WZB
Berlin Social Science Center

Rebecca Kittel, Bruno Castanho Silva

Keep It Simple, Stupid! The Determinants of Language Complexity in Politicians' Parliamentary and Online Communication

Discussion Paper

ZZ 2026-601

January 2026

Research Area
Dynamics of Political Systems

Research Unit
Center for Civil Society Research

WZB
Berlin Social Science Center

Rebecca Kittel, Bruno Castanho Silva
Keep It Simple, Stupid! The Determinants of Language Complexity in Politicians' Parliamentary and Online Communication
Discussion Paper ZZ 2026-601
Wissenschaftszentrum Berlin für Sozialforschung (2026)

Affiliation of the authors:

Rebecca Kittel
Free University of Berlin & WZB
Bruno Castanho Silva
Free University of Berlin

Keep It Simple, Stupid! The Determinants of Language Complexity in Politicians' Parliamentary and Online Communication

Rebecca Kittel*
Free University of Berlin & WZB

Bruno Castanho Silva
Free University of Berlin

January 2026

Abstract

Politicians can adjust the complexity of their communication to signal different things to different audiences: more complex language can indicate competence, while lower complexity may bring them closer to "common people". These strategic shifts in complexity, however, remain understudied. We ask what individual and contextual factors relate to politicians' use of more or less complex language in their communication, with a dataset matching 116,000 parliamentary speeches from 15 countries with 800,000 contemporaneous Facebook posts from the same MPs between 2018 and 2021, and apply measures of language complexity to each. Results show that women use more complex language in parliament, and that far-right politicians, while similar to others in parliamentary speech, simplify their language the most on social media, and benefit the most from higher engagement with their simpler posts. These results show new dimensions of how politicians strategically adapt their communication styles to the audience.

Keywords: Language Complexity, Strategic Communication, Parliamentary Discourse, Social Media, Political Communication

*Contact author. Email: rebecca.kittel@fu-berlin.de

1 Introduction

Political communication is a multidimensional endeavor where actors use a combination of content, tone, and style, intentionally or not, to express a variety of meanings to their audience (e.g. Laver and Garry, 2000; Rheault and Cochrane, 2020; Crabtree et al., 2019; Dietrich, Hayes and O'brien, 2019; Boussalis et al., 2021; Osnabrügge, Hobolt and Rodon, 2021; Slapin and Proksch, 2008). One of those dimensions is language complexity: studies have shown that more complex language is detrimental for people's understanding of political communication (Bischof and Senninger, 2018; Tolochko, Song and Boomgaarden, 2019), which suggests that political actors should opt for clear communication that allows them to be widely understood. On the other hand, complexity can also cue competence and knowledge: in certain areas, where the topic is naturally complicated, speaking in simple terms may lower the perceived competence and credibility of the speaker or of the entire political debate (e.g. Benoit, Munger and Spirling, 2019*a*; Wyss, Beste and Bächtiger, 2015).

What is missing in studies of complexity and other topics related to political communication, however, is to take into account that political actors adapt their rhetoric to their immediate audience (for an exception see Castanho Silva and Proksch, 2022). Almost all studies that look at political language complexity focus on one type of communication only, be it electoral manifestos (Bischof and Senninger, 2018), speeches (Schoonvelde et al., 2019; Decadri and Boussalis, 2019; Kittel, 2025*b*; Spirling, 2015; Wyss, Beste and Bächtiger, 2015), or press releases (Rauh, 2022). The rise of social media data, however, allows us to look at if and how politicians adapt their communication from one medium to another, in order to better target the respective audience. Therefore, we ask under what conditions do politicians change the complexity in their communication between parliament and social media, and how the complexity they choose for social media affects the engagement their posts receive from users.

This paper argues in an exploratory style that politicians adjust how complex their communication is across different arenas, in order to reach different goals. When addressing their peers in parliament, we may expect politicians to use more com-

plex language in order to be "taken seriously" as experts on a complex matter, or to contribute for the high quality of the debate. This may be particularly important for politicians who feel they have to prove their competence, such as women – due to persistent gendered biases (see e.g. Castanho Silva, Pullan and Wäckerle, 2025), or far-right parties. When addressing the general public directly, however, it is strategic to simplify their language to be accessible to the largest number of potential voters. Not only that, but parties that prize themselves for representing "the common people" against educated elites should be the ones adapting their language the most when addressing their followers rather than peers.

We test our hypotheses with rich textual data from 116,000 parliamentary speeches from 15 European countries between 2018 and 2021, matched to an original dataset containing all the contemporaneous Facebook posts by those MPs, totalling 800,000 posts. We apply "classic" readability scores as the most promising measure of language complexity, given our multi-lingual setup. Afterwards, we use multilevel longitudinal regression models to find the correlates of complexity in each arena and differences between them. For parliaments, we find that women and far-right MPs speak with *higher* complexity. On Facebook, on the other hand, female MPs post with less complex language than men, and radical right parties have substantively and significantly simpler communication than other parties. Results indicate that politicians from these parties clearly adjust their communication the most, being able to speak in fairly complex terms when in parliament but simplifying their messages quite substantively when talking directly to their voters and followers. Finally, when looking at the reactions to Facebook posts, we find that more complex language significantly decreases the number of likes and shares a politician's post receives, in line with prior work showing that simpler language results in better factual understanding among citizens (Bischof and Senninger, 2018; Tolochko, Song and Boomgaarden, 2019). However, we also find that men and radical right actors are the ones who benefit the most from using easier language on social media in comparison to women or other party families.

These findings are relevant on a number of accounts. First, they contribute to the

growing literature on politicians' strategic use of language style when communicating across different arenas. We highlight that language complexity is not a purely natural characteristic of someone's communication, but is adjusted to fit the audience, and that it does pay off. Importantly, we also speak to the literature on far-right parties, which has had mixed findings so far on their communication style: we show they are very strategic on adjusting their style to the audience and, recognizing that their voter-base tends to be lower educated in Europe, simplify their language the most when addressing followers directly. Third, the gender dimension confirms the double-bind for women in politics observed in other areas: on the one hand, there is a pressure to showcase competence, which is more easily doubted from women than from men, resulting in a need for more complex language. On the other, this harms the reach of their message to the public, since easier language travels better. Finally, our results show the risks and limitations that the discipline incurs when studying political communication with a single type of text – e.g. only speeches or manifestos – as political actors are rational and know how to cater to their public.

2 Language Complexity as Strategic Tool for Representation

Representation is the foundation of parliamentary democracies. Members of Parliament (MPs) are elected to represent their constituents and act in their will. Following most rational choice approaches to legislative behaviour, one of MPs' biggest aim is to be re-elected (Cox and McCubbins, 1993; Strøm, 1997). As such, they aim to maximise their votes in the next election, often defined as their utility function. To gain votes, MPs must communicate with their electorate and show them that they represent them in the best possible way. This delegation chain correlates highly with the basic assumptions of the principal-agent theory. In this scenario, the principal (voter) needs the agent (MP or party) to get a task done or, more precisely, policies implemented. However, the principal (voter) has to trust their agent (MP or party) that they act in

their interest (Lupia, 2003; McGraw, Best and Timpone, 1995). Simultaneously, the agent (MP or party) wants to be re-elected for their task, which is only successful if the agent (voter) considers them accountable, trustworthy and/or competent.

To achieve re-election, principals (MPs or parties) have different options to signal to their agents (voters) that they are accountable, trustworthy and/or competent. Often, politicians use communication strategies to signal trustworthiness (Auel and Umit, 2018) as well as competence and ambition (Behrens, Nyhuis and Gschwend, 2023). Parties can signal comprehensibility and relatedness to their electorate through the strategic use of language complexity in their speeches or messages. Language complexity affects how clear a message is formulated and how easily voters can follow up on that message and, ultimately, a certain policy position (Bischof and Senninger, 2018). As such, language complexity can affect how well politicians are perceived or if people agree with them.

In line with this, research shows that language complexity affects the voting behaviour of electorates as well as political elites and is applied as a strategic tool of communication (Bischof and Senninger, 2025; Kittel, 2025*b*; Spirling, 2015; Slapin and Kirkland, 2020). Research suggests that if language gets too complex, most voters will not be able to follow political messages and, therefore, may turn away from politicians and their policies. As such, parties can employ simpler language in parliamentary debates to connect to their constituents (Spirling, 2015). On the other hand, if language is too simple, people may perceive politicians as less competent and trustworthy, and consequently turn away from them too (Bischof and Senninger, 2025; Kittel, 2025*a*). Therefore, politicians are incentivised to consider their means of communication and their audience. As such, we assume that communication style and especially language complexity depend much on the platform of communication and the targeted audience.

As social media can be understood as a direct communication channel between MPs and their electorate, we assume that MPs will strategically employ a simpler and more direct way of talking and messaging. Parliament may also be seen as a platform

to communicate positions and policies to voters (Proksch and Slapin, 2015). However, MPs face higher incentives to display a more competent way of talking in parliament as their debates are more targeted towards elites and are often only perceived by the public through media coverage.[1] We further assume that MPs face a higher need to show competence in parliamentary speeches as they are presented in an official and institutionalised arena with clear rules. On social media MPs face more flexibility in how they can address and present issues. It can also be understood as a more informal platform for communicating with voters. We underline that the platform specificities as well as the audience orientation on these platforms are essential to determine the strategic use of language complexity, which leads to our first hypothesis:

Social-Media-Hypothesis: *MPs use more complex language in parliament than on social media.*

MPs are not solitary actors who can base all their decisions on individual preferences; in most cases, they are rather part of a party. Parties often aim for MPs to behave as a coherent group. This is displayed mostly through positions that should be communicated cohesively among all MPs of a party. But it can also be observed through the language styles of MPs and, more precisely, their tone (Proksch et al., 2019). As such, we assume that language complexity can be primed by party membership.

Parties as well as their MPs aim to maximise their votes. Therefore, they target their electorates in their messages to convince them to be the best possible representatives for their electorate's needs. Often, voters of certain parties display similar characteristics. As such, Arzheimer (2009) and Kriesi et al. (2008) found, for example, that radical right parties often attract voters that are less educated than voters of other party groups. We, thus, assume that radical right party voters prefer simpler language in political messages. Parties and MPs alike are aware of the characteristics of their electorates

[1]We would like to emphasise on this note that this does not mean that Social Media has a bigger outreach to voters than parliamentary speeches. Especially prominent speeches like the Prime Minister's Question in the UK get often directly broadcast on TV and reach a huge audience.

and accordingly adapt their discourse. Taking into account these characteristics and that platforms matter for communication style, we state the following hypothesis:

Radical-Right-Party-Hypothesis: *Radical right parties use more simple language than other parties on social media but not in parliament.*

Not only parties as a whole play an important role for the perception of a party, but also their leaders. Often, party leaders play an important role in how a party is perceived by the public, but also by its voters. Research has shown that party leaders can have an independent effect on electoral results (Aaldering, van der Meer and Van der Brug, 2018; Bittner, 2011). If party leaders are liked, they can reinforce pre-existing party preferences and increase votes for their party. They can also turn voters away if voters do not value the party leader of a given party (Lobo and Curtice, 2014). Party leaders have a special role as they are running for more important offices such as the prime minister or minister in coalition governments. As such, they are often covered more by the media and receive more attention than other MPs of their party. These dynamics can be observed when we look at the coverage of their parliamentary speeches but also their social media outreach.

In general, leaders speak to a broader public when they communicate in parliament as well as on social media as other members of their party. Following the importance of audience orientation as well as platform rules, we assume that party leaders stick more to both as they face more prominence. As such, more professional behaviour is expected. Therefore, we assume that they will speak more simply on social media, as they will reach a broader audience and aim to include more people in their discourse than just their core voters. Additionally, they are following social media guidelines for a direct and simpler communication style more explicitly. In parliament, they aim to represent strength as well as competence and will, therefore, speak more complexly. Even though party leaders will reach more voters through parliamentary speeches too, as their speeches are more often broadcast on TV than the speeches of backbenchers,

we assume that party leaders want to signal that they can perform highly competently in the parliamentary arena. Party leaders want to signal that they comply with the institutionalised parliamentay behaviour and rules very well as this also signals competence. This leads to the following set of hypotheses:

Party-Leader-Hypothesis 1: *Party leaders use simpler language than backbenchers on social media.*
Party-Leader-Hypothesis 2: *Party leaders use more complex language than backbenchers in parliament.*

As speaking habits are also highly related to personal characteristics, we can assume that language complexity also varies depending on MPs' personal characteristics. Often, gender is decisive for language and communication patterns in political discourse (Wäckerle and Castanho Silva, 2023). Research shows that women use more emotional and positive rhetoric in parliament (Boussalis et al., 2021; Childs, 2004; Dietrich, Hayes and O'brien, 2019). These rhetorical elements are also displayed in the use of certain grammatical styles. For example, Pennebaker (2011) show that women use more adverbs and verbs and fewer nouns in their texts or speeches.

Next to communication styles that are different between men and women, women are often confronted with feminine stereotypes that contradict with office-holding roles in politics. These stereotypes present women as more affectionate, helpful and kind and relate to communal roles (Eagly and Karau, 2002). Men, on the other hand, are often defined through agentic roles, which underline their capabilities as leaders or economic providers and include traits of aggressiveness, dominance and competence (Koenig et al., 2011). These perceptions of roles and traits correlate with gender stereotypes and often portray women as unfitting for roles that require agentic traits and office-holding positions in politics (Simon and Hoyt, 2008). Women must, therefore, more often as men present higher levels of competence to reduce underlying stereotypes that portray them as unfitting for parliamentary offices. One strategic communication tool

to signal higher competence levels is using more complex language. Through higher language complexity, women can, for example signal that they are more competent and knowledgeable on a given topic.

In line with this research, Bauer (2015) shows that campaign communication can activate stereotypes of women and, therefore, diminish the support for a female candidate; as such, she points out that "female candidates must be strategic in their campaign messages" (Bauer, 2015, 705). Connecting these findings with the general stereotypes women have to fight and their decisive communication styles, we can assume that women face higher incentives to speak more complexly in parliament as well as on social media to signal higher levels of competence constantly.

Gender-Hypothesis: *Female MPs use more complex language than male MPs in both parliament and social media.*

3 Language Complexity and Performance Feedback

As social media is a communication platform that comes with specific characteristics, we expect that these characteristics will affect politicians' strategic communication and their level of language complexity. One characteristic of social media platforms is their direct link to voters. On the one hand, politicians can communicate directly with interested followers and their potential voter group (Diaz et al., 2016; Spierings and Jacobs, 2014). On the other hand, voters can interact with politicians' messages and show their support by sharing, liking or commenting on these messages (Bode, 2016; Popa et al., 2020). Therefore, politicians can directly monitor how well a message performs, which is not possible for parliamentary debates. Additionally, voters can be the distributors of politicians' messages and share and support politicians by advocating their messages on social media. Thus, politicians face a high incentive to perform well on social media as they opt for a wide distribution of their messages. Language complexity can be

understood as one factor affecting the success of politicians' messages on social media.

As social media platforms often address an audience that has a limited amount of time and therefore likes straightforward as well as clear communication, we assume that politicians will be rewarded for considering these platform characteristics and audience preferences. Therefore, we expect simpler language in social media posts to increase politicians' engagement performance indicators (e.g., getting more likes and shares). We formulate the following hypothesis:

Performance-Hypothesis: *The simpler the language of a social media post, the more user engagement it receives.*

Further, we assume that party affiliation also affects how well simpler messages do on social media. Politicians of radical right parties often use social media platforms more extensively than politicians of other party families. One reason is that radicals blame the mainstream media for ignoring or misrepresenting their views (Ellinas, 2018, 269). Therefore, radical parties, especially the radical right, use social media extensively as a platform to present their messages in an unfiltered way. Radical right voters are aware of these dynamics and also refer to social media platforms more often to inform themselves of their party's positions on social media. As such, we assume that politicians of radical right parties are more familiar with the *informal* rules of social media and how their posts receive more attention; e.g. framing messages in a simpler way.

Additionally, radical right parties are often associated with providing "a simple and attractive alternative to the complexities and contradictions of liberal democracies" (Mudde, 2007, 236). Even though quantitative evaluation of populist right parties discourse is divided on whether these parties actually employ simpler language in their discourse (McDonnell and Ondelli, 2020; Kittel, 2025*b*), we believe that on social media, as a specific communication medium, radical right parties make strategic use of simpler language and are rewarded for that.

This aligns with earlier research showing that only radical right party voters reward simpler language if the message also provides right-wing ideologies, whereas other party voters penalise using too simple language (Kittel, 2025*a*). Therefore, we assume that radical right parties will be rewarded more for the use of simpler language than other party families, leading to the following hypothesis:

Radical-Right-Performance-Hypothesis: *Radical right parties receive higher engagement to simple messages on social media than other party families.*

However, we also assume that how well simple language performs differs across politicians and their personal characteristics. As such, we assume that male and female politicians are rewarded differently for using simple language on social media. Even though female politicians face the same incentives as male politicians to frame messages on social media more simply to attract more voters and higher social media performance rates, they also face the disadvantage of being perceived as less competent when employing simpler language in their social media messages. Women find themselves, therefore, often in a double bind.

As such, research has shown that even when women aim to fit into political life by adopting masculine styles often related to the *expected* behaviour, they are not rewarded in the same way as men. Castanho Silva, Pullan and Wäckerle (2025) show that not necessarily women with a more masculine language style will be selected into parliament and succeed. They rather show that women are socialized to speak more masculine and adopt the masculine language style over time. Focusing on emotions, Renner and Masch (2019) shows similar mechanisms between male and female politicians. They argue that women show, in general, more emotions on TV but are rewarded differently for that. This is in line with (Brescoll and Uhlmann, 2008), who find that showing anger shown by male and female politicians often creates negative responses towards female politicians and positive responses towards male politicians.

These results indicate that just adapting a more masculine or *expected* behaviour

given specific environments does not necessarily play out positively for women. Thus, we argue that even if social media is a platform that benefits simpler language, female politicians may not be rewarded like their male counterparts for following these expectations. We, therefore, assume that men will be rewarded more for simpler language than women, which leads to the following hypothesis:

Double-Bind-Effect-Hypothesis: *Female politicians receive less engagement when using simpler language on social media than male politicians.*

4 Data and Measures

To study how politicians adapt their language complexity across different platforms, we collected data from 15 European countries, which provides us with a vast geographical diversity across Europe as well as various political systems and communication arenas. For the analysis, we have two main branches of data. First are parliamentary speeches, collected from the following sources: Austria, Denmark, Germany, Netherlands, Spain, Sweden, and the UK from the Parlspeech v2 dataset (Rauh and Schwalbach, 2020), Portugal and Belgium from the MAPLE dataset (Kartalis and Lobo, 2020), Italy, Ireland, and Romania from Castanho Silva, Pullan and Wäckerle (2025), France from Castanho Silva and Proksch (2022), Estonia from Lupacheva and Mölder (2024), and Poland from Ogrodniczuk and Nitoń (2020). These contain the full transcript of all plenary speeches given in those parliaments, and we use all speeches available from January 2018 onwards. The reason for this date is to match the Facebook data that is available. Facebook data for this paper was collected through *Crowdtangle*, a platform previously owned by Meta itself. Up to being shut down in August 2024, it gave access to public Facebook data via its API to researchers, upon application with a research project. We first compiled the list of official pages of all national members of parliament in all EU countries in 2018, and used the Crowdtangle API to download all their public

available posts in August 2020 and again in June 2022. The data includes the full text of posts, along with metadata (i.e., time of posting, etc), and information about the posts' performance, in terms of number of likes/reactions, number of comments, and so on. Table 1 presents some description of the data available by country. Start dates and end dates are those for which we can match exactly the timing between availability of both speeches and posts.

Table 1: Description of matched Facebook and parliamentary speech data

Country	Start date	End date	MPs	Facebook posts	Speeches
Austria	2018-01	2018-12	90	10371	1589
Belgium	2018-01	2019-04	54	5823	1719
Denmark	2018-01	2018-12	139	12522	13552
Estonia	2018-01	2022-01	52	11232	14933
France	2018-01	2018-10	309	18556	6106
Germany	2018-01	2021-09	431	162830	17657
Ireland	2018-01	2019-12	101	18508	1865
Italy	2019-07	2021-01	428	137124	8530
Netherlands	2018-01	2019-07	59	6143	16656
Poland	2019-04	2019-10	284	47629	6436
Portugal	2018-01	2019-09	58	10085	3459
Romania	2018-01	2020-06	112	25359	4019
Spain	2018-01	2018-12	52	5707	911
Sweden	2018-01	2018-12	121	5975	3311
UK	2018-11	2019-12	442	73262	45754

While most studies of political communication in social media focus on Twitter (now X), Facebook was and still is the most used social media platform, both in general and for news consumption. According to the 2019 Reuters Institute Digital News report (Newman et al., 2019), which fielded surveys with representative samples from multiple countries to investigate news consumption habits, Facebook was the most used social media platform for news in every single country in our sample. The lowest share was in Germany: 22% for news, but 50% of respondents used in general, compared to 5% of Germans using Twitter for news. The highest was in Romania, where 68% of news consumption through social media was on Facebook. This is the platform, therefore, where politicians can most readily reach their audience without going through intermediaries such as journalists. We also report the distribution of

MPs on Facebook across parties per country in Appendix B.

Language Complexity Scores

Even though scholars are currently developing various versions of readability formulas or even machine learning models (Benoit, Munger and Spirling, 2019*b*), "classic" readability scores are still among the widely used and sufficiently accurate measures when it comes to assessing language complexity (Bizzoni et al., 2023; DuBay, 2004). Especially for our analysis, readability scores are more promising than current machine learning approaches for two main reasons. First, we need a measure that can be applied to 13 different languages across 15 countries. Machine learning approaches for detecting language complexity are often trained in a single language, typically English, and validating their adaptation to languages from Romanian to Estonian is beyond the scope of this paper. Furthermore, it has been shown that most machine learning approaches correlate highly with readability scores (see e.g. Benoit, Munger and Spirling (2019*b*) or (Kittel, 2025*b*)), while being much more computationally demanding. As such, we decided to rely on "classic" readability scores instead of other approaches, as they scale better for our large corpus, and are expected to give scores that correlate highly with other contemporary approaches.

Among the most common readability scores are the Flesch Reading Ease Score (Flesch, 1948), Gunning Fog Index (Gunning, 1952, 1969), Björnsson's (1968) Läsbarhetsindex (Björnsson, 1968) and Simple Measure of Gobbledygook – SMOG score –(McLaughlin, 1969). Most readability scores have been developed for English and follow a similar idea. They often count words, syllables, and sentence lengths and calculate formulas based on these counting measures. We use the SMOG formula for our analysis for three reasons. First, the SMOG formula is used heavily for writing health policy documents to ensure that patients can follow up medication descriptions or other important instructions (DuBay, 2004). As such, we believe this is a strong indicator of how well messages are understood, which is very important for analysis. Second, the SMOG score is one of the few scores that was adapted and transformed

into other languages. As such, it provides us with an additional robust measure that is not available for the other scores (see Appendix A). Third, it has been shown that there is a high correlation between the three scores when analyzing parliamentary speech data (see Kittel (2025*b*)).[2] Below, we list the original SMOG formula developed by McLaughlin (1969).

English Formula:

$$\textbf{SMOG} = 1.043 * \sqrt{number\ of\ words\ with\ 3\ syllables\ or\ more} * \frac{30}{number\ of\ sentences} + 3.2191$$

As the SMOG formula was originally developed for English, we follow two approaches to account for variation in complexity across languages. First, we calculate the original SMOG score for all parliamentary speeches and Facebook posts and then centre these scores for each country. This enables us to calculate language complexity within countries and compare actors' language complexity within a country. It is important to note that we do not compare non-transformed scores across countries or rank languages on their complexity based on these scores. Second, we calculate a robustness measures and group the various languages into their language families of origin. We calculate transformed scores for each language family. SMOG scores have been transformed to German, French and Spanish. We use language families to calculate adapted scores for each language, e.g. we use the German formula for Dutch and Danish (see Appendix A). We use these measures as an additional robustness check to test the validity of our results.

Table 2 presents two Facebook posts of varying language complexity based on the SMOG measure. The two Facebook posts on social security policies were posted by two British MPs of the House of Commons in the summer of 2020. They show that language complexity increases with longer sentences and longer/more complex words. Further, they show that simpler language is often connected to a straightforward tone and direct messages.

[2]Indeed, in the Online Appendix F we present results of all our analyses using the Flesch Score, and they remain the same.

Table 2: Example of Facebook Posts by UK MPs in the House of Commons with high and low language complexity on social security policies.

Member of Parliament on Facebook	**Facebook Post**	**SMOG**	**Word Count**	**Sentence Count**
Angela Rayner, Labour, 16.06.202	The Government Minister responsible for social security confirms that the PM will whip his MPs today to vote against Free School Meals for 1.3 million school children this summer holiday. I ask all MPs to vote for feeding our future generation in these unprecedented times today. #maketheUturn #HolidaysWithoutHunger We are in unprecedented times because of the devastation caused by coronavirus yet many are calling for a new £100 million quid yacht to "Boost morale" but we simply cannot afford to feed hungry children through summer, our future generation #maketheUturn #HolidaysWithoutHunger	18.2	91	2
Joanna Cherry, Scottish National Party, 17.08.2020	Social Security Scotland have launched the Job Start Payment - a new benefit to help young people aged 16-24 with the costs of starting a new job. *emoji* New work clothes, travel costs or childcare often have to be met before people get paid - this helps young people cover those costs. Find out more here: /job-start-payment/	7.8	55	3

Even though SMOG scores provide a quantitative measure of language complexity, we are aware that readability formulas do not consider proper grammar or the meaning of content (Contreras et al., 1999; Taylor, 1953), nor do they account for the use of technical terms. As such, readability scores should still be treated with caution. As Contreras et al. (1999) point out "they were never proposed to be used as the sole medium to assess reading difficulty" (Contreras et al., 1999, 26). Nevertheless, they provide an objective and standardised assessment of language complexity that pro-

vides us with an estimate of how difficult or easy a text or speech is. Especially in a multi-lingual setup, they seem to be the most promising and precise measure currently available. Further, readability scores often correlate highly with other measures or understandings of language complexity. We, therefore, consider readability scores and, in particular, the SMOG score and its adaptations as a valid measure to assess language complexity among MPs on Social Media as well as in parliament.

5 Analysis and Results

To test the first set of hypotheses, comparing parliament and social media complexity, our dependent variable is the readability of MPs' communication within each medium (Facebook or parliament) averaged for the course of each month. While complexity can be calculated at the individual speech/post level, we aggregate for each MP the average readability of their communication in each medium each month. The reason is that not every MP posts or speaks that frequently, so the level of aggregation has to be higher than daily or even weekly, not to lose too many observations. This allows us to temporally match the complexity displayed on parliament at a given time to that used on Facebook. The data is in long format, so that each MP-period has two observations: one for Facebook, one for parliament. Higher SMOG values denote complexity, i.e. it is harder to read and understand that text. Lower values indicate a more readable, or simpler, easier, text. The complexity score is then centered at the country-language level[3] – meaning, the average complexity of communication within each country/language is zero.

[3]We refer to "country-language" due to MPs in Belgium communicating both in Dutch and French, and in Ireland in both English and Irish. Given that different languages naturally have different structures, the centering occurs within each language for these two countries. For the others, it is centered by country – so, German MPs' communication is centered only among German MPs, and Austrians' among Austrians, ignoring the language in such cases.

Table 3: Predictors of complexity in parliament and on Facebook

	Model 1	Model 2	Model 3	Model 4	Model 5
Time	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***
FB posts word count (log)	0.010 (0.024)	0.010 (0.024)	0.017 (0.024)	0.010 (0.024)	0.017 (0.024)
Speeches word count (log)	0.088 (0.020)***	0.087 (0.020)***	0.095 (0.020)***	0.087 (0.020)***	0.094 (0.020)***
Male	−0.001 (0.050)	−0.104 (0.069)	−0.001 (0.050)	−0.001 (0.050)	−0.134 (0.069)
Party leader	−0.446 (0.101)***	−0.446 (0.101)***	−0.445 (0.101)***	−0.298 (0.140)*	−0.295 (0.140)*
Opposition	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***
Facebook	−6.603 (0.213)***	−6.742 (0.222)***	−6.336 (0.216)***	−6.594 (0.213)***	−6.489 (0.224)***
Far right	−0.032 (0.177)	−0.032 (0.177)	0.487 (0.191)*	−0.032 (0.177)	0.516 (0.191)**
Far Left	−0.286 (0.185)	−0.286 (0.185)	−0.287 (0.185)	−0.286 (0.185)	−0.121 (0.209)
Speeches word count * Facebook	−0.003 (0.028)	−0.003 (0.028)	−0.018 (0.028)	−0.003 (0.028)	−0.016 (0.028)
FB posts word count * Facebook	1.201 (0.035)***	1.201 (0.035)***	1.184 (0.035)***	1.200 (0.035)***	1.185 (0.035)***
Male * Facebook		0.206 (0.096)*			0.266 (0.096)**
Far right * Facebook			−1.041 (0.141)***		−1.098 (0.142)***
Party leader * Facebook				−0.294 (0.195)	−0.301 (0.194)
Far left * Facebook					−0.333 (0.192)
AIC	172894.181	172894.436	172845.138	172895.338	172843.405
BIC	173233.393	173242.345	173193.047	173243.247	173217.404
Num. obs.	44284	44284	44284	44284	44284
N. Speakers	2587	2587	2587	2587	2587
N.parties	125	125	125	125	125

Country-language fixed-effects included in the models but not reported here.

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

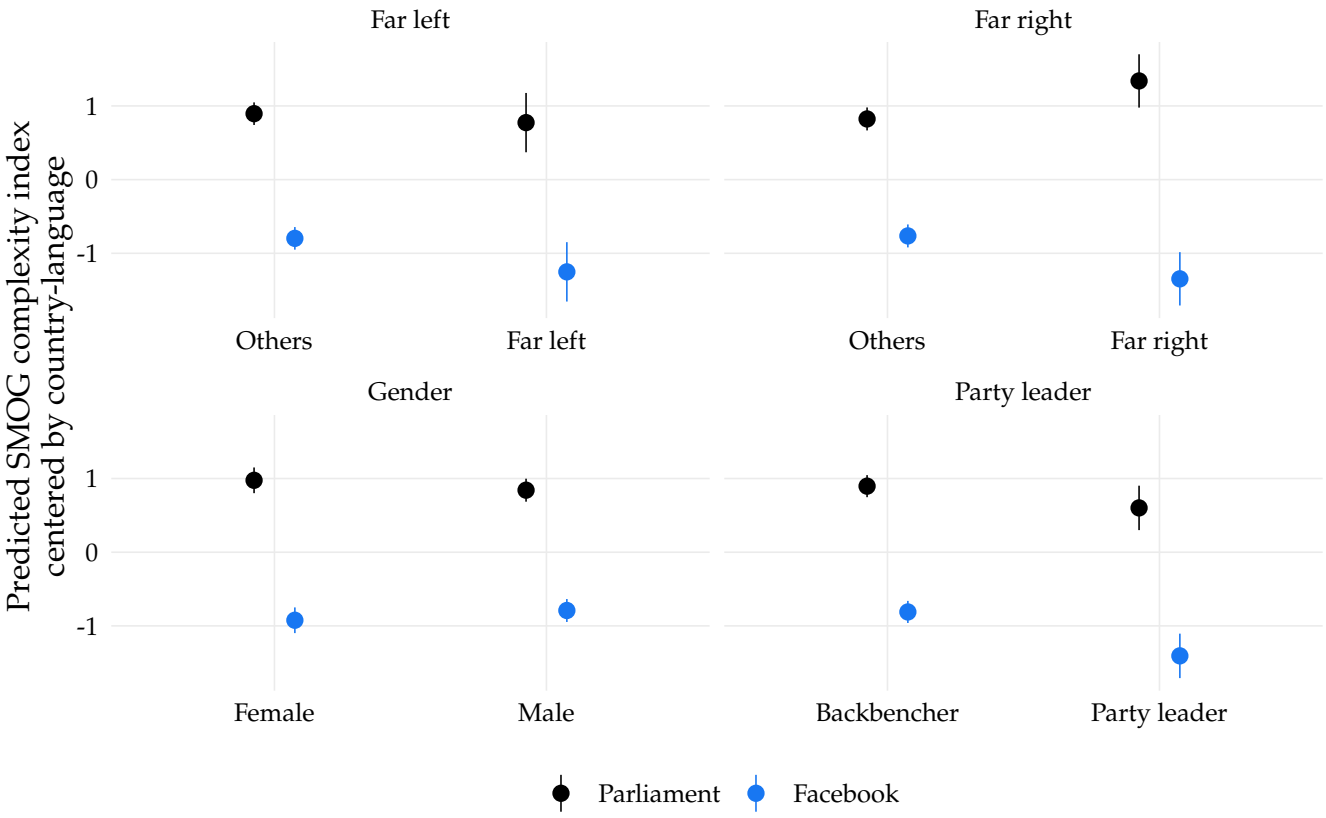
To explain this outcome, we use longitudinal multilevel models where communication complexity is nested in speakers and parties, with country fixed effects. To account for temporal autocorrelation, we add random effects for time which vary by MP and party, with an AR1 error-correction matrix (Pinheiro and Bates, 2000). We add dummies for whether the MP held a position of leadership within the party at the time of posting,[4], and if they belonged to a party in government or opposition (from the ParlGov dataset by Döring and Manow, 2019). We identify far right and far-left parties using the PopuList (Rooduijn et al., 2019). We also control for the average length of MPs' posts and speeches in that month, and have a dummy for whether that complexity value is from Facebook or parliament: this is what allows us to test whether one they use more complex language in one medium or the other.

Results in Table 3 show support for our baseline hypothesis, H1: posts on Facebook are indeed significantly less complex than speeches. The results also indicate that, by and large, the far right is not much different from other parties in parliament: the main coefficient for that dummy is either non-significant or positive and significant depending on the model. However, its interaction with the Facebook dummy indicates a significant shift in the platform. This is visualized in the top-right panel of Figure 1: based on Model 5, far right parties have even more complex language than other parties in parliament, but the absolute opposite is true for Facebook: there, their MPs post in a way significantly more readable than MPs from other parties. It is important to notice that this is not an effect of extremism: while far-left parties are a bit less complex on Facebook than mainstream parties, the gap across media is nowhere near as large as that of the far right.

Moving on to our gender hypothesis, we observe a similar effect albeit smaller: female MPs are more complex in their parliamentary speech than men, but change the most when switching to Facebook, where they are rather less complex, with a significant interaction term as well – as visualized in the bottom-left panel of Figure 1. This result suggests that women see an incentive to use more complex language in

[4]Party leader and deputy, parliamentary fraction/group leader and deputy, and party whip. Information collected by the authors

Figure 1: Predicted complexity for different factors from Model 5 in Table 3



parliament to convey competence, while trying to be more accessible on Facebook when addressing the public – partially against our third hypothesis. Finally, we also see that party leaders have significantly less complex language than the rank and file regardless of the platform they are using while the opposition, unencumbered by having to explain policy details, also speaks in significantly less complex terms. Regarding party leaders, this is in line with the party leader hypothesis 1, but against hypothesis 2, which expected them to speak in more complex language in parliament.

Additionally, we find evidence that MPs from the opposition speak more simply than their governmental counterparts. These results are in line with research from Hjorth (2025) on Danish MPs once they enter government. We also find that political discourse got simpler over time, even for our short period of three years. These findings also correspond to earlier research on parliamentary speeches (Kittel, 2025*b*; Lim, 2012; Sigelman, 1996).

Table 4: Formulas to calculate engagement metrics on Facebook

Metric	**Formula**
Popularity	log((Nr. of post Likes / Page likes)∗ 1,000)
Virality	log((Nr. of post shares / Page likes)∗ 1,000)
Commitment	log((Nr. of pos comments / Page likes)∗ 1,000)
Engagement	$Popularity + Virality + Commitment$

Audience perception

The question then turns to whether being more simple on Facebook pays off. For the next set of analyses we run models at the level of individual Facebook posts, to identify how their complexity affects reception in terms of likes, shares, and comments. Here we make use of the full dataset of 800,000 MPs' Facebook posts from January 2018 until January 2021 for all countries, not only the dates that match the shorter availability of speeches. The metrics we use follow Bonsón and Ratkai (2013) and are described in Table 4. For each of the three main indicators (likes, shares, comments) we take the value a post received and divide it by the number of people who had liked that politician's page at the time of posting. From this ratio (multiplied by 1,000 to ease calculations) we take the log, so that the variable is more normally distributed – since a majority of posts receives few reactions while a small number can get millions of interactions. The main dependent variable then created is the *Engagement* index, summing up all three.[5]

Each metric can indicate a different element: Likes are an indicator of popularity, or how much a post received generally (mild) positive reactions. It is the lowest cost of all reactions from users' perspective, but also generates the least benefit for the poster, as it does not help much with spreading the message. Shares are more valuable, as they happen when someone passes the post forward to their own followers, who might not follow the politician. This is a main venue to get incidental exposure, and help politicians spread their message beyond people who already follow them (Popa et al., 2020). Third, comments are the highest-cost action, as they take more time and effort from users – reason why it is termed *commitment*. They may be positive or negative,

[5]This approach has also been used in e.g. Serra-Silva, Dias Carvalho and Fazendeiro (2018).

Table 5: Predictors of engagement on MPs' Facebook Posts

	Engagement	Popularity	Virality	Commitment
Time	0.005 (0.000)***	0.001 (0.000)***	−0.002 (0.000)***	0.006 (0.000)***
Word count (log)	0.641 (0.005)***	0.109 (0.001)***	0.293 (0.002)***	0.240 (0.002)***
SMOG (scaled)	−0.258 (0.006)***	−0.071 (0.002)***	−0.056 (0.003)***	−0.131 (0.003)***
Male	0.218 (0.094)*	0.023 (0.036)	0.133 (0.036)***	0.060 (0.035)
Far right	1.102 (0.346)**	0.051 (0.137)	0.618 (0.157)***	0.405 (0.120)***
Far Left	0.459 (0.343)	−0.066 (0.136)	0.513 (0.154)***	0.018 (0.120)
Party leader	0.543 (0.061)***	0.152 (0.019)***	0.116 (0.026)***	0.283 (0.028)***
Opposition	0.256 (0.027)***	0.034 (0.009)***	0.115 (0.012)***	0.107 (0.013)***
Male * SMOG	−0.004 (0.007)	−0.007 (0.002)**	−0.004 (0.003)	0.006 (0.003)
Radical right * SMOG	−0.043 (0.009)***	0.002 (0.003)	−0.017 (0.004)***	−0.028 (0.004)***
AIC	4342220.145	2318807.582	2919698.460	3013733.911
BIC	4342558.631	2319146.068	2920036.946	3014072.397
Num. obs.	866252	866252	866252	866252
N. Speakers	2519	2519	2519	2519
N. Parties	127	127	127	127

Country-language fixed-effects included in the models but not reported here.

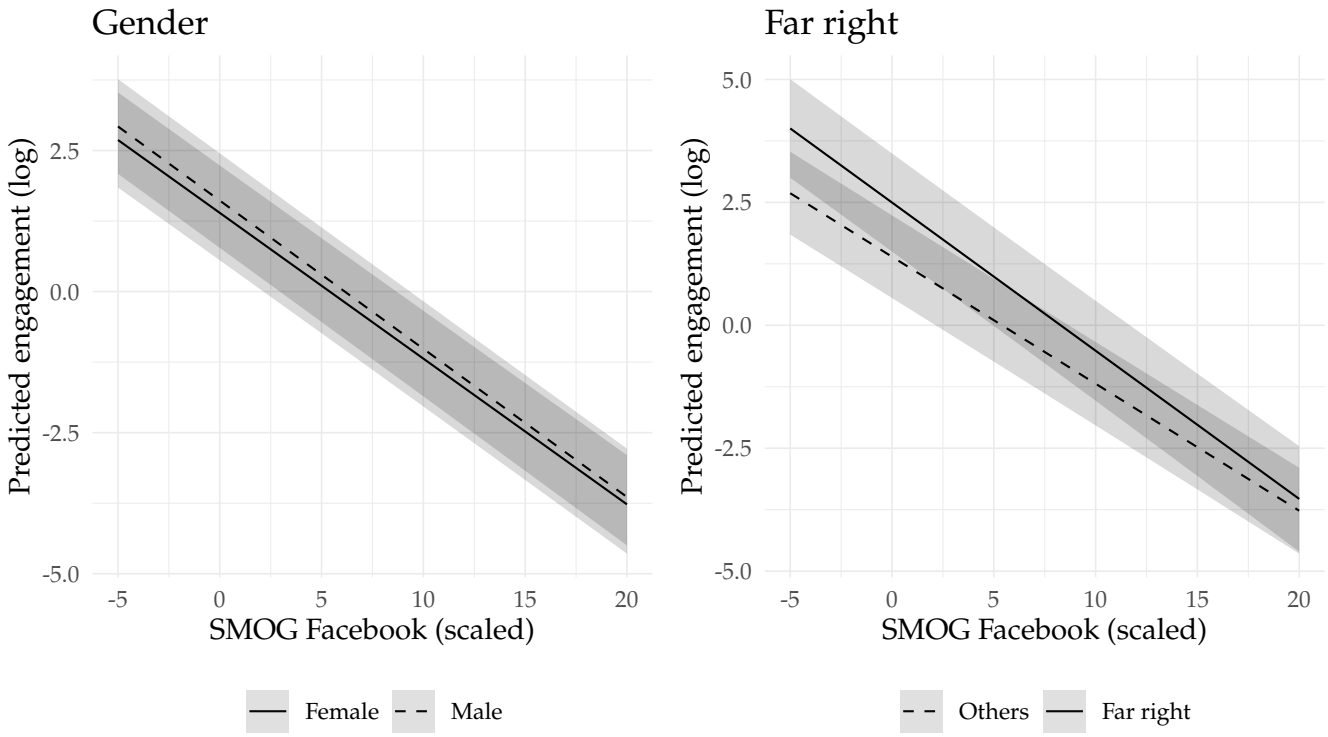
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

meaning a higher number is not always a sign of positive reception. But a high number of interactions in comments certainly helps spread a politician's message (as in the old adage "there's no such thing as bad publicity") and Facebook's algorithm might be more likely to promote posts with a large numbers of comments.

For these models, the SMOG complexity measure is centered and scaled at the country and language level. It means that the country average level of complexity on Facebook is set to 0, and thus the value for each MP is by how many standard deviations their posts are more/less complex than those of their peers. The reason to center by country/language here is that the SMOG measures are not directly comparable across languages, and we are not interested in average country differences – i.e., whether Austrian MPs use more complex language than Swedes – but only on how MPs within one country compare to one another.

Table 5 shows the results of multilevel models predicting engagement, and each of its components. The individual observations are posts, with random intercepts for MPs and parties, and fixed-effects for country-languages. The first thing to notice is

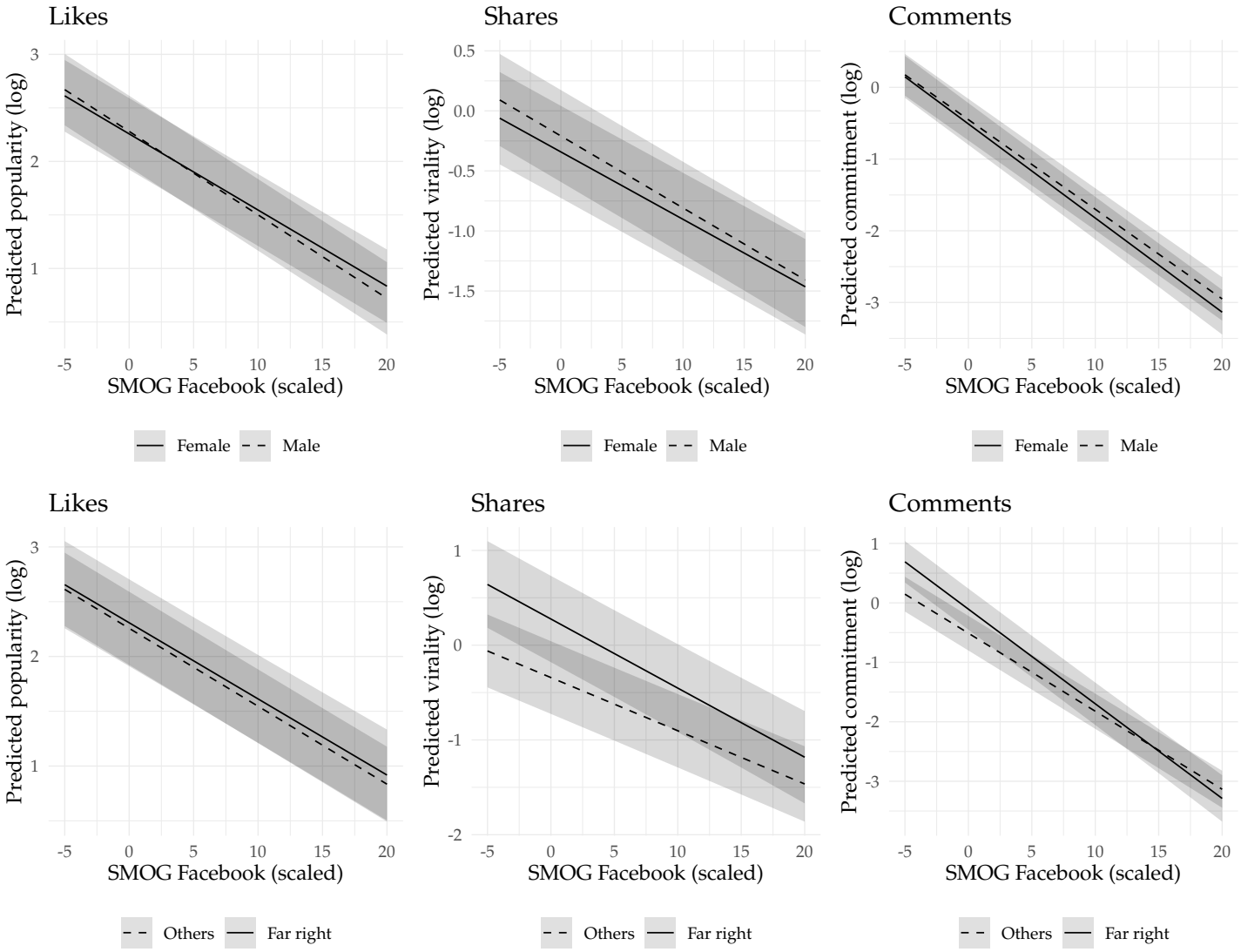
Figure 2: Predicted engagement by gender and party family, from Model 1 in Table 5



that higher complexity is strongly associated with lower engagement across all metrics. In other words, the more simple the language in a post, the more likes, shares, and comments it gets from the politician's followers. Next, we see that male MPs, and far-right ones, also get significantly more engagement than their counterparts, and that is driven primarily by virality and commitment – the two most potentially rewarding actions, since comments and shares are the most likely to generate incidental exposure. Since the measures are normalized by the number of likes the MP's page has, these results indicate that followers of far-right politicians are generally more engaged in spreading their message on social media than followers of politicians from other party families.

Our main hypotheses, however, are on the interaction between party family and gender, on one hand, and language complexity. These show that far right MPs have higher engagement particularly when posting with more simple language, as seen in Figure 2. The boost given by having a lower SMOG score is larger for MPs from far-right parties than for those from other party families. At the upper end of the complexity

Figure 3: Predicted logged number of likes, shares, and comments by gender and party family, from Models 2-4 in Table 5



scale, there is barely any difference in engagement between them and members of other parties. The picture is different however for gender: neither women nor men benefit from more simple language driving higher engagement: men have higher rates regardless of how complex their posts are. Figure 3 shows these patterns split by each metric of engagement. It shows that the effects for the far-right are indeed driven mostly by comments and shares, which are significantly higher when their posts have less complex language (bottom row). We also see once again small differences between posts by male and female MPs: neither seems to benefit too much by using more simple or more complex language on Facebook.

Robustness tests

In the Online Appendix we present several robustness tests and alternative specifications. First, we run the models using language-adjusted SMOG scores. Researchers have produced adjusted formulas to calculate SMOG scores in certain languages that better match linguistic features of those languages, such as Spanish, German, or French. Due to these adjustments not being available for all our languages of interest, in the main analyses we used the original SMOG formula for all. In the appendix we report results using the adjusted formulas for those languages in which they exist. Findings remain the same. Second, we run all tests separately by country, to show that results are not driven by a single outlier. While sample sizes within individual countries are smaller and thus models are underpowered, we still find a significant negative interaction between far right and Facebook (from Table 3) in three of nine countries that have a far right party, and the significant positive interaction with gender in four. Third, we use raw scores of likes, shares, and comments, rather than normalizing them by the number of likes a page received. Results remain substantively the same. We also present results from Table 3 without centering, and they are very similar to those in the main manuscript. Finally, we also run the models using two commonly used alternative measures of text complexity: the Flesch Reading Ease index (Flesch, 1948) and the Flesch-Kincaid grade level (Kincaid et al., 1975). They correlate highly with our SMOG scores ($r = -.841$ and $r = .964$ respectively), and the results hold with both measures.

6 Conclusion

The complexity of politicians' communication can have an impact on how they are perceived, and what kind of information people retain from them. Much like other aspects of their communication, such as tone or even position, we propose that politicians will also adjust their levels of complexity to attend to different goals. This paper tested this with matching data from social media and parliamentary speeches for national

members of parliament from 15 countries, between 2018 and 2021. Our results confirm the strategic use of complexity, which varies across medium and also due to politicians' and their parties' characteristics. Our analysis showed four main results.

First, we show that political actors are generally aware of their communication arena and audience and adapt their messages accordingly. As such, they talk more simply on social media than in parliament, given the different characteristics from each format. This highlights the importance of comparing diverse sources when studying politicians communication, as they clearly target the message to the listener – as previously seen by Castanho Silva and Proksch (2022), who showed that several MPs in seven European changed their professed EU positions between parliament and Twitter. Studying political communication within a single media, as still done by the majority of research in these areas, clearly leaves large gaps in our understanding.

We further show that simpler messages perform better on Facebook, receiving more likes, shares, and comments. This provides evidence that language complexity is a relevant element of political discourse that can effect how well political messages perform (Bischof and Senninger, 2018, 2025). It also confirms that language complexity is used as a strategic communication tool and is not simply a naturally occurring characteristic of a politicians' communication. It indicates that even politicians who might seem more "genuine" in their simple, common-folk communication, may be expertly tailoring their language to the audience.

In this line, our findings also indicate that radical right actors are the most apt at adapting their language complexity. In parliament, their language is among the most complex (as seen already in Kittel, 2025*b*), whereas on Facebook they become the simplest communicators. These strategic adaptations of language complexity show that radical right actors try to create an image of professionalisation and competence in parliament, whereas they aim for closeness and relatedness on social media. When looking at engagement metrics, we find that it works: they benefit the most from using simpler language in social media, getting more shares and comments to their simpler messages than politicians from other parties do. More broadly, our research contributes

to the idea that radical right parties do benefit more from the direct communication opportunities offered by social media.

Fourth, we show that women are faced with a double-bind effect when communicating on different platforms. In parliament they try to be more complex than their male counterparts to signal competence. On Facebook, women are less complex than men following the "informal" rules of the platform, trying to be more relatable. However, they still get significantly less engagement than male MPs who have comparable numbers of followers to their pages. The contradicting incentives for women, of signaling relatedness and competence at the same time, clearly still constitute a barrier to women's success in politics.

This paper provides the first evidence on how language complexity is adapted strategically by actors communicating across different arenas. It shows that depending on personal and ideological characteristics actors are benefiting differently from using simpler language, even though an easier and more straightforward discourse is on average evaluated more positively. This is in line with earlier research showing that easier language helps people to understand political messages (Bischof and Senninger, 2025).

Even though our results show how language complexity is adapted strategically by various actors, it is important to notice that we only measure grammatical language complexity. We cannot account for concept or policy complexity. As such, future research should focus on how concepts or policies are simplified by using simpler language or to what extent more complex language is used to whitewash easy policy proposals. It would also be interesting to look at longer time periods, and see how individual politicians may adapt their language in one way or another throughout different points of their careers. In summary, this paper shows that language complexity is an important element in political communication that determines who can participate in a political discourse.

References

Aaldering, Loes, Tom van der Meer and Wouter Van der Brug. 2018. "Mediated Leader Effects: The Impact of Newspapers' Portrayal of Party Leadership on Electoral Support." *The International Journal of Press/Politics* 23(1):70–94.

Arzheimer, Kai. 2009. "Contextual Factors and the Extreme Right Vote in Western Europe, 1980–2002." *American Journal of Political Science* 53(2):259–275.

Auel, Katrin and Resul Umit. 2018. "Explaining MPs' Communication to Their Constituents: Evidence from the UK House of Commons." *The British Journal of Politics and International Relations* 20(3):731–752.

Bauer, Nichole M. 2015. "Emotional, Sensitive, and Unfit for Office? Gender Stereotype Activation and Support Female Candidates." *Political Psychology* 36(6):691–708.

Behrens, Lion, Dominic Nyhuis and Thomas Gschwend. 2023. "Political Ambition and Opposition Legislative Review: Bill Scrutiny as an Intra-Party Signalling Device." *European Journal of Political Research* n/a(n/a).

Benoit, Kenneth, Kevin Munger and Arthur Spirling. 2019*a*. Dumbing down?: Trends in the complexity of political communication. In *Can America Govern Itself?* Cambridge University Press pp. 220–236.

Benoit, Kenneth, Kevin Munger and Arthur Spirling. 2019*b*. "Measuring and Explaining Political Sophistication through Textual Complexity." *American Journal of Political Science* 63(2):491–508.

Bischof, Daniel and Roman Senninger. 2018. "Simple Politics for the People? Complexity in Campaign Messages and Political Knowledge." *European Journal of Political Research* 57(2):473–495.

Bischof, Daniel and Roman Senninger. 2025. "Can Simple Language Affect Voters' Political Knowledge and Their Beliefs About Politicians?" *The Journal of Politics* p. Online First. https://doi.org/10.1086/736693.

Bittner, Amanda. 2011. *Platform or Personality? The Role of Party Leaders in Elections*. Oxford University Press.

Bizzoni, Yuri, Pascale Feldkamp Moreira, Nicole Dwenger, Ida Marie S. Lassen, Mads Rosendahl Thomsen and Kristoffer L. Nielbo. 2023. Good Reads and Easy Novels: Readability and Literary Quality in a Corpus of US-published Fiction. In *The 24rd Nordic Conference on Computational Linguistics*.

Björnsson, Carl-Hugo. 1968. *Läsbarhet*. Stockholm: Liber.

Bode, Leticia. 2016. "Political News in the News Feed: Learning Politics from Social Media." *Mass Communication and Society* 19(1):24–48.

Bonsón, Enrique and Melinda Ratkai. 2013. "A set of metrics to assess stakeholder engagement and social legitimacy on a corporate Facebook page." *Online information review* 37(5):787–803.

Boussalis, Constantine, Travis G Coan, Mirya R Holman and Stefan Müller. 2021. "Gender, candidate emotional expression, and voter reactions during televised debates." *American Political Science Review* 115(4):1242–1257.

Brescoll, Victoria L. and Eric Luis Uhlmann. 2008. "Can an Angry Woman Get Ahead?: Status Conferral, Gender, and Expression of Emotion in the Workplace." *Psychological Science* 19(3):268–275.

Castanho Silva, Bruno, Danielle Pullan and Jens Wäckerle. 2025. "Blending in or Standing out? Gendered Political Communication in 24 Democracies." *American Journal of Political Science* 69(2):653–668.

Castanho Silva, Bruno and Sven-Oliver Proksch. 2022. "Politicians Unleashed? Political Communication on Twitter and in Parliament in Western Europe." *Political Science Research and Methods* 10(4):776–792.

Childs, Sarah. 2004. "A Feminised Style of Politics? Women MPs in the House of Commons." *The British Journal of Politics and International Relations* 6(1):3–19.

Contreras, Alfonso, Rafael Garcia-Alonso, Marta Echenique and Fedora Daye-Contreras. 1999. "The SOL Formulas for Converting SMOG Readability Scores Between Health Education Materials Written in Spanish, English, and French." *Journal of Health Communication* 4(1):21–29.

Cox, Gary W. and Mathew D. McCubbins. 1993. *Legislative Leviathan: Party Government in the House*. University of California Press.

Crabtree, Charles, Matt Golder, Thomas Gschwend and Indridi H. Indridason. 2019. "It Is Not Only What You Say, It Is Also How You Say It: The Strategic Use of Campaign Sentiment." *The Journal of Politics* pp. 000–000.

Decadri, Silvia and Constantine Boussalis. 2019. "Populism, Party Membership, and Language Complexity in the Italian Chamber of Deputies." *Journal of Elections, Public Opinion and Parties* 0(0):1–20.

Diaz, Fernando, Michael Gamon, Jake M. Hofman, Emre Kıcıman and David Rothschild. 2016. "Online and Social Media Data As an Imperfect Continuous Panel Survey." *PLOS ONE* 11(1):e0145406.

Dietrich, Bryce J., Matthew Hayes and Diana Z. O'brien. 2019. "Pitch Perfect: Vocal Pitch and the Emotional Intensity of Congressional Speech." *American Political Science Review* 113(4):941–962.

Dietrich, Bryce J, Matthew Hayes and Diana Z O'brien. 2019. "Pitch perfect: Vocal pitch and the emotional intensity of congressional speech." *American Political Science Review* 113(4):941–962.

Döring, Holger and Philip Manow. 2019. "ParlGov Database." *Parliaments and governments database (ParlGov): Information on parties, elections and cabinets in modern democracies* Development version.

DuBay, William H. 2004. "The Principles of Readability." *Online Submission* .

Eagly, Alice H. and Steven J. Karau. 2002. "Role Congruity Theory of Prejudice toward Female Leaders." *Psychological Review* 109(3):573–598.

Ellinas, Antonis A. 2018. Media and the Radical Right. In *The Oxford Handbook of the Radical RIght*, ed. Jens Rydgren. [Oxford Handbooks] New York, NY: Oxford University Press pp. 269–284.

Flesch, Rudolph. 1948. "A New Readability Yardstick." *Journal of Applied Psychology* 32(3):221–233.

Gunning, Robert. 1952. *The Technique of Clear Writing*. McGraw-Hill.

Gunning, Robert. 1969. "The Fog Index After Twenty Years." *Journal of Business Communication* 6(2):3–13.

Hjorth, Frederik. 2025. "Losing Touch: The Rhetorical Cost of Governing." *Comparative Political Studies* p. 00104140251349646.

Kartalis, Yani and Marina Costa Lobo. 2020. "The MAPLE Parliamentary Data Set.".

Kincaid, J Peter, Robert P Fishburne Jr, Richard L Rogers and Brad S Chissom. 1975. Derivation of New Readability Formulas (Automated Readability Index, Fog Count and Flesch Reading Ease Formula) for Navy Enlisted Personnel. Technical report.

Kittel, Rebecca C. 2025*a*. "Let's Talk Populist? A Survey Experiment on Effects of (Non-) Populist Discourse on Vote Choice." *European Journal of Political Research* 64(2):719–743.

Kittel, Rebecca C. 2025*b*. "Simply Speaking? Language Complexity among (Non-)Populist Actors in Parliamentary Debates." *Government and Opposition* 60(4):1336–1366.

Koenig, Anne M., Alice H. Eagly, Abigail A. Mitchell and Tiina Ristikari. 2011. "Are Leader Stereotypes Masculine? A Meta-Analysis of Three Research Paradigms." *Psychological Bulletin* 137(4):616–642.

Kriesi, Hanspeter, Edgar Grande, Romain Lachat, Martin Dolezal, Simon Bornschier and Timotheos Frey. 2008. *West European Politics in the Age of Globalization*. Cambridge: Cambridge University Press.

Laver, Michael and John Garry. 2000. "Estimating Policy Positions from Political Texts." *American Journal of Political Science* 44(3):619–634.

Lim, Elvin. 2012. *The Anti-Intellectual Presidency: The Decline of Presidential Rhetoric from George Washington to George W. Bush*. Illustrated edition ed. New York, N.Y: Oxford University Press.

Lobo, Marina Costa and John Curtice. 2014. *Personality Politics?: The Role of Leader Evaluations in Democratic Elections*. OUP Oxford.

Lupacheva, Tatiana and Martin Mölder. 2024. "A place to speak and be heard? Parliamentary speech and media attention in Estonia, 2011–2019." *Legislative Studies Quarterly* .

Lupia, Arthur. 2003. Delegation and Its Peril. In *Delegation and Accountability in Parliamentary Democracies*, ed. Kaare Strøm, Wolfgang C. Müller and Torbjörn Bergman. Oxford University Press pp. 33–54.

McDonnell, Duncan and Stefano Ondelli. 2020. "The Language of Right-Wing Populist Leaders: Not So Simple." *Perspectives on Politics* 20(3):828–841.

McGraw, Kathleen M., Samuel Best and Richard Timpone. 1995. ""What They Say or What They Do?" The Impact of Elite Explanation and Policy Outcomes on Public Opinion." *American Journal of Political Science* 39(1):53–74.

McLaughlin, G. Harry. 1969. "SMOG Grading: A New Readability Formula." *Journal of Reading* 12(8):639–646.

Mudde, Cas. 2007. *Populist Radical Right Parties in Europe*. New York: Cambridge University Press.

Newman, Nic, Richard Fletcher, Antonis Kalogeropoulos and Rasmus Kleis Nielsen. 2019. "Reuters digital news report 2019." *Reuters Institute for the Study of Journalism* .

Ogrodniczuk, Maciej and Bartłomiej Nitoń. 2020. New Developments in the Polish Parliamentary Corpus. In *Proceedings of the Second ParlaCLARIN Workshop*, ed. Darja Fišer, Maria Eskevich and Franciska de Jong. Marseille, France: European Language Resources Association (ELRA) pp. 1–4.
URL: *https://www.aclweb.org/anthology/2020.parlaclarin-1.1*

Osnabrügge, Moritz, Sara B. Hobolt and Toni Rodon. 2021. "Playing to the Gallery: Emotive Rhetoric in Parliaments." *American Political Science Review* 115(3):885–899.

Pennebaker, James W. 2011. *The Secret Life of Pronouns: What Our Words Say About Us*. New York: Bloomsbury Press.

Pinheiro, José and Douglas Bates. 2000. *Mixed-effects models in S and S-PLUS*. Springer science & business media.

Popa, Sebastian Adrian, Zoltán Fazekas, Daniela Braun and Melanie-Marita Leidecker-Sandmann. 2020. "Informing the Public: How Party Communication Builds Opportunity Structures." *Political Communication* 37(3):329–349.

Proksch, Sven-Oliver and Jonathan B. Slapin. 2015. *The Politics of Parliamentary Debate*. Cambridge University Press.

Proksch, Sven-Oliver, Will Lowe, Jens Wäckerle and Stuart Soroka. 2019. "Multilingual Sentiment Analysis: A New Approach to Measuring Conflict in Legislative Speeches." *Legislative Studies Quarterly* 44(1):97–131.

Rauh, Christian. 2022. "Clear Messages to the European Public? The Language of European Commission Press Releases 1985–2020." *Journal of European Integration* 0(0):1–19.

Rauh, Christian and Jan Schwalbach. 2020. "The ParlSpeech V2 Data Set: Full-text Corpora of 6.3 Million Parliamentary Speeches in the Key Legislative Chambers of Nine Representative Democracies." *Harvard Dataverse* V1.

Renner, Anna-Maria and Lena Masch. 2019. "Emotional Woman – Rational Man? Gender Stereotypical Emotional Expressivity of German Politicians in News Broadcasts." *Communications* 44(1):81–103.

Rheault, Ludovic and Christopher Cochrane. 2020. "Word Embeddings for the Analysis of Ideological Placement in Parliamentary Corpora." *Political Analysis* 28(1):112–133.

Rooduijn, Matthijs, Stijn Van Kessel, Caterina Froio, Andrea Pirro, Sarah De Lange, Daphne Halikiopoulou, Paul Lewis, Cas Mudde and Paul Taggart. 2019. "The PopuList: An overview of populist, far right, far left and Eurosceptic parties in Europe.".

Schoonvelde, Martijn, Anna Brosius, Gijs Schumacher and Bert N. Bakker. 2019. "Liberals Lecture, Conservatives Communicate: Analyzing Complexity and Ideology in 381,609 Political Speeches." *PLoS ONE* 14(2).

Serra-Silva, Sofia, Diana Dias Carvalho and Julio Fazendeiro. 2018. "Party-citizen online challenges: Portuguese parties' Facebook usage and audience engagement." *Changing societies: legacies and challenges. Vol. 2. Citizenship in crisis* pp. 185–214.

Sigelman, Lee. 1996. "Presidential Inaugurals: The Modernization of a Genre." *Political Communication* 13(1):81–92.

Simon, Stefanie and Crystal L. Hoyt. 2008. "Exploring the Gender Gap in Support for a Woman for President." *Analyses of Social Issues and Public Policy* 8(1):157–181.

Slapin, Jonathan B. and Justin H. Kirkland. 2020. "The Sound of Rebellion: Voting Dissent and Legislative Speech in the UK House of Commons." *Legislative Studies Quarterly* 45(2):153–176.

Slapin, Jonathan B and Sven-Oliver Proksch. 2008. "A Scaling Model for Estimating Time-Series Party Positions from Texts." *American Journal of Political Science* 52(3):705–722.

Spierings, Niels and Kristof Jacobs. 2014. "Getting Personal? The Impact of Social Media on Preferential Voting." *Political Behavior* 36(1):215–234.

Spirling, Arthur. 2015. "Democratization and Linguistic Complexity: The Effect of Franchise Extension on Parliamentary Discourse, 1832–1915." *The Journal of Politics* 78(1):120–136.

Strøm, Kaare. 1997. "Rules, Reasons and Routines: Legislative Roles in Parliamentary Democracies." *The Journal of Legislative Studies* 3(1):155–174.

Taylor, Wilson L. 1953. ""Cloze Procedure": A New Tool for Measuring Readability." *Journalism quarterly* 30(4):415–433.

Tolochko, Petro, Hyunjin Song and Hajo Boomgaarden. 2019. ""That Looks Hard!": Effects of Objective and Perceived Textual Complexity on Factual and Structural Political Knowledge." *Political Communication* 36(4):609–628.

Wäckerle, Jens and Bruno Castanho Silva. 2023. "Distinctive Voices: Political Speech, Rhetoric, and the Substantive Representation of Women in European Parliaments." *Legislative Studies Quarterly* 48(4):797–831.

Wyss, Dominik, Simon Beste and André Bächtiger. 2015. "A decline in the quality of debate? The evolution of cognitive complexity in Swiss parliamentary debates on immigration (1968–2014)." *Swiss Political Science Review* 21(4):636–653.

Supplementary Materials:

Keep It Simple, Stupid! The Determinants of Language Complexity in Politicians' Parliamentary and Online Communication

A Adapted Readability Scores for Different Language Groups

First, it is important to notice that all languages we are analysing belong to the Indo-European languages. Therefore, they are, on average, already somewhat comparable. However, they still provide different grammatical particularities. Therefore, we group them into their sub-families. This provides us with two groups: (1) Germanic languages: Danish, Dutch, German, Swedish and English and (2) Roman languages: French, Italian, Portuguese, Romanian and Spanish. As the SMOG score was originally developed for English, we calculate language complexity separately for our English data sources. For Estonian Polish, we use the English formula as we could not find an appropriate adaptation.

The SMOG score has been adapted for German text by Benoit et al. (2018) (SMOG.de). This formula will be used for all Germanic languages as we can assume they display similar grammar and sentence structural features; therefore, the score should hold across these languages and produce comparable results. Further, we present the French SMOG (SMOG.fr) and the Spanish SMOG (SMOG.es) formulas developed by Contreras et al. (1999). The Spanish formula is used for all remaining Roman languages (Italian, Romanian and Portuguese).

German Formula:

$$\textbf{SMOG.de} = \sqrt{number\ of\ words\ with\ 3\ syllables\ or\ more * \frac{30}{total\ number\ of\ sentences}} - 2$$

French Formula:

$$\textbf{SMOG.fr} = -1.35 + 0.77 * SMOG$$

Spanish Formula:

$$\textbf{SMOG.es} = -2.51 + 0.74 * SMOG$$

Table A.1: Predictors of complexity in parliament and on Facebook - Adjusted SMOG scores by language

	Model 1	Model 2	Model 3	Model 4	Model 5
Time	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***
FB posts word count (log)	0.010 (0.024)	0.010 (0.024)	0.018 (0.024)	0.010 (0.024)	0.018 (0.024)
Speeches word count (log)	0.088 (0.020)***	0.087 (0.020)***	0.095 (0.020)***	0.087 (0.020)***	0.094 (0.020)***
Male	−0.001 (0.050)	−0.104 (0.069)	−0.001 (0.050)	−0.001 (0.050)	−0.134 (0.069)
Party leader	−0.445 (0.101)***	−0.445 (0.101)***	−0.445 (0.101)***	−0.298 (0.140)*	−0.295 (0.140)*
Opposition	−0.381 (0.068)***	−0.381 (0.068)***	−0.381 (0.068)***	−0.381 (0.068)***	−0.381 (0.068)***
Facebook	−6.604 (0.213)***	−6.742 (0.222)***	−6.336 (0.216)***	−6.595 (0.213)***	−6.489 (0.224)***
Far right	−0.036 (0.176)	−0.036 (0.176)	0.483 (0.190)*	−0.036 (0.176)	0.512 (0.190)**
Far Left	−0.280 (0.185)	−0.280 (0.185)	−0.282 (0.185)	−0.281 (0.185)	−0.115 (0.208)
Speeches word count * Facebook	−0.003 (0.028)	−0.003 (0.028)	−0.018 (0.028)	−0.003 (0.028)	−0.016 (0.028)
FB posts word count * Facebook	1.201 (0.035)***	1.201 (0.035)***	1.184 (0.035)***	1.200 (0.035)***	1.185 (0.035)***
Male * Facebook		0.206 (0.096)*			0.266 (0.096)**
Far right * Facebook			−1.041 (0.141)***		−1.098 (0.142)***
Party leader * Facebook				−0.294 (0.195)	−0.301 (0.194)
Far left * Facebook					−0.333 (0.192)
AIC	172891.201	172891.457	172842.155	172892.358	172840.422
BIC	173213.019	173221.972	173172.670	173222.873	173197.028
N. obs.	44284	44284	44284	44284	44284
N. Speakers	2587	2587	2587	2587	2587
N. Parties	125	125	125	125	125

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A.2: Predictors of engagement on MPs' Facebook Posts with Language-Adjusted SMOG Scores

	Engagement	Popularity	Virality	Commitment
Time	0.005 (0.000)***	0.001 (0.000)***	−0.002 (0.000)***	0.006 (0.000)***
Word count (log)	0.641 (0.005)***	0.109 (0.001)***	0.293 (0.002)***	0.240 (0.002)***
SMOG adjusted (scaled)	−0.259 (0.006)***	−0.071 (0.002)***	−0.056 (0.003)***	−0.131 (0.003)***
Male	0.218 (0.094)*	0.023 (0.036)	0.133 (0.036)***	0.060 (0.035)
Far right	1.102 (0.346)**	0.051 (0.137)	0.618 (0.157)***	0.405 (0.120)***
Far Left	0.459 (0.343)	−0.066 (0.136)	0.513 (0.154)***	0.018 (0.120)
Party leader	0.543 (0.061)***	0.152 (0.019)***	0.116 (0.026)***	0.283 (0.028)***
Opposition	0.256 (0.027)***	0.034 (0.009)***	0.115 (0.012)***	0.107 (0.013)***
Male * SMOG	−0.004 (0.007)	−0.007 (0.002)**	−0.004 (0.003)	0.006 (0.003)
Radical right * SMOG	−0.045 (0.009)***	0.001 (0.003)	−0.017 (0.004)***	−0.029 (0.004)***
AIC	4342199.590	2318788.312	2919681.764	3013734.370
BIC	4342538.076	2319126.798	2920020.250	3014072.856
N. obs.	866252	866252	866252	866252
N. Speakers	2519	2519	2519	2519
N. Parties	127	127	127	127

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

B Party Distribution of MPs on Facebook

Table A.3: Distribution of MPs on Facebook Across Country and Party - Table 1

country	party	Start date	End date	MPs
Austria	FPÖ	2018-01	2018-12	21
Austria	GRÜNE	2018-01	2018-12	9
Austria	NEOS	2018-01	2018-12	12
Austria	PILZ	2018-01	2018-12	5
Austria	SPÖ	2018-01	2018-12	30
Austria	ÖVP	2018-01	2018-12	43
Belgium	CD&V	2018-01	2020-04	12
Belgium	Ecolo-Groen	2018-01	2020-04	2
Belgium	MR	2018-01	2020-04	5
Belgium	N-VA	2018-01	2020-04	13
Belgium	Open Vld	2018-01	2020-04	4
Belgium	PS	2018-01	2019-11	9
Belgium	PTB-GO!	2018-01	2019-04	2
Belgium	VB	2018-01	2020-04	2
Belgium	cdH	2018-01	2019-04	3
Belgium	sp.a	2018-01	2020-04	2
Denmark	ALT	2018-01	2018-12	6
Denmark	DF	2018-01	2018-12	20
Denmark	EL	2018-01	2018-12	11
Denmark	IA	2018-01	2018-12	1
Denmark	KF	2018-01	2018-12	10
Denmark	LA	2018-01	2018-12	8
Denmark	RV	2018-01	2018-12	10
Denmark	S	2018-01	2018-12	35
Denmark	SF	2018-01	2018-12	6
Denmark	V	2018-01	2018-12	32
Estonia	EKRE	2018-01	2021-11	6
Estonia	IRL	2018-01	2021-11	6
Estonia	Isamaa	2019-01	2021-11	2
Estonia	Keskerakond	2018-01	2021-11	14
Estonia	Reformierakond	2018-01	2021-11	15
Estonia	Sotsiaaldemokraadid	2018-01	2021-11	9
France	Cap sur l'avenir	2018-01	2018-10	1
France	Debout la France	2018-01	2018-10	1
France	En Marche !	2018-01	2018-10	167
France	Front National	2018-01	2018-10	4
France	La France Insoumise	2018-01	2018-10	11
France	La politique autrement	2018-01	2018-10	1
France	Les Républicains	2018-01	2018-10	45
France	Mouvement Démocrate	2018-01	2018-10	20
France	Non rattaché	2018-01	2018-10	1
France	Parti Communiste Francais	2018-01	2018-10	8
France	Parti Progressiste Martiniquais (PPM)	2018-01	2018-10	1
France	Parti radical de gauche	2018-01	2018-10	1
France	Parti socialiste	2018-01	2018-10	24
France	Régions Et Peuples Solidaires	2018-01	2018-10	2
France	Tavini Huiraatira No Te Ao Maohi - Front de Libération de Polynésie	2018-01	2018-10	1
France	Union Des Démocrates, Radicaux Et Libéraux	2018-01	2018-10	7
France	Independent	2018-01	2018-10	1
Germany	AfD	2018-01	2020-12	59
Germany	BÜNDNIS 90/DIE GRÜNEN	2018-01	2020-12	35
Germany	CDU/CSU	2018-01	2020-12	129
Germany	DIE LINKE	2018-01	2020-12	45
Germany	FDP	2018-01	2020-12	46
Germany	SPD	2018-01	2020-12	97
Germany	Independent	2018-01	2020-12	23
Ireland	Fianna Fáil	2018-01	2019-12	33
Ireland	Fine Gael	2018-01	2019-12	30
Ireland	Green Party	2018-01	2019-12	2
Ireland	Independent	2018-01	2019-12	3
Ireland	Independents 4 Change	2018-01	2019-12	1
Ireland	Labour Party	2018-01	2019-12	5
Ireland	Sinn Féin	2018-01	2019-12	21
Ireland	Social Democrats	2018-03	2019-12	1
Ireland	Solidarity - People Before Profit	2018-01	2019-12	6

Table A.4: Distribution of MPs on Facebook Across Country and Party - Table 2

country	party	Start date	End date	MPs
Italy	FI	2019-07	2021-01	56
Italy	FdI	2019-07	2021-01	22
Italy	LN	2019-07	2021-01	81
Italy	LeU	2019-07	2021-01	6
Italy	M5S	2019-07	2021-01	167
Italy	MISTO - non iscritto ad alcuna componente politica	2019-07	2021-01	2
Italy	MISTO-CIVICA POPOLARE-AP-PSI-AREA CIVICA	2019-07	2021-01	2
Italy	MISTO-MAIE-MOVIMENTO ASSOCIATIVO ITALIANI ALL'ESTERO	2019-07	2021-01	2
Italy	PD	2019-07	2021-01	72
Italy	SC	2019-07	2021-01	16
Italy	SEL	2019-07	2021-01	2
Italy	Independent	2020-08	2021-01	24
Netherlands	CDA	2018-01	2019-07	18
Netherlands	CU	2018-01	2019-07	3
Netherlands	D66	2018-01	2019-07	8
Netherlands	DENK	2018-01	2019-07	3
Netherlands	FvD	2018-01	2019-07	2
Netherlands	GL	2018-01	2019-07	7
Netherlands	PVV	2018-01	2019-07	3
Netherlands	PvdA	2018-01	2019-07	8
Netherlands	PvdD	2018-01	2019-07	2
Netherlands	SGP	2018-01	2019-06	1
Netherlands	SP	2018-01	2019-07	4
Netherlands	VVD	2018-01	2019-07	16
Poland	Klub Parlamentarny Platforma Obywatelska	2019-04	2019-10	85
Poland	Klub Parlamentarny Polskiego Stronnictwa Ludowego	2019-04	2019-10	8
Poland	Klub Poselski Kukiz'15	2019-04	2019-10	16
Poland	Klub Poselski Nowoczesna	2019-04	2019-10	23
Poland	Koło Poselskie Unii Europejskich Demokratów	2019-04	2019-10	1
Poland	Koło Poselskie Wolni i Solidarni	2019-04	2019-10	3
Poland	Law and Justice	2019-04	2019-10	148
Portugal	BE	2018-01	2019-09	8
Portugal	CDS-PP	2018-01	2019-09	5
Portugal	PAN	2018-01	2019-09	1
Portugal	PCP	2018-01	2019-09	3
Portugal	PS	2018-01	2019-09	18
Portugal	PSD	2018-01	2019-09	23
Romania	Minoritati	2018-02	2020-06	2
Romania	PMP	2018-01	2020-06	3
Romania	PNL	2018-01	2020-06	31
Romania	PRO Romania	2018-01	2020-06	8
Romania	PSD	2018-01	2020-06	21
Romania	UDMR	2018-01	2020-06	9
Romania	USR	2018-01	2020-06	8
Spain		2018-01	2018-12	9
Spain	G.P. Mixto	2018-01	2018-12	1
Spain	GCUP-EC-EM	2018-01	2018-12	19
Spain	GCs	2018-01	2018-12	3
Spain	GER	2018-01	2018-12	3
Spain	GPP	2018-01	2018-12	13
Spain	GPSOE	2018-01	2018-12	3
Spain	Independent	2018-01	2018-12	2
Sweden	C	2018-01	2018-12	15
Sweden	KD	2018-01	2018-12	9
Sweden	L	2018-01	2018-12	13
Sweden	M	2018-01	2018-12	31
Sweden	MP	2018-01	2018-12	11
Sweden	S	2018-01	2018-12	29
Sweden	SD	2018-01	2018-12	6
Sweden	V	2018-01	2018-12	7
UK	Con	2018-11	2019-12	219
UK	DUP	2018-11	2019-12	5
UK	GPEW	2018-11	2019-12	1
UK	Lab	2018-11	2019-12	174
UK	LibDem	2018-11	2019-12	7
UK	PlaidCymru	2018-11	2019-12	3
UK	SNP	2018-11	2019-12	32
UK	Independent	2018-11	2019-12	1

C Results without Centering

For the main analyses reported in the paper comparing parliamentary speech complexity to Facebook, we centered and scaled SMOG scores by country-language — meaning, from each individual SMOG score we subtracted the average SMOG in that country-language and divided by the standard deviation of the SMOG score in that country-language. This is because we are not interested in explaining differences in complexity across languages or countries, so that variance is not of particular substantive relevance. Still, centering is known to sometimes affect estimates in multilevel models, so Table C.1 we present results without centering or scaling the SMOG scores, to confirm that our substantive findings were not driven by this statistical choice.

Table C.1: Predictors of complexity in parliament and on Facebook without centering the dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5
Time	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***	−0.012 (0.003)***
FB posts word count (log)	0.010 (0.024)	0.010 (0.024)	0.017 (0.024)	0.010 (0.024)	0.017 (0.024)
Speeches word count (log)	0.088 (0.020)***	0.087 (0.020)***	0.095 (0.020)***	0.087 (0.020)***	0.094 (0.020)***
Male	−0.001 (0.050)	−0.104 (0.069)	−0.001 (0.050)	−0.001 (0.050)	−0.134 (0.069)
Party leader	−0.446 (0.101)***	−0.446 (0.101)***	−0.445 (0.101)***	−0.298 (0.140)*	−0.295 (0.140)*
Opposition	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***	−0.383 (0.069)***
Facebook	−6.603 (0.213)***	−6.742 (0.222)***	−6.336 (0.216)***	−6.594 (0.213)***	−6.489 (0.224)***
Far right	−0.032 (0.177)	−0.032 (0.177)	0.487 (0.191)*	−0.032 (0.177)	0.516 (0.191)**
Far Left	−0.286 (0.185)	−0.286 (0.185)	−0.287 (0.185)	−0.286 (0.185)	−0.121 (0.209)
Speeches word count * Facebook	−0.003 (0.028)	−0.003 (0.028)	−0.018 (0.028)	−0.003 (0.028)	−0.016 (0.028)
FB posts word count * Facebook	1.201 (0.035)***	1.201 (0.035)***	1.184 (0.035)***	1.200 (0.035)***	1.185 (0.035)***
Male * Facebook		0.206 (0.096)*			0.266 (0.096)**
Far right * Facebook			−1.041 (0.141)***		−1.098 (0.142)***
Party leader * Facebook				−0.294 (0.195)	−0.301 (0.194)
Far left * Facebook					−0.333 (0.192)
AIC	172894.178	172894.436	172845.138	172895.337	172843.405
BIC	173233.390	173242.345	173193.047	173243.246	173217.405
N. obs.	44284	44284	44284	44284	44284
N. Speakers	2587	2587	2587	2587	2587
N. parties	125	125	125	125	125

Country-language fixed-effects included in the models but not reported here.

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

D Results by Country

These results by country are split into two tables. Table D.1 contains estimates for countries without MPs from far-right parties in our data, meaning these models do not include a farright dummy. Table D.2 contains results for countries that have MPs from far-right parties. Due to the smaller number of far-left parties, and the fact we find little effects of far-left in the analyses, we drop that variable from these models.

Table D.1: 'Predictors of complexity in parliament and on Facebook by Country

	BE (FR)	IE	PT	RO	ES	UK
Time	−0.01	−0.00	−0.04***	−0.04***	−0.02	−0.00
	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)
FB posts word count (log)	−0.26	−0.05	0.12	0.10	−0.29	0.12**
	(0.24)	(0.12)	(0.18)	(0.13)	(0.24)	(0.05)
Speeches word count (log)	0.25	0.13	0.98***	1.53***	0.25	−0.11***
	(0.25)	(0.08)	(0.19)	(0.11)	(0.25)	(0.03)
Male	0.05	−0.02	0.56	−0.22	0.11	−0.15
	(0.43)	(0.26)	(0.42)	(0.36)	(0.48)	(0.08)
Party leader	−1.39*	−0.16	−0.81	−1.18*		−0.28
	(0.59)	(0.42)	(0.86)	(0.58)		(0.29)
Facebook	−8.13***	−3.68***	−4.72**	0.47	−8.13***	−4.11***
	(2.14)	(0.87)	(1.56)	(1.10)	(2.14)	(0.31)
Speeches word count * Facebook	−0.03	−0.06	−1.06***	−1.50***	−0.03	0.07
	(0.33)	(0.10)	(0.25)	(0.14)	(0.33)	(0.04)
FB posts word count * Facebook	1.95***	0.82***	1.65***	1.59***	1.95***	0.68***
	(0.29)	(0.13)	(0.22)	(0.15)	(0.29)	(0.05)
Male * Facebook	−0.57	0.08	−0.45	−0.24	−0.57	0.17**
	(0.37)	(0.17)	(0.26)	(0.19)	(0.37)	(0.06)
AIC	1055.15	6985.34	4456.41	11062.68	1058.90	26976.86
BIC	1099.19	7051.58	4515.77	11132.58	1099.27	27060.33
N. obs.	290	1844	1040	2502	290	7752
N. Speakers	20	101	58	112	20	441

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table D.2: 'Predictors of complexity in parliament and on Facebook by Country

Time	0.01	−0.02	−0.03**	−0.00	−0.08***	0.00**	−0.03***	0.01	0.11**	0.01
	(0.01)	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.03)	(0.01)
FB posts word count (log)	0.02	0.19	0.12	0.19*	0.42*	−0.06	−0.02	0.04	0.47*	0.03
	(0.13)	(0.17)	(0.10)	(0.10)	(0.18)	(0.03)	(0.06)	(0.13)	(0.20)	(0.12)
Speeches word count (log)	0.23*	−0.02	0.64***	1.17***	1.07***	−0.45***	1.67***	0.48	−0.06	0.50***
	(0.11)	(0.19)	(0.12)	(0.12)	(0.15)	(0.03)	(0.11)	(0.25)	(0.37)	(0.11)
Male	−0.21	0.58*	0.16	−0.22	−0.77***	−0.05	0.09	−0.15	0.15	0.20
	(0.16)	(0.28)	(0.15)	(0.28)	(0.21)	(0.08)	(0.19)	(0.31)	(0.25)	(0.20)
Party leader	−0.65	−0.58	−0.43	−0.59	−0.68	−0.23	−0.05	−0.72*	−0.98*	−0.35
	(0.47)	(0.36)	(0.29)	(0.33)	(0.54)	(0.13)	(0.35)	(0.35)	(0.49)	(0.30)
Facebook	−3.85***	−2.66	−0.42	0.43	−2.20	−7.27***	−4.28***	−2.07	−6.20**	−1.65
	(1.03)	(1.85)	(1.00)	(0.91)	(1.36)	(0.26)	(0.84)	(1.92)	(2.39)	(0.96)
Far right	−0.20	1.04*	−0.12	0.03	−0.73	0.12	0.27	−0.19	1.59***	−0.01
	(0.21)	(0.49)	(0.22)	(0.42)	(0.76)	(0.11)	(0.20)	(0.74)	(0.23)	(0.44)
Speeches word count * Facebook	−0.33*	0.11	−0.65***	−0.82***	−1.18***	0.34***	−1.76***	−0.52	0.31	−0.30*
	(0.14)	(0.26)	(0.16)	(0.16)	(0.20)	(0.03)	(0.15)	(0.34)	(0.49)	(0.14)
FB posts word count * Facebook	1.12***	0.38	0.48***	0.74***	1.28***	1.15***	1.81***	0.73***	0.92***	0.81***
	(0.14)	(0.22)	(0.12)	(0.12)	(0.23)	(0.04)	(0.08)	(0.16)	(0.25)	(0.13)
Male * Facebook	0.54***	−0.97***	0.04	1.07***	0.76**	0.11*	0.22	0.36	−0.11	−0.21
	(0.13)	(0.25)	(0.12)	(0.18)	(0.23)	(0.04)	(0.17)	(0.23)	(0.28)	(0.17)
Far right * Facebook	0.18	0.02	−0.08	−0.03	−0.56	−0.41***	−1.33***	1.01	−1.01***	0.89*
	(0.18)	(0.39)	(0.19)	(0.24)	(0.83)	(0.06)	(0.19)	(0.56)	(0.25)	(0.38)
AIC	4096.07	1791.73	5446.74	8464.19	7177.30	49360.81	20485.54	5479.56	7839.91	3434.57
BIC	4168.01	1851.06	5522.22	8542.84	7252.24	49467.67	20574.40	5551.98	7915.39	3502.82
N. obs.	1260	512	1622	2034	1560	15256	4217	1304	1621	968
N. Speakers	87	34	137	52	303	403	298	59	284	121

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

E Results with Raw Logged Scores of Engagement Metrics

Table E.1: Predictors of engagement on MPs' Facebook Posts – Raw (logged) counts

	Likes	Shares	Comments
Time	0.007 (0.000)***	0.002 (0.000)***	0.007 (0.000)***
Word count (log)	0.110 (0.002)***	0.361 (0.003)***	0.302 (0.003)***
SMOG (scaled)	−0.072 (0.002)***	−0.061 (0.003)***	−0.162 (0.004)***
Male	0.029 (0.031)	0.155 (0.041)***	0.063 (0.042)
Page follower count	0.687 (0.005)***	0.714 (0.008)***	0.903 (0.009)***
Far right	0.224 (0.102)*	0.848 (0.183)***	0.486 (0.146)***
Far Left	0.104 (0.103)	0.717 (0.179)***	0.016 (0.146)
Party leader	0.226 (0.020)***	0.157 (0.032)***	0.303 (0.035)***
Opposition	0.039 (0.009)***	0.149 (0.015)***	0.130 (0.016)***
Male * SMOG	−0.009 (0.002)***	−0.008 (0.004)*	0.005 (0.004)
Radical right * SMOG	0.003 (0.003)	−0.028 (0.005)***	−0.038 (0.005)***
AIC	2403629.330	3269741.429	3425697.301
BIC	2403979.488	3270091.587	3426047.458
N. obs.	866252	866252	866252
N. Speakers	2519	2519	2519
N. Parties	127	127	127

Country-language fixed-effects included in the models but not reported here.

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

F Alternative Measures of Text Complexity

In the following pages, we report results with two alternative measures of text complexity: the Flesch Reading Ease index, and the Flesch-Kincaid grade level. They highly correlate with SMOG scores in our data: $r = -.84$ and $r = .96$ respectively. As the correlation indicates, there is a negative relation between the Flesch index and SMOG: in Flesch, higher values indicate easier (i.e,. less complex) texts, while for SMOG higher values indicate more complex text. This should be kept in mind when looking at coefficients in the tables with Flesch results, as they will have opposite signs as those observed in the main analysis.

Table F.1: Predictors of complexity in parliament and on Facebook - Flesch Reading Ease index as outcome

	Model 1	Model 2	Model 3	Model 4	Model 5
Time	0.073 (0.020)***	0.073 (0.020)***	0.073 (0.019)***	0.073 (0.020)***	0.073 (0.019)***
FB posts word count (log)	−0.026 (0.145)	−0.026 (0.145)	−0.057 (0.145)	−0.027 (0.145)	−0.058 (0.145)
Speeches word count (log)	0.507 (0.123)***	0.508 (0.123)***	0.478 (0.123)***	0.507 (0.123)***	0.482 (0.123)***
Male	0.263 (0.277)	0.882 (0.380)*	0.260 (0.277)	0.263 (0.277)	0.982 (0.380)**
Party leader	2.746 (0.586)***	2.745 (0.586)***	2.743 (0.586)***	2.129 (0.808)**	2.116 (0.807)**
Opposition	2.677 (0.433)***	2.677 (0.433)***	2.676 (0.433)***	2.677 (0.433)***	2.677 (0.433)***
Facebook	15.834 (1.266)***	16.672 (1.314)***	14.854 (1.287)***	15.791 (1.267)***	15.716 (1.329)***
Far right	−0.637 (1.236)	−0.637 (1.236)	−2.295 (1.293)	−0.637 (1.236)	−2.427 (1.293)
Far Left	1.557 (1.249)	1.556 (1.249)	1.553 (1.247)	1.557 (1.249)	1.054 (1.351)
Speeches word count * Facebook	−0.929 (0.166)***	−0.931 (0.166)***	−0.873 (0.167)***	−0.931 (0.166)***	−0.881 (0.167)***
FB posts word count * Facebook	−2.073 (0.210)***	−2.074 (0.210)***	−2.004 (0.211)***	−2.072 (0.210)***	−2.004 (0.211)***
Male * Facebook		−1.239 (0.522)*			−1.445 (0.522)**
Far right * Facebook			3.324 (0.769)***		3.587 (0.773)***
Party leader * Facebook				1.234 (1.113)	1.255 (1.111)
Far left * Facebook					0.999 (1.040)
AIC	331959.017	331954.845	331941.221	331957.739	331932.691
BIC	332280.836	332285.361	332271.736	332288.255	332289.297
N. obs.	44284	44284	44284	44284	44284
N. Speakers	2587	2587	2587	2587	2587
N. Parties	125	125	125	125	125

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table F.2: Predictors of complexity in parliament and on Facebook - Flesch-Kincaid Reading Ease index as outcome

	Model 1	Model 2	Model 3	Model 4	Model 5
Time	−0.016 (0.004)***	−0.016 (0.004)***	−0.016 (0.004)***	−0.016 (0.004)***	−0.016 (0.004)***
FB posts word count (log)	0.016 (0.034)	0.016 (0.034)	0.024 (0.034)	0.016 (0.034)	0.024 (0.034)
Speeches word count (log)	−0.028 (0.029)	−0.029 (0.029)	−0.020 (0.029)	−0.029 (0.029)	−0.022 (0.029)
Male	−0.001 (0.066)	−0.137 (0.092)	0.000 (0.066)	−0.001 (0.066)	−0.166 (0.092)
Party leader	−0.584 (0.135)***	−0.584 (0.135)***	−0.584 (0.134)***	−0.361 (0.187)	−0.364 (0.187)
Opposition	−0.494 (0.094)***	−0.494 (0.094)***	−0.494 (0.094)***	−0.494 (0.094)***	−0.494 (0.094)***
Facebook	−6.774 (0.294)***	−6.958 (0.307)***	−6.493 (0.299)***	−6.761 (0.294)***	−6.682 (0.310)***
Far right	0.020 (0.235)	0.020 (0.236)	0.522 (0.253)*	0.020 (0.236)	0.561 (0.254)*
Far Left	−0.310 (0.244)	−0.310 (0.244)	−0.311 (0.244)	−0.310 (0.244)	−0.056 (0.275)
Speeches word count * Facebook	0.128 (0.039)***	0.128 (0.039)***	0.111 (0.039)**	0.128 (0.039)***	0.115 (0.039)**
FB posts word count * Facebook	1.061 (0.049)***	1.061 (0.049)***	1.043 (0.049)***	1.060 (0.049)***	1.043 (0.049)***
Male * Facebook		0.273 (0.127)*			0.331 (0.127)**
Far right * Facebook			−1.007 (0.186)***		−1.084 (0.187)***
Party leader * Facebook				−0.448 (0.260)	−0.442 (0.260)
Far left * Facebook					−0.511 (0.255)*
AIC	202505.117	202504.791	202479.870	202505.017	202475.734
BIC	202826.935	202835.306	202810.385	202835.532	202832.340
N. obs.	44284	44284	44284	44284	44284
N. Speakers	2587	2587	2587	2587	2587
N. parties	125	125	125	125	125

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table F.3: Predictors of engagement on MPs' Facebook Posts – Complexity measured with Flesch Readability

	Engagement	Popularity	Virality	Commitment
Time	0.005 (0.000)***	0.001 (0.000)***	−0.002 (0.000)***	0.006 (0.000)***
Word count (log)	0.561 (0.004)***	0.086 (0.001)***	0.273 (0.002)***	0.202 (0.002)***
Flesch (scaled)	0.238 (0.006)***	0.064 (0.002)***	0.046 (0.003)***	0.128 (0.003)***
Male	0.214 (0.094)*	0.023 (0.036)	0.132 (0.036)***	0.058 (0.035)
Far right	1.097 (0.346)**	0.050 (0.137)	0.617 (0.157)***	0.402 (0.120)***
Far Left	0.463 (0.343)	−0.065 (0.136)	0.513 (0.154)***	0.021 (0.120)
Party leader	0.547 (0.061)***	0.153 (0.019)***	0.118 (0.026)***	0.285 (0.028)***
Opposition	0.255 (0.027)***	0.034 (0.009)***	0.115 (0.012)***	0.106 (0.013)***
Male * Flesch	0.023 (0.007)**	0.012 (0.002)***	0.009 (0.003)**	0.002 (0.003)
Radical right * Flesch	0.002 (0.009)	−0.016 (0.003)***	0.005 (0.004)	0.012 (0.004)**
AIC	4342022.360	2318873.727	2919890.114	3012807.084
BIC	4342360.846	2319212.213	2920228.600	3013145.570
N. obs.	866252	866252	866252	866252
N. Speakers	2519	2519	2519	2519
N. parties	127	127	127	127

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table F.4: Predictors of engagement on MPs' Facebook Posts – Complexity measured with Flesch Kincaid grade level

	Engagement	Popularity	Virality	Commitment
Time	0.005 (0.000)***	0.001 (0.000)***	−0.002 (0.000)***	0.006 (0.000)***
Word count (log)	0.603 (0.005)***	0.097 (0.001)***	0.284 (0.002)***	0.222 (0.002)***
F. Kincaid (scaled)	−0.237 (0.006)***	−0.063 (0.002)***	−0.054 (0.003)***	−0.121 (0.003)***
Male	0.217 (0.094)*	0.023 (0.036)	0.133 (0.036)***	0.059 (0.035)
Far right	1.103 (0.346)**	0.051 (0.137)	0.618 (0.157)***	0.405 (0.120)***
Far Left	0.457 (0.343)	−0.066 (0.136)	0.512 (0.154)***	0.017 (0.120)
Party leader	0.545 (0.061)***	0.152 (0.019)***	0.117 (0.026)***	0.283 (0.028)***
Opposition	0.258 (0.027)***	0.035 (0.009)***	0.115 (0.012)***	0.108 (0.013)***
Male * F. Kincaid	−0.015 (0.007)*	−0.011 (0.002)***	−0.004 (0.003)	0.000 (0.003)
R. right * F. Kincaid	−0.037 (0.009)***	0.005 (0.003)	−0.013 (0.004)***	−0.028 (0.004)***
AIC	4342377.501	2319172.935	2919706.967	3013782.510
BIC	4342715.987	2319511.421	2920045.453	3014120.996
N. obs.	866252	866252	866252	866252
N. Speakers	2519	2519	2519	2519
N. Parties	127	127	127	127

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

References

Benoit, Kenneth, Kohei Watanabe, Haiyan Wang, Paul Nulty, Adam Obeng, Stefan Müller and Akitaka Matsuo. 2018. "Quanteda: An R Package for the Quantitative Analysis of Textual Data." *Journal of Open Source Software* 3(30):774.

Contreras, Alfonso, Rafael Garcia-Alonso, Marta Echenique and Fedora Daye-Contreras. 1999. "The SOL Formulas for Converting SMOG Readability Scores Between Health Education Materials Written in Spanish, English, and French." *Journal of Health Communication* 4(1):21–29.