



Explaining Interruption Behavior in Parliament: The Role of Topic Expertise, Career Status, and Government-Opposition Dynamics

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Abstract Why do politicians interrupt each other? Previous research has studied how personal characteristics of politicians, especially their gender, influence interruption behavior. However, we lack knowledge regarding how strategic incentives arising from political competition influence whether two politicians will interrupt each other. I argue that interruptions are a tool to disrupt the communication of other politicians, attack their public image, and boost one's own reputation. Based on strategic incentives, I expected three groups of factors to drive interruptions. First, politicians who are experts on the same topic should be more likely to interrupt each other. Second, career status could influence how likely new parliamentarians are to interrupt and how likely frontbenchers are to be interrupted. Third, opposition parties may use interruptions to attack members of government parties, whereas members of government parties should be least likely to interrupt their coalition partners. I used data on interruptions in the German Bundestag from 2017 to 2021, employing logistic and network regression models, and found support for shared topic expertise and government-opposition dynamics driving interruptions. New parliamentarians seem to be less likely to interrupt, but I found no robust evidence for an effect of frontbencher status. These findings enrich knowledge about the strategic role of interruptions in parliamentary communication and legislative behavior, demonstrating the roles of topic expertise and government-opposition dynamics in interruptions, which should not be disregarded in future studies.

Keywords Party competition · Legislative behavior · Parliamentary speechmaking · Text-as-data · Parliamentary careers

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Eine Erklärung von Unterbrechungsverhalten im Parlament: Die Rolle von thematischer Expertise, Karrierestatus und Regierungs- Oppositions-Dynamiken

Zusammenfassung Warum unterbrechen sich Politiker:innen gegenseitig? Die bisherige Forschung untersucht, wie persönliche Merkmale von Politiker:innen, insbesondere ihr Geschlecht, beeinflussen, wie oft sie unterbrechen und unterbrochen werden. Wir wissen allerdings nicht, wie strategische Anreize, die sich aus dem politischen Wettbewerb ergeben, die Häufigkeit beeinflussen, mit der sich zwei bestimmte Politiker:innen gegenseitig unterbrechen. Ich argumentiere, dass Unterbrechungen ein Mittel sind, um die Kommunikation anderer Politiker zu stören, ihr öffentliches Image anzugreifen und das eigene Ansehen zu steigern. Auf Grundlage strategischer Anreize erwarte ich, dass drei Gruppen von Faktoren Unterbrechungen im Parlament beeinflussen. Erstens sollten Politiker:innen, die Experten:innen für das gleiche Thema sind, sich wahrscheinlicher gegenseitig unterbrechen. Zweitens könnte der Karrierestatus neue Politiker:innen dazu veranlassen, häufiger zu unterbrechen, und Mitglieder der Parteiführung sollten wahrscheinlicher unterbrochen werden. Drittens könnten Oppositionsparteien Unterbrechungen nutzen, um Mitglieder von Regierungsparteien anzugreifen, während Mitglieder von Regierungsparteien am wenigsten geneigt sein sollten, ihre Koalitionspartner zu unterbrechen. Ich verwende Daten zu Unterbrechungen im Deutschen Bundestag von 2017 bis 2021 und logistische sowie Netzwerkregressionsmodelle. Ich finde Belege dafür, dass gemeinsame Themenexpertise und die Dynamik zwischen Regierung und Opposition die Wahrscheinlichkeit von Unterbrechungen beeinflussen. Neue Parlamentarier scheinen weniger häufig zu unterbrechen, während ich keine robusten Belege für einen Effekt für die Parteiführung finde. Diese Ergebnisse bereichern den Kenntnisstand über die strategische Rolle von Unterbrechungen für die parlamentarische Kommunikation und das Gesetzgebungsverhalten, indem sie die Rolle von Themenexpertise und Regierungs-Oppositions-Dynamiken für Unterbrechungen aufzeigen, zwei Faktoren, die in zukünftigen Studien nicht vernachlässigt werden sollten.

Schlüsselwörter Parteienwettbewerb · Parlamentarisches Verhalten · Parlamentarische Reden · Text als Datenquelle · Parlamentarische Karrieren

1 Introduction

What strategic purpose do interruptions during speeches in parliament serve, and what factors influence their prevalence? Democratic parliaments provide opportunities for their members to ask questions or make comments during speeches within their rules of conduct. Still, members of parliament (MPs) often interrupt each others' speeches outside institutional rules. Interruptions describe verbal disruptions to the flow of a speech by another MP without an institutional right to speak. This distinguishes interruptions from institutionalized forms of contributions, such as asking a question during a speech after requesting the right to do so. These interruptions constitute a powerful tool of communication in parliament, since they allow inter-

rupters to disrupt their target's effective communication and attack the target's public image while signaling their own position and investment in the topic.

Although interruptions are integral parts of parliamentary interactions around the world, they have only recently become the subject of study for quantitative political scientists. Their focus so far has been who gets interrupted with what frequency—specifically, whether there is a bias toward interrupting female MPs more often than their male colleagues. Considering the pure frequency at which female MPs are interrupted, studies of the U.S. Congress (Miller and Sutherland 2023) and the German state parliaments (Ash et al. 2024) have led to opposing findings. Others have investigated how female MPs react differently to being interrupted (Vallejo Vera and Gómez Vidal 2022) and how speaker and interrupter characteristics influence the likelihood of interrupting female and minority speaker MPs during their speeches (Boyd et al. 2024). So far, research on the topic has focused on the question of how the interplay of personal MP characteristics influences their interruption behavior toward women specifically and their reactions to being interrupted.

However, what we do not know yet is how strategic considerations, arising from party strategies and MPs' individual incentives, influence the interruption behavior of MPs. Specifically, I focus on explaining which factors influence how likely each pair of MPs is to interrupt each other. I thus shift the focus from the targets of the interruptions (Ash et al. 2024; Miller and Sutherland 2023; Vallejo Vera and Gómez Vidal 2022) to all dyads of MPs in parliament and their interactions via interruptions. A similar analysis has been performed by Miller and Sutherland (2023) to investigate whether interruptions are more frequent in same- or mixed-gender dyads. Answering this question is important for understanding the role interruptions play for party and MP interactions during parliamentary debates. Knowing under which strategic circumstances MPs use interruptions against each other can help us understand what place they take in the overall legislative process and the dynamics of party and MP competition. This is a question on which we currently lack knowledge. I thus derived the question leading the following work: "What strategic incentives influence how likely two MPs are to interrupt each other during their speeches in parliament?"

I argue that MPs face strategic incentives based on their career considerations that influence their propensity to interrupt during parliamentary speeches. My arguments are based on a theoretical framework highlighting the importance of parliamentary speeches for parties and their individual MPs (Imre and Ecker 2024). Interruptions can hinder successful speechmaking and attack a speaker's public image while signaling the interrupter's engagement with the debate to their party leadership. Based on this theoretical foundation, I propose that three groups of factors should create incentives for MPs that drive their interruption behavior. First, I expect that MPs who speak on and are experts on the same topics should interrupt each other more often due to their individual and their parties' competition over these topics. Second, the career status of MPs should influence how likely they are to interrupt or be interrupted. While inexperienced MPs can use interruptions to circumvent their limited access to speaking time and build their reputation, party frontbenchers present more likely targets due to their prominence. Third, opposition MPs should be most likely to use interruptions to attack MPs of government parties, whereas MPs of different government parties should be least likely to interrupt each other to maintain

coalition cohesion. I used a dataset of all interruptions perpetrated in the German Bundestag during the 19th electoral term between 2017 and 2021. The Bundestag is an ideal environment for this study since its protocols contain detailed information on interrupter and speaker for nearly all interruptions, with a variety of parties and a coalition government. I analyzed the probability of interruptions in each MP dyad using logistic regression models and additive and multiplicative effects network models for binary dependent variables to account for network structure.

I found that interruptions are concentrated in dyads of MPs who share a high degree of speaking time and expertise on the same topics. This suggests that interruptions are a tool of experts' communication in parliaments, in line with previous findings on the role of topic expertise for parliamentary behavior. New MPs are less likely to interrupt their colleagues, whereas I did not find robust evidence for an effect of frontbencher status. Dyads with opposition MPs as interrupters are most likely to see interruptions, both when targeting members of government or other opposition parties. As expected, dyads consisting of members of government parties have the lowest probability for interruptions.

These findings enhance our understanding of the role that interruptions play for parliamentary communication and legislative behavior overall. Interruptions fit closely with other forms of parliamentary communication in the sense that they are used to communicate between topic experts and by opposition MPs to voice their criticism. Thus, interruptions (in party/expert centered systems) might rather be a regular tool of parliamentary communication, being mainly used between topic experts or by the opposition to fulfill its role, and can be misused for personal attacks.

2 Legislative Debates and Interruption of Speakers

Parliamentary speechmaking is highly important for parties as a whole and for individual MPs. Speechmaking is a key aspect of deliberation during legislative processes. Through speechmaking, parties can try to convince each other of their positions and thus have the opportunity to influence the outcomes of a lawmaking process in their favor (Proksch and Slapin 2015). Implementing policies close to the party line can then again increase the satisfaction of the party's voters, benefiting the party in future elections. Parties can also use their speeches in parliament to signal their party line to the general public and frame issues in a way that is favorable to them (Jerit 2008; Slapin and Proksch 2021).

Speeches in parliament are also a way for parties and their MPs to gain public attention. Due to the presence of journalists and the existence of various social media platforms used by parties and politicians, the actual audience of speeches in parliaments extends beyond the MPs present during a speech. Sharing a speech on social media or having a news story be produced about a speech provides an opportunity to communicate the party line to the general public and potentially convince voters of the party's position. The speechmaking of their MPs is therefore important for parties as a whole since it is instrumental to successful policy-making and for securing voter support in future elections.

For individual MPs, who seek to get reelected and aim for higher offices in their party or in government (Mayhew 1974; Norris 1996), giving speeches is also a way to pursue these goals. By delivering a high-quality speech that advances their parties' interests, they can increase their own status within the party and achieve a better standing with the party leadership. Doing so repeatedly might be rewarded by the party leadership with offices within the party or a better spot on the party list in upcoming elections and/or support when running for direct mandates (Louwerse and Van Vonna 2022; Yildirim et al. 2019). Further, giving speeches also allows MPs to build their own personal reputation in addition to their party affiliation (Proksch and Slapin 2012, 2015; Yildirim et al. 2023) by communicating their own position.

Having a good public image is crucial for MPs since it translates into receiving more votes and support from the electorate, and it also increases their chances of a better party career (André et al. 2017; Norris 1996). MPs can build their reputation through speeches by delivering good speeches and sharing them via social media or having them received in a news story, as well as by representing key interests of the constituents that they want to vote for them (Yildirim et al. 2019). In summary, parliamentary speeches are critical for parties to communicate their positions and frame debates, and for individual MPs to help advance their personal career and build a public image.

2.1 Incentives for Interruptions

Interrupting other MPs during their speeches can have multiple strategic benefits for the perpetrating MP and their party. Interrupting a speaker in parliament disrupts the flow and coherence of their speech, reducing the effectiveness of their speech and their likelihood of achieving the benefits of a successful speech (Miller and Sutherland 2023; Smith-Lovin and Brody 1989). Further, when someone interrupts an MP during a speech and thus challenges their points and skills as a speaker, the audience's attitudes toward the speaker can be negatively influenced (Beatty and Kruger 1978). By violating a speaker's institutional right to speak via an interruption, the interrupting MP can also attempt to demonstrate their own power, engaging in conversational "power play" (Mendelberg et al. 2014, p. 23). Qualitative investigations of parliamentary interruptions reveal that they are mostly substantial opposition to the speech's contents; attacks on the competence, knowledge, or political style of the target; or simply a way to seek to ridicule the speaker (Burkhardt 2016; Hitzler 1990; Och 2020). Even in the rare instances in which interruptions between MPs of different parties are not open attacks, they still serve the purpose of disrupting the speaker against their institutional speaking right and hijacking their speech to communicate a different position.

Interruptions offer MPs a way to participate in a debate and receive attention, without being restricted by access to speaking time. They can therefore use interruptions to signal their position on the matter and show to their party leadership that they are invested in the legislative process, even though they are not allowed to speak. Although MPs may be able to give only a few speeches per term, participation through interruptions can convince their party leadership and interested voters that they take part in the deliberative process at all times. This may be rewarded

with better positions in the party or on party lists by the party's leadership, or with electoral support from voters.

For parties as a whole, interruptions against other parties also have strategic benefits. By interrupting other parties during a debate, a party may be able to decrease the chance for other parties to successfully argue for their position and sway the deliberative process in their favor. In the long run, parties can also use interruptions to influence public perception of other parties' competence. Repeatedly interrupting speakers from other parties can prevent them from giving good speeches. This might reduce the target party's ability to share their speeches on social media and decrease the likelihood of positive media coverage. As a result, this may in the long term lower voters' perceptions of the target party's competence.

However, MPs cannot perpetrate an unlimited number of interruptions without negative consequences for themselves. Perpetrating too many interruptions runs the risk of disciplinary measures, decreasing their standing with other MPs, or hurting their own public image. Consequently, I expect MPs to choose their targets for interruptions strategically to maximize their benefit from the limited number of interruptions they can perpetrate without hurting themselves.

It is also important to consider that interruptions are part of a larger range of reactions to speeches, alongside, for example, laughter or applause, which occur as spontaneous reactions to a speech. If a speaker says something that another MP in the audience dislikes, this may motivate the listener to spontaneously react with an interruption to show their disagreement, without strategic consideration. Given the potential randomness and spontaneity of interruptions, it is even more interesting that research repeatedly finds systematic patterns in interruption behavior (Ash et al. 2024; Boyd et al. 2024; Miller and Sutherland 2023). A reason may be that interruptions require verbalization of disagreement, whereas other forms of reactions, such as laughter, do not. This makes interruptions a less attractive way of spontaneously reacting to a speech, compared to other nonverbal reactions, leaving interruptions more to MPs using them strategically.

2.2 Topic Expertise

The topic expertise of MPs is an important factor shaping their political behavior inside and outside of parliament. Plenty of different topics are subject to legislative processes nowadays, and many of them have become very complex and technical. Thus, it is impossible for all members of a party to be knowledgeable on all areas. To overcome this issue, specific MPs often become the experts of their party in certain policy fields. These MPs are usually also members of the parliamentary committees within their field and shape the position and policy-making of their party in that field. Experts also inform their colleagues, for example, before votes on the topic. Often multiple MPs who are experts on a similar topic form their party's working group in a policy field. While parties "claim to delegate MPs based on their knowledge and expertise on the specific legislation or policy area" (Müller et al. 2021), the exact selection process is unknown to individuals outside of the parties. There is evidence for patterns in the assignment of MPs to policy areas, based on demographic characteristics such as sex (Bäck et al. 2014; Bäck and Debus 2019), age (Debus

and Himmelrath 2022), or ethnicity/migration background (Bäck and Debus 2020). Being a party's expert on a topic heavily influences MPs' parliamentary behavior. Party experts give more speeches on their topic of expertise (Fernandes et al. 2019; Huber et al. 2022; Müller et al. 2021) and focus on their field in parliamentary questions or press releases (Meyer and Wagner 2021; Proksch and Slapin 2011; Sozzi 2022).

Topic experts are assigned to topics to represent their party's interests on their topics, making their performance on these topics crucial for their reputation and future success within their party. Giving speeches on their topic is central for MPs to ensure renomination and better positions within the party (e.g., Louwerse and Van Vonna 2022). The same should be true for other forms of participation in debates, such as interruptions. By interrupting speeches on their topic, MPs can influence the outcome of deliberation in their party's favor. They can also demonstrate that they are invested in the topic, even without being allocated speaking time. In addition, interruptions between topic experts can also serve as a way to compete for issue ownership, either by defending the issue ownership of one's party or by challenging that of others.

Therefore, MPs have incentives to specifically target MPs from other parties with their interruptions who speak on the same topics as they do. This way, they can increase their chances of implementing their parties' policy positions and increase their standing with their party leadership by signaling engagement with the topics they have been assigned.

H1: *Interruptions are more likely in dyads of MPs who speak more on the same topics.*

Considering topic expertise as a driver of interruption behavior is crucial because the gender of MPs and their expertise in specific policy areas is heavily connected (Bäck et al. 2014; Bäck and Debus 2019). If topic expertise drives interruption behavior, gendered patterns of topic expertise may bias results on the effect of MPs' gender on their involvement in interruptions (Ash et al. 2024; Boyd et al. 2024; Miller and Sutherland 2023; Vallejo Vera and Gómez Vidal 2022).

2.3 Career Status

In addition to their topic expertise, the parliamentary experience, or seniority, of MPs should influence their propensity to interrupt. As MPs accumulate more experience in parliament, they become more familiar with parliamentary procedures, form connections with other MPs, and are able to establish themselves through participation in various legislative activities. Additionally, experienced MPs have shown that they are able to get reelected, convincing their party leadership and voters to nominate and support them again, through strong parliamentary performance (Yildirim et al. 2019). However, MPs serving their first term in parliament have not had this chance to prove themselves in parliament and demonstrate their competence by being reelected. A tangible outcome of this difference in experience and status is that inexperienced MPs get allocated less speaking time than their more senior colleagues (Hájek 2019; Müller et al. 2021).

As a consequence of having less speaking time and having to prove themselves to their party leaders and voters, MPs in their first term in parliament may turn to other legislative activities to achieve their goal of reelection. In the Czech Republic, MPs with low parliamentary experience have a higher vote attendance than their more experienced colleagues (Hájek 2019). This may be a way for new MPs to signal their motivation and commitment to their party leaders, hoping for future promotions. Interruptions may be an opportunity to do the same. Unlike giving speeches, the opportunity to interrupt speeches is not formally limited and cannot be disproportionately allocated to senior MPs. As explained above, interrupting can be a tool for MPs to show their commitment to participate in debates to their party leadership and, potentially, also voters. Especially for new MPs, interrupting can thus be a suitable alternative. I therefore expect MPs who are in their first term to perpetrate more interruptions:

H2a: *MPs who are in their first term in parliament are more likely to perpetrate interruptions compared to their more senior colleagues.*

There are, however, also good reasons why inexperienced MPs may shy away from perpetrating interruptions. As new MPs have not had the time to establish relationships with their colleagues yet, they may be afraid that interrupting too frequently may hurt their reputation with other MPs. In turn, this could decrease their chances of cooperation across party lines, hindering their future career. Additionally, newcomer MPs have not yet shown that they can act as productive politicians, compared to experienced MPs who have already demonstrated that they can make politics beyond attacking their colleagues. Therefore, MPs in their first term may hold back from perpetrating too many interruptions and instead focus on more constructive forms of legislative activities. In contrast to the prior hypothesis, one could therefore also expect fewer interruptions from newcomer MPs:

H2b: *MPs who are in their first term in parliament are less likely to perpetrate interruptions compared to their more senior colleagues.*

Frontbenchers of parties may be more desirable targets for interruptions compared to common backbenchers, due to their prominence and status (Miller and Sutherland 2023). Frontbenchers of parties give more speeches in important situations, for example when the party unity is at stake (Proksch and Slapin 2012) or during debates close to election day, especially when the topic is salient to their party (Bäck et al. 2019). Party leaders also receive more media attention compared to party members (Van der Pas 2022). The goals of interruptions include attracting attention from one's own party leadership and media representatives. Therefore, interrupting a frontbencher during their speech seems especially desirable because their speech will likely receive more attention than that of a backbencher. I thus expect that party frontbenchers will more frequently be the targets of interruptions, due to the heightened attention to their speeches as a result of their position:

H3: *Party frontbenchers are more likely to be targeted by interruptions compared to backbenchers.*

2.4 Government-Opposition Dynamics

While interruptions occur between individual MPs, it is important to also consider how party-level factors influence the interruption behavior of party members. Although individual MPs can act in their own interest, toeing the party line and working to achieve the party's goals is important to their careers. This is because the party leadership decides on nominations for higher offices in party and in government and exerts strong control over the renomination of MPs in future elections; MPs will therefore likely use their interruptions to achieve not only their individual goals but also the goals of their party.

One important divide that structures legislative activities is between government and opposition parties (De Giorgi and Ilonszki 2018; Helms 2022). The divide between government and opposition parties is often so crucial that it is a stronger predictor of voting patterns in parliament than ideological positions (Hix and Noury 2016). The key role of opposition parties is "to exercise control and appear in parliament as a challenger that provides an alternative to the government" (De Giorgi and Ilonszki 2018, p. 2). In parliament, opposition parties can fulfill this role by presenting their own positions in their speeches, as well as by criticizing the government's positions. During parliamentary debates, this manifests in significant differences between government and opposition parties regarding the sentiment of their speeches, with opposition MPs speaking more negatively (Proksch et al. 2019; Schwalbach 2022). Besides sentiment, this dynamic of opposition parties criticizing the government is also found regarding verbal attacks during parliamentary question times. Here the largest number of attacks is perpetrated by opposition parties targeting government parties (Poljak 2023). It is very likely that opposition parties will also use interruptions to criticize government parties. I consequently expect that interruptions will be most prevalent in constellations in which opposition MPs target MPs of governing parties:

H4a: *Interruptions are most likely in dyads of MPs in which the interrupting MP is a member of an opposition party and the speaking MP is a member of a government party.*

In contrast, members of parties in a coalition government should be less likely to interrupt each other. Coalition governments require their members to cooperate across the party lines and make compromises to maintain the legislative majority needed to pursue their policy goals (Bergman et al. 2021). There may still be incentives for coalition parties to try to distinguish themselves from their coalition partners. I do, however, expect that appearing united as a coalition is more important during debates in order to be able to enact policy and convince voters of their effectiveness as a government. Consequently, I hypothesize that interruptions are least prevalent between MPs of parties that are in a government coalition together:

H4b: *Interruptions are least likely in dyads of MPs in which both the speaking and the interrupting MP are members of government parties.*

3 Data and Methodology

3.1 Data

I focused on interruptions in the German national parliament, the Bundestag, due to data availability. Interruptions are a common phenomenon in democratic parliaments around the world, with previous studies mainly focusing on the targets of interruptions (Ash et al. 2024; Miller and Sutherland 2023; Vallejo Vera and Gómez Vidal 2022). Although interruptions are often contained in the audio or video recording of a debate, not all plenary protocols contain them. Further, the protocols that contain interruptions often lack information about the perpetrator. One exception to this trend is the protocols of the German parliament, which contain nearly all interruptions and give information on content and perpetrator. I therefore relied on data on speeches and interruptions during the 19th term of the German Bundestag from 2017 to 2021 (Richter et al. 2023).

In the protocols of the German Bundestag, stenographers note all forms of reactions to the current speech in a coherent format (compare Ash et al. 2024). These include verbal interruptions/interjections without the right to ask a question or make a comment according to the rules of conduct (noted as *Zuruf* or *Zwischenruf* in German), as well as other reactions such as laughter (*Gelächter*) or applause (*Beifall*). I focused specifically on these verbal interruptions for multiple reasons. First, verbal interruptions are noted in the protocol with the specific MP interrupting, allowing for the investigation of the speaker and the interrupting MP. This is not the case for other forms of reactions such as applause, where multiple MPs often perform this action at the same time. Second, verbal interruptions have been the focus of multiple prior studies in the field (e.g., Boyd et al. 2024; Miller and Sutherland 2023). For the German Bundestag, all reactions to speeches were extracted by the Open Discourse Project (Richter et al. 2023). An example of such a verbal interruption during the speech of Niema Movassat (the Left Party [*Die Linke*]) on COVID-19 policy can be seen below¹:

Niema Movassat (*Die Linke*): [...] Or the topic of home office. Instead of taking the economy into the responsibility to let employees go into home office wherever it is possible, there is only a vague regulation.

(Michael Grosse-Brömer [Christian Democratic Union(CDU)/Christian Social Union (CSU)]): The people should decide that themselves!

The people need to completely restrict their private lives, but have to go to work in fully packed trains. This is obviously absurd! [...]

3.2 Dependent Variable

As my dependent variable, I used a binary measure indicating whether there was at least one interruption in an interrupter–speaker dyad during the parliamentary term.

¹ Speech given on 29 January 2021. Translation from German by the author. Source: <https://dsserver.bundestag.de/btp/19/19207.pdf>

Using this binary indicator for interruptions in a dyad mirrors the data structure used in the network analysis by Miller and Sutherland (2023), although they used a cutoff of four interruptions due to a higher prevalence of interruptions in the U.S. case. Using a binary dependent variable also allows for the use of regression models for network data (more on this in the section on model selection).

The direction of the dyad is of relevance since previous findings suggest that MP characteristics influence how and whom they interrupt or get interrupted by (Ash et al. 2024; Boyd et al. 2024; Miller and Sutherland 2023). Thus, each pair of MPs is contained twice in the dataset, once with each role configuration. I excluded all dyads with MPs of the same party faction. Intra-faction interruptions are likely to be overwhelmingly supportive. Thus, they serve different purposes than cross-faction interruptions and do not fit the theoretical framework of seeking to hinder the communication of MPs from other parties. Cross-faction interruptions may also be supportive in some instances, although with substantially lower frequency than intra-faction interruptions (Burkhardt 2016; Hitzler 1990). Even when cross-faction interruptions contain a supportive message, they still serve the purpose of hijacking the current speech to communicate the party line of another party. Further, I excluded all dyads containing at least one MP without a party faction, since their number is too small to draw inferences about them.

This led to a dataset with a total of 405,370 dyads, across which we can observe 56,640 interruptions. While most dyads have zero recorded interruptions, there are 19,861 dyads in which at least one interruption occurred. This represents about 5% of dyads. Substantially, this means that each MP has about 30 MPs from other factions whom they have interrupted and/or have been interrupted by throughout the term. Figure 1 shows the distribution of interruptions per speech across the electoral term. Although there is a notable range regarding how often speeches are interrupted, the average number of interruptions per speech is quite stable across the term.

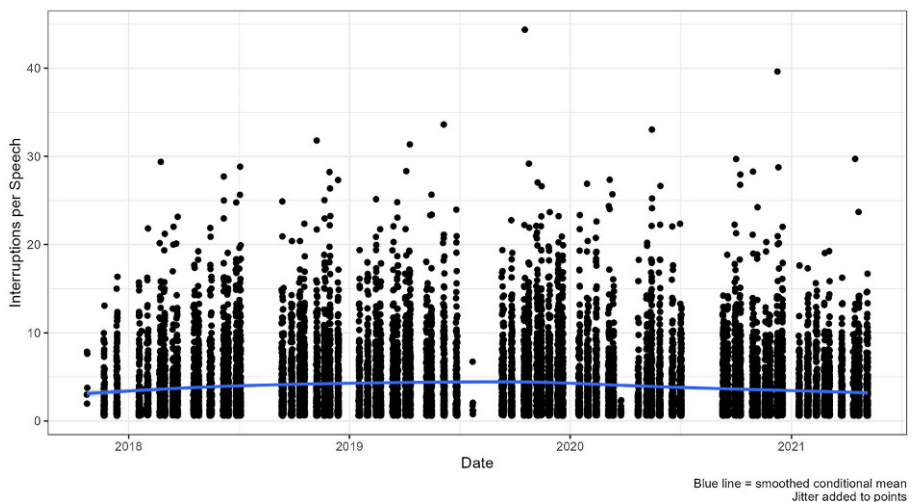


Fig. 1 Distribution of interruptions per speech across the electoral term

3.3 Explanatory Variables

To measure how much speaking time the two MPs in a dyad shared on the same topic, I classified the topics every individual MP spoke on. I used the transformer-based supervised classifier ParlBERT-Topic-German (Klamm et al. 2022). Such transformer-based language models are superior to previous text analysis techniques because they are able to consider words in context. This leads these new transformer-based models to perform better than older techniques on many tasks such as the classification of topics (Wang 2023) or emotions (Widmann and Wich 2023). The ParlBERT-Topic-German model was trained on a large corpus of German interpellations and pretrained on German parliamentary speeches (Klamm et al. 2022) and has been extensively validated. It is specifically trained to classify German texts into 21 categories according to the Comparative Agendas Project (CAP) coding scheme. Because this model has good model performance and is specifically trained for the task required for this paper, there was no need to develop a new classifier. I validated the performance of the model on a sample of sentences from my dataset, indicating sufficient model performance comparable with other classifiers using the CAP scheme. I applied this classifier to each individual sentence in Bundestag speeches during the 19th term. Sentences represent coherent statements that can be classified into distinct topics with higher precision than whole speeches. Classifying full speeches would neglect the fact that speeches often contain statements on multiple topics, ignoring the important variation of topics within speeches. To test the robustness of results to the choice of classification procedure, I additionally employed a semisupervised approach using a keyword-assisted topic model (Eshima et al. 2024). The substantial results of this paper are robust to this different classification approach (see Appendix for validation, additional information, and an extended discussion of classification procedures).

I aggregated the individually classified sentences to the MP level and calculated the share of sentences per topic in each MP's speeches across the full term. From this, I calculated the topic similarity measure for each dyad. This measure consists of the absolute difference in the share of sentences spoken between the MPs for each topic summed up across topics. I subtracted that from 2 and divided it by 2 to receive a measure ranging from 0 to 1, where higher values represent higher similarity in topics. This can be condensed into the following formula:

$$\text{Similarity} = \frac{2 - \sum^t |\theta_{st} - \theta_{it}|}{2}$$

where θ_{st} indicates the share of sentences of the speaker s in the dyad for topic t , and similarly, θ_{it} indicates the share of sentences of the interrupter i for the same topic. The resulting measure has a theoretical range between 0 and 1. A value of 1 would indicate that both MPs in a dyad speak on the same topics with exactly the same proportions, while a value of 0 would indicate that the two MPs do not share any speaking time on any topic. What is handy about this measure is that the values can be interpreted as the relative share of speeches both MPs have on the same topics.

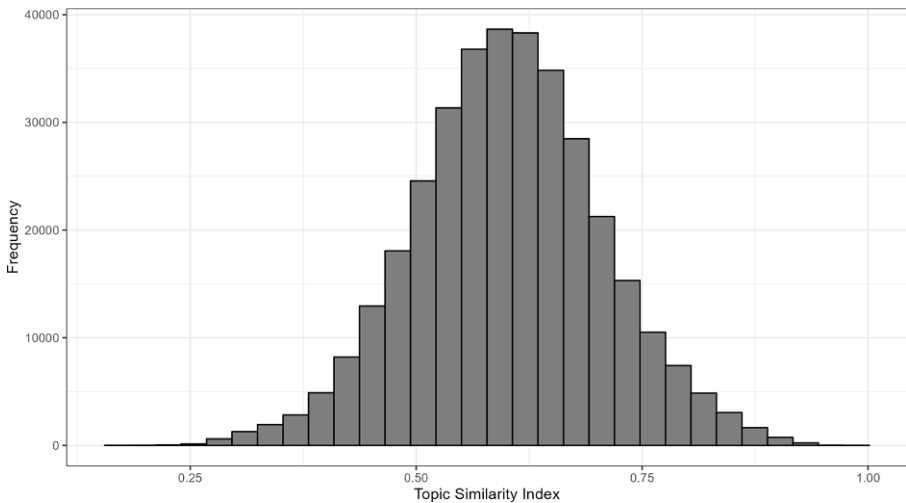


Fig. 2 Distribution of topic similarity index across interrupter-speaker dyads

The observed range in my data for this parliamentary term goes from 0.18 to 1. The absence of values close to 0 is a result of the prevalence of formal parts of speeches, classified into the government topic. A distribution of this variable is shown in Fig. 2. One important observation from this figure is that only about 8% of dyads have a topic similarity score of 0.75 or above, representing speaking on the same topic for 75% or more of their speeches. In absolute values, this means that for each MP, there are on average about 30–40 MPs from other parties with whom they have such a high topic similarity.

Another possible measure of topic expertise for MPs could be their committee chairmanships. Previous studies on legislative behavior in the Bundestag did, however, reveal that committee chairmanship does not systematically influence how frequently MPs participate in a debate (Müller et al. 2021). This suggests that the connection between committee chairmanship and topic expertise is not strong enough for it to be used instead of my measure of topic similarity.

Additionally, I constructed a series of dummy variables indicating the government/opposition constellation of both the interrupting and speaking MP in a given dyad, similar to Poljak (2023). I used dyads in which both MPs were members of government parties as a baseline. To determine whether the speaking MP was a frontbencher or backbencher, I followed Müller et al. (2021), considering party leaders, leaders of the parliamentary party group, and party whips as frontbencher and the remaining MPs as backbenchers. Lastly, I created a dummy variable indicating whether the interrupting MP in a dyad was in their first term in the Bundestag.

3.4 Control Variables

I controlled for the gender of the speaker and interrupter. This was necessary because gender influences the frequency with which MPs get interrupted (Ash et al. 2024;

Miller and Sutherland 2023) and how often they speak on certain topics (Bäck et al. 2014; Bäck and Debus 2019; Müller et al. 2021). Also, there is a gender imbalance of MPs between parties (Bieber 2022), making the gender of MPs a potential confounder of their topic similarity and interruption frequency and between government/opposition dynamics and interruption frequency. Additionally, I included a dummy variable indicating whether both MPs were from the same electoral district, to keep potential effects of regional competition constant. Two MPs from the same region may speak more on the same topics to represent their local interests (e.g., Rehmert 2024), increasing their topic similarity index. If they also interrupt each other more frequently as a means of competing over votes and status in their home region, both MPs being from the same district would confound the relationship between topic similarity and interruption frequency. I also included the total number of sentences in speeches by the speaking MP in a dyad across the term. This accounts for the number of opportunities to interrupt that MP. Finally, there is a potential concern that two MPs may interrupt each other more frequently simply because they speak together more frequently and are thus present during the other MP's speech rather than being experts on the same topic. To address this potential issue, I included a variable containing the number of times both MPs in a dyad had given a speech on the same day, approximating how often they were present during the other MP's speeches. A measure based on speaking during the same agenda item may have also been desirable to account for this possibility. Data on the agenda item of speeches is, however, not yet available for this parliamentary term. Focusing narrowly on speeches during the same agenda item would, though, neglect the possibility that MPs were present because they were speaking on different agenda items that were debated shortly after one another.

3.5 Model Selection

Since my dependent variable is binary, I used a logistic regression model. Using a logistic regression model over a linear probability model is necessary to prevent predictions below zero. The model includes all the variables mentioned above.

With dyadic data like this, there can be a concern that the assumption that the errors are independent and identically distributed may not hold (Minhas et al. 2022). This is because one actor, in this case an MP, is the sender and receiver in multiple dyads. Therefore, their personal characteristics might influence the values of multiple observations. For example, if an MP is generally more inclined to interrupt, independent of target, they are more likely to have perpetrated interruptions across multiple dyads. This would lead to these dyads being dependent. There are regression models specifically for this type of network data that can be constructed from these dyads and that do not contain this assumption. Most of these can only include data on the nodes, in this case MPs, of the network and for each edge, i.e., connection, a binary indicator of whether the two nodes have the same value for a given characteristic. One class of network models that allows for the inclusion of continuous edge characteristics, such as the topic similarity in this paper, consists of additive and multiplicative effects network models (AMEN; Hoff et al. 2013), implemented in the *amen* package for R (Hoff 2015). I repeated the specification as

for the logistic regression model as an AMEN model for binary dependent variables. If both models lead to the same conclusions regarding the direction and significance of effects, this would serve as strong support for or against the hypothesis.

4 Results

Table 1 shows the output for both regression models. As expected, topic similarity has a positive and systematic effect on the interruption likelihood in an MP dyad in both models. Thus, two MPs who are experts on the same topic(s) are systematically more likely to interrupt each other. This provides strong support for *H1*. Looking at career status, it seems that MPs who are in their first term are less likely to perpetrate an interruption compared to their senior colleagues, supporting *H2b* over *H2a*.

Table 1 Regression models on interruption likelihood

	(1)	(2)
Topic similarity	7.541*** (0.085)	5.059*** (0.058)
Opposition → opposition	1.309*** (0.034)	0.652*** (0.08)
Opposition → government	1.350*** (0.032)	0.665*** (0.067)
Government → opposition	0.694*** (0.033)	0.396*** (0.033)
Frontbencher speaker	0.188*** (0.024)	0.035 (0.051)
First-term interrupter	-0.423*** (0.018)	-0.301*** (0.067)
Female interrupter	0.031* (0.018)	-0.093 (0.074)
Female speaker	-0.149*** (0.019)	-0.07** (0.033)
Same district	0.159 (0.128)	0.109 (0.077)
#Sentences speaker	0.0001*** (0.00001)	0.0001*** (0.000)
Same-day speeches	0.072*** (0.001)	0.039*** (0.001)
Constant	-9.155*** (0.066)	-6.04*** (0.084)
Model type	Logistic	Binary AMEN
Observations	322,398	322,398
Log likelihood	-56,710.460	–
Akaike information criterion	113,444.900	–

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Regarding frontbencher status of the target MP in a dyad, the two models find diverging results. While the standard logistic regression model suggests a significant positive effect of frontbencher status of the target for interruption likelihood, the network model finds no systematic effect. This suggests that when receiver characteristics are accounted for in the network model, the effect of being a frontbencher on the likelihood of getting interrupted disappears. For government-opposition dynamics, the highest likelihood of interruptions exists in dyads in which both MPs are in opposition parties or in which the interrupting MP is in opposition while the speaker is a member of a government party. This serves as mixed evidence regarding *H4a*. At the low end, dyads in which both MPs are members of government parties, the baseline in the models, are least likely to have an interruption during the term, supporting *H4b*.

Regarding control variables, female interrupters are slightly more likely to interrupt in the logistic regression model, but this effect disappears once network structure is accounted for. Interestingly, female speakers are less likely to be interrupted in both models, corroborating prior findings in Germany (Ash et al. 2024). Electoral competition in the same district does not seem to affect the interruption behavior.

To get a better substantial understanding of the results, I calculated marginal effects using the *margins* package (Leeper 2024) based on model 1. I present marginal effects only for the explanatory variables for which both models led to the same substantial results. For topic similarity, I present the marginal effect of moving from median topic similarity (0.6) to the 90th percentile (0.734). This step from median topic similarity to a relatively high level of topic similarity is substantially more meaningful than looking at the full range. These marginal effects can be seen in Fig. 3.

Moving from the median topic expertise to the 90th percentile of topic expertise increases the probability of at least one interruption by slightly below 5 percentage points, all else constant. Given that we observe one or more interruptions in only about 5% of all dyads, this is a substantially large increase. This strongly supports the notion that MPs use interruptions strategically to attack topic experts from other parties. On the flip side, it implies that MPs who do not share at least some topic expertise are very unlikely to interrupt each other. This concentrated use of interruptions between topic experts indicates that they are likely to be part of a larger variety of ways in which experts interact during the legislative process. They therefore seem to fit closely with other forms of legislative activities that we already know are strongly driven by topic experts (Fernandes et al. 2019; Meyer and Wagner 2021; Müller et al. 2021; Proksch and Slapin 2011; Sozzi 2022). This also suggests that interruptions do not stand out from the general culture of parliamentary debates in particular and legislative activities in general.

Turning to the constellations of government-opposition status, interruptions are most likely in dyads in which the interrupter is in opposition while the speaker is in government and in dyads in which both interrupters are in opposition. For both of these constellations, observing at least one interruption is about 6 percentage points more likely compared to a dyad of two MPs who are members of government parties. Again, these effect sizes are quite substantial considering that we observe

interruptions in only 5% of dyads overall. Dyads with a government MP as the interrupter and an opposition MP as the speaker are around 3 percentage points more likely to see at least one interruption, compared to two government MPs. These findings reveal multiple interesting insights about the use of interruptions along the government-opposition divide. Interruptions are, in fact, part of the strategic toolbox of opposition parties that they use to attack and criticize government parties, in line with previous expectations. Opposition MPs, however, also use interruptions, with a high likelihood to attack MPs from other opposition parties. This suggests that opposition parties and their MPs also use interruptions as a means of competing with other opposition parties. Finally, dyads of two MPs from different governing parties indeed have the lowest likelihood of experiencing interruptions. This supports the notion that cooperation in a government coalition does in fact create the necessity for less conflictual behavior between coalition partners, disincentivizing attacks such as interruptions.

One exemplary dyad for both the effect of topic expertise and government-opposition dynamics is that of Dr. Julia Verlinden of the Green Party and Jens Koeppen from the conservative CDU/CSU faction. They interrupted each other 40 times over the course of the term, with most of the interruptions coming from Verlinden, and had a topic similarity index of 0.81, stemming from both of them speaking frequently on energy policy. The shared topic expertise in this dyad is substantially valid, given that Verlinden is party spokesperson for energy policy and Koeppen is a member of the committee on energy and climate protection and former head of an expert committee covering energy policy for the state of Brandenburg. This shared expertise would not have been captured by shared committee membership, since there are multiple committees covering either energy policy and/or climate protection.

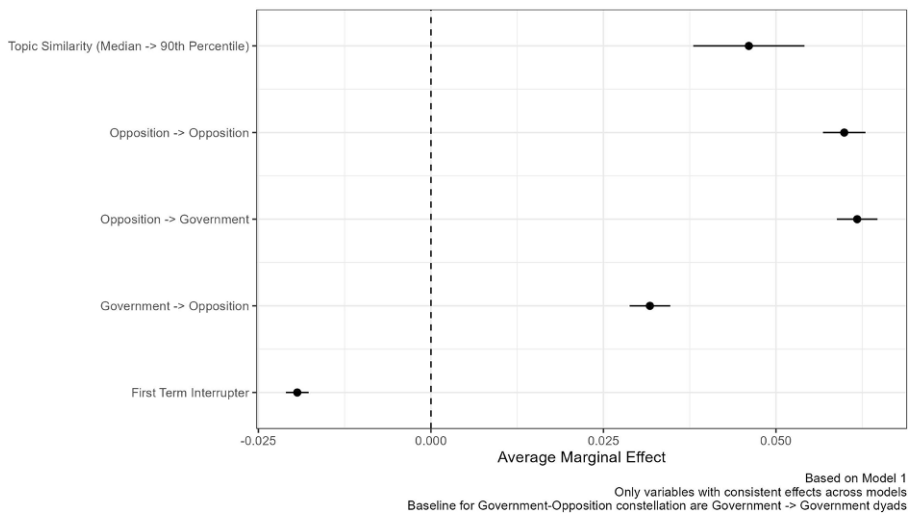


Fig. 3 Average marginal effects of explanatory variables

The MPs who are serving their first term in parliament are less likely to perpetrate interruptions than their senior colleagues. Specifically, dyads that have an MP in their first term as the interrupter are around 2 percentage points less likely to experience at least one interruption. The size of this effect is still substantial given the overall prevalence of interruptions, but it is less impactful than topic expertise or government-opposition dynamics. This finding supports the expectation that MPs serving in their first term may refrain from interrupting too much to avoid hurting their reputation and focus instead on other more constructive forms of legislative activities. While interruptions likely have strategic benefits for their perpetrators, MPs appear to weigh these benefits against the potential costs to their career of overusing interruptions.

Lastly, the results on whether frontbencher MPs are more likely to be the target of interruptions are inconclusive. Although the logistic regression models found a positive and significant effect for frontbencher speakers, this effect disappears in the network model. Because the network model also accounts for the inherent network structure and for sender and receiver effects across dyads, the results should not be seen as supporting the hypothesis that frontbencher MPs are more likely to be interrupted.

5 Conclusion

This paper enriches the literature on parliamentary behavior and interruptions in parliament by studying strategic incentives for interruptions. Previous studies on interruptions in parliament have focused on the influence of demographic speaker characteristics, such as gender, on how frequently they get interrupted (Ash et al. 2024; Miller and Sutherland 2023) and how they react to interruptions (Vallejo Vera and Gómez Vidal 2022), as well as the interplay of personal characteristics of MPs on the interruption of female and minority speakers (Boyd et al. 2024). I changed the focus to the strategic considerations influencing whether two MPs interrupt each other. I argue that through interruptions, MPs can attack their targets, hinder the targets from giving good speeches, and increase their standing with their party leadership, benefiting their careers. First, I hypothesized that MPs are more likely to interrupt other MPs who are experts on the same topics. Second, I expected that the career status of MPs influences interruption behavior, specifically the experience of the interrupter and frontbencher status of the target. Third, I hypothesized that government-opposition dynamics drive interruptions, making interruptions most likely when opposition MPs target government MPs and least likely between MPs of different government parties. I used data on interruptions in all MP dyads of different parties in the German Bundestag between 2017 and 2021. I found strong evidence that interruptions are more likely in dyads of MPs who frequently speak on the same topics, indicating topic expertise. Further, I found that inexperienced MPs are less likely to interrupt their colleagues, but I did not find robust evidence for an effect of frontbencher status. My findings also reveal that interruptions are most likely when opposition MPs target government MPs, as well as in dyads of two opposition MPs, whereas dyads of two government MPs are least likely to experience interruptions.

These findings are highly relevant for understanding the drivers of interruptions in parliament and their role in parliamentary communication. Prior research treats interruptions as a form of personal attack somewhat outside of the institutional rules (Ash et al. 2024; Boyd et al. 2024; Miller and Sutherland 2023). My findings, however, suggest that interruptions might in large part be tools of expert communication and an avenue for opposition parties to fulfill their role in parliament. Thus, interruptions might be more accurately described as parliamentary communication tools that can also be used for (personal) attacks. This possibility for the use as attacks is, however, still important, since nonattacking communication could not explain prior findings fully (Ash et al. 2024; Miller and Sutherland 2023). Future researchers on the topic should consider this in their theories.

The finding of shared topic expertise as a driver for parliamentary interruptions has important implications regarding previous findings on the role of personal characteristics of MPs for interruptions in parliament. Gender is a strong indicator for how often MPs are interrupted (Ash et al. 2024; Boyd et al. 2024; Miller and Sutherland 2023). However, these findings may partially be driven by gender differences in topic expertise and in taking the floor (Bäck et al. 2014; Bäck and Debus 2019). For example, the finding from Ash et al. (2024) that female MPs receive fewer interruptions may partially result from fewer MPs being topic experts on traditionally female topics due to the gender imbalance among German MPs.

Additionally, these findings provide insight into the attention and participation of MPs in parliamentary debates they are not experts on. While not all MPs of a parliament are usually present during each debate, the number of present MPs in most instances exceeds the party experts for the specific topic at hand. The fact that these present MPs who are not experts on the current issues only rarely interrupt the experts speaking on the topic supports the notion that MPs do not participate in debates they are not experts on. While this phenomenon is established for speaking in parliament (Huber et al. 2022; Müller et al. 2021) and asking parliamentary questions (Proksch and Slapin 2011; Sozzi 2022), it appears that this dynamic also applies to more spontaneous and less formalized forms of participation, such as interruptions. Similarly, new MPs being less likely to interrupt than their senior colleagues suggests that the lower debate participation of new MPs in formalized forms such as speechmaking (e.g., Müller et al. 2021) also extends to informal forms such as interruptions. This also means that new MPs may not try to make up for lower speaking time through other forms of debate participation such as interruptions. Instead, they seem to focus on different legislative activities to show their commitment to their party leadership (Hájek 2019).

While this paper discusses the incentives of individual MPs and their parties separately, it is not entirely able to distinguish them empirically. Especially regarding the effect of topic expertise, I am not able to determine whether individual topic experts interrupt other experts due to their own incentives or whether their party leadership instructs them to do so. Because both entities have incentives for competition on topics through interruptions, it is a reasonable possibility that both drive interruptions. This potential mix of incentives does not invalidate the results showing topic expertise to be a driver of interruption behavior; however, they do not conclusively demonstrate whose incentives lead to this effect.

Because the case of study for this paper is the German Bundestag, whose debate culture revolves around party experts (Müller et al. 2021), it can be considered a more likely case for a strong effect of topic expertise. It would therefore be interesting to see how well these findings translate to countries with electoral systems facilitating candidate-centered parliamentary cultures, such as the United Kingdom. These systems encourage personal reputation-building of MPs more and might therefore give more power to other factors to drive the prevalence of interruptions between MPs. Additionally, studying whether these effects hold in other party/expert-centered systems could be relevant to rule out effects specific to Germany.

All of these implications open additional avenues for future research. In which cases are MPs interrupted by MPs whom they do not share topic expertise with? Also, during which debates do MPs of the government camp interrupt each other? While these and previous findings indicate that these instances might be rare, understanding the exceptions may consolidate our knowledge of parliamentary culture further. Possible instances for exceptions could be new topics without a clear belonging to one area of expertise, such as the COVID-19 pandemic, or highly salient and moralized topics such as abortion.

While this paper provides valuable insight on the effects of topic expertise, career incentives, and government-opposition dynamics separately, additional research should also consider the interplay of these factors. In particular, diving deeper into the question of whether government-opposition dynamics change the incentives created by topic expertise could provide additional details regarding the influence of these factors for legislative behavior. Similarly, investigating the potential combination of individual topic expertise of MPs and competition over issue ownership at the party level could be a fruitful approach for future studies. Further, quantitative analyses of the content of interruptions could reveal more about their purpose for parliamentarians.

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