The Role of Gendered Verbal and Nonverbal Cues in Political Campaigns

by

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Declaration of Authorship

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Abstract

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Political scientists have long been invested in studying the role of gender in electoral politics. However, a large majority of work has focused on gendered verbal cues, with gendered nonverbal cues often taking a backseat, partially due to the difficulty of studying those signals. This thesis aims to address some of this imbalance and applies recent methodological advances in analysing visual and voice data to show that gendered nonverbal cues matter for elite and voter perceptions. Through one observational study, one visual survey experiment and two field experiments, I revisit candidate-voter interactions through a gendered lens. First, I relax the assumption that nonverbal cues are secondary to verbal messages by investigating how U.S. candidates adjust their voice pitch—a physiologically gendered nonverbal signal—during town hall meetings. Using computational methods, I find that women and men candidates use different nonverbal communication styles, aligning with evolutionary psychology's findings on gender-based behaviour appeal. Second, through a novel visual conjoint experiment with AI-generated candidates, I show that gendered visual cues—facial femininity and masculinity—influence voter perceptions, which aligns with evolving gender stereotypes in politics. Lastly, I move beyond nonverbal cues to analyse the ways in which candidates effectively convey important social identities in campaigns through strategic identity priming. Based on two field experiments conducted in Germany with women candidates, I find that priming gender and place-based identities increases candidate name recognition but not vote choice. This thesis advances our understanding of how gendered cues, both verbal and nonverbal, influence political behaviour using innovative methods that contribute to future research on voter decision-making and gender dynamics in politics.

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Introduction

> *"I don't have a traditionally female way of speaking... I am quite assertive. If I didn't speak the way I do, I wouldn't have been seen as a leader. But my way of speaking may have grated on people who were not used to hearing it from a woman. It was the right way for a leader to speak. It goes against type."*[1]
>
> – Kim Campbell, *19th Prime Minister of Canada*

Compared to their men counterparts, women politicians receive more criticism for more than just their policies and leadership abilities; their entire demeanour, tone, and appearance are also examined (Van Der Pas and Aaldering, 2020). Hillary Clinton's experience in the United States, where she launched two presidential campaigns in 2008 and 2016, is an illustrative example. During her campaigns, she received criticisms about how she "talks like a man" (Jones, 2016). Closer examination also focused on her choice of pantsuits, which critics attacked as an attempt to downplay her femininity. In response to this criticism, Clinton wrote in her memoir about her strategic choice of clothing, noting that, "...I also thought it would be good to do what men politicians do and wear more or less the same thing every day. As a woman running for President, I liked the *visual cue* that I was different from the men but also familiar. A uniform was also an antidistraction technique: since there wasn't much to say or report on what I wore, maybe people would focus on what I was saying instead."[2] The 2024 U.S. presidential election is another example of how women candidates receive criticism beyond their policies. After Vice President Kamala Harris received President Joe Biden's endorsement and announcement that he would not run for reelection, she was subject to criticisms for her gender, race, appearance, and laughter. Criticisms included a website dedicated to her attire (e.g., WhatKamalaWore.com) and being nicknamed "Laffin' Kamala Harris,"

[1] Quoted in Eagly and Carli (2007, p.102) and cited in Jones (2016, p.626).
[2] "What Happened?" by Hillary Rodham Clinton (2017), quoted from page 63.

referring to her smiling while standing her ground during the 2020 Vice Presidential Debate when she got interrupted by Republican opponent Mike Pence (Washington Post 2020).[3] After her nomination as presidential candidate, Republican Tim Burchett referred to Harris as a "DEI vice president" on social media, derisively suggesting she advanced due to diversity policies (quoted in CNN, 2024).[4]

The above examples and quotes illustrate three key points. Firstly, they demonstrate that politicians understand how they act, sound and look, complementing their spoken words in their self-presentation. Secondly, the assessment of their self-presentation goes through a gendered lens. Compared to men candidates, women candidates face disproportionate scrutiny for their expression, including their words, delivery, and physical appearance. Whether Hillary Clinton wears pantsuits or Kim Campbell speaks in a non-traditional way, women candidates may strategically tailor their presentation to appear more suited for the office. Thirdly, the gendered exposure to candidates' nonverbal cues can impact voter perceptions. For instance, research shows that depictions of Hillary Clinton as more masculine are linked to lower levels of voter support (Conroy, Joesten Martin, and Nalder, 2020). This thesis addresses these issues and asks: "How are candidate preferences and elite behaviour shaped by gendered verbal and nonverbal cues?"

This is a crucial question as the rapid increase in visual campaigning -especially on social media- is changing the exposure of candidates to voters. With 51% of the world's population having access to the internet and 79% having access to TV, the visual side of politics is more important than ever in this age of information overload (Veneti, Jackson, and Lilleker, 2019). On the one hand, this increased visual exposure gives candidates more agency over how they present themselves to the public, facilitates the personification of hard-to-reach politicians, and allows voters direct engagement with politicians (Lenz and Lawson, 2011; Campbell and Cowley, 2018; Vecchiato and Munger, 2022; Boussalis, Coan, and Holman, 2022; Bernhard, 2023). On the other hand, this amplifies the visibility of cues that politicians convey to voters (López Ortega and Radojevic, 2024). For example, American voters in 1960 had different views about who won the first televised debate between John F. Kennedy and Richard Nixon. People who listened to the debate on the radio thought Nixon won, while people who watched it on TV thought Kennedy won (Boussalis and Coan, 2021, p.76). This difference demonstrates how TV images can affect voter perceptions by conveying additional cues, such as physical appearance and presentation. The following quote explains why viewers of the TV debate might have favoured Kennedy over Nixon: "Kennedy was bronzed beautifully... Nixon looked

[3] `https://www.washingtonpost.com/opinions/2020/10/08/harris-wont-stop-her-smirk-nor-should-she-its-black-womens-superpower/`. Accessed on July 26th, 2024.

[4] `https://edition.cnn.com/2024/07/23/politics/kamala-harris-burchett-dei-hire-backlash/index.html`. Accessed on July 26th, 2024.

like death" (quoted in Druckman (2003, p.563)). Apart from influencing perceptions, a voter's decision-making process is made easier with the use of cues, which are easily accessible signs or indicators that act as heuristic information or cognitive shortcuts (Mondak, 1993; Lau and Redlawsk, 2001). Cues can be verbal, meaning they convey a signal through spoken language and the written word, or nonverbal, meaning they convey any message without using words, including the voice pitch (Seiter and Weger Jr., 2020). Both verbal and nonverbal cues, e.g., party affiliation labels, demographic traits, social identities, appearance, and facial and vocal characteristics, can allow voters to link candidates with easily accessible stereotypes (Foos and Rooij, 2017). For instance, visible demographic cues can influence voters who lean towards liberal ideology to support women or Black candidates (Mcdermott, 1998; van Oosten, Mügge, and van der Pas, 2024). This is because voters think these candidates can advocate for progressive policies or bring new ideas and experiences to the political scene. Moreover, the fact that out of 56 Black congresswomen in U.S. House history, just one has been a Republican and 55 have been Democrats (CAWP, 2023) may lead voters to assume that African American women candidates would likely be Democrats.[5] In addition, cues' informational value stems from conveying candidate traits, including competence, trustworthiness, and leadership potential (Klofstad, Anderson, and Peters, 2012; Todorov et al., 2005), which can eventually influence voter preferences and perceptions without requiring a lot of cognitive processing (Olivola and Todorov, 2010; Brusattin, 2012).

Analysing the processes by which verbal and nonverbal cues function can help us better understand their ability to transmit information. Candidates can learn a lot about voters using demographic and social identity cues. Subsequently, they can improve the effectiveness of their messages and campaign strategies by observing certain traits in voters (Holman, Schneider, and Pondel, 2015; Michelson, 2006). For example, when Hillary Clinton launched her 2016 presidential campaign, she connected with parents by discussing her experiences as a daughter and parent (Greenlee et al., 2020). In addition, candidates can adjust their nonverbal cues when considering perceived identity or demographic alignment with voters. Kamala Harris wearing sneakers on her campaign trail is an example of this. The shoes become a symbol of her younger age compared to her opponent in 2024, sending a nonverbal cue that she is more energetic and has a modern attitude (The Guardian 2024).[6] Individuals may trust a candidate with personal experience to represent them and their best interests when they share demographics, traits, and identities (Pitkin, 1967; Campbell, Childs, and Lovenduski, 2010; Campbell and Heath, 2017; Montoya et al., 2022). Similarly, voters often associate specific

[5] `https://cawp.rutgers.edu/black-women-elective-office`. Accessed on August 13th, 2024.

[6] `https://www.theguardian.com/fashion/2020/sep/03/kamala-harris-what-her-sneakers-mean`. Accessed on July 30th, 2024.

demographic and social identity cues with particular characteristics (e.g., a man candidate being a strong leader) (Huddy and Terkildsen, 1993*a*; Mcdermott, 1997). For this reason, politicians can increase their campaign's appeal and effectiveness by employing voter-resonant verbal and nonverbal cues.

Understanding the role of nonverbal and verbal cues in both elite behaviour and candidate preferences is also critical due to their implications for gender and politics. Gendered aspects of these cues matter because societal norms and biases influence how men and women are perceived, especially in leadership roles (Eagly and Karau, 2002). Research shows that gender bias can filter how verbal and nonverbal cues are perceived for women politicians, causing different interpretations (Carpinella et al., 2016). For instance, voter preferences can be influenced by the perception that assertive behaviour, which is highly regarded by men politicians, is aggressive or unfeminine when exhibited by women politicians (Everitt, Best, and Gaudet, 2016; Neumann, Fowler, and Ridout, 2022). Media portrayals also amplify these prejudices, influencing voter perceptions and candidate evaluations. In addition, women politicians are attentive to the various ways that the public perceives them. Women politicians like Hillary Clinton and Margaret Thatcher have strategically tailored their self-presentation to navigate these biases. Clinton's choice of pantsuits and Thatcher's voice coaching to lower her pitch to sound more dominant and masculine[7] demonstrate attempts to align with gendered expectations in politics through nonverbal signals. These examples can also highlight how gendered perceptions of verbal and nonverbal cues can create a double bind, where women carefully calibrate their self-presentation to avoid backlash (Eagly and Carli, 2007; Bauer and Santia, 2022; Barnes et al., 2022).

While substantial attention has been devoted to dissecting the verbal messages of politicians and political parties, this thesis addresses a significant gap that persists in understanding the intricate influence of nonverbal cues on voter preferences and elite behaviour. Specifically, nonverbal cues are often overlooked in analysing how elite behaviour and voter preferences are shaped due to methodological challenges in their analysis and under the assumption that verbal messages and policy positions are the primary components of political discourse. For example, studies that focus simply on the content of political speeches may overlook how a candidate's body language, facial expressions, or vocal tone affect voter perceptions. These factors impact how voters perceive candidates' leadership abilities and how well they can overcome prejudice and stereotyping, affecting elite behaviour and voter attitudes. Therefore, this thesis builds on research that develops methodological tools to overcome the challenges associated with the analysis of nonverbal cues and views political communication as encompassing both verbal and nonverbal elements (Bucy and Stewart, 2018; Schonhardt-Bailey, 2017;

[7] "The Path to Power" by Margaret Thatcher (1995)

Dietrich, Hayes, and O'Brien, 2019; Dietrich, Enos, and Sen, 2019; Boussalis et al., 2021). It extends this understanding to assert that the nonverbal components of candidates' self-presentation impact voter perceptions (Klofstad, Anderson, and Peters, 2012; Lenz and Lawson, 2011; Carpinella and Johnson, 2016; Laustsen and Petersen, 2018; Bernhard, 2023; López Ortega and Radojevic, 2024). This thesis is structured into three interconnected papers that study three different dimensions of political communication, the first two of which focus on nonverbal cues: (i) vocal, ii) visual, and iii) verbal. I contribute to our understanding of political behaviour by testing out innovative methodologies that provide a basis for studying the political impact of differences in nonverbal cues in political decision-making through a visual survey experiment and an observational study. Through the survey experiment, I show that visual signals, such as facial femininity and masculinity levels, can influence vote choice (Paper 2). In addition, I show that candidates, unlike in their verbal expressions, alter their vocal pitch in direct encounters with voters based on the voter's visible demographics (Paper 1).

The second main contribution of this thesis relates to gender's role in our understanding of verbal and nonverbal cues. Research shows that attitudes towards gender equality in politics have evolved (Lawless, 2015) and voter biases are playing a minor role in women's underrepresentation (Campbell and Cowley, 2014; Dolan and Lynch, 2014). Recent studies show that voters slightly favour women for leadership roles (Schwarz and Coppock, 2022; Clayton et al., 2020; Teele, Kalla, and Rosenbluth, 2018). However, as novel technologies and methodologies emerge, it is now possible to analyse the role of nonverbal cues in addition to verbal ones. As a result, it is important to continue investigating biases and mechanisms that impact the role of nonverbal cues in political communication and behaviour via a gendered lens. Existing research shows gendered nonverbal cues affect voter evaluations moving beyond the binary gender (Klofstad, Anderson, and Nowicki, 2015; Hehman et al., 2014; Everitt, Best, and Gaudet, 2016; Carpinella and Johnson, 2013) and candidates' verbal and nonverbal behaviour change based on gender role expectations (Carpinella and Bauer, 2021; Hargrave and Blumenau, 2022; Boussalis, Coan, and Holman, 2022). Yet, we know little about how these cues intersect with other visually perceivable demographic traits and social identities to influence voter perceptions and candidate strategies. This thesis examines how candidates use gendered nonverbal cues in face-to-face campaigns, how these cues, especially unadjustable visual ones, affect voter evaluations, and how candidates strategically modify their verbal behaviour to align with perceived shared social identities with the voters. Bridging the literature on nonverbal political communication, gender norms, gender role expectations, and intersectionality, I demonstrate that candidates' vocal communication, particularly voice pitch, varies based on the perceived gender of the voters they interact with (Paper 1). In Paper 2, I show that gendered nonverbal cues, such as facial

masculinity and femininity, significantly shape voter preferences, regardless of the candidate's gender or race. Lastly, moving beyond nonverbal cues, through two persuasion field experiments, I demonstrate that women candidates can increase name recognition, but not necessarily favourability and vote share, by emphasising their gender, locality, and motherhood identities, compared to not emphasising these identities (Paper 3).

Methodologically and empirically, this thesis broadens our knowledge of gendered aspects of nonverbal and verbal cues for voter preferences and elite behaviour in Western democracies. First, the literature has extensively explored the implications of voters' reactions to men and women candidates, as well as potential differences in their political rhetoric. For example, we know gender and gender role expectations shape how politicians communicate (Everitt, Best, and Gaudet, 2016; Dietrich, Hayes, and O'Brien, 2019; Boussalis et al., 2021; Hargrave and Blumenau, 2022), and it is often the case that women and men politicians adopt different styles (Hargrave and Langengen, 2021). Second, research moving beyond binary gender cues frequently examines how candidates alter their masculine or feminine self-presentation and how voters respond by focusing on their words or campaign issues, treating these traits as easily manipulable (Bauer and Santia, 2022; Karpowitz et al., 2024; Bernhard, 2022). However, implicit gendered role expectations, which are more challenging to observe solely through rhetoric and physiological, i.e., endogenous, nonverbal cues like voice pitch or facial masculinity, can also impact voter preferences and candidate communication. To address this, I develop a novel visual survey experiment to simulate voters' exposure to candidates on social media or their campaign websites. In addition, I collect a unique video dataset focusing on real-election campaign interactions between candidates and voters in the U.S. I argue that with methodological advancements allowing us to investigate multidimensional information sources such as photos and videos, visual exposure to candidates reveals voters' preferences of gendered facial features. I use a novel visual survey experiment to test the impact of gendered visual cues, such as facial femininity and masculinity, on voter preferences (Paper 2). In the United States, I explore this idea with hypothetical candidates using an AI tool for detailed facial feature customisation, creating realistic experimental interventions to simulate the visual aspects of political campaigns. I demonstrate that voters prefer both women and men candidates with less facial masculinity through visual signals of perceived attractiveness. In Paper 1, I use computational methods to analyse town hall videos from the Democratic Party primaries for the 2020 U.S. Presidential Election. I show that women candidates speak in a higher voice pitch and men candidates talk in a lower voice pitch when interacting with a voter of the opposite gender. This behavioural response to perceived gender mismatch in opposite directions is moderated by attractiveness perception, and it is more difficult to quantify and observe when analysing the words they use alone.

This thesis, overall, explores how gendered verbal and nonverbal cues activate implicit preconceptions and compliance with gender expectations, expanding our understanding of these processes and their consequences. Through three primary themes, the subsequent sections introduce the major bodies of literature that underpin the three papers in this thesis. First, the theme of nonverbal communication in politics sets the foundation by examining how candidates' nonverbal cues, specifically visual and vocal cues, influence perceptions and behaviour. Second, the discussion on reevaluating gender in politics builds on this by delving into the specific ways these nonverbal cues, in addition to the verbal ones, intersect with gender norms and expectations, and shared traits, shaping both voter evaluations and candidates' behaviour. Finally, the theme of political campaigns highlights how these environments provide a rich context for observing the interaction between gendered verbal and nonverbal cues.

1.1 Nonverbal Communication in Politics

In this thesis, I define nonverbal communication as any message conveyed without the use of words, following Seiter and Weger Jr. (2020). According to this definition, every aspect of a message, not only its words but also its delivery, is valid. This includes facial expressions, eye contact, kinesics, vocalics, artefacts, and any visible cues. In addition, nonverbal communication can impact how information is processed, as well as how much of a bias viewers bring to their evaluation of messages (Seiter and Weger Jr., 2020). For example, attorneys use nonverbal cues like yawning and fist slamming to distract jurors from counsel's message, potentially diminishing the persuasiveness of their arguments (Ubel, 2008). Even though communication includes both verbal and nonverbal components, political science literature has traditionally focused on the verbal component. Nevertheless, one must acknowledge the substantial function of nonverbal communication because of its capacity to transmit politically pertinent information. This is due to the fact that nonverbal cues have the power to amplify or diminish the impact of spoken words. The role of this phenomenon is therefore relevant to politics, especially in contexts where political discourse is interactive (Bucy and Stewart, 2018; Wasike, 2019). For example, if a candidate stands tall and makes direct eye contact, voters might perceive them as competent and trustworthy. Conversely, if a candidate's body language is inconsistent, it can create an impression of hesitancy or suggest that they are trying to hide something (Winship, 2015).

Candidates use various visual and interactive platforms to communicate with voters (López Ortega and Radojevic, 2024). Through these visual means, many voters obtain information about a candidate's public persona, including visible demographic

traits, gestures, and body language. Given that visual platforms emphasise nonverbal behaviour and appearances, images can sometimes be given greater importance than arguments (Jamieson and Birdsell, 1990). Research shows that, particularly in low-information scenarios, these nonverbal cues can convey substantial political information and influence political decision-making (Dumitrescu, 2016). For instance, photographs of candidates on ballots in numerous countries can prime voters to focus on visible social categories when making electoral choices (Moehler and Conroy-Krutz, 2016). As a result, voters might selectively use information (Hobolt, Tilley, and Wittrock, 2013) and prioritise visible traits such as binary gender, race, and age over other types of information (Abrajano, Elmendorf, and Quinn, 2018; López Ortega and Radojevic, 2024). This can occur through cognitive accessibility (Valentino, Hutchings, and White, 2002). In other words, concepts and factors that have been recently or frequently activated are more likely to be employed in subsequent decision-making (Taylor and Fiske, 1978). Thus, due to the frequent exposure to nonverbal cues and their efficacy in conveying candidate information (Bucy and Grabe, 2007), nonverbal cues from non-textual sources can influence voter preferences.

Drawing on research in verbal communication, I argue that candidates and voters alike use heuristic information about each other's nonverbal cues to inform their preferences and self-presentation during the election process. Nonverbal communication involves various components. Because each of these factors has a significant impact on message interpretation -including vocal characteristics, facial expressions, and gestures- it is essential to distinguish them. For example, facial expressions can communicate emotions (Masch and Gabriel, 2020; Boussalis et al., 2021); gestures can boost political viability (Bucy and Stewart, 2018); and vocal characteristics can suggest confidence (Guyer, Fabrigar, and Vaughan-Johnston, 2019; Klofstad, 2017). Specifically, I am focusing on visual and vocal channels of nonverbal communication. In terms of the visual channel, I contribute by investigating how endogenous visual cues like facial masculinity and femininity interact with visible demographic traits, such as gender and race, in shaping voter preferences. Additionally, as part of my contribution to the vocal channel, I develop a mechanism for how candidates interpret the visible demographic cue -their perception of the gender of the voter they are interacting with- by altering their voice pitch.

1.1.1 Visual channel in nonverbal communication

Visual communication, a significant aspect of nonverbal communication, wields a powerful influence on how the public perceives political candidates. This understanding underscores its importance in shaping public opinion. Images such as videos, photos, and campaign logos all play a role in shaping the public's perception of a candidate. Visual

cues are an efficient way to learn about a candidate's character, beliefs, and objectives. Numerous studies have shown that visuals convey a wealth of political information such as competence, trustworthiness and other leadership skills (Schill, 2012; Brusattin, 2012; Carpinella et al., 2016; Klofstad, 2017; Schonhardt-Bailey, 2017). This information is conveyed through both the content and style of representation (see Dumitrescu (2016) for a review). A common result among research demonstrating the information value of visuals is that the inclusion of visuals in campaign messages predicts the behaviour of leaders, both now and in the future. For example, photos of a candidate interacting with members of other ethnic groups might demonstrate their inclusivity and approachability. Similarly, a video of an energetic candidate's speech at a rally can showcase their dedication and leadership qualities. Therefore, visual communication is vital for voters to form impressions.

When citizens have limited access to other information about candidates or issues, visual cues can help voters reduce the cost of information gathering through heuristic processing. Moreover, research shows that the brain processes visual information faster and remembers it better when verbal and visual signals are provided at the same time (Bucy and Grabe, 2007; Bauer and Carpinella, 2018; Todorov, 2017). In support of this, studies, where subjects choose a candidate following brief exposure to their photographs without other information, provide further evidence linking visual cues with vote decisions. Specifically, many of these studies find a strong association between voters' perceptions of a candidate's facial features and their likelihood of being elected (Laustsen and Petersen, 2016; Lawson et al., 2010; Mattes and Milazzo, 2014; Praino and Stockemer, 2019; Stockemer and Praino, 2015). For example, Laustsen and Petersen (2016) find that conservative men politicians benefit from facial dominance, and in times of conflict, viewers of all genders tend to choose leaders with commanding faces. Everitt, Best, and Gaudet (2016) show that women candidates who exhibit dominant characteristics, such as masculine attributes, tend to perform worse in elections compared to those who do not. Additionally, women candidates are more likely to lose favour from voters if they use agentic hand gestures, such as choppy, expressive, or aggressive movements, unlike their men counterparts (Everitt, Best, and Gaudet, 2016). Visual signals, including the way candidates look and their visible nonverbal behaviours, have the potential to impact how voters perceive them and the outcome of elections.

Paper 2 in this thesis builds on the research that argues that voters use visual signals as heuristics to evaluate politicians, especially in low information contexts. This is particularly true in light of the prominence of visual platforms like social media, which provide clear benefits over more conventional visual media like television. Though both social media and television are visual media, their constant flow of visual information and interaction actually distinguishes social media. Because of the real-time engagement

and consistent updates made available by social media platforms, candidates are able to continuously change their public persona in response to instantaneous voter input. Television's stationary character and lack of two-way engagement constrain candidates' control over the time and context of their visual presentation. Moreover, voters can actively shape a narrative about politicians through social media's participatory character, fostering a more personalised and engaging experience. In this context, the visual channel is essential since it can emotionally connect with viewers right away and last longer. According to Paper 2, which simulates voter exposure to candidates on social media or candidate websites, even in the absence of verbal cues, visual signals convey information about leadership skills and can significantly influence voter preferences.

1.1.2 Voice pitch in nonverbal communication

Within nonverbal communication, the vocal channel refers explicitly to the facets of vocal expression that transmit meaning beyond the words spoken. The majority of studies exploring nonverbal political communication have addressed its visual aspects. However, the literature continues to develop, examining the data inherent in the vocal communication route. This channel incorporates a wide range of vocal traits, such as tone, pitch, and volume. Among these vocal traits, voice pitch stands out due to its unique physiological properties. Research on the vocal pitch and methodological advancements in its analysis has been a step forward in understanding the vocal channel of nonverbal communication. Voice pitch serves as an essential physiological indicator of emotional arousal (Mauss and Robinson, 2009; Schwartz and Gouzoules, 2019). It is also a physiologically gendered attribute (Titze, 2000), with testosterone and oestrogen affecting the width of the vocal cords. Despite these insights, the extent to which a candidate's physiologically gendered voice pitch can serve as a nonverbal cue for responding to voters' shared visible demographics remains unclear. In Paper 1 of my thesis, I contribute to the literature on gendered role expectations and political communication by demonstrating that a candidate's voice pitch acts as a behavioural response to perceived demographic misalignment with the voter.

Understanding the gendered aspect of voice pitch is important because of its implications for voter perception formation. In political contexts, where perceptions of masculinity can signal leadership abilities, voice pitch can influence voter behaviour since deeper voices, which men are physiologically more likely to have, are often perceived as more competent and dominant compared to higher pitches (Klofstad, Anderson, and Nowicki, 2015; Laustsen, Petersen, and Klofstad, 2015). Further illustrating this point, research on the use of men and women voice actors in American political advertisements shows that commercials aimed at "women's issues" (such as education and health care), as well

as those with a predominantly women demographic, are more likely to use women voice-overs than men (Strach et al., 2015). Voice pitch can ultimately affect voter perceptions and preferences (Klofstad, Anderson, and Peters, 2012; Klofstad, 2017; Tigue et al., 2012; Banai et al., 2018).

Voice pitch has additional informational value apart from sending signals about personalities. Due to its physiologically continuous nature, voice pitch can change in response to external factors. For example, when a parent speaks to their frightened child, they tend to lower their voice pitch to a soothing tone to help calm the child down. In political contexts, this physiological response mechanism can help us understand how political elites behave when they are in certain contexts or interacting with specific individuals. Building on methodological developments in the field, studies have examined elites' voice pitch changes when they are among other elites and sought to understand their relation with judicial voting patterns (Dietrich, Enos, and Sen, 2019), commitment to gender-congruent issues (Dietrich, Hayes, and O'Brien, 2019; Rittmann, 2024), and gender-based overall emotional displays in political debates (Boussalis et al., 2021). However, these studies primarily focus on the context in which elite players interact with each other. We know little about how political elites behave when they interact directly with voters. In Paper 1, I contribute to the gendered nonverbal communication literature by studying candidates' use of voice pitch adjustment at town hall events in the United States, where there is extensive opportunity for candidates to interact directly with voters. To my knowledge, I am the first to use direct interactions from real-election campaigns to explore elite behaviour in response to aligned/unaligned demographic traits with the voters. The study uses computational methods to examine these changes and finds patterns that show how men and women candidates alter their voice pitch conditional on the perceived gender of the audience member with whom they are interacting. I show that women candidates heighten their voice pitch, i.e., sounding more feminine than their average, when they are interacting with a man voter. In contrast, men candidates lower their voice pitch, i.e., sounding more masculine than their average, when they are interacting with a woman voter. I also demonstrate that observing this gendered response pattern becomes challenging when solely concentrating on politicians' verbal communication. Therefore, I show that nonverbal communication channels can shed light on gendered communication patterns that, unlike words, are overlooked. I address the relevance of gendered features of nonverbal cues, which are essential to examine in order to set the stage for future studies that aim to understand voter preferences and elite behaviour. So, in the following section, I go into greater detail regarding the significance of reassessing the role of gender in the ways that nonverbal cues, in addition to verbal ones, impact perceptions and preferences.

1.2 Reevaluating Gender in Politics

Gender, a critical political category, can influence both voter preferences and candidate campaign strategies. Prejudiced judgements about a candidate's abilities and personality type could arise when cultural narratives and social conventions associate specific traits, actions, and duties with a candidate's gender. According to gendered political socialisation theory (Bos et al., 2022), sex disparities in adult voting behaviour arise because children learn that politics is male-dominated and masculine (Lay et al., 2021). However, recent studies show that voters now have a more accurate representation of women politicians and that representation is increasingly in line with the leadership positions (Lawless, 2015; Van Der Pas, Aaldering, and Bos, 2023; Schwarz and Coppock, 2022). Moreover, a wealth of research also documents that voters play very little to no role in the gender gap in representation (Campbell and Cowley, 2014; Campbell and Heath, 2017; Dolan and Lynch, 2014; Dolan, 2014; Schwarz and Coppock, 2022). The number of women in political leadership positions has increased over the past decade. Yet, there are still fewer women representatives compared to men in many Western democracies (Klar and Schmitt, 2021).

The voter side explanations need to be reevaluated considering evolving media structures and methodological advancements in the field to study visual exposure to candidates. Research shows that going beyond binary gender in explaining voter stereotypes, a candidate's marital status, the alignment of elections with conventional gender norms, the candidate's race in interaction with her gender, and other factors such as nonverbal cues can influence voter perceptions (Anzia and Bernhard, 2022; Clayton, Crabtree, and Horiuchi, 2023; Teele, Kalla, and Rosenbluth, 2018; Lemi and Brown, 2020; Mosier and Pietri, 2021). Building on this research, my thesis contributes to the gender and politics literature by identifying verbal and nonverbal cues exposed in political communication from a gendered perspective. In terms of mechanisms, my focus is on multiple identity priming, shared identities, and physiologically gendered traits, which extend beyond evaluating a candidate's binary gender (Paper 2 and Paper 3).

1.2.1 Gender-Based Preferences: Beyond Single In-Group Bias

The role of voters in understanding gender or gendered preferences is not limited to a candidate's binary gender. It is crucial to examine what traits make voters more susceptible to forming particular preferences toward gender. A voter's gender is one of these factors. The assumption that many voters have a "baseline gender" preference or that women are more prone to supporting group interests because of their "gender

consciousness" and loyalty to their groups is firmly held (Sanbonmatsu, 2002). Social identity theory states that this notion can be explained via an understanding of an individual's affiliation with a social group and how belonging to a social group can significantly influence political opinions (Tajfel, 1981; Conover, 1988). Scholars have elaborated on the reasoning behind politically favouring an in-group. They suggest that "people identifying with various groups do bring different perspectives to bear on the political world, perspectives that focus more heavily on those issues most explicitly linked to each group's economic and social interests." (Conover, 1984, p.774). This could lead to women voters leaning towards candidates from their social group, such as women candidates (Badas and Stauffer, 2018; Stauffer and Fisk, 2022). The evidence suggesting that women are more likely to favour women candidates, however, is not unanimous. As an illustration, while some research has demonstrated that women voters lean towards women candidates (Plutzer and Zipp, 1996; Brians and Tech, 2005; Herrnson, Lay, and Stokes, 2003; Holman, Schneider, and Pondel, 2015), other studies have observed minimal or no impact (Mcdermott, 1997; King and Matland, 2003; Kam, Archer, and Geer, 2017). With women constituting almost half of the world population, I argue in my thesis that one should not solely examine gender-based preferences only via in-group and out-group gender perspectives. For instance, a woman candidate may choose to focus on her occupational background as an anchor to be perceived if she holds the office rather than emphasising her gender identity, which would otherwise signal not only descriptive but substantive representation to women voters. In other words, when only exposed visually, gender provides ascriptive demographic information rather than giving voters identity-based in-group signals and information on their policy stances.

When individuals identify with many groups, voting behaviour can become more complicated. Politicians are aware that appealing to specific groups can be an effective way to gain support for particular issues (Dickson and Scheve, 2006). However, they must consider new group identities' emergence (Bruter, 2005; Hobolt et al., 2021) and the shifting political climates that make multiple identities more visible (López Ortega and Radojevic, 2024). Following Huddy (2001)'s discussion, real-world election campaigns can be a good example of the contradiction with predictions of social identity theory. Huddy provides evidence that the shared ascriptive traits do not always work in favour of an in-group. She shows that people of different ethnicities and races in the United States identify more with being an American than their racial or ethnic group. As a result, voters take into account more than just a candidate's gender; with increased exposure to information about candidates, they have a deeper understanding of them. For example, whether the candidate has any children or how old the candidate is. Therefore, it is necessary to move beyond single group identities in order to gain a more nuanced understanding of voter behaviour.

An intricate view of gender-based political preferences is provided by intersectionality theory, which investigates the ways in which different social identities interact to produce distinct forms of discrimination and advantage (Hancock, 2007*a*,*b*; Simien, 2007). Each individual can define themselves as belonging to multiple groups; therefore, their shared experiences and social identities that are politically relevant can influence their electoral decisions. As Hancock (2007*a*) points out, identity research should incorporate the paradigm shift by recognising that the policy problems of single or multiple identity groups experience should not be taken into account as additive but multiplicative. "Intersectionality theory claims that these problems are more than the sum of mutually exclusive parts; they create an interlocking prison from which there is little escape" (Hancock, 2007*a*, p.65). This indicates that while considering women candidates, it is necessary to take into account not just their gender but their multiple identities and demographics, such as their race, class, age, sexual orientation, and parenting status. For instance, because of the interplay between gender and race, a Black woman candidate may face different kinds of prejudice and support than a white woman candidate. As Simien (2007, p.266) points out, "...race and gender cannot be defined in terms of strict dichotomies—either black/white or male/female—when race is gendered, and gender is racialised in such a way that it creates distinct opportunities for all race-sex groups in various contexts." Furthermore, as intersectionality can encompass membership in multiple groups, it suggests that they can interact in diverse ways. Parenthood is such a group that is politically relevant (Thomas and Bittner, 2017) and might operate with voters differently in the intersection of other identity groups (Klar, 2013; Campbell and Cowley, 2018). Sweet-Cushman and Bauer (2024) shows this by adding motherhood into consideration and finding that both white and minority voters are equally likely to evaluate Black women candidates who emphasise their motherhood positively. In addition, social identities that are politically relevant to the candidates can also shape how they approach their policies. For example, the woman candidate I collaborated with for Paper 3's persuasion field experiment in Berlin stated that her personal experience as a woman and a parent impacted how she prioritised the issues she highlighted, precisely her position on the number of high schools in her district. Hence, the intersectionality of multiple identities can shed light on the ways in which it affects candidates' campaign strategies and the dynamics of persuasion.

Integrating intersectionality into candidates' persuasion campaign strategies could provide valuable insights. So far, there has been a lack of field experimental evidence from the persuasion literature that looks at "multiple identity priming" and its influence on voters. Although identity priming has received some attention in the literature (for example, Klar (2013) defining identity priming and looking at Democratic partisans who are also parents), most of these were survey experiments. To contribute to

this discussion, Paper 3's persuasion field experiments conducted in Germany draw on prior research on identity priming and identity alignment and are the first effort that I am aware of to examine the impact of priming gender identity (along with local and parenthood identities) on the effectiveness of real-life election campaigns. An integral part of Paper 3 is investigating if, in actual election contexts, a candidate can boost her visibility and viability as a candidate and eventually increase her votes when she presents themselves in the light of more than just as a woman but also as a local and a mother. The findings show that emphasising multiple identities can boost a candidate's profile in terms of her name recognition. However, this only contextually results in an increase in her favourability and does not translate into more votes on the ballot for her. Testing the identity alignment in terms of the gender identity of the candidate and the voter, Paper 3 also shows that voters were not more swayed in favour of the women candidates when they strongly identified with their gender. Gender identity alignment may also play a minor role than other social identities in influencing voters' perspectives and choices in election settings.

1.2.2 Masculinity and Femininity Perceptions in Candidate Evaluation

Stereotypes based on gender go beyond simple dichotomies and instead emphasise the more complex and nuanced nature of masculinity and femininity. People often perceive women candidates and officeholders as exhibiting more feminine traits, such as empathy and honesty, warmth and expressiveness, and a greater ability to interact with constituents. Men are thought to be more competent, decisive, stronger leaders, and better able to deal with crises that signal more masculine traits (Huddy and Terkildsen, 1993*b*; Kahn, 1994; King and Matland, 2003; Lawless, 2004; Dolan and Lynch, 2014). The relevance of trait stereotypes is underscored by the fact that numerous studies have demonstrated that individuals place a higher value on stereotyped masculine traits (e.g., leadership, experience) in politics than on feminine traits (e.g., compassion, honesty), particularly as level of elected office considered increases from local to national (Huddy and Terkildsen, 1993*b*; Rosenwasser et al., 1987; Dolan and Lynch, 2014). However, "while conceptions of masculinity and femininity are derived from the types of things that male- and female-bodied individuals tend to do, they are also available for men and women to perform independent of sex" (Karpowitz et al., 2024, p.3). In my thesis, Paper 2 contributes to this discussion by shifting the focus from how candidates perform femininity and masculinity to viewing facial masculinity and femininity as unadjustable but continuous gendered cues.

Having men and women portray a range of masculine and feminine self-presentations allows for a richer depiction of the complex range of gendered expectations in politics.

Voters may come across, for instance, a feminine man or a masculine woman candidate. A case in point is Hillary Clinton during the 2008 Democratic Party Primaries for the U.S. Presidential election, where her communication style was criticised for "talking like a man" as her language became more masculine over time (Jones, 2016). Yet, voters do not immediately perceive women candidates as possessing masculine traits (Bauer, 2015*b*; Schneider and Bos, 2011). Women running for office who exhibit masculine traits run the risk of being criticised for being either too masculine or not feminine enough (Falk, 2010). Voter behaviour is significantly affected by these stereotypes based on gender, which might limit their opportunities for political office.

Many studies have viewed femininity and masculinity cues as manipulable, which indicates that both women and men candidates can modify their feminine and masculine self-presentation, as well as the issue they stress, to be perceived as more feminine or masculine. Particularly in some contexts, the candidate selection process may favour more masculinity, which could negatively impact the electability of women candidates who are more likely to portray femininity (Bernhard, 2022; Carpinella et al., 2016; Oliver and Conroy, 2018; Conroy, 2016; Huddy and Terkildsen, 1993*b*). However, studying voter preferences is nuanced and requires further attention to understand how a voter perceives femininity and masculinity cues of a candidate. Femininity and masculinity cues can also be perceived from non-manipulable perceived gendered traits that can influence voter preferences. In Paper 2, taking femininity and masculinity as physiological and endogenous factors, I focus on facial characteristics. In addition, I take into account the intersectional role of other visually perceived cues, such as race and binary gender (i.e. being a woman or a man). In line with the recent findings in the literature that show that voters in the U.S. increasingly prefer feminine leadership styles and conduct (Bernhard, 2022) and in line with the shifting gender preferences in the United States (Lawless, 2015), my findings contribute to the literature by showing that voters also consistently prefer candidates who look more feminine regardless of their binary gender or race in a low information hypothetical electoral setting.

Even though women face gendered preconceptions in politics, they can counteract some of these biases. For instance, by adopting a more masculine self-presentation, women candidates can avoid coming across as overly feminine while campaigning, although this might sometimes cause backlash (Bauer and Santia, 2022). To explore this behavioural response further, Paper 1 expands on this idea by stating that candidates' communication differs based on gender because they might have internalised gendered expectations from society. I test this idea by analysing observational video data from Democratic Party primary town halls on politicians' nonverbal cues, specifically their shifts in voice pitch, when interacting with voters. The rationale for examining voice pitch is its physiological properties, which signal femininity and masculinity (Titze,

2000; Krahé, Uhlmann, and Herzberg, 2021). My findings show that, by modulating their voice pitch, candidates align with societal gendered expectations. In particular, when answering questions from men, women politicians' voices are higher pitched compared to when they answer questions from women. For men politicians, they tend to lower their voice pitch when answering a question posed by a women. These findings indicates a parallel trend in which vocal pitch, as a gendered physiological signal, enhances an individual's appeal and perceived attractiveness when gender-congruent, as informed by evolutionary psychology literature.

1.3 Political Campaigns as Interactive Platforms for Gendered Communication

Elections are fundamentally communicative in nature, and political campaigns are the primary means by which candidates communicate with the electorate. This communication component is critical because candidates in political campaigns can utilise various forms of communication tools to spread their messages in an effort to get support from the electorate (Benoit, 2007). Understanding how politicians attempt to control and mould perceptions of the public is a crucial focus for scholars studying democratic politics (Fridkin and Kenney, 2011). However, our understanding of the activation of cues that can be perceived via a gendered filter in real election campaigns remains limited. In this thesis, I look at real election campaigns in Germany and the United States. I demonstrate that political campaigns offer an interactive environment in which politicians and voters can learn more about one another using cues that are often gendered. While politicians can influence voter evaluations by emphasising or de-emphasising their multiple identities (Paper 3) or by adopting their nonverbal expressions as a response to voter's perceived demographic (Paper 1), voters learn about candidates by observing gendered verbal cues, which provide cognitive shortcuts (Paper 3).

To fully understand the dynamics of voter engagement and persuasion in contemporary campaigns, it is crucial to examine how various factors, including identity, shape voter perceptions and decisions. Thus far, the literature has primarily employed surveys or survey experiments to provide foundational insights into electoral behaviour based on social group affiliations. For instance, Holman, Schneider, and Pondel (2015) found that women candidates can gain more support by appealing to the gender identity of female voters. Similarly, Evans et al. (2017) demonstrated that candidates residing in neighbouring constituencies are more likely to receive votes compared to those in distant constituencies, highlighting the impact of shared local identity on voter preferences in the UK. In addition, some field experimental studies have explored the effects of shared

social identities, showing positive outcomes when canvassers emphasise the voter's perceived common ethnicity, particularly among Latino voters in the United States (Michelson, 2003, 2006). However, contradictory evidence exists regarding the effectiveness of a shared identity between the campaigner and the voter in persuasion. For example, Broockman et al. (2022) found that shared demographics did not increase persuasion effects in eight experiments on interpersonal campaign conversations. Yet, we know little about whether identity alignment acts as a mechanism in contexts where women candidates strategically adopt multiple identity priming as a persuasion tool. To address this gap, Paper 3 in this thesis develops and tests the identity alignment mechanism in two persuasion field experiments in Bonn and Berlin, Germany. Specifically, I test whether identity alignment—such as gender, locality, and parenthood—works in favour of the women candidates. The results indicate that local identity alignment positively predicts voter response in one context but not in the other. Additionally, gender identity strength does not moderate the effect of identity-prime postcards. Overall, while the benefits of local identity alignment are evident, the results remain inconclusive regarding broader identity effects. Paper 3 contributes to the literature by providing field experimental evidence that priming multiple identities benefits candidates. The findings align with survey findings (Campbell et al., 2019; Campbell, Childs, and Lovenduski, 2010), suggesting that emphasising localness is the most effective strategy, as voters value local candidates.

Political campaigns, in their interactive nature, are essential for providing candidates and political parties an opportunity to update their profiles and shape the narrative about their public personas (Lenz, 2013; Zaller, 1992). Extensive research has shown how candidates and political parties can adjust their rhetoric in response to public opinion (Adams et al., 2004; Pereira, 2020; Hager and Hilbig, 2020; Vries and Hobolt, 2020). For instance, candidates can advertise neutral non-policy issues when they want to connect with a broader audience (Le Pennec, 2023), or can use code-switching (i.e., a practice in which members of a speech group use different languages or dialects depending on contextual circumstances that are not specifically related to language) when directly interacting with local citizens (Kementchedjhieva, 2016). However, we have little knowledge of how candidates react in their nonverbal behaviour when campaigns provide them with an interactive environment to learn more about voters simultaneously. Town halls offer a great setting to understand this process. In town halls, candidates receive questions from voters, answer them, and learn more about how the public perceives them as a candidate, as well as the issues they emphasise or their policy positions (Wuttke and Foos, 2024; Minozzi et al., 2015; López-Moctezuma et al., 2022; Wantchekon, 2017; Masullo, 2020). Paper 1 of this thesis contributes to this understanding by demonstrating that candidates use town halls as interactive settings to observe voter cues, such as

perceived gender, and adapt their nonverbal expressions accordingly. In other words, candidates change their nonverbal expressions when the campaign setting allows for interactive engagement with voters. For a candidate aiming to persuade voters, perceived gender alignment can inform their behavioural response on stage.

1.4 Methodological contributions

This thesis applies advanced computational and experimental methodological approaches to study gendered verbal and nonverbal cues in evaluating candidate-voter interactions. In this section, I will review the methodological challenges and explain how this thesis addresses them.

1.4.1 Computational methods to measure nonverbal cues

The literature on elite communication has concentrated chiefly on politicians' and political parties' verbal communication due to the widespread use of text-as-data computational approaches to persuade voters (for a review, see Blumenau and Lauderdale (2024)). There are various reasons why nonverbal cues have yet to be researched as extensively as verbal cues in political communication. One of the most significant obstacles is the technical and methodological restrictions that have historically made it challenging to collect and analyse nonverbal cues accurately. Nonverbal cues like facial expressions, vocal pitch, and body language are intrinsically difficult to quantify. These cues are dynamic, multidimensional, and context-dependent, requiring complex techniques for accurate detection and interpretation. Attempts to research nonverbal communication frequently depended on manual coding, which is time-consuming and susceptible to human mistakes. Furthermore, because nonverbal signals are nuanced, even tiny alterations in expression, tone, or gesture might have different meanings in different circumstances, adding to their analysis' complexity. In comparison, verbal communication is more accessible to transcribe, quantify, and investigate using traditional and computational methods. Moreover, the availability of massive textual datasets and the development of natural language processing (NLP) techniques have increased the emphasis on speech analysis in political science.

Recent technological and methodological improvements, particularly in computer vision, machine learning, and audio processing, have begun to break down some of these barriers. For example, facial recognition, audio analysis, and motion tracking techniques have improved accuracy and accessibility, allowing researchers to analyse nonverbal expressions more precisely. These computational advancements, which are continually

evolving, have paved the path for a more thorough investigation of how politicians use nonverbal communication to affect voter impressions. In political science literature, a small number of studies have adopted these techniques and examined elite communication in a broader context, taking into account verbal as well as nonverbal signals such as facial expressions (Boussalis and Coan, 2021), vocal pitch changes (Dietrich, Enos, and Sen, 2019; Dietrich, Hayes, and O'Brien, 2019; Rittmann, 2024; Boussalis et al., 2021) and body movements (Dietrich, 2021). These studies opened up new avenues of research in political science by bringing computational advancements in the analysis of nonverbal cues in observational datasets. However, none of this research linked the nonverbal channel of elite communication to the dynamic communication lens regarding perceived gender alignment with voters. Building on the methodological advances made in political science literature recently, in Paper 1 of this thesis, I methodologically and empirically contribute to the literature on nonverbal political communication and gender-based behavioural moderations in politics.

In Paper 1, I return to the theme of gender as a social marker to describe elites' behaviour towards voters who share their gender. I investigated if gender matching could predict politicians' vocal communications. To explore this, I assembled a unique dataset of 86,358 seconds of footage from videos documenting interactions between politicians and voters. I compiled these town hall videos from the Democratic Party primaries for the 2020 U.S. presidential election. I classified the audience's perceived visible demographic cues, considering the nature of town halls, where they are also prospective voters. I adopted the computational approach proposed by Boussalis et al. (2021) to examine voice pitch change as a component of the vocal communication channel. Specifically, I used the *ffmeg* library in Python and *parselmouth* Praat source code to extract the audio from videos and then fed the files into it (Boersma and Weenink, 2020). Using these advanced methodologies, Paper 1 adds to a growing corpus of research that aims to understand the nuanced ways in which nonverbal cues—often overshadowed by verbal communication—play a critical part in the interaction between political elites and voters.

1.4.2 AI-enhanced visual experiments to identify the impact of nonverbal cues

Voters do not base their evaluation of a candidate for public office on just one quality. They also consider a candidate's political leanings, demographics, and how they present themselves, including their appearance. Therefore, it is essential to include various preference dimensions to understand better the impact of physiological and demographic variables on candidate assessment. The current literature suggests that conjoint survey experiments are a good way to assess the causal link between these various candidate

traits and hypothetical candidate choices (Bansak et al., 2021; Hobolt and Rodon, 2020; Hainmueller and Kern, 2008).

Standard conjoint survey experiments involve a set of randomly generated candidate profiles comprising a list of attributes. These profiles are then presented to participants to rank or select their preferred options following their personal preferences. However, this design needs to be revised to capture the current interaction between politicians and electors, primarily conducted through social media and television (Vecchiato and Munger, 2022). Integrating this aspect to accurately represent the mode of a voter's exposure to a candidate became increasingly important, as a significant portion of their experience evaluating a candidate includes visual cues.

Using visuals in conjoint survey designs is a well-established practice in marketing and product design (Dominique-Ferreira, Rial Boubeta, and Varela Mallou, 2012; Sylcott, Orsborn, and Cagan, 2016). However, despite the widespread use of conjoint experiments in political science research to investigate candidate preferences, the use of visuals has recently become more prevalent in candidate choice experiments (Abrajano, Elmendorf, and Quinn, 2018; Vecchiato and Munger, 2022; Bernhard, 2023; López Ortega and Radojevic, 2024). Some of these studies show that including visuals can change how voters evaluate candidates, e.g., minority candidates (Abrajano, Elmendorf, and Quinn, 2018), and how including visuals in conjoint designs can induce discriminatory preferences towards certain groups of candidates (López Ortega and Radojevic, 2024).

Adopting visuals also has the distinct benefit of being able to analyse the nonverbal cues that are important for making first impressions of candidates. In addition, studies have demonstrated that visual cues such as facial traits influence candidate preferences, even in the case of high political sophistication (Laustsen and Petersen, 2018). By utilising visual cues, researchers can better understand how voters interact with politicians in the real world. This paves the way for a more sophisticated investigation of how these nonverbal cues impact preferences and decisions, yielding insights that experiments based on text would fail to capture.

In visual conjoint survey designs, each attribute of the candidate profile is visually presented and assigned at random. Following (Vecchiato and Munger, 2022)'s argument that visually randomising candidate attributes improves ecological validity compared to conventional conjoint designs, Paper 2 in this thesis adopts a visual conjoint design. I achieved this by randomly allocating three categories of visible cues: gender, race, and the degree of facial masculinity.

In Paper 2's visual conjoint experiment, participants engage in a series of three-choice tasks, each involving the evaluation of two computer-generated candidate profiles, randomly assigned by two levels in three attributes—race, gender, and degree of facial masculinity. To control for potential confounding variables in the hypothetical candidate photographs, I created 24 candidates, with three candidates for each possible variation. In contrast to traditional conjoint surveys to study candidate preferences, I employ a novel approach adopting MetaHumans software, i.e., an AI-enhanced tool, to present the subjects with computer-generated candidate images, enabling realistic manipulation of nuanced facial features and other attributes. To my knowledge, I am the first to use the Metahumans Creator in a candidate choice experiment.

In experimental candidate preference literature, the use of artificial intelligence tools to examine gender and gendered attributes has increased. AI-enhanced tools offer ways to capture better how voters engage with candidates through the advent of visual experimentation in political science. Contrary to more conventional text-based experiments, visual conjoint designs are more realistic in portraying candidate traits and their ability to be directly manipulated. For example, in text-based experiments, participants are given written descriptions of qualities and then asked to evaluate them. When it comes to assessing a written description of a visual cue, such as gender, text-based experiments leave a gap for subjects to use their visualisation when they are trying to interpret these traits. However, there may be discrepancies in how cues are perceived because individuals' interpretations can differ. Visual experiments, on the other hand, can use standard images to decrease interpretation variability and increase ecological validity. In line with this, the creation of realistic experimental interventions for gendered physiological traits, such as the masculinity and femininity of the face, influenced by oestrogen and testosterone levels, can significantly benefit from controlled manipulation tools, i.e., AI-enhanced experimentation.

Paper 2 offers methodological contributions by adopting a visual conjoint experiment over text-based experiments and using MetaHumans over other AI-enhanced tools. Studies recently started to use realistic-looking hypothetical candidates for experiments (López Ortega and Radojevic, 2024). However, they either use a third-party provider to generate the hypothetical candidates, or the tools adopted would only allow changing some details about the faces. So far, political science literature interested in how masculinity affects candidate preferences has mainly focused on masculine behaviour (Winter, 2010; Bernhard, 2022) with few experimental studies focusing on facial masculinity (Carpinella and Johnson, 2013; Carpinella et al., 2015; Hehman et al., 2014). For example, in Carpinella et al. (2015), they use real politician photos and input politician pictures into FaceGen Modeller, and the Gender Morph tool was used to determine the

sex typicality of each face. They measure "facial sex typicality" based on anthropometric factors of the human population, using a database of hundreds of "three-dimensional face scans of men and women" (Carpinella et al., 2015, p.25). One drawback of this method is that the subject may still be able to recognise each politician's image. The second disadvantage is that the Gender Morph tool relies on training data from hundreds of human faces to manipulate the degree of facial masculinity. This programme uses the average facial structure of all male faces to create a masculinity score and female faces to create a femininity score. Therefore, the tool's manipulation of a politician's photo to make it appear more masculine would depend on the training set's range of facial masculinity and femininity scores. The development and public access provided by Metahumans Creator in 2021 enabled Paper 2 to overcome the constraints posed by the lack of a customisable tool.

Paper 2's contribution to the literature in understanding the role of nonverbal cues in candidate preference comes from the need for a tool that helps to challenge the methodological obstacles in manipulating small-scale facial features. MetaHuman Creator allows for independent customisation of each facial feature without relying on a small-scale training set but trained with millions of faces that include a variety of demographic characteristics, hence providing a more diverse training set. Therefore, an advantage lies in replicating a human face with varying levels of femininity and masculinity by manipulating one or a few facial structures that shape the perception of masculinity. This is because a few independent factors collectively influence how a face is perceived as either masculine or feminine, determining the level of facial masculinity. Mitteroecker et al. (2015, p.1) outline the "morphometrics of masculinity" in human faces, and they show that the facial features typically perceived as more masculine include "wide inter-orbital distance, a wide nose, thin lips, and a large lower face". The process of masculinisation follows established procedures outlined in the literature, which involve modifying specific facial dimensions, including inter-orbital distance, nasal region width, lip fullness, lower jaw area, and eye size. In Paper 2, I also demonstrate the accuracy of experimental manipulations through validation tests. The second benefit of this tool is that the candidates who are generated are not real politicians, so subjects are unfamiliar with them.

Undoubtedly, the use of AI in visual experiments raises ethical questions. While AI-generated images such as MetaHumans enable precise manipulation of facial features, they also prompt questions of authenticity and consent. The line between synthetic and natural individuals may blur as hyper-realistic digital faces advance, even if they are entirely artificial. The primary concern is the potential misuse, where AI-created images could be used to influence public opinion or deceive voters in a non-transparent

manner. Managing these ethical risks allows for the responsible use of AI technology and ensures that participants fully understand the nature of the stimuli under examination.

Paper 2's visual survey experiment adhered to the 2020 APSA Principles for Human Subjects Research (APSA, 2020). Paper 2 provides participants with images of fictitious candidates that are generated using artificial intelligence (AI). These images may or may not accurately represent the appearance of the actual candidates who are running for office. In order to address ethical concerns regarding the use of AI-generated candidates and survey experimental methodologies, I provided the information and consent form to U.S. participants prior to the beginning of the survey. Due to the use of AI-generated candidate pictures, this investigation encourages enquiries concerning deception. The study examines the ethical implications of subjecting research participants to fabricated virtual representations for evaluation. I presented the debriefing form after the participants had finished answering the questions but before they submitted their responses, in accordance with the APSA's recommendation that subjects' autonomy be respected when using deceit. I addressed the issue of image manipulation in the debriefing form and clarified that the candidate pictures they had evaluated were generated using AI. Furthermore, participants were informed that their participation in the survey was entirely voluntary and that they had the option to withdraw at any time. Individuals who were 18 years of age or older were eligible to participate. In order to preserve the confidentiality of the participants, the survey experiment did not collect any identifiable data. The study was approved by the LSE Research Ethics Committee (REC reference number is 90881) for ethical reasons after it was determined to adhere to the APSA's Guidelines and Principles for Research with Human Subjects (APSA, 2020).

As artificial intelligence continues to advance, the structures for ethical supervision in research are also evolving. It is crucial to scrutinise issues such as the potential bias in AI algorithms, particularly in how they create or alter images of various ethnic and gender groupings. The foremost concern is to ensure that AI-generated images do not perpetuate existing prejudices or negative stereotypes. Researchers must be vigilant in testing and verifying their instruments to guarantee that the fair and accurate representations used in studies are indeed so.

1.4.3 Field experiments to evaluate the impact of candidate-voter interactions

In political science, field experiments offer numerous advantages over survey-based experiments. First, field experiments allow researchers to observe voter and candidate

conduct in natural situations, which tends to be absent from controlled survey settings, thereby providing external validity (Findley et al., 2017), or generalisability (Gerber, 2011). Second, the results are more likely to reflect real-world behaviours and outcomes since participants in field experiments interact with actual political campaigns, candidates, and electoral procedures. This real-world engagement adds to the authenticity of the findings. Third, field experimentation can capture the complexity of the transmission and reception of identity cues during real political processes by analysing the dynamic interactions between voters and candidates. As of yet, identity priming has been marginally addressed in the expanding corpus of research on political persuasion with only a few studies using field experiments (Broockman and Kalla, 2016; Kalla and Broockman, 2020, 2018). Paper 3 makes a methodological contribution to the identity priming literature by involving real candidates in the canvassing process as persuaders and senders of identity cues and in the handwriting and signing of treatment postcards.

During the German state elections in 2022 and 2023, Paper 3 shows the results from two field experiments on persuasion in North Rhine-Westphalia and Berlin. Paper 3's primary goal is to establish causal evidence regarding whether the dynamic nature of persuasion based on social identities influences voters' candidate evaluations. The design followed Broockman, Kalla, and Sekhon (2017)'s work on field experiments with survey outcomes. The experiments involved door-to-door canvassing by the candidates, i.e., personal interactions, and the distribution of handwritten and machine-written postcards that either highlighted or did not stress the candidates' gender, locality, and parenthood, i.e., impersonal interactions, with voters. Paper 3's methodological approach uses real-life candidate interactions to show that field experiments may fill the vacuum in identity-priming research.

In Paper 3, we aimed to triangulate our results by integrating survey-based approaches with field experimentation. Before administering the experimental treatments, we thoroughly learned about voters' baseline preferences and perceptions through the initial baseline survey. The following treatment deliveries allowed us to put our theories to the test in a real-world setting, and the follow-up surveys let us measure the effects immediately and over time. By combining these approaches, we hope to offer a more thorough and sophisticated examination of how candidate-voter interactions impact voters' preferences and behaviour, especially those that centre on social identities.

While survey experiments are great for assessing variables that influence voters' preferences in generally a one-way interaction, they frequently need to catch up when capturing the intricate social and environmental aspects that impact how identity priming works in real political contexts. Moreover, the external validity of survey experimental results can be lower than field experiments because they are conducted in controlled, artificial

settings that may not be accurate depictions of the real world (Findley et al., 2017). Because identity cues subtly impact voter behaviour in the real world, identity priming in surveys usually entails questions or activities that might not completely capture that. However, voters' real-life encounters with identity cues can be better replicated in field experiments, which allow for more natural, two-way interactions. For example, a candidate's mention of shared local ties or parental status during a door-to-door campaign is an example of identity priming in action since it is entrenched in accurate two-way social contact and is thus more likely to resonate with the voter. Similarly, discovering a candidate's identity in a survey scenario could be less impactful than receiving a handwritten postcard emphasising a shared identity (Paper 3).

However, there are some drawbacks to field experiments as well. First, they usually demand more time, money, and effort to execute because they are resource-intensive. Yet, as evidenced in Broockman, Kalla, and Sekhon (2017, p.436), employing field experiments with survey outcomes can decrease the variable costs by 98%. Hence, Paper 3's methodological approach offers a robust field experimental design with a lower cost. Second, in a natural setting, it can be challenging to control that the effects observed are caused by the experimental intervention rather than other external factors (Baldassarri and Abascal, 2017). Examining causal relationships can be more clearly done in survey-based experiments, which provide greater control over these mechanisms. Third, ensuring that the identity cues are presented consistently across various voters in field studies is a challenging logistical and resource-intensive task requiring careful organisation and coordination.

Another factor to consider is the potential ethical ramifications of field experiments. Concerns regarding manipulation, consent, and the effects on democracy arise when voters are actively involved in genuine political processes (for a critical review, see McDermott and Hatemi (2020)). Because of this, it is crucial to keep participants' political choices free from undue influence and to communicate with them openly about any potential ethical concerns. The field experiments in Paper 3 also follow the APSA code of ethics and the EU's General Data Protection Regulation (GDPR). Field experiments raise ethical concerns because of their potential to have a wider societal influence; therefore, researchers should avoid attempting to influence political processes without the affected individuals' consent (APSA, 2020). The participants in Paper 3's field experiments were individuals over the age of 18 who had explicitly agreed to participate in an academic study on the relevant German state elections and gave informed consent prior to participating in the studies. We followed APSA's Guidelines and Principles for Research with Human Subjects, and the LSE Research Ethics Committee (REC reference number is 150811) granted ethical approval to both field experiments of Paper 3 (APSA, 2020).

One of the ethical concerns of carrying out the field experiments was to provide subjects with information about every individual and institution that has access to their data. Nevertheless, including the names of the candidates we collaborated with in a document that is accessible to participants prior to enrolling in our panel study would undeniably increase the likelihood of introducing significant bias. Ensuring compliance with GDPR and ethics was crucial for the field experiments while also maintaining the subjects' unawareness that the communication they got from our cooperating candidates was a component of the study they had agreed to participate. Consequently, we decided to ensure that the candidates and their parties would never have access to any specific subject data. This decision had significant logistical ramifications for the execution of the trial, namely in regard to the distribution of the treatments. The research team received the written and signed postcards from the candidates for the postcard treatments and took care of attaching address labels and sending them. During the canvassing visits, each candidate would be accompanied by at least one member of the research team or one graduate student. Their role would be to guide the candidate, ensuring they approach the correct door and ring the doorbell. When subjects asked for further or follow-up information during their doorstep encounters, the candidates consistently directed them to send an email to their campaign headquarters. In this manner, individuals would willingly provide their data to the candidates and their political party again, separate from the research and beyond the scope of GDPR. This approach was followed consistently during every stage of data collection and processing. Both candidates recognised the significance of adhering to legal and ethical obligations and endorsed our endeavour to abide by the regulations.

Overall, Paper 3 demonstrates that field experiments with survey outcomes are appropriate for capturing the complex and ever-changing ways identity cues impact voter behaviour in real-world election circumstances. Using field experiments, we could understand how gender, locality, and parenthood influence voters' preferences and how identity priming works in real political contexts.

1.5 Roadmap

The remaining sections of this thesis present three self-contained research papers, which are followed by a conclusion chapter. Chapter 2 analyses the effect of perceived gender alignment on candidates' voice pitch modulation of 86,358 seconds of video footage from Democratic Party town halls. Chapter 3 examines the causal relationship between candidates' facial masculinity/femininity levels and voter preferences in the United States. Chapter 4 evaluates evidence of the impact of "multiple identity priming" on political

persuasion for women candidates in Germany. Finally, Chapter 5 summarises these findings, explores their policy consequences as well as larger issues of democratic representation, and suggests areas for future research.

2

Vocal Chameleons: Gender dynamics in nonverbal expressions in campaigning

Abstract

In politics, building a candidate's image and winning over the public takes effective verbal and nonverbal communication. The use of rhetoric by politicians has been the subject of many studies. Still, the importance of nonverbal communication, particularly when considering the gender dynamics of both politicians and voters, has received comparatively less attention. The purpose of this study is to examine the gender dynamics at play in the use of nonverbal expressions, focusing on voice pitch modulation, during face-to-face campaign interactions by analysing video recordings from the Democratic Party's primary town hall meetings for the 2020 U.S. presidential election. Results indicate that women candidates increase their voice pitch when engaging with men audience members, whereas men candidates lower their pitch when addressing women audience members. These findings are consistent with gendered expectations and attractiveness perceptions informed by evolutionary psychology research. This study adds to our understanding of gendered political communication dynamics by incorporating nonverbal expressions in elite behaviour.

2.1 Introduction

Effective communication in politics not only shapes perceptions and influences decisions but also plays a crucial role in image building, enabling leaders to cultivate public trust and support. Therefore, studying the ways in which elite actors establish rapport with others through verbal and nonverbal expressions in their communication is important. While most scholarly attention is given to the impact of politicians' use of words in legislative debates and campaigning (Osnabrügge, Hobolt, and Rodon, 2021; Gennaro and Ash, 2021; Crabtree et al., 2020; Bauer, 2020*a*), there is a developing interest regarding the manner in which politicians use nonverbal expressions in comparable contexts (Boussalis and Coan, 2021; Boussalis et al., 2021; Dietrich, Hayes, and O'Brien, 2019; Masch and Gabriel, 2020). Some of these studies have focused on how political elites' nonverbal expressions, as measured by changes in voice pitch, correlate with various factors including judicial voting patterns (Dietrich, Enos, and Sen, 2019) or gendered expressions such as legislators' commitment to gender-congruent issues (Dietrich, Hayes, and O'Brien, 2019; Rittmann, 2024), or women candidates' overall display of emotions during political debates with men (Boussalis et al., 2021). Although previous research has focused primarily on the dynamics of interactions among elite players, a critical gap persists in understanding the gender dynamics in how political elites use their nonverbal expressions during in-person campaign events, especially when directly engaging with potential voters.

Political campaigns provide an opportunity for voters to learn about a candidate. Hence, candidates can use this platform to display their political image and build public trust (Lenz, 2013; Zaller, 1992). Yet, the target audience is important for determining whether candidates use different communication styles to establish a personal connection better. Candidates can modify what and how they say in accordance with their intended audience (Meeks, 2016; Schneider, 2014; Dolan, 2005). Moreover, voters' perceptions of candidates' efforts to alter their communication and targeting styles can differ based on gender (Holman, Schneider, and Pondel, 2015). Although political candidates exhibit considerable variation in the efficacy of their nonverbal expressions (Boussalis et al., 2021; Grabe and Bucy, 2009), each candidate may attempt to maintain a consistent image through their rhetoric. Nevertheless, the extent to which nonverbal signals are consciously perceived or given different significance than rhetoric due to the gender of the individual with whom they are interacting may vary depending on the context and the audience's focus. Gender expectations and societal norms can influence how nonverbal cues are perceived and valued. This study aims to investigate, through the perspective of vocal expressions as a less controllable means of communication (Zuckerman, Driver,

and Guadagno, 1985), whether, when interacting face-to-face, candidates adapt their nonverbal expressions based on the gender of their audience.

Candidates' gender impact voters' expectations (Eagly and Karau, 2002; Cassese and Holman, 2018; Bauer, 2020*b*, 2015*b*; Anzia and Bernhard, 2022; Teele, Kalla, and Rosenbluth, 2018), which in turn cause candidates to display various communication styles in campaigning while trying to connect with these expectations (Dittmar, 2020; Brader, 2005; Fischbach, Lichtenthaler, and Horstmann, 2015; Meeks and Domke, 2016). For instance, women are more likely to display their emotions, while men are more likely to suppress them, reflecting the traditional masculine roles of leadership (Schneider and Bos, 2019). In addition, research shows that women candidates can tailor their femininity and masculinity emphasis in their self-presentation or in their campaign messages in order to comply with voters' gendered expectations (Bauer, 2020*a*; Bauer and Santia, 2022; Bernhard, 2022). Understudied, however, is the extent to which candidates' nonverbal expressions differ according to their and the target audience's gender, particularly in situations when they interact directly with their audiences. Recognising these variations can inform more about the unconscious biases and social factors that affect political behaviour. Exploring these can reveal how gendered expectations influence not only voters, but also candidate behaviour. This understanding can guide efforts to improve communication and create a more inclusive political environment. In addition, studying candidates' voice pitch modulation in relation to their target audience provides a window to understand fundamental human nature in strategic settings such as political campaigns. Acknowledging that changes in voice pitch are often unconscious, I go beyond the strategic aspects of candidates' communication styles, including their rhetoric, and examine their less controlled vocal shifts in in-person contacts.

Research shows that voice pitch influences perceptions, with a lower pitch signalling masculinity and a higher pitch indicating femininity (Krahé, Uhlmann, and Herzberg, 2021; Anderson and Klofstad, 2012). Therefore, due to the perception that leadership is a masculine quality (Eagly and Karau, 2002; Lombard, Azpeitia, and Cheryan, 2021), voter evaluations may be biased towards women, who possess physiologically higher voices (Titze, 2000). Voice pitch also influences attractiveness perceptions of others, with men favouring high-pitched female voices and women preferring lower-pitched male voices (Jones et al., 2010; Feinberg et al., 2008; Puts et al., 2007; Collins and Missing, 2003). Enhancing their perceived expertise and electoral success (Palmer and Peterson, 2016; Milazzo and Hammond, 2018), candidates can benefit from being perceived as more attractive. Exploring the implicit nature of vocal pitch modulation and the influence of gender on nonverbal communication, I accentuate that the listener's gender can also influence the way in which voice pitch affects perceptions and behaviour. Consequently,

candidates may unconsciously adjust their voices to sound more appealing, reflecting human nature in political conversations.

As a physiological indicator, a higher voice pitch can also resonate with audiences, indicating emotional arousal (Albertson, Dun, and Gadarian, 2020; Kappas, Hess, and Scherer, 1991; Bachorowski and Owren, 1995; Mauss and Robinson, 2009). Although men candidates would comply with voters' gender expectations and limit their display of emotional arousal, when interacting with individuals of the opposite gender, women candidates may display higher emotional arousal, possibly due to a lack of descriptive representation advantages (Rosenthal, 1995; Ferland, 2022; Badas and Stauffer, 2018) or to overcome strategic discrimination (Bateson, 2020). Moreover, voters reward women candidates with higher overall emotional displays (Boussalis et al., 2021).

In this paper, I use the Democratic Party's primary town hall meetings for the 2020 presidential election as a case study. Primary town halls are an ideal environment in which to test my expectations for gendered nonverbal communication patterns. First, a diverse audience can observe candidates' nonverbal cues in a controlled yet naturalistic town hall setup. Public access to many of these town hall videos also enables the analysis of communication patterns and variations during town hall meetings. Second, compared to general elections, primaries offer a larger number of viable opponents (Benoit, 2007). Specifically, the 2020 Democratic Party primary election town halls provide a unique context for assessing my research question due to the diversity of candidates based on gender, with six women vying for the nomination. Third, the partisan makeup of the audience tends to remain relatively constant among key town hall audiences, notwithstanding the demographic diversity of the attendees. Because of the consistent partisanship in these primaries, it is an ideal setting for studying the impact of gender matching on candidates' nonverbal communication during campaigns, where their primary objective is to secure individual votes.

To assess the validity of my hypotheses concerning nonverbal communication, I analyse video data comprising 86,358 seconds of footage from eight town halls. I leverage the methodological advancements in analysing nonverbal expressions by combining computational methods based on changes in voice pitch to analyse the audio content in these videos and text analysis to evaluate the transcripts of these town halls.

In this paper, I show that women and men candidates, on average, do not show any substantial disparity in how much they deviate from their baseline voice pitch. However, their vocal communication differs based on the gender of their target audience. Taking the non-strategic part of political communication in the centre and adopting insights from evolutionary psychology, I anticipate that women candidates will heighten their voice pitch compared to their average when interacting with an opposite-gender

questioner. However, when it comes to assessing men candidates' behaviour, gender role expectations inform that they will lower their voice pitch from their average. My findings support these expectations.

I aim to emphasise the importance of nonverbal expressions, particularly variations in voice pitch, in studying elite behaviour that is otherwise difficult to notice. Because these cues can significantly influence voter perceptions and behaviours in ways that are not immediately apparent through verbal communication alone, candidates' nonverbal expressions can subtly affect how others view their authority, empathy, and credibility. Making them a critical component of campaign strategies, these nuanced differences in political communication can have the power to influence voter perceptions and decisions. When it comes to political communication, this paper presents a methodological approach that highlights the distinct role of unconscious nonverbal communication, moving away from a sole focus on spoken and written words that could further be employed in future studies in understanding voter preferences. I offer an analysis of how politicians use their vocal pitch, considering their audience, by focusing on the context of campaigns where candidates interact directly with voters. Part of this process entails looking at gender dynamics in political communication and how vocal expressions bring them to light. Not only do I find that voice pitch varies with audience gender, but I also draw attention to the difficulty of detecting such patterns through verbal expressions alone. I argue for a more comprehensive strategy that goes beyond traditional datasets by highlighting the value of taking into account the wealth of information revealed by videos. This approach can provide deeper insights into the unspoken elements of communication, offering a richer understanding of political behaviour and voter interactions.

2.2 Nonverbal expressions in political communication

A performer's goal in an interaction, according to Goffman (1959), is to influence the reactions of others around them by projecting the right image. In his definition of performer's influence, Goffman distinguishes between verbal and nonverbal expressions (also see Fenno (1977, p.898) and Dietrich, Hayes, and O'Brien (2019, p.943) for discussion). When the performer knows that other people are watching, their nonverbal expressions become more contextual and dramatic. The audience would view the performer's verbal expressions as easier to direct and influence. In contrast, viewers depend significantly on the inferences made from the performer's nonverbal cues to maintain a connection with the performer. As Fenno (1977) mentions what Goffmann tries to point out also apply to politics since politicians, like performers, want audience approval and legitimacy. Their goal is to create perceptions that garner political support. As a particular

kind of performer, they could try to influence "presence of self" more than most individuals. Because politicians could feel that their support is largely based on the image they convey to their voters, they put a premium on nonverbal and contextual elements of their presentations.

In terms of their verbal expressions, politicians can be adept communicators who can strategically employ language and consider the responses that particular words elicit (Gallant and Libben, 2021; Crabtree et al., 2020; Osnabrügge, Hobolt, and Rodon, 2021; Silva, Schürmann, and Proksch, 2024). They can use code-switching to balance authority and solidarity (Kementchedjhieva, 2016). Their linguistic choices, including pronominal use, narrative strategies, and textual organization, can create intimacy and influence beliefs (Reyes, 2015). Politicians also strategically use speech to persuade and manipulate public opinion (Austen-Smith, 1992; Jerit, Kuklinski, and Quirk, 2009). For instance, elites' use of emotion in their rhetoric in campaigns can depend on the incumbency status, policy position, economic condition (Crabtree et al., 2020; Scott and McDonald, 2022; Widmann, 2021), and the context, which includes factors such as whether it is the campaign season (Silva, Schürmann, and Proksch, 2024), it is war times (Gennaro and Ash, 2021), or the electoral setting (Pipal et al., 2024).

Nevertheless, the majority of the literature on political communication has centred around the politicians' use of language. In comparison, only a small number of studies have examined the nonverbal aspect of political communication (Dietrich, Enos, and Sen, 2019; Boussalis et al., 2021; Boussalis and Coan, 2021; Rittmann, 2024; Knox and Lucas, 2021; Damann, Knox, and Lucas, 2023). Scholars argue that nonverbal expressions, such as small changes in vocal pitch, are mainly uncontrollable by the speaker as opposed to verbal expressions like words (Ekman et al., 1991; Zuckerman, Driver, and Guadagno, 1985)(also see Dietrich, Hayes, and O'Brien (2019)). "Leakage hierarchy" proposed by Ekman and Friesen (1969) suggests that people only regulate the actions they have learned that are noticeable to others. People tend not to monitor and obscure certain activities, such as gestures, because others rarely comment on these actions. Instead, they will concentrate on facial and verbal behaviour. Hence, moving away from the focus on words alone, this study tries to explore the vocal channel of nonverbal expressions in elite communication that could bring forth the underexplored dynamics of their unconscious behaviour.

Nonverbal expressions such as the tone of voice, similar to body language, convey meaning beyond that communicated by words alone or by the expressions on the speaker's face (Ekman et al., 1991). Not only does the content of our words matter, but the way we express them is also crucial (Boussalis, Coan, and Holman, 2022; Damann, Knox, and Lucas, 2023; Tilley and Hobolt, 2024; Homan, Schumacher, and Bakker, 2023).

Voices emerge as a critical component of nonverbal communication. Voices, as one specific category within nonverbal expressions, transmit information that goes beyond the substance of messages (Guyer, Fabrigar, and Vaughan-Johnston, 2019). Listeners can form perceptions of speakers via their voices, such as confidence (Guyer, Fabrigar, and Vaughan-Johnston, 2019), trustworthiness (O'Connor and Barclay, 2017), warmth (Wu et al., 2023), attractiveness (Feinberg, Jones, Little, Burt, and Perrett, 2005; Collins and Missing, 2003; Jones et al., 2010), social and physical dominance (Schild et al., 2022; Puts, Gaulin, and Verdolini, 2006; Rezlescu et al., 2015), emotional arousal (Filippi et al., 2017) and masculinity (Krahé, Uhlmann, and Herzberg, 2021; Anderson and Klofstad, 2012). In addition, voice can also influence individuals' perceptions of leadership abilities (Klofstad, 2016, 2017; Laustsen, Petersen, and Klofstad, 2015; Banai et al., 2018; Cinar and Kıbrıs, 2024). Furthermore, by delving into the function of voices in dynamic communication, we do not only learn more about how voters use nonverbal cues such as vocal signals to assess and judge political elites, but also how these elites act in such a context.

2.2.1 Gender dynamics in political communication and voice pitch

Gender dynamics significantly impact candidates' communication styles and the reception of their messages within the context of political discourse. Since women and men are socialised into particular "gendered roles" in society (Eagly and Karau, 2002; Bos et al., 2022), their behaviour and communication styles are often shaped by these ingrained societal expectations. Women are expected to display communal traits like compassion and warmth; men are expected to exhibit more agentic traits like dominance and assertiveness due to these assigned gendered roles. When it comes to politics, the role of leadership has been traditionally viewed to be a masculine categorised position (Lombard, Azpeitia, and Cheryan, 2021; Eagly and Karau, 2002). Hence, women candidates face gendered constraints when running for office, requiring them to navigate a "double-bind" by demonstrating both the agentic traits associated with masculinity and the communal traits associated with femininity (Carpinella and Bauer, 2021; Bauer and Santia, 2022).

Not only do these gendered expectations impact how people view politicians, but they can also influence how politicians interact with their constituents. Moreover, as they gain experience, politicians can hone their control over particular communication styles. For instance, in the UK, women parliamentarians' debate styles have been found to be transitioned from being more "feminine," characterised by more emotional and positive approaches, to being more "masculine" (Hargrave and Blumenau, 2022). Gendered expectations can shape the verbal communication styles of politicians (Everitt, Best, and

Gaudet, 2016), but also their nonverbal expressions. Another example from Germany is that Angela Merkel, the former chancellor who served four terms, displayed less anger-related facial expressions in debates compared to her men opponents (Boussalis et al., 2021). In terms of tailoring nonverbal communication styles, Margaret Thatcher, the longest serving prime minister in the UK, worked with a voice coach to lower her voice pitch eventually signalling more masculine traits such as competence and dominance.[1]

Perception of voice pitch, a crucial element of nonverbal communication, is significantly influenced by gendered expectations. It is sexually dimorphic, with women having a physiologically higher voice pitch than men (Puts et al., 2007; Titze, 2000; Feinberg, Jones, Little, Burt, and Perrett, 2005; Vieira, Dalbosco Gadenz, and Cassol, 2015). Consequently, a lower voice pitch signals traits associated with masculinity, dominance, competence and attractiveness for men (Feinberg, Jones, DeBruine, Moore, Law Smith, Cornwell, Tiddeman, Boothroyd, and Perrett, 2005; Feinberg et al., 2007; Pavela Banai, Banai, and Bovan, 2017). While a higher voice pitch signals traits associated with femininity, warmth and attractiveness for women (Jones et al., 2010; Wu et al., 2023; Krahé, Uhlmann, and Herzberg, 2021; Collins and Missing, 2003; Klofstad, 2016). Because our voices serve as heuristics, their influence translates from day-to-day human interactions (O'Connor and Barclay, 2017; Re et al., 2012) to evaluating politicians. Voters often rely on them to form first impressions of politicians (Banai, Banai, and Bovan, 2017; Anderson and Klofstad, 2012; Tigue et al., 2012; Klofstad, 2016; Laustsen, Petersen, and Klofstad, 2015). Thus, the perception of voice pitch can influence how voters evaluate politicians and attribute leadership skills to them.

Women frequently face systemic gender bias in politics due to their higher possibility of having a naturally higher vocal pitch than men. Experimental evidence shows that both women and men candidates can benefit electorally from having a lower voice pitch compared to their opponents (Anderson and Klofstad, 2012; Tigue et al., 2012; Klofstad, Anderson, and Peters, 2012; Klofstad, Anderson, and Nowicki, 2015; Klofstad, 2016; Cinar and Kıbrıs, 2024). As lower voice pitch is associated with masculine traits, perceptions of voice pitch are particularly relevant for women. Stereotypes towards high-pitched voices in politics can result in women candidates striving to balance their self-presentation along the femininity-masculinity continuum during campaigns. By modulating their voice pitch, they could navigate these gendered expectations to appeal to a broader range of voters and enhance their perceived suitability for leadership roles.

There is also a positive correlation between emotional arousal and display of high voice pitch as a physiological indicator (Mauss and Robinson, 2009; Schwartz and Gouzoules,

[1] "The Path to Power" by Margaret Thatcher (1995)

2019). As a higher voice pitch can signal femininity, the display of emotional intensity can also vary based on assigned gender roles (Barnes et al., 2022). For instance, women are conditioned to experience and show stronger emotions; alternatively, men learn to keep their emotions under check (see Boussalis and Coan (2021) for a discussion). Dietrich, Hayes, and O'Brien (2019) show that when discussing issues pertaining to women, as opposed to other subjects, women members of Congress (MCs) have greater emotional intensity measured by voice pitch. The significance of comprehending the ways in which gender dynamics impact verbal and nonverbal communication in politics is further underscored by the fact that voters expect politicians to depict emotional arousal that conforms to gender stereotypes (Everitt, Best, and Gaudet, 2016; Fischbach, Lichtenthaler, and Horstmann, 2015). Hence, a woman candidate can benefit from displaying higher emotional arousal (Boussalis et al., 2021).

Notwithstanding, it is important to identify who the target audience is when studying political communication. Despite its potential effects on a speaker's communication dynamics, the gender of the audience has not garnered sufficient attention in nonverbal political communication when it comes to the influence of the perceived demographic alignment between the candidates and the target audience. Evolutionary psychology literature provides insights into the potential underlying mechanisms behind gendered vocal communication patterns. Previous research has shown that men prefer high-pitched women voices, and this is positively correlated with men's attractiveness ratings for high-pitched female voices (Jones et al., 2010; Feinberg et al., 2008; Puts et al., 2007). In contrast, women find lower-pitched male voices more attractive (Collins and Missing, 2003). Furthermore, Fraccaro et al. (2013) finds that sex-atypical pitch variation (i.e., men heightening their voice pitch while women lower their voice pitch) can make speakers sound less appealing. Women's preferences for lower-pitched male voices may be indicative of a preference for signals that indicate long-term health (Puts, Apicella, and Cárdenas, 2012). Oestrogen levels are also positively correlated with the pitch of women's voices (Abitbol, Abitbol, and Abitbol, 1999) and are positively correlated with healthy reproductive development (Alonso and Rosenfield, 2002).

Perception of attractiveness might also signal the politician's expertise (Palmer and Peterson, 2016) and potential electoral success (Milazzo and Hammond, 2018). According to Herrmann and Shikano (2016), a candidate's attractiveness increases the probability that a subject will attribute her political beliefs to that candidate. Moreover, Stockemer and Praino (2015) finds that voters who lack political education or information rely on attractiveness perceptions to guide their voting decisions. This pattern suggests that politicians' inclination to conform to gender stereotypes when interacting with an opposite-gender audience member and to be perceived as more attractive may be the

cause of the change in vocal communication. These perceptions could influence voters' evaluations.

***Hypothesis**: Women candidates will respond to questions from men with a higher voice pitch than their average, while men candidates will respond to questions from women with a lower voice pitch.*

2.2.2 The Case of 2020 Democratic Party Presidential Primary Town halls

Communicating with people is one of the most essential parts of running for office; each candidate is trying to persuade them for their support (Kendall, 2000, p.2). Allowing ample time for communication, primaries offer a great setting for building a connection with voters and persuasion. Primaries occur in advance of the main election when most people have yet to develop strong opinions. Consequently, candidates have a unique chance to shape people's views and agendas in this context of limited knowledge. Viewers of these debates can change their impressions of the candidates by shifting their focus from the candidates' actual positions on the issues to their public personas and debate styles (Lanoue and Schrott, 1989). In primaries where candidates frequently hold similar positions on key issues, differentiating how they present themselves can be particularly pivotal (Kendall, 2000).

In the United States, primary town halls serve as platforms for citizens to engage directly with political candidates running for office. These events provide candidates with the opportunity to articulate their platforms. While voters can pose questions, voice concerns, and gain insights into the individuals who may represent them in the future. This setting enables politicians to engage with town hall attendants on a more personal level, fostering direct communication that is invaluable for building connections. Research shows that establishing personal contact with voters is a highly effective strategy for politicians seeking to enhance communication and, ultimately, persuade individuals to support their candidacy (Foos, 2018; Cantoni and Pons, 2021; McGregor, 2017; Lee et al., 2018).

Town hall meetings have grown in importance as a means for candidates to address a large audience face-to-face. They provide a one-of-a-kind structure for political involvement and discourse (Wuttke and Foos, 2024; López-Moctezuma et al., 2022; Minozzi et al., 2015; Wantchekon, 2017). At these events, politicians meet with voters, share their agendas, and answer their questions in an atmosphere that encourages participation (Masullo, 2020). Town hall meetings allow for one-to-many conversations, which

can increase the impact of a candidate's message and reach a wider audience than less communal methods of communication like door-to-door canvassing (Foos, 2018).

In addition to facilitating voter participation, town hall meetings are of great relevance. According to López-Moctezuma et al. (2022), these settings are strategically important in political campaigns since they can positively affect parties' vote shares relative to the status quo. Town halls enhance politicians' appeal and relatability by providing a forum for real-time engagement and input. This allows candidates to customise their messaging and respond dynamically to voter concerns. In addition, unlike in more private settings, town hall meetings are open to the public and allow for the study of nonverbal communication techniques such as voice pitch modulation. Investigating these nonverbal expressions during town hall meetings reveals how candidates modify their delivery depending on the gender of the audience member who asks the question.

Moreover, people who share similar views are more likely to meet in primary town halls. Regarding rhetoric, this particular context may impact how politicians express themselves. When politicians address groups that share their views and keep their messages simple rather than complex, they can have a greater impact on influencing the public (Amsalem, 2019). The primary election cycle has the added benefit of maintaining partisanship between the candidates and the voters. Keeping partisanship constant would be beneficial, as candidates from both parties can use different styles in their rhetoric (Widmann, 2021; Scott and McDonald, 2022). Even though the more controllable part of communication, i.e., words, differs by parties, I would also expect partisanship to condition the verbal communication's "leakage" into nonverbal communication (Ekman and Friesen, 1969; Ekman et al., 1991). Thus, for the specific context of this study, this provides no concern.

By conducting a case study of the Democratic Party Primary town halls for the 2020 Presidential election, I evaluate my expectations. The unprecedented number of women who ran for the nomination of the Democratic Party in the primaries of 2020 turned them historically significant. Among the twenty-eight candidates for the presidency, six women have formally declared their candidacy. By examining the influence of gender on the nonverbal communication channels of political elites, this campaign period presents an opportunity that is unlike any other in the U.S. In light of the conditions that surrounded these primaries, the overwhelming majority of Democratic candidates demonstrated a common objective: to defeat Donald Trump (Chang et al., 2023, p.3).

The 2020 Democratic primaries offered an unprecedented opportunity for diversity; however, the gendered media coverage has been cited as one of the reasons why the final two candidates were white men (Chang et al., 2023). Specifically, women candidates were subject to a notable disparity in media coverage compared to their men counterparts,

a trend that has been documented across several countries (Kahn, 1994; Lühiste and Banducci, 2016). Two white men contenders, Joe Biden and Bernie Sanders, remained in the race only after Elizabeth Warren announced her suspension on March 5, 2020. After Sanders withdrew from the race on April 8, 2020, the sole remaining candidate, Biden, became the presumptive nominee. Biden received the necessary 1,991 delegates to secure his nomination in early June. On August 11, Biden named former presidential candidate Kamala Harris as his running mate. At the Democratic National Convention on August 18 and 19, 2020, delegates formally nominated Biden for president and Harris for vice president. On November 3, 2020, Biden and Harris emerged victorious in the presidential election against Trump and Pence. Following this timeline of reduced competition for nomination in 2020, all the town halls I analyse in this paper took place in-person during 2019 and involved multiple candidates taking the stage, hence still providing diversity in terms of the gender of the candidates.

2.3 Research design

To analyse politician-audience interactions, I use video data from Democratic Party primary town halls in the United States for the 2020 presidential election, which are publicly available on YouTube.[2] Those running for the Democratic presidential nomination in 2020 took part in a series of question-and-answer sessions in these town halls. There were a total of 14 primary town halls held between March 30th, 2019 and July 5th, 2019, during which no candidates suspended their campaigns. The first candidate to withdraw from the race among the town hall participants was Eric Swalwell on July 8, 2019. I collected eight town hall videos in order to preserve the town halls without any withdrawal, as it would potentially affect the expressions of other candidates and due to the availability of downloadable videos. The names of the candidates and the town halls in which they participated are listed in Table 2.1. This led to a raw data set that consisted of 86,358 seconds of video footage. More information about the town halls, such as the date held, total duration, and issues covered, can be found in Appendix Table A.1.

The formats in all these town halls are similar to each other. The moderators introduce the politician to the stage first. Then the politician introduces themselves and gives a small speech. Second, the politician takes questions one by one from the moderators and the voters who are, considering the nature of these town halls being held for the Democratic Party primary, highly likely to be Democratic Party voters. The politician takes 2 to 10 questions one by one and then answers them one by one before receiving

[2] `https://www.youtube.com/c/USPresidentialDebates/playlists?view=50&sort=dd&shelf_id=6`

the next question. After the politician answers all the questions, they leave the stage, and the moderators introduce the next politician.

TABLE 2.1: Political Candidates' Participation Across Town hall Video Content

Politicians	Town hall No.							
	1	2	3	4	5	6	7	8
Biden	✗	✗	✗	✗	✗	✗	✗	✓
Booker	✗	✓	✓	✗	✗	✓	✗	✗
Buttigieg	✗	✗	✗	✗	✗	✗	✓	✗
Castro	✓	✓	✓	✓	✓	✓	✓	✓
de Blasio	✗	✗	✗	✗	✗	✗	✗	✓
Delaney	✓	✗	✗	✗	✗	✗	✗	✗
Gabbard	✗	✗	✓	✗	✗	✗	✗	✗
Gillibrand	✗	✓	✗	✗	✗	✓	✗	✗
Harris	✗	✗	✓	✓	✓	✓	✗	✓
Hickenlooper	✗	✗	✗	✓	✗	✗	✓	✗
Inslee	✗	✓	✗	✗	✓	✗	✗	✓
Klobuchar	✓	✓	✓	✓	✗	✓	✓	✓
O'Rourke	✗	✓	✓	✓	✗	✓	✓	✓
Ryan	✓	✗	✗	✗	✗	✗	✗	✓
Sanders	✗	✓	✓	✗	✓	✓	✓	✓
Swalwell	✗	✗	✗	✗	✗	✗	✓	✗
Warren	✓	✓	✓	✓	✗	✓	✓	✓

2.3.1 Vocal Pitch

I evaluate these videos of real politician-audience interactions using computational methods. First, I extracted the audio from the videos using *ffmeg* library in Python. Based on the Praat source code, I then used the Python parselmouth library to feed the audio files extracted from the videos into it (Boersma and Weenink, 2020). I followed the steps introduced by Boussalis et al. (2021, p.1247-1248). With 100 "frames" per second, this software transformed the audio from these videos into a Praatsound object. Each "frame" includes a candidate estimate of fundamental frequency (F_0). Fundamental frequency refers to the lowest frequency of a person's vocal fold vibrations when producing a voiced sound. It is perceived as the pitch of the voice. The vibratory rate of the vocal folds determines voice pitch. Longer vocal folds with less muscle tension vibrate at a lower fundamental frequency (F_0), resulting in a perceived lower pitch (Aung and Puts, 2020, p.154). I use the default Praat frequency settings of 75-600 Hz. The programme uses a path-finding algorithm to select the most plausible candidate estimate for each frame. Finally, this resulted in a data frame in which each row represents a second in the forum and offers the most precise fundamental frequency estimate for the speaker at that specific instant.

I subsequently expanded the second-by-second data frame to include manually coded columns indicating who was speaking at that specific moment: men politicians, women politicians, men moderators, women moderators, women voters, or men voters. I also included the following columns: the name of the politician, gender (with a binary indicator of 1 for women and 0 for men), ethnicity (with a binary indicator of 1 for white candidates and 0 for candidates from non-white backgrounds), age (with a categorical variable to indicate older, middle-aged, and young politicians), a column to indicate to whom the candidate is responding, and three columns with binary indicators of whether there is a perceived gender, ethnicity, or age mismatch between the candidate speaking at that moment and the audience questioning them. To categorise perceived gender, ethnicity, and age mismatch, I relied on the candidates' accessible background information and visually examined the questioners in the videos. Age categories were determined using visual signals such as facial features, hair colour, and visible age indicators. Individuals appearing under 40 years old were coded as "young," those appearing between 40 and 60 were coded as "middle-aged," and those appearing more than 60 were coded as "older." These age assessments, albeit subjective, were regularly applied using these criteria to assure replicability across all observations. Lastly, I created a clustering variable to indicate each answer that a politician is giving to a different question. It is a grouping variable since, for each answer, there are multiple observations, i.e., an answer often spans multiple seconds. Before moving into the analysis part, I constrained the data to the seconds where the politicians were responding to questions asked to them, which resulted in 42,144 observations.

Figure 2.1 illustrates the measured fundamental frequency for each politician and by politician gender. Based on Boussalis et al. (2021), I standardised the per-second fundamental frequency within each town hall for all politicians. I believe that including townhalls in the standardised F_0 measurement would be beneficial in addressing unobservables that could affect a politician's average voice pitch on different days that the townhalls were held, e.g., a candidate becoming ill in one townhall and affecting their voice pitch (Tarafder, Datta, and Tariq, 2012). Figure 2.2 shows the distibution of standardised voice pitch for all politicians.

2.3.2 Verbal expression analysis

Using the Lexicoder Sentiment Dictionary—which has been well-validated for political discourse—I employ a dictionary approach to assess verbal emotional arousal at the conversation level (Boussalis et al., 2021; Crabtree et al., 2020; Proksch et al., 2019). After identifying the responses that each politician provided, I put them through the sentiment dictionary. In each answer, I count the quantity of positive and negative

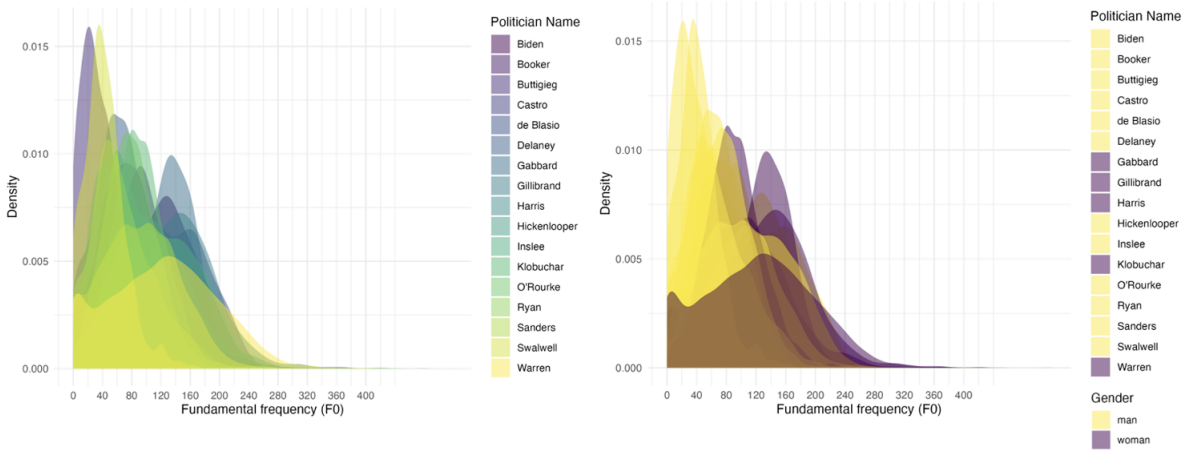


FIGURE 2.1: Density plot of candidates' voice pitch by politician name and gender (F_0)

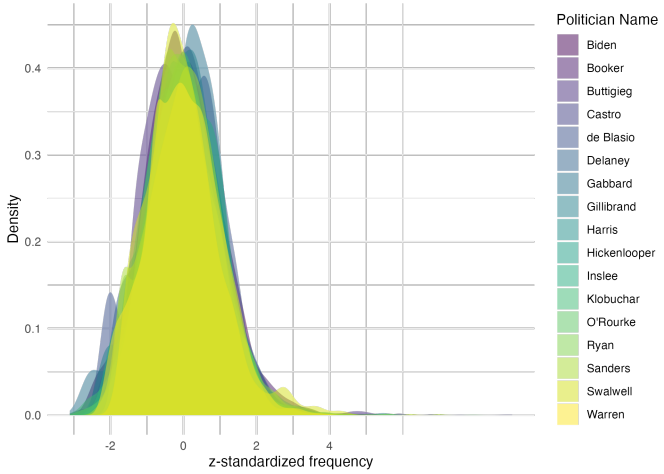


FIGURE 2.2: Density plot of candidates' z-standardised fundamental frequency (F_0)/ based on politicians within each townhall

words, and I calculate the overall emotion by logging the sum of positive and negative expressions. Since I try to measure overall emotional arousal but not emotional valence, my approach diverges from the measure employed by Boussalis et al. (2021), where they measure the aggregate sentiment by logging the ratio of positive and negative terms. As an illustration, anger and joy are comparable in terms of emotional arousal, but they differ in valence. Nevertheless, both emotions have been associated with vocal pitch and amplitude (Johnstone and Scherer, 2000). With the verbal-level overall emotional intensity serving as a secondary outcome variable, I question whether candidates are controlling their verbal expressions in the case that they show emotional intensity in their nonverbal vocal communication channel. The results where I used emotional valence measure as a secondary outcome variable are also presented in Appendix Figure A.2 for comparison.

To further quantify the sentiment in the question that was posed to the candidate, I

employ the same dictionary. I measured this using the log ratio of positive and negative terms since each question's sentiment direction could be significant in eliciting a response from the candidate. In order to determine if the candidates' voice pitches vary in response to a given question, this will serve as a control variable.

2.4 Results

I use linear regression to estimate the differences in pitch changes between candidates who respond to a co-gender audience member's question or not. I introduce "gender mismatch" and "woman" as the primary independent variables, which indicate whether the candidate is a woman or a man and aligns with the questioner's perceived gender or not.

The sentiment level of the question posed may also influence the manner in which an individual uses nonverbal expressions through variation in their voice pitch. To examine this, I converted my data from a long format (second level) to a wide format (conversation level). This analysis, therefore, classifies each candidate's response to each question in each town hall into a separate row. Hence, the dependent variable of the degree to which the candidate's pitch fluctuated from the candidate's baseline level in each town hall was measured within each conversation. Specifically, I take the mean of the second-by-second fundamental frequency for each candidate in each townhall for a specific answer. Then, I followed the z-standardisation approach discussed in Section 2.3.1, which is standardising the per-answer mean fundamental frequency within each town hall for all politicians. I calculated the difference between the answer-level mean fundamental frequency and the candidate's mean fundamental frequency during their introduction before receiving any questions from the audience members. I then divided this difference by the standard deviation of their answer-level fundamental frequency. Noting that every candidate in attendance at each town hall responds to each question posed is crucial. As a result, I was capable of gauging the sentiment level of the question posed to a candidate, which might have prompted how they responded.

All models incorporate town hall fixed effects. This is because each town hall typically focuses on a single issue (see Appendix Table A.1), and the bulk of questions centre around these themes. Additionally, the models include fixed effects at the candidate level. Due to the standardised nature of the primary dependent variable, all candidates' means are zero. As stated in Rittmann (2024, p.941), this means that fixed effects are required for candidate-level intercept estimation. I also present the primary findings without fixed effects at the candidate level. My results' direction is unaffected by the fixed effects specification. Finally, to account for potential correlations in residuals across

candidates across numerous observations during a town hall event, fixed effects may not be sufficient. Therefore, I incorporated clustered standard errors by candidate to account for systematic changes over time within candidate, such as a candidate getting exhausted or agitated, which may impact voice pitch and cause correlations in residuals between earlier and later questions during a town hall.

In Table 2.2, I look at whether women and men candidates change their voice pitch in opposite directions (i.e., women candidates via heightening and men candidates via lowering) when responding to an audience member with whom they have a gender mismatch. I interact the "Woman" variable with the binary "Gender Mismatch" variable, indicating if an opposite gender audience is asking a question to the candidate. In all models, perceived age mismatch and ethnicity mismatch serve as control variables (also see Appendix Section A.3 and A.4 for further discussion).

I present the outcomes at the conversation level, both with and without candidate-level fixed effects specifications, in Table 2.2. Models (1), (2), (3) and (4) use standard deviations above and below baseline to predict the speaker's voice pitch. Model (2) presents the results without candidate-level fixed effects, whereas Model (3) has candidate-level fixed effects and Model (4) with the question sentiment as an additional control variable.[3] The following discussion displays the estimates from Model 3 within the parentheses.

	Model (1)	Model (2)	Model (3)	Model (4)
(Intercept)		0.19	0.11	0.07
		(0.11)	(0.20)	(0.19)
Gender mismatch		−0.45*	−0.48*	−0.46*
		(0.21)	(0.23)	(0.22)
Woman	0.01	−0.40**	−0.38*	−0.29
	(0.01)	(0.17)	(0.19)	(0.20)
Gender mismatch x Woman		0.74*	0.77**	0.74*
		(0.32)	(0.32)	(0.32)
Question sentiment				0.09
				(0.05)
Fixed effect:	Town hall	Town hall	Town hall + Candidate	Town hall + Candidate
R^2	0.00	0.03	0.03	0.04
Adj. R^2	−0.03	−0.02	−0.08	−0.07
Num. obs.	276	276	276	276
N Clusters	17	17	17	17

TABLE 2.2: Effect of candidate and audience gender on vocal pitch changes. Perceived age mismatch and ethnicity mismatch are added as control variables. *p<0.1; **p<0.05; ***p<0.01.

[3] R^2 and adj. R^2 scores show that the independent factors do not explain a great amount of variation in vocal pitch within the speaker/town hall. There are numerous causes of vocal pitch variation. Thus, this is hardly surprising and in parallel with Rittmann (2024, p.942)'s discussion on model specification. After removing between-speaker and between-town hall variation by z-standardisation of voice pitch, candidates and town halls are included as fixed effects, which results in negative adj. R^2 values.

As presented in Model (2) (Model (3)), the vocal pitch of women candidates during interactions with men audience members is notably higher than when responding to questions posed by women audience members. Women candidates' voices are 0.74 (0.77) standard deviations higher than their baseline voice pitch when they address a man audience member. Comparatively, men candidates' voices barely rise by 0.19 (0.11) standard deviations while speaking to men audience members, which is roughly four times (seven times) lower. However, men candidates lower their voice pitch when interacting with women audience members. In addition, as shown in Model (4) of Table 2.2, the candidates' voice pitch increases, on average, in response to the sentiment of the query, compared to their average pitch. Even when accounting for the sentiment of the question, the alteration in the pitch of the voice for women candidates in response to a question asked by a man is 0.74 standard deviations greater than their baseline pitch when responding to a question posed by a man. The findings, therefore, support my expectations for the Hypothesis.

	Voice Pitch	Verbal
(Intercept)	0.11	−0.94**
	(0.20)	(0.35)
Gender mismatch	−0.48*	0.23
	(0.23)	(0.18)
Woman	−0.38*	−0.08
	(0.19)	(0.26)
Gender mismatch x Woman	0.77**	−0.46
	(0.32)	(0.39)
Fixed effect:	Town hall +Candidate	Town hall +Candidate
R^2	0.03	0.18
Adj. R^2	−0.08	0.09
Num. obs.	276	276
N Clusters	17	17

Note: *p<0.1; **p<0.05; ***p<0.01.

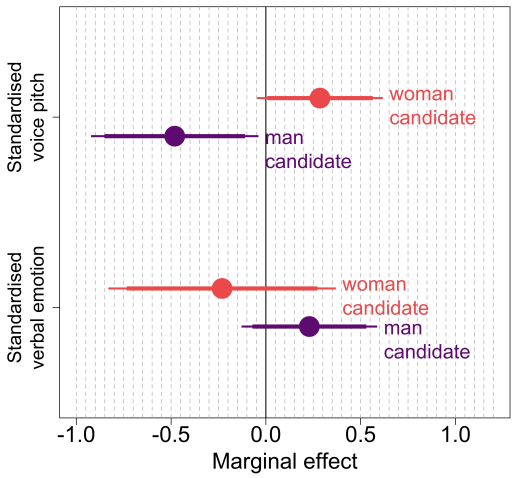


FIGURE 2.3: Estimation results of linear regression. Perceived age mismatch, ethnicity mismatch and town halls are added as control variables. The right panel shows the marginal effect of interacting with an audience with whom the candidate has a gender mismatch. Horizontal bars on the right panel show 90% and 95% confidence intervals.

In order to further investigate the emotional arousal mechanism, I evaluate whether the candidates' overall verbal emotional intensity corresponds with the results I observe in their vocal pitch changes. To achieve this, I calculated the standardised verbal emotional intensity for each candidate's answer and used it as a secondary dependent variable. In conjunction with the control variables of perceived age and ethnicity mismatch with the questioner and town halls and candidate fixed effects, the analysis incorporated Gender Mismatch and the Woman binary variables. In the left panel, Figure 2.3 displays the results of the linear regression analysis, while the right panel illustrates how the marginal

effect coefficients for verbal emotional arousal and vocal pitch differ when there is a gender mismatch between the questioner and the candidates.

Analysis of the overall verbal emotional intensity reveals no distinction between men and women politicians when they are interacting with an opposite-gender audience member (see the second column in the left panel). Considering the verbal expressions "leakage" into nonverbal communication (Ekman et al., 1991), if the emotional arousal mechanism is in play for candidates' voice pitch changes, I would have expected that the pattern I observed in voice pitch changes would be in the same direction as the verbal emotional arousal. In addition, although not statistically significant, I find that women candidates use less emotional arousal in their rhetoric than men when they interact with an opposite-gender questioner. This further substantiates the notion that alterations in voice pitch could be reflective of being perceived as more appealing by the listener, akin to the subconscious human interactions that occur during political campaigns.

2.4.1 Analysis on seconds level

To be able to use the variation in second-by-second data format, I use the long format data to estimate the gendered differences in voice pitch changes. All models presented in Table 2.3 exhibit similar outcomes as Table 2.2, albeit with smaller effect sizes. When responding to a question from a man audience member, women candidates use a higher voice pitch than when speaking to a woman audience member, as shown in Model (1) (Model (3)), without (with) candidate-level fixed effects specification. Models 2 and 4 present the results with clustered standard errors by candidate. In addition, men candidates lower their voice pitch than their baseline by -0.04 (-0.07) standard deviations when interacting with a woman audience. According to Dietrich, Hayes, and O'Brien (2019)'s interpretation of the raw magnitudes, the speaker probably does not influence the shift in voice pitch. The hypothesis is also supported by subgroup analysis presented in Appendix, Table A.3, where the same voice pitch pattern is observed when analysing the questions asked by moderators and voters separately.

	Model (1)	Model (2)	Model (3)	Model (4)
(Intercept)	0.03	0.03	0.01	0.01
	(0.02)	(0.04)	(0.05)	(0.05)
Gender mismatch	−0.07***	−0.07	−0.08***	−0.08
	(0.02)	(0.05)	(0.02)	(0.06)
Woman	−0.07***	−0.07	−0.06	−0.06
	(0.02)	(0.04)	(0.05)	(0.04)
Gender mismatch x Woman	0.14***	0.14*	0.15***	0.15*
	(0.03)	(0.07)	(0.03)	(0.08)
Fixed effect:	Town hall	Town hall	Town hall + Candidate	Town hall + Candidate
Clustered sd:	No	Yes	No	Yes
R^2	0.00	0.00	0.00	0.00
Adj. R^2	0.00	0.00	0.00	0.00
Num. obs.	42144	42144	42144	42144

TABLE 2.3: Effect of candidate and audience gender on vocal pitch changes. Perceived age mismatch and ethnicity mismatch are added as control variables. *p<0.1; **p<0.05; ***p<0.01.

2.5 Conclusion

The aim of this study was to examine how politicians use their nonverbal expressions through their voices in in-person interactions during campaigns and formulate and evaluate a theory on how candidates' and their targets' genders affect this. I hypothesised that women candidates would be more likely to increase their voice pitch when speaking to an audience that does not share the same gender due to an internal motivation to be perceived as more appealing and to comply with gendered expectations of emotional expressions. In contrast, I expected men candidates to lower their voice pitch. The findings corroborated this hypothesis. However, when I examined their verbal emotional intensity displays, the same finding disappeared. The lack of differentiation in verbal emotional expressions between men and women candidates may have been indicative of a subconscious drive. This conclusion might be due, in part, to the more controlled nature of the spoken words (Ekman et al., 1991; Zuckerman, Driver, and Guadagno, 1985). Following that, this paper offers a methodology for future studies to further investigate whether there may be additional pressure for women candidates to appeal to men listeners, which may cause them to comply with femininity signals due to ingrained gender preconceptions and cultural expectations. The same would apply to men candidates seeking to portray themselves as more masculine.

Despite the growing body of literature on candidates' use of verbal and nonverbal expressions, gendered communication dynamics vis-à-vis the target audience received less attention. These studies opened up new avenues for research by developing advanced methodological tools to analyse verbal and nonverbal expressions (Dietrich, Hayes, and O'Brien, 2019; Boussalis, Coan, and Holman, 2022; Osnabrügge, Hobolt, and Rodon,

2021). Little is known, however, about the ways in which politicians employ vocal expressions in direct interactions with potential voters during election campaigns, despite the fact that there is research on the effects of candidates' voice pitches on voters' perceptions across genders. Focusing on the gendered communication dynamics in campaigns, the selected case for this paper, Democratic Party primary town halls, offers a good setting for testing the direct communication channel in elite behaviour. This paper's main contribution comes from its use of the recipient's gender in exploring elites' campaign behaviour.

There are also implications for the Democratic Party stemming from the observation of gendered voice pitch patterns among candidates for the highest office in the U.S. The Democratic Party has a reputation for promoting liberal, progressive ideals, such as gender equality, so that candidates would be less pressured to adhere to traditional norms of masculine leadership (Hansen, 2016; McDermott, 2016; Bernhard, 2022). The findings on adhering to gender-congruent behaviour when interacting with an opposite-gender questioner suggest that candidates unintentionally conform to gendered norms, belonging to a party that evokes concepts of femininity, i.e., "ideas about the party that are cognitively linked to the ideas about gender" in people's minds (Winter, 2010, p.589). The findings indicate that Democratic women candidates modulate their voice pitch more than men candidates when interacting with men audience members, resulting in a more masculine-sounding voice than their average. This suggests that a party advocating for gender inclusivity may not be immune to the impact of deeply embedded cultural norms and preconceptions regarding gender and politics. These trends, which the Republican Party's more traditional views on gender roles could make more obvious (King and Matland, 2003), expose an additional level of nuance in the communication styles of Democratic candidates. This finding further demonstrates that entrenched gender expectations in politics may influence candidates' nonverbal expressions despite the party's commitment to liberal gender norms. This has broader implications for our understanding of politicians' communication styles and the process of harmonising their nonverbal expressions with their ideological beliefs.

In this study, I wanted to better understand gendered interactions in politics by examining voice pitch variations as a way to operationalise attractiveness and emotional intensity in nonverbal displays. But it is important to remember that pitch is just one factor among many when it comes to gauging the intensity of nonverbal emotions and attractiveness. Other measures of attractiveness in nonverbal communication include facial and body appearance (Groyecka et al., 2017; Hart, Ottati, and Krumdick, 2011), which together provide a more comprehensive understanding of how politicians might portray attractiveness when interacting with potential voters. Moreover, a fuller picture of how emotions affect communication between people has been gained from looking

at other nonverbal cues, such as heart rate, facial electromyography (EMG) (Bakker, Schumacher, and Rooduijn, 2021), and facial expressions (Boussalis and Coan, 2021). Understanding gender's effects on political communication and nonverbal expressions may benefit from integrating other nonverbal cues.

Even though a candidate's vocal pitch could reveal their communication style, it is hard to draw a direct causal link between vocal pitch changes and campaign persuasion goals. In this paper, I do not claim to estimate a direct causal effect of candidates' and voters' gender on voice pitch modulation or voice pitch modulation on electoral success. Instead, I aim to investigate the relationship between nonverbal expressions and audience gender, as well as the potential implications of these interactions on gendered expectations in politics. To infer causality, certain assumptions need to be held, such as the isolation of voice pitch changes as the primary variable influencing voter perceptions and the control of extraneous factors that could confound the relationship. Understanding politicians' inner motivations and the influence of their nonverbal communication on voters is crucial before drawing any conclusions on whether politicians' voice pitch shifts are attributable to persuasion and/or represent everyday human interactions. When voters establish their opinions, they take into account past events, current events, and interpersonal conversations (Chong and Druckman, 2011). The link between changes in voice pitch and results of persuasion is complicated because these outside factors impact the environment in which voters perceive politicians' portrayal of themselves. Consequently, the precise effect of vocal displays on electoral outcomes is complex and situational; however, it may affect how strongly people feel about a candidate and form impressions. More research should be done in the future to find out how campaign mechanisms, individual attitudes, and nonverbal communication are connected. This could be done through experimental designs that better account for these variables and test for causality.

While vocal pitch changes may reveal information about a candidate, it remains unclear how elites' gendered communication would impact public perception and electoral gains. However, for the specific case of primary election campaigns, it would be misleading to draw conclusions about the impact of gender matching on vote gains from the primary election results alone. Not only do I not argue in this paper that politicians' nonverbal cues are the most compelling and vote-winning signal, but many candidates also decided to suspend their campaigns during the primary for other reasons, hence missing individual observations.

This paper emphasises the significance of considering gendered dynamics in campaign settings and the significant influence of nonverbal cues on elite communication, particularly variations in vocal pitch. However, my attempt to comprehend gendered political communication during a specific primary election campaign period highlights the need

for more study to look into the complex mechanisms. Future research should examine these interactions in greater detail across a range of political circumstances and election stages to better understand how gender influences political communication strategies, public perception, and election results.

3

Perceived masculinity is not a vote winner: A visual survey experiment

Abstract

The rise of new technologies has opened up novel opportunities to study the visual aspects of political communication through images and videos on social media and news platforms. This shift highlights the need to investigate the heterogeneity in candidate preferences as conveyed through their visual representation. In this study, I explore whether candidates' perceived facial masculinity influences voter preferences for candidates' gender and race in the United States as a gendered visual cue. Adopting a novel visual experiment, I generated virtual candidates using a tool that allows comprehensive facial feature customisation. Against expectations, I find a general preference for less facial masculinity in political candidates, primarily shaped by the preferences of self-identified liberal voters. Women, particularly African American women candidates, are worse off when they are perceived to look more masculine than feminine. One mechanism that can explain the finding on women candidates is the lower degree of perceived attractiveness for more masculine-looking candidates.

3.1 Introduction

Researchers have focused extensively on the impact of politicians' words on voting behaviour. However, as our exposure to politicians involves visual aspects, understanding how their nonverbal communication might trigger implicit biases among voters is becoming essential (Bernhard, 2023; López Ortega and Radojevic, 2024; Vecchiato and Munger, 2022). For instance, a 2020 Washington Post opinion piece details the criticisms aimed at Vice Presidential candidate Kamala Harris' nonverbal expressions during the Vice Presidential Debate in the United States, following her interruption by opponent Mike Pence: *"So she smiled as she held her ground — and of course, they called it a smirk, a grin that by definition comes off as irritating or smug. But it was more than that. Harris gave Pence "The Look" … The kind of thing that leads Black women to be called sassy, volatile, aggressive or angry. All of that is an effort to dismiss or demean. But that attempted erasure is the very reason Black women — indeed, most women — have some version of The Look in their arsenal."*[1] Even after getting elected as the first African American and Asian American woman Vice President of the United States and running as the presidential candidate for the 2024 U.S. Elections, the criticisms towards her continued, being nicknamed "Laffin Kamala Harris" by her presidential race opponent Donald Trump.

A gendered lens filters the portrayal of candidates' looks and sounds, judging their performances according to standards of masculine behaviour. Hence, learning how nonverbal cues affect voters is important to understanding voter behaviour to creating more inclusive political communication to be able to foster a more diverse political environment. Studies are showing the benefits men can experience by adhering to gender-congruent norms and women by adhering to gender-incongruent norms (Bauer, 2017; Schneider and Bos, 2019). Yet, there is still a gap in our knowledge on how gendered nonverbal cues, especially the ones that are challenging to tailor on a daily basis, such as facial characteristics signalling masculinity or femininity, influence voters' judgement and how they interact with the perceived race and gender of a candidate. Leveraging a state-of-the-art AI tool released in 2021, I create virtual political candidates to investigate whether a candidate's perceived facial masculinity, considering the candidate's race and gender, has an impact on voting preferences in the United States.

Although there is widespread evidence of strategic discrimination against women and ethnic minorities (Bateson, 2020; Green, Schaffner, and Luks, 2023), candidate preferences might be evolving (Lawless, 2015). Recent empirical evidence has uncovered an

[1] `https://www.washingtonpost.com/opinions/2020/10/08/harris-wont-stop-her-smirk-nor-should-she-its-black-womens-superpower/`. Accessed on July 25th, 2024.

intriguing pattern in candidate preferences. On a global scale, the exhaustive meta-analysis of candidate choice experiments conducted by Schwarz and Coppock (2022) reveals that women candidates perform slightly better than men on average. However, this "pro-women" preference might disguise some heterogeneity. Studies have shown that the preference for women varies based on candidates' marital status (Clayton et al., 2020; Teele, Kalla, and Rosenbluth, 2018), race (Lemi and Brown, 2020; Mosier and Pietri, 2021; Schneider and Bos, 2011), whether elections are gender-stereotype congruent elections (Anzia and Bernhard, 2022), the partisanship of voters (Karpowitz et al., 2024; Bernhard, 2022; Koch, 2000), their nonverbal physical traits such as height (Bernhard, 2023), voice (Klofstad, 2016), perceived attractiveness (Chiao, Bowman, and Gill, 2008) as well as their facial features (Carpinella et al., 2016) such as having gender-congruent facial traits (Hehman et al., 2014; Rhodes, Hickford, and Jeffery, 2000). Yet, as voters are exposed to candidates via visual platforms (Carpinella and Johnson, 2016), such as social media, the question of whether there is still a relatively unexamined heterogeneity in the preference for visuals for women and non-white candidates has become increasingly important.

The visual interaction with a candidate could increase voters' reliance on familiar signals, hurting the diversity of representation voters receive. As a result, physiological cues like perceived facial masculinity and femininity might play a role beyond simple categorisation in triggering gender stereotypes. The study by López Ortega and Radojevic (2024) reveals that using visual cues rather than textual labels in the candidate selection process appears to amplify discriminatory preferences significantly. They show that, with visual cues, the preference for women candidates and, especially, non-white women lessens notably. Although studies have focused on the manipulative part of feminine and masculine self-presentation of the candidates (Karpowitz et al., 2024), understanding facial masculinity and femininity as a non-manipulative and continuous component could help to explain why discriminatory biases may increase in response to political candidates' visual representations. This endogenous gendered signal perceived via faces has the potential to qualify the literature's findings on the preferences of the binary gender of politicians.

In this study, I adopted a pre-registered visual conjoint experiment where subjects were presented with two randomly presented hypothetical candidate pictures.[2] I show that visual signals related to physical appearance influence voter preferences for candidates. On average, regardless of race or binary gender, I find that voters prefer candidates with less facial masculinity. Therefore, this study shows that facial masculinity can be one of the factors that could explain voters' preferences when we move away from binary gender

[2]The hypotheses and primary data analysis in this paper adhere to a pre-analysis plan that was registered before the experiment was conducted: `https://osf.io/58dhm`.

classifications to understand the underlying cues voters could perceive from candidates' faces. This finding also indicates that when exhibited visually, women candidates can still experience a disadvantage compared to men; however, having more facial femininity serves as a mediating gendered cue. When I confine my focus to African American candidates, I find that African American women candidates benefit more from possessing more facial femininity than their co-racial male counterparts. One plausible explanation for this finding is that voters tend to perceive candidates of any racial background or women with facial features that align more closely with stereotypically masculine traits as being less attractive. The results also indicate that self-identified liberal voters primarily influence the preference for facial femininity in political candidates. In contrast, conservative voters do not differ significantly in their preference for facial masculinity based on the candidate's race.

According to preconceptions based on facial features, facial masculinity, a heuristic that is difficult to change on a daily basis, may favour or disadvantage politicians and hurt inclusive political representation. Researchers have looked at the relationship between facial characteristics, including facial masculinity and, to some extent, voting behaviour, exploring how these visual cues may affect how we evaluate and choose political leaders (for a review, see Carpinella and Johnson (2016)). Nonetheless, how facial masculinity, as a continuous gendered signal, functions at the intersection of race and gender in political decision-making offers an opportunity to deepen our understanding of visual cues in representation.

3.2 Visual perception and voter choice

The proliferation of visual representations of political candidates across various media platforms has elevated the significance of nonverbal cues in shaping voter perceptions. With the increasing reliance on televised broadcasts (Sapiro et al., 2011; Bauer and Santia, 2022), debates (Boussalis et al., 2021), social media (Boussalis, Coan, and Holman, 2022; Vecchiato and Munger, 2022), and campaign websites (Druckman, Kifer, and Parkin, 2007) for candidate information, voters often resort to observable physical attributes to inform their impressions and decision-making (Carpinella and Johnson, 2016). Extensive research has underscored the strong link between these visual cues and candidates' electoral success, emphasizing the heuristic role of facial features in facilitating rapid information processing (Todorov et al., 2005; Olivola and Todorov, 2010; Klofstad, 2017). This paper delves into the influence of facial masculinity as a prominent visual characteristic on voter preferences. It seeks to understand how its impact on

candidate evaluations varies depending on the candidate's gender and race in the United States.

3.2.1 Facial masculinity: is it sexually dimorphic?

Disentangling gender category information from indicators of facial femininity and masculinity is important. Evidence suggests that gender classification based solely on facial features can be inaccurate (Walker and Wänke, 2017). Extra information about the person's facial styling, like hairstyle and jewellery, is often required to determine if they are a man or a woman. While high levels of facial masculinity are generally associated with the male gender, it is not necessarily true that all men display high levels of facial masculinity. In addition, women can exhibit varying degrees of facial masculinity, which can be attributed to a range of factors, including genetic predisposition, hormonal fluctuations, and environmental factors. On the one hand, elevated testosterone levels are associated with masculine facial traits such as a stronger jaw and brow, and narrower eyes (Pound, Penton-Voak, and Surridge, 2009) and dominance, risk-taking, and status-seeking (Spisak et al., 2012). On the other hand, oestrogen is associated with feminine facial traits, giving women wider eyes and fuller lips and making them more caring and kind (Taylor et al., 2000; Thornhill and MØller, 1997).

While the level of facial masculinity is physiologically gendered and men hormonally have a higher chance of portraying more masculine features, social role theory and gendered socialisation theory suggest that men's and women's historical occupation of societal roles (e.g., men as leaders and breadwinners, women as caretakers and nurturers) has led to widespread beliefs about their internal characteristics being consistent with those required to perform these roles (Eagly, 1987; Eagly and Wood, 2016; Bos et al., 2022).

The notion of leadership being gendered is a prevalent stereotype, especially in the realm of politics (Eagly and Karau, 2002; Lombard, Azpeitia, and Cheryan, 2021). However, the perception of masculinity as a gendered continuous cue might hide some heterogeneity in candidate preferences. Oliver and Conroy (2018) find that regardless of gender, higher perceived masculinity improves the likelihood of being recruited for political office. In another study, Chan et al. (2021) show that voters and lobbyists perceive masculine politicians as being harder to control. Rosenwasser and Dean (1989, p. 82) find that men were more likely than women to win the presidency and that voters viewed masculine-categorised tasks as being comparatively more significant than women's. Research has shown that this might be due to the association of masculinity with traits such as strength (Rosenberg et al., 1986; Johns and Shephard, 2007), competence (Oh, Buck,

and Todorov, 2019; Olivola and Todorov, 2010), and dominance (Wen et al., 2020). Consequently, political candidates who exhibit facial characteristics and conduct that are construed as masculine would be more likely to be perceived as competent leaders and enjoy a higher probability of securing electoral victory (Cooper, 2008; Carpinella and Johnson, 2016) (also for heterogeneous effects see Carpinella et al. (2016) and Bernhard (2022)). In particular, I aim to test the following hypothesis:

Hypothesis 1. Voters are more likely to choose a candidate with more masculine features.

The gendered correlations between facial signals and personality factors may explain why these characteristics have distinct effects on election outcomes for men and women. Women politicians often portray a masculine image of competence while projecting a feminine image of beauty (Bauer, 2017). Incongruent with neither masculine nor feminine norms, research reveals that voter expectations of women candidates are uncertain. Voters do not regard women candidates as feminine (Bauer, 2015*b*,*a*; Dolan, 2014), but they also do not instantly identify them with desirable leadership characteristics such as experience and expertise (Schneider and Bos, 2014). This disparity in gender classification and perceived masculinity is a result of the flexible nature of masculinity and femininity.

3.2.2 Accounting for candidate race

In accordance with the principles of social role theory and the leadership prototype within the U.S., the perception of an individual's leadership capabilities is expected to be linked to their electability. Leaders are deemed highly efficient and desirable when they exhibit traits that are stereotypically associated with men or white individuals. According to prior studies, there exists a perception that women and African Americans are less likely to possess robust leadership qualities in comparison to their male and white counterparts (Schneider and Bos, 2011; Ditonto, Hamilton, and Redlawsk, 2014). Experimental research in this area has been limited (for a recent investigation, see Mosier and Pietri (2021)), despite the fact that theoretical consideration of the interplay between these two factors in the creation of political stereotypes has garnered substantial attention (Gay and Tate, 1998; Brown and Gershon, 2016; Ditonto, Stalsburg, and Andersen, 2010; Holman and Schneider, 2018).

Research on minority politicians shows that racial biases can affect election outcomes, with minority politicians receiving consistently lower approval ratings than their white counterparts. According to Weaver (2012), there is a higher probability that voters will associate unfavourable political stereotypes with politicians who possess more distinct African American physical characteristics compared to those who have more Caucasian

features. This is due to the fact that negative racial stereotypes are more strongly linked to individuals who belong to the outgroup and exhibit darker skin tones and more Afrocentric traits. Visalvanich (2017) unveils racial competency stereotypes in political candidates, showing how white individuals tend to view racial minorities as less qualified and unfit for politics. As Schneider and Bos (2011) point out, African American politicians face stereotypes that they are less competent than their white counterparts in terms of intelligence, influence, eloquence, and leadership ability. In addition to that, they reveal that African Americans are more direct and emotionally intense but not as manipulative as other groups. Furthermore, if non-African-Americans believe that African-American leaders are putting the interests of their racial group ahead of their own constituents' interests, they may be less likely to support those leaders (Schneider and Bos, 2011).

The notion that minority politicians may be perceived as less viable candidates compared to their non-minority counterparts has the potential to influence public attitudes towards them. Although African American candidates are often perceived as more compassionate, capable, and motivated to serve the interests of marginalised communities than their white counterparts (Sigelman et al., 1995), there are concerns among voters regarding the competence of African American politicians on issues that are not directly related to race (Brown and Gershon, 2016; Gordon, Miller, and Harrison, 2006). These concerns might cause voters to negatively evaluate African American politicians when they have less information about these politicians' expertise or their issue priorities, hence paving the way for voters to rely on the stereotypes. The perception of a candidate that is deemed excessively masculine may potentially elicit racial stereotypes towards candidates belonging to minority groups (Cooper, 2008). Therefore, the presence of facial masculinity may have a negative impact on the electoral success of African American politicians. Thus, I anticipate that African American candidates who possess more masculine physical attributes than their same-race opponents will encounter greater electoral obstacles:

Hypothesis 2. Voters are less likely to choose African American candidates with more masculine features. However, they are more likely to choose Caucasian candidates with more masculine features.

Within the political context of the U.S., it is imperative to acknowledge the intersection of gendered signals and racial classifications. Little et al. (2007) show that voters tend to perceive white men candidates as more masculine than non-white or women candidates, regardless of their actual facial features. According to the study by Carpinella et al. (2015), male faces elicit categorisations as either Asian or African American for racially ambiguous targets, monoracial targets, and actual facial pictures, while female faces elicit

categorisations as white. Sigelman et al. (1995) argue that there exists a perception that individuals of African American and Latino descent are deemed incapable of effectively addressing significant policy concerns.

Based on prior studies highlighting the intersectional discrimination faced by African American women, I expect that the impact of facial masculinity on electoral results will be complex. African American women have frequently confronted political marginalisation, by overcoming stereotypes depicting them as unfeminine, dominant, and excessively assertive (King, 1973; Clayton and Stallings, 2000; McClain, Carter, and Brady, 2005). Successful African American women, especially those who pursue political careers, are typically perceived as distinct from the stereotypical African American woman (Brown and Lemi, 2021; Carew, 2012). Therefore, it is anticipated that the perceptions of African American women politicians will be shaped by both racial and gender stereotypes in an interactive manner (Ditonto, Stalsburg, and Andersen, 2010).

While the decision to run for political office may serve as an indicator of the capabilities of African American women, it may also exacerbate negative emotional stereotypes and lead to perceptions of diminished qualifications. As per the double jeopardy theory, African American women are perceived to possess the lowest levels of leadership capabilities compared to other gender and racial groups (Berdahl and Moore, 2006; Mosier and Pietri, 2021). There is a perception that African American women exhibit more masculine traits than their Caucasian counterparts (Goff, Thomas, and Jackson, 2008). In accordance with the expected behaviour, they may face fewer negative consequences for engaging in dominant behaviour (Livingston, Rosette, and Washington, 2012; Rosette et al., 2016), whereas Caucasian women candidates may be punished for this type of behaviour because it would be viewed as unexpected. Consequently, I expect that the impact of masculine traits will vary between African American women politicians and their men counterparts. This is due to the fact that African American women in politics face not only the stereotype of being masculine but also the stereotype of incompetence. As a result, it can be inferred that African American women encounter supplementary hindrances owing to their dual marginalised statuses as both women and ethnic minorities.

Hypothesis 3. The effect of having more facial masculinity is negative for both African American men and women. However, this effect is greater for African American men than African American women.

3.2.3 Heterogeneous candidate preferences by ideology

Previous studies have shed light on the varied positions held by Republicans and Democrats when it comes to the link between political ideology and gendered views. According to Carpinella and Johnson (2016), Republicans tend to support conventional gender norms, emphasising feminine characteristics in women. Conversely, Democrats tend to adopt more progressive gender roles, exhibiting a less strict adherence to established societal standards. The phenomenon of divergence also encompasses facial characteristics, as examined by Laustsen and Petersen (2016) in their study on the influence of facial dominance, which pertains to a masculine and dominant appearance. Notable is the finding that conservative voters have a favourable reaction to facial dominance, which is associated with greater electoral success and communication effectiveness. On the other hand, liberal voters demonstrate lower levels of support for politicians who exhibit facial dominance. This interaction between facial signals and political inclination emphasises how intricately linked gendered perceptions and ideological preferences are.

The partisan signals from the facial cues vary in the interaction of candidate gender and masculinity and femininity. According to Carpinella and Johnson (2013) study, women politicians who exhibited more feminine traits were more accurately identified as Republicans, while those who exhibited less feminine traits were more accurately identified as Democrats. Specifically, higher levels of facial femininity were associated with political conservatism. Bernhard (2022) find that politicians who were described as feminine were evaluated more favourably by Democrats, liberals, and women from all parties as opposed to Republicans, conservatives and voters for Donald Trump. The literature paves the way for me to explore the heterogeneous effects of voters' ideology and test the following hypothesis:

Hypothesis 4. The effect of being perceived as more masculine on the likelihood of being elected are greater for Conservative voters than Liberal voters.

According to the existing literature, individuals who identify as political liberals tend to exhibit a higher level of dedication towards promoting diversity and racial equality in comparison to those who identify as political conservatives (Bernhard, 2023; Crowder-Meyer et al., 2020). Under conditions of low cognitive load, individuals who are committed to diversity are more inclined to choose African American candidates over Caucasian candidates (Crowder-Meyer et al., 2020). In the context of both race and gender, the dual identity of African American women candidates holds intriguing implications. This distinctive identity frequently aligns them with progressive and Democratic viewpoints (Schneider and Bos, 2011; Koch, 2000). This perception may also arise due to historical associations between African American women and progressive social movements. Additionally, the underrepresentation of African American women in conservative political

circles further reinforces this alignment with liberal ideologies.[3] This concept proposes that the combination of being an African American woman candidate has an accumulative impact on how voters perceive the candidate's ideology and party affiliation (Ditonto, Stalsburg, and Andersen, 2010). This perception is influenced by the intersectionality of their race and gender, which shapes voters' expectations and assumptions about their policy positions. Therefore, even without explicit party affiliation information, these cues can lead to varying levels of support from voters across the ideological spectrum.

3.3 Empirical Strategy

To study facial masculinity and its interaction with a candidate's race and gender, I ran a visual conjoint survey in which respondents were visually assigned these three candidate characteristics at random. Respondents were required to choose between two fictitious candidate photographs. The novelty of this study lies in its use of state-of-the-art software to generate realistic hypothetical candidate photos and randomise photo attributes, as well as its examination of the intersection of candidate race and gender in the U.S.

3.3.1 Visual Conjoints

In order to elucidate the influence of physiological and demographic characteristics on candidate assessment, it is necessary to incorporate various preference dimensions within the research design of this study. Individuals who participate in the electoral process do not depend on a solitary factor when assessing a potential political representative. In addition, the voters take into account the candidate's demographic characteristics and, most of the time, for uninformed voters, the appearance of the candidates. According to existing literature, the conjoint survey experiments can be effective in evaluating the causal relationship between various attributes and hypothetical choices (Bansak et al., 2021; Hainmueller and Kern, 2008; Hainmueller, Hopkins, and Yamamoto, 2014; Hobolt and Rodon, 2020).

The use of visuality within conjoint analysis is a well-established practice in the fields of marketing and product design (Green and Srinivasan, 1990; Dominique-Ferreira,

[3]Shirley Chisholm (D-NY) became the first elected Black woman to Congress in 1968. The House had 53 Black women (52 Democrats, 1 Republican), while the Senate had 3 (all Democrats). From 2015 through 2019, Mia Love was the only Black Republican woman in Congress (Center for American Women and Politics, 2023).

Rial Boubeta, and Varela Mallou, 2012; Sylcott, Orsborn, and Cagan, 2016; Birenboim et al., 2019). Although conjoint experiments became highly adopted in political science research to study candidate preferences[4], the use of visuals are becoming recently important in candidate choice experiments (Abrajano, Elmendorf, and Quinn, 2018; Vecchiato and Munger, 2022; Bernhard, 2023; López Ortega and Radojevic, 2024; Mcclean and Ono, 2024).

In standard conjoint analysis, participants are provided with a set of randomly generated candidate profiles that consist of a list of attributes. They are then instructed to select or rank their preferred options based on their personal preferences. This particular design is suboptimal for the purpose of representing the current interaction of politicians with voters, which is mainly through social media and television (Vecchiato and Munger, 2022). As a significant portion of voters' experience evaluating a candidate is reliant on visual cues, it became more crucial to incorporate this aspect to realistically represent the mode of a voter's assessment of a candidate. Focusing on how a candidate's height influences voter preferences, Bernhard (2023) generated a visual debate environment where the two candidates' heights were randomly assigned. Her design imitated the way in which voters come across politicians close to election times, i.e. on television standing next to each other. Abrajano, Elmendorf, and Quinn (2018) find in their study that the treatment mode effects exhibit variations in conjoint designs. Specifically, they observed that the conjoint designs that incorporate ethnically identifiable photos of political candidates have a significantly greater impact compared to the conjoint designs that rely solely on labels to indicate the candidate's ethnicity. López Ortega and Radojevic (2024) also demonstrate that visual cues elicit more discriminatory preferences than a textual conjoint design. Vecchiato and Munger (2022), in their candidate choice experiment, generated social media profiles for hypothetical candidates in which they randomly assigned each attribute of the candidate profile visually. Based on their argument that visually randomising candidate attributes enhances ecological validity compared to conventional conjoint designs, my study's design adopts creating hypothetical candidate images through the random allocation of three attributes: gender, race, and degree of facial masculinity.

Candidate evaluations involve an assessment that includes visual impressions in today's political environment. With the increased use of social media and television platforms, voters engage in verbal and nonverbal communication with political candidates. Using political candidate images to assess voter preferences is a realistic approach, mimicking the candidates' ability to establish connections with their constituents. Delving into this

[4]There is an extensive list of studies that conducted conjoint experiments to study candidate preferences, the following are some references from the literature: Hainmueller and Kern (2008); Hainmueller, Hopkins, and Yamamoto (2014); Franchino and Zucchini (2015); Kirkland and Coppock (2018); Doherty, Dowling, and Miller (2019); Horiuchi, Smith, and Yamamoto (2020).

context, it becomes clear that evaluating politicians involves a complex understanding of the interaction between their verbal and visual representations.

3.3.2 Study Design

Participants are administered three choice tasks, wherein they are presented with two visually presented candidate profiles for each task. Each candidate is defined by three attributes with two levels in each: Race, Gender, and Degree of Facial Masculinity (Table 3.1). In order to address the potential impact of unobserved variables in candidate photographs, a set of 24 candidates was generated, consisting of three candidates for each potential profile, while trying to keep other observational traits constant, e.g. age and facial hair. The choice task was, "Now, imagine you are asked to vote for one of the political candidates running for the political office below. Who would you vote for?" The experiment deliberately refrained from providing any cues regarding the political party affiliation of the candidates in order to eliminate the influence of partisanship. This kind of decision task is designed to be very similar to the non-partisan elections in the U.S., where the jurisdiction holding the election prohibits any declaration of political party allegiance, affiliation, or affinity. Kirkland and Coppock (2018) also show that the presence or absence of political labels makes no difference with respect to race and gender in a conjoint survey experiment.

The experiment was fielded in February 2023 and involved the recruitment of 1014 individuals who are citizens of the United States. Cloud Research Connect platform was set to distribute the survey and collect relevant data.[5] When compared to the overall population of the United States, the Cloud Research sample is, on average, younger, more educated, and more liberal. The sample information can be found in Table B.1 in the Appendix.

Table 3.1: Attibutes

Degree of facial masculinity	Race	Gender
Low facial masculinity [1]	White[1]	Male[1]
High facial masculinity	Black	Female

[1] Reference category

[5]The experiment was granted Ethics approval (REC ref.90881) in compliance with the Ethics regulations of the London School of Economics and Political Science. Ethics discussion is presented in Appendix Section B.6.

3.3.3 Experimental Stimuli

The candidate profiles that have been presented exhibit differences from the existing body of political science literature. Rather than presenting the subjects with written lists of candidate profiles, the participants were exposed to two computer-generated political candidate photos, which varied randomly in each attribute. This was facilitated by the use of a recently launched software, MetaHumans.[6] This software is a user-friendly tool that enables the manipulation of various facial features, ultimately resulting in the creation of high-quality and realistic human images. It also allows the user to modify the levels of various attributes, such as gender, race, cheekbone prominence, jaw size, and eye size, along with very fine-grained visual manipulations. To my knowledge, I am the first to use the Metahumans tool in a candidate choice experiment to create hypothetical candidates.

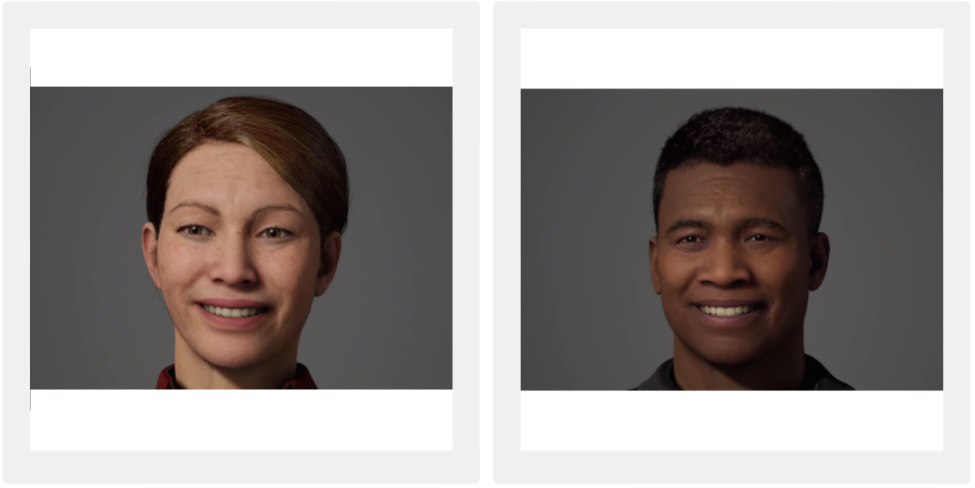
The process of masculinising both male and female faces was carried out in five stages, as outlined in Mitteroecker et al. (2015), applied to a set of computer-generated human faces. The proposed modifications include: i) increasing the width of the face by augmenting the inter-orbital distance; ii) widening the nasal region; iii) reducing the fullness of the lips; iv) augmenting the lower facial region, specifically the lower jaw area; and v) decreasing the size of the eyes. Prior to the actual experimentation, the stimuli utilised in the study underwent a preliminary testing phase with a limited sample size to authenticate the experimental manipulations. Five hypothetical candidates were generated for each combination of gender and race. During the validation test, the participants were instructed to rank the computer-generated faces in order of perceived level of facial masculinity, from the most masculine to the least masculine (Figure B.3 in the Appendix presents a screenshot of a validation task.). For the purpose of mitigating potential bias stemming from unobserved characteristics of individual candidates, the actual experiment utilised the top three faces with the highest validation scores for each combination of gender and race.

3.3.4 Manipulation check

Table 3.2 presents the results of the manipulation check conducted to examine whether the masculinisation of the facial features, as per the methodology proposed by Mitteroecker et al. (2015), on MetaHumans are perceived as expected by the participants. On a scale from 0 to 10, respondents were asked to assess the perceived masculinity of

[6]The software package comprises MetaHuman Creator, an online application that is available at no cost and simplifies the rapid creation of fully rigged virtual human beings. `https://www.unrealengine.com/en-US/metahuman`

FIGURE 3.1: Screenshot of a choice task



Note: The image presented on the left is an example of a feminised Caucasian woman candidate, the image on the right is an example of a masculinised African American man candidate.

each candidate in response to a question designed to detect whether the manipulation worked. The scale measuring perceived masculinity was subsequently transformed into a binary indicator to facilitate the interpretation of Table 3.2. The first column of Table 3.2 displays the results for all participants, indicating a 10 percentage points increase in the probability of attributing a more masculine rating to a candidate whose facial features were manipulated to appear more masculine, in contrast to a hypothetical candidate whose facial features were manipulated to appear less masculine. The second and third columns of the table were analysed independently with regard to women and men candidates. The results indicate that the respondents perceived a higher level of manipulation of masculinity in women candidates compared to men candidates. Despite the factors outlined in the above sections that contribute to the general perception of men candidates as more masculine, the manipulation of facial masculinity in men candidates resulted in a significant increase of 5 percentage points in perceived masculinity compared to facially feminised men candidates.

TABLE 3.2: Manipulation check for the level of facial masculinity (Dependent variable: 0: perceived feminine, 1: perceived masculine)

	All candidates	Women candidates	Men candidates
(Intercept)	0.50***	0.22***	0.79***
	(0.01)	(0.02)	(0.02)
Masculinized candidate face	0.10***	0.15***	0.05**
	(0.02)	(0.02)	(0.02)
R^2	0.01	0.03	0.00
Adj. R^2	0.01	0.03	0.00
Num. obs.	6084	3040	3044
N Clusters	1014	1002	1005

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

3.3.5 Analysis

I organise the data so that for each respondent, it contains as dummy variables the descriptive characteristics of the selected and viewed profiles. To analyse the primary dependent variable, candidate choice, I calculated the Average Marginal Component Effect (AMCE) and Average Marginal Component Interaction Effect (AMCIE) following the literature (Hainmueller, Hopkins, and Yamamoto, 2014; Kirkland and Coppock, 2018). Since each participant completed multiple-choice tasks, standard errors were clustered by participants. The details for this analysis can be found in Appendix Section 3.3.5.

I also follow Leeper, Hobolt, and Tilley (2020) and use their R package 'Cregg' to estimate the AMCEs in a principled manner, with every subject decision scenario serving as the unit of analysis while accounting for clustered standard errors by respondents. The Cregg package also enables the implementation of survey weights, which I used to depict the descriptive distribution of the U.S. population based on the 2020 wave of the American National Election Studies (ANES).[7] In an effort to identify the effects by subgroups, I provide related results that estimate the difference in marginal means (MM), which is particularly relevant for making causal claims about the differential treatment effects of attributes on subgroups (Leeper, Hobolt, and Tilley, 2020).

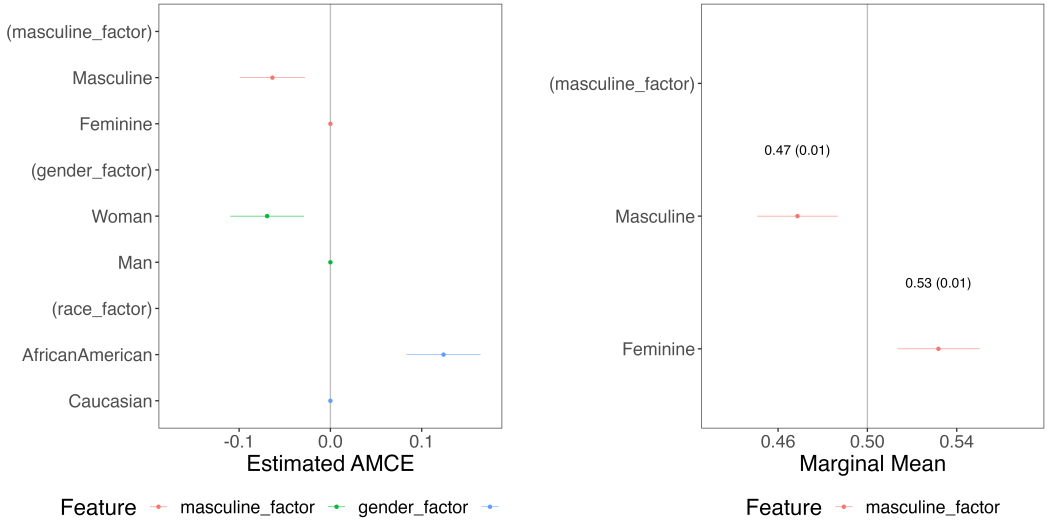
3.4 Results

The experiment's findings for the binary vote choice are visually presented in Figure 3.2, featuring both AMCEs for all the attributes (Figure 3.2a) and MMs for facial masculinity (Figure 3.2b). I find that respondents exhibited a negative response to heightened

[7]The sample characteristics of the Cloud Research platform and ANES representative sample are presented in Table B.1 in the Appendix.

facial masculinity with a margin of 6.3 percentage points (pp). In addition, respondents, on average, preferred men candidates over women candidates by 6.9 pp. Women respondents did not show a significant preference between women and men candidates; this negative effect is mainly driven by male voters (as presented in Figure B.5b). The results also highlight that African American candidates, on average, are preferred more than Caucasian counterparts with 12.3 pp. African-American respondents and younger respondents are the primary sources of this effect (see Figure B.5a and B.5c). The effect of facial masculinity indicates the opposite of what was predicted for masculinity in H1, with a significantly higher preference for candidates with lower levels of facial masculinity. Even though respondents, on average, evaluated women candidates worse than men, the negative effect on facial masculinity shows a potential explanation of the findings in recent literature (Schwarz and Coppock, 2022); voters, when presented in text, might prefer women more because they might envision a more feminine looking women candidate. As shown in López Ortega and Radojevic (2024), visual cues can bring forth discrimination as they assign greater importance to social categories such as gender. Although respondents show a negative preference for women candidates, they still prefer more femininity in facial traits. I also conduct analysis with the second pre-registered outcome variable, which asked participants to rate their likelihood of voting for each of the two candidates on a scale from 0 to 100 for each choice task. The results presented for the continuous outcome variable in Table B.4 in the Appendix support the findings of the binary outcome variable presented in Figure 3.2a.

FIGURE 3.2: Average marginal component effect (AMCE) and marginal means (MM)



(a) Dependent Variable: Candidate Preference

(b) Dependent Variable: Candidate Preference

The present analysis shifts attention towards the interaction between candidate race and facial masculinity to test H2. Figure 3.3a displays the interaction effects. As claimed in

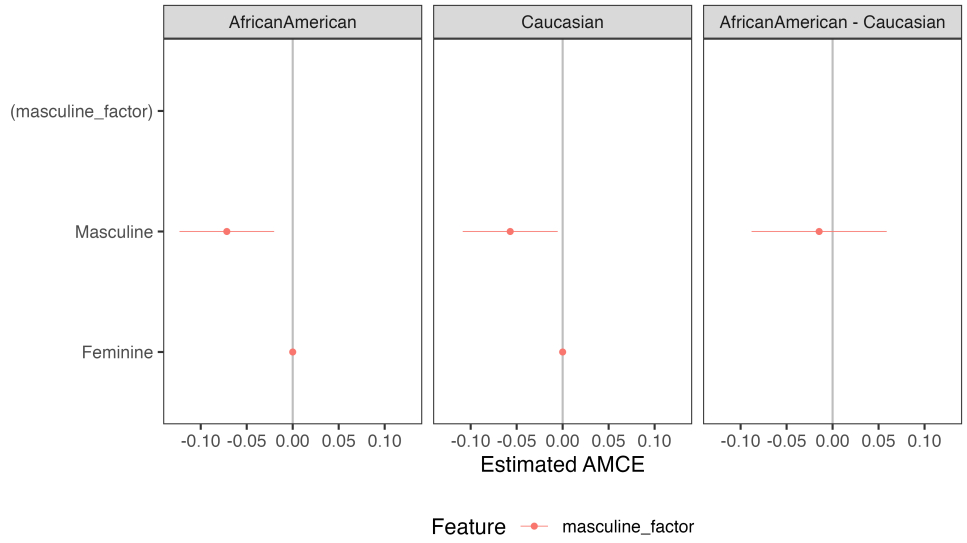
hypothesis H2, there exists a preference for African American candidates with feminised facial features over candidates who exhibit a higher degree of facial masculinity. The preference for facial masculinity when evaluating African American candidates results in a 7.1 percentage point difference in favour of candidates with lower facial masculinity. However, H2 is only partially supported. Facial masculinity had a statistically significant negative impact on Caucasian candidates, albeit smaller than anticipated (5.7 percentage points), with a significance level of $p < 0.01$. The statistical analysis conducted to assess differences in effect sizes, presented in the third column in Figure 3.3a, indicates that the change in the probability of selecting a profile based on varying levels of facial masculinity, in comparison to the reference point of low facial masculinity, does not exhibit a significant variation based on the race of the profile (see Table B.10). This suggests that the impact of facial masculinity on profile selection is consistent across different racial backgrounds.

Regarding candidate gender and facial masculinity's interaction, the experimental results show a very similar pattern. Figure 3.3b shows that both men and women candidates experience a disadvantage when they have a higher facial masculinity level (see Table B.9). Facial masculinity level plays a mediating role in the preference for women candidates. As previously discussed, although voters, on average, have a negative preference for women, they are evaluated similarly to men when they have lower facial masculinity.

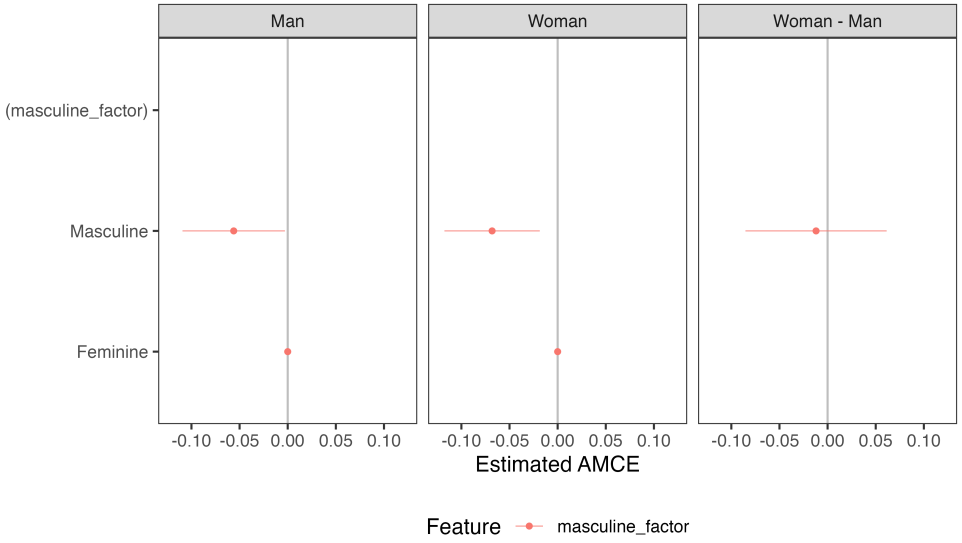
Next, in order to test the hypothesis regarding race and gender, H3, it was necessary to narrow the focus exclusively to African American candidates. The dataset was filtered to include solely observations of African American candidates and subsequently analysed to investigate the potential impact of gender and facial masculinity. The results of this analysis, as presented in Figure 3.4a indicate that exhibiting higher levels of facial masculinity had an adverse impact on the selection of African American men and women candidates (see Appendix B.11). African American women candidates exhibiting higher levels of facial masculinity were significantly less preferred compared to their co-racial women counterparts displaying more feminine facial features (10.4 pp, $p < 0.05$). Although not significant, the size of the effect of having more facial masculinity is smaller for African American men. Therefore, the hypothesis regarding the relationship between race and gender, as denoted by H3, is only partially supported.

I also analysed the case of Caucasian candidates. For Caucasian women candidates, the effect of the level of facial masculinity does not significantly differ (see Appendix B.12). However, for Caucasian men candidates, I find that they can have an advantage when they have lower facial masculinity (7.7 pp, $p < 0.05$). The findings highlight the unique challenges faced by African American women candidates who may face discrimination

FIGURE 3.3: Average component interaction effects (AMCIE)



(a) Dependent Variable: Candidate Preference



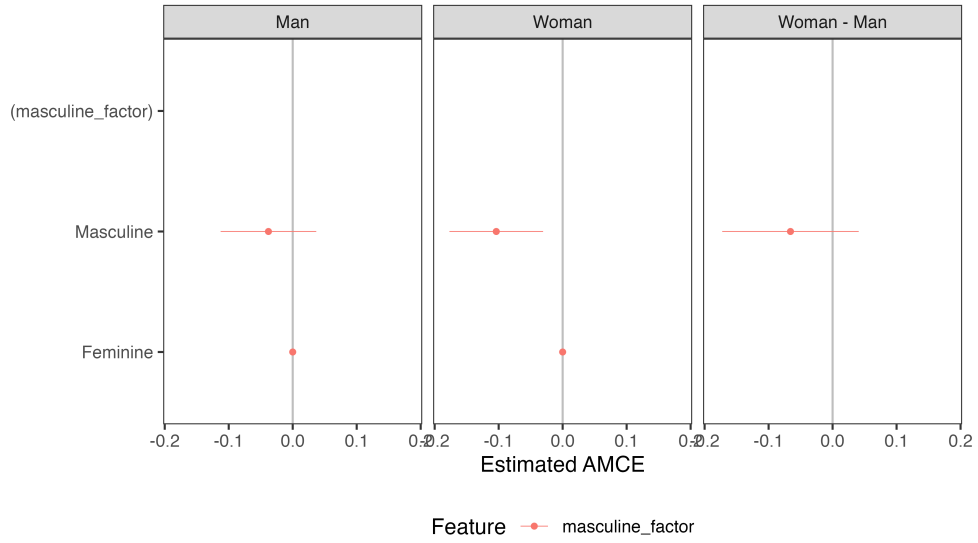
(b) Dependent Variable: Candidate Preference

based on both their race and a gendered physiological cue, shedding light on the importance of addressing multiple dimensions of identity (Ditonto, Stalsburg, and Andersen, 2010; Philpot and Walton, 2007; King, 1973).

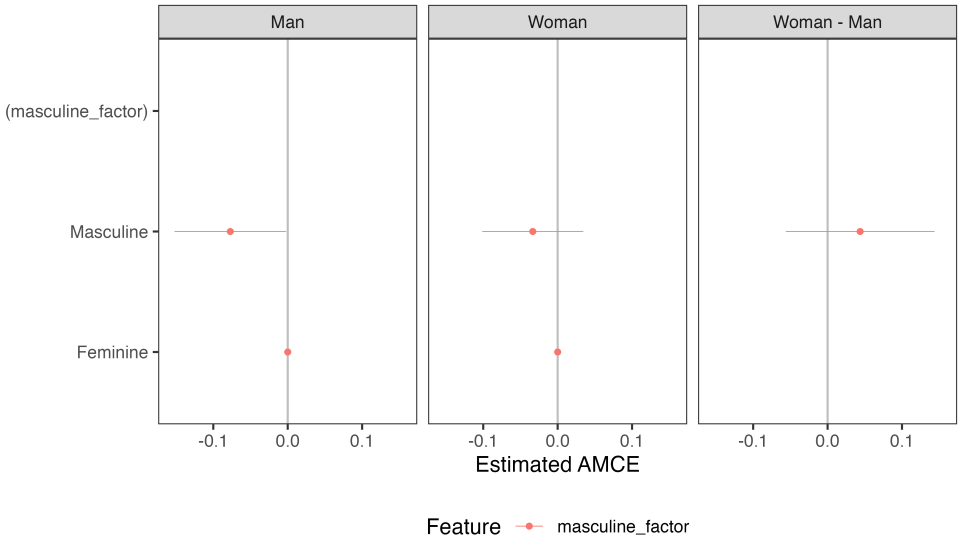
3.4.1 Heterogeneous effects

In accordance with the theoretical framework proposed by Crowder-Meyer et al. (2020) regarding varied levels of support for diversity in political representation, I expand the analysis to test whether the outcomes observed for facial masculinity and the interaction

FIGURE 3.4: Average component interaction effects (AMCIE) by both race and gender



(a) The effect of facial masculinity on candidate preference by gender among African American candidates

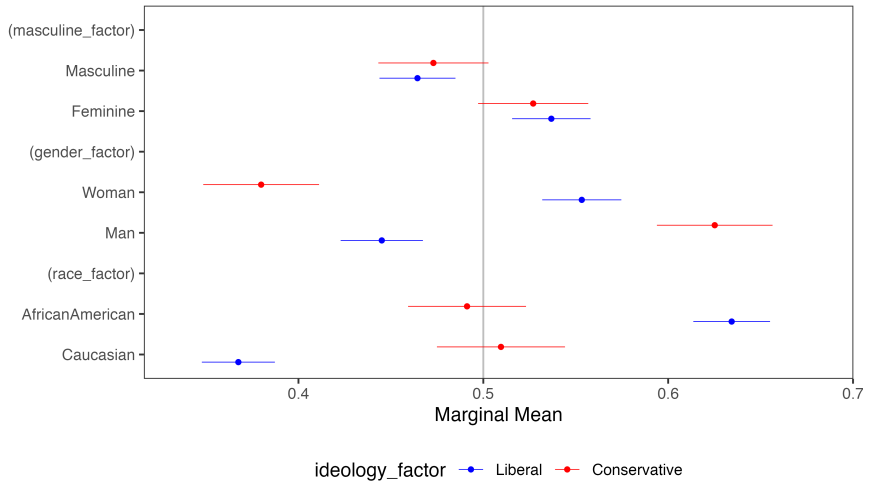


(b) The effect of facial masculinity on candidate preference by gender among Caucasian

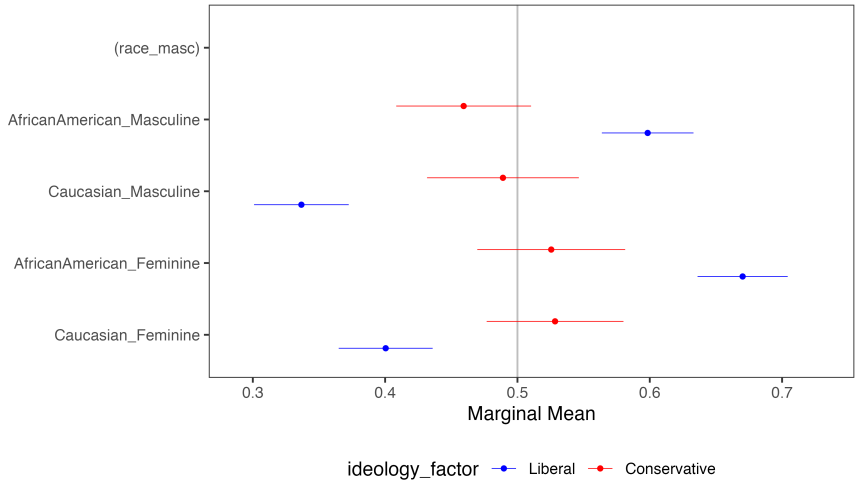
of race and gender can be attributed to variations in support for these groups across different ideological orientations. During the pre-treatment questionnaire, the respondents were asked to indicate their ideological self-placement based on the measure for self-placement ideology utilised in the American National Electoral Study of 2020. In contrast to their conservative counterparts, politically liberal voters showed a preference for inclusive representation, as evidenced in previous literature, of women (Schwarz and Coppock, 2022) and African American candidates (López Ortega and Radojevic, 2024), as presented in Figure 3.5a (Appendix B.13).

However, in spite of the fact that the display of masculine features has a slightly greater influence on individuals who identify as conservatives than on those who identify as liberals, I find no statistically significant difference leading to the rejection of H4. This indicates that the effect of displaying masculine features on voters' perceptions of masculinity may not differ substantially between conservatives and liberals. However, liberal voters show a greater preference for women candidates (36 pp, $p < 0.01$) and African American candidates (28 pp, $p < 0.01$) than conservatives.

FIGURE 3.5: Subgroup marginal means for respondent's ideology



(a) Marginal mean by respondent ideology



(b) Interaction marginal means by respondent ideology

Figure 3.5b indicates that liberal voters demonstrate a noticeable inclination towards both African American and Caucasian candidates when they display more facial femininity. Notwithstanding, I show that conservative voters prefer less masculine-looking

African American candidates and more masculine-looking Caucasian candidates compared to liberals (see Appendix B.15). When it comes to the manner in which conservative voters evaluate the perceived masculinity of a candidate, I show that the race of the candidate functions as a moderator.

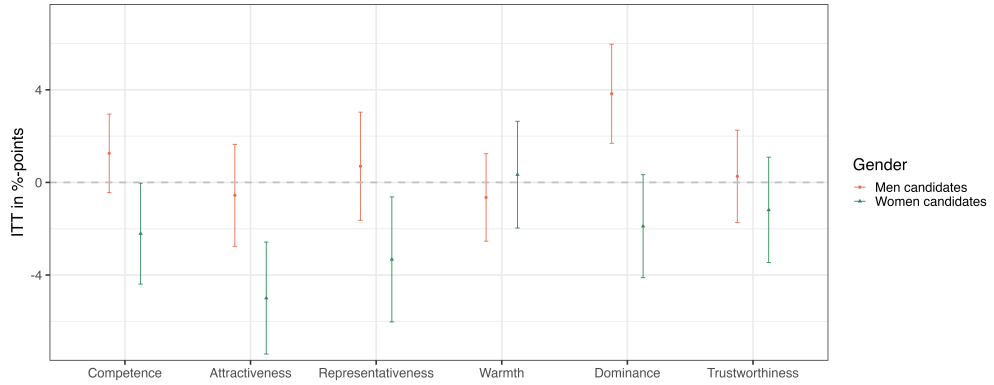
3.4.2 Mechanisms

To obtain a deeper understanding of the mechanisms underlying preferences for specific candidate attributes, I asked participants to rate each candidate they evaluated on a range of characteristics using a 0 to 10 scale. According to the scale, a score of 0 means the candidate is perceived to have a little of a particular trait, while a score of 10 means they are perceived to have a lot of that trait. In Figure 3.6, the results of the analysis are displayed, with each regression yielding a unique outcome, namely competence, attractiveness, representativeness, warmth, dominance and trustworthiness. The results are presented by candidate gender (Figure 3.6a) and by candidate race (Figure 3.6b).

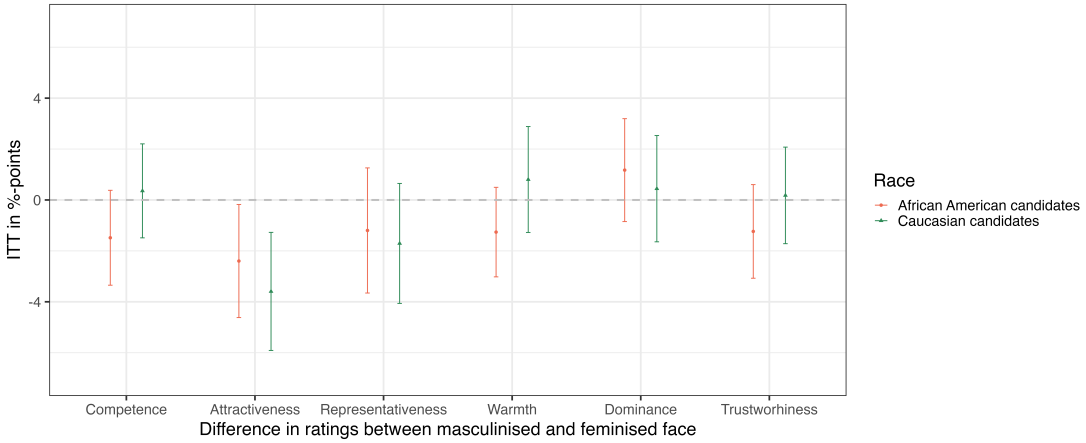
The results show that one potential explanation for why respondents preferred to choose candidates with lower levels of facial masculinity, on average, might be attributed to the perceived higher attractiveness ratings of these candidates. For candidates from both racial categories as well as women, assessments of attractiveness are statistically significantly lower for those with more facial masculinity than for the candidates with less. Compared to their co-racial counterparts, respondents rated African-American candidates with a more masculine appearance 2.4 pp less ($p < 0.05$) attractive. Respondents also evaluated more masculine Caucasian candidates 3.6 pp less ($p < 0.01$) attractive. The impact of facial masculinity on attractiveness ratings for women candidates shows parallel findings to the literature (Grammer and Thornhill, 1994) and is particularly evident, with a statistically significant negative effect of 5 pp ($p < 0.01$). This is not surprising considering Ekrami et al. (2021)'s findings that show an extreme level of facial masculinity is not perceived to be attractive. In addition, Rhodes, Hickford, and Jeffery (2000) demonstrates that individuals, regardless of gender or race (i.e. the two racial categories used in their experiment were Caucasian and Chinese), tend to perceive feminised faces as more attractive than masculinised faces. It is also possible that cultural conventions regarding an absence of sufficient feminine traits worked against the women candidates. In contrast, respondents did not show a significant distinction between levels of facial masculinity and femininity when evaluating men candidates in terms of perceived attractiveness.

In conjunction, respondents not only evaluated women candidates to be less attractive when they have more facial masculinity but also less competent (2.2 pp, $p < 0.05$) and

FIGURE 3.6: Effect of the level of facial masculinity on the candidate ratings between a masculinised and a feminised face, 95% CIs.



(a) The effect of having a higher facial masculinity level by candidate gender

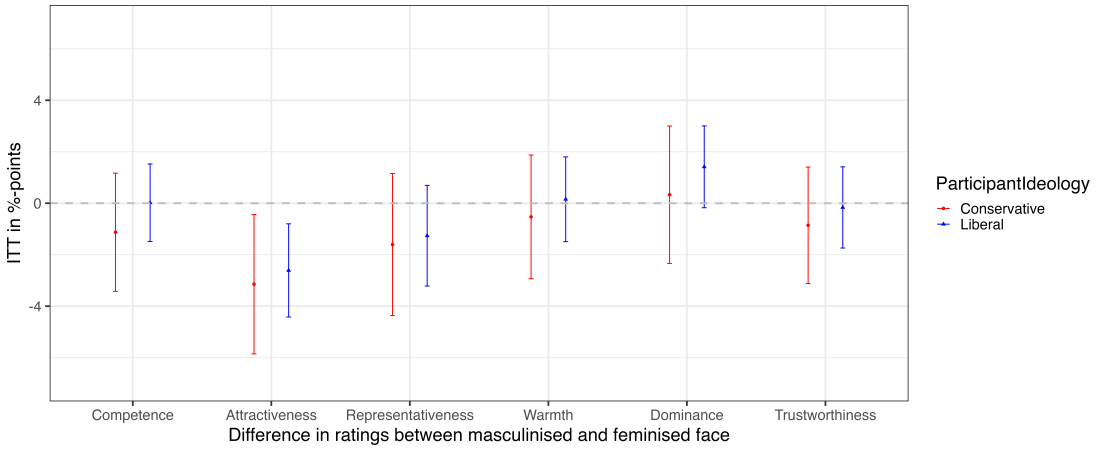


(b) The effect of having a higher facial masculinity level by candidate race

less representative (3.3 pp, $p < 0.05$). These mechanisms are helpful in explaining the findings presented in Figure 3.3b, where respondents, on average, preferred less facial masculinity in women candidates. I did not find any significant effect of facial masculinity on warmth, dominance and trustworthiness ratings for women candidates. For men candidates, only the dominance ratings for more facial masculinity show a significantly positive effect (3.8 pp, $p < 0.01$). This finding is likely attributable to the fact that male facial masculinity is highly associated with perceived dominance and strength, as previous research has demonstrated (Pivonkova et al., 2011). There is also empirical evidence that shows inter-group conflict alone —not primes of cooperation— moves voter preferences for dominant leaders (Laustsen and Bor, 2017; Laustsen and Petersen, 2017). In this experiment, respondents evaluated the candidates in the uncertain reality of not knowing the conflict versus peace state of the electoral context. This might explain why a dominant perception of male facial masculinity failed to translate into a stronger voting preference (Figure 3.3b).

Furthermore, voters' ideologies may influence their assessment of facial masculinity on various candidate traits. However, as shown in Figure 3.7, the only trait that presents significant results is perceived attractiveness ratings. Candidates with more facial masculinity are perceived to be less attractive by both liberal and conservative voters, indicating that this phenomenon can transcend ideological lines. There is some evidence that voters of any political affiliation prefer leaders who demonstrate a more nuanced blend of stereotypically masculine and feminine traits in their decision-making (Meeks and Domke, 2016). The reasons for this could be due to changing cultural standards, in which the traditional link between masculinity and leadership is giving way to a more open and nuanced concept of what makes a successful political leader. This shift in perspective exemplifies how political aesthetics are evolving to include a more holistic lens that takes into account a broader range of characteristics, regardless of party affiliation.

FIGURE 3.7: Effect of having a higher facial masculinity level by participant ideology, 95% CIs.



3.5 Conclusion

The impact of candidates' facial masculinity on voter behaviour is an intriguing and complex subject of investigation within the field of politics. I present empirical evidence to study the previously underresearched territory of visual cues, specifically those conveying gendered signals, in light of more recent empirical evidence from non-visual studies showing a preference for women candidates over their male counterparts. The findings offer helpful insight into the shifting voter preference landscape despite the fact that they were unexpected in pre-registered hypotheses.

Incorporating AI-generated candidates to simulate voters' actual exposure to candidates, I used a novel visual survey experiment design. The method I use in this study has multiple implications for experimental political science. First, the tool used to generate

virtual candidates opens up further avenues for future research with its potential for experimentally manipulating various physical features such as age, gender, and race, as well as going into a more tailored format that allows to manipulate skin colour, the depths of facial feature manipulation, and even the formal or informal type of clothing a virtual candidate might wear. Furthermore, research has demonstrated that paired conjoint experiments exhibit higher external validity compared to vignette survey experiments (Hainmueller, Hangartner, and Yamamoto, 2015). In addition, the visual presentation of the two candidate profiles in a choice task can even increase external validity by simulating voters' real-life exposure to the political candidates. Experimentally mimicking how voters really see candidates leads to a discussion about this study's results and what they mean for future research in the field of experimental political science.

In the U.S., I find experimental support for the notion that lower levels of facial masculinity can significantly impact the manner in which voters perceive political candidates. Even though this finding was in the opposite direction of the pre-registered hypothesis and the positive association between masculinity and voters' candidate evaluations is a well-established phenomenon, my findings are not unprecedented. Similarly, Bernhard (2022) discovered that voters in the United States, on average, showed a preference for politicians of both genders who were regarded as having feminine leadership styles. In addition, Bos et al. (2022) indicates that young children envision men as political leaders. However, they define these candidates as possessing as much feminine traits as masculine ones. While it cannot be immediately inferred that feminine leadership styles are correlated with the display of feminine facial features, my research findings contribute to the ongoing discourse on the influence of perceived masculinity on voter preferences. Even though there is still much room to ameliorate the diversity among political candidates and representatives, my findings can open avenues for further research into whether, in the U.S., voters' inclinations have shifted towards politicians who exhibit fewer masculine traits and behaviours.

The interaction between facial masculinity, race and gender further complicates the equation. Having a higher facial masculinity level might hurt African American women candidates' electoral gains more than a co-racial man candidate. The intermediate outcomes show that this might be due to their perceived low levels of attractiveness, competence, representativeness and dominance. Although there are empirical findings on the positive association between masculinity and dominance, competence and leadership (Oh, Buck, and Todorov, 2019; Wen et al., 2020; Eagly and Karau, 2002), I show that facial masculinity is an important factor to acknowledge when we evaluate the political representation of minority groups. Hence, in electoral contexts where candidates from diverse backgrounds seek political office, facial masculinity perceptions can be signals of

how voters perceive these candidates' traits that can eventually lead to their representation in office. This emphasises the need for a nuanced comprehension of the interplay between race, gender and facial masculinity in influencing voter perceptions.

The study presented has certain limitations. First, I present a novel experimental design to show how one gendered facial cue can be influential along with other candidate descriptive traits in shaping voters' perceptions. However, one can expand this research question into various political contexts. For example, research suggests that politicians exhibiting more masculine facial features tend to be perceived as more dominant and competent, particularly during periods of crisis or ambiguity (Spisak et al., 2012). Lawless (2004) find that in the time of crisis, women are disadvantaged when political circumstances elevate traditionally masculine issues, such as war. Voters may exhibit an intrinsic inclination to support candidates who demonstrate the capacity to safeguard and cater to the needs of their electorate during challenging situations. In addition, social norms and cultural expectations affect the perception of facial masculinity. As a result of cultural aesthetic standards and gender conventions, different cultures may have varying notions of what constitutes a masculine visage. These cultural differences influence the effect of facial masculinity on voter behaviour further, as preferences and perceptions vary across societies. Additional research may expand upon these findings by incorporating further interaction among the variables mentioned above.

Second, in the present study, the omission of any political party cue in the experimental design was intentional, as it aimed to replicate election scenarios wherein the political party affiliation of candidates is either withheld (e.g., municipal or county office elections) or held constant (e.g., U.S. presidential primaries). The purpose of this was to mitigate the impact of partisanship. In a conjoint experiment, Kirkland and Coppock (2018) show that the preference for a candidate's race and gender does not significantly differ from the presence of candidates' political party as a cue. The outcomes delineated in this paper exhibit heterogeneity in their effects based on the ideologies of the respondents. Carpinella and Johnson (2013) suggests that individuals who exhibited more feminine traits were more accurately classified as Republicans. In contrast, those who displayed less feminine traits were more accurately classified as Democrats; I show support that the preference for facial masculinity holds across ideologies. In addition, there is empirical evidence that the perception of African American women candidates aligns them with more liberal viewpoints (Schneider and Bos, 2011). However, when I limit the analysis to choice tasks where participants chose between two male Caucasian candidates, which makes it ambiguous to infer what a candidate's ideology is, I also find a preference for a lower level of facial masculinity. Further research may delve deeper into the matter by explicitly referencing the political party of the candidate while maintaining consistency

or by prompting respondents to evaluate the perceived party affiliation or ideology of the observed candidate.

The objective of this study is to initiate discourse on the significance of facial masculinity perceptions, with a particular emphasis on their multifaceted function in relation to the candidate's race and gender. The influence of facial masculinity on voter behaviour is a complex phenomenon that is influenced by evolutionary psychology, race, gender, culture, and social norms. Despite the fact that facial masculinity can affect our perceptions of dominance, competence, and strength, it is necessary to consider it alongside other factors when evaluating political candidates.

4

Identity Priming in Campaigning: Field Experimental Evidence from Women Candidates in Germany

Asli Ceren Cinar, Frederik Ferié, Florian Foos

Abstract

For politicians running for office, social identities such as their gender and the place where they live often encapsulate important experiences and motivations relevant to their political life, which they discuss with voters on the campaign trail. At the same time, candidates, especially women candidates, face questions about how to communicate relevant social identities with voters effectively. However, while there is solid evidence on how candidates' socio-demographic traits influence vote choice, we know little about the effects of identity priming that occurs during campaign interactions. Based on two field experiments that we conducted in collaboration with women state parliamentary candidates in Germany, we show that emphasising a candidate's gender and place-based identities can positively affect name recognition and candidate favorability. However, there is little evidence that this effect materialises via identity alignment between voters and candidates or that identity priming affects vote choice.

4.1 Introduction

Campaign trails are not only contexts where candidates discuss politics, but they also serve to establish personal connections with voters. When attempting to form such social connections, candidates, especially women candidates, frequently need to decide which politically relevant social identities to accentuate and how to discuss them. Social identities often encompass experiences and motivations that are relevant to candidates' political lives, for instance, as political representatives or activists. But at the same time, candidates worry that voters might react negatively to them discussing specific social identities during campaigning. One reason for such worries might be that some identities are not shared by all voters they interact with. Some voters might be uncomfortable with accentuating or even discussing particular social identities at all.

Examples of relevant social identities would be a candidate's gender or the place where they live and that they feel attached to. In this paper, we test if explicitly priming social identities on the campaign trail can impact voter evaluations of candidates and their voting decisions. With the term "identity priming," we refer to candidates highlighting specific dimensions of their social identity that have a political meaning and are important to them. Gender, for instance, can be an identity integral to women candidates' political personalities. When a woman candidate emphasises her gender, she emphasises not only a social reality but also an experience that can be relevant to her motivation to get engaged in politics. It can also provide a signal to the policies that she champions. By emphasising their identity as a woman, women candidates might appeal to other women, who share the same identity and can relate to their experience as women in politics. Moreover, priming aligned identities can indicate that the candidate understands the voter's identity-related concerns and would be a good representative in descriptive and substantive terms. Identity priming can hence establish an emotional connection, as voters perceive candidates who share their identities to be relatable and sympathetic to their concerns. In addition, highlighting these identities helps cast light on the distinctive perspectives and experiences that candidates bring to the political landscape, thereby enhancing the diversity of voices in decision-making processes (Bauer and Santia, 2022; Windett, 2014; Herrnson, Lay, and Stokes, 2003; Williams, 2019).

Do identity-based campaign messages influence voter perceptions, and if so, how? Do they increase the candidates' relatability and authenticity? While the expanding literature on political persuasion (Broockman and Kalla, 2016; Kalla and Broockman, 2020, 2018) has tested how canvassers can most effectively communicate with voters, e.g. via perspective-giving and -taking, the political persuasion literature so far has not devoted much space to identity priming. The few studies that exist provide mixed evidence

about whether priming social identities should affect voters' political decisions. While Broockman et al. (2022) find that shared demographics do not affect the effectiveness of political persuasion, Valenzuela and Michelson (2016) argue that the strength with which voters identify with specific identities matters for whether identity appeals are effective at mobilising voters. We focus on whether speaking to voters about key social identities, such as their gender or the place where they live, affects voters' evaluations of candidates.

By exploring the effects of emphasising gender, parenthood status, and local identities on candidate evaluations, we hope to add to the body of knowledge on how candidates, and particularly how women candidates, can effectively communicate with voters on the campaign trail. We specifically examine the effect of identity primes on voter perceptions of two women candidates seeking reelection in the 2022 state election in North Rhine-Westphalia and the 2023 repeat state election in Berlin, Germany. We conducted two persuasion field experiments in these elections.

Our experiments establish that direct interactions with candidates positively affect name recognition and candidate evaluations but do not translate into higher vote shares for the party. Our findings show that some identity primes more positively affect candidate evaluations and vote choice: Campaign postcards that highlighted a candidate's gender, locality, and parenthood were more effective in influencing voters' candidate evaluations than messages that did not emphasise the candidates' identities. Importantly, the strength of gender, place-based, and parenthood identities does not moderate our findings, speaking against identity alignment as a key mechanism. Our findings offer insights into the complex ways in which multiple identities can be leveraged by candidates to influence voter perceptions.

4.2 Identity Priming: Shared experience or information cue?

According to social identity theory, individuals have a strong need to categorise themselves and others into social groups, and these group attachments can influence attitudes, beliefs, and behaviours (Tajfel, 1981). A social identity is formed when an individual's membership in a group is incorporated into that individual's self-concept (Huddy, 2013). Early findings of Conover (1988) indicate that group identifications play a vital role in determining people's political opinions; people who identify with different groups focus on different topics and analyse political matters from distinct angles. In contexts where little information is available, voters may only have access to a few pieces of information

about candidates, which can include their party, gender, and anything that they share with voters via campaign interactions and communication. In these situations, voters may "use descriptive stereotypes (beliefs about how members of a group conduct and think) to fill in factual gaps about a candidate, resulting in the formation of prescriptive preconceptions (beliefs about how members of a group should behave and think)" (Everitt, Best, and Gaudet, 2016, p.1742). Dickson and Scheve (2006) find that politicians are well aware that spotlighting identities pertinent to the issue at hand is an efficient method for garnering support from members of specific identity groups. As an illustration, a woman may emphasise her gender identity and support for women's problems to attract women voters. At the same time, a candidate with a military past may do the same to appeal to military voters by highlighting their experience and support for veterans.

Social identities as shared experiences

By emphasising social identities, candidates can establish a connection with voters based on shared experiences (Steffens, Haslam, and Reicher, 2014). Shared identities can signal empathy and comprehension for the concerns and aspirations of their constituents, thereby nurturing a connection that might transcend political differences. One strategy of communicating about social identities is, hence, to emphasise identities that are expected to be widely shared in the target electorate, for instance, an attachment to the place where people live. Being local is something that many people in a constituency would have in common. Even if identities are to some extent categorical, such as gender identities, emphasising a candidate's gender identity can appeal to people who share the same identity. If identities work via cuing shared experiences and associated feelings of empathy, then the extent to which the identity that is highlighted is shared among the target population is crucial. If *identity priming* is effective via *identity alignment* (a shared social identity between candidate and voter), then we would expect that identities that are more widely shared in the target population - *encompassing identities* , on average, will provide more effective identity primes. One such encompassing identity could be place-based identities that are widely shared between constituents and a local candidate. Some studies also find that highlighting gender identities may boost the electoral performance of women politicians among voters who share these identities (Dolan and Lynch, 2014; Herrnson, Lay, and Stokes, 2003), although other studies have found null or mixed results (Bauer, 2015*b*; Bauer and Santia, 2022).

Social identities as information cues

Even in the absence of identity alignment, however, highlighting a social identity can provide important information about candidates, which grounds their candidacy in experiences and values that constituents can empathise with. If identity priming works by providing relevant information about a candidate, then it might affect opinion formation independently of whether the target audience shares the specific identity that the candidate primes. Even *narrower* primes could hence be effective if they provide relevant, positive information. An example of such a narrow identity prime could be a candidate communicating about their identity as a parent. There is evidence that voters perceive that parents have a better grasp of issues that are essential to families and children (Stalsburg, 2010; Stalsburg and Kleinberg, 2015; Bell and Kaufmann, 2015; Campbell and Cowley, 2018; Deason, 2020), irrespective of whether they are parents themselves. Some recent literature also suggests that voters, all else equal, have a preference for women candidates (Schwarz and Coppock, 2022). Moreover, being local could also signal that the candidate would be more attentive to the needs of their constituents (Schulte-Cloos and Bauer, 2023; Key and Heard, 1949; Panagopoulos, Leighley, and Hamel, 2017). Beyond being an identity, being local could hence also be a cue for the quality of constituency work that the candidate would provide if elected.

4.2.1 The specific case of women candidates

A key political category that might affect voting behaviour and political support is gender. Popular political narratives focus on the "women's vote", implying that women politicians have an advantage over women voters (Stauffer and Fisk, 2022). Many voters exhibit a "baseline gender" preference (Sanbonmatsu, 2002), or women experience a sense of "gender consciousness" and group loyalty that motivates them to advocate for the interests of their group. As a result, research argues that women favour in-group candidates (Badas and Stauffer, 2018; Stauffer and Fisk, 2022). Scholars have shown conflicting results when testing the hypothesis that women voters favour women candidates, despite widespread discussion of the "gender-affinity effect" (see Stauffer and Fisk (2022) for a review). Some have presented evidence in favour of it (Plutzer and Zipp, 1996; Brians and Tech, 2005; Herrnson, Lay, and Stokes, 2003; Stauffer and Fisk, 2022; Holman, Schneider, and Pondel, 2015), while others have found very small to no effects (Mcdermott, 1997; King and Matland, 2003; Kam, Archer, and Geer, 2017). These mixed findings imply that women may support women candidates depending on the context and the candidates.

Although most research on women candidates' campaign strategies has concentrated on a single identity, women candidates rarely rely solely on their gender identity to persuade voters; they also emphasise other identities. These other social identities can exclusively

apply to women but do not necessarily have to. Women candidates frequently talk about being mothers, their communities, and their political experiences. The use of this tactic can mitigate against potential exclusionary effects of focusing on gender or against negative gender stereotypes and misogyny that women politicians face (Anzia and Bernhard, 2022; Cassese and Holman, 2018).

One identity that women candidates might promote beyond their identity as a woman is their local identity, which can generate the "friends and neighbours" effect that has been discovered in a variety of electoral circumstances, showing that shared geography influences people's decision-making (Key and Heard, 1949; Lewis-Beck and Rice, 1983; Evans et al., 2017; Panagopoulos, Leighley, and Hamel, 2017; Campbell et al., 2019; Harfst et al., 2024). Voting for a local candidate can reflect in-group bias, as members are driven to advance the group's interests. However, Campbell et al. (2019) also show that voters utilise politicians' local roots (descriptive localism) in the lack of specific information on their performance in the office. Hence, the locality of the candidate might influence voters' assessments, boosting the possibility that they will vote for the candidate with that they share a place-based identity. A candidate's place of origin might be advantageous in elections if she is perceived as an in-group member with a shared place-based identity. From another perspective, Schulte-Cloos and Bauer (2023) argue that individuals vote for politicians from their local communities to manifest their place-based identity.

To improve the effectiveness of women candidates' messages, expanding their identity-based strategies may hence prove useful. Parenthood is one such identity that is believed to influence political behaviour (Stalsburg, 2010; Stalsburg and Kleinberg, 2015; Campbell and Cowley, 2018)(for additional discussion, see Klar (2013) and Klar, Madonia, and Schneider (2014)). Parents are more likely to partake in community activities, such as attending meetings, signing petitions, and casting a ballot. Being a mother or father is a crucial identity for many individuals and transcends class and ethnicity-based social boundaries. However, voters' reactions to women candidates who emphasise their motherhood in their campaigns may vary. Portraying themselves as mothers may appeal to voters who value traditional gender roles and the family (Bell and Kaufmann, 2015). On the other hand, emphasising motherhood may reinforce gender stereotypes and the perception that women are primarily responsible for caregiving and domestic responsibilities. This could result in backlash, i.e. "motherhood penalty" (Correll, Benard, and Paik, 2007), and diminish a candidate's perceived competence and leadership abilities, particularly among voters who value these qualities.

In political campaigns, women candidates can utilise the intersectionality of their identities in a variety of ways, as described previously. Women candidates can use their

overlapping identities to demonstrate their commitment to diversity and inclusion (Kao and Benstead, 2021). By emphasising intersectionality in their campaign messages, they can demonstrate to voters that they prioritise and value representation and equity. This can help elicit support from voters who value inclusive democratic representation. Additionally, they can emphasise the diversity of their social identities to build rapport with voters from various groups. A candidate who identifies as both a woman and a parent, for example, can discuss the unique challenges and experiences she faces as a result of these intersecting identities. Women candidates can also fight biases and assumptions about women in politics by leveraging their intersectionality (Holman and Schneider, 2018). In this paper, we collaborate with two women candidates and test the following hypothesis by concentrating on the impact of promoting the intersection of their various social identities, including their gender and the place where they live:

Hypothesis 1: Messages that prime identities positively affect a) name recognition, b) candidate ratings and c) votes for the candidate.

Hypothesis 2: Messages that prime identities positively affect a) name recognition, b) candidate ratings and c) votes for the candidate than messages that do not prime identities.

4.2.2 Candidate Contact

The ability of a politician to connect on a personal level with voters has been shown to have the potential to improve the support of such voters (Kruikemeier, 2014; McGregor, 2017; Lee et al., 2018). According to Foos (2018), voters are more likely to feel a personal connection with a politician who makes an effort to interact with them. However, when women politicians interact with or communicate with voters, they might opt to emphasise or support identities that are commonly shared. Nevertheless, there is a lack of consensus about whether or not the social and political identities of canvassers may have an impact on the success of campaign interventions (for positive effects, see Michelson (2003); Valenzuela and Michelson (2016), and for null effects, see Broockman and Kalla (2016)). Broockman et al. (2022)'s findings indicate that demographic similarities do not consistently increase persuasion in interpersonal conversations. Sometimes, shared characteristics can enhance persuasion, but they can also have little effect or even work against it in other circumstances. The context and topic of the conversation have a significant impact on how shared demographic characteristics affect persuasion, according to the study. Our study, which focuses on the campaign strategies of women candidates, provides a novel perspective on the short- and long-term consequences created by interactions between candidates and voters during two state election campaigns

in Germany, as well as the influence of the women candidates' social identities. In light of this, the following hypotheses are examined regarding the influence of personal and impersonal contact by the candidate on political persuasion:

Hypothesis 3: Personal and impersonal interactions with the candidate will positively affect a) her name recognition, b) her candidate ratings and c) votes.

4.3 Experimental Design

We designed two randomised field experiments in collaboration with two women state representatives (MdL) who ran for re-election to the state parliaments of North Rhine-Westphalia and Berlin, respectively. North Rhine-Westphalia is the most populous German state and the NRW state election is usually referred to as the "small federal election." The Berlin state election is important due to Berlin's status as the capital and seat of the German federal government. Both state MPs represented the same party that is a member of the current governing coalition at the federal level.

Both experiments followed a comparable set-up. Following the method proposed by Broockman, Kalla, and Sekhon (2017), our team of RAs distributed invitation postcards in the respective electoral district. These postcards included a QR code and a link that led respondents to the study on Qualtrics. The invitation postcard is displayed in Figure C.3 in the Appendix. After reading the participant information and consenting to participate in our study on "German state election campaigns", respondents completed the baseline survey, where we recorded pre-treatment measurements of the outcome variables and political and socio-demographic covariates. During the consent process, participants were told that they could receive campaign materials as part of the study. The day after the election took place, we fielded the first outcome wave (wave 2) and a final outcome collection wave was fielded one month after the election (wave 3). The study design follows best practice introduced in Broockman, Kalla, and Sekhon (2017), with the one exception that the experiments are not placebo-controlled because it would be impossible to send real candidates to talk to voters about matters other than the election, without at least administering partial treatment.

4.3.1 Treatments

The treatment in both experiments was a postcard, combined with a door-to-door visit from the candidate. In experiment 1 (Bonn), the treatment was joint, meaning every subject assigned to treatment received both a postcard and an attempt at a door-to-door conversation, while in experiment 2 (Berlin), we randomly assigned whether the

postcard was followed by a door-to-door visit, or not. The treatment cards, hand-written in experiment 1 and machine-written in experiment 2, followed broadly the treatment design in Foos (2018), meaning they were introductory in tone and included an offer of a follow-up conversation. We randomly varied the content of the letters: Half of the letters contained identity cues, while the other half did not.[1] Both experiments were reviewed and approved by the LSE Research Ethics Committee and pre-registered on OSF.[2] We took great care to comply at all stages of the research process with GDPR protocols: at no point was individual level data exchanged between the research team and the candidates. The candidates provided the treatment postcards to the research team, paid postage, and the postcards were labelled and mailed by the research team. The candidates hence did not know who received the postcards and who did not. Moreover, RAs accompanied the candidates on their canvassing trips and pointed out which houses (not) to canvass. No canvassing lists were exchanged between the research team and the candidates, nor did they at any point have access to the outcome survey data.[3]

4.3.2 Experiment 1

In the 2022 North-Rhine Westphalia state election, we conducted a randomised field experiment in a single electoral district in Bonn, the former German capital. Approximately 110,000 eligible voters reside in the electoral district where we conducted Experiment 1. The city of Bonn comprises two electoral districts in state elections, roughly dividing the city into North and South. Neither of the two constituencies is socio-demographically homogeneous. About 8500 postcards with invitations to join the three-wave online panel were distributed to mailboxes in the district, one balloting district after the other. We executed the postcard distribution ourselves with the support of several student assistants.

171 individuals signed up to the online panel, completed the pre-treatment wave and passed the eligibility tests. We then used block-random assignment (blocked on sign-up period and postal vote) to divide the sample into three experimental conditions. 50% of the sample was assigned to the untreated control group, and 25% to each of the two treatment groups. Subjects in both treatment groups received first a hand-written postcard and then an attempt at a door-to-door visit from the candidate. The two treatment groups differed along the postcard that they received. One group received a postcard that primed the candidate's gender and local identity and the other received

[1] We also randomly assigned whether the postcards included a listening or a talking prime. The content of the door-to-door conversations were unscripted. The results of this treatment are reported elsewhere.

[2] `https://osf.io/mdnpr/` and `https://osf.io/vbm8q/`

[3] See Appendix C.5 for more information on data protection.

a postcard that did not put any particular focus on her gender and local identity. The final experimental groups hence consisted of one control group and two distinct treatment groups, displayed in Figure 4.1.

We cooperated with a local candidate to deliver all the treatments. The candidate we worked with had already been a state parliament member for the previous term. She grew up in Bonn and has lived in the city ever since. All subjects in the two treatment groups received a hand-written postcard. The candidate and her campaign team subsequently also made a door-to-door visit to each of the subjects in the treatment group. In order to protect the privacy of the subjects, we handled all the data. At all times, a member of the research team joined the candidate. The team members had the task of guiding the candidate to the doors of the subjects and ringing their doorbells. At no time any of the data given by the subjects as part of the baseline survey was accessible to the candidate or anyone else outside of our research team. In case the subjects encountered at the door wanted to receive further information, they were asked to contact the candidate's team. To the best of our knowledge, no subject made the connection between participating in the baseline survey and receiving a visit from the candidate.

The pre-treatment covariates are gender, education, age, party identification, vote choice in the previous general election, and the respective outcome variable measured at t1 in the baseline survey. There are no significant differences in covariate balance between subjects randomly allocated to one of the two treatment groups or to control. The relevant variables were embedded in a larger survey on the respective state election. The treatment texts are displayed in Appendix Figures C.2.

Table 4.1: Random Assignment of Participants into Experimental Conditions

	Postcard with Identity Prime	Postcard without Identity Prime
Canvassing	$p = 0.25$	$p = 0.25$
	$p = 0.5$	
Control	$p = 0.5$	

4.3.3 Experiment 2

For experiment 2, we worked in a single electoral district during the 2023 Berlin state election in the central "Mitte" area, which straddles the former East and the West of Berlin. The 2023 Berlin state election was remarkable because it was a repeat election and, thus, a novelty to the German electoral system. The Berlin constitutional court had ruled the previously run state elections, which had been conducted in parallel with the 2021 German federal elections, as void, because of administrative errors. These

errors had led to voters in several electoral districts of the city not being able to vote in time or having to cue for hours to be able to cast their ballot. The court deemed this a breach of sufficient gravity of electoral rules to rule in favour of repeating the election.

Using electoral district-distributed postcards, we replicated the experimental methodology for experiment 1 to recruit participants for a three-wave online panel study. The population eligible to vote in the constituency consists of approximately 30,000 people. In total, about 16,000 invitation postcards were distributed in the entire electoral district by us, supported by student assistants from local universities. Through this procedure, almost every household in the electoral district received an invitation postcard, with the exception of those whose mailboxes were not accessible to us.

We recruited 204 participants who completed the baseline wave and were then randomly assigned to experimental conditions using block-random assignment (blocked on whether they reported having children and plan to vote in person instead of by post).[4] We randomly assigned respondents to seven experimental conditions, six treatment groups (each with p=.11), and a pure control, with p=.34, resulting in a 3x2+1 factorial design. The first factor varied the content of the postcard and the second factor varied whether subjects were contacted at the door-step on top of receiving the postcard, or not. Participants in each of the six treatment groups received a postcard from the candidate, while subjects in the control condition did not receive any campaign materials from her. 33% of the postcards primed gender and parenthood identity, while 33% primed gender, parenthood and local identity, and the remaining 33% did not include any identity primes.

The candidate we cooperated with for this study had already been a member of the state parliament in the previous term as well as of the state parliament that had been elected in the election later declared void by the court. She shared the same party affiliation as the candidate we cooperated with in experiment 1. Having moved to Berlin after growing up and studying in different states, the candidate has resided in her constituency ever since. Guided by us, she attempted to reach every subject in the treatment group multiple times as part of her door-to-door campaigning effort during the two weeks leading up to the election. In case nobody answered the door at the address of the respective subject, we included that subject in the door-to-door campaign on a different day. Again, in this experiment, no personal data of the subjects was shared with the candidate or her campaign. Furthermore, to the best of our knowledge, no subject identified the candidate's personal campaigning effort to be connected to them filling out the baseline survey.

[4]Blocking on whether the participants have children was done due to a school closure period to plan the door-to-door visits accordingly by the request of the candidate.

The pre-treatment covariates measured are gender, education, age, party identification, vote choice in the previous state election, and the respective outcome variable measured at t1 in the baseline survey. There are no significant differences in covariate balance between subjects randomly allocated to one of the treatment groups or to control. The experimental conditions, can be found in Table 4.2 and the treatment texts are displayed in Appendix Figures C.3.

TABLE 4.2: Random Assignment of Participants into Experimental Conditions

	Canvassing	No Canvassing
	$p = 0.33$	$p = 0.33$
Postcard without Identity Prime	$p = 0.11$	$p = 0.11$
Postcard with Gender and Parenthood Prime	$p = 0.11$	$p = 0.11$
Postcard with Gender, Parenthood and Locality Prime	$p = 0.11$	$p = 0.11$
Control	$p = 0.34$	

4.3.4 Outcome measurement

We are attempting to estimate the impact of campaign contact on five outcome variables and various secondary outcome variables that serve as checks on the mechanisms and experimental manipulations. Qualtrics is used to conduct a three-wave opt-in panel survey and then collect data on all variables.

The first outcome variable, name recognition, is a binary variable that takes on the value 1 if the participants indicate that they are familiar with the candidate. It takes the value 0 if they report being unfamiliar with the candidate. The second outcome variable is feelings towards the candidate, a measure between 0 to 100, where 0 means the subject feels very cold toward the candidate and 100 means the subject feels very warm toward the candidate. The feeling thermometer is then recoded as a binary variable to indicate whether the participant has positive feelings toward the candidate or not. It takes on the value 1 if the subject knows the candidate and rates her higher than 50 on the feelings thermometer and 0 otherwise. The third outcome variable is a feeling thermometer towards her party, which might run anywhere from 0 (very cold) to 100 (very warm). The fourth and fifth variables are the participant's vote choices in the state elections for the constituency candidate (also known as the "primary vote" in Germany) and for the party list (also known as the "secondary vote" in Germany). For both variables, the value of 1 is assigned if the participant votes for the candidate or her party. The value of 0 is assigned if the participant does not vote for the candidate or her party.

4.3.5 Manipulation checks

Table 4.3 presents the manipulation checks administered in the post-treatment surveys. The first two columns show the manipulation checks for Experiment 1 and the third and fourth columns for Experiment 2. Table 4.3 presents the results for whether the participants remember being contacted with a campaign letter from the party for both waves in each experiment. According to these results, respondents in the treatment group in Bonn had a 64 percentage-points higher likelihood of recalling contact via letter than the respondents in the control group. The likelihood is 61 percentage-points higher in the third wave. We also record lasting effects of recall in Berlin. In Experiment 2, respondents in the treatment conditions were 89 percentage-points more likely to remember postcard contact from the candidate in wave 2, and 84 percentage-points more likely to recall contact via postcard in wave 3, compared to the control group that did not receive any postcard.[5] Overall this shows that the postcard was highly memorable.

	Bonn		Berlin	
	Wave 2	Wave 3	Wave 2	Wave 3
	Recall campaign postcard contact			
Treatment: Campaign Postcard			0.27***	0.29***
(only in Berlin)			(0.09)	(0.10)
Treatment: Campaign postcard and Canvassing	0.64***	0.61***	0.62***	0.55***
	(0.06)	(0.07)	(0.08)	(0.09)
R^2	0.41	0.42	0.29	0.23
Adj. R^2	0.34	0.35	0.22	0.15
Num. obs.	155	148	177	168
N Clusters	149	142	163	156
	Recall door contact			
Treatment: Campaign Postcard			0.01	−0.01
(only in Berlin)			(0.03)	(0.03)
Treatment: Campaign postcard and Canvassing	0.64***	0.60***	0.56***	0.12**
	(0.06)	(0.06)	(0.06)	(0.05)
R^2	0.45	0.47	0.55	0.22
Adj. R^2	0.39	0.40	0.50	0.13
Num. obs.	155	148	177	168
N Clusters	149	142	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.3: Manipulation check for campaign postcard and canvassing recall

Table 4.3 also presents the results for whether the participants recall being contacted at their door-step for both waves in each experiment. Table 4.3 shows that respondents

[5] In the Berlin experiment, both treatment conditions received a campaign postcard and we only assigned half of them to receive a canvassing visit. The mentioned percentage points effect size is the linear addition of the postcard recalls for both treatment conditions.

assigned to the treatment group in Bonn were 64 percentage points more likely to recall an interaction with the respective party than respondents in the control group. In the third wave, the effect was still 60 percentage points. In experiment 2, respondents who were assigned to the canvassing treatment condition were 56 percentage points more likely to recall door-to-door contact from the candidate. In Berlin, the effect is still significant for the third wave, despite the fact that its magnitude decreased to 12 percentage points after four weeks. It is important to note that these are ITT effects and that there was significant non-compliance in the canvassing group. In total, around 50% of the treatment group opened the door in Bonn and 60% in Berlin.

	Candidate info		Gender		Place-based	
	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3
			Bonn			
No Identity	0.659***	0.483***	0.440***	0.455***	0.471***	0.281***
	(0.077)	(0.093)	(0.082)	(0.081)	(0.094)	(0.077)
Gender and Local Prime	0.602***	0.464***	0.522***	0.453***	0.308***	0.219***
	(0.082)	(0.097)	(0.095)	(0.077)	(0.074)	(0.073)
R^2	0.517	0.329	0.427	0.352	0.331	0.351
Adj. R^2	0.441	0.241	0.337	0.267	0.226	0.267
Num. obs.	155	148	155	148	155	148
N Clusters	149	142	149	142	149	142
			Berlin			
No Identity	0.253***	0.371***	0.026	0.211**	0.168**	0.120*
	(0.089)	(0.117)	(0.070)	(0.081)	(0.076)	(0.063)
Gender, Parenthood & Local Prime	0.437***	0.365***	0.187**	0.413***	0.198***	0.270***
	(0.087)	(0.109)	(0.080)	(0.103)	(0.074)	(0.089)
Gender & Parenthood Prime	0.307***	0.365***	0.229**	0.422***	0.034	0.182**
	(0.099)	(0.108)	(0.088)	(0.092)	(0.065)	(0.080)
R^2	0.219	0.219	0.130	0.262	0.154	0.165
Adj. R^2	0.135	0.130	0.037	0.178	0.063	0.071
Num. obs.	177	168	177	168	177	168
N Clusters	163	156	163	156	163	156
Covariate adjusted	Yes	Yes	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.4: Manipulation check for Campaign letter content recall

Table 4.4 displays the manipulation checks on the identity primes in both Bonn and Berlin. We present evidence that the experimental manipulation in both cases was successful. Subjects assigned to the postcards correctly perceived that these postcards included information about the local candidate. Moreover, subjects assigned to the gender prime in Bonn were 8 percentage-points more likely to perceive the gender prime than subjects assigned to the postcard without prime. In Berlin, subjects assigned to the gender prime were 20 percentage-points more likely to perceive the prime than subjects in the no identity condition. Given that both postcards displayed a photo of the candidate, the manipulation worked well.

4.4 Results

The estimates in Tables 4.5, 4.6, 4.7, and 4.8 are Intent-to-Treat (ITT) estimates. The tables show a side-by-side comparison of the findings of Experiments 1 and 2. In Bonn, 50% of doors assigned to treatment were opened; in Berlin, the ratio was 59.09% in the letter and canvassing condition. Since the door-to-door visits were always accompanied by a postcard (hand-written in Bonn and machine-written in Berlin), we present the Intent-to-Treat (ITT) effect only because it is impossible to determine who read the campaign postcards. The covariate-adjusted ITT effects of assignment to any of the treatments on name recognition and positive feelings towards the candidate are shown in Table 4.5 for each experiment, according to the post-treatment surveys. In Bonn, the treatment group's name recognition of the candidate increased by 21 percentage points compared to the control group. In Wave 3, the impact of the treatment, which included campaign postcards and a canvassing visit, is an increase of 12 percentage points. In Bonn, positive candidate ratings in the treatment group are 19 percentage points higher than positive candidate evaluations in the control group, and this effect diminishes over time when we contacted the participants one month following the election. In the Berlin experiment, which is reported in columns 5, 6, 7, and 8, the bundled treatment of being contacted through postcard and door-to-door canvassing raised the candidate's name recognition by 13 percentage points, and the impact persists in Wave 3. We observe very similar effects of the treatment on favourable attitudes towards the candidate. Both personal and impersonal contact from the candidate significantly increased positive feelings for the candidate by 15 percentage points, and this effect remained significantly positive when we contacted the participants one month after the treatment was administered in Berlin, with 13 percentage points more positive feelings compared to the control group.

	Bonn				Berlin			
	Name recognition		Positive feelings		Name recongition		Positive feelings	
	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3
Treatment	0.21**	0.12*	0.19**	0.08	0.13**	0.18***	0.15***	0.13***
	(0.08)	(0.07)	(0.06)	(0.07)	(0.06)	(0.06)	(0.05)	(0.05)
R^2	0.32	0.42	0.32	0.27	0.36	0.41	0.27	0.48
Adj. R^2	0.24	0.35	0.24	0.18	0.29	0.35	0.20	0.42
Num. obs.	155	148	155	148	177	168	177	168
N Clusters	149	142	149	142	163	156	163	156
Covariate adjusted	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.5: The Effect of Treatment on Candidate Name Recognition and Rating on Having positive feelings.

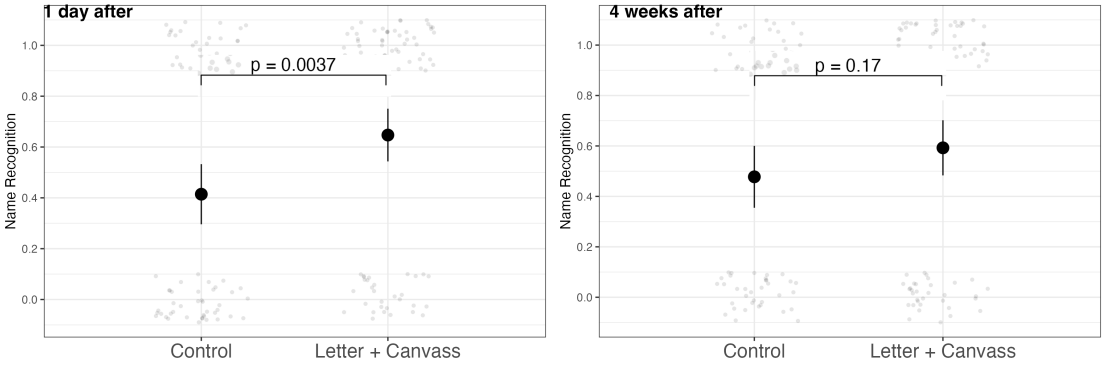
Each participant in the treatment group in the Bonn experiment received a canvassing

visit as well as a handwritten campaign postcard. In Experiment 2, the Berlin experiment, in order to examine the effect of only receiving campaign postcards versus also receiving a canvassing visit, we randomly assigned the mode of interaction into three experimental groups: (i) control group who did not receive any campaign contact, (ii) only postcard group received hand-written greeting campaign postcards with randomly assigned emphasis on multiple identities of the candidate, and (iii) postcard and canvassing group received hand-written greeting campaign postcards as well as a canvassing visit. In Figures 4.1 and 4.2, we present a breakdown of the method of contact's effects on candidate name recognition, positive attitudes about the candidate and voting for the candidate. As evidenced in Figures 4.2a and 4.2b, the treatment effect was attributable to the door-to-door interaction with the candidate. We cannot tell from experiment 2 whether the ineffectiveness of the letter alone was due to the letter being machine written, or whether letters alone do not work per se. Foos (2018) reports significant effects of a hand-written letter on candidate favourability and vote choice, and our results from experiment 1 are consistent with the findings on favourability however we do not find that contact with the voter has increased the probability of voting for the candidate.

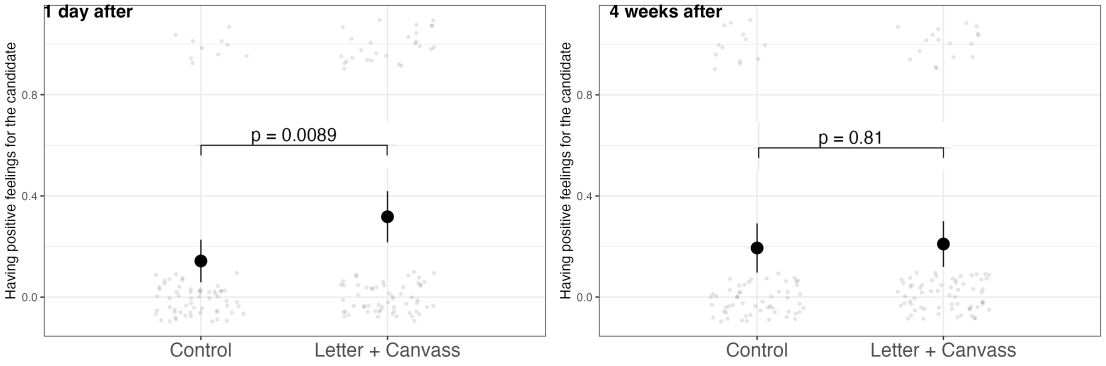
Tables 4.6, 4.7 and 4.8 present the effect of identity priming in the campaign postcards on the outcome variables. When comparing the experimental group, which received postcards emphasising the candidate's gender and local identities (and the parenthood identity for the Berlin experiment), to the control group in both experiment 1 and experiment 2, we record that name recognition and candidate favourability is significantly higher than in control, confirming Hypothesis 1. In both experiments, the positive effects continued for a full month after the election had taken place. The covariate-adjusted ITT estimates for the experimental group that received a campaign postcard without any emphasis on the candidate's gender and place identity are not statistically different from zero for candidate name recognition. That means that getting a campaign postcard that did not emphasise the candidate's identity did not greatly boost the recipient's name recognition of the candidate. Regarding candidate favourability, we find similar positive effects for both the postcards that employed identity primes and those that did not.

In experiment 2, we also added a third postcard content in which the candidate primed her gender and parenthood identities, excluding the local identity. In columns 3 and 4 in Table 4.6 and 4.7, the last row shows the effect of priming gender and parenthood identity of the woman candidate on her name recognition and positive feelings towards her. The immediate effects of this campaign postcard are substantially positive, but not significantly different than zero compared to the control group, however the effect appear to increase when we contacted the participants one month after the election. We record

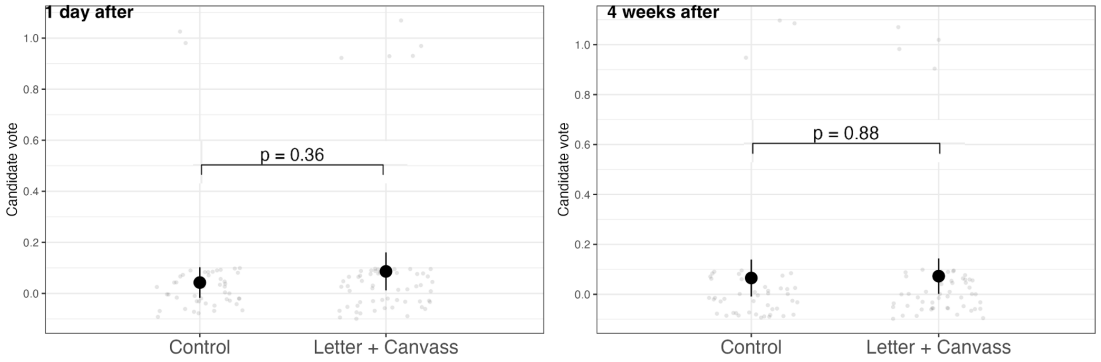
FIGURE 4.1: Effect of treatment on candidate-level outcomes in Bonn, 95% CIs.



(a) Mode of interaction effect on candidate name recognition in Bonn



(b) Mode of interaction effect on positive feelings for the candidate in Bonn

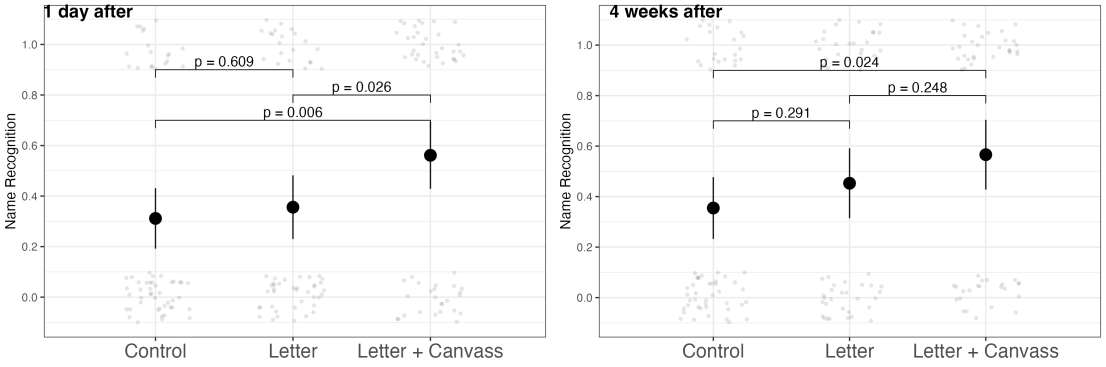


(c) Mode of interaction effect on vote choice for the candidate in Bonn

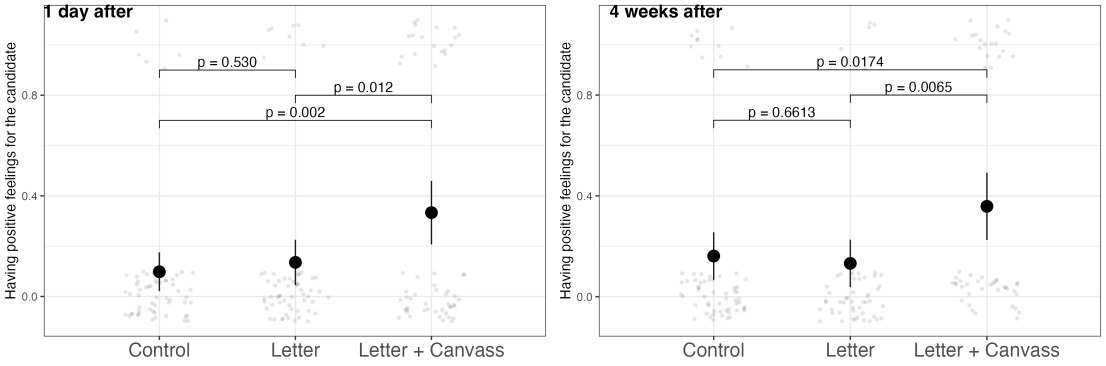
a statistically significant increase of 16 percentage points for her name recognition and 11 percentage points for having positive feelings for the woman candidate.

Table 4.8 displays the treatment effect on participants' self-reported vote choice for the constituency candidate (i.e. the primary vote), excluding participants who had already cast their ballots by mail at the time they completed the baseline recruitment survey. In contrast to our robust findings regarding candidate name recognition and positive feelings towards the candidate, our results on vote choice are more noisy. In wave 2, we

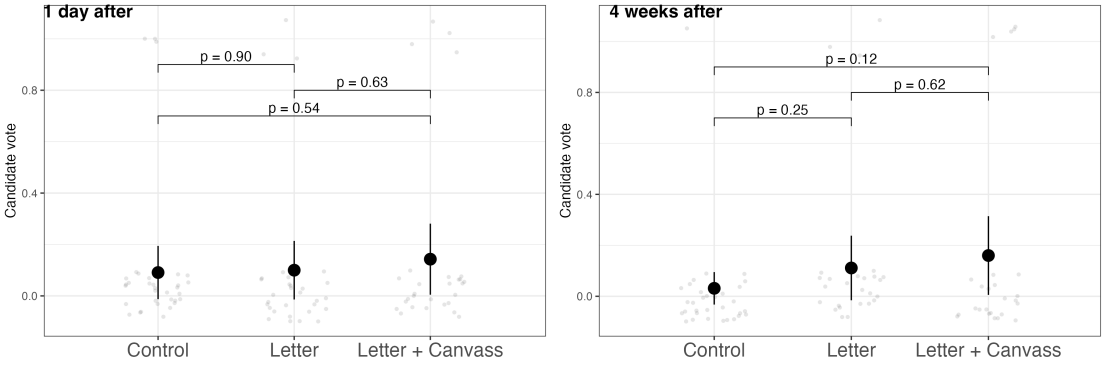
FIGURE 4.2: Effect of treatment on candidate-level outcomes in Berlin, 95% CIs.



(a) Mode of interaction effect on candidate name recognition in Berlin



(b) Mode of interaction effect on positive feelings for the candidate in Berlin



(c) Mode of interaction effect on vote choice for the candidate in Berlin

observe a significant and substantively large (9 %-points) increase in self-reported vote choice for the candidate in Bonn among participants who received campaign postcards priming the candidate's gender and locality when compared to the group that served as the control. The effect estimate in Berlin is large (our best guess is 15 percentage-points), but not statistically significant. The effects of the postcards that do not prime identities are null. We do not find any spillover effects of the postcards on the party vote.

	Name recognition			
	Bonn		Berlin	
	Wave 2	Wave 3	Wave 2	Wave 3
No identity	0.19	0.09	0.11	0.16*
	(0.10)	(0.08)	(0.10)	(0.09)
Gender and Local Prime	0.23*	0.15*	0.20**	0.23**
(and Parenthood only in Berlin)	(0.09)	(0.08)	(0.09)	(0.10)
Gender and Parenthood Prime			0.09	0.16*
(only in Berlin)			(0.09)	(0.08)
R^2	0.32	0.43	0.36	0.41
Adj. R^2	0.23	0.35	0.29	0.34
Num. obs.	155	148	177	168
N Clusters	149	142	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.6: The Effect of Identity Priming on Candidate Name Recognition

	Candidate favourability			
	Bonn		Berlin	
	Wave 2	Wave 3	Wave 2	Wave 3
No identity	0.22*	0.04	0.18**	0.09
	(0.09)	(0.08)	(0.08)	(0.06)
Gender and Local Prime	0.17*	0.12	0.19***	0.20**
(and Parenthood only in Berlin)	(0.09)	(0.08)	(0.06)	(0.07)
Gender and Parenthood Prime			0.11	0.11*
(only in Berlin)			(0.07)	(0.06)
R^2	0.33	0.28	0.21	0.48
Adj. R^2	0.24	0.18	0.12	0.42
Num. obs.	155	148	177	168
N Clusters	149	142	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.7: The Effect of Identity Priming on Having Positive Feelings for the Candidate

4.4.1 Identity Alignment

In accordance with findings reported in Valenzuela and Michelson (2016), we test whether or not messages that prime identities are more effective than messages that do not prime identities among voters who strongly share the candidate's identities (gender, locality, parenthood) than among voters who do not share the primed identities. A five-point

	Vote choice			
	Bonn		Berlin	
	Wave 2	Wave 3	Wave 2	Wave 3
No identity	−0.03	−0.04	−0.09	−0.15**
	(0.04)	(0.05)	(0.06)	(0.06)
Gender and Local Prime	0.09**	0.12	0.15	0.04
(and Parenthood only in Berlin)	(0.05)	(0.08)	(0.10)	(0.08)
Gender and Parenthood Prime			0.11	0.06
(only in Berlin)			(0.095)	(0.05)
R^2	0.51	0.30	0.49	0.54
Adj. R^2	0.42	0.16	0.36	0.41
Num. obs.	105	101	91	84
N Clusters	100	96	86	79
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE 4.8: The Effect of Identity Priming on self-reported vote choice for the Candidate

Likert scale is used to measure identity strength as a more precise approximation of voters' identities (Kuo and Margalit, 2012). This scale takes into account how strongly voters feel about their social and demographic identities. Voters' identities are measured at baseline.

We find that place-based identity alignment positively predicts (p = 0.007) how voters respond to the treatment in Bonn. To put it another way, the treatment effect of the identity-prime postcards gets larger, as voters' place-based identification grows stronger (getting closer to five on a scale of one to five). On the other hand, this interaction is positive, but not significant in the Berlin experiment. We do not find any evidence that gender-identity strength moderates the effect of the postcards that use identity primes, no matter the outcome variable. There is some evidence (from experiment 1) to show that having a local identity that is aligned with a candidate's platform might be beneficial to that candidate in a local election, but our results on identity alignment more broadly remain, at best, inconclusive.

In accordance with our pre-registration plan for this experiment, we also examine mechanisms that could explain our findings regarding the effect of exposure to identity messages on candidate-level outcome variables. During the post-treatment surveys, we asked participants to rate, on a scale from 0 to 10, the degree to which they identified with the candidate. The purpose behind measuring this theoretical mediator was to determine whether or not an increased level of self-identification with a candidate is a consequence of being exposed to identity primes. In other words, messages that prime identities may

boost voters' impression of labelling the candidate as a member of an in-group, which may increase the candidate's likelihood of winning the election. In both experiment 1 and 2, we find support for the idea that communications that prime women candidates' gender, local, and parental identities boost the likelihood of identifying with the candidate (Appendix Table C.11).

4.5 Discussion and conclusion

Gender and other social identities are important factors in how voters form candidate evaluations. However, gender is not just a perceived characteristic but also an expressed identity and a lived reality, and many women candidates talk about their experiences as women with voters. While many studies have identified the effects of candidates' socio-demographic characteristics on vote choice, especially in survey experiments (Schwarz and Coppock, 2022), few studies have looked at how women candidates communicate about their social identities, including their gender, and what the effects of identity priming are on how voters evaluate candidates. In this paper, we build a theory of multiple identity priming and show that emphasising gender and localness can positively influence how voters view women candidates.

Leveraging two field experiments that we conducted with women candidates in German state elections, we find that postcards that prime gender and place positively affect candidate evaluations. However, we do not find that this effect is a function of identity alignment, meaning voters who are more likely to share these identities are no more likely to support the candidate than voters whose identities do not align with those of the candidate. This finding is consistent with recent work by Broockman et al. (2022), which shows that demographic alignment does not condition the effectiveness of volunteer-voter interactions. By making specific characteristics salient, we show that this finding also extends to identity alignment.

Moreover, we present field experimental evidence consistent with findings from survey experiments (Campbell et al., 2019; Campbell, Childs, and Lovenduski, 2010): Voters value candidates who are local, and emphasising localness appears to have a positive effect on candidate evaluations in the field. In light of this, placing a strategic emphasis on locality can be an effective technique for women candidates to boost their visibility and viability.

In addition, our findings corroborate those of the literature, which suggests that door-to-door canvassing is a beneficial strategy for candidates (Arceneaux, 2007; Peterson and Simonovits, 2018), especially when women candidates act in the role of persuaders (Foos,

2018). Candidates are able to address particular problems better, provide comprehensive information, and build confidence through individualised encounters as opposed to more impersonal means of communication, such as campaign postcards (Gerber, Green, and Larimer, 2008; Foos, 2018). Further, our findings indicate that canvassing outperforms campaign postcards in terms of having a more positive and long-term impact on candidate evaluations.

Despite the benefits of personalised campaign strategies, our postcard campaign's low response rates highlight the challenge in field experiments of disproportionately attracting participants with higher political interest. Although a low response rate can skew results towards those already politically engaged, our sample still offers valuable insights: 36% of Bonn respondents and 41% of Berlin respondents indicated a very strong interest in politics. Compared to the general political interest averages in Berlin (20.1%) and North Rhine-Westphalia (16.1%) found in the German Longitudinal Election Study (GLES), these figures underscore a concentration of politically engaged participants. While this may limit the broader generalisability of findings, it highlights the attitudes and behaviours of those already inclined toward political participation—insights relevant for targeted outreach strategies (Zaller, 1992; Broockman, Kalla, and Sekhon, 2017). Future studies might explore additional methods, such as incentives or multi-channel recruitment, to capture a broader spectrum of political engagement levels and enhance sample diversity.

By appealing to voters' impressions of the candidate without relying on identity alignment, the multiple identity priming strategy seems to attract a larger pool of eligible voters. Campaign strategists and candidates should benefit from these results as this approach broadens the appeal beyond traditional party lines. Women candidates can overcome some of the obstacles caused by prejudices and gender preconceptions through strategic campaign messaging.

5

Conclusion

Raphael Warnock, a Democrat, garnered media attention for his campaign advertisements prior to his election as Georgia's (U.S. State) first Black senator in 2021. Georgia is a white majority state with a 61.6% White population followed by a 12.4% African American population (U.S. Census 2020). Raphael Warnock faced a task in the highly contested U.S. Senate race in Georgia: winning over Black voters while attracting White Georgians. Running against a White Republican candidate, Warnock featured in a campaign ad with a dog named "Alvin the Beagle," who not only became famous but also played a strategic role in Warnock's ad sending nonverbal cues to voters with whom he had a racial misalignment. "If you're trying to make history in the South and you're trying to elect an African-American pastor in an election for which you know you're going to need white voters, then you need to do everything you can with your ad strategy to make white voters comfortable" (The New York Times 2021).[1] In a highly racialised race, Warnock's strategy was to show his ability to represent the people, even though they did not look like them. The dog was part of de-racialising Warnock "to challenge the stereotype of [*aggressive and angry*] Black men and to endear him to a broader swath of voters." (Politico 2021).[2] Raphael Warnock's campaign strategy exemplifies the mobilisation of nonverbal cues to navigate visible demographic misalignment with voters in politics and its impact on voting preferences. Campaigns know the role nonverbal cues play in addition to verbal ones in influencing voter decisions. In addition, voters use these cues in informing their decision-making (Bartels, 1996; Mcdermott, 1998; Valentino, Hutchings, and White, 2002; Hehman et al., 2014; Bowler and Nicholson, 2018).

[1] `https://www.nytimes.com/2021/01/23/us/politics/raphael-warnock-puppy.html`. Accessed on August 1st, 2024.

[2] `https://www.politico.com/news/2021/01/03/raphael-warnock-georgia-race-453222`

Despite the implications in real-life political campaigns and voter perceptions, the role of nonverbal cues in how elites act and how the public responds is understudied compared to research on rhetoric's influence. This was partially due to methodological challenges faced in analysing nonverbal expression channels in political communication. When we study elite behaviour and voter preferences, we frequently approach it with the underlying assumption that verbal messages and policy positions are the primary components of political discourse. This thesis relaxed this assumption, arguing that nonverbal cues have informational value apart from verbal ones. Moreover, through one observational study, one visual survey experiment, and two field experiments, this thesis has shown that gendered verbal and non-verbal cues matter in shaping elite behaviour and voter preferences and can have substantial effects at the intersection of visible demographic traits and identities.

In this thesis, I presented three individual papers. In Paper 1, I make an empirical contribution to the gender and politics and political communication literature by arguing that perceived gender alignment affects how candidates adjust their nonverbal communication. In line with the process of behavioural responsiveness in communication with the opposite gender, I find that candidates tend to sound more appealing when they directly interact with voters from the opposite gender. In Paper 2, I examine whether a gendered nonverbal cue, i.e., facial masculinity and femininity, can influence voter preferences and perceptions, taking into account the visible demographic traits of the candidates, i.e., race and gender. Through an innovative visual survey experiment, I found that voters prefer less facial masculinity in hypothetical candidates regardless of the candidate's race and gender. In Paper 3, through two field experiments in collaboration with two candidates, I show that "multiple identity priming" is an effective strategy for candidates in boosting their profiles, i.e., their visibility. In addition, I also show that local identity alignment can strengthen the effect of multiple identity priming in some contexts.

These papers demonstrate the significant impact of gendered nonverbal and verbal cues on voter decisions, candidate behaviours, and campaign strategies. The papers also demonstrate the importance of nonverbal cues in revealing biases, behavioural reactions, as well as that of verbal cues. Nonverbal cues are becoming more important in modern political campaigns, particularly in visual social media and easy internet access, since voters and candidates are more accessible and engaged than ever before (Veneti, Jackson, and Lilleker, 2019). Evidence from this thesis shows that research on gender, identity, and political behaviour should consider nonverbal cues alongside verbal ones.

While this thesis shows that gender norms and expectations in politics might be evolving, such as increased visibility of women candidates and the accepted norm of looking

gender-congruent, the findings provide evidence that voters are attentive to nonverbal cues. This can have problematic implications for diversity in democratic representation. In the 2024 Presidential Election race in the United States, Kamala Harris, the Democratic nominee, faced increased criticism, with opposition Republican Party members referring to her as the "DEI hire." Negative campaign attacks, such as on gender in addition to the other visible identity cues, can also disproportionately mobilise voters (Brooks, 2010). Moreover, when criticism includes shaping the gendered narrative around cues for women candidates, it can influence public perceptions (Dovi, 2024). For instance, Harris' opponent, Donald Trump, questioned her racial identity: "I didn't know she was black until a number of years ago when she happened to turn black, and now she wants to be known as black... So I don't know—is she Indian? Or, is she black?" (BBC 2024).[3] This could create a backlash from voters because of the "perceived lack of embrace of her Indian heritage" (Washington Post 2024).[4] These attacks can cause different reactions from voters by making certain parts of identities more visible (Simien, 2007).

Not only does the inclusion of gendered verbal and nonverbal cues have ramifications for political candidates and voters, but it also has consequences for democratic and inclusive representation. In the following section, I will discuss the implications of gendered cues for candidate preference, stereotypes, and representation. Following that, I will address the extent to which the findings presented in this thesis can be generalised and potential directions for further research. In my final remarks, I will review the policy implications, including suggestions for campaigns and political parties.

5.1 Gendered cues, inclusion and democratic representation

Gendered aspects of verbal and nonverbal cues affect elite behaviour and voters and have broader implications for inclusion in democratic representation. Stereotypes towards gendered traits, mainly from the traditionally masculine and male-dominated sphere in politics, can activate feminine stereotypes, which have been linked to reducing the leadership evaluations of women candidates (Bauer, 2020*a*). Biased assessments based on gendered cues could lead to a skewed representation in political leadership positions. As Karpowitz et al. (2024, p.19) points out, "refocusing scholarly attention towards candidate gender presentation as opposed to just studying the effects of candidate sex is crucial for understanding women's underrepresentation in politics." This quote, which

[3] `https://www.bbc.com/news/articles/c06k07dn1zjo`. Accessed on August 1st, 2024

[4] `https://www.washingtonpost.com/world/2024/07/28/india-kamala-harris/`. Accessed on August 1st, 2024.

aligns with the thesis' framework, emphasises the importance of a nuanced exploration of gendered cues in candidate presentations to understand their role in women's representation in politics. It also shows that going beyond the categorisation of "women" and "man" candidates can reveal the underexplored dynamics in democratic representation. This thesis emphasises the importance of addressing these "underexplored" dynamics in order to take meaningful steps toward fostering a more diverse and inclusive political environment.

This thesis shows that gendered cues significantly impact the political behaviour of both elites and voters. Paper 1 and Paper 2 highlight the ways via which gender norms are communicated and perpetuated in political settings by looking at nonverbal cues like facial features and voice pitch. For instance, to address leadership expectations, women candidates may alter their voice pitch to sound more masculine. However, when interacting with voters of the opposite gender, they comply with the gendered expectations of sounding more feminine. These dual practices show how gender presentation and social expectations interact in complicated ways and can reinforce the stereotypes towards women candidates (Bauer and Santia, 2022; Teele, Kalla, and Rosenbluth, 2018). To increase the democratic representation of women, there needs to be a broader definition of leadership that appreciates different gender expressions.

For many reasons, increasing diversity in representation is essential in democracies. To begin with, it bolsters inclusive and fair democracy by ensuring that a broader range of voices are considered in political processes: parties' issue emphasis and policy responsiveness involve more diversity (Pitkin, 1967; Schwindt-Bayer and Mishler, 2005; Greene and O'Brien, 2016). More complete and effective policy-making results from diverse representation since candidates from all backgrounds provide unique experiences and perspectives that can better meet the interests of many populations. Moreover, diversity in representation helps to strengthen the legitimacy and confidence in government institutions since people are more likely to feel linked to and trust a government that incorporates people who look like them and go through comparable experiences (Arnesen and Peters, 2018). Increasing diversity also challenges institutional preconceptions and stereotypes, promoting social understanding (Barnes and Holman, 2020). Reflecting the actual composition of the population helps an inclusive government to better advocate for underprivileged groups, lower socioeconomic inequities, and build a fairer and equitable society.

This thesis investigates concealed gender biases, examining how nonverbal cues trigger elites' behavioural reactions to conform to gendered norms and gender stereotypes. Therefore, the findings of this thesis have implications for our understanding of the continuous underrepresentation of women in elected governments all around the world

(Klar and Schmitt, 2021). For example, according to the Centre for American Women and Politics (CAWP), as of 2024, women representatives make up just 25 percent of the Senate and 29 percent of the House of Representatives in the United States.[5] These substantial disparities still exist even though 57% of Americans (Gallup poll, 2024) believe the country would be run better if there were more women in government office.[6] Therefore, the case of the U.S. presents a clear difference between public opinion and the number of women holding public office (Lawless, 2015). Studying this discrepancy, research so far has offered a few explanations: the gender gap in political ambition and interest, the small number of female candidates, and the strong impact of political parties and institutional structures (Fox and Lawless, 2004; Sanbonmatsu, 2006; Campbell and Winters, 2008; Lawless and Fox, 2010; Karpowitz, Monson, and Preece, 2017; Holman and Schneider, 2018; Foos and Gilardi, 2020). When we switch from the supply side explanations to the role of voters, research shows that voters increasingly play a minor role in women's underrepresentation (Campbell and Cowley, 2014; Dolan and Lynch, 2014). Recent empirical studies even show that voters slightly favour choosing women for leadership roles (Schwarz and Coppock, 2022; Clayton et al., 2020; Teele, Kalla, and Rosenbluth, 2018); however, the gap between public opinion and representation persists. In this thesis, I contribute to the discussion on gender and politics by revealing that voters still have gender expectations and candidates still comply with these expectations.

Recognising the ideological and political differences in the preferences for nonverbal signals would help us fully understand the dynamics at work. Research has shown that political parties indeed play a role in including candidates with specific nonverbal cues and strategically placing these candidates on the ballot, such as facial traits that signal competence or dominance (Laustsen and Petersen, 2018). The stereotypes towards gendered cues are also associated with the ideological positions of the political parties and the preferences of ideological voters. On the one hand, reflecting their alignment with conventional gender norms and leadership styles, conservative and right-leaning parties could, for example, favour candidates who have more typically masculine qualities, such as a deeper voice or strong body language (Laustsen, Petersen, and Klofstad, 2015; Karpowitz et al., 2024). On the other hand, progressive and left-leaning parties could be more receptive to candidates that show a combination of both masculine and feminine characteristics (Bernhard, 2023), therefore endorsing a more comprehensive range of gender expressions and a more inclusive style of leadership.

[5] "https://cawp.rutgers.edu/facts/current-numbers" was accessed on June 10, 2024, within the context of this thesis.

[6] `https://thehill.com/changing-america/respect/equality/4517330-gallup-over-half-of-americans-think-u-s-would-be-better-governed-with-more-women-in-office/` was accessed on July 20, 2024.

These ideological and political preferences for nonverbal cues can affect the kinds of candidates parties support and their campaign tactics. Political parties play a huge role in their candidate nomination strategies since, in some contexts, party stereotypes have the potential to exert more influence than gender stereotypes (King and Matland, 2003; Hayes, 2011; Hayes, Lawless, and Baitinger, 2014). Parties may endorse the extent to which gendered cues play a role in democratic representation by nominating candidates who align with the ideologically gendered expectations of voters. For example, a left-leaning party could stress a woman candidate's community involvement and inclusive communication style. In contrast, a right-leaning party might promote a man candidate's military past and assertive demeanour. In addition to reflecting the parties' ideological positions, the deliberate positioning and promotion of candidates based on nonverbal cues also satisfy the prejudices and expectations of their respective voter bases. This thesis contributes to the ongoing debate on gender and politics by revealing the persistence of existing gender expectations among voters and candidates' adherence to these expectations. This conformity shows that ingrained preconceptions and expectations still influence political behaviour, even if public perceptions of gender diversity have evolved. I emphasise the need for a combined strategy to approach gender representation: altering voter opinions and expectations and arming candidates to question and redefine gender standards in their presentations.

This thesis highlighted the interplay between verbal and nonverbal cues and their impact on voter behaviour, providing a framework for understanding these dynamics. It is clear from connecting the contributions of this thesis to the more extensive debate on diversity, inclusion, and democratic representation that realising a more fair political environment depends critically on knowledge of and addressing gendered verbal and nonverbal cues. We may advance towards a more inclusive and representative democracy that reflects diversity and equality by creating an environment whereby different gender expressions are appreciated and recognised.

5.2 Generalisability, limitations and avenues for further research

In this section, following the discussion of the consequences of gendered verbal and nonverbal cues for democratic representation, I will suggest potential research directions. I will also explore the extent to which my research can be generalised to different contexts and discuss its limitations.

This thesis has investigated how gendered verbal and nonverbal cues shape elite behaviour and voter preferences. One of Paper 1's key findings is that a gender mismatch

with the voter lead both women and men candidates to alter their voice pitch in opposite directions during U.S. Democratic Party primary campaign interactions. I expect these findings to travel within the U.S. to the other major political party: the Republican Party. On the one hand, research shows that the Democratic Party supports liberal and progressive ideas, with less adherence to traditional gender roles in politics (Hansen, 2016; McDermott, 2016; Bernhard, 2022). On the other hand, the Republican Party has more traditional views on gender roles that promote more masculinity in leadership (King and Matland, 2003; Karpowitz et al., 2024). In comparison, traditional gender roles are also more strongly held by Republican voters than by Democratic voters (Horowitz, Parker, and Stapler, 2017). The findings from Paper 1 on adhering to gender-congruent behaviour when interacting with an opposite-gender questioner in Democratic Party primaries suggest that candidates conform to gendered expectations, where women candidates speak in a more feminine-sounding voice than their average and men candidates speak in a more masculine-sounding voice than their average. It suggests that even a political party that holds less traditional views of femininity and masculinity may be susceptible to the influence of long-standing gender stereotypes and expectations. The Republican Party's more conventional views on gender roles may highlight these tendencies even more.

Given the universality of many physiological characteristics associated with voice pitch, the generalisability of the findings from this thesis beyond the U.S. setting is promising. I expect the findings from Paper 1 to travel to other countries without language-specific restrictions. On average, the voice pitch range, as a physiological trait, can change according to the language spoken (Andreeva et al., 2014). However, due to the gendered nature of voice pitch, women still have a physiologically higher voice pitch than men, even though their range may differ from that of English speakers. Therefore, non-English contexts may also exhibit the gendered pattern I observed in the U.S. case.

Even though the results from this thesis can travel across parties and countries, one methodological limitation of Paper 1 is that, due to the limited data availability, it cannot isolate the impact of perceived gender mismatch on the change in voice pitch. The town hall contexts do not allow for perfect control over the assignment of the audience and candidate gender to causally identify whether the perceived gender mismatch predicts the nonverbal expressions of the candidates. Paper 1 provides evidence of the descriptive relationship between perceived gender mismatch and how candidates change their voice pitch; however, establishing a causal relationship could further support the findings from this thesis. This could be accomplished by employing experimental designs that take these factors into greater consideration and examine potential causal relationships.

Voters can use visually presented gendered nonverbal cues, such as facial masculinity and femininity, to inform their preferences. Although a wealth of research has presented evidence that voters prefer women candidates with more masculine cues (Klofstad, Anderson, and Peters, 2012; Oliver and Conroy, 2018; Carpinella and Johnson, 2016), Paper 2 presents a visual survey experiment in the U.S. context a few years after Hillary Clinton's 2016 presidential campaign. Despite facing numerous criticisms for her presentation of masculinity and femininity, the Clinton campaign marked the first time American voters had seen a woman running as the presidential candidate from any party. The Clinton campaign could have made gendered verbal and nonverbal cues more visible and acceptable. The overall finding, which suggests that facial femininity cues are more beneficial for candidates, will remain relevant in the U.S. context, particularly in the future. This is particularly significant because Kamala Harris, a woman, is running for president in the United States for the second time as a Democratic Party candidate.

It is crucial to take into account the distinct impact racial and gender dynamics play in U.S. politics when discussing the generalisability of the findings from Paper 2 to other country contexts. For example, in comparison to the U.S., with 125 women in the 118th U.S. House of Representatives out of 435 (CAWP 2024), in the United Kingdom, gender representation has improved, with more women in Parliament. Returning the highest number of women elected in the Parliament, 40.5% of all Members of Parliament are women after the 2024 general election in the U.K. (House of Commons Library 2024).[7] The context of the U.S. further offers a different setting when it comes to the interpretation of gendered cues because of the influence that race plays in influencing voter attitudes. In the U.K., Blacks constitute only 4% percent of the overall population, while in the U.S., they constitute 14.4% (Office of National Statistics 2021, Pew Research Center 2024). Research also shows that representation in the population can affect political attitudes. The Black population in Britain are less likely to perceive themselves as inhabiting a "fundamentally marginalised structural position", and they are less inclined to support "race-specific interventions" that could undertake such marginalisation (Laniyonu, 2019, p.117). Therefore, it is important to recognise that the intersection of race and gender may not be as pronounced in the U.K. as it is in the U.S. This is due to the unique social and historical circumstances of each country, which shape the ways in which gender and race interact. Beyond the U.S.-U.K. comparison, this thesis underscores the importance of understanding the unique political landscapes of different countries in terms of studying intersectionality.

Voters, regardless of their ideology, would respond in a comparable way to the gendered visual cues. The heterogeneous effects from Paper 2, based on the subjects' self-reported

[7] `http://commonslibrary.parliament.uk/2024-general-election-how-many-women-were-elected/`. Accessed on August 21st, 2024.

ideologies, corroborate these expectations. I showed that both liberal and conservative voters prefer less facial masculinity in candidates. However, as discussed in the previous section on the role of ideology in the perception of candidates' verbal and nonverbal cues, the omission of candidates' political party cues could have prompted subjects to evaluate the gendered visual cue in different directions. Even though research finds that omission of party labels from conventional candidate choice experiments does not change preferences for candidate race and gender (Kirkland and Coppock, 2018), it could have influenced how subjects reacted to the nonverbal cues. Future research could incorporate political party or ideology cues into the presentation of candidate profiles to further explore whether alignment with the candidate's ideology could influence voters' preferences for facial masculinity.

Regarding the demographic alignment between the candidate and the voter, Paper 2 showed that African American voters lean heavily towards voting for other African American candidates, which emphasises the importance of race in the electoral politics of the United States. Race is a critical factor in voter alignment and party loyalty, as Black voters overwhelmingly support the Democratic Party (Wamble et al., 2022). Paper 2 also demonstrated that men lean heavily towards voting for other men. The intriguing results, which show Caucasian individuals voting more for African American candidates and women voting equally for both men and women candidates, highlight the need for additional investigation of shared identities through intersectionality theory. The inability to examine the impact of perceived alignment on multiple demographic traits results from Paper 2's limited sample size. Future studies with much larger sample sizes could include additional subgroup analysis to assess perceived alignment across multiple demographic groups, thereby advancing this analysis. It would be interesting to see whether African American women vote for African American women candidates or whether Caucasian women vote for Caucasian women candidates in the presence of gendered visual cues.

Particularly in view of developments in audiovisual AI technology, there are methodological restrictions that merit attention in addition to sample size limitations. The influence of gendered nonverbal cues on voting preferences and elite behaviour is examined in this thesis using a visual survey experiment and observational data; however, the fast-developing area of audiovisual AI presents new avenues for more sophisticated and integrated analyses. Future studies should incorporate both types of stimuli into their experimental designs to gain a more complete picture of how visual and auditory cues interact to impact political perceptions. To better reflect how dynamically engaged verbal and nonverbal communication are, AI-enhanced experiments can build candidate profiles that incorporate facial expressions, voice modulation, rhetoric and body language seamlessly. These technologies have the potential to improve the generalisability of the

findings by providing more diverse stimuli, which could assist in overcoming present methodological limitations. Furthermore, researchers may be able to study the temporal dynamics of nonverbal cue processing with the help of these AI-enhanced methods; this would allow them to track the real-time evolution of voters' perceptions as they are exposed to various combinations of auditory and visual signals.

This thesis also examines how voters respond when women candidates emphasise their multiple identities and verbally emphasise their gender. In particular, it showed that emphasising politically relevant identities, such as parenthood, locality and gender, can boost women candidates' profiles contextually (Paper 3). I tested multiple identity priming at two real election campaigns collaborating with women candidates in Germany, putting women candidates in the role of persuaders (instead of using volunteers and canvassers). The main idea behind this intervention is to portray women candidates as individuals who embody multiple identities, thereby increasing their personification in the eyes of voters. Expanding the scope of current research, I anticipate that multiple identity priming would also apply to other candidate demographics, such as ethnic minority candidates or LGBTQ+ candidates, as well as to different countries. The interventions focus on enhancing women candidates' viability and visibility through multiple identity priming, but they could also shed light on the importance of specific identities compared to men candidates.

In terms of generalising the findings from Paper 3, the specific case selection of Germany and the German electoral system needs to be considered. Germany has a mixed electoral system. In single-member districts, it mixes PR with plurality rule, so that each voter gets two votes: one for a constituency candidate (first vote, i.e., *Erststimme*), and another for a list of party representatives (second vote, i.e., *Zweitstimme*) (Shikano, Herrmann, and Thurner, 2009). In Germany, for state parliaments, political parties' second votes (*Zweitstimme*) must meet a threshold of 5%, just as in federal elections (Shikano, Herrmann, and Thurner, 2009). In order to acquire seats through the party list system, smaller parties depend on the second vote, even if they might only win a few seats directly through the first vote (Harrison, 1997). In the context of two field experiments, we collaborated with a small political party; in one of our electoral focuses on the Bonn state elections in 2022, the party barely crossed the 5% threshold to enter the state parliament, and in our second electoral focus of Berlin State Elections in 2023, the party barely did not pass the threshold and stayed out of the state parliament. Considering the impact of collaborating with a smaller party regarding the generalisability of our results requires further attention to how multiple identity priming would have worked similarly or differently in the case of a larger party. Voting behaviour is likely to vary in a number of ways between smaller and larger parties, especially in the former case where the second vote is more important. Receiving votes through party identification

or policy stances can be more crucial rather than specific candidate characteristics or identity priming, especially when it comes to smaller parties.

Contrasting the more critical personal traits like gender or local identification in our experiments with smaller parties, voters in larger parties may place a higher value on candidate traits that could affect their first vote. Candidates running for office from larger parties may adopt a different approach to the campaign, one that prioritises candidate traits in addition to party messaging so that multiple identity priming could have resulted to be a more effective strategy. Because of the lower weight of the first vote in smaller parties, voters may respond more generically, with party loyalty and electoral strategy taking precedence over gendered verbal and nonverbal cues. Applying multiple identity priming to larger parties could yield different effects due to variations in voting behaviour and candidate strategy. I would have expected the findings from Paper 3 to be more emphasised and more robust in the context of large parties in Germany in addition to seeing a more significant effect of multiple identity priming on first vote preferences. This potential for new insights underscores the importance of considering party size and electoral context when generalising results. By re-creating Paper 3's experimental design with larger parties and a stronger focus on the first vote, researchers might investigate these dynamics further and learn more about the ways in which identity priming interacts with party allegiance and election strategy.

However, Paper 3 also contains limitations that aim to test the concept of "shared" multiple identities between the candidates and voters. I would expect that sharing gender, parenthood, and locality with the candidates would have positively influenced the woman candidate's vote share. For example, a local mother finding more commonalities with the women candidates I collaborated with could more positively evaluate the candidates compared to a local father. Because of the limited sample size in this paper, I could separately test how sharing gender identity, local identity, or parenthood identity impacts candidate evaluations in addition to their vote share. By expanding the sample size, future research could delve deeper into the mechanism of multiple identity alignment in political persuasion.

Studies have demonstrated that the brain becomes habituated to visual stimuli with prolonged exposure, reducing the neurological and behavioural responses to those stimuli (Zago et al., 2005; Turatto et al., 2018). Following this, I would have expected the multiple identity priming's effects to be more emphasised through the identity alignment mechanism when the identity priming involves new information to voters, i.e., apart from the ones they are visually exposed to, such as the visible demographic cue: gender. This is critical for understanding the identity alignment effects observed in Paper 3. In the electoral contexts of the experiments, the women candidates we collaborated with were

incumbent state parliamentarians seeking reelection. During the election periods of our experiments, their campaigns used election posters in the district streets with their pictures. In addition, the treatment postcards we distributed included the pictures of the candidates. In this scenario, voters who had been assigned to the identity priming by the postcard have visually encountered the candidate's pictures and identified their gender. However, since locality and parenthood are not visible cues, our intervention, which included priming these identities in addition to gender, provided voters with new information. I anticipate that the newly presented information would have significantly influenced voter responses to candidates in our second-wave survey outcomes, potentially explaining the positive impact of local identity alignment over gender identity alignment.

5.3 Policy implications

The practical implications of this thesis, which demonstrate the significant role of gendered nonverbal and vocal cues in political behaviour, are of paramount importance. These implications extend beyond the theoretical and methodological contributions, offering tangible benefits to political parties, media, and politicians involved in political campaigns.

This thesis can help political parties, civil society organisations and advocacy groups understand how voters can form opinions about candidates not just by evaluating their rhetoric or ideological stance but also by how the candidates look and sound in addition to who the candidate is as an individual. Although Paper 3 shows that political parties can use "multiple identity priming" to boost women candidates' profiles, the inability of this strategy to translate into votes can indicate that verbal signals alone may not be decisive. Recognising the influence of nonverbal cues, especially in face-to-face interactions with voters, nonverbal cues might weaken the impact of verbal signals. In awareness of this, campaigns can adopt an encompassing strategy that includes strategically choosing a candidate's nonverbal cues, such as adjusting their attire. Additionally, campaigns can adjust their rhetoric along the lines of multiple identity priming to push forward women candidates with the goal of increasing representation in their candidate pool.

For political parties, these findings should be encouraging. Once they push towards a more equally represented candidate pool, their strategy for promoting a candidate can benefit from introducing the candidate as belonging to multiple groups. Because of the interplay between different identity and demographic groups (such as the interplay between gender and race, as considered in Paper 2), it is clear that this approach may have varying degrees of success depending on the individual. Given the potential for intersectional identity cues to appeal to a larger voting base, it is reasonable to extend

this tactic to LGBTQ+ or ethnic minority politicians. The interplay between gender, race, and other identity markers might have varied impacts on voter behaviour. Thus, it is important to carefully analyse how different identities might be seen in combination when using this strategy.

Beyond political campaigns, the media should be cautious not to overemphasise specific visible candidate features since this may unintentionally encourage the notion that these attributes are critical for assessing a candidate's competency. This narrowing of attention runs the risk of reinforcing prejudices, a potential harm we must be vigilant about, and reducing the diversity of candidates perceived as electable. The media could also actively challenge the portrayal of candidates on nonverbal cues. In the previous section, I discussed how nonverbal cues, which even account for evolving gender stereotypes in some electoral contexts, could hurt specific candidate demographics. For example, the emphasis on how a woman candidate has more feminine conduct than masculine could hurt the competency evaluations of a woman candidate conditional on the electoral context. When a political party shapes the narrative about a candidate around visible demographic cues and the media reinforces it, the evaluation of the candidate's leadership skills could include more weight on these traits in the voters' eyes. This can negatively impact diversity in representation by shaping storylines around ascribed traits and perpetuating stereotypes about the electability of women and other minority groups.

Instead of making stereotypes more accessible to voters, campaigns can pursue a narrative around candidates as "partisan creatures" (King and Matland, 2003, p.607). Political parties can identify specific circumstances to prevent voters from basing their judgements on visible cues (Hayes, 2011). For instance, framing campaigns around racial issues may make candidates' racial identities more prominent in voters' assessments. If the electoral context deems shaping the campaign to make some of these cues more visible to increase the diversity of representation, this strategy might be beneficial. If a campaign aims to de-emphasise a candidate's physical attributes, it can enhance the prominence of the political party (Hayes, 2011). In other words, if the electoral context hinders the inclusion of diversity in representation, the political party may choose to emphasise party stereotypes instead or balance the ticket. A recent example from the U.S. Presidential election race in 2024 presents a good illustration of "balancing the ticket". Kamala Harris, the Democratic Party presidential nominee, is an African-American and South Indian woman candidate. Kamala Harris chose Tim Walz, her Vice President pick, who is a veteran, a former high school teacher and a football coach. He succeeded a six-term Republican incumbent in 2006 to represent Minnesota's 1st congressional district in the United States House of Representatives. The one interpretation of Kamala Harris' choice of Walz as her running mate was that she wanted to appeal to a broader

range of voters and balance her presidential ticket (New York Times 2024).[8] Harris, who obtained the Democratic nomination for president in a virtual roll call, might use his credentials to win over white, working-class voters, who the Republican opponent and former president Donald Trump are also attracting.

This thesis has broader implications for political campaigns' efforts to reach voters. In interactive environments like town halls, candidates use nonverbal cues to match their expressions with voter expectations, as shown in Paper 1. To better connect with various electorates, this adaptation process allows candidates to learn from and react to voter perceptions and preferences in real time. This indicates that campaigns might assist candidates in establishing rapport and trust with various voter groups by detecting and appropriately reacting to visible cues while interacting with voters (Krook and Norris, 2014). Some examples of this could be stressing the significance of vocal intonation, facial expressions, and body language. Real-time feedback mechanisms integrated into campaign events can adjust candidate communication tactics. Social media monitoring used during live debates or speeches is a practical illustration of real-time feedback in political campaigns. Analysing which expressions viewers connected with and which did not would help the campaign adjust its message and candidate presentation to better respond to voter expectations. Political parties can also discover which demographic and social identification cues resonate with different voters. This approach has the potential to increase voter engagement.

A final takeaway from this thesis is the need for political parties and politicians to be mindful of gendered assessment when evaluating nonverbal cues by voters. Facial traits of masculinity and femininity, as demonstrated in Paper 2, are examples of gendered nonverbal cues that impact voting behaviour. Having more facial masculinity, however, can reduce the electability of women candidates. Campaign strategies should benefit from acknowledging the potential challenges women candidates face due to immutable facial features. Candidates can mitigate the possible adverse consequences of facial masculinity by consciously embracing gender-neutral indicators that indicate femininity or masculinity. One example is that candidates can change their attitude or attire to allow voters to balance the leadership trait signals they receive through facial features (Kaczmarek and Stencel, 2022). This may cause facial features to appear less prominent. In addition, candidates can adjust their nonverbal conduct to meet voter expectations since nonverbal communication includes facial features and other nonverbal cues like body language or facial expressions (Boussalis, Coan, and Holman, 2022).

[8] `https://www.nytimes.com/2024/08/06/us/politics/harris-tim-walz-vp-pick.html`. Accessed on August 19th, 2024.

The findings of this thesis do not suggest that political parties and candidates should concentrate just on the view of gendered nonverbal cues to improve diversity in representation. I also showed that voters' assessment of women candidates still depends on verbal cues. Voter preferences are complicated and represent the importance of combining verbal and nonverbal cues in harmony. Understanding the nuances of how gendered and other identity-based cues affect voter impressions may help political players create campaigns that appeal more inclusively to different voters. Although these tactics could be modified for different political environments, the more general objective should be to apply this knowledge to promote more diversity and inclusiveness in representation. In principle, increasing diversity in representation and addressing fundamental institutional prejudices will be more crucial than surface image management in producing a political environment where diversity could be successful.

Appendix A

Appendix Paper 1

A.1 Town hall descriptions

Town hall title	**date**	**duration (h)**	**issue focus**
1. Heartland Forum	March 30, 2019	02:22:43	Economic issues affecting rural Americans
2. We the People	April 1, 2019	06:27:43	Various issues
3. She the People	April 24, 2019	02:53:53	Issues affecting women of color
4. Wages and working people	April 27, 2019	03:28:54	Economic issues affecting low-income Americans
5. Unity and Freedom	May 31, 2019	02:37:27	Immigration reform and issues affecting Hispanic and Latino Americans
6. Big Ideas	June 1, 2019	03:41:04	Ideas that can inspire voters and transform the country
7. Naleo	June 21, 2019	02:22:18	Issues affecting Hispanic and Latino Americans
8. Public schools	July 5, 2019	02:20:23	Issues affecting education and public schools

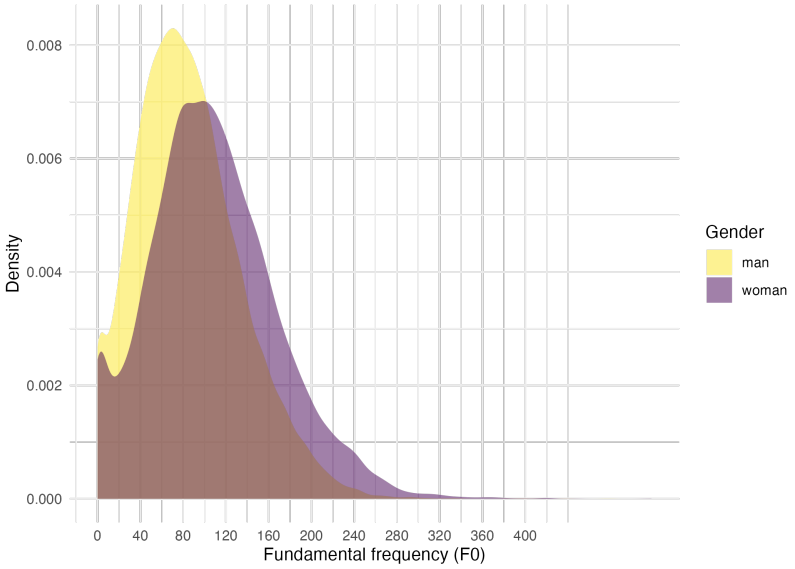
Table A.1: The date held, duration and issue focus of each town hall in the study sample

A.2 Sample Statistics

TABLE A.2: Descriptive Statistics

Town hall No	1 (N=4260)	2 (N=6614)	3 (N=6528)	4 (N=7141)	5 (N=4281)	6 (N=4272)	7 (N=4105)	8 (N=5163)	Total (N=42364)
Candidate Name									
Biden	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	570 (11.0%)	570 (1.3%)
Booker	0 (0.0%)	881 (13.3%)	626 (9.6%)	0 (0.0%)	0 (0.0%)	451 (10.6%)	0 (0.0%)	0 (0.0%)	1958 (4.6%)
Buttigieg	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	532 (13.0%)	0 (0.0%)	532 (1.3%)
Castro	531 (12.5%)	815 (12.3%)	704 (10.8%)	1168 (16.4%)	998 (23.3%)	462 (10.8%)	401 (9.8%)	458 (8.9%)	5537 (13.1%)
de Blasio	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	517 (10.0%)	517 (1.2%)
Delaney	819 (19.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	819 (1.9%)
Gabbard	0 (0.0%)	0 (0.0%)	730 (11.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	730 (1.7%)
Gillibrand	0 (0.0%)	401 (6.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	603 (14.1%)	0 (0.0%)	0 (0.0%)	1004 (2.4%)
Harris	0 (0.0%)	0 (0.0%)	998 (15.3%)	1342 (18.8%)	1108 (25.9%)	720 (16.9%)	0 (0.0%)	421 (8.2%)	4589 (10.8%)
Hickenlooper	0 (0.0%)	0 (0.0%)	0 (0.0%)	1217 (17.0%)	0 (0.0%)	0 (0.0%)	552 (13.4%)	0 (0.0%)	1769 (4.2%)
Inslee	0 (0.0%)	1085 (16.4%)	0 (0.0%)	0 (0.0%)	1258 (29.4%)	0 (0.0%)	0 (0.0%)	554 (10.7%)	2897 (6.8%)
Klobuchar	1106 (26.0%)	704 (10.6%)	769 (11.8%)	1165 (16.3%)	0 (0.0%)	813 (19.0%)	611 (14.9%)	484 (9.4%)	5652 (13.3%)
O'Rourke	0 (0.0%)	819 (12.4%)	750 (11.5%)	1047 (14.7%)	0 (0.0%)	483 (11.3%)	553 (13.5%)	499 (9.7%)	4151 (9.8%)
Ryan	1206 (28.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	559 (10.8%)	1765 (4.2%)
Sanders	0 (0.0%)	902 (13.6%)	789 (12.1%)	0 (0.0%)	917 (21.4%)	261 (6.1%)	545 (13.3%)	549 (10.6%)	3963 (9.4%)
Swalwell	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	355 (8.6%)	0 (0.0%)	355 (0.8%)
Warren	598 (14.0%)	1007 (15.2%)	1162 (17.8%)	1202 (16.8%)	0 (0.0%)	479 (11.2%)	556 (13.5%)	552 (10.7%)	5556 (13.1%)
Candidate Gender									
man	2556 (60.0%)	4502 (68.1%)	2869 (43.9%)	3432 (48.1%)	3173 (74.1%)	1657 (38.8%)	2938 (71.6%)	3706 (71.8%)	24833 (58.6%)
woman	1704 (40.0%)	2112 (31.9%)	3659 (56.1%)	3709 (51.9%)	1108 (25.9%)	2615 (61.2%)	1167 (28.4%)	1457 (28.2%)	17531 (41.4%)
Candidate Race									
nonwhite	531 (12.5%)	1695 (25.6%)	3058 (46.8%)	2510 (35.1%)	2106 (49.2%)	1633 (38.2%)	0 (0.0%)	879 (17.0%)	12412 (29.3%)
white	3729 (87.5%)	4918 (74.4%)	3470 (53.2%)	4631 (64.9%)	2175 (50.8%)	2639 (61.8%)	4105 (100.0%)	4284 (83.0%)	29951 (70.7%)
Candidate Age									
middle	3662 (86.0%)	2916 (44.1%)	4577 (70.1%)	4722 (66.1%)	2106 (49.2%)	3532 (82.7%)	1565 (38.1%)	2938 (56.9%)	26018 (61.4%)
old	598 (14.0%)	3698 (55.9%)	1951 (29.9%)	2419 (33.9%)	2175 (50.8%)	740 (17.3%)	1653 (40.3%)	2225 (43.1%)	15459 (36.5%)
young	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	887 (21.6%)	0 (0.0%)	887 (2.1%)
Replying to who									
woman moderator	710 (16.7%)	1190 (18.0%)	4429 (67.8%)	0 (0.0%)	1198 (28.0%)	4220 (98.8%)	1800 (43.8%)	3549 (68.7%)	17096 (40.4%)
woman voter	815 (19.1%)	3954 (59.8%)	2099 (32.2%)	2027 (28.4%)	1662 (38.8%)	0 (0.0%)	622 (15.2%)	1148 (22.2%)	12327 (29.1%)
man moderator	2111 (49.6%)	0 (0.0%)	0 (0.0%)	4504 (63.1%)	559 (13.1%)	52 (1.2%)	848 (20.7%)	0 (0.0%)	8074 (19.1%)
man voter	624 (14.6%)	1470 (22.2%)	0 (0.0%)	610 (8.5%)	861 (20.1%)	0 (0.0%)	835 (20.3%)	466 (9.0%)	4866 (11.5%)
Fundamental frequency (F_0									
Mean (SD)	72.380 (39.421)	117.856 (58.207)	113.890 (52.597)	94.471 (46.558)	87.385 (52.841)	81.304 (53.032)	46.316 (31.828)	113.565 (57.937)	94.510 (55.079)
Range	0.000 - 259.315	0.000 - 518.094	0.000 - 421.943	0.000 - 363.431	0.000 - 477.450	0.000 - 382.724	0.000 - 289.550	0.000 - 410.531	0.000 - 518.094

FIGURE A.1: Density plot of candidates' voice pitch by politician gender (F0)



A.3 Subgroup analysis

In addition to voters, moderators, the majority of whom are media representatives, comprise the town hall attendants. Therefore, at these town halls, candidates have the opportunity to interact directly with media representatives. I tried to categorise the different types of audience that candidates address in town halls so that I could analyse the dynamics of gendered communication more thoroughly. In order to achieve that I run a subgroup analysis in Table A.3. This is to determine whether the questioner is a voter or a moderator influences whether candidates' vocal communication changes in response to a gender mismatch.

During their encounters with both the moderators and the voters in the audience, a gendered dynamic persists, in line with the expectation of H2, in that women candidates are more likely to speak in higher voice pitch while conversing with a man moderator or a man voter than with a woman. In addition, I find that men candidates lower their voice pitch than their average when they are interacting with a woman moderator. However, this tends to be not the case for when they are answering questions from a woman voter. The effects of perceived age and ethnicity mismatch controls reveals no effect on the changes in voice pitch.

	Full sample	Answering voter	Answering moderator
(Intercept)	0.01	0.12	−0.06
	(0.05)	(0.09)	(0.07)
Gender mismatch	−0.08***	−0.01	−0.07**
	(0.02)	(0.03)	(0.03)
Woman	−0.06	−0.26***	0.06
	(0.05)	(0.08)	(0.07)
Ethnicity mismatch	−0.02	−0.01	−0.02
	(0.01)	(0.02)	(0.02)
Age mismatch	0.01	−0.03	0.02
	(0.01)	(0.02)	(0.02)
Gender mismatch x Woman	0.15***	0.08*	0.10*
	(0.03)	(0.05)	(0.05)
Fixed effect:	Candidate + Town hall	Candidate + Town hall	Candidate + Town hall
R^2	0.00	0.01	0.00
Adj. R^2	0.00	0.01	0.00
Num. obs.	42144	16973	25170

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE A.3: Subgroup analysis of the effect of candidate and audience gender on vocal pitch changes. *p<0.1; **p<0.05; ***p<0.01.

A.4 Exploratory analysis

To understand any possible effect of perceived ethnicity and age mismatch on the change in voice pitch, I conducted an explanatory analysis. Table A.4 presents the results for how perceived gender, age, and ethnicity mismatch between the candidate and the questioner affect the change in voice pitch depending on the candidate's gender. Therefore, I included the interaction terms for "Woman" and "Ethnicity mismatch"—that takes 0 if the perceived ethnicity of the candidate matches with that of the questioner asking the question—, "Woman" and "Age mismatch"—that takes 0 if the perceived age group of the candidate matches with the questioner and 0 otherwise—as well as the interaction terms of "Woman" and "Gender mismatch.".

	Full sample
(Intercept)	0.03
	(0.05)
Woman	−0.10*
	(0.05)
Gender mismatch	−0.08***
	(0.02)
Ethnicity mismatch	−0.02
	(0.01)
Age mismatch	−0.01
	(0.02)
Gender mismatch x Woman	0.15***
	(0.03)
Ethnicity mismatch x Woman	−0.00
	(0.02)
Age mismatch x Woman	0.04*
	(0.02)
Fixed effect:	Candidate + Town hall
R^2	0.00
Adj. R^2	0.00
Num. obs.	42144

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE A.4: Subgroup analysis of the effect of candidate and audience gender on vocal pitch changes. *p<0.1; **p<0.05; ***p<0.01.

The findings show that perceiving an ethnicity mismatch between the questioner and themselves, women candidates voice pitch change does not differ from that of men candidates. However, perceiving an age mismatch results in a slight increase of 0.04 sd ($p-value < 0.1$) in voice pitch for women candidates compared to men candidates. The attractiveness perception mechanism is consistent with this finding. The pattern shown in women candidates may be an attempt to counteract the age-related decline in face attractiveness (Maestripieri et al., 2014) by utilising another nonverbal cue: voice pitch.

A.5 Verbal emotional valence model results

I present the results for overall emotional valence by logging the ratio of positive to negative expressions following Boussalis et al. (2021). Analysis of the overall verbal sentiment reveals no distinction between men and women politicians (see the second row in the right panel). These findings support the results presented in Figure A.2 that women candidates exhibit more changes in their nonverbal expressions interacting with an audience with whom they have gender mismatch through non-verbal channels than their men counterparts.

	Voice Pitch	Verbal Sentiment
(Intercept)	0.11	−0.45
	(0.62)	(0.65)
Gender mismatch	−0.48**	0.07
	(0.19)	(0.20)
Woman	−0.31	0.45
	(0.60)	(0.63)
Gender mismatch x Woman	0.77**	0.04
	(0.33)	(0.35)
Fixed effect:	Candidate	Candidate
R^2	0.03	0.09
Adj. R^2	−0.08	−0.00
Num. obs.	275	275

Note: *p<0.1; **p<0.05; ***p<0.01.

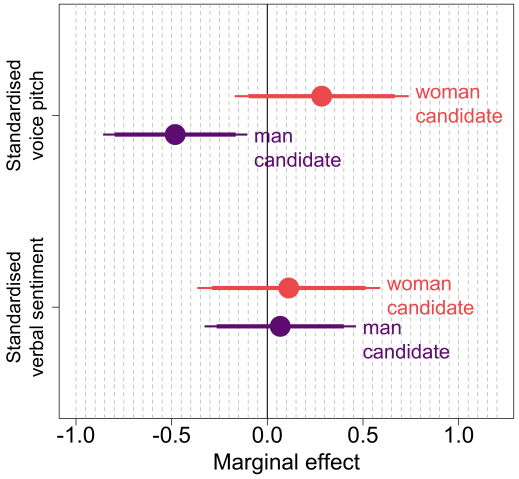


FIGURE A.2: Estimation results of linear regression. Perceived age mismatch, ethnicity mismatch and town halls are added as control variables. The right panel shows the marginal effect of interacting with an audience with whom the candidate has a gender mismatch. Horizontal bars on the right panel show 90% and 95% confidence intervals.

Appendix B

Appendix Paper 2

B.1 Sample Statistics

This section provides an overview of the key attributes of the Cloud Research sample and the American National Election Studies (ANES), which is used as reference points and for survey weighting purposes. The sample population of CloudResearch exhibits characteristics that are indicative of a younger demographic, possessing higher levels of education, and displaying a greater inclination towards liberal ideologies compared to the national average.

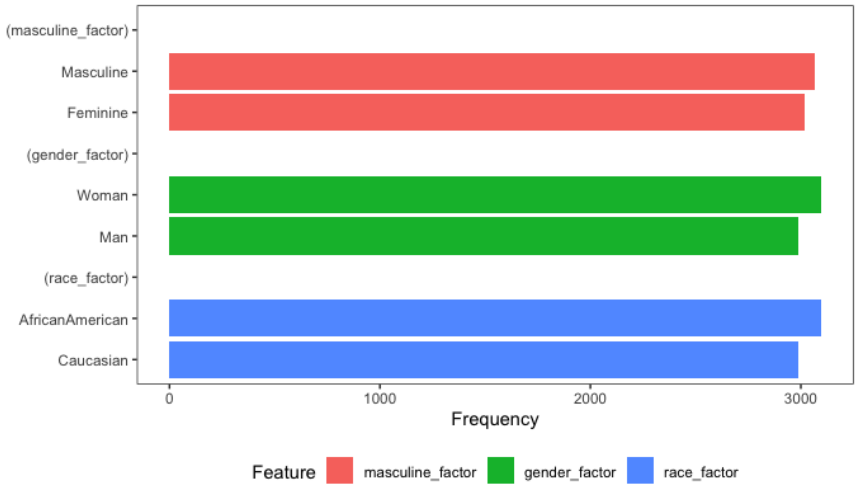
Table B.1: Sample characteristics

	Cloud Research Sample	ANES
Year	2023	2020
Age		
18-34	41%	26%
35-55	45%	31%
56+	15%	43%
Women	50%	54%
University graduates	61%	44%
Caucasian	65%	72%
Ideology		
Liberal	72%	52%
Conservative	28%	48%

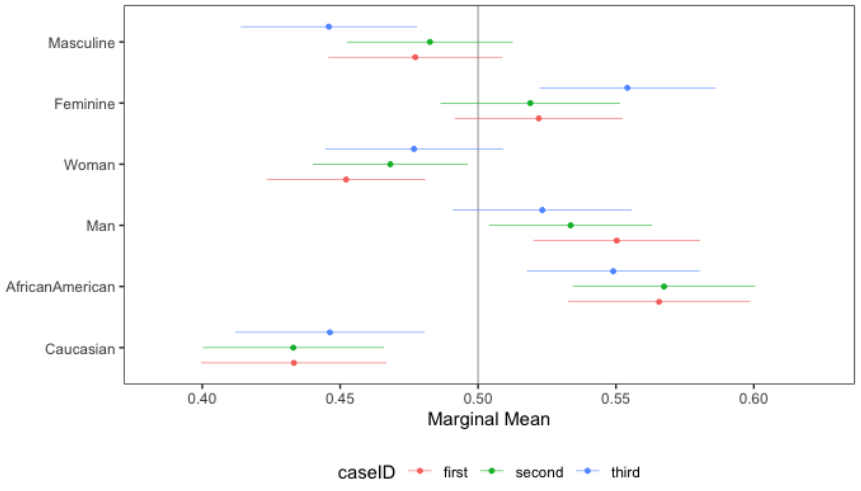
B.2 Diagnostics

The diagnostic measures employed in this section ensure that the levels of each attribute in Figure B.1a are presented in a nearly equal manner. Additionally, Figure B.1b indicates that there is no discernible profile spillover effect, which refers to any systematic changes in response to attributes within the given number of tasks. Based on the available data, there is no reason to suspect the presence of such an effect.

FIGURE B.1: Design diagnostics



Frequencies of displayed levels of attributes

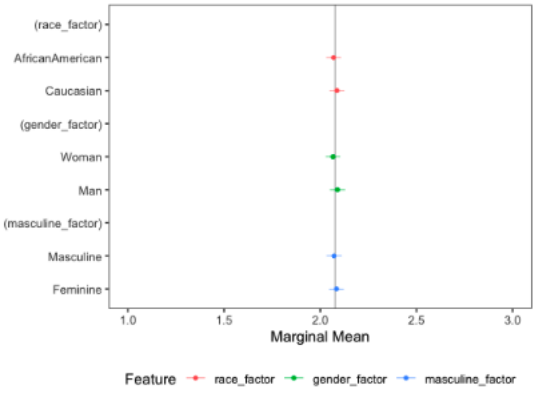


(b) Profile spillover effects

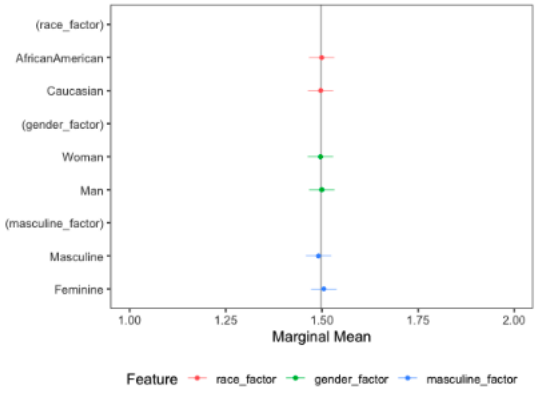
B.3 Balance Testing

The confidence intervals for each feature presented in Figure B.2 exhibit close proximity to the mean, thus indicating a lack of evidence to suggest the presence of any imbalance issue.

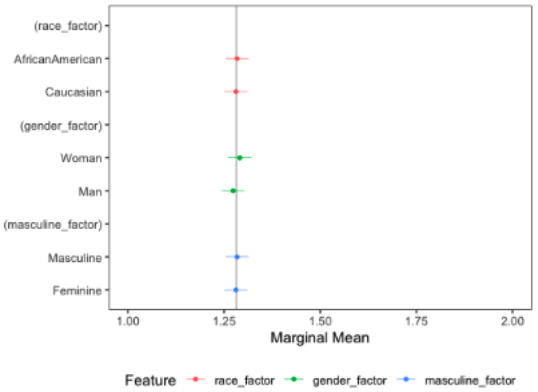
FIGURE B.2: Balance Tests



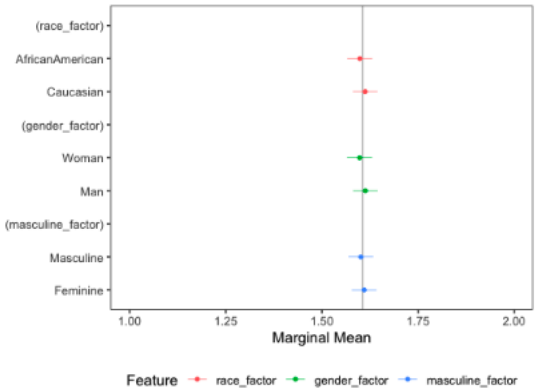
(a) Respondent race
(1: Other 2: Caucasian 3: African American)



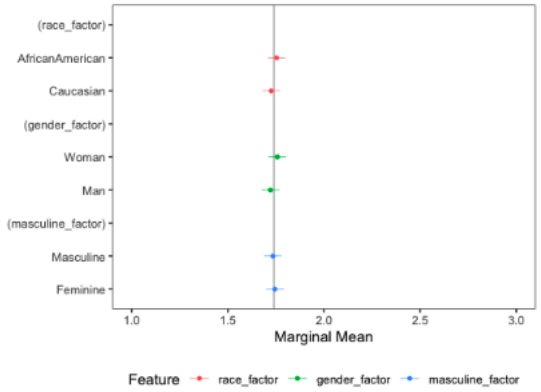
(b) Respondent gender
(1: Male 2: Female)



(c) Respondent ideology
(1: Liberal 2: Conservative)



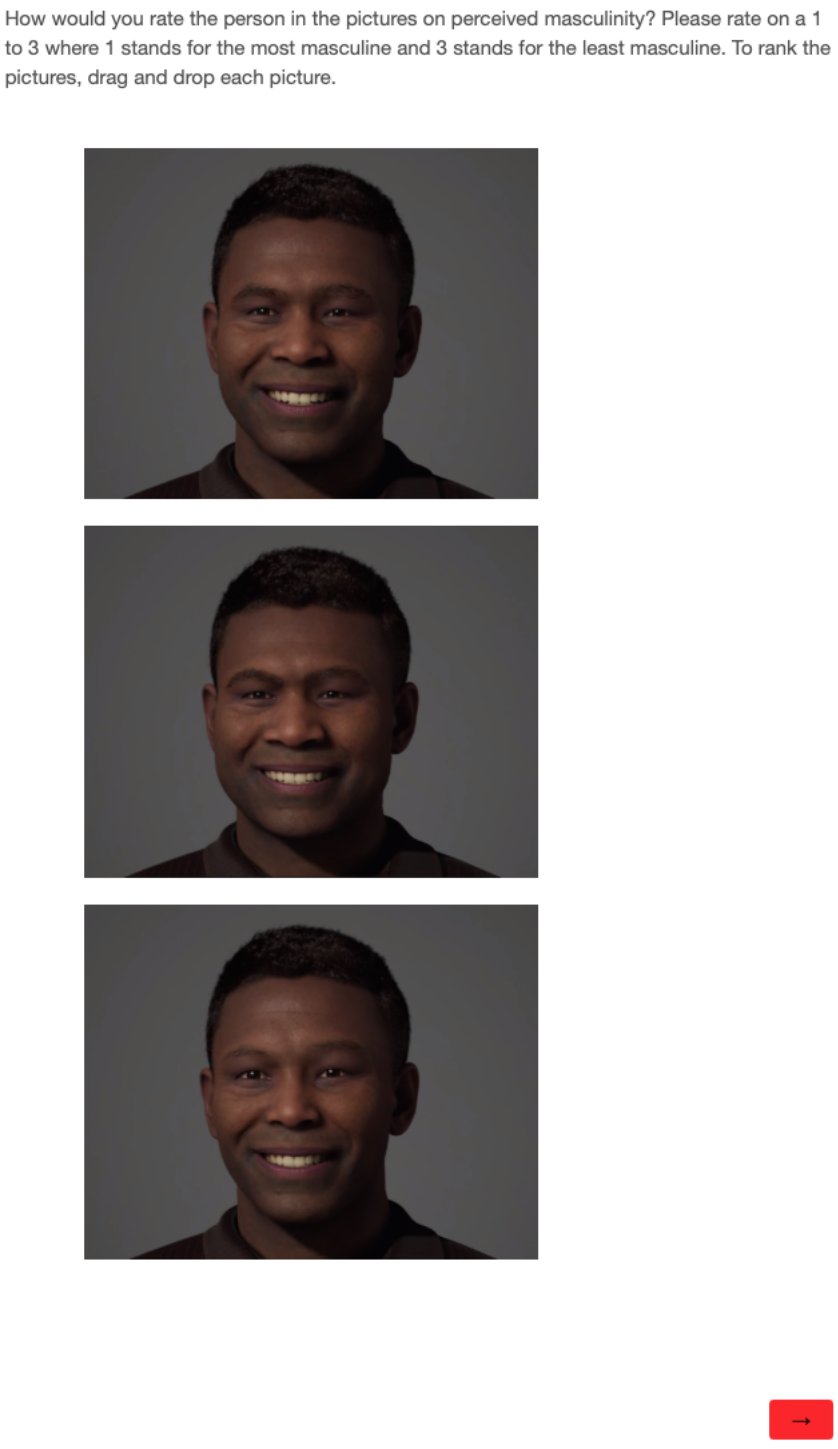
(d) Respondent education
(1: Other 2: University graduate)



(e) Respondent age
(1: 18-35 2: 36-55 3: 56+)

B.4 Pre-test Validation Task

FIGURE B.3: Screenshot of validation task



B.4.1 Example facial masculinity manipulation

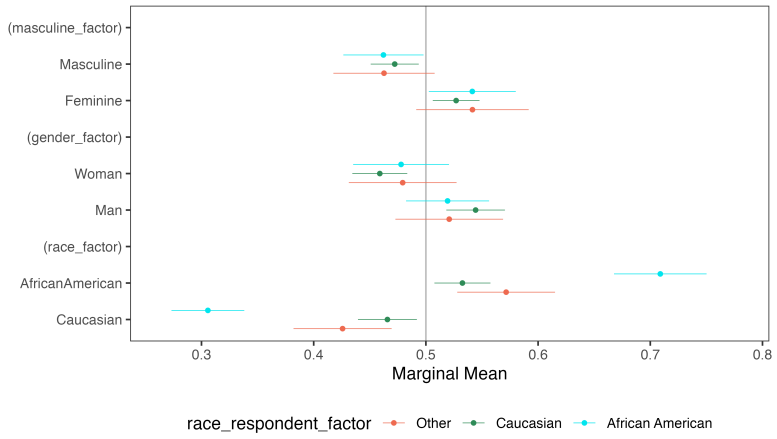
FIGURE B.4: Example of facial masculinity manipulation from lower level of facial masculinity to higher

(a) Example from a Caucasian man candidate

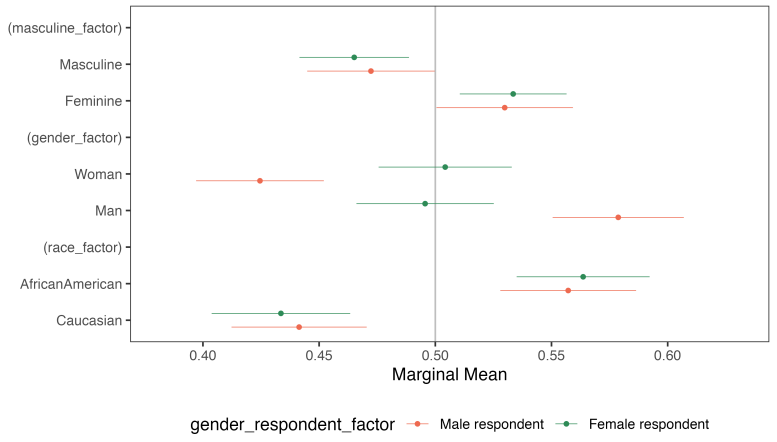
(b) Example from an African American woman candidate

B.4.2 Subgroup analyses

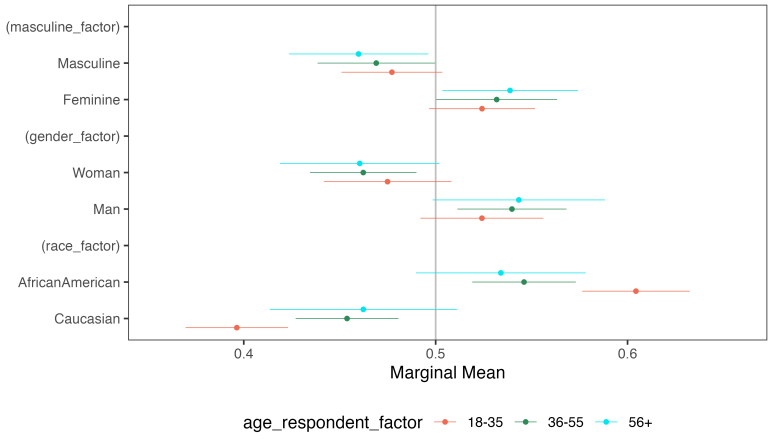
FIGURE B.5: Marginal means for subgroup analysis



(a) Marginal means by respondent race



(b) Marginal means by respondent gender



(c) Marginal means by respondent age

B.5 Analysis and Regression tables

The Average Marginal Component Effect (AMCE) and Average Marginal Component Interaction Effect (AMCIE) can be computed by employing regression models of the following structure:

$$Y_{i,j,k} = \beta_0 + \beta_1 FacialMasculinityLevel_{i,j,k} + \beta_2 Gender_{i,j,k} + \beta_3 Race_{i,j,k} + \epsilon_i \quad (1)$$

$$Y_{i,j,k} = \beta_0 + \beta_1 Race_{i,j,k} + \beta_2 FacialMasculinityLevel_{i,j,k} + \beta_3 Race_{i,j,k} x FacialMasculinityLevel_{i,j,k} + \epsilon_i \quad (2)$$

$$Y_{i,j,k} = \beta_0 + \beta_1 Gender_{i,j,k} + \beta_2 FacialMasculinityLevel_{i,j,k} + \beta_3 Gender_{i,j,k} x FacialMasculinityLevel_{i,j,k} + \epsilon_i \quad (3)$$

where i indicates the subject, j indicates the scenario, and k indicates the choice task. In this experimental setting, $i \in 1, 2, \ldots, 1000$, $j \in 1, 2$ and $k \in 1, 2, 3$. Each subject i produces six observations: three rounds with two options each round.[1] Y represents the main outcome variables, one binary vote choice {0,1} and the second one as a continuous vote choice [0,100]. Gender is a binary variable and takes 1 when the evaluated hypothetical candidate is a woman and 0 otherwise. Race is also a binary variable and takes 1 when the evaluated candidate is African American and 0 otherwise. The facial masculinity score is 1 if the computer-generated candidate's face has been altered to appear more masculine, and 0 otherwise.

[1] Standard errors are clustered by the subject.

TABLE B.2: The effect of candidate attributes on binary vote choice, 95% CIs.

Dependent variable: Binary vote preference {0,1}		
(Intercept)	0.50***	0.51***
	(0.02)	(0.02)
Facial masculinity	−0.06***	−0.06***
(Masculinised face=1)	(0.02)	(0.02)
(Feminised face=0)		
Gender	−0.07***	−0.07***
(Woman=1)	(0.02)	(0.02)
(Man=0)		
Race	0.12***	0.12***
(African American=1)	(0.02)	(0.02)
(Caucasian=0)		
Respondent characteristics		
Woman		−0.002
		(0.003)
Age (reference: 18-34)		
Age category: 35-55		0.002
		(0.003)
Age category: 56+		−0.001
		(0.004)
Race (reference: other)		
Caucasian		0.000
		(0.004)
African American		0.001
		(0.004)
University graduate		−0.000
		(0.002)
Ideology (reference: liberal)		
Conservative		−0.003
		(0.003)
Covariate adjusted	No	Yes
R^2	0.02	0.02
Adj. R^2	0.02	0.02
Num. obs.	6084	6084
N Clusters	1014	1014

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Note: Covariates are gender, age, race, education, and ideology of the respondents.

TABLE B.3: Interaction effects, 95%CIs.

Dependent variable: Binary vote preference {0,1}				
(Intercept)	0.47***	0.47***	0.56***	0.57***
	(0.02)	(0.02)	(0.02)	(0.02)
Facial masculinity	−0.06**	−0.06**	−0.06**	−0.06**
(Masculinised face=1)	(0.03)	(0.03)	(0.03)	(0.03)
(Feminised face=0)				
Race	0.13***	0.13***		
(African American=1)	(0.03)	(0.03)		
(Caucasian=0)				
Facial masculinity x Race	−0.01	−0.01		
	(0.04)	(0.04)		
Gender			−0.06**	−0.06**
(Woman=1)			(0.03)	(0.03)
(Man=0)				
Facial masculinity x Gender			−0.01	−0.01
			(0.04)	(0.04)
Respondent characteristics				
Woman		−0.002		−0.002
		(0.003)		(0.002)
Age (reference: 18-34)				
Age category: 35-55		0.000		0.001
		(0.002)		(0.002)
Age category: 56+		−0.003		0.001
		(0.003)		(0.002)
Race (reference: other)				
Caucasian		−0.001		−0.001
		(0.003)		(0.002)
African American		0.004		−0.003
		(0.004)		(0.003)
University graduate		0.000		−0.001
		(0.002)		(0.002)
Ideology (reference: liberal)				
Conservative		−0.002		−0.000
		(0.003)		(0.002)
Covariate adjusted	No	Yes	No	Yes
R^2	0.02	0.02	0.01	0.01
Adj. R^2	0.02	0.02	0.01	0.01
Num. obs.	6084	6084	6084	6084
N Clusters	1014	1014	1014	1014

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Note: Covariates are gender, age, race, education, and ideology of the respondents.

TABLE B.4: The effect of candidate attributes on continuous voting preference, 95% CIs.

Dependent variable: Continuous vote preference [0,100]		
(Intercept)	56.90***	56.65***
	(0.88)	(2.39)
Facial Masculinity	−1.86**	−1.79**
(Masculinised face=1)	(0.82)	(0.80)
(Feminised face=0)		
Gender	−4.24***	−4.14***
(Woman=1)	(1.19)	(1.18)
(Man=0)		
Race	6.29***	6.40***
(African American=1)	(0.97)	(0.96)
(Caucasian=0)		
Respondent characteristics		
Woman		4.231***
		(1.446)
Age (reference: 18-34)		
Age category: 35-55		−1.610
		(1.641)
Age category: 56+		−1.348
		(1.857)
Race (reference: other)		
Caucasian		0.154
		(2.167)
African American		1.331
		(2.375)
University graduate		2.018
		(1.423)
Ideology (reference: liberal)		
Conservative		−4.047***
		(1.482)
Covariate adjusted	No	Yes
R^2	0.03	0.04
Adj. R^2	0.03	0.04
Num. obs.	6060	6060
N Clusters	1014	1014

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Note: Covariates are gender, age, race, education, and ideology of the respondents.

TABLE B.5: Interaction effects, 95%CIs.

Dependent variable: Continuous vote preference [0,100]				
(Intercept)	54.57***	54.50***	59.24***	58.96***
	(0.88)	(2.33)	(1.01)	(2.48)
Facial masculinity	−1.50	−1.62	−0.13	−0.06
(Masculinised face=1)	(1.17)	(1.19)	(1.05)	(1.07)
(Feminised face=0)				
Race	6.69***	6.63***		
(African American=1)	(1.32)	(1.32)		
(Caucasian=0)				
Facial masculinity x Race	−0.78	−0.42		
	(1.67)	(1.69)		
Gender			−2.59*	−2.50*
(Woman=1)			(1.49)	(1.50)
(Man=0)				
Facial masculinity x Gender			−3.32*	−3.31*
			(1.84)	(1.82)
Respondent characteristics				
Woman		4.253***		4.300***
		(1.456)		(1.454)
Age (reference: 18-34)				
Age category: 35-55		−1.686		−1.625
		(1.649)		(1.638)
Age category: 56+		−1.450		−1.212
		(1.873)		(1.870)
Race (reference: other)				
Caucasian		0.109		0.097
		(2.175)		(2.170)
African American		1.476		1.091
		(2.380)		(2.365)
University graduate		2.067		1.966
		(1.430)		(1.420)
Ideology (reference: liberal)				
Conservative		−4.026***		−3.868***
		(1.490)		(1.476)
Covariate adjusted	No	Yes	No	Yes
R^2	0.02	0.04	0.01	0.03
Adj. R^2	0.02	0.03	0.01	0.02
Num. obs.	6060	6060	6060	6060
N Clusters	1014	1014	1014	1014

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. Note: Covariates are gender, age, race, education, and ideology of the respondents.

TABLE B.6: Linear regression of the intermediate outcomes on the facial masculinity by candidate race

	Competence		Attractiveness		Representativeness		Warmth		Dominance		Trustworthiness	
(Intercept)	0.72***	0.67***	0.59***	0.49***	0.61***	0.56***	0.70***	0.62***	0.61***	0.57***	0.66***	0.60***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Facial masculinity	−0.01	0.00	−0.02**	−0.04***	−0.01	−0.02	−0.01	0.01	0.01	0.00	−0.01	0.00
(Masculinised face=1)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
(Feminised face=0)												
Candidate race subgroups	African American	Caucasian	African American	Caucasian	African American	Caucasian	African American	Caucasian	African American	Caucasian	African American	Caucasian
R^2	0.001	0.000	0.003	0.005	0.001	0.001	0.001	0.000	0.001	0.000	0.001	0.000
Adj. R^2	0.001	−0.000	0.002	0.005	0.000	0.001	0.001	0.000	0.000	−0.000	0.001	−0.000
Num. obs.	3034	3050	3034	3050	3034	3050	3034	3050	3034	3050	3034	3050
N Clusters	1007	1000	1007	1000	1007	1000	1007	1000	1007	1000	1007	1000

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE B.7: Linear regression of the intermediate outcomes on the facial masculinity by candidate gender

	Competence		Attractiveness		Representativeness		Warmth		Dominance		Trustworthiness	
(Intercept)	0.692***	0.697***	0.530***	0.548***	0.578***	0.592***	0.648***	0.670***	0.581***	0.597***	0.635***	0.634***
	(0.009)	(0.008)	(0.012)	(0.012)	(0.012)	(0.012)	(0.010)	(0.010)	(0.011)	(0.011)	(0.010)	(0.011)
Facial masculinity	−0.022**	0.013	−0.050***	−0.006	−0.033**	0.007	0.003	−0.006	−0.019*	0.038***	−0.012	0.003
(Masculinised face=1)	(0.011)	(0.009)	(0.012)	(0.011)	(0.014)	(0.012)	(0.012)	(0.010)	(0.011)	(0.011)	(0.012)	(0.010)
(Feminised face=0)												
Candidate gender subgroups	Woman	Man	Woman	Man	Woman	Man	Woman	Man	Woman	Man	Woman	Man
R^2	0.003	0.001	0.010	0.000	0.004	0.000	0.000	0.000	0.002	0.009	0.001	0.000
Adj. R^2	0.003	0.001	0.009	−0.000	0.004	−0.000	−0.000	−0.000	0.002	0.009	0.000	−0.000
Num. obs.	3040	3044	3040	3044	3040	3044	3040	3044	3040	3044	3040	3044
N Clusters	1002	1005	1002	1005	1002	1005	1002	1005	1002	1005	1002	1005

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE B.8: Linear regression of the intermediate outcomes on the facial masculinity by respondent ideology

	Competence		Attractiveness		Representativeness		Warmth		Dominance		Trustworthiness	
(Intercept)	0.704^{***}	0.685^{***}	0.544^{***}	0.534^{***}	0.608^{***}	0.563^{***}	0.669^{***}	0.649^{***}	0.580^{***}	0.597^{***}	0.652^{***}	0.618^{***}
	(0.008)	(0.012)	(0.010)	(0.016)	(0.011)	(0.015)	(0.009)	(0.013)	(0.009)	(0.015)	(0.009)	(0.014)
Facial masculinity	0.000	−0.011	-0.026^{***}	-0.031^{**}	−0.013	−0.016	0.002	−0.005	0.014^{*}	0.003	−0.002	−0.009
(Masculinised face=1)	(0.008)	(0.012)	(0.009)	(0.014)	(0.010)	(0.014)	(0.008)	(0.012)	(0.008)	(0.013)	(0.008)	(0.011)
(Feminised face=0)												
Respondent ideology subgroups	Liberal	Conservative	Liberal	Conservative	Liberal	Conservative	Liberal	Conservative	Liberal	Conservative	Liberal	Conservative
R^2	0.000	0.001	0.003	0.004	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.000
Adj. R^2	−0.000	0.000	0.003	0.003	0.000	0.000	−0.000	−0.000	0.001	−0.001	−0.000	−0.000
Num. obs.	4368	1716	4368	1716	4368	1716	4368	1716	4368	1716	4368	1716
N Clusters	728	286	728	286	728	286	728	286	728	286	728	286

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

B.5.1 Marginal mean and AMCE tables

Table B.9: AMCE and AMCE difference by candidate gender

Level	Man	Woman	Woman-Man
(Masculine_factor) Feminine	Reference category	Reference category	-
(Masculine_factor) Masculine	-0.06* [-0.11, 0]	-0.07** [-0.12, -0.02]	-0.01 [-0.09, 0.06]

Table B.10: AMCE and AMCE difference by candidate race

Level	Caucasian	AfricanAmerican	AfricanAmerican - Caucasian
(Masculine_factor) Feminine	Reference category	Reference category	-
(Masculine_factor) Masculine	-0.06* [-0.11, -0.01]	-0.07** [-0.12, -0.02]	-0.01 [-0.09, 0.06]

Table B.11: AMCE and AMCE difference by gender for African American candidates

Level	Woman	Man	Woman - Man
(Masculine_factor) Feminine	Reference category	Reference category	-
(Masculine_factor) Masculine	-0.1** [-0.18, -0.03]	-0.04 [-0.11, 0.04]	-0.07 [-0.17, 0.04]

Table B.12: AMCE and AMCE difference by gender for Caucasian candidates

Level	Woman	Man	Woman - Man
(Masculine_factor) Feminine	Reference category	Reference category	-
(Masculine_factor) Masculine	-0.03 [-0.1, 0.03]	-0.08* [-0.15, 0]	0.04 [-0.06, 0.14]

Table B.13: MMs and MM differences by respondent ideology

Level	Liberal	Conservative	Conservative - Liberal
(Masculine_factor) Feminine	0.54*** [0.52, 0.56]	0.53*** [0.5, 0.56]	-0.01 [-0.05, 0.03]
(Masculine_factor) Masculine	0.46*** [0.44, 0.48]	0.47*** [0.44, 0.5]	0.01 [-0.03, 0.04]
(Gender_factor) Man	0.45*** [0.42, 0.47]	0.63*** [0.59, 0.66]	0.18*** [0.14, 0.22]
(Gender_factor) Woman	0.55*** [0.53, 0.57]	0.38*** [0.35, 0.41]	-0.17*** [-0.21, -0.14]
(Race_factor) Caucasian	0.37*** [0.35, 0.39]	0.51*** [0.47, 0.54]	0.14*** [0.1, 0.18]
(Race_factor) African American	0.63*** [0.61, 0.66]	0.49*** [0.46, 0.52]	-0.14*** [-0.18, -0.11]

Table B.14: AMCE and AMCE difference by respondent ideology

Level	Liberal	Conservative	Conservative - Liberal
(Masculine_factor) Feminine	Reference category	Reference category	-
(Masculine_factor) Masculine	-0.07** [-0.11, -0.03]	-0.04 [-0.1, 0.01]	0.02 [-0.05, 0.09]
(Gender_factor) Man	Reference category	Reference category	-
(Gender_factor) Woman	0.11*** [0.07, 0.15]	-0.24*** [-0.3, -0.18]	-0.36*** [-0.43, -0.28]
(Race_factor) Caucasian	Reference category	Reference category	-
(Race_factor) AfricanAmerican	0.27*** [0.23, 0.31]	-0.01 [-0.08, 0.05]	-0.28*** [-0.36, -0.2]

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TABLE B.15: MM and MM difference in the intersection of candidate race and facial masculinity by respondent ideology

Level	Liberal	Conservative	Conservative - Liberal
(Race_masculine) Caucasian_Feminine	0.4*** [0.36, 0.44]	0.53*** [0.48, 0.58]	0.13*** [0.07, 0.19]
(Race_masculine) AfricanAmerican_Feminine	0.67*** [0.64, 0.7]	0.53*** [0.47, 0.58]	-0.14*** [-0.21, -0.08]
(Race_masculine) Caucasian_Masculine	0.34*** [0.3, 0.37]	0.49*** [0.43, 0.55]	0.15*** [0.08, 0.22]
(Race_masculine) AfricanAmerican_Masculine	0.6*** [0.56, 0.63]	0.46*** [0.41, 0.51]	-0.14*** [-0.2, -0.08]

B.5.2 Accounting for measurement error bias using *projoint* without survey weights

FIGURE B.6: Measurement error bias with Intra-Respondent Reliability Equal to 1 from Original Data without Repeated Tasks

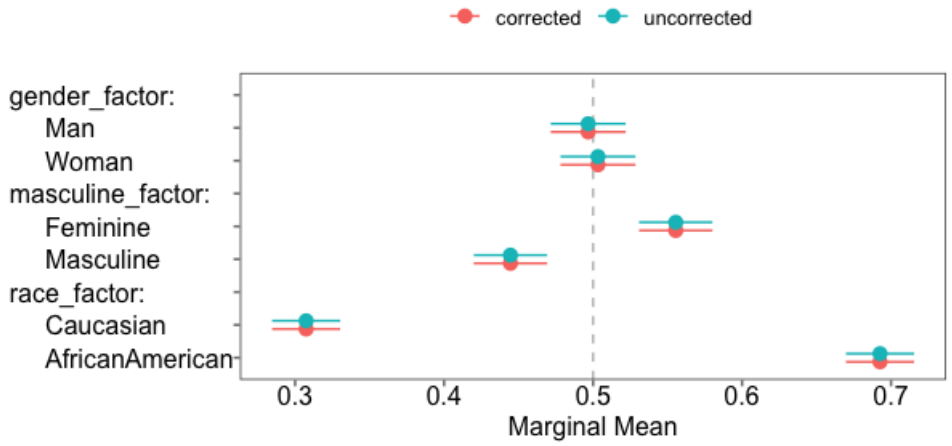
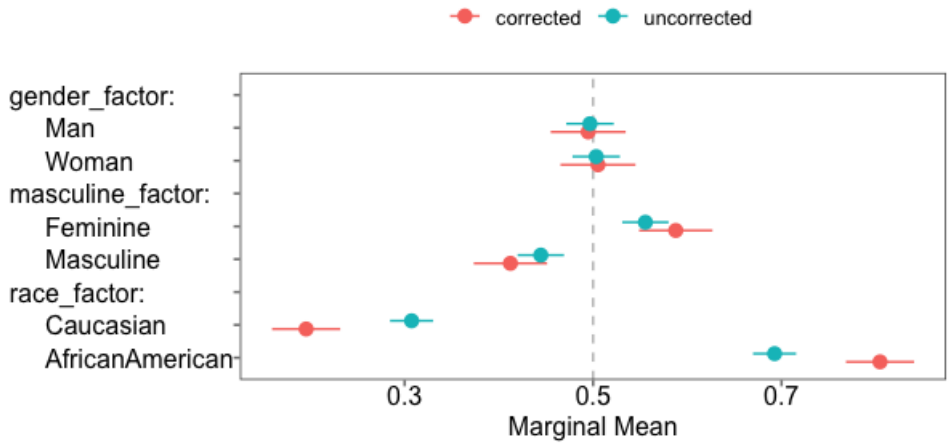


FIGURE B.7: Measurement error bias with Intra-Respondent Reliability Equal to 0.70 without Repeated Tasks



B.6 Ethics

I recruited participants for the CloudResearch Connect platform. Participants recruited through this platform received $1.5 for completing the 8-minute survey. Given that the median weekly income in the United States is $1,037, this should not significantly impact participants' willingness to participate. In this study, I present participants with fictitious candidate photographs and request their evaluation of them subsequent to obtaining their informed consent. I gave the U.S. participants the information and consent form shown in Figure B.8 before they begin the survey and the debrief form shown in Figure B.9 after they complete the survey but before submitting their responses. I show participants images of fictitious candidates generated with artificial intelligence (AI), which may or may not accurately reflect the appearance of the actual candidates running for office. This study therefore stimulates inquiries regarding deceit. Ethical approval for this study was granted by [*the name of the author's institution*] IRB after it was shown to comply with the APSA's Guidelines and Principles for Research with Human Subjects (APSA, 2020).

The study addresses the ethical considerations involved in exposing research participants to fake virtual representations for evaluation. In accordance with the APSA's recommendation that subjects' autonomy be respected when using deceit, I presented the debriefing form after the participants completed answering the questions but before they submitted their answers. In the debriefing form, I brought up the issue of image manipulation and made it clear that the candidate photos they had evaluated were created with AI. I confirm that my study adheres to the standards set forth by the American Political Science Association for studies involving human participants (APSA, 2020).

FIGURE B.8: Consent and information form

Dear participant,

Thank you for considering participating in this study. This information sheet outlines the purpose of the research and describes your involvement and rights as a participant if you agree to participate.

I am interested in understanding individuals' political candidate preferences. You will be presented with the photos of some candidates and asked to answer some questions about them. The study should take around 6-8 minutes to complete. It is up to you to decide whether or not to take part. You do not have to take part if you do not want to. If suppose you do decide to take part; tick the box below.

You can withdraw from the study until March 1st 2023, without having to give a reason before clicking the submit button or by writing an email to [*the contact details of the author]*. Withdrawing from the study will not affect your current and future connection with the researcher. If you withdraw from the study, I will not retain the information you have given thus far unless you are happy for me to do so.

I will use the collected information for a research project. The records from this study will be kept as confidential. Only [*the contact details of the author*] will access the files. Your data will be anonymised – your name will not be used in any reports or publications resulting from the study. Such information will be treated according to the UK Data Protection Act 2018 and the new General Data Protection Regulations (GDPR). All digital files will be given codes and stored separately from any participants' names or other direct identification. Any hard copies of research information will always be kept in locked files.

This study has undergone an ethics review (Ref: 90881) following the [*name of the institution]* Ethics Policy and Procedure. The [*name of the institution]* Privacy Policy can be found at: [*link to the institution's ethics approval procedure*].

If you have any questions regarding this study, please contact the researcher, [*the contact details of the author]*.
If you have any concerns or complaints regarding the conduct of this research, please contact [*the contact details of the institution]*.
If you are happy to participate in this study, please sign the consent sheet attached/below.

☐ I agree to participate

☐ I decline to participate

FIGURE B.9: Debrief form

Thank you for participating in our study *on understanding individuals' political candidate choices*.

Please read the information on this form carefully to learn essential details regarding your participation in this study.
Following this debriefing, you may request that the information we gathered about you be removed from this research project.

It was essential for this study that we conceal some information from you regarding specific components of the study. Now that your participation is complete, we will explain what information was withheld. You will be given the option of having your data included in this study or having it removed from it.

What You Need to Know About This Research

Before you started participating in this study, you were informed that you would be *evaluating the photographs of some candidates*. However, the fact that these images were all made digitally was not disclosed. That is because your responses need not be impacted by knowing this information.

Your Data Withdrawal Rights

You can choose whether or not to have your data removed from the research now that you know the true nature of the *individual photographs* you have evaluated. If you withdraw from the study, there will be no penalties or negative repercussions for you. Before you decide, please send the researcher any questions you have through email at [*the contact details of the author*]. You can also contact the researcher from this email address to withdraw from the study.

Confidentiality

Whether you agree to have your data used in this study or not, please bear in mind that the integrity of this research was dependent on keeping some aspects hidden from you and the other participants. Although the processes for creating the *individuals in the photographs* used in this study are not mentioned to you at the start, *everything else on the consent form is correct*. We will keep any information we know about you completely confidential, including your decision to drop out of the study.

If You Have Any Questions or Concerns

Please keep a copy of this Debriefing Form for future reference. If you have any questions or concerns about this study and the research procedures used, you may contact the researcher, [*the contact details of the author*]. If you would like to receive a copy of the final report of this study or a summary of the findings when it is complete, please feel free to get in touch.

B.7 Deviations from the pre-analysis plan

The main paper exhibits a few deviations from the pre-registration, as shown in the anonymized version accessible at the following link: [*click here for the anonymised version*]. The preregistered title of this study is "Who benefits from perceived masculinity? A visual survey experiment". My discussion of any deviations from the PAP may be found in the sections that follow.

B.7.1 Hypotheses

I include two of the preregistered hypotheses (i.e. *Hypothesis A.1.* and *Hypothesis A.2.*) in this section in the Appendix so as to maintain narrative coherence throughout the main body of this manuscript. Although not stated clearly in the main text, the testing of these hypotheses are fundamental to the study's design, was elaborated upon in the main body of the text. To balance transparency and readability, I moved two of my preregistered hypotheses to this appendix. This allows readers to see the full range of preregistered hypotheses while maintaining the primary research presentation's clarity. In addition, I rephrased Hypothesis 3 in the main text, for which I include the original version below.

Hypothesis A.1. *Respondents are more likely to choose Caucasian candidates than African American candidates.*

Figure 3.2 shows that African American candidates are preferred more than Caucasian candidates. The findings underscore the fact that, on average, African American candidates receive 12.3 percentage points more support than their Caucasian counterparts.

Hypothesis A.2. *Respondents are more likely to choose Caucasian women with more masculine features followed by Caucasian men with more masculine features compared to their counterparts with fewer masculine features.*

In Figure 3.4, I examined the candidate pool for Caucasian candidates. The degree of facial masculinity, on the other hand, does not vary significantly between men and women candidates, hence I was unable to reject the null hypothesis. The direction of the effect shows only substantive support for the HA.2. When it comes to Caucasian women candidates, I find that they have an advantage when they possess a higher degree of facial masculinity than their men counterparts (7.7 pp, $p < 0.05$).

Hypothesis 3 *Voters are more likely to choose African American men with fewer masculine features followed by African American women with fewer masculine features compared to their more masculine counterparts.*

B.7.2 Exploratory analysis

Testing the mechanisms that have the ability to mediate the influence of facial masculinity on vote choice was a part of the exploratory analysis that was preregistered. I make a note of the need to conduct a test for perceived attractiveness, perceived competence, and perceived warmth in the preregistration. In addition to those, as was shown in Figures 3.6, 3.6, and Figure 3.7, I furthermore included perceived trustworthiness, perceived dominance, and perceived representatives as intermediate outcomes. The results on the perceived dominance of men and the perceived representativeness of women candidates, are discussed in further depth in Section 3.4.2.

Another explanatory hypothesis to test as preregistered is the following: the heterogeneous effects of respondent gender on hypotheses H1 through H4 will also be investigated. When it comes to testing H1 and heterogeneity by respondent gender, Figure B.5 shows that there is no statistical difference between the facial masculinity preferences of female and male respondents. When it comes to H2, Table B.16 shows that female and male respondents also did not show differences in their preferences for masculine looking African American and Caucasian candidates. Tables B.19 and B.18 show the differences in preferences between female and male respondents for H3 and H4.

Table B.16: MM and MM difference in the intersection of candidate race and facial masculinity by respondent gender

Level	Female respondent	Male respondent	Female respondent - Male respondent
(Race_masculine) Caucasian_Feminine	0.45*** [0.41, 0.49]	0.48*** [0.43, 0.53]	-0.03 [-0.1, 0.03]
(Race_masculine) African American_Feminine	0.61*** [0.57, 0.66]	0.58*** [0.53, 0.63]	0.03 [-0.03, 0.1]
(Race_masculine) Caucasian_Masculine	0.42*** [0.36, 0.47]	0.4*** [0.36, 0.45]	0.01 [-0.05, 0.08]
(Race_masculine) African American_Masculine	0.51*** [0.47, 0.56]	0.54*** [0.49, 0.59]	-0.03 [-0.09, 0.04]

Table B.17: MMs by respondent ideology and gender

level	Liberal female respondent	Liberal male respondent	Conservative female respondent	Conservative male respondent
(Masculine_factor) Feminine	0.52*** [0.49, 0.55]	0.55*** [0.52, 0.58]	0.54*** [0.51, 0.58]	0.51*** [0.45, 0.56]
(Masculine_factor) Masculine	0.48*** [0.45, 0.51]	0.45*** [0.43, 0.48]	0.45*** [0.42, 0.49]	0.5*** [0.44, 0.55]

Table B.18: MM and MM difference by respondent gender (only African American candidates)

level	Female respondent	Male respondent	Female respondent - Male respondent
(Gender_masc) Man_Feminine	0.55*** [0.48, 0.62]	0.64*** [0.58, 0.7]	-0.09 [-0.18, 0.01]
(Gender_masc) Woman_Feminine	0.68*** [0.61, 0.74]	0.52*** [0.45, 0.6]	0.15** [0.05, 0.25]
(Gender_masc) Man_Masculine	0.52*** [0.45, 0.59]	0.59*** [0.52, 0.66]	-0.07 [-0.17, 0.02]
(Gender_masc) Woman_Masculine	0.51*** [0.44, 0.58]	0.49*** [0.42, 0.56]	0.02 [-0.08, 0.12]

Table B.19: MM difference by respondent ideology and gender

level	Conservative male - Conservative female respondent	Liberal female - Conservative female respondent	Liberal male - Conservative female respondent
(Masculine_factor) Feminine	-0.04 [-0.1, 0.02]	-0.02 [-0.07, 0.02]	0.01 [-0.04, 0.06]
(Masculine_factor) Masculine	0.04 [-0.02, 0.1]	0.02 [-0.02, 0.07]	0 [-0.05, 0.04]

Appendix C

Appendix Paper 3

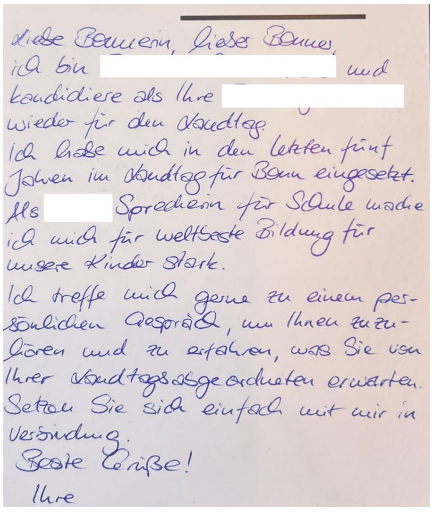
C.1 Treatment materials

FIGURE C.1: Recruitment postcard design

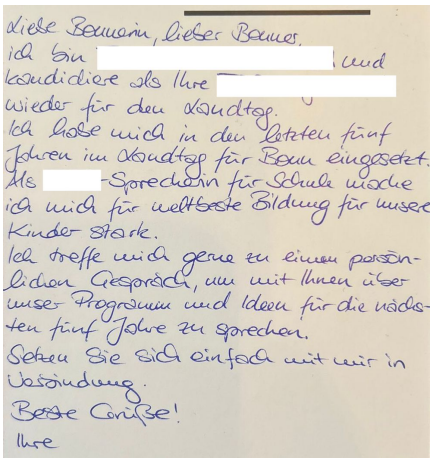
(a) Front page of recruitment postcards

(b) Back page of recruitment postcards

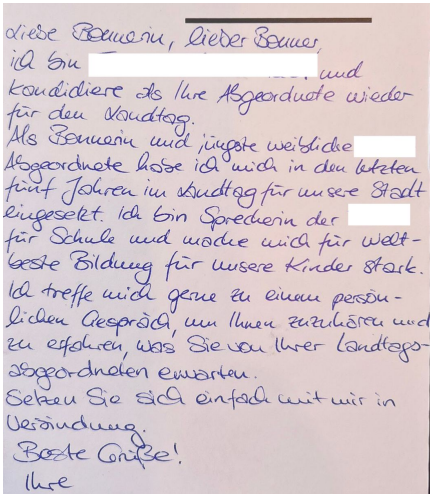
FIGURE C.2: Handwritten campaign postcard for each experimental condition in Bonn



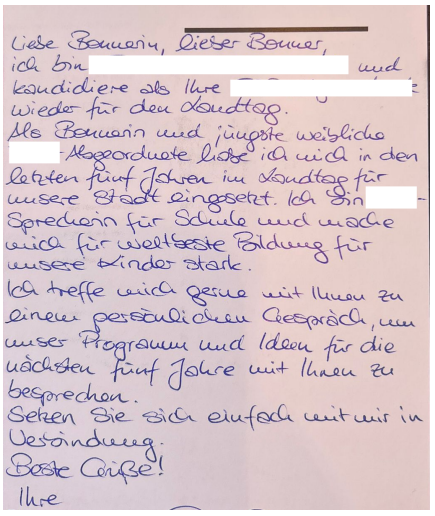
(a) No Prime



(b) No Prime

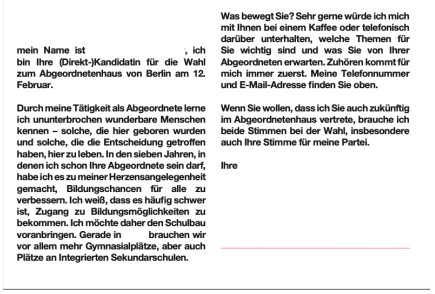


(c) Identity Prime



(d) Identity Prime

FIGURE C.3: Machine-written campaign postcard for each experimental condition in Berlin



mein Name ist , ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

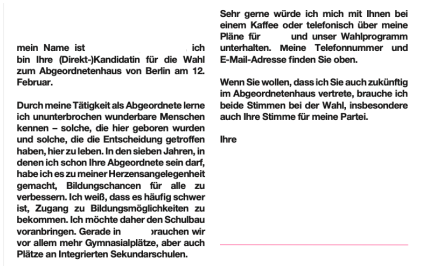
Durch meine Tätigkeit als Abgeordnete lerne ich ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben. In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern. Ich weiß, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen. Ich möchte daher den Schulbau voranbringen. Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

Was bewegt Sie? Sehr gerne würde ich mich mit Ihnen bei einem Kaffee oder telefonisch darüber unterhalten, welche Themen für Sie wichtig sind und was Sie von Ihrer Abgeordneten erwarten. Zuhören kommt für mich immer zuerst. Meine Telefonnummer und E-Mail-Adresse finden Sie oben.

Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(a) First Version



mein Name ist ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

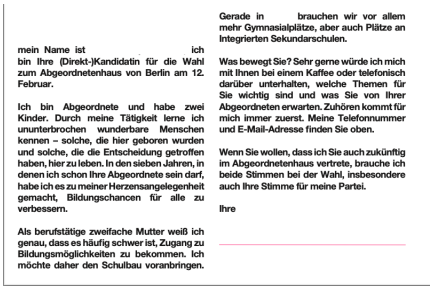
Durch meine Tätigkeit als Abgeordnete lerne ich ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben. In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern. Ich weiß, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen. Ich möchte daher den Schulbau voranbringen. Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

Sehr gerne würde ich mich mit Ihnen bei einem Kaffee oder telefonisch über meine Pläne für und unser Wahlprogramm unterhalten. Meine Telefonnummer und E-Mail-Adresse finden Sie oben.

Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(b) Second Version



mein Name ist ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

Ich bin Abgeordnete und habe zwei Kinder. Durch meine Tätigkeit lerne ich ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben. In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern.

Als berufstätige zweifache Mutter weiß ich genau, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen. Ich möchte daher den Schulbau voranbringen.

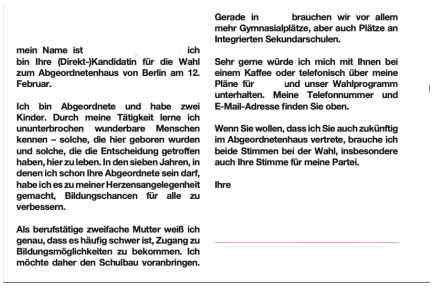
Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

Was bewegt Sie? Sehr gerne würde ich mich mit Ihnen bei einem Kaffee oder telefonisch darüber unterhalten, welche Themen für Sie wichtig sind und was Sie von Ihrer Abgeordneten erwarten. Zuhören kommt für mich immer zuerst. Meine Telefonnummer und E-Mail-Adresse finden Sie oben.

Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(c) Third Version



mein Name ist ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

Ich bin Abgeordnete und habe zwei Kinder. Durch meine Tätigkeit lerne ich ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben. In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern.

Als berufstätige zweifache Mutter weiß ich genau, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen. Ich möchte daher den Schulbau voranbringen.

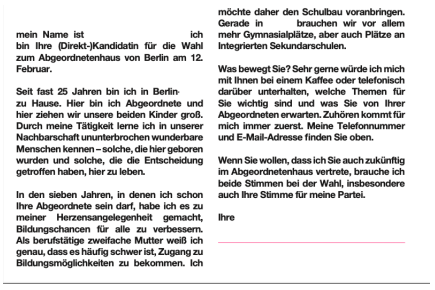
Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

Sehr gerne würde ich mich mit Ihnen bei einem Kaffee oder telefonisch über meine Pläne für und unser Wahlprogramm unterhalten. Meine Telefonnummer und E-Mail-Adresse finden Sie oben.

Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(d) Fourth Version



mein Name ist ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

Seit fast 25 Jahren bin ich in Berlin zu Hause. Hier bin ich Abgeordnete und hier ziehen wir unsere beiden Kinder groß. Durch meine Tätigkeit lerne ich in unserer Nachbarschaft ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben.

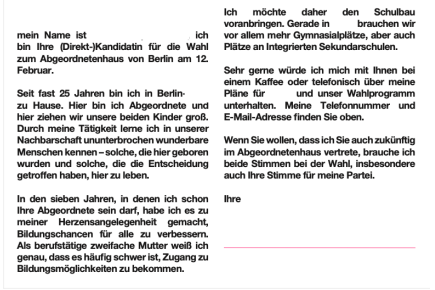
In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern. Als berufstätige zweifache Mutter weiß ich genau, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen. Ich möchte daher den Schulbau voranbringen. Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

Was bewegt Sie? Sehr gerne würde ich mich mit Ihnen bei einem Kaffee oder telefonisch darüber unterhalten, welche Themen für Sie wichtig sind und was Sie von Ihrer Abgeordneten erwarten. Zuhören kommt für mich immer zuerst. Meine Telefonnummer und E-Mail-Adresse finden Sie oben.

Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(e) Fifth Version



mein Name ist ich bin Ihre (Direkt-)Kandidatin für die Wahl zum Abgeordnetenhaus von Berlin am 12. Februar.

Seit fast 25 Jahren bin ich in Berlin zu Hause. Hier bin ich Abgeordnete und hier ziehen wir unsere beiden Kinder groß. Durch meine Tätigkeit lerne ich in unserer Nachbarschaft ununterbrochen wunderbare Menschen kennen – solche, die hier geboren wurden und solche, die die Entscheidung getroffen haben, hier zu leben.

In den sieben Jahren, in denen ich schon Ihre Abgeordnete sein darf, habe ich es zu meiner Herzensangelegenheit gemacht, Bildungschancen für alle zu verbessern. Als berufstätige zweifache Mutter weiß ich genau, dass es häufig schwer ist, Zugang zu Bildungsmöglichkeiten zu bekommen.

Ich möchte daher den Schulbau voranbringen. Gerade in brauchen wir vor allem mehr Gymnasialplätze, aber auch Plätze an Integrierten Sekundarschulen.

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Wenn Sie wollen, dass ich Sie auch zukünftig im Abgeordnetenhaus vertrete, brauche ich beide Stimmen bei der Wahl, insbesondere auch Ihre Stimme für meine Partei.

Ihre

(f) Sixth Version

C.2 Balance and attrition

TABLE C.1: Population statistics based on 2021 German Longitudinal Election Survey (GLES)

	Berlin (N=597)	NRW Small city/rural (N=1540)	NRW Urban (N=877)	Other states (N=8586)	Total (N=11600)
Education					
Other	399 (66.8%)	1178 (76.5%)	587 (66.9%)	6468 (75.3%)	8632 (74.4%)
University qualification	198 (33.2%)	362 (23.5%)	290 (33.1%)	2118 (24.7%)	2968 (25.6%)
Gender					
Female	296 (49.6%)	801 (52.0%)	442 (50.4%)	4413 (51.4%)	5952 (51.3%)
Male	301 (50.4%)	739 (48.0%)	435 (49.6%)	4173 (48.6%)	5648 (48.7%)
Age					
18-24	141 (23.6%)	407 (26.4%)	262 (29.9%)	2573 (30.0%)	3383 (29.2%)
35-55	245 (41.0%)	614 (39.9%)	339 (38.7%)	3497 (40.7%)	4695 (40.5%)
56+	211 (35.3%)	519 (33.7%)	276 (31.5%)	2516 (29.3%)	3522 (30.4%)
Previous Vote					
CDU/CSU	91 (15.2%)	337 (21.9%)	168 (19.2%)	1766 (20.6%)	2362 (20.4%)
Die Grünen	75 (12.6%)	111 (7.2%)	97 (11.1%)	827 (9.6%)	1110 (9.6%)
Die Linke	65 (10.9%)	67 (4.4%)	47 (5.4%)	593 (6.9%)	772 (6.7%)
FDP	23 (3.9%)	72 (4.7%)	36 (4.1%)	341 (4.0%)	472 (4.1%)
Other	259 (43.4%)	673 (43.7%)	362 (41.3%)	3983 (46.4%)	5277 (45.5%)
SPD	84 (14.1%)	280 (18.2%)	167 (19.0%)	1076 (12.5%)	1607 (13.9%)

Table C.2: Balance table for Bonn Experiment

	Control (N=76)	Letter+Canvass (N=95)	Total (N=171)	p value
Education				0.162
University Graduates	60 (78.9%)	66 (69.5%)	126 (73.7%)	
Other	16 (21.1%)	29 (30.5%)	45 (26.3%)	
Gender				0.721
Female	39 (51.3%)	48 (50.5%)	87 (50.9%)	
Male	35 (46.1%)	46 (48.4%)	81 (47.4%)	
Other	2 (2.6%)	1 (1.1%)	3 (1.8%)	
Age				0.812
18-34	37 (48.7%)	46 (48.4%)	83 (48.5%)	
35-55	21 (27.6%)	23 (24.2%)	44 (25.7%)	
56+	18 (23.7%)	26 (27.4%)	44 (25.7%)	
Previous vote				0.951
CDU	8 (10.5%)	9 (9.5%)	17 (9.9%)	
SPD	13 (17.1%)	16 (16.8%)	29 (17.0%)	
Bündnis 90/Die Grünen	31 (40.8%)	37 (38.9%)	68 (39.8%)	
FDP	11 (14.5%)	11 (11.6%)	22 (12.9%)	
Die Linke	5 (6.6%)	9 (9.5%)	14 (8.2%)	
Other	8 (10.5%)	13 (13.7%)	21 (12.3%)	

Table C.3: Balance table for Berlin Experiment

	Control (N=69)	Letter (N=66)	Letter+Canvass (N=68)	Total (N=203)	p value
Education					0.908
University Graduates	60 (87.0%)	59 (89.4%)	60 (88.2%)	179 (88.2%)	
Other	9 (13.0%)	7 (10.6%)	8 (11.8%)	24 (11.8%)	
Gender					0.957
Female	32 (46.4%)	30 (45.5%)	30 (44.1%)	92 (45.3%)	
Male	36 (52.2%)	34 (51.5%)	37 (54.4%)	107 (52.7%)	
Other	1 (1.4%)	2 (3.0%)	1 (1.5%)	4 (2.0%)	
Age					0.394
18-34	16 (23.2%)	24 (36.4%)	20 (29.4%)	60 (29.6%)	
35-55	29 (42.0%)	23 (34.8%)	31 (45.6%)	83 (40.9%)	
56+	24 (34.8%)	19 (28.8%)	17 (25.0%)	60 (29.6%)	
Previous vote					0.716
CDU	6 (8.7%)	4 (6.1%)	7 (10.3%)	17 (8.4%)	
SPD	10 (14.5%)	10 (15.2%)	6 (8.8%)	26 (12.8%)	
Bündnis 90/Die Grünen	21 (30.4%)	27 (40.9%)	23 (33.8%)	71 (35.0%)	
FDP	10 (14.5%)	7 (10.6%)	9 (13.2%)	26 (12.8%)	
Die Linke	11 (15.9%)	8 (12.1%)	6 (8.8%)	25 (12.3%)	
Other	11 (15.9%)	10 (15.2%)	17 (25.0%)	38 (18.7%)	

TABLE C.4: Attrition table for Bonn Experiment

	Control (N=76)	Letter + Canvass (N=95)	Total (N=171)	p value
Missing				
Wave 2				0.560
Mean (SD)	0.079 (0.271)	0.105 (0.309)	0.094 (0.292)	
Wave 3				0.584
Mean (SD)	0.118 (0.325)	0.147 (0.356)	0.135 (0.342)	
Range	0 - 1	0 - 1	0 - 1	

	Control (N=76)	Gender and local (N=48)	No identity (N=47)	Total (N=171)	p value
Missing					
Wave 2					0.644
Mean (SD)	0.079 (0.271)	0.083 (0.279)	0.128 (0.337)	0.094 (0.292)	
Wave 3					0.739
Mean (SD)	0.118 (0.325)	0.167 (0.377)	0.128 (0.337)	0.135 (0.342)	
Range	0 - 1	0 - 1	0 - 1	0 - 1	

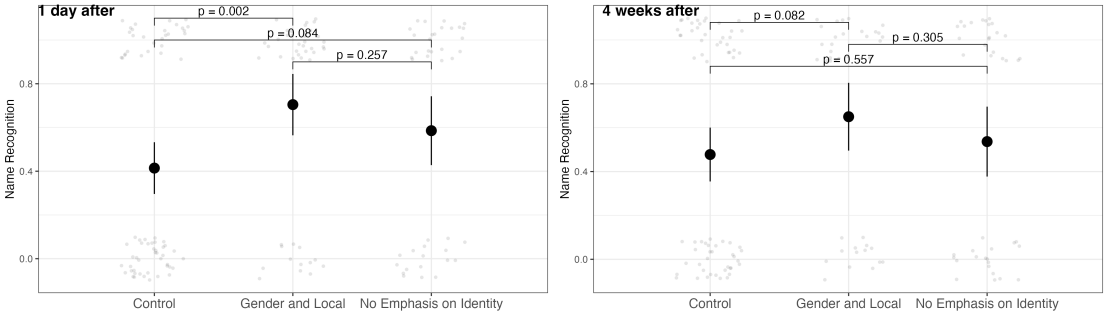
TABLE C.5: Attrition table for Berlin Experiment

	Control (N=69)	Letter (N=66)	Letter+Canvass (N=69)	Total (N=204)	p value
Missing					
Wave 2					0.454
Mean (SD)	0.116 (0.323)	0.106 (0.310)	0.174 (0.382)	0.132 (0.340)	
Wave 3					0.150
Mean (SD)	0.101 (0.304)	0.197 (0.401)	0.221 (0.418)	0.172 (0.379)	
Range	0 - 1	0 - 1	0 - 1	0 - 1	

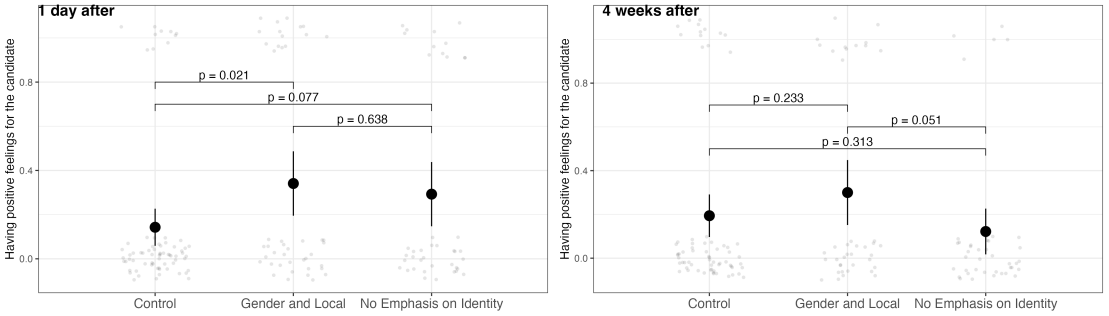
	Control (N=69)	No identity (N=40)	Gender and Parenthood (N=47)	Gender, Parenthood and local (N=48)	Total (N=204)	p value
Missing						
Wave 2						0.537
Mean (SD)	0.116 (0.323)	0.175 (0.385)	0.085 (0.282)	0.167 (0.377)	0.132 (0.340)	
Wave 3						0.010
Mean (SD)	0.101 (0.304)	0.250 (0.439)	0.087 (0.285)	0.292 (0.459)	0.172 (0.379)	
Range	0 - 1	0 - 1	0 - 1	0 - 1	0 - 1	

C.3 Figures

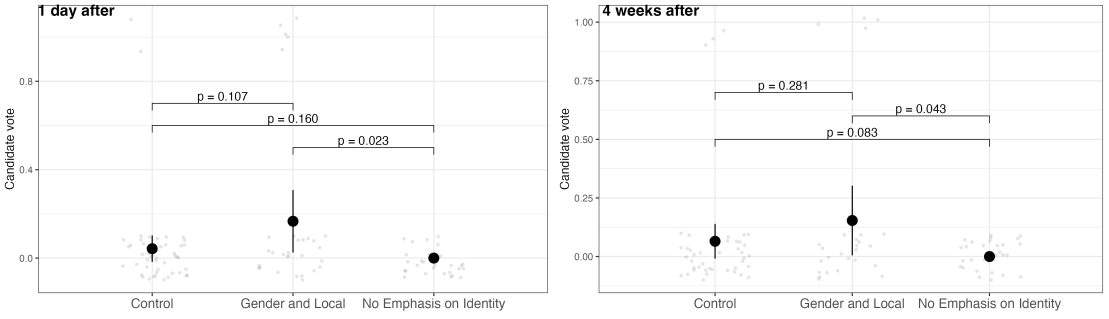
FIGURE C.4: Effect of Identity Priming on candidate-level outcomes in Bonn, 95% CIs.



(a) Identity Priming effect on candidate name recognition

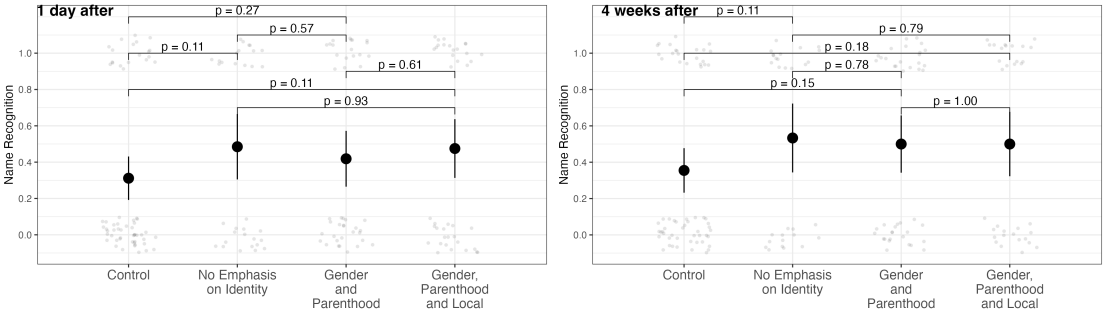


(b) Identity Priming effect on positive feelings for the candidate

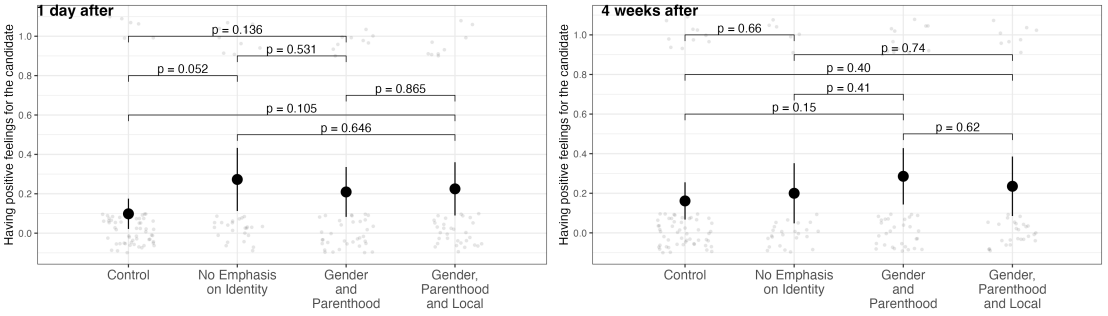


(c) Identity Priming effect on vote choice

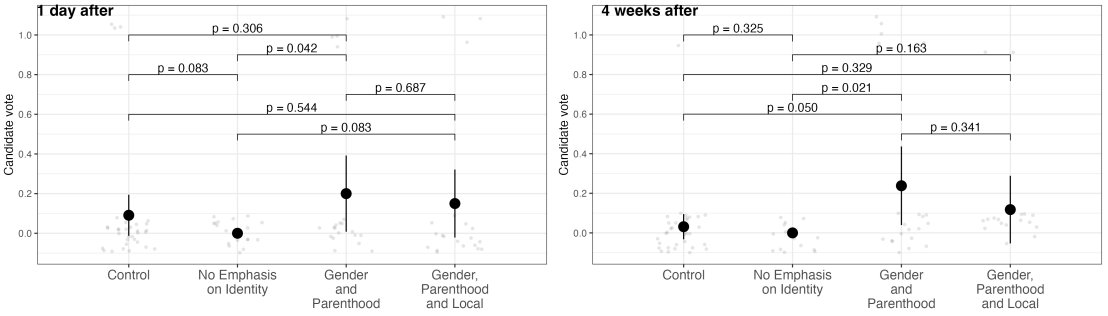
FIGURE C.5: Effect of Identity Priming on candidate-level outcomes in Berlin, 95% CIs.



(a) Identity Priming effect on candidate name recognition



(b) Identity Priming effect on positive feelings for the candidate



(c) Identity Priming effect on vote choice

C.4 Regression tables

Table C.6: The Effect of Treatment on Candidate Name Recognition and Rating on Feeling Thermometer without using Inverse Probability Weighting in Berlin

	Name recognition		Positive feelings	
	Wave 2	Wave 3	Wave 2	Wave 3
Treatment	0.13**	0.18***	0.15***	0.13***
	(0.06)	(0.06)	(0.05)	(0.05)
R^2	0.36	0.41	0.27	0.48
Adj. R^2	0.29	0.35	0.20	0.42
Num. obs.	177	168	177	168
N Clusters	163	156	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table C.7: The Effect of Identity Priming on Candidate Name Recognition and Rating on Feeling Thermometer without using Inverse Probabilty Weighting in Berlin

	Name recognition		Positive feelings	
	Wave 2	Wave 3	Wave 2	Wave 3
No identity	0.11	0.16*	0.20**	0.09
	(0.10)	(0.09)	(0.08)	(0.06)
Gender + Parenthood	0.09	0.16*	0.06	0.11*
	(0.09)	(0.08)	(0.07)	(0.06)
Gender + Parenthood + Local	0.20**	0.23**	0.21***	0.20**
	(0.09)	(0.10)	(0.07)	(0.07)
R^2	0.36	0.41	0.29	0.48
Adj. R^2	0.29	0.34	0.21	0.42
Num. obs.	177	168	177	168
N Clusters	163	156	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE C.8: The Effect of Identity Priming on Vote Choice without Inverse Probability Weighting in Berlin

	Vote Choice- candidate	
	Wave 2	Wave 3
No identity	−0.090	−0.153**
	(0.058)	(0.063)
Gender + Parenthood	0.035	0.057
	(0.095)	0.053
Gender + Parenthood + Local	0.154	0.042
	(0.097)	0.081
R^2	0.490	0.539
Adj. R^2	0.362	0.412
Num. obs.	91	84
N Clusters	86	79
Covariate adjusted	Yes	Yes
Blocks	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

TABLE C.9: The Interaction of Identity Strength and Identity Priming on Outcome Variables -Bonn

	(Name Recognition)		(Feeling Thermometer)		(Vote Choice -candidate)	
	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3
No Identity	0.41	−0.38	0.04	−0.31	−0.09	−0.03
	(0.44)	(0.34)	(0.37)	(0.25)	(0.18)	(0.18)
Gender and Local Prime	−0.01	−0.44*	−0.46**	−0.62***	0.19	0.10
	(0.33)	(0.28)	(0.25)	(0.22)	(0.19)	(0.18)
Gender Identity Strength	0.01	−0.08*	−0.02	−0.02	0.01	0.00
	(0.08)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)
Place-based Identity Strength	−0.08	−0.08	−0.11**	−0.13**	0.02	0.04
	(0.06)	(0.07)	(0.05)	(0.05)	(0.02)	(0.04)
No Identity x Gender Identity Strength	−0.12	0.06	−0.04	0.02	−0.00	0.00
	(0.11)	(0.07)	(0.08)	(0.06)	(0.04)	(0.04)
Gender and Local Prime x Gender Identity Strength	−0.00	0.07	0.07	0.10	−0.04	0.06
	(0.11)	(0.08)	(0.07)	(0.08)	(0.05)	(0.08)
No Identity x Place-based Identity Strength	0.06	0.11	0.14*	0.12*	0.03	−0.01
	(0.12)	(0.10)	(0.10)	(0.08)	(0.05)	(0.06)
Gender and Local Prime x Place-based Identity Strength	0.11	0.17**	0.19***	0.19**	0.01	−0.08
	(0.10)	(0.09)	(0.07)	(0.08)	(0.04)	(0.07)
R^2	0.35	0.46	0.38	0.34	0.52	0.33
Adj. R^2	0.23	0.36	0.27	0.21	0.39	0.13
Num. obs.	155	148	155	148	105	101
N Clusters	149	142	149	142	100	96
Covariate adjusted	Yes	Yes	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. One-tailed test.

TABLE C.10: The Interaction of Identity Strength and Identity Priming on Outcome Variables -Berlin

	(Name Recognition)		(Feeling Thermometer)		(Vote Choice -candidate)	
	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3
No Identity	−0.69**	−0.23	−0.21	−0.26	−0.03	−0.42
	(0.37)	(0.37)	(0.33)	(0.34)	(0.28)	(0.39)
Gender and Parenthood Prime	0.48*	0.47*	0.73***	0.44*	1.06***	0.58*
	(0.29)	(0.32)	(0.25)	(0.28)	(0.36)	(0.41)
Gender, Parenthood and Local Prime	−0.13	−0.02	0.83***	0.44*	0.86**	0.66*
	(0.40)	(0.48)	(0.23)	(0.29)	(0.34)	(0.48)
Gender Identity Strength	0.08**	0.05	0.08**	−0.05*	0.07	−0.02
	(0.05)	(0.06)	(0.04)	(0.04)	(0.05)	(0.03)
Parenthood Identity Strength	−0.05**	−0.02	0.03*	−0.02	0.01	−0.01
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Place-based Identity Strength	−0.03	0.02	−0.00	0.03	0.01	0.03
	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)	(0.02)
No Identity x Gender Identity Strength	0.10	0.10	0.06	0.10*	−0.07	0.02
	(0.09)	(0.09)	(0.07)	(0.06)	(0.09)	(0.07)
Gender and Parenthood Prime x Gender Identity Strength	−0.09	0.03	−0.17**	−0.02	−0.27**	−0.11
	(0.08)	(0.09)	(0.07)	(0.07)	(0.10)	(0.10)
Gender, Parenthood and Local Prime x Gender Identity Strength	0.06	0.12	−0.05	0.05	−0.08	−0.08
	(0.11)	(0.13)	(0.07)	(0.07)	(0.10)	(0.10)
No Identity x Parenthood Identity Strength	0.09	0.01	−0.00	−0.01	−0.02	0.02
	(0.07)	(0.06)	(0.06)	(0.06)	(0.03)	(0.04)
Gender and Parenthood Prime x Parenthood Identity Strength	−0.08*	−0.12***	−0.09**	−0.04	−0.04	0.06*
	(0.06)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
Gender, Parenthood and Local Prime x Parenthood Identity Strength	0.05	0.02	−0.08*	0.04	0.01	0.09
	(0.07)	(0.08)	(0.05)	(0.05)	(0.07)	(0.09)
No Identity x Place-based Identity Strength	0.15**	0.02	0.10	0.02	0.08	0.09
	(0.07)	(0.07)	(0.08)	(0.07)	(0.07)	(0.11)
Gender and Parenthood Prime x Place-based Identity Strength	0.00	−0.09*	−0.01	−0.10*	−0.07	−0.11*
	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Gender, Parenthood and Local Prime x Place-based Identity Strength	0.01	−0.07	−0.16***	−0.20***	−0.22***	−0.19**
	(0.08)	(0.11)	(0.05)	(0.07)	(0.06)	(0.07)
R^2	0.45	0.48	0.40	0.56	0.67	0.72
Adj. R^2	0.34	0.37	0.28	0.46	0.51	0.57
Num. obs.	177	168	177	168	91	84
N Clusters	163	156	163	156	86	79
Covariate adjusted	Yes	Yes	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. One-tailed test.

TABLE C.11: The Effect of Identity Priming on the Degree of Identification with the Candidate

	Degree of identification with the candidate			
	Bonn		Berlin	
	Wave 2	Wave 3	Wave 2	Wave 3
No Identity	0.37	−0.07	0.04	0.02
	(0.49)	(0.51)	(0.44)	(0.42)
Gender and Local Prime	1.34*	0.35	1.01**	0.83
(and Parenthood only in Berlin	(0.52)	(0.49)	(0.49)	(0.56)
Gender and Parenthood Prime			0.62	0.92*
(only in Berlin)			(0.51)	(0.50)
R^2	0.36	0.32	0.41	0.49
Adj. R^2	0.28	0.22	0.34	0.43
Num. obs.	155	148	177	168
N Clusters	149	142	163	156
Covariate adjusted	Yes	Yes	Yes	Yes
Blocks	Yes	Yes	Yes	Yes

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$. One-tailed test.

C.5 Data Protection

For both field experiments, we comply with the European Union's General Data Protection Regulation (GDPR). One of the most challenging aspects of implementing the experiments was GDPR's demand that subjects be informed about every individual and institution with access to their personal data. In academic research in compliance with GDPR, a standard approach is to provide subjects with complete documentation of everyone who can access their data before the subjects sign up for a study. Subjects then have to explicitly agree that they have read this information and consent to give access to their data to the listed individuals and institutions. However, listing the candidate we cooperated with in a document visible to subjects before signing up for our panel study would undoubtedly have led to a meaningful chance of bias.

It was of utmost importance that the studies comply with GDPR, and, at the same time, subjects would remain oblivious to the fact that the communication they received from our cooperating candidate was part of the study they had consented to. Therefore, we decided to make sure that the candidates and their party would at no point get access to any individual subject data. This decision had meaningful logistical consequences for the implementation of the study, i.e., the delivery of the treatments: For the treatments that were sent by mail, the research team received the written and signed postcards from the candidates and handled attaching address labels and posting. For the canvassing visits, at least one member of the research team or one graduate student would accompany every canvassing visit to guide the candidate to the right door and ring the doorbell. If subjects requested further or follow-up information from the candidates during their conversations at the doorstep, the candidates always asked the subjects to send an email to their campaign headquarters. This way, subjects would volunteer their data to the candidates and their party anew, independent from the study and outside its GDPR coverage. To the best of our knowledge, this protocol was maintained throughout every step of data gathering and analysis. Both candidates understood the importance of complying with legal and ethical requirements and supported our effort to comply with the rules.

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