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The impact of metaphorical language on social media engagement: evidence from the presidential run-off and major parliamentary parties during the 2023 Turkish general election

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ABSTRACT

This paper challenges the generally implied view in the literature on political language that metaphors attract citizens' attention. We examined the influence of metaphorical expressions in social media posts on user engagement during the 2023 Turkish general elections, focusing on tweets by the two main presidential candidates who contested the run-off election and five major political parties that gained parliamentary representation ($N=4131$). A data-driven framework measured the frequency and originality of metaphors in each post to assess their impact on likes, reposts, and replies. The results showed that metaphor frequency modestly increased engagement by 1–2%, while metaphor originality had a stronger effect, boosting likes and reposts by 6–7%. Replies, however, were less influenced, reflecting the 'engagement ladder' concept – the idea that as more mental effort is required, people tend to interact less. In addition, metaphor use intensified as critical election days approached, indicating strategic efforts to engage the audience. Overall, while metaphors enhance relatability and memorability, our findings showed that their actual impact on user engagement is modest and depends on contextual factors.

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Metaphor density; metaphor originality; social media engagement; political discourse; Turkey

1. Introduction

Politicians' appearance on social media has transformed the political communication landscape: online networking enables political actors to share information rapidly and generate a vast number of interactions with citizens. Online politicizing also affects the quality of political messages, which are increasingly influenced by commercialization, globalization, and visual culture (Landtsheer et al., 2008). All these factors have led to a shift in political communication dynamics, referred to as 'perception politics' (Landtsheer et al., 2008, p. 220), which prioritizes style over content and enables politicians

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and political parties to enhance the reaction they create among the audience (Beer & Landtsheer, 2004; Landtsheer et al., 2008; McGraw, 2003).

One tool for perception management is the strategic use of metaphors in language, which aids political parties and individual politicians in conveying their messages to the public. The metaphors used by political elites to influence various issues are widely documented, and the literature frequently takes for granted that the conceptualizations political actors put on the agenda indeed mold citizens' perceptions (Bougher, 2012; Hartman, 2012; Landau & Keefer, 2014; Perrez & Reuchamps, 2015; Reuchamps et al., 2018). However, elaboration of the actual political impact of metaphors is relatively recent (Perrez & Reuchamps, 2015a). The same observation can be applied to social media; despite its prevalence in public political discourse, research on users' responses to metaphors in social media messages remains limited. One notable exception is Augé (2024), who demonstrated that users actively engage with and debate metaphors in public forums, indicating their cognizance of political metaphors.

Thus, to capture people's involvement with metaphors in political communication, we propose a data-driven approach that measures their social media engagement with posts that include metaphorical expressions. Building on the framework proposed by Landtsheer (2009) and Sun et al. (2021), we analyzed the frequency and originality of metaphorical words and phrases, the metaphoricity of which was established using the Metaphorical Identification Procedure, a well-established means of metaphor analysis (MIP; Pragglejaz Group, 2007; MIPVU). Subsequently, we measured the users' reactions to tweets of various levels of metaphor frequency and originality.

The significance of metaphor frequency per word (indicating metaphor density of a post) and metaphor originality (indicating average originality of metaphorical phrases in a post) on user engagement was tested by analyzing 4,131 tweets on X (formerly known as Twitter) posted by two main presidential candidates, Recep Tayyip Erdoğan and Kemal Kılıçdaroğlu, as well as five major parties that entered the Turkish Parliament.¹ Our research encompassed the timeframe of the official Turkish election period between March 18 and May 28, 2023. Being a prominent time in politics, elections attract citizens' attention (Kam & Utych, 2011), and politicians have been shown to include more metaphors in their messages during campaigns (Vertessen & Landtsheer, 2008). To explore the effects of metaphorical language use on X users' social media engagement in the context of the 2023 Turkish general election, the following research questions were formulated:

RQ1. How did metaphor frequency per word affect user engagement on X during the 2023 Turkish general election?

RQ2. How did originality in metaphor use affect user engagement on X during the 2023 Turkish general election?

User engagement was interpreted using the following three variables: likes, reposts, and replies.

In the following sections, we first reflect on the interrelationship between metaphors and politics in Section 2. Section 3 describes the proposed model to measure the impact of metaphors on user engagement. Section 4 outlines the corpus and methodology, and Section 5 presents the results and discussion. Finally, we conclude the paper in Section 6.

2. Metaphors in politics

As Thompson (1996, p. 185) aptly puts it, ‘Fish need water to be fish; humans need metaphor to do and think about politics.’ How can metaphors contribute to doing politics and thinking about politics? Policymaking and public affairs involve numerous abstract and complex phenomena in which citizens are less familiar (Bougher, 2012; Mio, 1996, 1997). The concepts of political life can be made more accessible by metaphorically portraying them; this process – describing abstract and unfamiliar concepts in terms of more concrete and familiar ones – is, in fact, the very definition of metaphor (Bougher, 2012; Charteris-Black, 2004; Hartman, 2012; Kövecses, 2006; Lakoff & Johnson, 1980; Lin, 2011; Musolff, 2007, 2016). Additionally, metaphors are known to be effective persuasive devices, highlighting certain aspects of a concept while concealing others (Charteris-Black, 2004, 2018; Hopkins, 2023; Landau & Keefer, 2014) and even influencing decision-making (Thibodeau & Boroditsky, 2011). Finally, metaphors evoke intense emotions (Bougher, 2012; Landtsheer, 2009; Mio, 1996, 1997; Vertessen & Landtsheer, 2008).

By way of illustration, in the context of campaign communication, the metaphors that routinely appear are ‘politics as war,’ ‘politics as sport,’ and ‘politics as entertainment’ (Author et al., 2022; Kövecses, 2005, 2010; Semino, 2008). These metaphors make political campaigning more comprehensible while highlighting different aspects: ‘war’ and ‘sport’ emphasize competition and conflict, whereas ‘entertainment’ presents politics as spectacle. In terms of emotions, violent conceptualizations such as ‘war’ may evoke more tension and fear (Flusberg et al., 2018).

Metaphors thus constitute strategic rhetorical devices, enabling political actors to interpret events in a way that is in line with their political agenda. An oft-cited example of the impact of metaphors on political perception is George W. Bush’s ‘War on Terror’ metaphor in the aftermath of the 9/11 terror attack. The representation of U.S. foreign policy as war resonated with the public to such an extent that the metaphor was not challenged and eventually licensed the invasion of Iraq (Lewis & Reese, 2009). Although research cannot determine how consciously politicians select metaphors, Charteris-Black (2012, 2018) proposed that metaphor selection is purposeful in politics, linking past intentions with the current verbal act of metaphor usage and anticipating its future social and political impact. Intentional metaphor selection emerges through the strategic use of metaphors, particularly when metaphorical phrases are repeated and positioned at key moments within a speech, for example.

Work on the effects of metaphors on citizens’ interpretation of political issues has largely revolved around survey methods and experimental research. Jimenez et al. (2021) obtained survey data confirming that exposing American respondents to the inundation metaphor in an opinion piece increased their support for building a border wall between the United States and Mexico. Hartman’s (2012) experiments conducted among university students and social network respondents revealed the persuasive power of metaphors in net neutrality legislation conceptualized via the ‘toll booth metaphor.’

While surveys and other experimental designs reveal key aspects of how citizens rely on metaphors to understand political issues, they necessarily carry artificiality. For instance, Martini and Olmastroni (2021) discussed the challenges of external validity in survey experiments, noting that controlled scenarios may not accurately reflect

real-world experiences, thereby limiting the generalizability of their findings. Similarly, Thibodeau et al. (2019) highlighted that experimental designs might not capture the full richness of metaphor usage in natural political discourse, thus raising concerns about ecological validity. Furthermore, data-based approaches are generally credited with an increased level of objectivity and more generalizability owing to the large data sample as well as enhanced transparency and replicability (Bednarek et al., 2024; Marchi & Taylor, 2009). Thus, we propose that research on the public's reactions to metaphors should be supplemented with data-driven social media analyses, which provide an organic means of exploring people's immediate reactions to metaphors. In the following section, we outline how such work can be carried out.

3. Modeling reactions to metaphor on social media

To test the effect of metaphors on user reactions, we determined two metaphor-related metrics: metaphor frequency per word (MFW) and metaphor originality (MO). Our analytical framework is based on Landtsheer's (2009) 'metaphor power model' (MP), a quantitative content analysis approach to political semantics. The metaphor power model stems from the idea that metaphor analysis 'can establish political meaning for various forms of political discourse' (Landtsheer, 2009, p. 65) by determining an index based on three variables: metaphor frequency (MF), metaphor intensity (MI), and metaphor content (MC). The MP index, calculated by the multiplication of MF, MI, and MC, shows the 'metaphorical strength' of an analytical unit (e.g., a political speech, news article, or social media post), namely, the extent to which the text producer relies on metaphors in terms of 'frequency,' 'intensity,' and 'content' to discuss an issue on the agenda. Landtsheer's (2009) work has since been applied to numerous languages and contexts, including Dutch, Flemish (Landtsheer, 1994; Landtsheer, 2009), Russian, Chinese, and English (Kalinin, 2021, 2022; Sun et al., 2021). In the following, we briefly elaborate on the variables proposed by Landtsheer (2009) and how we incorporate them into the present research.

First, metaphor frequency (MF) is determined by dividing the total number of metaphors (f) by the total number of words in the discourse sample (tw). To make MF applicable to our analysis, we scaled this variable for social media by adjusting it for the average post length (56 words) on X to account for variations in tweet length. This standardized measure indicates the metaphoric density of a social media post and can also be fitted to other social media platforms. Since MF is determined based on word count in X posts, we refer to this variable as metaphor frequency per word (MFW). This metric was calculated using the following formula:

$$MFW = \frac{\text{Number of metaphor}}{\text{Post length}} * 56$$

Our first research question (RQ1) investigates how the frequency of metaphors affects user engagement, with MFW serving as our metric to measure this potential effect. The unit of analysis is the individual social media post, within which we identify metaphorical expressions. This approach is justified by our research question, as it allows us to test whether a higher density of metaphorical language correlates with increased engagement.

The second variable proposed by Landtsheer (2009) is metaphor intensity (MI). MI is based on the idea that novel and creative metaphors are more intense than conventional or dead metaphors (Landtsheer, 2009, pp. 65–66). Accordingly, a metaphor such as the 1991 Iraq War ‘Desert Storm’ is stronger in terms of novelty as compared to problems that ‘put in the refrigerator’ (moderate) or compared to decisions that ‘follow the wind’ (weak), according to Landtsheer (2009, p. 66). To quantify this variable, metaphor intensity scores were assigned to metaphors with values ranging from (1) for weak (w) metaphors, (2) for moderate or normal (n), and (3) for creative, strong (s) metaphors.

While metaphorical creativity may enhance attention (Subramaniam et al., 2013), we propose another perspective on this metric. The reason for this is that determining the level of creativity of a metaphor is problematic, as creativity is a relatively subjective feature of any metaphorical expression and can be highly context-dependent (Kövecses, 2010, 2023). Moreover, a metaphor’s perceived creativity can be influenced by shared cultural knowledge and references (Littlemore et al., 2023). What appears creative for an individual or a group may be conventional for another one. However, the other aspect of MI determined by Landtsheer (2009), namely metaphorical novelty and originality, can be determined on more objective grounds; therefore, we propose metaphor originality (MO) as a variable. In our model, MO measures metaphor originality in language by evaluating a metaphor’s presence in established linguistic resources and assessing how much it deviates from conventional usage (Ahrens, 2010; Sun et al., 2021). It comprises three categories: weak, moderate, and strong originality. The methodology is as follows: if a metaphorical phrase is found in the dictionary, it is classified as weak (score 1); if it is not found in the dictionary but in a language corpus, it is classified as moderate (score 2); and if it is absent from both the dictionary and corpus, it is classified as novel with strong originality (score 3). The rationale behind this categorization, namely giving the highest score to novel metaphors and the weakest score to conventionalized ones, is that new comparisons tend to increase persuasion (Ottati & Renstrom, 2010). Thus, the formula for MO is as follows:

$$MO = \frac{(1w + 2m + 3s)}{\text{Number of metaphors}}$$

For example, if a social media post contains 2 metaphorical expressions categorized as weak (score 1 each) and 1 novel metaphor (score 3), then Metaphor Originality for that post = $(1 + 1 + 3)/3 = 1.67$.

Our second research question (RQ2) investigates whether the originality of metaphors measured for each X post, measured by the MO metric, influences user engagement. This approach is justified by the idea that original metaphors are perceived as more intense and impactful than conventional metaphors (Landtsheer, 1994; 2009). By operationalizing originality, we test whether the use of less conventional metaphorical expressions drives higher engagement.

Among the many possible approaches to studying metaphor, this study concentrated on quantifiable metrics, such as metaphor frequency per word and originality. These measures can help reduce – but not eliminate – reliance on subjective interpretations, and may make the findings more transparent and replicable for other researchers.

To illustrate how we applied our analytical framework, we first outline the MIP(VU) procedure (Pragglejaz Group, 2007), then demonstrate its application to a social media post, and finally show how we calculated the MFW and MO metrics. First, the MIP(VU) involves four core steps:

1. **Read the text for general understanding:** Establish the overall meaning of the passage in context.
2. **Determine the lexical units:** Break down the text into individual words or phrases that carry meaning and can be evaluated for potential metaphorical use.
3. **Establish contextual and basic meanings:**
 - Determine the contextual meaning of each unit as it appears in the specific passage.
 - Identify whether the unit has a more basic, concrete, or historically older meaning in other contexts.
4. **Contrast and comparison:** If the contextual meaning contrasts with the basic meaning but can be understood through comparison with it, mark the unit as metaphorical.

The following example, an X post from President Recep Tayyip Erdoğan, demonstrates how the model was implemented for the purposes of this research.

- 1) Memurlarımız müsterih olsunlar, onların haklarını teslim etmek de bizim **boynumuzun borcudur**.

‘Let our civil servants rest assured; ensuring their rights is **our solemn duty**.’ (Erdoğan, 2023)

In line with the MIP(VU) (Pragglejaz Group, 2007), we applied the core four-step identification procedure to determine whether expressions in the post are metaphorical.

1. **General understanding:** The sentence conveys reassurance to civil servants, emphasizing the speaker’s responsibility to protect their rights.
2. **Lexical unit identification:** The expression ‘*boynumuzun borcudur*’ (literally ‘a debt on our neck’) was identified as the key phrase.
3. **Contextual and basic meanings:** The phrase signifies a moral duty – an ethical responsibility that must be fulfilled. In its basic, more concrete meaning, ‘*boyun borcu*’ refers to a literal debt or burden physically carried on one’s neck (Boyun borcu, n.d.).
4. **Contrast and comparison:** The contextual meaning (moral obligation) clearly contrasts with the basic meaning (physical burden), yet the moral responsibility can be understood through comparison with carrying a physical weight. This contrast confirms the expression is used metaphorically.

Thus, one metaphorical expression can be determined in the sentence; ‘*boynumuzun borcudur*’ (our solemn duty) symbolizes a deep moral or ethical obligation to fulfill a responsibility. Literally translated as ‘a debt on our neck,’ the phrase metaphorically conveys a strong sense of duty or responsibility that one feels honor-bound to fulfill.

For the purposes of this research, we used *Türk Dil Kurumu Sözlüğü* (TDKS, the dictionary of the Turkish Language Association) as a reference dictionary, and TSCorpus V2 and TweetS Corpus (Sezer & Sezer, 2013; Sezer, 2016) as reference corpora for the categorization. To elaborate on these resources, the TDKS is the official and authoritative dictionary published by the Turkish Language Association, the primary regulatory body for the Turkish language, making it the definitive benchmark for what is considered standard, lexicalized language. For contemporary usage, we consult the TSCorpus V2, a large, general-purpose web corpus built from various online sources like newspapers, blogs and other sources. Finally, the TweetS Corpus is a specialized collection of one million tweets designed specifically to capture the unique characteristics of social media discourse, making it a particularly relevant resource for our analysis.

Returning to Example 1, the phrase is conventional in Turkish and is described as a figurative expression in the TDK dictionary as follows: ‘Something that must be done; a duty that is considered an obligation, a necessity, or a moral imperative’ [Author 1’s translation] (Boyun borcu, n.d.). Its presence in the dictionary as a well-defined figurative expression demonstrates its conventional status and its widespread familiarity within the language. This level of institutionalization indicates that it is not a novel or unique metaphor but rather a commonly used and understood idiomatic phrase. As such, it was classified as weak in originality (score 1).

Regarding the scoring, the example sentence was 11 words, while the average post length in the dataset was 56 words. When normalized to the average post length, the metaphor frequency per word was calculated as follows:

$$\frac{\text{Number of metaphor}}{\text{Post length}} \times \frac{\text{Average tweet length}}{1} = \frac{1}{11} * 56 = 5.09 \text{ Metaphor Frequency Per Word}$$

Finally, substituting the values, MO is calculated as follows:

$$\frac{\text{Originality score for the metaphorical expression}}{\text{Number of metaphor}} = \frac{1}{1} = 1 \text{ Metaphor Originality (MO)}$$

To determine social media users’ level of engagement with posts of various metaphorical strengths, we calculated the level of interactions (e.g., retweet, reply) elicited by tweets of various MFW and MO.

4. Corpus and analysis

4.1. Collecting the corpus

This research focuses on X because it has significantly impacted political dialogue and anti-corruption efforts since the Gezi protests (Bulut & Yörük, 2017) and positioned itself as a significant player and hub for interactions and connections among diverse actors in Turkey (Doğu, 2020; Polat & Tokgöz, 2014). Beyond politics, the platform has proven essential for real-time information sharing during crises, such as its critical role in coordinating relief during the 2023 Turkish earthquake (Aldamen & Hacimic, 2023).

Our data collection focused on the core electoral contest, collecting 4,202 X posts via the Apify platform from the official election start on March 18, 2023, to the final run-off on May 28, 2023.² For the presidential race, we focus on the two second-round candidates, Recep Tayyip Erdoğan and Kemal Kılıçdaroğlu, for two main reasons. First, it ensures temporal consistency by analyzing actors who were viable contenders across both voting rounds, thus avoiding the candidates who did not advance to the second round. Second, it provides a comparative framework for a direct, head-to-head analysis of the communication strategies employed by the ultimate rivals who defined the election's outcome. First-round results of the election support this approach: Erdoğan led with 49.52%, Kılıçdaroğlu followed with 44.88%, while the other two candidates, Sinan Oğan and Muharrem İnce received only 5.17% and 0.43%, respectively – İnce having withdrawn on May 11. While Oğan and İnce influenced the election dynamics, their significantly smaller voter bases support our focus on the decisive run-off contenders, though we acknowledge this limits our analysis by omitting their impact on broader electoral discourse.

In our party-level analysis, we selected the five parties that crossed the 7% parliamentary threshold, focusing on official party accounts rather than those of individual leaders. This distinction avoids conflating institutional communication with personal charisma. Those parties that crossed the threshold in 2023 constitute the main political blocs. The incumbent 'People's Alliance' consisted of the Justice and Development Party (AKP), led by President Recep Tayyip Erdoğan, which has governed since 2002 and the Nationalist Movement Party (MHP), a longstanding far-right nationalist party that has played a central role in sustaining the government's parliamentary majority. The opposition was primarily organized under the 'Nation Alliance,' represented by the Republican People's Party (CHP), the main secular center-left party historically associated with the founding of the republic, and the Good Party (İYİ), a center-right nationalist party formed in 2017 as a breakaway from the MHP. In addition, we include the Party of Greens and the Left Future (YSP), aligned with the broader pro-Kurdish and socialist tradition, which sought to articulate alternative visions of representation and rights for historically marginalized populations.

In Turkey's leader-centric politics, party accounts still strongly reflect leadership influence. They serve as strategic tools for amplifying leaders' messages and often mirror the rhetoric and priorities established by party chairs during campaigns (Gümüş, 2023). This makes party accounts reliable proxies for formal campaign strategy while aligning with parliamentary elections' focus on party platforms and collective representation rather than individual leadership.

Once the tweets from candidates and parties were collected, the final step before coding the dataset was data cleaning. This included removing non-Turkish posts, retweets of

third party accounts and posts containing only visual content without accompanying text, as our analysis focuses specifically on textual metaphorical expressions. Although only six posts in our dataset consisted solely of visual content without text, the role of visual elements in political communication is significant. Prior research highlights the persuasive and engaging power of visuals (Powell et al., 2015; 2019), yet systematically coding visual metaphors in terms of presence, domain, and interaction with text is methodologically challenging and difficult to integrate with a corpus-based approach. This does not diminish their importance; rather, it points to the need for novel approaches beyond the scope of this study.

To maintain focus on the actors' direct strategic messaging, we retained original posts and retweets of their own or affiliated party/leader accounts, while excluding all retweets of third-party content. To account for the distinction between original and endorsed content in our statistical models, we incorporated a categorical variable marking whether a post was a retweet. Our final sample consisted of 4,131 entries. Table 1 summarizes the actors, their alliance affiliations, posts, and follower counts.

4.2. Coding the data

After the data cleaning process, the tweets were coded by two native Turkish coders. The first step was metaphor identification using MIP(VU) (Pragglejaz Group, 2007). MIP(VU) involves a core four-stage analysis of lexical units to detect discrepancies between basic and contextual meanings. Once every metaphorical phrase was identified within each post, coders registered the number of metaphorical phrases necessary to calculate the MFW. Upon metaphor identification and counting, the coders registered the originality of metaphorical phrases to account for MO. Calculations of the metrics discussed in Section 3 (MFW and MO) were automatically performed by Author 1 without the involvement of coders.

4.3. Fitting the model

The procedure underwent two intercoder reliability tests (Table 2). A pilot test was conducted on 100 randomly selected posts, followed by a second test on a random sample of 400 posts which covers 10 percent of the dataset (Neuendorf, 2017). The first pilot test

Table 1. Summary of political actors and dataset characteristics.

Actor	Actor (English)	Role / Ideology	Followers ⁴	Number of Posts
Recep Tayyip Erdoğan	-	President / Leader of the AKP	20,100,000	610
Kemal Kılıçdaroğlu	-	Main Opposition Candidate / Leader of the CHP	9,500,000	315
Adalet ve Kalkınma Partisi (AKP)	Justice and Development Party	Center-right, Conservative	3,200,000	1,132
Cumhuriyet Halk Partisi (CHP)	Republican People's Party	Center-left, Social Democratic	2,300,000	581
Milliyetçi Hareket Partisi (MHP)	Nationalist Movement Party	Far-right, Nationalist	2,500,000	589
İyi Parti (İYİ)	Good Party	Center-right, Nationalist	1,000,000	408
Yeşiller ve Sol Gelecek Partisi (YSP)	Party of Greens and the Left Future	Left-wing, Pro-Kurdish	103,000	497

Table 2. Aggregated intercoder reliability test results (Number of Metaphors and Originality).

	Per cent Agreement	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements
Test during the training (n = 100)	82.00	0.71	0.71	164	36
Test 2 (n = 400)	88.65%	0.81	0.81	711	91.00

achieved 82% agreement between coders, with Cohen's Kappa of 0.71 and Krippendorff's Alpha of 0.71, which fall within the substantial agreement range (0.61–0.80) defined by Landis and Koch (1977). The second test achieved 88.65% agreement, with Cohen's Kappa of 0.81 and Krippendorff's Alpha of 0.81, which fall within the near-perfect agreement range (0.81–1.00) defined by Landis and Koch (1977). These reliability scores confirmed consistent application of the metaphor identification procedure and allowed us to code the remaining data.

The distribution of the dependent variables (likes, reposts, and replies) exhibited characteristics typical of social media count data, as they were highly skewed: most posts received low engagement, while a small number received very high engagement. To model this pattern, we used a Generalized Linear Mixed Model (GLMM), which allows us to include both fixed effects (factors influencing all posts, such as the presence of metaphors) and random effects (differences attributable to individual politicians). A negative binomial distribution was selected because it is well suited to count data that vary substantially in this way. In addition, the GLMM accounts for the fact that multiple posts from the same politician are more similar to one another than to posts from different politicians.

To optimize model performance, we applied three adjustments. First, we transformed engagement metrics using a square root function (e.g., converting a count of 100–10), which compresses large values so that viral posts do not dominate the analysis and stabilizes variance. Second, we weighted observations based on temporal proximity to election day (giving greater importance to posts during critical campaign periods). Third, we evaluated model improvement using the Akaike Information Criterion (AIC), a measure that helps researchers compare competing models. AIC balances two objectives: a model should explain the data well (goodness of fit), but it should also remain as simple as possible. Models that overfit the data by including too many parameters receive penalty points. Lower AIC values indicate a better balance between these two goals. The final model achieved an AIC of 2,835 compared to 83,000 for the baseline specification, a reduction of 96.6%.

The metaphor-related independent variables were MFW and MO. We controlled the engagement count for account name, date, post length, number of mentions, number of hashtags, presence of visuals or videos, whether a post was a retweet, and whether a retweeted post was from the party leader.³ Notably, we included the last variable because retweets of content from party leaders tend to disproportionately boost engagement metrics for party accounts due to the added visibility and influence of the leader's personality and public appeal. The analysis was conducted using R version 4.4.1 (R Core Team, 2024). We used various R packages for different aspects of the analysis. For building statistical models, we used *glmmTMB* (Brooks et al., 2017), which handles overdispersed count data, common in social media contexts where most posts receive few

interactions while a small number receive very many. To check whether our models were appropriate for the data, we used DHARMA (Hartig, 2024), which runs simulations to compare what the model predicts against what was observed. A close match between the predictions and observations indicates that the model assumptions are reasonable; systematic deviations, in contrast, indicate inadequate model fit. For calculating predicted values from the models and generating the regression tables, we used effects (Fox & Weisberg, 2019) and sjPlot (Lüdtke, 2024). Data preparation and visualization were performed using ggplot2 (Wickham, 2016) and dplyr (Wickham et al., 2023). These packages are open-source, well-documented, and have become standard tools for quantitative analysis not only in natural sciences but also in the social sciences, including linguistics and communication research (Sonderegger, 2023; Winter, 2019). For instance, Luebke et al. (2025) employed glmmTMB to analyze social media popularity. Similarly, Ahrens et al. (2024) and Yu et al. (2024) utilized sjPlot and glmmTMB for metaphor research, while Sonsaat-Hegelheimer and Levis (2025) used DHARMA for diagnostics. Collectively, these studies demonstrate the suitability of these tools for research like ours.

5. Results and discussion

5.1. Descriptive statistics

First, we present descriptive statistics (Figure 1), followed by MFW during the election timeline (Figure 2). The engagement metrics were highly skewed, with a few posts receiving extremely high interaction while most received modest engagement. To address this, we applied a log₁₀ transformation, a technique that compresses large numbers to reduce the influence of extreme values. For example, it treats the difference between 10 and 100 the same as the difference between 100 and 1,000 – both represent a tenfold increase. This

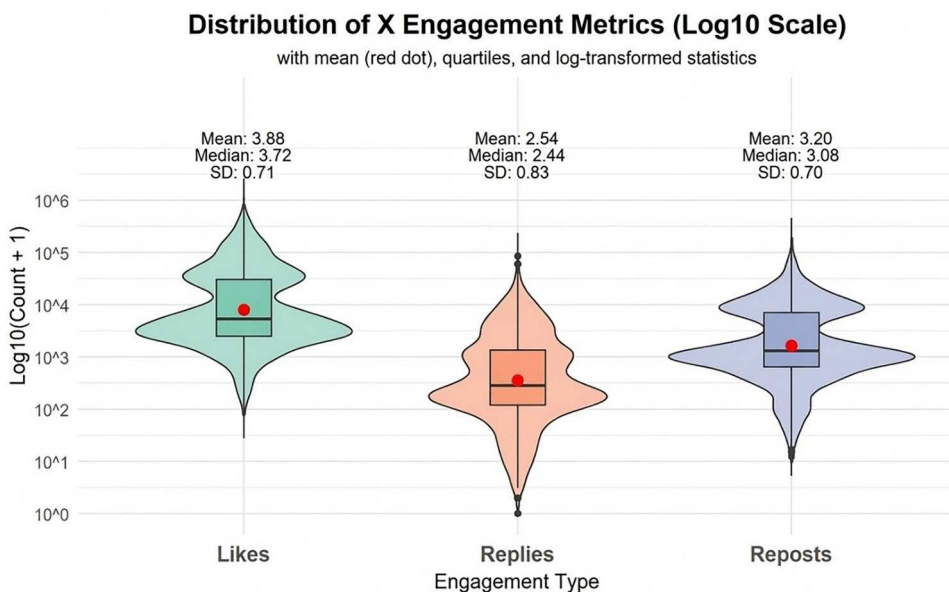


Figure 1. Descriptive statistics of engagement metrics.

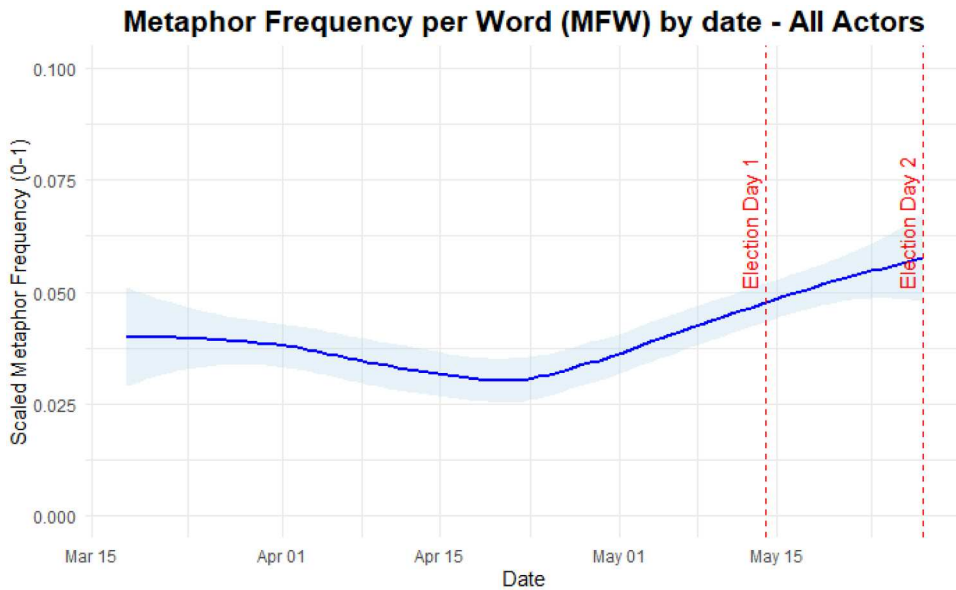


Figure 2. Metaphor frequency per word (MFW), March 18 – May 28, 2023.

transformation normalizes the distributions, mitigates the influence of extreme values, and improves interpretability. In the transformed data, likes exhibited the highest engagement, followed by reposts, and then replies.

Figure 1 shows the distribution of each engagement metric using violin plots. Wider sections indicate higher post density at specific engagement levels. Each violin includes a box for the middle 50% of data, a horizontal line for the median, and a red dot for the mean. The vertical axis uses a log₁₀ scale to effectively display the wide range of interactions, where a value of 10^2 corresponds to 100 interactions, 10^3 to 1,000, and so on. The plot highlights that likes are most common, followed by reposts, with replies being least frequent and skewed toward lower values.

Figure 2 illustrates the trend in MFW use over time, leading to and including the election period. We observed a generally steady level of metaphor usage from mid-March to early April, followed by a slight decrease. As election days approached, there was a notable increase in metaphor usage, peaking closer to the two key election dates of May 14 (Election Day 1) and May 28 (Election Day 2). This trend suggests that political discourse may intensify in metaphorical language as critical voting days draw near, which might indicate heightened efforts to engage or influence the audience. The dashed red lines mark election days, providing clear reference points for these observed changes. This pattern aligns with the findings of Vertessen and Landtsheer (2008), who observed a heightened reliance on metaphors during election campaigns in their study of Belgian politicians. As the authors explain, this heightened metaphor use is likely linked to persuasion efforts, such as those observed during crises.

Figure 3 shows the distribution patterns of metaphor use and differences between the political actors. A notable hierarchy emerges in MFW, with presidential candidate Kemal Kılıçdaroğlu and his party, the CHP, employing metaphors more often than their rivals. This pattern largely extends to MO, where the opposition bloc again demonstrates a

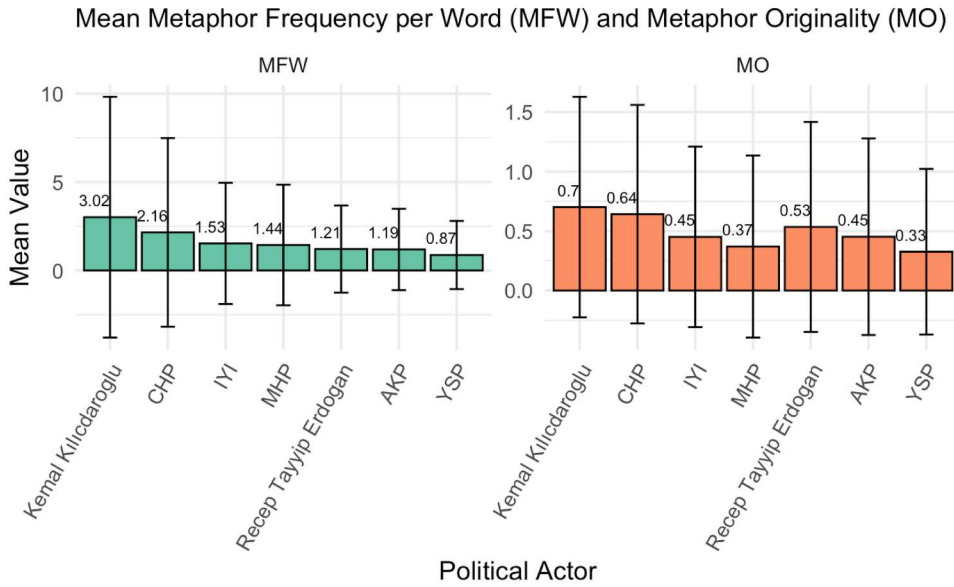


Figure 3. Showing the MFW and MO distributions across political actors.

greater tendency towards using more original expressions. In contrast, President Erdoğan and the ruling AKP adopted slightly more conventional choices, with slightly lower average scores on both frequency and originality. Overall, the difference between the actors in terms MFW is varying but for MO, the distinction is more subtle.

5.2. GLMM results

Table 3 summarizes the core results of our analysis (full methodological details in Section 4.3; complete results in Appendix A). The table reports Incidence Rate Ratios (IRRs), which show how much engagement changes when a predictor increases by one unit. An IRR greater than 1 indicates more engagement, while an IRR less than 1 indicates less engagement. To illustrate the interpretation, we use Reposts as an example.

The intercept shows that a baseline post (zero metaphors; all other predictors at reference values) expects about 55 reposts. The MFW row shows an IRR of 1.02, meaning that increasing metaphor frequency by one-unit increases expected reposts by 2% (from 55 to approximately 56). Similarly, the MO row shows an IRR of 1.07, indicating that using more original metaphors boosts reposts by 7% (from 55 to approximately 59). The same interpretation applies to Likes (baseline: 136) and Replies (baseline: 24).

Table 3. GLMM with negative binomial distribution: metaphor metrics and user engagement.

Predictors		Likes	Replies	Reposts
Intercept	IRR:	136.11	24.49	54.70
	p	<0.001	<0.001	<0.001
MFW	IRR:	1.01	1.02	1.02
	p	<0.001	<0.001	<0.001
MO	IRR:	1.07	1.06	1.07
	p	0.030	0.186	0.031

5.3. Discussion

5.3.1. Metaphor frequency per word and user engagement

Regarding our first research question, the analysis revealed that MFW has a statistically significant but modest positive effect on user engagement metrics across likes, replies and reposts. Specifically, for likes, the IRR of 1.01 indicates that one-unit increase in MFW increases the expected number of likes by 1% (from 136 to 137). For replies, the IRR of 1.02 translates to a 2% increase in expected replies. Similarly, for reposts, the IRR of 1.02 shows a 2% increase in expected reposts. While these effects are statistically significant, their magnitude was relatively small.

The modest positive relationship between MFW and user engagement aligns with the idea that metaphors can enhance messages by making content more relatable and memorable (Sopory & Dillard, 2002). Considering that social media platforms expose users to high volumes of content, marginal increases in engagement metrics are important, especially during election periods. While metaphorical language can enhance post-visibility through concrete imagery and innovative conceptual frameworks, scholars may either overestimate or underestimate its impact. Current metaphor research presents methodological challenges for precisely measuring these effects.

The small effect sizes suggest that merely increasing MFW is insufficient to drive substantial user engagement. This reveals that, although metaphors increase interest, their effect is limited and probably works in tandem with other elements that promote engagement.

The relationship we showed between MFW and user engagement also conceptually aligns with the findings of Sopory and Dillard (2002). Their meta-analysis of 29 studies confirmed that metaphors were more persuasive than literal language under certain conditions, indicating a small but consistent persuasive effect. The effect size increases particularly when a single novel metaphor with a familiar target is introduced early in the message. The authors argued this persuasive power stems from metaphors' ability to help people organize and structure arguments. Despite differences in methods and focus, our study partially supports Sopory and Dillard by indicating metaphors' potential to enhance audience interaction under certain conditions.

5.3.2. Metaphor originality and user engagement

For our second research question, the results show that MO has a statistically significant positive effect on likes and reposts but not on replies. For likes, the IRR of 1.07 shows that each unit increase in metaphor originality increases the expected number of likes by 7% (from 136 to 145). For replies, the IRR of 1.06 was not statistically significant ($p = 0.186$), indicating that metaphor originality does not reliably affect replies. For reposts, the IRR of 1.07 displays a 7% increase in expected reposts (from 54 to 58).

The slightly larger effect size of MO compared with MFW implies that the uniqueness of metaphors plays a more substantial role in enhancing user engagement than the sheer frequency of metaphor use. Original metaphors may capture user interests more effectively by presenting ideas in unexpectedly simple and thought-provoking ways. This novelty can stimulate users to like or share content, as it may positively reflect on them when they endorse a political message.

However, the lack of a significant effect on replies suggests that while original metaphors encourage passive forms of engagement such as likes and reposts, they do not necessarily stimulate active discussions or comments. This can be understood through the framework of the ‘engagement ladder’ in [Figure 4](#), which conceptualizes engagement as requiring progressively greater cognitive effort (Aldous et al., 2019; Noguti, 2016).

As shown in [Figure 4](#), the lowest level of engagement is simply viewing content privately. Next, users may signal basic approval through likes or similar reactions, thus making their preferences visible to others. More engaged users actively share and comment on posts on the same platform, helping to spread the content further.

Because replies represent the highest rung of this ladder, requiring the most cognitive effort and time investment from users, the limited effect of original metaphors on replies may not necessarily indicate their ineffectiveness. Rather, this pattern aligns with the expected diminishing returns as we move up the engagement ladder, where fewer users naturally progress to more demanding forms of interaction regardless of content features. This hierarchical perspective suggests that metaphors’ modest impact on replies may reflect the inherent challenges in stimulating high-investment engagement rather than a limitation of metaphorical language itself. Alternatively, the lack of a significant effect regarding replies could be due to the platform’s communication tendencies, where users may prefer quick interactions to composing replies.

5.3.3. Additional factors

While both MFW and MO have positive but modest effects on user engagement, other variables in the models also shape the broader dynamics. As noted, user account, leader association (when a party retweets its own leader’s content), and distance from election day are the strongest predictors of engagement. Given their fundamental role in political communication and campaign dynamics, the predictive power of these features is intuitive and requires little explanation.

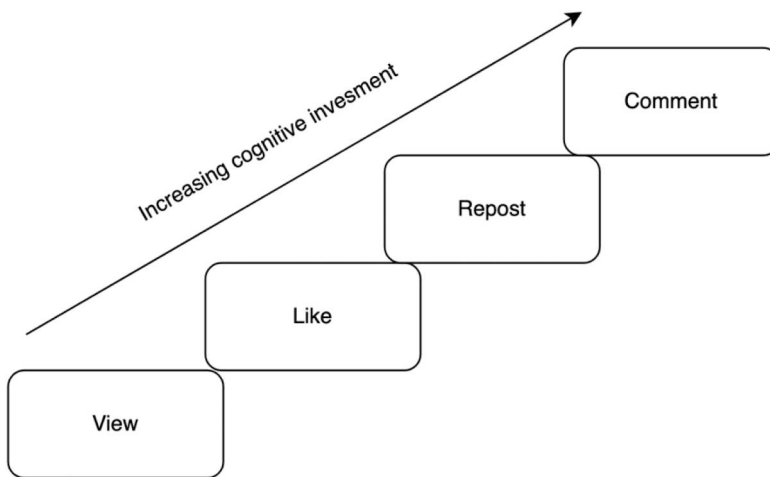


Figure 4. Increasing cognitive investment across engagement types, based on Aldous et al. (2019) and Noguti (2016).

In contrast, our analysis revealed counterintuitive patterns for content-specific features. Each additional hashtag, mention, and multimedia element was associated with decreased engagement, and post length had no impact. This likely reflects that less popular parties, such as the socialist and pro-Kurdish YSP, relied more heavily on these features to boost their engagement. Because these parties had lower baseline engagement, the frequent use of such features became associated with decreased engagement.

6. Conclusions

As of 2024, more than five billion people are using social media worldwide (Number of social media users, 2024), with an average of 143 min spent on various platforms per day (We Are Social et al., 2024), providing a rich breeding ground for political actors to spread their agenda. Yet do people mind the metaphors through which politicians communicate the intricacies of policymaking? While metaphor has been believed to be an effective strategic tool to draw users' attention to political messages and shape public discourse, our results suggest that it enhances user engagement to a limited extent, coupled with other tools of political communication.

To examine the extent to which metaphorical expressions in political discourse on social media reach the public, we proposed a data-driven analytical framework that measures the frequency and originality of linguistic metaphors in social media posts and interprets how metaphors can influence the levels of user engagement in three types of reactions: likes, reposts, and replies.

Our analysis yielded several key findings with implications for both political communication theory and practice. We found that while metaphor frequency has a statistically significant positive effect on engagement, its impact is modest (1–2% increase). The practical implication for campaign strategists is that simply increasing the quantity of figurative language is a low-yield strategy. In contrast, metaphor originality proved to be a more potent driver of engagement, boosting likes and reposts by 6–7%. This suggests that the true value of metaphorical language lies not in its mere presence, but in its creative execution; novel, attention-grabbing metaphors are more effective at generating engagement. Theoretically, our findings also contribute to the 'engagement ladder' concept. The fact that even more original metaphorical expressions failed to significantly increase replies – the most cognitively demanding form of engagement – indicates that while linguistic creativity is important for capturing attention, it may not be sufficient on its own to stimulate deeper, deliberative discourse on social media.

7. Limitations

This study has several limitations. First, our focus on the 2023 Turkish election on a single platform and on a specific set of major political actors limits the generalizability of our results to other political contexts, platforms, or less prominent actors. Our dataset comprises posts in Turkish from official accounts within Turkey, and thus does not capture diaspora communities' political discourse, which may employ different rhetorical strategies. Our dataset excluded lower-polling presidential candidates Oğan and İnce, who together accounted for less than 6% of the first-round vote. While justified by

their small voter bases, Oğan's eventual support for Erdoğan demonstrates that their influence cannot be entirely discounted. Second, at the party level, we focused on official party accounts rather than individual leaders to avoid conflating institutional communication with personal charisma. While this aligns with the parliamentary dimension, it remains a limitation in Turkey's leader-centric political culture, where party communication is deeply shaped by party chairs. This makes party accounts useful proxies for formal campaign strategy, but they may not fully capture the mobilizing effect of individual leaders' personal communication. Third, while we employed the MIP framework for metaphor identification, any coding process, particularly in assessing originality, involves a degree of interpretive subjectivity. Fourth, our textual analysis does not capture the multimodal nature of social media, where metaphors may be conveyed through images and videos. We excluded six posts containing only visual content. Although few, their exclusion constitutes a limitation. Finally, bots operating on X may distort engagement data.

8. Future research

Building on these limitations, several promising directions for future research emerge. First, comparative studies are essential to test our model's validity across different social media platforms, diverse political cultures, and other languages. Second, future work could employ a longitudinal design to track how metaphor strategy evolves over an entire political cycle, not just during the peak election period analyzed here. Third, multimodal analyses are needed to explore how visual elements interact with textual metaphors to amplify or alter their engaging effects. Finally, while our analysis establishes a general link between metaphorical language and engagement, it treats metaphors as a single, monolithic category. A promising avenue for future studies would be to qualitatively code and compare the effects of different conceptual metaphor domains – such as those invoking themes of conflict, national unity, or a journey – to determine if their thematic content moderates their impact on audience interaction.

Notes

1. The 2023 Turkish general election determined both the presidency and the composition of the 600-seat Turkish Parliament. In the presidential race, long-time incumbent Recep Tayyip Erdoğan of the ruling Justice and Development Party (AKP) competed against his main rival, Kemal Kılıçdaroğlu, leader of the opposition Republican People's Party (CHP). The campaign led to a second-round run-off, where Erdoğan ultimately secured another term. The parliamentary election also saw intense competition between the major political coalitions: the ruling People's Alliance, the opposition Nation Alliance and the Labor and Freedom Alliance. In the end, Erdoğan's People's Alliance retained a parliamentary majority (Supreme Election Council of Turkey, [n.d.](#)).
2. Turkey's 2021 alliance law enables smaller parties to pool votes with larger ones to surpass the seven percent threshold. Our study focuses on major political figures, excluding smaller parties and candidates with limited electoral support.
3. The control variables we used while fitting the model were Actor, Date, WordCount, NumberOfMention, NumberOfHashtag, PhotoAndVideo, IsRetweet, LeaderAssociation.
4. Follower numbers were recorded during the election period.

Author contributions

CRedit: **Lilla Petronella Szabó**: Conceptualization, Supervision, Validation, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Data were collected from public X profiles via Apify. Due to X's Terms of Service, raw data cannot be shared, but replication procedures are detailed in Section 4 and analysis code is available on the Open Science Framework.

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