Reading the mind of Voters: A case of Neuro-politics and voting

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Abstract

Research in leadership and decision-making suggests that the physical characteristics and traits of an individual influence the consumer's trustworthiness. Despite being a less explored research area, studying the impact of specific verbal and non-verbal cues of a political leader through a technological lens such as eye-tracking has been sparsely talked about. Three sets of experiments were conducted to study voters' visual attention and reactions to gauge their willingness to vote. The present study analyzed the non-verbal aspects of a political leader with regard to voting intention and found that even a few of the non-verbal cues have an influence on the willingness to vote for a candidate.

Keywords: Neuropolitics, Neuromarketing, Nonverbal cues, Decision making, Voting Behavior

1. Introduction

Politics is no longer a game of democracy or elections. Prior research regarding political parties and political leaders suggests that the particular cues of people who represent a political party have an impact on people's political choices (Cohen, 2003). Furthermore, research suggests that the physical characteristics and traits of an individual influence the consumer's trustworthiness to a large extent (Mittal and Silvera, 2021). In addition, verbal and non-verbal cues appeal to individuals (are non-biased) and increase perceived opinions of leadership (van Knippenberg, 2023). Despite being a less explored research area (Peifer & Holbert, 2013 and Hemshorn de Sanchez et al., 2021), the impact of specific verbal and non-verbal cues of a political leader has been sparsely studied (Martín-Raugh et al., 2022). It is provocative to note that verbal and non-verbal cues might be advantageous to a particular candidate or their opponents, but it is left to us to contemplate if specific traits could really influence political orientation. The researchers have established that voters make decisions based on their emotions. Electoral success is about nudging a voter's limbic system, which is associated with the emotional brain (Westen, 2007). Based on this evidence, we investigate whether willingness to vote is influenced by the verbal and nonverbal stimuli of political leaders. Neuropolitics literature was systematically reviewed to find out if any study used nudges to demonstrate the relationship between physical characteristics, biological traits, and other verbal as well as non-verbal cues that can influence the voting decisions of voters. The present study attempts to give an explanation for the stated aspect and adds to the literature by showing that political behavior can also be nudged—verbally and non-verbally. Accordingly, the objective of the research is to (1) analyze the attention intensity and emotional engagement that a political leader generates among voters and (2) study the influence of verbal and non-verbal cues on voting intention. Three sets of experiments were conducted for the present study, considering the participant's sociodemographics and the candidate's non-verbal cues. First, an eye-tracking tool was used to record the visual attention of voters for two political leaders, namely Narendra Modi and Rahul Gandhi, during the 2021 Bengal elections. Subsequently, a short survey was used to analyze the 'willingness to vote' and how it is affected by a few of the nonverbal nudges of the political leaders chosen as part of the study. Third, a sentiment analysis of people in India was carried out with the help of a sentiment analysis tool during the Bengal elections. The sentiment analysis analyzed the sentiments of potential voters in India with regards to Narendra Modi (NaMo) and Rahul Gandhi (RaGa) and their speeches during the Bengal election.

2. Literature Review

Dual-System Approach and Decision-Making

To comprehend the art of handling cognitive tasks by the brain, dual-process or dual-system theories have been extensively used to decipher the phenomena of learning, thinking, analyzing, and evaluating. Particularly in psychology, empirical work has been carried out on dual-process or dual-system theory (Berry and Dienes, 1993; Reber, 1993) and neuroscience (Eichenbaum and Cohen, 2001) to understand the reasoning and decision-making process. Furthermore, the theory states that human cognitive architecture contains two distinct processes: type 1 (System 1) or type 2 (System 2). The type 1 process, also referred to as "system 1" (Kahneman, 2011), characterizes fast, implicit, and unconscious processes and responses. On the other hand, type 2 vis-à-vis system 2 is characterized by rather slow, analytical, and explicit processes and responses.

Table 2: Review of Literature | Physical Traits and Voting Behaviour

Cite	Physical trait	Element of Politics	Brief description
Stanton et al., 2009	Testosterone level	Voting Behaviour	Changes in testosterone levels of male voters if their preferred candidate losses elections.
Little et al., 2007	Facial shape	Willingness to Vote	How different facial shapes are associated with voter's preference.
Ballew and Todorov, 2007; Todorov et al., 2005; Poutvaara et al. 2009; Rule et al., 2010; Samochowiec et al., 2010; Olivola et al., 2012; Carpinella, C.M. and Johnson, K.L., 2013; Rule and Ambady, 2010; Little, 2007; Antonakis, J. and Dalgas, 2009	Facial appearance	Outcome of Elections	Rapid judgments of competence based solely on the facial appearance of candidates were shown to reliably predict the outcome of elections.
Armstrong et al., 2010	Facial competence rating	Outcome of Elections	Snap judgments of facial competence by unbiased raters provided useful predictions of the popular vote winners.
Murray & Schmitz, 2011	Height	Willingness to Vote	Physical stature influences the choice of voters.
Banducci et al., 2008	Attractiveness	Voting Decision	Cognitive heuristics like attractiveness in political decision making
Gregor, 1979	Physical Stature	Opposition's Behaviour	Good physical stature has an influence on opponent as well, they perceive them with more respect and seriousness.
McCann, 2001	Height	Outcome of Elections	Height, Societal Threat, and the Victory of Margin in Presidential Elections
Alford et al., 2005	Genes	Political Orientation	Political Orientations Genetically Transmitted
Lazauskas, 2020	Political Ads Empathetic Tone	Voting Decision	Personal Narratives and including real supporters in ads have immense power in influencing voters

Halpern, 2020	Cadence (Voice) Talking points in speech	Voting Decision	Data was gathered to unleash the political sentiments by people's bodies to design and shape the ads and touching points that trigger voters' underlying psychological predispositions.
Andrew, 2015	PPB (Political Party Broadcasts) featuring celebrity vs PPB talking about family	Voting Decision	Personal engagement is highest when leader himself is featured in ad and uses "I" and "my", focuses on morality and values and has family-oriented approach. Negative attack lines registers withdrawal response in viewer's brain.
Han, 2007; Thatcher & Suwan, 2007	Blue Scarf Olfactory branding	Voting Decision	To trigger voter's memory, a special perfume was used to be sprinkled at public gatherings and at polling booths. Also, carrying blue scarf everywhere symbolised stability and a good brand (candidate's name) recall for the voters.
Kosinski, 2021	Naturalistic facial images from social network websites of voters	Political Orientation	Correlations between political orientation and a range of interpretable facial features including head pose (pitch, roll, and yaw), emotional/facial expression (probability of expressing sadness, disgust, anger, surprise, and fear); eyewear (wearing glasses or sunglasses); and facial hair. Face-based judgments are enabled by stable facial features (e.g., morphology); transient facial features (e.g., facial expression, makeup, facial hair, or head orientation); or targets' demographic traits that can be easily inferred from their face (e.g., age, gender, and ethnicity).
Kosinski et al., 2013; Youyou et al., 2015	Digital footprint's data Facebook likes of voters	Political Orientation	A wide variety of people's private traits and personal attributes, ranging from sexual orientation to intelligence, can be automatically and accurately inferred using their Facebook Likes.
Park et al., 2015	Language used on social media	Political Attitude	The language in social media can be harnessed to create a valid and reliable measure of personality, political attitudes etc.
Oxley et al., 2008	Physiological Traits	Political Attitude	Variations in political attitudes correlate with physiological traits. The degree to which individuals are physiologically responsive to threat appears to indicate the degree to which they advocate policies that protect the existing social structure from both external (outgroup) and internal (norm-violator) threats.
Klofstad et al.,2015	Voice Pitch	Outcome of Elections	Voice pitch can foretell electoral outcome. This study suggests a biological advantage to people with lower-pitched voices.

Rational and Irrational Voting Behaviour

With regards to neuropolitics, prior theory suggests that voters are usually irrational as they get inclined to re-select politicians who delivered favorable outcomes. For instance, voters tend to evaluate their state's growth in relation to the national economy. Voters tend to groupthink and behave like members of a tribe. Thus, these tests also give an indication that rule-of-thumb performance filtering, i.e., heuristics, are effective. To apprehend the approach of political

decision-making, the rational choice model becomes an obvious choice, as it argues that the motivation behind voting will be when anticipated benefit exceeds the cost of incurring it.

Verbal and Non-Verbal Cues and Decision Making

In political rhetoric, physical traits are frequently used to influence and capture the audience's attention and interest (Gruner, 1967; Hill et al., 2022). Gruner (1967) also argued that humor plays an important role in political discourse as it relates to electoral success; that is, political humor affects voter emotions, perception, behavior, and voting decision (Sy & Knippenberg, 2021 and Mercadante et al., 2022). In addition, the public's attitudes and voting intentions change during the campaign when they are exposed to competing arguments from industry and activist groups (Seiders et al., 2022). Extant literature presents how politicians have used non-verbal cues to influence voters, to emotionally engage voters, and to grab the attention of voters. Thus, affecting voters' perception and opinion about politicians (Martín-Raugh et al., 2022). Table 2 highlights different studies that have been conducted in order to understand the relationship between voting behavior and non-verbal or physiological traits. In view of the importance of persuasion, especially in the context of leadership, more recent theoretical approaches underpin that leaders not only persuade people by presenting cogent messages but also appeal to followers' emotions, biases, and unconscious motivations (Martín-Raugh et al., 2022; Volk et al., 2022). Furthermore, it establishes that non-verbal cues with regards to leadership are largely communicated via the peripheral route to persuasion.

Conceptual Model

One of the most important theoretical developments in the understanding of human behavior has been the emergence of dual-process models that classify cognitive processes into two main categories, i.e., intuition and reason (Sloman, 1996).

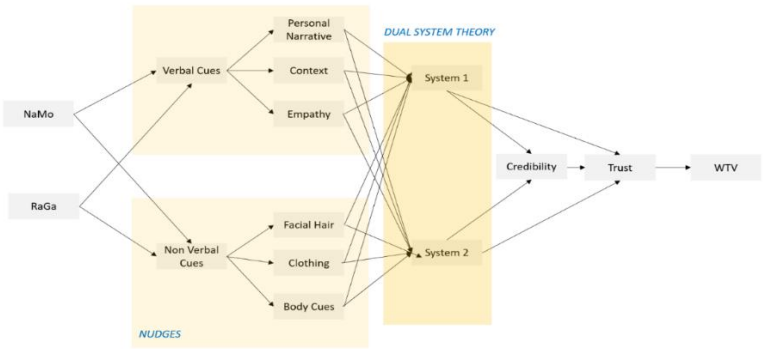


Figure 1: The Conceptual Model

In this dialogue, we propose a novel framework of non-verbal cues and decision making, suggesting that decisions such as willing to vote can be thought of as arising primarily from either intuitive or deliberate processing. Our framework (Figure 1) proposes a novel grouping of verbal and non-verbal cues that allows for a richer understanding of the mechanisms through which they operate. We argue that in the case of non-verbal cues, such as facial hair, clothing, or specific body cues exhibited by a political leader, system 1 is engaged since system 1 tends to be rapid and tends to generate a response that comes to mind before the decision is done consciously. Based on the literature and the objectives of the current study, we hypothesize the following:

H1: The non-verbal cues of a political leader directly influence System 1, leading to higher credibility/ trust/ willingness to vote.

H2: The non-verbal cues of a political leader directly influence System 2, leading to higher credibility/ trust/ willingness to vote.

Data, Methods, and Empirical Analyses

We perform three complementary studies that use variant research designs and analysis. In each study, non-verbal cues acting as nudges serve as the primary measure of interest. Study 1 analyses individual preferences for the non-verbal cues of the political leader: facial hair, clothing, and body cues like posture and tone. In Study 2, data is collected from a questionnaire to determine the effect of these nudges—facial hair, clothing, and body cues—on respondents' willingness to vote. In Study 3, we collected real-time information (for the duration of the Bengal election) with regards to two political leaders, namely Narendra Modi and Rahul Gandhi, and assessed the general sentiments of the public.

Table 3: Experimental Design for the current study

Study	Nature	N (Participants)	Average Age	Location
Study 1	Eye Tracking	18 *10 Males* *8 Females*	28.5 Yrs.	Delhi and Gurgaon
Study 2	Survey	32 16 Males 16 Females	31.4 Yrs.	Delhi and Gurgaon
Study 3	Sentiment Analysis	Over 20,000 Interactions/Posts on Social Media Platforms using #	NA	India

Table 3 gives a summary of the sociodemographic characteristics of the participants. Different participants were involved in each experiment.

Empirical Analyses

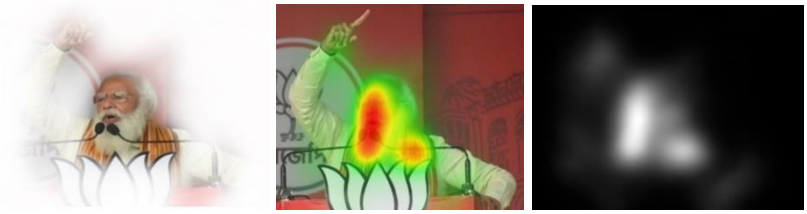
Study 1: Eye Tracking Study

A total of twenty-seven participants were appointed for participation in the study. A set of nine (9) static pictures were shown to the participants. The pictures were taken from the recent Bengal election, held in 2021. Study 1 is designed to capture the cognitive load, Region of Interest (ROI), and heat map of participants with regards to the image of the political leader while they give a public speech. As calculated, the cognitive demand for Rahul Gandhi was around 34%, indicating that cognitive load is high, which means more effort will be required to process the message in the image, whereas the cognitive demand for Narendra Modi was around 29%, indicating that cognitive load is comparatively low and thus, less effort will be required to process the message. In addition, heat maps were also generated for Narendra Modi and Rahul Gandhi while appearing with members of their political party (Figures 5 and 6). The results indicate that Narendra Modi's wearing the neck-wrap with the BJP's logo grabbed maximum attention, whereas no such registration of the party logo was done in terms of memory in Rahul Gandhi's case.

Table 4 : AOIs grabbing attention

AOIs	NaMo	RaGa
Facial Hair	32%	10%
Logo on dice	21%	NA
Clothing	45%	23%
Hand Movement	29%	15%

During the course of the study, it was discovered that the hands-mic-face triad had a considerable influence on the respondents. The distance between hands, the microphone (mic), and the face triad were analyzed for both Narendra Modi and Rahul Gandhi while addressing the audience. It was identified (Figure 7) that the hand-mic-face triad was larger for Narendra Modi as compared to Rahul Gandhi. It can also be argued that such non-verbal cues from political leaders attract more attention of voters and may influence their intentions to a great extent.



Fog Map Heat Map Saliency Map

Figure 2: Narendra Modi

Fog Map Heat Map Saliency Map

Figure 3: Rahul Gandhi

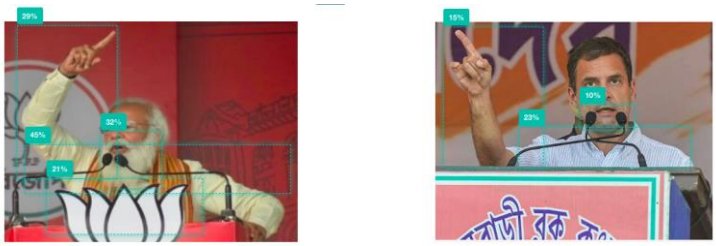


Figure 7: Hand-Mic-Face Triad and AOIs (Area of Interest)

The results from the first study, as indicated in Table 4, suggest that individuals are nudged by the non-verbal cues of a political leader, which is in congruence with the evolutionary theory presented as part of the study.

Table 4 : AOIs grabbing attention

AOIs	NaMo	RaGa
Facial Hair	32%	10%
Logo on dice	21%	NA
Clothing	45%	23%
Hand Movement	29%	15%

Study 2: Individual Interest and Willingness to Vote

In Study 2, respondents were asked a series of questions with regards to non-verbal cues such as facial hair, clothing, etc. on a scale of 1 to 5, with 1 being the lowest score and 5 being the highest. Figure 9 indicates the preference of respondents with regards to a political figure, based on the mean scores for each of the questions and the willingness to vote. It was identified from the study that nonverbal cues such as clothing (a kurta in the case of Narendra Modi) and party logos also had a positive influence on the willingness to vote. In addition, it was identified that 64 percent of respondents focused on the facial hair of Narender Modi as compared to Rahul Gandhi. In addition, participants focused more on the clothing of Narendra Modi as

compared to Rahul Gandhi, indicating the influence of fashion, i.e., clothing, on decision-making.

Study 3: Sentiment Analysis

Sentiment analysis is a computer algorithm developed to understand the sentiments of a group of consumers' opinions on a specific issue (Lappeman et al., 2020). For carrying out sentiment analysis, first, multilingual posts are identified and classified into positive, negative, and neutral categories. In our study, specific key words were used to identify posts from multiple platforms. The keywords used were #NaMo #Narendramodi #Modi #ModjiJi #Bengal #Elections #BengalElections #RaGa #RahulGandhi #Gandhi #BJP #Congress. Each post was scored based on how positive or negative the posts were. Positive posts are given a positive score; neutral posts are given a zero-sentiment score; and negative posts are given negative sentiment scores. The extraction was carried out using automatic categorization based on the keywords in English.

Months	**Sentiment Scores**		**Positive counts (PC)**		**Negative Counts (NC)**		**Average Sentiment Score**	
	NaMo	RaGa	NaMo	RaGa	NaMo	RaGa	NaMo	RaGa
March	2728	2837	1789	1341	939	1496	8.2341	5.9765
April	2188	2879	1569	893	619	1986	7.9876	5.4587

Table 5: Sentiment Score

An in-house proprietary tool of a cloud-based customer experience management organization was used to carry out the sentiment analysis. Data was collected for a period of two (2) months, i.e., from March 1, 2021, until May 1, 2021. The user sentiments were analyzed across social media platforms like Facebook, Twitter, Instagram, LinkedIn, etc. With the help of the AI-powered social listening tool provided by the company, over 2 million conversations were analyzed and subsequently transformed into structured actionables, sentiment scores, and relevant insights. Based on a specific algorithm for sentiment analysis, polarized words and their syntactic contexts were isolated within the comments, and a score was then assigned to each comment ranging from 3 (extremely negative) to 3 (extremely positive). As indicated in Figure 10, positive sentiments were associated with Narendra Modi’s (NaMo) verbal as well as non-verbal cues, whereas people’s emotions did not change significantly based on either the

verbal or non-verbal cues of Rahul Gandhi. A total of 20 thousand posts were extracted pertaining to the Bengal elections: NaMo and RaGa. Each of the above-mentioned categories was analyzed using the sentiment scores across the posts. Table 5 indicates the sentiment scores for both Narendra Modi and Rahul Gandhi. It was observed that positive sentiments for Narendra Modi were way higher as compared to positive sentiments for Rahul Gandhi.

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