

Doctor Who? Framing Through Names and Titles in German

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Abstract

Entity framing is the selection of aspects of an entity to promote a particular viewpoint towards that entity. We investigate entity framing of political figures through the use of names and titles in German online discourse, enhancing current research in entity framing through titling and naming that concentrates on English only. We collect tweets that mention prominent German politicians and annotate them for stance. We find that the formality of naming in these tweets correlates positively with their stance. This confirms sociolinguistic observations that naming and titling can have a status-indicating function and suggests that this function is dominant in German tweets mentioning political figures. We also find that this status-indicating function is much weaker in tweets from users that are politically left-leaning than in tweets by right-leaning users. This is in line with observations from moral psychology that left-leaning and right-leaning users assign different importance to maintaining social hierarchies.

Keywords: framing, naming, Twitter, German, stance, sentiment, social media

1. Introduction

To frame a topic is to “to select some aspects of a perceived reality and make them more salient in a communication text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” towards that topic (Entman, 1993, p. 52). For example, a text may discuss the topic of immigration primarily in an economic frame that focuses on the need for workers, or in a cultural frame that focuses on issues of diversity and integration. Most work on framing in computational linguistics has focused on the framing of issues and events, rather than entities (Card et al., 2015; Fulgoni et al., 2016; Field et al., 2018).

In previous work (van den Berg et al., 2019), we introduced *entity framing* as the presentation of an entity that (intentionally or not) promotes a particular viewpoint towards that entity. Our goal is to understand how bias and stance are expressed in computer-mediated discourse about political topics, in light of rising concern that discussions about politics on social media are less civil and objective than discussions on traditional platforms (Persily, 2017; Ott, 2017; Dang-Xuan et al., 2013).

One area in which entities can be framed more or less positively is in the use of names and titles. Sociolinguists identify two main functions of naming: the indication of the status of the target, and the indication of solidarity with the target (Brown and Ford, 1961; Allerton, 1996; Dickey, 1997). We found that the formality of naming forms correlates positively with stance in English tweets mentioning politicians (van den Berg et al., 2019). This points to status-indication being the more dominant naming function in such tweets.

However, the positive correlation between stance and naming formality was found only for English and only for the professional title *President*. It may be different in a different language or for a different kind of title.

An interesting language to contrast with English in terms of naming and titling is German. Speakers of German (both in Germany and Austria) are said to use titles more frequently than non-German speakers, but this may be an outdated stereotype (Besch, 1998). Left-wing student protests in the 1960s in Germany destabilised many conventions, including the formality of pronouns. Instead of using the polite pronoun *Sie* as the default among strangers, an increasing number of speakers treat informal *du* as the default, a convention that is also associated with the political left (Glück and Sauer, 1997; Clyne et al., 2006; Besch, 1998). During the protests, this change in pronoun went hand-in-hand with a refusal to use academic titles (Besch, 1998).

In this work, we investigate naming and titling in stance-annotated German tweets that mention politicians with a doctoral degree. We collect and stance-annotate the German Titling Twitter Corpus (GTTC)¹, ensuring that the title *Dr.* is used in half of the tweets to have sufficient data to study titling effects.

We find that title use and naming formality correlate positively with stance. We also that this association is much weaker in tweets from users that have a left-wing political orientation than tweets from likely right-leaning users, in line with observations by moral psychologists (Graham et al., 2009) who postulate differences in the importance of hierarchies in left-wing and right-wing value systems. To confirm this finding in a corpus with a natural title distribution, we additionally construct the GTTC Addendum² without oversampling *Dr.*-containing tweets.

Our contributions therefore are:

- a corpus of stance-annotated German tweets mention-

¹Available here: <https://doi.org/10.11588/data/AOSUY6>. In compliance with Twitter usage guidelines, we provide tweet ids rather than full tweets with their texts.

²Published along with the main GTTC.

ing politicians with a doctoral degree

- evidence for the status-indicating function of naming in a language other than English and for an academic degree instead of a professional title
- evidence that the status-indicating function of naming and titling is weaker in left-leaning than in right-leaning discourse

2. Related Work

The framing of entities is a fairly new topic covered in only a handful of papers (Card et al., 2016; Fan et al., 2019). The only currently existing dataset for entity framing is the BASIL dataset (Fan et al., 2019), which annotates framing segments and their polarity towards political entities in news articles. BASIL is not suitable for studying the impact of naming and titling on entity framing, as journalistic style guides prescribe certain naming conventions to ensure objectivity both in English (Siegal and Connolly, 1999) and in German (Raue, 2012). We therefore work with tweets.

More common than datasets for entity framing are datasets annotated for explicit stance. These are typically tagged for stance towards products and companies (Somasundaran and Wiebe, 2010; Meng et al., 2012; Jiang et al., 2011; Mohammad et al., 2016) where titling might play a lesser role. Datasets which do cover person entities typically include them as a subset among other target types such as companies, institutions and topics (Rosenthal et al., 2017; Amigó et al., 2012; Amigó et al., 2013; Amigó et al., 2014), with the exception of Taddy (2013) which only has person entity targets. On these datasets, no studies were conducted on the use of names and titles.

In previous work, we presented a dataset to examine the use of names and titles in English tweets mentioning presidents (van den Berg et al., 2019). We hypothesised that the relation between naming and stance would depend on which naming function was more dominant: (i) marking of relative status (based on e.g. age or professional role) or (ii) marking of relative solidarity, also referred to as intimacy or group membership (Brown and Ford, 1961; Allerton, 1996; Dickey, 1997; Clyne et al., 2006). We found a positive correlation of 0.32 between stance and formality of naming, which indicates that the status-indicating function is more dominant than the solidarity-indicating function in these tweets. Because naming and titling are culturally and situationally dependent (Brown and Ford, 1961; Allerton, 1996; Dickey, 1997; Besch, 1998), it is desirable to compare this finding across languages and name inventories.

3. Corpus Construction

We created the German Titling Twitter Corpus (GTTC), a corpus of German tweets that mention German parliament and government members with a doctoral degree. We annotate the tweets for their stance towards the target politician and the type of naming form used for the politician. The total number of tweets after cleaning and annotation is 1904.

3.1. Tweet Collection

We collected tweets from June/July 2018 that mention prominent parliament and government members who have

a doctoral degree and can thus be called by an academic title. To meet the prominence criteria, a politician must be or have been party chairman, Federal President, president of the parliament or member of the parliament after 2013. Out of the members of parliament with no additional function, we selected the top ten with the largest Twitter following. We constructed queries with political keyword or party name disambiguators that were likely to return on-target results. The party names were: AfD, CDU, Bündnis 90/Die Grünen (henceforth B90/Grün), Die Linke, SPD and CSU. For the position of these parties on the political spectrum we refer to Table 1.³ Political keyword disambiguators were selected by two of the authors who are native speakers. These were: *Bundestag* (*parliament*), *MdB* (*Mitglied des Deutschen Bundestages* i.e. *member of the German parliament*), *Kanzlerin* (*Chancellor*), *Bundestagspräsident* (*president of the parliament*), *Regierung* (*government*), *Kabinett* (*cabinet*), *Ministerium* (*ministry*) and *Minister* (*minister*).

We did not create queries for mentions of politicians by their first name, as it would be too time-consuming to find relevant tweets among irrelevant ones mentioning common first names like ‘Thomas’ or ‘Peter’. In addition, first name references to politicians are rare in English tweets mentioning presidents (van den Berg et al., 2019). We expect naming by just the first name to be even more uncommon in the current setting.⁴

The four types of queries we used were:

- #FIRST-NAME-LAST-NAME (e.g. #AngelaMerkel)
- FIRST-NAME LAST-NAME (e.g. Angela Merkel)
- LAST-NAME PARTY (e.g. Merkel CDU)
- LAST-NAME POLITICAL-KEYWORD (e.g. Merkel Bundestag)

We collected all tweets (excluding retweets) that matched one of these four query types over 6 weeks in June/July 2018.⁵ Because journalists are instructed not to use the Dr. title unless topically relevant (Raue, 2012), we excluded tweets from a manually compiled list of 247 news accounts. We assigned tweets a naming form type, concentrating on our title of interest and frequently occurring naming forms. We first looked for the occurrence of a doctoral title followed by the target politician’s first name and last name, and labeled the tweet **TFNLN** if a match was found. If not, we looked for the doctoral title and last name (labeled **TLN**), then for first name and last name (**FNLN**), and finally for the last name only (**LN**). This means rarer title/name combinations would be grouped with one of these

³The important German party FDP is not represented, because there were no FDP members who both had a doctoral degree and met our criteria for prominence after 2013.

⁴There are some very prominent politicians that are occasionally addressed by first names or nickname, e.g. *Donald* for Donald Trump and *Vlad* for Vladimir Putin. Few German politicians are currently prominent enough for this to be the case. Therefore a study of first name usage would not generalise.

⁵Results were limited to German language tweets but not to tweets or accounts with the location Germany.

Party	Name	Political Position
Die Linke	The Left	Left-wing
B90/Grün	Alliance 90/The Greens	Centre-left/Left-wing
SPD	Social Democratic Party	Centre-left
CDU/CSU	Christian Democratic Union / Christian Social Union	Centre-right
AfD	Alternative for Germany	Right-wing

Table 1: Name and position on the political spectrum of the German political parties represented in the GTTC.

four forms. For example, *Prof. Dr. John Smith* falls under TFNLN and *Frau Merkel* (Ms. Merkel) falls under LN. This ensures sufficient data per naming form category. We look at some of these rarer combinations and their effect on stance in Section 5.2.

To ensure that the categories TFNLN and TLN are represented by enough tweets for a study on the impact of titling, we oversampled from these categories. We first sampled all TLN and TFNLN tweets. We then sampled the same number of LN and FNLN tweets in a stratified manner. To ensure no politician was represented exclusively by title-containing tweets, we applied on top of stratification the additional rule that each politician subset should contribute at least as many non-title tweets as title tweets to the overall sample. There were two politicians of the 26 who originally passed the criteria for prominence for whom no TLN or TFNLN tweets were found, and for whom the stratified sample returned no FN or FNLN tweets. Our corpus thus contains the 24 politicians in Table 4. The final sample, still including potentially unreadable or irrelevant tweets, consisted of 2005 tweets.

3.2. Stance Annotation

We collected 7 stance annotations per tweet using Amazon Mechanical Turk⁶. Workers were paid \$0.02 per HIT for approximately 7 HITs per minute. Workers had to pass a German proficiency test and an instruction comprehension test. To protect against spammers, we required a minimum number of completed HITs (500), a minimum HIT approval rate (97%) and a task-internal accuracy rate (97%) based on trap questions making up roughly 4% of the data. For trap questions, the first author selected and annotated a subset of explicitly stance-expressing tweets.

Annotators were given the prompt: *Wie würde sich ein Anhänger von X fühlen, nachdem er/sie diesen Tweet gelesen hat? (How would a supporter of X feel after reading this tweet?)* The possible stance labels were:

- *positiv (positive)* (1)
- *weder positiv noch negativ (neither positive nor negative)* (0)
- *negativ (negative)* (-1)
- *nicht lesbar / trifft nicht zu (cannot read / does not apply)* (x)

Annotators were given the tweet, its location, and the profile picture, name and description of the user who posted it.

If a tweet was a response to another tweet, that tweet was shown also. Annotators were instructed to use this context to label more ambiguous tweets.

Our prompt is inspired by the reader-perspective prompt in Buechel and Hahn (2017). The prompt is designed to capture subtle stance cues that the writer may not have included consciously. To compensate for the lower reliability of reader-perspective prompts (Buechel and Hahn, 2017), we instructed annotators to imagine the perspective of a proponent of the target, as in Card et al. (2015).

After annotation we obtained final labels with Multi-Annotator Competence Estimation (MACE) (Hovy et al., 2013). MACE can be used to remove the least reliable annotators and to obtain a reliable majority vote even in quite unfavourable circumstances.⁷ Out of 28 original annotators, we removed 3 annotators for being unreliable as judged by MACE.

To measure agreement, we used Krippendorff’s alpha (Krippendorff, 2018), which is suitable for multi-coders ordinal annotation (Antoine et al., 2014). The 25 competent annotators had an agreement of 0.62. This is a bit higher than the 0.58 alpha value for stance annotation in van den Berg et al. (2019) (also 3 classes), and than the alpha value of 0.57 obtained for 3-class sentence-level valence annotation in Antoine et al. (2014). Table 2 shows examples of cases where annotators disagreed. Common reasons for disagreement were the need for more context to interpret a tweet, the presence of only implicit stance and the presence of irony.

The majority vote labeled 101 of the 2005 tweets unreadable or irrelevant. After removing these tweets, the final size of our corpus was 1904 (Table 4).

4. Corpus Statistics

Table 3 shows the distribution in the GTTC of naming forms and stance labels. The distribution of politicians, parties and stance labels is provided in Table 4. The politicians who make up 5% or more of the data are: Angela Merkel (CDU, 34%), Alice Weidel (AfD, 31%), Jörg Meuthen (AfD, 10%), Franziska Giffey (SPD, 5%), and Alexander Gauland (AfD, 5%). The parties SPD, CDU and AfD together make up 93% of the data.

The naming form distribution in the GTTC does not reflect the natural distribution of naming forms because we oversampled *Dr.*-containing tweets. However, the relation between naming and stance should not be affected by oversampling. For an approximation of the natural distribution

⁶<https://www.mturk.com>

⁷We conducted experiments to confirm that MACE was likely to produce a reliable gold standard from our annotations.

Tweet text	Translation	Annotations
UNGLAUBLICH!!! Wichtige Nachricht von @AfD-Chef Dr. Jörg Meuthen!	INCREDIBLE!!! Important message from @AfD-Chef Dr. Jörg Meuthen	-1, x, 0, 1, 0, 0, 1
Dass sich Merkel das noch alles antut. Ich hätte der CDU/CSU den ganzen Schmarren schon hingeschmissen.	[Can't believe] that Merkel is doing all this to herself. I would have let CDU/CSU deal with all this nonsense on their own long ago.	0, 0, -1, 1, 1, 1, 0

Table 2: Examples of tweets with disagreeing annotations. Possible labels were: negative (-1), neither positive nor negative (0), positive (1) and cannot read / does not apply (x).

Form	Stance			Total
	Negative	Neutral	Positive	
LN	578 (69%)	135 (16%)	121 (15%)	834
FNLN	115 (37%)	86 (28%)	106 (35%)	307
TLN	207 (55.8%)	39 (10.5%)	125 (33.7%)	371
TFNLN	65 (16.6%)	112 (28.6%)	215 (54.8%)	392
Total	965 (50.7%)	372 (19.5%)	567 (29.8%)	1904

Table 3: Number and rounded proportion of stance labels for tweets containing various naming forms in the GTTC.

of naming forms in German tweets, we also constructed the GTTC Addendum (Section 6.2).

5. Naming and Stance

According to sociolinguistics, naming mainly signals relative status and/or solidarity (Brown and Gilman, 1960; Allerton, 1996; Dickey, 1997). Along the status dimension, the more formal the naming, the higher the perceived status of the target. Along the solidarity dimension, the more formal the naming, the lower the sense of solidarity with the target. Because of these conflicting functions, there are at least two ways in which naming variation could contribute to the stance of a tweet. High naming formality could reflect high status and thus correlate positively with stance. Alternatively, it could reflect a low degree of solidarity and thus correlate negatively with stance.

We previously showed that for English tweets that mention presidents, the title *president* is more common in positive tweets and that naming formality correlates positively with stance (van den Berg et al., 2019). Now we generalise this finding to German tweets and an academic title (*Dr.*).

5.1. Naming Formality and Stance

Because stance is an ordinal variable with the values negative (-1), neutral (0) and positive (1), we can compare the **average stance** of parts of the corpus. We contrast the average stance of GTTC tweets that contain the title *Dr.* with those that do not. A Kruskal-Wallis test shows that title-containing tweets have statistically significantly higher stance ($\mu = 0.09$, $n = 763$) than non-title-containing tweets ($\mu = -0.41$, $n = 1141$) ($\chi^2(4)=145.46$, $p<0.01$).

Second, we determine the correlation between naming formality and stance in the GTTC. We rank naming form types on the formality scale $LN < FNLN < TLN < TFNLN$. This ranking is based on the assumptions that (i) names with titles are more formal than names without titles, (ii) longer

names are more formal than shorter names. The resulting scale lets us assign tweets a **naming formality score** from 0 (LN) to 3 (TFNLN). Due to the oversampling of *Dr.*-containing tweets, this score does not reflect the typical formality of German tweets, but it does let us compare tweets with different stance labels to each other.

On our naming formality scale the GTTC has a mean formality of 1.17 and a median of 1. The average naming formality is lowest for tweets with negative stance (0.75, $n=965$), higher for neutral tweets (1.34, $n=372$) and highest for positive tweets (1.77, $n=567$). We can now treat formality as well as stance as ordinal variables, and compute their Spearman rank correlation. There is a moderate, statistically significant positive correlation between formality and stance in our corpus ($r_s(1904) = .38$, $p<0.01$), somewhat higher than in previous work on English ($r_s(4002) = .32$) (van den Berg et al., 2019).

Both the stance of title-containing tweets and the correlation between stance and naming formality suggest that, in the GTTC, the status-indicating function of naming and titling is stronger than the solidarity-indicating function.

5.2. Titles Other Than Dr.

As explained in Section 3, we collapsed naming forms into four classes. The most notable naming forms in the GTTC aside from title, first name and last name are *Frau* (Ms.), *Herr* (Mr.), the professional titles *Bundeskanzlerin* and *Kanzlerin* (Chancellor) for Angela Merkel (CDU/CSU), and the academic title *Professor* for Jörg Meuthen (AfD).

Table 5 shows that the appearance of *Frau* and *Herr* in tweets is associated with negative stance. Table 6 shows that professional and academic titles, here including *Dr.* for comparison, are associated with positive stance.

German allows more flexible combining of naming forms than English. The GTTC contains 19 different combinations of names/titles, most of them represented by only a handful of tweets. The combination *Frau Dr.* occurs quite frequently (295 tweets, mostly with the target Alice Weidel (AfD) (71%)). Appendix A shows examples of this combination in context. Tweets containing *Frau Dr.* have low stance (-0.35, $n=295$), but the stance is not significantly different from that of female-target tweets without *Frau Dr.* (-0.28, $n=1116$).

6. Naming Formality and Political Orientation

Sociolinguists have observed that in German the choice of the second person pronoun is affected by the political orientation and worldview of the speaker (Besch, 1998; Hickey,

Party	Stance			Total
	Negative	Neutral	Positive	
Die Linke	13 (26%)	14 (28%)	23 (46%)	50
Sahra Wagenknecht	10 (30.30%)	7 (21.21%)	16 (48.49%)	33
Gregor Gysi	1 (9.091%)	5 (45.455%)	5 (45.455%)	11
Dietmar Bartsch	2 (33.33%)	2 (33.33%)	2 (33.33%)	6
B90/Grün	17 (47.2%)	11 (30.6%)	8 (22.2%)	36
Robert Habeck	9 (39.13%)	8 (34.78%)	6 (26.09%)	23
Anton Hofreiter	7 (70%)	1 (10%)	2 (20%)	10
Simone Peter	1 (33.33%)	2 (66.67%)	0 (0.0%)	3
SPD	46 (26.4%)	46 (26.4%)	82 (47.1%)	174
Franziska Giffey	17 (16.5%)	26 (25.24%)	60 (58.25%)	103
Karl Lauterbach	20 (68.97%)	6 (20.69%)	3 (10.34%)	29
Frank-Walter Steinmeier	6 (30%)	7 (35%)	7 (35%)	20
Karamba Diaby	1 (6.67%)	4 (26.67%)	10 (66.67%)	15
Katarina Barley	2 (28.57%)	3 (42.86%)	2 (28.57%)	7
CDU/CSU	440 (59.2)	165 (22.2)	138 (18.6)	743
Angela Merkel	421 (64.87%)	133 (20.49%)	95 (14.64%)	649
Wolfgang Schäuble	7 (21.875%)	10 (31.25%)	15 (46.875%)	32
Gerd Müller	1 (4.55%)	9 (40.9%)	12 (54.55%)	22
Norbert Lammert	0 (0%)	3 (23.08%)	10 (76.92%)	13
Ursula von der Leyen	2 (25%)	4 (50%)	2 (25%)	8
Peter Tauber	5 (83.33%)	0 (0%)	1 (16.67%)	6
Helge Braun	1 (16.67%)	3 (50%)	2 (33.33%)	6
Thomas de Maizière	1 (25%)	2 (50%)	1 (25%)	4
Kristina Schröder	2 (66.67%)	1 (33.33%)	0 (0%)	3
AfD	449 (49.8%)	136 (15.1%)	316 (35.1%)	901
Alice Weidel	327 (55.8%)	62 (10.58%)	197 (33.62%)	586
Jörg Meuthen	75 (38.86%)	49 (25.39%)	69 (35.75%)	193
Alexander Gauland	42 (40.78%)	17 (16.5%)	44 (42.72%)	103
Frauke Petry (formerly AfD)	5 (26.32%)	8 (42.1%)	6 (31.58%)	19
Total	965 (50.68%)	372 (19.54%)	567 (29.78%)	1904

Table 4: Stance of GTTC tweets per party in order of most left-wing to most right-wing, and per politician in order of frequency.

Title	With Form		Without Form	
	#Tweets	Stance	#Tweets	Stance
* Frau	352	-0.40	1059	-0.25
Herr	25	-0.36	468	0.04

Table 5: Average stance of GTTC tweets that do or do not contain *Frau* (tweets with a female target) and *Herr* (tweets with a male target). In marked rows (*) the difference is statistically significant ($p < 0.01$).

2003; Clyne et al., 2006). Speakers that are left-leaning use the informal pronoun *du* more frequently to signal equality and solidarity, whereas speakers that are right-leaning make more frequent use of the formal pronoun *Sie* out of respect for the social hierarchy. Moral psychologists also state that there is a right-left divide in value systems that differs in whether hierarchies are viewed as an asset to conserve or an injustice to resist (Graham et al., 2009).

We now investigate whether a dependence on political orientation also exists for naming formality. Specifically, we

Title	With Title		Without Title	
	#Tweets	Stance	#Tweets	Stance
* Dr.	763	0.09	1141	-0.41
* Professor	94	0.31	99	-0.35
* B/K	70	0.13	579	-0.58

Table 6: Average stance of GTTC tweets that do or do not contain *Dr.* (all tweets), *Bundeskanzlerin (B)/Kanzlerin (K)* (tweets with target *Angela Merkel*) and *Professor (P)* (tweets with target *Jörg Meuthen*). In marked rows (*) the difference is statistically significant ($p < 0.01$).

hypothesise that status-indication of naming formality is a weaker function in tweets from left-leaning Twitter users than in tweets from right-leaning Twitter users.

6.1. Political Orientation in the GTTC

We separate the GTTC into a left-leaning and right-leaning part and compare the strength of the association between naming formality and stance in these two parts. We first dis-

card neutral tweets, and tweets with a target from a government party (CDU/CSU, SPD), since these targets likely attract criticism from both sides of the political spectrum. We divide the remaining 826 tweets into those whose target is a right-leaning politician (current or former AfD member) and those whose target is a left-leaning politician (member of B90/Grün or Die Linke).

Now we need to group tweets by whether their *writer* is left-leaning or right-leaning. As a proxy, we hypothesize that tweets with negative stance towards right-leaning politicians and positive stance towards left-leaning politicians are from likely left-leaning (**LLL**) users. Similarly, we hypothesize that tweets with negative stance towards left-leaning politicians and positive stance towards right-leaning politicians are from likely right-leaning (**LRL**) users. There are thus two user categories: the category LLL contains the stance directions anti-right (**AR**) and pro-left (**PL**), and the category LRL contains the stance directions anti-left (**AL**) and pro-right (**PR**) (Table 7).

User Leaning	Size by Stance		Total
	Negative	Positive	
LLL	449 (AR)	31 (PL)	480
LRL	30 (AL)	316 (PR)	346
Total	479	347	826

Table 7: Number of GTTC tweets with likely left-leaning (LLL) or likely right-leaning (LRL) users and pro-left (PL), anti-right (AR), pro-right (PR) or anti-left (AL) stance.

If it is correct that names and titles are less status-indicating in left-leaning discourse than right-leaning discourse, and if our proxy for identifying political orientation separates these discourse groups well enough, then the LLL and LRL group should differ in the strength of their associations between naming formality and stance.

Because we removed neutral tweets, stance here is a binary variable. We therefore do not compare the LLL and LRL groups on their formality-stance correlation, but on the discrepancy in formality between positive and negative tweets, i.e. the **naming formality gap**. The naming formality gap can be measured using the naming formality score defined in Section 5.1. In the whole GTTC, the naming formality score of negative tweets is 0.75 and that of positive tweets 1.77. The formality gap in the GTTC is thus 1.02, or 111% of the naming formality of negative tweets.

Table 8 looks at the formality gap in the 826 tweets with a right-wing or left-wing target as well as the two subparts corresponding to likely right-leaning and likely left-leaning writers. It shows that there is a much smaller gap in formality ($\delta=0.34$, 37%) between positive and negative LLL tweets than between positive and negative LRL tweets ($\delta=1.24$, 207%). This is in line with our suspicion that names/titles in tweets from LLL users are less status-indicating than in tweets from LRL users.

6.2. GTTC Addendum

In our experiment on GTTC tweets from likely left-leaning and likely right-leaning users, the formality gaps may have been affected by the oversampling of *Dr*-containing tweets

User Leaning	Formality by Stance		Formality Gap (δ)	Total
	Negative	Positive		
LLL	0.92 (AR)	1.26 (PL)	0.34 (37%)	0.94
LRL	0.60 (AL)	1.86 (PR)	1.24 (207%)	1.75
Total	0.90	1.8	0.90 (100%)	1.28

Table 8: Average naming formality in GTTC tweets with likely left-leaning (LLL) or likely right-leaning (LRL) users and pro-left (PL), anti-right (AR), pro-right (PR) or anti-left (AL) stance, and the naming formality gap as an absolute number and a percentage of negative tweets.

described in Section 3.1 We also had considerably more tweets with right-wing politician targets (AR and PR stance subgroups) than with left-wing politician targets (AL and PL subgroups). Finally, the political orientation of users was determined by a proxy that assumes that if you criticise right-wing politicians you are more likely to be left-leaning and vice versa. However, of course, you can also criticise politicians from your own political spectrum.

We therefore collect additional data with a natural distribution of naming forms and a more balanced distribution of left-wing/right-wing targets that we enhance with dedicated manual annotations of user orientation. We collected tweets mentioning each of the four right-wing politicians (AfD members and Frauke Petry) and each of the six left-leaning politicians (members of B90/Grün or Die Linke) from Section 6.1 and Table 4. For each target, the first author collected the three most popular non-news tweets of each month of 2018, which were then stance-annotated by an outside native speaker annotator. Tweets which had no clear stance direction were discarded.

Tweets were grouped by their user. Each user was shown to two outside native speaker annotators. Annotators saw the users' tweets along with the user name, user location and user description. Annotators were encouraged to follow a link to the user profile for more context if necessary. Annotators were asked to decide for each user whether they would categorize them as *left-leaning* (**LL**) or as *right-leaning* (**RL**). Agreement between the annotators was 0.85 (Cohen's kappa). We kept only tweets by users whose political orientation was unambiguous i.e. annotated the same by both annotators.

The resulting GTTC Addendum consists of 296 tweets with an average stance of 0.18 (compared to -0.16 in the GTTC) and an average naming formality of 0.60 (compared to 1.28 in the GTTC, where titles were oversampled). Table 9 shows that the distribution of the four stance direction groups is more balanced in this dataset.

User Leaning	Size by Stance		Total
	Negative	Positive	
LL	116	66	182
RL	59	55	114
Total	175	121	296

Table 9: GTTC Addendum tweets by left-leaning (LL) or right-leaning (RL) user and negative or positive stance.

In the GTTC Addendum, the formality gap between the stance direction groups of LL tweets is much smaller ($\delta=0.14$, 28%) than the formality gap between the stance direction groups of RL tweets ($\delta=0.65$, 176%) (Table 10). Therefore again, our data suggest naming formality is more weakly associated with stance in left-leaning discourse than in right-leaning discourse.

User Leaning	Formality by Stance		Formality Gap (δ)	Total
	Negative	Positive		
LL	0.50	0.64	0.14 (28%)	0.55
RL	0.37	1.02	0.65 (176%)	0.68
Total	0.46	0.81	0.35 (76%)	0.60

Table 10: Average naming formality in the GTTC Addendum across left-leaning (LL) or right-leaning (RL) users and negative or positive stance, and the naming formality gap as an absolute number and a percentage of negative tweets.

7. Discussion

We provide evidence that, in German tweets mentioning politicians, naming formality is associated with positive stance, confirming quantitatively the status-indicating function of naming in a new language. We also find support for the claim that this association is considerably weaker in left-leaning discourse than in right-leaning discourse. This is the first quantitative evidence of an impact of the writer’s political orientation on naming, and of interaction between entity framing and differences in value systems suggested by moral foundations theory (Graham et al., 2009). The claim is supported by two differently sampled corpora, and in one case by direct annotation of the political orientation of Twitter users.

We looked only at political orientation as a factor impacting naming. Other factors that influence naming that one could control for in future work are the age and gender of the target or user, and whether the politician in question is being referred to or directly addressed (Brown and Ford, 1961; Clyne et al., 2006).

Future work could also investigate the degree to which titles are used sarcastically in our data. A sample of title-containing tweets suggests that titles are not a definite signal that an otherwise positive-sounding German tweet is meant to be interpreted negatively (or vice versa). However, since the use of honorifics can be indicative of sarcasm (Liu et al., 2014), it is worth investigating whether the use of titles alongside explicit negative stance should be interpreted as sarcasm, and whether this sarcastic use plays a role in causing the weaker positive association with formal naming in left-leaning discourse.

8. Conclusion

We explored how German political figures with a doctoral degree are named on Twitter. We contribute a stance-annotated Twitter corpus with such targets and show that use of an academic title is associated with positive stance. This association is of similar strength as in previous findings on the formality of English naming of presidents on

social media, thus indicating a general trend towards signaling the perceived higher status of politicians with more formal names on Twitter.

To discover what role the political orientation of the writer plays in the choice of naming form, we compare the formality of naming forms in different writer-target stance direction subgroups. The association between naming formality and stance differs between these subgroups in a way that suggests that left-leaning twitter users have a substantially less pronounced positive association with formal naming than right-leaning users. We consider this work noteworthy empirical evidence that naming formality correlates positively with stance, and that this correlation is less pronounced in left-leaning discourse than in right-leaning discourse.

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A. Examples of Tweets Containing *Frau Dr.*

Tweet Text & Translation	Stance
<p>Frau Dr. Alice Weidel machen sie weiter so. Sie sprechen Menschen mit Sachverstand und dem Herz am rechten Fleck an. <i>Dr. Alice Weidel keep it up. You approach people with expertise and the heart in the right place.</i></p>	Positive
<p>Frau Dr. Alice Weidel spricht endlich mal die Wahrheit aus, die die Regierungsparteien und Gutmenschen vehement leugnen. <i>Dr. Alice Weidel finally speaks out the truth which the government parties and do-gooders vehemently deny.</i></p>	Positive
<p>Frau Dr. Wagenknecht war heute im Bundestag in Bestform! Teilen, teilen, teilen. <i>Dr. Wagenknecht was in top form in the Bundestag today! Share, share, share.</i></p>	Positive
<p>Sie sind widerlich, Frau Dr. Weidel. <i>You are revolting, Dr. Weidel</i></p>	Negative
<p>Mit Verlaub Frau Dr. Weidel - Sie haben gewiss nicht alle Latten am Zaun. <i>With all due respect Dr. Weidel - you've clearly got a few screws loose.</i></p>	Negative
<p>Alles Gute zum Geburtstag, Frau Dr. Angela Merkel! Und viel Spaß im Ruhestand! #frischesbayern #fdp #liberal <i>Happy birthday, Dr. Angela Merkel! And have fun in retirement retired! #fresh-bavaria #fdp #liberal</i></p>	Negative

Table 11: Examples of tweets with the title combination *Frau Dr.* and either positive and negative stance.