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Emotions Running High? A Synopsis of the State of Turkish Politics through the ParlaMint Corpus

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Abstract

We present the initial results of our quantitative study on emotions (Anger, Disgust, Fear, Happiness, Sadness and Surprise) in Turkish parliament (2011–2021). We use machine learning models to assign emotion scores to all speeches delivered in the parliament during this period, and observe any changes to them in relation to major political and social events in Turkey. We highlight a number of interesting observations, such as anger being the dominant emotion in parliamentary speeches, and the ruling party showing more stable emotions compared to the political opposition, despite its depiction as a populist party in the literature.

Keywords: emotion, parliamentary corpora, Turkey

1. Introduction

Increasing polarization of politics (Enyedi, 2016; McCoy et al., 2018) and global rise of populism (Moffitt, 2016; Cox, 2018) can be counted among the main catalysts of the renewed interest in the role of sentiments in politics. At the same time, studying emotions in politics has traditionally remained a polarizing subject in political science literature (Marcus, 2000, p.221). On the one hand, there is the idea that emotions are "the expression of personal emotions," (Marcus, 2000, p.222) and that political issues ultimately carry sentimental value (Werlen et al., 2021, p.1). On the other hand is the rationalist approach, where emotions become handmaidens to the goals that actors pursue. However, recent studies increasingly problematize this Manichean outlook, and argue that "[i]nformal, affective manifestations of politics are enormously influential, profoundly shaping inter- and intra-national democracy." (Prior and van Hoef, 2018, p.48).

While exploring the relevance of sentiments in politics, parliaments in particular have remained at the center of attention as "[p]arliamentary and legislative debate transcripts provide access to information concerning the opinions, positions, and policy preferences of elected politicians." (Abercrombie and Batista-Navarro, 2020). Although parliaments exist in a variety of regime settings, ranging from democratic to autocratic, the existing literature almost exclusively consist of studies on democracies in the developed world to better understand their political processes (Diermeier et al., 2012; Kapočiūtė-Dzikienė and Krupavičius, 2014; Werlen et al., 2021; Rheault et al., 2016; Abercrombie et al., 2019). It creates a lacuna, as recent research suggests that parliamentary debates in non-democratic settings can be as nuanced and worth exploring as their democratic counterparts (Kurtoğlu Eskisar and Durmuşlar, 2021). Hence, any relevant input or data from non-democracies has the potential to significantly contribute to the study of emotions in politics.

The goal of our study is therefore threefold. First, we aim to analyze the Turkish parliamentary transcripts for their emotional content. Although there are some studies on the nature of parliamentary debates in Turkey (Elçi, 2019), including content analyses of the speeches of political leaders on specific issues (Devran and Özcan, 2016; Güngör, 2014) or linguistic analysis of emotions in Turkish (Toçoğlu and Alpkoçak, 2018), none of them exclusively focus on emotions in the Turkish parliament, or are as comprehensive in their coverage and findings as our study. Through an overview of emotions in the Turkish parliament, our second aim is to offer a preliminary discussion of their role in hybrid regimes, which is mostly overlooked in the relevant bodies of literature. Although the subject of this study naturally falls under the focus of political science, relatively few political scientists have done research on the topic using computational methods (Hopkins and King, 2010, p.230). Therefore, by adopting a multi-disciplinary (computational linguistics and political science) approach to the topic, this study also hopes to contribute to the growing number of such collaborative studies in the field.

We single out Turkey for further discussion for several reasons. First, as a country that has witnessed a regime shift (from democratic to hybrid or autocratic) in recent years, monitoring the leading emotions in Turkish politics can help to discover any existing linkage between regime types and emotions expressed in comparative parliamentary settings. An analysis on Turkish parliament is also a welcome addition to the existing literature, which has few comparative studies (Abercrombie et al., 2019, p.6). Methodologically speaking, it reduces measurement inconsistencies or bias by focusing

on the same parliament under different regime settings.

2. Turkish Politics in Recent Years: A Synopsis

To explore our goals, we overview the prevailing emotions or sentiments in the Turkish parliament from June 2011 to April 2021. For our purposes, we focus on the following emotional states as markers in our study: Fear, anger, surprise, disgust and sadness and happiness.[1]

Although ruled by the same political party (Adalet ve Kalkinma Partisi, AKP) since 2002, Turkish politics has experienced many ups and downs. During the period studied, Turkey experienced a number of significant social and political events, some of which include the following: Gezi protests (28 May 2013-30 August 2013), "bribery and corruption operations" (17-25 December 2013), ban on access to social media (Twitter) on (20 March 2014-3 April 2014), local elections (30 March 2014), Soma mining accident where 301 miners lost their lives (30 May 2014), presidential elections (10 August 2014), Kurdish refugee inflow (approximately 150000 people) from Kobani, Syria in September 2014, general elections (7 June 2015, 1 November 2015), series of terrorist attacks that resulted in 862 deaths (7 June 2015–1 November 2015),[2] restart of negotiations with EU since 5 November 2013 (14 December 2015), coup d'etat attempt (15 July 2016), announcement of the state of emergency (20 July 2016), referendum for constitutional changes (16 April 2017), ban on access to Wikipedia (29 April 2017), presidential elections (24 June 2018), removal of the state of emergency (19 July 2018), local elections (31 March 2019), annulment of local election results for Istanbul (6 May 2019), local election for Istanbul (23 June 2019).

3. Method

We investigate the research questions outlined above using data-driven, quantitative methods on parliamentary corpora. In particular, we use machine learning methods to detect emotion in parliamentary speeches, and base our analyses on changes in emotions in the parliamentary discourse through time.

[1]Both choices, the date range and the emotions studied, are motivated by practical reasons. The range covers the complete range available from the Turkish section of the current version of the ParlaMint corpus (Erjavec et al., 2021), and the emotions are the ones studied by the Turkish emotion corpus TREMO (Toçoğlu and Alpkoçak, 2018).

[2]"Haber analiz: Davutoğlu ne demek istedi, 862 insanın hayatını kaybettiği 7 Haziran ve 1 Kasım seçimleri arasında neler oldu?" https://t24.com.tr/haber/haber-analiz-davutoglu-ne-demek-istedi-862-insanin-hayatini-kaybettigi-7-haziran-ve-1-kasim-secimleri-arasinda-neler-oldu,836288 (accessed on 15 March 2022).

Country	Period	Segments	Avg. Length
TR	2011–2021	357 726	108.58
UK	2014–2021	505 490	212.65

Table 1: Basic statistics of the parliamentary corpora used. The last column lists the average number of words in each speech segment.

3.1. Data

Parliamentary data The main source of data we use is from the ParlaMint corpora collection (Erjavec et al., 2021; Erjavec et al., 2022). ParlaMint is a multilingual, multiple-country collection of parliamentary corpora, mainly consisting of the transcriptions of the speeches delivered in the main proceedings of the parliaments of the respective countries. The ParlaMint project currently publishes parliamentary corpora of 17 countries in a unified format. We use the section of the Turkish corpus (ParlaMint-TR) for our main analysis. Although our focus is analyzing emotion in the Turkish parliament, we also run a similar analysis on ParlaMint-GB to verify the validity of our analysis. We note, however, that this only serves as a general sanity check. The differences in the parliamentary debates in two countries as well as the methodology we use makes a detailed comparison difficult.

For Turkish parliament, we include the top five parties based on number of speeches in the given period, and take the `segments` in the TEI-encoded corpus which are uninterrupted speech segments by the speakers. This leaves *Adalet ve Kalkinma Partisi* (AKP, 'Justice and Development Party'), *Cumhuriyet Halk Partisi* (CHP, 'Republican People's Party'), *Milliyetçi Hareket Partisi* (MHP, 'Nationalist Movement Party'), *Halkların Demokratik Partisi* (HDP, 'Peoples' Democratic Party'), and *İYİ Parti* (IYIP, 'Good Party') from Turkish parliament. For comparison with the UK parliament, we followed a similar approach, considering the most active four parties: *Conservative Party* (CON), *Labour Party* (LAB), *Liberal Democrats* (LD), *Scottish National Party* (SNP). The most outspoken fifth group in the ParlaMint-GB corpus was the '*Crossbencher*'s of the British House of Lords, which we left out in our data. Table 1 presents basic statistics on the parliamentary corpora used in this study.

Emotion corpora To train the machine learning methods for emotion classification, we make use of the TREMO data set for Turkish (Toçoğlu and Alpkoçak, 2018). TREMO is a corpus of sentences annotated manually for six emotion classes (Anger, Disgust, Fear, Happiness, Sadness and Surprise). Toçoğlu and Alpkoçak (2018) follow well-known ISEAR data set (Scherer and Wallbott, 1994), where a large number of participants are asked to describe experiences associated with each emotion. The texts provided by participants were further checked by experts, filtering out the

Corpus	Class	Instances	Avg. Length
TREMO		25 989	7.02
	Anger	4723	7.14
	Disgust	3620	6.15
	Fear	4393	6.51
	Happy	5229	7.14
	Sadness	5021	7.10
	Surprise	3003	8.26
ISEAR		5395	24.49
	Anger	1079	27.54
	Disgust	1066	23.92
	Fear	1076	26.71
	Joy	1092	22.00
	Sadness	1082	22.33

Table 2: Basic statistics of the emotion-annotated corpora used in this study.

conflicting texts and labels. The TREMO data set differs from the original ISEAR data, leaving 'Shame' and 'Guilt' emotions out, introducing a new emotion class 'Surprise', and using the label 'Happiness' instead of 'Joy'. For uniformity, we use the ISEAR data for English. ISEAR is available in a few slightly different versions on the Internet. We use the version from Bostan and Klinger (2018), but remove the instance belonging to 'Shame' and 'Guilt' classes. The statistics of the data sets as we use in this study are presented in Table 2.

3.2. Machine Learning Model

On both data sets, we use one-vs-rest SVM classifiers, with sparse character and word n-grams. SVM classifiers have been a common and successful choice for similar classification tasks (see Abercrombie and Batista-Navarro (2020) for a recent review). The n-gram features from both the characters and words are combined to a single feature matrix before applying TF-IDF weighting. We do not apply any preprocessing, except considering case normalization as a hyperparameter along with the maximum character and word n-grams included in the features and the SVM regularization parameter 'C' (the hyperparameter ranges and optimum values are documented in Appendix B). To find the optimum hyperparameters we perform a random search with 3000 iterations and pick the hyperparameter setting with the highest mean F1 score (macro-averaged) over 10-fold cross validation. We use the Python scikit-learn library (Pedregosa et al., 2011) for all machine learning experiments.

The macro averaged F1-scores of the respective models are 90.51% (sd=0.77 over 10 cross validation folds) on the TREMO data set, and 71.53% (sd=1.51) on the ISEAR data set. Although not directly comparable because of metrics reported and/or slight differences in the classes used in the experiments, these scores indicate substantially better models than the state-of-the-art scores reported in Toçoğlu and Alpkoçak (2018) and Bostan and Klinger (2018) (86% accuracy, and 62.2% macro-averaged F1 score, respectively).

3.3. Assigning Emotion Scores

The models with the best set of hyperparameters are re-trained using the complete data and used for assigning scores to each speech segment in the parliamentary data. Since we are not interested in assigning a single label to each segment, but detect the 'amount of a particular emotion' in text, we take the distance to the decision boundary of each one-vs-rest classifier, and take the sigmoid of each distance value to normalize the scores between 0 and 1. In the scores presented in the rest of this paper, a value of 1 is a confident estimate of the expression of a particular emotion, while a value 0 is a confident estimate that the given emotion is not expressed in a particular speech. A value close to 0.5 indicates that the classifier is rather uncertain.

In time-based visualizations displayed in the next section, each data point refers to the average emotion scores over a moth starting at the indicated date. We are interested in the change in the scores over time. An approximate interpretation of an absolute value at a particular date is similar to above. However, a value close to 0 means most speeches are non-emotional, 'rational'; a value close to 1 would mean that most speeches are emotionally loaded, and a value of 0.5 would indicate an equal number of emotional and non-emotional speeches.

4. Results

We summarize the overall emotional landscape of Turkish politics in Figure 1, which presents the average emotion scores for five largest parties in the Turkish parliament. The scores presented in the figure are averaged over all speeches during a month, and smoothed to show long-term trends more clearly. It is possible to divide our observations into general and party-specific findings. Due to the almost constant flow of political crises and issues experienced at home and abroad since 2011, and in line with earlier observations on Turkish foreign policy (Oran, 2010, p.3) and the populist character of the main political parties in Turkey (Baykan, 2018; Elçi, 2019), prior to conducting our research, we expected a relatively high variability of emotions in the parliament (cf. Figure 5 and 6 in the Appendix A, presenting a similar display of the UK parliament, where the scores seem more stable, despite the fact that the period also covers a rather volatile period of British politics due to Brexit).

Despite the series of volatile political events and populist characteristics attributed to Turkish politics in the literature, however, in Figure 1, the average scores remain below 0.5, indicating relatively non-emotional, rational speeches delivered in the parliament. More specifically, contrary to our expectations, political parties such as AKP have displayed less emotions than expected. We believe that this finding directly chal-

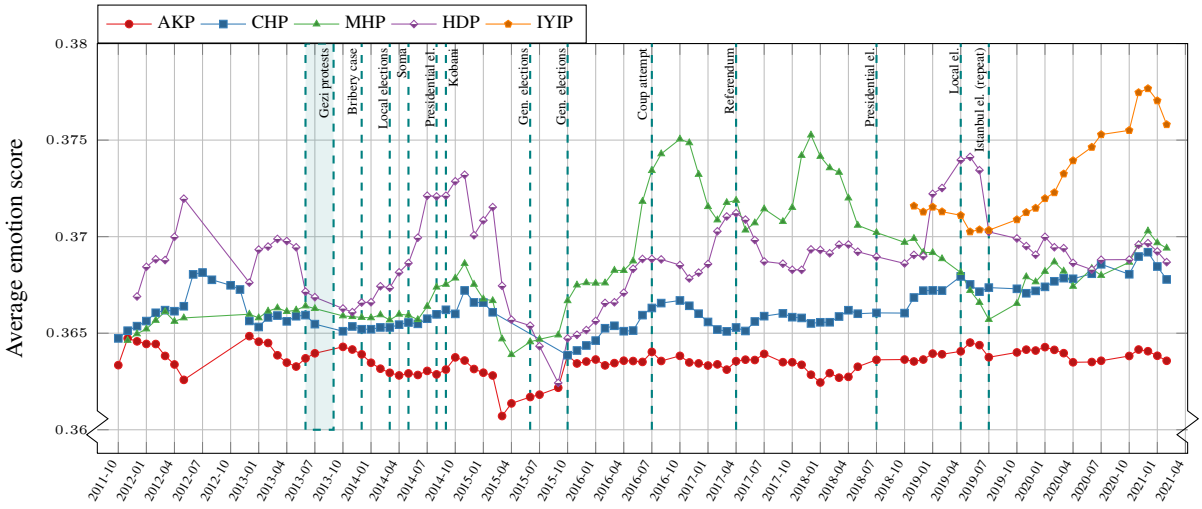

Figure 1: Average emotion scores for five parties in Turkish parliament throughout the period available from ParlaMint. The scores are averages of all emotion scores of speeches of all members of a party for a month. To display of longer-term trends, each data point represents an average of five-month window centered on the indicated month. Approximate dates of the periods of some of the events noted in Section 2 are indicated with vertical lines or shaded regions.

lenges the existing arguments in the literature on populism. Although more in-depth analysis is required to arrive at conclusive results, some possible factors behind this outcome are worth a mention: First, as an extension of the Weberian ideal type of a modern state, it is possible that discussions in a parliamentary setting are more 'rational' than 'emotional.' The second explanation is based on a rational choice approach: Since parliamentary debates are rarely followed closely and consistently by the public, politicians may have little incentive to adopt a sentimental speech style – for any political bargaining process, their immediate address, after all, is other politicians and not the public. Another reason for relatively stable and low emotion scores displayed by AKP could be attributed to its governing role. It may be a general tendency for the governing parties to express less emotion, in particular anger, in comparison to the opposition parties in the same parliament. This explanation is also supported by the emotion scores of the Conservative Party shown in Figure 5.

To display the particular emotions expressed in the parliament, Figure 2 presents the average emotion scores for all speakers during the period investigated. Averaging emotions across all parties seems to hide the variability of them in this figure. A clear finding here is that anger is the leading emotion in parliamentary speeches. Furthermore, there is a slight increase in anger, surprise and sadness, and a drop in happiness scores in time.

Since anger is the emotion that is displayed most frequently by all parties in the parliament, we present the anger scores per party in Figure 3. Detailed plots showing other emotions in a similar manner are provided in Figure 4.

Another interesting general finding is the relative persistence of emotional traits in the Turkish parliament in time. For instance, despite the new presidential system adopted in 2018, the outlook of parliamentary speeches has not drastically changed or decreased. This continuity may be due to a lag effect of the habits of political actors. If this assumption is valid, we would expect this effect to be measurably less in a follow up research.

A third general finding for the Turkish parliament has been the relatively constant, or unchanging emotions of all parties toward certain political events, such as the July 15 2016 coup attempt. Even parties that exist on the opposite sides of the political spectrum (e.g., ultra-nationalist MHP vs pro-Kurdish HDP) have displayed similar emotions during that time period. Whether this relative homogeneity of emotions is unique to the Turkish parliament, or can be traced in other parliamentary settings or not is probably worth exploring in another research.

In addition to these general findings, we also obtained a few counterintuitive results concerning the ruling party and the opponent parties in Turkey. First, HDP seems to have displayed more emotions compared to other political parties in our study. Moreover, it has also shown more anger compared to other political parties during the given time period. One possible reason behind this finding can stem from the party's identity: As the latest representative of a long chain of pro-Kurdish political parties in Turkish politics, HDP has frequently experienced repression, threat of prosecution or even party closure throughout its existence. Therefore, ceteris paribus, these conditions might have led it to display more anger compared to other political parties in the parliament.

HDP's overall level of display of emotions is followed by MHP–its polar opposite in terms of ideological and identity disposition. Unlike HDP or other parties, how-

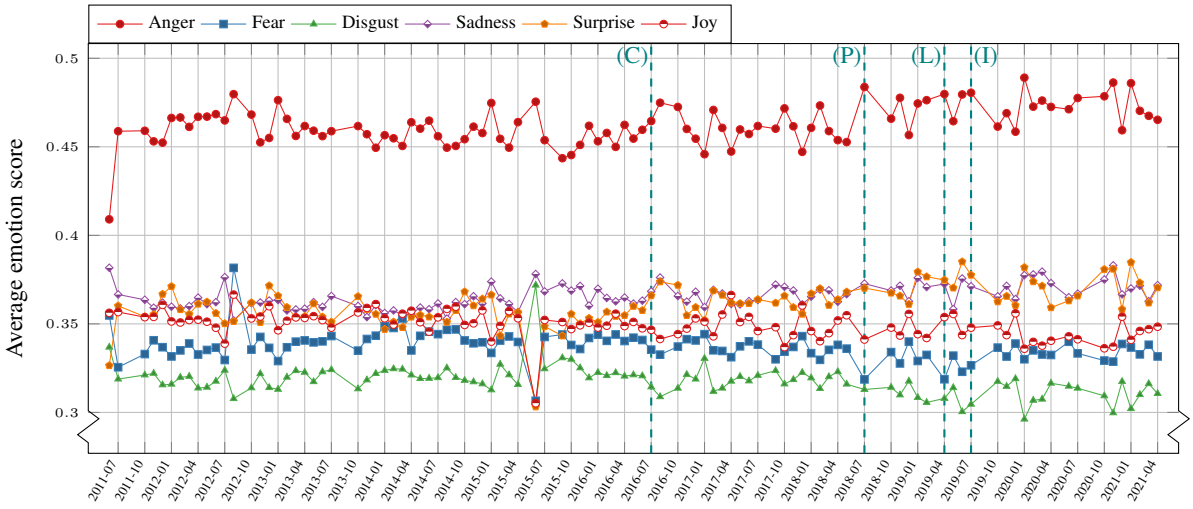

Figure 2: Average emotion scores for five parties in the Turkish parliament throughout the period available from ParlaMint. The scores are averages of all emotion scores of speeches of all members of a party for a month. Unlike the other figures, the scores are not smoothed in this figure. The marked horizontal lines correspond to 2016 military (C)oup attempt, 2018 (P)resedential elections after constitutional change to the 'presidential system', 2019 (L)ocal elections, and repeated local elections in (I)stanbul.

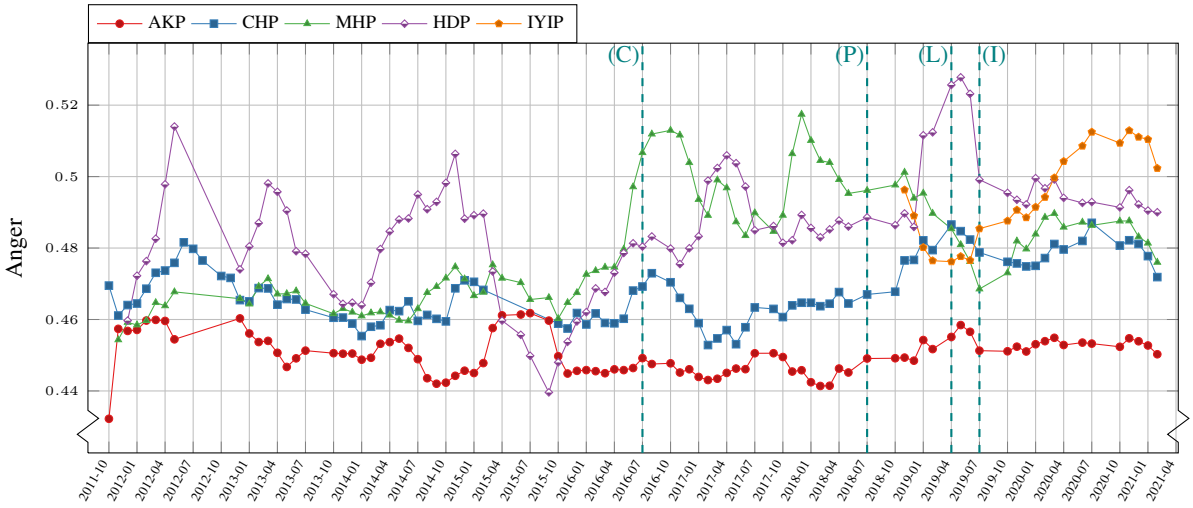

Figure 3: Average anger scores for five parties in Turkish parliament throughout the period available from ParlaMint. The scores are averages of all emotion scores of speeches of all members of a party for a month. To display of longer-term trends, each data point represents an average of five-month window centered on the indicated month. The marked horizontal lines correspond to 2016 military (C)oup attempt, 2018 (P)resedential elections after constitutional change to the 'presidential system', 2019 (L)ocal elections, and repeated local elections in (I)stanbul.

ever, MHP's display of anger (second highest after HDP) starts to decrease after 2018. The small but noticeable drop in anger levels in MHP can be explained with the political alliance it formed with the ruling AKP, whose anger levels have remained surprisingly low throughout the time period under focus. Although AKP–MHP rapprochement dates back earlier (Kurtoğlu Eskisar and Durmuşlar, 2021), the impact of their alliance became clear to all political players without any doubts in 2018 presidential elections. As a result of joining powers with the ruling party, MHP's display of emotions can be expected to run parallel to AKP, which has displayed low levels of anger compared to other political parties in time. A second possible explanation for the drop of anger level in MHP can be explained by the emergence of IYIP – a splinter party from MHP. IYIP may have taken over the anger level of MHP due to its initial identity as the primary nationalist/right wing opposition party filling the vacuum of MHP.

Among the political parties that are included in our study, IYIP has the shortest history. It formed a group

in the Turkish parliament on 22 April 2018, and is thus, arguably, the most difficult party to discuss here. Albeit on a lower level, and for a shorter time period, similar to HDP, IYIP's overall anger level seems higher than other political parties, such as CHP or AKP. Yet, on average, we also observe that the speeches of IYIP have wavered in a way that cancels out those speeches with emotions with those that have remained mostly devoid of emotions. One possible explanation for this emotional oscillation may be due to the party's brief past: As a new party that splintered from MHP, which has put its mark on Turkish politics for decades, IYIP politicians may feel the need to prove their credentials and show themselves as a viable alternative to MHP. During its establishment, both MHP and AKP targeted IYIP, which may have also led it to adopt a more defensive tone and increase its anger levels. At the same time, however, IYIP has also tried to position itself as a center-right political party, which is the default stance of almost all political parties that have managed to come into power in Turkish politics for decades. As a result, the initial tendency to try to take over the place of MHP may have been replaced by the goal to establish itself as a center-right party in Turkish politics, which can also explain the variance.

CHP displays overall lower levels of anger compared to the other opposition parties, but nevertheless, they are still elevated compared to the AKP. Although CHP has been an opposition party for decades now, it is also the oldest political party of Turkey. Its relatively stable position in Turkish politics can explain its overall lower levels of anger compared to other political opposition parties in time. Another factor may also rise from its identity as a secular, rational party at the center of the political spectrum in Turkey. At the same time, despite its lower levels of anger compared to MHP, the second oldest political party in the parliament, the anger levels of both parties intersect in April 2019, following the local elections on 31 March 2019, when AKP lost in several major cities, including Istanbul to CHP. After the rejection of election results in Istanbul by the Supreme Electoral Council (Yüksek Seçim Kurulu), the election in Istanbul was repeated on 23 June 2019, where CHP won again, but this time by a far greater margin. The repetition of elections in Istanbul was regarded as unfair by CHP, which can also explain their highest anger level in the observed time period.[3]

Among all parties that are mentioned so far, the results concerning AKP are possibly the most counterintuitive: An initial overview of anger levels in AKP shows that although it may have displayed more anger prior to 2013, it decreased after 2013 and has remained consistently low in time. The initial change in the anger level and relative stability afterwards may arise from their self confidence in imagining themselves to be the ruler of the state. As the political party that has ruled Turkey since 2002, and in charge of all main state institutions, AKP has not been concerned with political survival in a long time, which can explain its low anger levels compared to other parties in the opposition.

Before wrapping up this section, due to its importance as a political event, a brief overview of the general reactions of all parties to the coup attempt on 15 July 2016 is useful.[4] Overall, the general reactions of political parties to this major event has ranged from spikes observed in anger, followed by surprise and sadness (see Figure 4). At the same time, their feelings of happiness, fear and (interestingly) disgust took a dip. For AKP, although anger levels have remained fairly consistent in time, during the coup attempt surprise and sadness took the front seat for emotions, instead of anger. Meanwhile, CHP has shown surprise and sadness along with anger, and, notwithstanding the presence of anger for HDP, surprise and sadness also seemed to prevail. For MHP, it was sadness and surprise that came out as a more prominent feeling, followed by anger against the coup.

5. Discussion

Although this study is based on initial observations and findings from the Turkish parliamentary corpus, it is still possible to draw some tentative conclusions and hypotheses for further in-depth research. One such assumption would involve the relationship between the regime type and the display of emotions in parliamentary corpus: As a regime displays more authoritarian traits, one can expect the parliamentary speeches of the dominant party to display less anger than the parties representing the opposition, possibly due to its diminished accountability for its actions. However, parties under existential threat (party closure or other forms of repression or threat against their identity) can be more inclined to display more anger in their speeches. In an authoritarian setting, ceteris paribus, one can expect more emotional display by opposition parties, as doing so may help increase their credentials as a political opponent for potential supporters. At the same time, loyal opposition in authoritarian settings are likely to display similar emotions to the ruling party. Although emotions are frequently associated with populism, our study suggests that this assumption requires further inquiry: Contrary to such expectations, display of emotions in a parliamentary corpus may also signify a more democratic setting, where actors with different political leanings are free to express their thoughts and ideas without fear of persecution. Although increased polarization can lead political actors to adopt a more aggressive or angry tone in their speeches to consolidate their followers, our initial findings do not seem to support

[3] "İstanbul seçim sonuçları: YSK kararı bekleniyor, iptal dahil kulislerde hangi ihtimaller konuşuluyor?," https://www.bbc.com/turkce/haberler-turkiye-47861165 (accessed on 23 March 2022).

[4] Since IYIP was established after this event, it is left outside our discussion here.

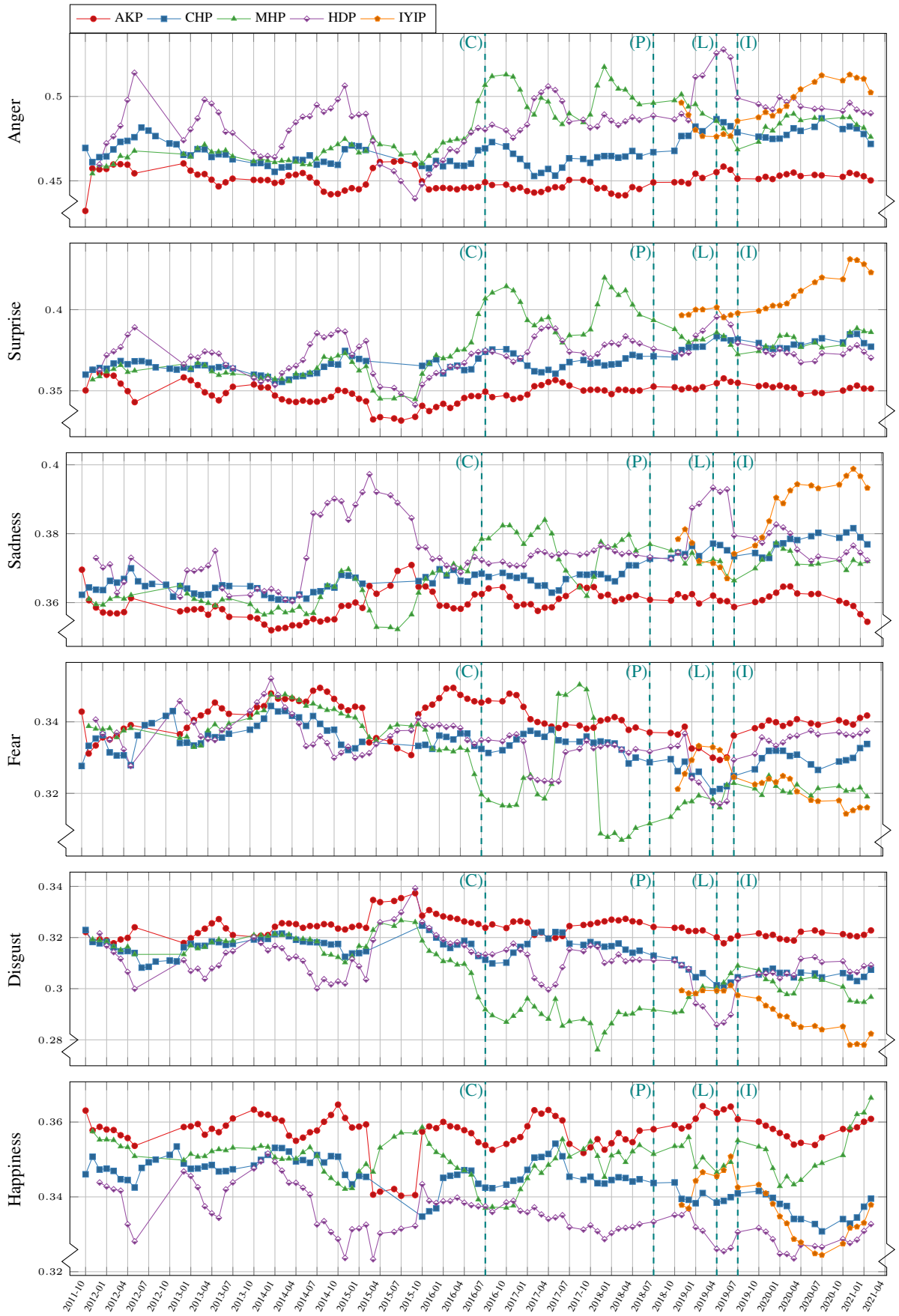

Figure 4: All emotion scores of five Turkish parties. Note that the y-ranges of the plots differ. The marked horizontal lines correspond to 2016 military (C)oup attempt, 2018 (P)resedential elections after constitutional change to the 'presidential system', 2019 (L)ocal elections, and repeated local elections in (I)stanbul.

this assumption. Still, more in-depth analyses can reveal conclusive results on this issue later.

Methodologically, our study is based on descriptive visualizations of emotion scores of parliamentary speeches measured by a machine learning method. Although we believe that the trends we discuss are clear, to test specific hypotheses, use of proper hypothesis testing mechanisms as well as validating the scoring method (e.g., by testing it on multiple parliamentary corpora, and manually checking the quality of emotion assignments) is necessary. Furthermore, to gain insight into specific events, focusing more on the relevant time period, and supporting the findings with other data sources (e.g., social media, political speeches outside the parliament) would be beneficial.

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A. Additional Plots

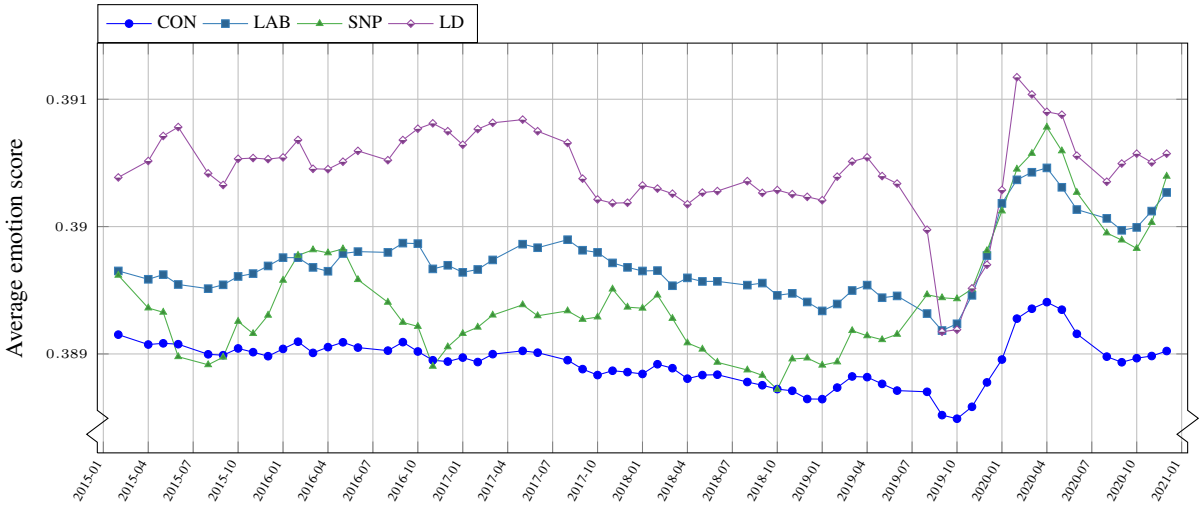

Figure 5: Average emotion scores for four most-active parties in the UK parliament throughout the period available from ParlaMint. The scores are averages of all emotion scores of speeches of all members of a party for a month in both houses in UK parliamentary system. To allow display of longer-term trends, each data point represents an average of five-month window centered on the indicated month.

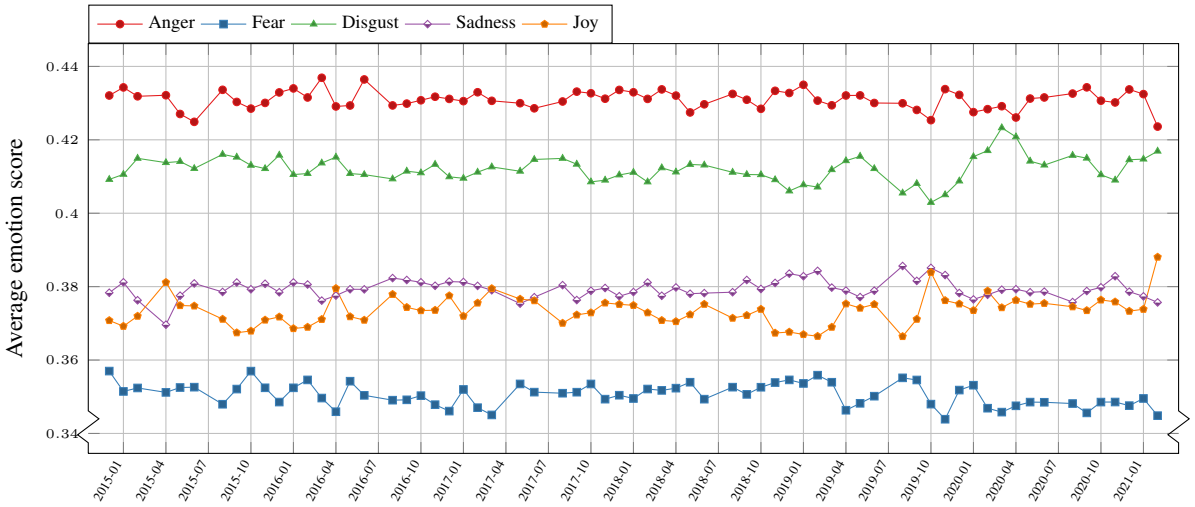

Figure 6: Emotion scores averaged over all parties in the UK parliament throughout the period available from ParlaMint.

B. Details of Model Tuning

For the classifiers used in this study, we use one-vs-rest support vector machines. The classifiers for both languages are first tuned on the respective data sets described in Section 3.1. We used a random sample of 3000 hyperparameter configurations from the hyperparameter space defined in Table 3, and picked the best hyperparameter configuration that yielded highest average macro F1-score in 10-fold cross validation.

Hyperparameter	range	sampling	best (EN)	best (TR)
Maximum order of character n-grams	1–8	uniform	6	7
Maximum order of word n-grams	1–4	uniform	4	2
The SVM regularization parameter ‘C’	0.001–5.0	uniform	0.94	0.91
Case normalization	word, char, both, none	categorical	word	word

Table 3: Hyperparameter space and best values for each language.