issues and warm characteristics than far-right AfD candidates. In Study 2, the difference was no longer evident. This is likely due to the changes in political roles after the general election. The Green politicians then held high positions in the German government in stereotypical masculine ministries. Annalena Baerbock became Minister of Foreign Affairs, Robert Habeck became Vice-Chancellor of Germany and *Federal Minister for Economic Affairs and Climate Protection*. Against the background of Russia's invasion of Ukraine and the resulting energy crisis in Europe, both politicians were frequently discussed in public discourse. They also had to take decisions against core "Green" positions of climate protection because maneuvering through the energy crisis was a more pressing issue. However, they continued to be rated more warmly than AfD politicians, suggesting that character evaluations are more stable than issue evaluations.

The Role of Prior Attitudes

Further, Study 2 took up the conclusion from Study 1 that voters' prior attitudes toward the real-world politicians constrained gender stereotypical evaluations. We hypothesized that whether (counter) gender stereotypical visuals activate additional evaluations about a politician depends on whether voters already associate him or her with stereotypical feminine or masculine characteristics. However, these expectations were only weakly confirmed. For the most part, we did not find interaction effects of prior attitudes and visual communication on the evaluation of the politicians, with one exception: The higher respondents rated men politicians regarding competence related–stereotypically masculine–traits prior to treatment, the stronger the positive effect of visuals displaying feminine stereotypes on men politicians' evaluation of stereotypical feminine issue competency. Although this isolated finding should not be overestimated, it is in line with the direction suggested by our hypotheses: Visual information is particularly effective when it contradicts the already prevailing perceptions of a politician. In this case, stereotypically feminine visual information has a particular effect among those who perceive men politicians as stereotypically masculine. This suggests that research on effects of gender stereotypical communication should take prior attitudes into account–especially with well-known politicians, whose perception does not necessarily follow gender stereotypes.

Limitations and Suggestions for Future Research

Our project comes with limitations that open avenues for future research. First, our stimulus material has limitations that affect generalizability. One is that we presented the gender-stereotyped visual information in the background of the social media profile, rather than in images of the politicians themselves. Although this is no different from the original study, it is conceivable that gender-stereotyped images, possibly showing the politicians themselves, could have stronger effects on their evaluation. Moreover, although our study utilized similar pictures as the original study to facilitate comparisons, when it comes to generalizing our results, the valence of gender stereotypical visuals could have an influence. As Bauer (2017) argues, negative information (e.g., expressions of anger) that is inconsistent with feminine stereotypes might have a stronger effect on the evaluation of women politicians than positive information (e.g., expressions of competence). Therefore, the results may not be generalizable for all gender stereotypical images. Furthermore, research on multimodal framing effects suggests that "visuals should be particularly effective at making associations more accessible when considering a political issue, whereas text allows individuals to determine what is applicable to their pre-existing ideas" (Powell et al., 2019, p. 574). Thus, it could be assumed that (counter) gender stereotypical visuals–in contrast to text–do not provide sufficient arguments to change consolidated opinions toward well-known politicians. Since we studied visual information in isolation to stay close to the original study`s design, future studies should take an integrative approach (Coleman, 2006) and test this assumption by comparing effects of visual and verbal (counter) gender stereotypical information.

Second, we analyzed effects on a one-time/singular exposure to (counter) gender stereotypical images. Notably, we found that visual information has largely no effect on the evaluation of real politicians once prior attitudes of voters are controlled for. It could thus be argued that evaluations of well-known politicians can hardly be influenced by one-time confrontation with certain visual communication styles. While this contradicts (sparse) previous experimental research which found that even singular exposure to gender stereotypical visual communication influences voters' perceptions of well-known Finnish party leaders (Lindholm et al., 2020) or German politicians of the populist far-right (Bast et al., 2022), research has shown that media effects are stronger when communicated over the long term and cumulatively. Thus, future research should test whether multiple exposure leads to different results. For example, a dose-response account (Arendt, 2017) would allow for a more nuanced examination of how individuals' perceptions evolve over time in response to repeated exposures to gender stereotypical visual stimuli.

Third, our stimulus material focused on the four well-known party leaders of the AfD and the Greens. Their level of recognition and popularity might have overshadowed the effects of visual communication. Concluding that visual information is not relevant for political communication would however be wrong. We assume that visual information becomes particularly relevant in two cases: first, with less well-known (young or simply new to the field) politicians who are still in the process of building

their image. And second, visuals can support impression formation when a politician enters a new area of expertise such as taking over a new ministry or the party/politician aiming to occupy a new field. Future studies should explore these assumptions in more depth and compare the impact of visual communication on well-known and less well-known politicians.

Lastly, our sample was somewhat limited. Although relatively balanced regarding education, age, and political orientation, it only reflects respondents who identify as men or women. We had to exclude other participants to be able to use gender as a control variable and therefore required a usable group size. Since gender identity can affect attitudes related to gender issues (Toller et al., 2004), findings may not generalize to persons with non-binary identities.

Conclusion

Our study contributes to the scarce empirical evidence and the theoretical development in visual political communication. We show that context is the key to impression formation and that established theories in the field need to be adapted accordingly. The premise that stereotypes are the default evaluation base for impression formation should be questioned. Instead, researchers should think more about how and under what conditions stereotypes and individuating information, such as observed behavior of a politician in a newly acquired role or opposing stereotypical behavior, jointly influence associations that voters attach to a politician. These constitute prior attitudes, which in turn seem to influence the effects of gender stereotypical communication.

Our study also underscores the importance of replicating findings in multiple (real-world) contexts to identify general patterns. We do however also reflect on our design choices critically. The conceptual replication aimed for a simple transfer of a fictional study to a current, real-world context, but this resulted in many considered (multiparty systems, role of X in political communication) and also unexpected changes (role of prior attitudes). The study produced many valuable insights, but incremental changes are needed to determine cause-effect relationships. What is essentially required for such replication endeavors are open materials and transparent procedures and data that kick-start future research. We aim to set a good example with the current project in line with the open science movement.

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Open Practice Statement

The data that support the findings of this study are openly available in the Open Science Framework at https://osf.io/wyhz6/.

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Notes

1. This also covers possible interaction effects (see Study 2); detailed information on the calculated effect sizes can be found on OSF.
2. Clickworker is a German crowdsourcing platform offering a reliable online access panel for experimental surveys (Lutz, 2015). Participants were compensated according to the German minimum wage.
3. We had to exclude $N=4$ participants who did not identify as men or women as participants' gender served as a control variable and the size of this group was too small to be separately considered in the analysis.
4. Results of Analyses of Variances (ANOVA; Tables T2 and T3 on OSF) for the comparison of effects of visual information on evaluation of politicians without control variables correspond to the findings from the full models.
5. Effect sizes for all coefficients can be found in Table T4 on OSF.
6. CIs were constructed at the 100(1 - 2α)% confidence level (Alter & Counsell, 2023) for an adjusted alpha of .009 based on the procedure described by Benjamini and Hochberg (1995). The adjusted CI were added during the review process and, thus, not preregistered.
7. We determined the smallest effect size of interest (SESOI) based on the original study: The smallest statistically significant effect of visual information reported by the original study corresponds to a 5.8% change in politicians' evaluations. Since we expect effects for real, well-known candidates to be considerably smaller, we decided to set the SESOI at one percent of the maximum possible score for each dependent variable. Thus, the SESOI was set at $b=$-0.07/0.07 for evaluation of issue competencies and character traits (scale from 1 to 7) and at $b=-0.11/0.11$ for evaluation of electoral viability and favourability (scale from 1 to 11; see Alter and Counsell (2023, p. 63).
8. Information on how we calculated effect sizes can be found on OSF.
9. We excluded $N=5$ participants who did not identify as men or women as participants 'gender is included as a control variable in our models and the size of this group was too small to be separately considered in the analysis.
10. Results of Analyses of Variances (ANOVA) for the comparison of effects of visual information on evaluation of politicians without control variables can be found on OSF (Tables T7 and T8). They show similar patterns as results from the full models, with the exception that the significant (but not robust) effects of visual information on evaluation of women politicians' competence traits and competence for feminine issues are not evident in the ANOVAs after *p*-value adjustment.

11. As in Study 1, CIs were constructed at the 100(1 - 2α)% confidence level (Alter & Counsell, 2023) for an adjusted alpha of .012 based on the procedure described by Benjamini and Hochberg (1995). The adjusted CI were added during the review process and, thus, not preregistered. The SESOI was set at $b = -0.07/0.07$ for evaluation of issue competencies and character traits (scale from 1 to 7) and at $b = -0.11/0.11$ for evaluation of electoral viability and favorability (scale from 1 to 11; see Alter and Counsell (2023, p. 63).
12. Effect sizes for all coefficients can be found in Table T9 on OSF.

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