

Variation of New German Verbal Anglicisms in a Social Media Corpus

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Abstract

This study examines the morphological behavior of new German verbal Anglicisms by exploring the frequencies of non-finite verbal forms in a large and novel German-language social media corpus. In order to identify new Anglicisms, a list of potential words was created by building German word forms from English verbal stems and excluding words that exist in the standard German lexicon. Then, the frequencies of the new non-finite verbal forms were tabulated, including prefixed verbal forms. Although new German verbal Anglicisms are infrequent, many types are attested, some of which exhibit inflectional variation. The data suggest that assimilation of the past participle to German orthographical norms is influenced by phonological and phonotactic, semantic, and stylistic/pragmatic considerations, and is mediated by frequency effects. In addition, the derivational morpheme *-ier-* is shown to be only somewhat productive. By considering frequency patterns of verbal Anglicisms in an online medium in which multilingualism and non-standard language are prevalent, the analysis provides a snapshot of the process by which the verbal lexicon of German is undergoing change.

Keywords: German Morphology, Borrowing, Anglicisms, Social Media, Corpus Linguistics

1. Introduction

English lexical borrowings (Anglicisms) constitute a steadily growing component of the German lexicon. While the morphological behavior of Anglicisms (and other borrowings) in German is usually predictable, they can in some cases exhibit non-standard inflectional forms, a process that is affected by semantic and phonological as well as pragmatic considerations. Verbs constitute only approximately 5% of Anglicisms in German overall (Eisenberg 2013), but due to their inflectional and derivational richness, their behavior can shed light on the morphological integration of borrowed lexemes into a language. In this study, German Anglicisms as infinitives, participles, prefixed verbs, and verbs derived using the *-ier-* affix are considered.

1.1. Non-finite verbal forms

The German infinitive ends in *-(e)n*. Verbs borrowed into German or derived from borrowed lexical material typically assimilate to the weak inflectional paradigm, forming the past participle (*Partizip II*) via circumfixation of *ge-* and *-(e)t*.

Infinitive	Past part.
<i>fühlen</i> ‘to feel’	<i>gefühlt</i> ‘felt’
<i>lieben</i> ‘to love’	<i>geliebt</i> ‘loved’
<i>jobben</i> ‘to work’ (esp. temporary jobs)	<i>gejobbt</i> ‘worked’
<i>batteln</i> ‘to battle’ (esp. rap battles)	<i>gebattelt</i> ‘battled’

Table 1: Infinitive and *Partizip II* of weak verbs in German

In Table 1, *fühlen* and *lieben* belong to the core German lexicon, whereas *jobben* and *batteln* are Anglicisms. In *jobben*, the final stem consonant has undergone gemination after a short stressed vowel in a closed syllable (the so-called *Silbengelenk*). In *batteln*, metathesis of <le> has occurred in order to adhere to the German norm for phoneme-grapheme correspondence, and the schwa of the infinitive

suffix *-en* has been elided after a liquid. Verbs formed from English words with the same phonological shape (e.g. *giggle*, *babble*, etc.) are usually subject to this process and their orthography adapted (Duden 2016: §38, §92–94; Eisenberg 2011: 242–244), although for recent borrowings, variation exists (e.g. *googeln* and *googlen* ‘to google’).

For some verbal Anglicisms, partially assimilated participial variants exist alongside forms that conform to German inflection. Examples (1) and (2) are tweets in which the past participle of *liken* (‘to like’, esp. social media) exhibits full (*gelikt*) or partial (*geliked*) assimilation to the German inflectional norm. The first example notes that an influential German language authority, the Duden publishing house, codified the assimilated form in its dictionary in 2017.¹

- (1) @user *Jetzt ist es offiziell: du hast gelikt, er/sie/es likt. #Duden* [Now it’s official: you have liked, he/she/it liked. #Duden]
- (2) @user *Grade erst gesehen :3 Das meist geliked Video auf mein Kanal mittlerweile, Dankeschön!!!* [Just saw it :3 The most liked video in my channel in the meantime, Thankyou!!!]

1.2. Verb Derivation via Affixation

Prefixation of a verbal stem with a separable or an inseparable particle has historically been a productive process in German verb formation. Separable prefixes (mostly) specify the semantic scope of the verb spatially or temporally, whereas inseparable prefixes can express a wide range of possible meanings (see Duden, §1054–1076). Examples (for a standard German verb) are shown in (3). Prefixed Anglicisms are relatively common in the data used in this study (see also Baeskow 2017).

¹Usernames have been anonymized.

- (3) *laufen* ‘to run’ *auslaufen* ‘to run out’ (*sich*) *verlaufen* ‘to get lost’

The verbal infixes *-ier-* and *-isier-*, in verbs such as *studieren* (‘to study’) or *legalisieren* (‘to legalize’), have historically been the most important morphemes for the integration of borrowed lexical material into the German verbal system, productive since at least the 12th century (Öhmann 1970). Older, codified *-ier-* derivations are in some cases in competition with verbal forms showing simple suffixation of *-en* (e.g. *attackieren* vs. *attacken*, both ‘to attack’).

In the following, a brief review of related work is provided, followed by a description of the methods used to collect and filter the data and identify new German Anglicisms. In Section 4, the semantic fields of the most frequent new Anglicisms are considered, and the frequencies of past participles (*Partizip II*) are analyzed with respect to their assimilation to German orthographical norms and their use as verbal elements or as adjectives. The frequencies of *-ier-* derivations are also considered.

2. Previous Work

English has long been a source of lexical material for other languages, and in the last hundred years, English words have been adopted into the vocabularies of languages worldwide (Görlach 2003). This is particularly true for German since 1945, a result of social, economic, and political factors (von Polenz 1999). Studies of English lexical borrowings in German have investigated their semantic and structural aspects, examined their pragmatic contexts of use, and estimated their overall prevalence in German, for example on the basis of corpora derived from printed material.

Carstensen (1965) described lexical, grammatical and syntactic influences of English on German on the basis of texts printed in West German newspapers and magazines from 1961–1964, primarily the weekly news magazine *Der Spiegel*, and introduced the distinction between *Bedürfnislehnwörter* (‘necessary borrowings’), or words for which no lexeme exists in the receptor language, and *Luxuslehnwörter* (‘luxury borrowings’), or words whose semantic content is covered by existing lexemes. Yang (1990), Onysko (2007), and Burmasowa (2010) utilized corpora of journalistic texts to show increased usage of Anglicisms over time. Onysko and Winter-Froemel (2011) utilized the terms *catachrestic* (representing a new concept) and *non-catachrestic* (expressing the same content as an existing lexeme) to take a closer look at the most frequent Anglicisms in the corpus of Onysko (2007), finding that for non-catachrestic borrowings, loanword age and usage pragmatics are important factors in the adoption of an item.

Eisenberg (2013) analyzed chronological trends in Anglicisms on the basis of corpora compiled from popular, scientific, journalistic, and literary texts published in the periods 1905–1914, 1948–1957, and 1995–2004, showing that some verbal Anglicisms (e.g. *flirten* ‘to flirt’ or *boycottieren* ‘to boycott’) were well attested in German already

before 1914 (84). Winter-Froemel et al. (2015) regressed Anglicism frequency with several variables, finding that for words that replicate the semantic content of existing lexemes (*non-catachrestic* borrowings), shorter length and lexical field (technology and internet) positively influence the success of the borrowing. Baeskow (2017) discussed verbal Anglicisms with inseparable prefixes from the semantic field of information technology (e.g. *ergoogeln*), focusing specifically on the lexical aspect of inseparable prefixation.

While research into Anglicisms in German has been extensive, the status of inflectional variants of non-finite verb forms has not been a primary focus. Onysko suggested that participles derived from verbal borrowings are more likely to exhibit standard German weak participial inflection (e.g. *gecancelt* ‘cancelled’, *gechattet* ‘chatted’), whereas forms borrowed as adjectives (i.e. not derived from a borrowed verb) are more likely to retain English or partially English orthography (e.g. *relaxed* or *gefaked*), especially if their phonological realization in English and German more or less coincide (2007: 235–237).

3. Data and Methods

653,457,659 tweets with “place” metadata were collected globally from the Twitter Streaming API from November 2016 until June 2017 using *Tweepy* (Roesslein 2015). From this “seed” data, 70,986 users who had authored at least one German-language tweet and with place metadata from Germany, Austria or Switzerland were identified and all of their tweets, or the most recent 3,250 tweets (whichever was larger), downloaded from Twitter’s API during April 2018. The timelines of 60,683 users were downloadable (others presumably having been set to private, deleted, or banned by Twitter). Of the 61,118,733 tweets downloaded in this manner, 36,240,530 (59.3%) were in German, according to tweet metadata. Tweets were tokenized using the nltk tokenizer (Bird et al. 2009), resulting in a corpus of 534,211,366 tokens.²

To build a set of potential verbal borrowings, the 1,000 most frequent base verbal forms (corresponding to English infinitives without *to*) were accessed from the *British National Corpus*, the *Corpus of Contemporary American English*, and the *Wikipedia Corpus of English* (Davies 2004–, 2008–, 2015)³, then combined with 1,413 forms from the *Pattern Dictionary of English Verbs* (Hanks 2013)⁴. From this list of 2,630 unique types, German infinitives and participles were created using regular expressions, taking into account German phonotactics and orthographic conventions. Forms with inseparable prefixes (*be-*, *er-*, *ent-*, *emp-*, *miss-*, *ver-*, *zer-*, *über-*) and separable prefixes (*ab-*, *an-*, *auf-*, *aus-*, *durch-*, *ein-*, *her-*, *herauf-*, *herum-*, *herunter-*, *hin-*, *hinzu-*, *mit-*, *voran-*, *los-*, *mit-*, *vor-*, *weg-*, *zurück-*, *zusammen-*) were created, as were infinitives of prefixed verbs with an infixed *-zu-* (e.g. *anzutwittern*). The same forms were generated from the stems for the *-ier-* and *-isier-*

²The corpus can be generated from the list of the tweet IDs available at <https://github.com/stcoats/GermanAnglicisms>.

³<http://corpus.byu.edu>.

⁴<http://pdev.org.uk>.

derivations, and adjectival inflections were accounted for (e.g. *das gelikte Foto* ‘the liked photo’). English false positives were removed using an English word list of 236,736 types from nltk (Bird et al. 2009).⁵

In order to exclude well-established Anglicisms that are considered part of the standard German lexicon, each of the forms generated from the procedure described above was matched against a list of 239,650 German word types (Kleuker 2016).⁶ To account for forms not attested in the Kleuker (2016) list but which are nonetheless standard German words, Anglicisms were checked with SMOR, a finite-state transducer for morphological analysis of German words whose current lexicon contains approximately 6,000 verbal stem types (Schmid et al. 2004, Fitschen 2004). Only words not attested in standard German according to these two criteria were further considered.⁷

In total, the iterative procedure used to create new German verbal Anglicisms generated a large number of possible word forms.⁸ While most of these forms were not present in the corpus, those attested exhibited significant variation.

4. Results and Analysis

4.1. Overall frequencies

New non-finite verbal Anglicisms in the corpus are attested from diverse semantic fields and exhibit variation in orthography. A total of 3,201 types in the corpus produced matches with the automatically-generated list, comprising 117,246 tokens. Table 2 shows the 20 most frequent types.

Many of the most frequent types clearly represent *Bedürfnislehnwörter*, or cultural borrowings that fill a gap in the receptor language lexicon: *twittern*, *streamen*, *googlen*, *liken*, *adden*, *updaten*, *rendern*, *coden*, *followen*, and *sharen*, and their past participles, are primarily used in the context of social media or information technology; their meanings correspond closely to the social-media- or IT-specific meanings of their English source words. In this data, *gefıxt* is used in the sense of ‘to repair/fix’ (an online service or website): the older meaning of the denominal

⁵Some Anglicisms generated by the procedure are actual English words – these (e.g. *driven*) are often present in longer codeswitched sequences rather than as single-word Anglicisms in German text.

⁶<https://github.com/davidak/wortliste>. The list aggregates data compiled by the Berlin-Brandenburg Academy of Sciences, the Leipzig Corpora Collection of the University of Leipzig, and the Institute for the German Language in Mannheim.

⁷An Anglicism wordlist comprising infinitives and past participles not matching standard German words is available at <https://github.com/stcoats/GermanAnglicisms>.

⁸For example, from the English verb *to wreck*, the non-finite German verbal forms *wrecken*, *wreckend*, *gewreckt*, *gewrecked*, *wreckieren*, *wreckierend*, *wreckiert*, *wreckisieren*, *wreckisierend*, and *wreckisiert* were generated; for each of these 28 prefixed forms were created.

⁹6388 if *googeln*, whose stem is in the SMOR lexicon, is included.

	Type	Freq		Type	Freq
1	<i>twittern</i>	28921	11	<i>adden</i>	1214
2	<i>streamen</i>	9248	12	<i>geupdated</i>	1188
3	<i>chillen</i>	8543	13	<i>haten</i>	1146
4	<i>getwittert</i>	6567	14	<i>rendern</i>	1054
5	<i>googlen</i>	2829 ⁹	15	<i>coden</i>	1000
6	<i>gestreamt</i>	2232	16	<i>followen</i>	831
7	<i>geliked</i>	1415	17	<i>gevotet</i>	810
8	<i>supporten</i>	1370	18	<i>cachen</i>	782
9	<i>gefıxt</i>	1300	19	<i>tracken</i>	781
10	<i>geflasht</i>	1271	20	<i>sharen</i>	758

Table 2: Most frequent new Anglicisms

borrowing *fixen*, ‘to inject drugs’, is not attested.¹⁰ Among the most frequent types, only three are used mainly in non-IT contexts: *supporten* ‘to support’ denotes support for a sports team, as in (4). *Geflasht* is used as a predicate adjective meaning ‘excited’ (*ich bin geflasht* ‘I’m excited’), but also to denote rewriting the memory of an IT device. *Haten* is a stylistically marked equivalent to standard German *has-sen* (‘to hate’) (5).

- (4) *so kinder, jetzte jehts los. kurz vorm olympiastadion. supporten fuer hertha und die relegation. alle die daumen druecken!!!* [so children, now it begins. just in front of Olympic Stadium. supporting hertha and relegation. everyone cross your fingers!!!]
- (5) *Ich bin ja ganz vorne mit dabei wenns darum geht den #EmojiFilm zu haben... aber den Trailer find ich gar nicht mal so scheiße. 🙄* [I’m among the first to agree when it comes to hating the #EmojiFilm... but the trailer is not even so shitty. 🙄]

The frequency distribution of new Anglicisms exhibits a “long tail” – a large number of types that occur only once in the corpus (i.e. are *hapax legomena*). The semantic values of the 1,271 *hapax* types are diverse, and mostly unrelated to social media or information technology. A sample – the meanings of which are transparent from the verbal stem – is shown in (6).

- (6) *annoyen, breatheen, ercaptureen, zurüickcheaten, gehealed, mitgentioned, gelookt, killiert, encouragierend, failiert*

129 infinitive types with inseparable prefixes were found, the most frequent being *vertwittern* (‘to twitter away/out’), *entfollowen* (‘to stop following on social media’), and *entliken* (‘to stop liking on social media’). For separable prefixes, 349 infinitive types were attested: *abfucken* (‘to fuck up’) was the most common, followed by *antwittern* (‘to twitter to someone’) and *abchillen* (‘to chill out’). Other attested forms included *anbeefen* (‘to start an argument/complain to someone’), *aufleveln* (‘to level up in

¹⁰The prefixed form *angefıxt* ‘be hooked on’, however, was well attested.

a computer game’), and *ansneaken* (‘to sneak up on someone’). The prefixed infinitive form with infix *-zu-* was attested by 70 types: *abzufucken*, *mitzutwitern*, and *anzutwitern* were the most frequent.

Some false positives were present in the frequency counts as the result of non-standard spellings. For example, *erfahren*, attested twice in the corpus, is a present participle in the match list derived from *to fare*. In the tweets in question, the type is a non-standard spelling of standard German *erfahren* (‘to experience’ or ‘experienced’). Other non-standard spellings include *überagend*, from *to age* (*überagend* ‘outstanding’), *forden* and *erforden*, from *to ford* (*fordern* ‘demand’ and *erfordern* ‘require’), *gestatet*, from *to state* (*gestattet* ‘allowed’), *ausgerut*, from *to rut* (*ausgeruht*, ‘rested’), and *verwanten*, from *to want* (*verwandten* ‘related’ or ‘relations’). Overall, the frequencies of these forms are low. Another false positive was the type *nabend*, created automatically as a present participle from *to nab*, but a common non-standard German word (a blend from *guten Abend* ‘good evening’).

4.2. Variation in the Past Participle

Variation between the assimilated and partially-assimilated forms of the past participle was attested for 219 past participle types: Table 3 shows the counts and an effect size measure, the logarithmic odds ratio, for the most frequent forms.¹¹ Figure 1 shows the log odds ratio versus the log of number of occurrences of the participle for forms for which both variants are attested at least once: More frequent participles are more likely to exhibit the standard inflectional ending *-t*, whereas less frequent participles are more likely to retain *-ed* endings.

	Type	Freq	Type	Freq	logOR
1	<i>getwittered</i>	4	<i>getwittert</i>	6567	-7.40
2	<i>gestreamed</i>	121	<i>gestreamt</i>	2232	-2.91
3	<i>geliked</i>	1415	<i>gelikt</i>	197	1.97
4	<i>geupdated</i>	1118	<i>geupdatet</i>	404	1.08
5	<i>geflashed</i>	309	<i>geflasht</i>	1271	-1.41
6	<i>gefixed</i>	223	<i>gefixt</i>	1300	-1.76
7	<i>geleaked</i>	375	<i>geleakt</i>	993	-0.97
8	<i>gevoted</i>	131	<i>gevotet</i>	810	-1.82
9	<i>gelaunched</i>	81	<i>gelauncht</i>	601	-2.00
10	<i>geadded</i>	98	<i>geaddet</i>	332	-1.22

Table 3: Variation in Past Participles

The partially assimilated forms *geliked* and *geupdated* are preferred to *gelikt* and *geupdatet*, but otherwise the more frequent variants have standard inflection. The degree to which English and German orthography overlap in the representation of vowel sounds appears to influence assimilation to German inflection. Retention of partially English orthography may help recognition of the diphthongs [aɪ] and [eɪ] in forms such as *geliked* or *geupdated*, whereas the German-inflected forms could be realized with [ɪ]/[i]

¹¹The logarithmic odds ratio, $\log \frac{n_x}{n_y}$, is symmetrical about zero and results in positive values when *x* is more frequent and negative values when *y* is more frequent.

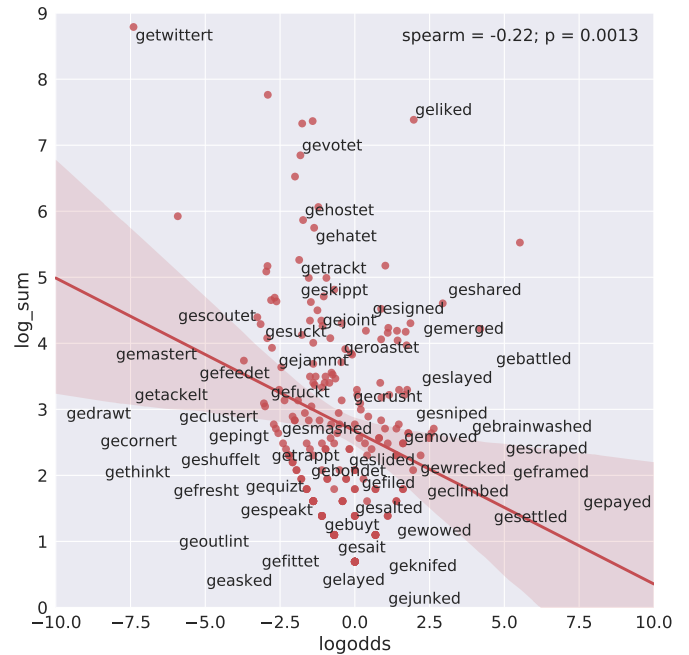


Figure 1: Assimilated and partially-assimilated past participle forms

and [a]. Forms more readily assimilated to German participial inflection (those with negative log-odds ratio values) have stem vowels whose realization is similar to that of the original English participles. The recentness of borrowing may also play a role — forms with negative log-odds ratios which are semantically not necessarily related to online behavior may be somewhat older borrowings and thus more advanced in terms of assimilation to the German inflectional pattern. The negative correlation between the log frequency and the log odds ratio shown in Figure 1 suggests that, as with other types of language change, frequency effects may mediate assimilation to standard orthography.

4.3. Past Participle as Attributive Adjective

In order to check use of participles as attributive and superlative adjectives, the frequencies of past participles with the inflectional suffixes *-e*, *-em*, *-en*, *-er*, *-es*, *-este*, *-estem*, *-esten*, *-ester*, and *-estes* were counted. Table 4 shows the ten most frequent fully assimilated past participles, their frequencies as participial or adjectival attributes, and the verbal to adjectival log odds ratio. While the tendency to be used as a verbal component or an adjectival attribute depends on the semantics of the verb, verbal use is more common — the verbal to adjectival log odds ratio for all fully-assimilated participles is 2.93, meaning the forms are almost 19 times more likely to be used as verbal elements.

For the partially-assimilated participles, only a handful are used as attributive adjectives (Table 5). The log odds ratio for all of these forms is 5.42. Adjectival usage is almost non-existent.

	Type	Freq_part	Freq_adj	logOR
1	<i>gebloggt</i>	8840	67	4.88
2	<i>getwittert</i>	6567	209	3.45
3	<i>geblockt</i>	5862	172	3.53
4	<i>gecheckt</i>	3111	7	6.10
5	<i>gerockt</i>	2433	2	7.10
6	<i>gegoogelt</i>	2276	28	4.40
7	<i>gestreamt</i>	2232	49	3.82
8	<i>gechillt</i>	1487	377	1.37
9	<i>geleakt</i>	993	411	0.88
10	<i>gefixt</i>	1300	20	4.17

Table 4: Variation in Past Participles

	Type	Freq_part	Freq_adj	logOR
1	<i>geliked</i>	1415	3	6.16
2	<i>geupdated</i>	1188	0	inf
3	<i>geleaked</i>	375	4	4.54
4	<i>geflashed</i>	309	0	inf
5	<i>gefeatured</i>	250	0	inf
6	<i>gefixed</i>	223	0	inf
7	<i>gehacked</i>	197	0	inf
8	<i>getagged</i>	164	0	inf
9	<i>gevoted</i>	131	0	inf
10	<i>gefollowed</i>	130	1	4.87

Table 5: Variation in Past Participles

4.4. *-ier-* Derivations

83 types created via derivation with *-ier-* were attested. Many of these, however, are established dialect words (e.g. the Swiss German words *grillieren* ‘to grill/barbecue’ or *parkieren* ‘to park a car’) or non-standard spellings of established lexical items (e.g. *boycottieren* instead of *boykottieren* ‘to boycott’, *debatieren* instead of *debattieren* ‘to debate’), and thus do not represent new Anglicisms. *-ier-*derived forms of the most common new verbal Anglicisms, those pertaining to social media and IT, are almost non-existent: *twitterieren* occurs once in the corpus, as does *updatieren*. A few lexemes appear to be new borrowings from English: *relatieren* (‘to be relevant/similar/related’) occurs 15 times. Verb formation from borrowed lexical items via the *-ier-* morpheme, although still somewhat productive in German, appears to be less common than suffixation of a borrowed stem with the *-en* infinitive suffix. Word length considerations and communicative economy may also play a role, especially considering the character limitation inherent to Twitter.

5. Conclusions and Future Outlook

Significant variation exists in the morphology of new verbal Anglicisms in a large German-language social media corpus from Twitter. The most frequent new Anglicisms denote entities from the domains of social media, computer-mediated communication, and information technology, and are typically used as infinitives or past participles. For past participles, variation in assimilation to German inflection may reflect phonological considerations as well as the recency of the borrowing, and is manifest in frequency counts.

Partially-assimilated past participles are used almost exclusively as verbal elements, while fully assimilated past participles can be used as attributive adjectives.

Future work with the data can be organized along the following lines: First, a more thorough consideration of the phonological, semantic and pragmatic factors that prompt use of an Anglicism could be undertaken for widely-attested forms that have a high degree of semantic overlap with common verbs in the German core lexicon, such as *worken* (‘to work’), *playen* (‘to play’), *walken* (‘to walk’), or *eaten* (‘to eat’): In addition to being used for stylistic and pragmatic reasons, such lexemes may be undergoing semantic specialization as well. A quantitative approach using word embeddings could shed light on this process. Secondly, the productivity of both borrowed verbal stems and verbal affixes can be measured, for example by calculating vocabulary growth rates. Are borrowed stems more productive than stems from the core lexicon? Thirdly, sociolinguistic parameters of variation can be assessed by measuring correlations between Anglicism use and demographic features that can be gleaned from Twitter metadata such as user location, gender, or social network membership. Finally, by comparing aggregate measures of morphological variation in this data to similar measures in other large corpora drawn from social media and non-social-media sources, broader insight can be gained into the rate at which the lexicon of German is undergoing renewal.

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