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fields, and exposure to English through entertainment is ever-present. Television shows and films are broadcast in English without voiceover using subtitles and a high proportion of the population follows English news media and consumes literature in English, and English is used ubiquitously on social media, social networking sites, and in online gaming (Leppänen et al., 2011). High exposure to English has implications for language use, and studies of typological profiling show that, on purely structural criteria, spoken and written English in the Nordic region are closely similar to many indigenised L2 English varieties (Laitinen, 2018). Peterson’s (2020) description of young Finns’ relationship with English applies, in our estimation, equally to youth in all the Nordic countries:

In fact, this ease with English makes some of these younger speakers a bit difficult to classify in terms of their status with English; they are usually not mother-tongue speakers because they haven’t grown up speaking English at home. At the same time, they are not really foreign speakers of English either, as English imbues their daily existence and has done so for nearly their entire life. Many have reached a level of proficiency that equates to nativeness. (Peterson, 2020, p. 6)

However, despite the high level of proficiency, continued use in English as a lingua franca (ELF) contexts, and generally positive attitudes to English, Nordic speakers see English from a pragmatic and utilitarian perspective (Forche, 2012), as an important tool for communication, as sometimes an important part of one’s identity, but not as a second (or third) native language.

The present article takes, as a starting point, the observation that ‘native’-like use of discourse markers can be considered a sign of advanced language proficiency (Sankoff et al., 1997, p. 213). Thus, given the attested proficiency of Nordic speakers of English, we hypothesise that Nordic speakers are likely to use English discourse markers in a largely similar manner to ‘native speakers’ of English, but that some L1 influence may still be detected given the somewhat different meaning potentials and sentence positional preferences of near-equivalent discourse markers in the respective L1s. This case study focuses on the discourse marker actually, which as one of the most extensively studied discourse markers in English has an abundance of comparative data available from various contexts and registers (Aijmer, 2008, 2015, 2016; Cheng & Warren, 2001; Traugott & Dasher, 2002). The following three examples come from the Nordic Tweet Stream corpus, which is a real-time monitor corpus of tweets from the region:

(1) There actually is a little hipster inside all Swedes. That’s why so much good music comes from Sweden.
(2) Gonna cook dinner now. On the stove. Ugh, boring. I actually think that traditional cooking is kinda boring and I’ve always thought that.
(3) Huge surprise to see Kimi attending The Finnish Sports Gala. AND he actually gave a speech. Like.. several words!

The contrastive analysis compares the use of actually in English produced on Twitter by two groups of Nordic speakers with a Germanic L1 (Swedish and Norwegian) and one group with a Finnic L1 (Finnish); the subcorpora come from the Nordic Tweet Stream (NTS) dataset. A fourth subcorpus, tweets from the ‘Curators of Sweden’ tweet stream, is also used in order to assess the effects of communicative context. The focus on Twitter is motivated by the fact that social media platforms and social networking sites are among the places where Nordic people are most likely to make active use of their English skills (Leppänen et al., 2011, pp. 115–117). Indeed, recent studies have shown that Twitter can provide valuable new insights into the use of English (and other non-native languages) in the Nordic countries (Laitinen et al., 2017a, 2017b; Coats, 2019).

The research design, which draws on Granger’s (1993) Contrastive Interlanguage Analysis, thus sets up four contrastive pairings of three different types of comparisons: generic Swedish tweets (as in private tweets posted by normal Twitter users for various purposes) and contextually constrained Swedish tweets (as in tweets posted by users whose participation on Twitter is related to a specific role or identity); generic Swedish and Norwegian tweets as a comparison of two Scandinavian L1s’ influence on L2 English; and generic Swedish and Norwegian tweets compared to generic Finnish tweets as a comparison of L1 influence on L2 English (see Figure 1).
Our research questions focus on investigating quantitative patterns of *actually* that emerge in online communication.

(1) What quantitative patterns of *actually* emerge in the data?
(2) What kinds of differences exist between the three L1 backgrounds?
(3) What quantitative differences exist between the more contextualised Curators’ data and the NTS?

This research charts new possibilities in the computational study of discourse markers in world Englishes and in ELF in particular, and these openings are related to increasing the validity of research activities in at least three aspects. The first concerns the empirical validity of world Englishes research. In the study of native Englishes, large real-time corpora are increasingly used as empirical data (Grieve et al., 2019), and while such data could offer substantial insight into the study of ELF, their use is not yet widespread, and the major share of empirical studies still rely on small, static, and often increasingly old corpus resources. As new dynamic datasets, such as the NTS used here, are gradually made available for research, this state of affairs is likely to change in the future.

This study also contributes to increasing methodological validity in the study of grammatical variation in ELF. Being an emerging field, the knowledge of grammatical variability in ELF is still shallow, and most publications discussing ELF grammar have primarily resorted to spotting features and engaging in listing individual grammatical features without in-depth quantitative and qualitative analyses (Ranta, 2018). This means that there is room for improving the methodology by extending the study of ELF grammar to include more advanced quantitative tools (Laitinen, 2020). In the empirical part, we utilise probabilistic conditioning.

The last aspect highlights theoretical insights generated here. We focus on grammatical patterns that emerge in natural ELF discourse. Even though ELF is not a focused language variety, in-depth studies of its grammar could yield insight into language contact in general and world Englishes in particular. ELF is a second-order contact language that consists of a large number of users from different language backgrounds coming together (Mauranen, 2018). While the current knowledge of first-order contact situations is extensive (Trudgill, 2004), much less is known about the patterns of grammatical change that may emerge in second-order contact situations in ELF, which is the locus of this article.
2 | BACKGROUND

2.1 | Actually as a discourse marker

The definition of the concept of discourse marker is notoriously varied in linguistics. Over the past 40 years, an abundance of different terms, definitions, and research foci have been proposed; for an overview, see Schiffrin (2001). In the present study, we follow Aijmer’s (2015) pragmatics-focused approach and define discourse markers as units consisting of one or more lexical items that serve to ‘guide the hearer to the interpretation of the utterance’ (p. 89) without making a conceptual contribution to the sentence; see also Fraser (1990). Our analysis here does not comment on the cohesion-enhancing role of discourse markers nor on their discourse structural functions. Importantly, although discourse markers and related phrasal expressions are non-obligatory in terms of conveying the core meaning of a sentence, they play an important role in enhancing the naturalness of language use and increasing temporal fluency by reducing lexical gaps and pauses (Götz, 2013, p. 39). However, as Hellerman and Vergun (2007, p. 158) point out, the use of discourse markers is often not explicitly taught to second-language learners, which negatively affects their competence and fluency.

Importantly for the present study, a hearer’s interpretation of the pragmatic meaning of a discourse marker is guided by the sentence position. According to Aijmer (2002), ‘native speakers’ use discourse markers ‘with great precision’ (p. 3), which means that subtle differences in sentence position and prosodic stress can alter the pragmatic meaning of a discourse marker, and as a result, even fairly advanced L2 speakers can inadvertently change the intended meaning of a sentence by using the inappropriate discourse marker or placing it in an unorthodox sentence position. The multifunctionality and positional flexibility of discourse markers can pose a particular challenge for L2 speakers, and consequently the ‘native’-like use of discourse markers can be considered one indicator of high proficiency in a given language (Sankoff et al., 1997; Pérez-Paredes & Sánchez-Tornel, 2014). Contrastive interlanguage studies of discourse markers show that advanced L2 speakers and writers are able to capture the nuances of discourse markers well and use them with ‘native’-like precision, even if traces of first language influence remain; for the concept of interlanguage, see Selinker (1972) and for an overview of studies, see Müller (2005, pp. 13–15). For example, while Dalili and Dastjerdi (2013) report no significant differences between American ‘native’ and Iranian ‘non-native’ speakers’ use of discourse markers in political news reporting, Liu (2013) showed that the discourse marker use of Chinese speakers of English appeared to be influenced by discourse markers in Mandarin. Similarly, Nikula’s (1996) study of the somewhat broader concept of ‘pragmatic force modifiers’ from an interlanguage perspective, focusing on English and Finnish, showed that ‘due to the different structural features of their language, the speakers of Finnish made abundant use of morphological clitic particles to modify the impact of their messages whereas the speakers of English typically opted for lexical modifiers’ (p. 233).

The discourse marker actually has been studied extensively over the past two decades (Aijmer, 2002, 2008, 2015, 2016; Cheng & Warren, 2001; Traugott & Dasher, 2002; Waters, 2008). Since its adoption into English from French during the 15th century, the adverb has seen a steady increase in frequency up to the present day, developing from an adverb of manner in the Early Modern period to an epistemic adversative in the Late Modern period and finally to a discourse marker in Present-day English (Defour et al., 2010; Krug & Sönning, 2018). In recent years, actually has often been mentioned by prescriptivists as an overused ‘crutch word’ similar to literally, honestly, and absolutely. Aijmer (2013) concurs, noting that actually ‘stands out because of its “overuse” in some text types’ (p. 104).

Actually shows considerable flexibility when it comes to both sentence position and semantic function. Although there is no exclusive position-to-meaning mapping, it may be said in broad terms that the initial position is associated with change of perspective, medial position with opposition, and final position with politeness and hedging (examples (4), (5), and (6), respectively).

(4) It’s actually like watching little kids on the sandbox fighting over toys. (NTS Finland)
I understand your point, but it actually costs nothing to give ‘that’ respect (NTS Finland)
its quite fun actually.:-) (Curators)

These intuitively understood positional preferences guide readers’ interpretations of the intended meaning, and thus a ‘misplaced’ discourse marker can change the intended meaning of the sentence. As shown by Aijmer (2015, pp. 94–95), the sentence position of actually shows considerable variation between world Englishes. In a comparison of four national varieties (British English, New Zealand English, Singapore English, and Hong Kong English), Aijmer found that while the first two Inner Circle varieties (Kachru, 1982) gave strong preference to the medial position (c. 67%), both Singapore and Hong Kong English favored the sentence-initial position (c. 52%). According to Aijmer (2015, p. 106), in Singapore English and Hong Kong English, actually has a predominantly subjective meaning, while in the Inner Circle varieties, the meaning is primarily intersubjective. Although the lack of detailed sociolinguistic background data on individual speakers prevents the conclusion of unequivocal transfer from L1s, the findings support the more general understanding that the use of near-equivalent discourse markers in a speaker’s L1 will influence their practices with L2 (Sankoff et al., 1997; Liu, 2013). Cheng and Warren (2001) observed differences in the frequency and sentence positioning of actually between speakers of Hong Kong English and ‘native’ Englishes, but relatively minor differences when it came to the distribution of pragmatic functions. Naturally, the conditions and circumstances of exposure to English vary considerably as we move from one country to another and across time, and these differences will affect the pathways through which L2 speakers acquire their competence. Thus, it may be argued that in the case of the Nordic L2 speakers, the constant and multidirectional exposure to English provides a ‘(pseudo)-natural foreign language context’, which Romero Trillo (2002) argues is necessary for the development of pragmatic competence and which is ‘often almost impossible to produce in formal education’ (p. 770).

Given the contrastive perspective of this study, a few words should be said about the semantic and pragmatic equivalents of English actually in Swedish, Norwegian, and Finnish. Swedish and Norwegian belong to the North Germanic family of Indo-European languages, which are structurally and lexically fairly close to English. Finnish, by contrast, is a mainly agglutinative Finnic language that differs markedly from the Germanic languages in respect to morphology, lexis, and syntax. If L1 plays a significant role in the use of discourse markers, we would thus expect the English of Swedish and Norwegian speakers to be relatively similar, and different from the Finnish speaker’s English. In Swedish and Norwegian, the closest semantic equivalents to the English actually are faktiskt and faktisk, respectively, while in Finnish, the closest equivalent is the word pair itse asiassa (examples (7), (8), and (9) from the Nordic Tweet Stream, respectively). The Norwegian faktisk is also a near equivalent to in fact (Hasselgård, 2009); the same could be said for the Finnish itse asiassa.

(7) Det däremot instämmer jag helt i. Jag instämmer faktiskt helt i den tweeten. (NTS Sweden)
Translation: ‘that I nevertheless agree completely with. I agree actually completely with that tweet’

(8) Offentlig informasjon? Du burde kanskje begynne med å faktisk lese avisen…. (NTS Norway)
Translation: ‘public information? You should maybe start to actually read the newspaper’

(9) Tää Fox Newsin striimi on itse asiassa aika viihdyttävää katseltavaa. Toistaiseksi vain full HD sössötystä. #usavaalit (NTS Finland)
Translation: ‘This Fox News stream is actually pretty entertaining to watch. So far it’s been nothing but bullshit in full HD. #americanelection’

### 2.2 Twitter and linguistic research

Since its launch in 2006, the microblogging service Twitter has quickly become one of the most important social media platforms in the world. With hundreds of millions of accounts and considerable popularity among organisations, corporations, celebrities, academics, and politicians, Twitter is now an important global communication channel that
empowers diverse discourse communities across traditional boundaries (Zappavigna, 2012). Twitter’s relatively permissive policy to data collection has made it one of the most widely studied social media platforms by linguists and other researchers interested in gathering large amounts of authentic data. Twitter provides rich metadata on each post, including time, location, and social networking data, which facilitate complex analyses at a scale that would have been virtually impossible a decade ago (Grieve et al., 2018; Mocanu et al., 2013). For linguists, the opportunity to access authentic, unedited language produced by extremely large and diverse groups of participants affords new insights into the temporal and spatial distributions of linguistic features and practices, giving rise to entirely new subdisciplines such as digital dialectology (Grieve et al., 2019).

Despite the fact that Twitter data are increasingly used as primary data in many fields of study, there are limitations, the first of which is related to the restricted socio-demographic scope of social media data in general. As a way of illustrating this, Huang et al. (2016) point out that Twitter data do not fully represent the entire population since certain groups, such as young generations in general and young men in particular, are overrepresented on Twitter. Another limitation is related to the geolocation properties of Twitter data. All the Nordic Tweet Stream data come from account holders who, at the time of data collection, were physically located in the Nordic countries (Laitinen et al., 2017a). However, a reasonable question to ask is if the data represent residents in the region and not occasional visitors. Previous studies that use Twitter data have suggested, however, that a great majority of messages in one location are in fact from residents of that location (Lamanna et al., 2018). We therefore assume that our dataset is reliable, given the general limitations of Twitter data.

3 | DATA

3.1 | Nordic Tweet Stream (NTS)

The Nordic Tweet Stream corpus is a real-time monitor corpus compiled from November 2016 onwards (Laitinen et al., 2017a, 2017b). It was developed in the Linnaeus University Center of Data Intensive Sciences and Applications (DISA), a multidisciplinary research consortium, and it consists of geolocated tweets and metadata sent from five Nordic countries. Each day, we add almost 40,000 messages to the corpus. To ensure replicability, a pilot version of the data is currently freely available for basic research through a graphic interface.¹ The data collection makes use of the free Twitter Streaming API, and we use HBC as our downloading mechanism.² The data capture utilises the geolocation information, in which we first specify a geographic region covering the five Nordic countries, and then a second filtering process is applied to select only tweets tagged with a Nordic country code (DK, FI, IS, NO, or SE). This second filtering is necessary in order to exclude tweets from neighboring countries (for example, Germany and Russia) located within the chosen geographic boundary (see Laitinen et al., 2017a, for the process).

We also apply a third filtering that removes automatically generated bot messages. The concept of a bot refers to a heterogeneous set of account types that are non-personal and that post automated messages, and their presence can seriously skew sampling and result in inaccuracies when used as empirical evidence (Morstatter et al., 2016). Previous sociolinguistic studies have relied on a range of methods when it comes to handling bot accounts. Huang et al. (2016) recognise their presence but include them in the results. Coats (2017) uses a method in which material from certain types of devices is excluded. In Laitinen and Lundberg (in press), an advanced algorithmic approach is utilised to increase data accuracy and remove automatically generated tweets (AGTs).

To clean the data available through the graphic interface, we have integrated a tool that enables a user to either exclude or include AGTs in the dataset. The tool is based on an algorithm developed by Lundberg et al. (2019) and is a language-independent approach for detecting bot messages. An AGT is defined as a tweet in which all or parts of the natural language content are generated automatically by a bot or other type of program. Being language independent means that the actual Twitter text is not used as an input feature in the classifier. Rather, the algorithm classifies each tweet using only select attributes in the metadata, which are available for each tweet. This feature makes our approach
simple and light so that it can handle high-velocity data. In our experiments, the best classifier (J48-HP) had an error rate of 1.84 per cent, with precision 0.998, and recall of 0.920. This application enables us to focus solely on human-generated tweets (HGT).

3.2 | Curators of Sweden

_Curators of Sweden_ (hereafter Curators) was an image-building initiative of the Swedish government agencies Swedish Institute and VisitSweden that involved individual Swedish citizens assuming responsibility for the Twitter account @Sweden for one week each. Running from December 2011 to December 2018, the project saw a total of 356 ‘curators’ representing Sweden by answering questions, telling stories, and otherwise engaging with other Twitter users. The curators represent a broad cross-section of Swedish society, including people of different ethnic backgrounds, professions, ages, and genders. The official Curators’ website gives biographical information on each curator, which makes it theoretically possible to assign sociolinguistic variables to the individual curators. The vast majority of the tweeting was done in English. For this project, the tweets of 217 curators were compiled as a corpus comprising 135,322 tweets (1.8 million words). Within this dataset, the weekly tweet counts of the individual curators ranged from 36 to 2,155. Although there is nothing outwardly unusual about the curators’ tweets, we hypothesise that the fact the curators were acting as digital ambassadors of their country is likely to have affected their language use in various ways, such as conscious self-editing, refraining from using colorful or potentially offensive language, and generally taking on a politer and more information-focused style of communication than what Twitter is generally known for. For this reason, the Curators’ dataset provides an interesting point of comparison to the previously discussed NTS data, which represents normal everyday tweeting.

3.3 | Other corpora cited

In order to contextualise the frequencies of _actually_ obtained from the Twitter corpora, we will begin section 5.1 with a comparison of those frequencies with the frequency of _actually_ in a selection of other relatively contemporaneous corpora of spoken language. Some of the reference data comes from previous research — the London-Lund Corpus (LLC) data from Aijmer (2002) and the Toronto Corpus data from Waters (2008) — while data from the British National Corpus (BNC) 1994 (context governed), BNC 2014 (spoken), the TV corpus, and the Corpus of Contemporary American English (COCA) (spoken) were obtained directly from the corpora for the present study. No detailed analysis was carried out on the latter beyond verifying that the hits were correctly retrieved.

4 | METHOD

The initial qualitative analyses of the Curators, Finnish NTS, and Norwegian NTS subcorpora were carried out by a total of 14 BA and MA students of English Linguistics at ANON University under the supervision of Tyrkkö and Levin. The qualitative analysis of the Swedish NTS subcorpus was carried out by Tyrkkö. See Table 1 for basic descriptive statistics.

Prior to the analyses, the students were introduced to theoretical background literature (specifically Aijmer, 2002, 2015) and the coding parameters were discussed in class. Each student was assigned a set number of tweets to code between in-class sessions. The tasks were not graded, but instead the students were encouraged to discuss the coding scheme collaboratively with each other, and problematic cases were discussed in class. The initial coding scheme included three variables, which are given in Table 2. In addition to coding the variables, this phase of the analysis also included pruning false positives, such as occurrences of _actually_ as part of a user ID, the use of _actually_ in non-English
TABLE 1  Corpora used in the study

<table>
<thead>
<tr>
<th>Subcorpus</th>
<th>Tweets in English in primary data</th>
<th>Frequency of actually (per 10,000 words)</th>
<th>Tweets in subcorpus</th>
<th>Tweets retained after pruning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curators of Sweden</td>
<td>1,803,871</td>
<td>12,560 (8.65)</td>
<td>1,749</td>
<td>1,727 (98%)</td>
</tr>
<tr>
<td>Finnish NTS</td>
<td>941,598</td>
<td>5,024 (53.35)</td>
<td>1,400</td>
<td>1,309 (93%)</td>
</tr>
<tr>
<td>Norwegian NTS</td>
<td>1,040,553</td>
<td>6,172 (59.31)</td>
<td>700</td>
<td>670 (95%)</td>
</tr>
<tr>
<td>Swedish NTS</td>
<td>2,355,853</td>
<td>11,879 (50.42)</td>
<td>700</td>
<td>652 (93%)</td>
</tr>
<tr>
<td>Total</td>
<td>6,141,875</td>
<td>24,635 (40.12)</td>
<td>4,549</td>
<td>4,358</td>
</tr>
</tbody>
</table>

TABLE 2  Categorical variables and levels

<table>
<thead>
<tr>
<th>Variable</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punctuation</td>
<td>Yes, No</td>
</tr>
<tr>
<td>Sentence position</td>
<td>Initial, Medial, Final</td>
</tr>
<tr>
<td>Function</td>
<td>Elaboration, Emphasising reality, Emphasising speaker's position, Hedging, Novelty, Opposition, Politeness, Surprise</td>
</tr>
</tbody>
</table>

tweets (Hade actually hellre sett Ida vinna ph. Hon bidrog så mkt till gruppen?????????????????????????? [sic]) and references to the film Love Actually.

The variable ‘punctuation’ indicates whether or not the instance of actually was separated from the rest of the sentence by a punctuation mark, typically a comma. The variable ‘sentence position’ indicates the relative position of the discourse marker within the sentence. We use the terms initial, medial, and final for the levels, but it is important to note that the level ‘initial’ corresponds with what Aijmer (2015, pp. 93–94) defines as left periphery and the level ‘final’ corresponds with Aijmer’s right periphery. This means that actually does not have to be the absolute first or last item in the sentence to be coded as initial or final. Thus, in the case of the initial position, we also included cases where actually occurs as the second item preceded by a pronoun (we, you), a contracted form of pronoun + verb (I’m, you’ll), a conjunction (and, but), or another discourse marker (so, well).

Whilst the coding of the first two variables was a relatively trivial task, the coding of semantic function was more challenging. Over the years, researchers working on discourse markers, including specifically on actually, have used a number of different categorisation systems for analysing semantic function. In order to produce comparative results, we initially opted to use the fine-grained system of levels introduced by Aijmer (2002). However, because the tweets had to be analysed out of discursive context and there were naturally no prosodic cues to aid the interpretation, some of the levels were found to be difficult to distinguish from one another, especially when two levels have a closely associated meaning, such as Novelty and Surprise. To give an example, the function of the tweet in example (10) was classified by a student as Novelty because it introduces new information, but arguably the follow-up sentence ‘Say what?!’ would also support coding the function as Surprise, given that the author of the post seems to want to indicate that the previous sentences introduced surprising information.

(10)  Although I work in Gothenburg, I actually live in Denmark. Say what?! I live in the northern part of Denmark, taking the ferry to work.

In example (11), the function coded by a student is Hedging (a display of conscious uncertainty), but it might also be possible to argue that the discourse marker introduces new information (Novelty) or, perhaps even more
controversially, that the fact that the poster appears to be correcting someone else’s earlier claim could support the idea of coding this tweet as OPPOSITION.

(11) @Anna70OH I think it is from Lurō actually, but not totally sure:)

To streamline the levels of semantic function, we collapsed the original eight levels into five: ELABORATION, EMPHASISING, OPPOSITION, POLITENESS/HEDGING, and SURPRISE/NOVELTY. The five levels are semantically distinct and reasonably easy to code reliably, which also makes the statistical analyses more robust under the law of parsimony.

5 ANALYSIS

5.1 Frequency comparison of Nordic tweets and previous findings

The first question in the contrastive framework concerns the overall frequency differences between the different subcorpora in this study. We also compare the frequencies with previous findings concerning the use of actually in various spoken text types. The dot plot in Figure 2 gives an overview of the findings concerning central tendencies. The results cluster unambiguously into two groups, with the NTS subcorpora showing high frequencies in the 50–60/10,000 words range, while all other corpora queried, as well as findings reported in previous literature, fall in the 5–20/10,000 words range. The cluster of spoken corpora is capped by the oldest and youngest cohorts in Waters’ (2008) study of the Toronto corpus of spoken English. The data from spoken-language corpora show that the frequency of actually has been increasing for decades (meta-analysis in Krug & Sönning, 2018).

Turning to the Nordic Twitter data, we see that actually is used substantially more in regular everyday tweeting in the Nordic context than in spoken ‘native-speaker’ English. The frequency differences between the three NTS corpora are statistically significant, but the effect sizes are relatively small (Sweden-Finland LL = 11.20, p = ***.

![Figure 2](#)
We also see that in stark contrast to the NTS data ($LL = 6459.7$, $p = ***$, LogRatio $= 2.54$), the Curators' use of *actually* appears to be perfectly in line with usage in the spoken Englishes. Although the informants in the Curators subcorpus are not the same group that posted the tweets in NTS Sweden, it seems most likely that the difference between the two subcorpora reflects context-dependent choice rather than any fundamental difference in proficiency between the Curators and generic Swedish Twitter users. Furthermore, although the possibility cannot be discounted without further study that the frequency difference between the NTS data and the previous corpus-based evidence is not a feature of 'non-native' speaker performance — notably, Cheng and Warren (2001) found that speakers of Hong Kong English used *actually* much more frequently than 'native speakers' — the fact that all three NTS subcorpora show high frequencies within the same range suggests that the Twitter users may be following a pragmatic practice emergent in social media, or possibly specifically on Twitter. Further analysis with more varied data would be needed to test this hypothesis.

5.2 Functions and sentence positions

We begin the monofactorial analysis by looking at how often the different user groups employed a comma to separate sentence-initial and sentence-final instances of *actually* from the rest of the sentence. The data show that while the users in all three NTS subcorpora only use punctuation c. 5 per cent of the time, the Curators used punctuation significantly more at 35 per cent, both in the initial and final positions (pooling the NTS corpora and testing for independence of the Curators and NTS subcorpus, $\chi^2 = 186.39$, $df = 1$, $p = ***$; see Figure 3). In a mosaic plot, the vertical axis shows proportional distribution by level of the outcome variable and the widths of the columns on the horizontal axis indicate the proportional size of each predictor; note that in Figure 3 we show the sentence positions side-by-side and...
that the value labels indicate the hit counts. Thus, for example, we see that in the final position in the Curators corpus, punctuation is not present 66.3 per cent (223 hits) of the time, while in the initial position, punctuation is not present 60.4 per cent (182 hits) of the time.

What this suggests is that the Curators, perhaps self-conscious of their official role, may have felt the need to follow a more formal written standard in their tweets. Studies of digital media show that when a social networking service imposes character limits, as happens with text messages and tweets, users will typically attempt to abbreviate the message by omitting punctuation, function words, normal politeness formulae, and long words, and by using non-standard spellings (Tagg, 2015). The use of standard punctuation by the Curators is therefore an unusual choice, especially considering that the Curators subcorpus comprises tweets by 217 individuals. The differences between the NTS subcorpora are barely significant: collapsing sentence-initial and final punctuations together and testing for independence between the three subcorpora, we get $\chi^2 = 6.14$, df = 2, $p = *$. A post hoc test shows that the explanation is the Finnish users’ slightly weaker tendency to use punctuation than the Norwegians and the Swedes ($\chi^2 = 4.29$, df = 1, $p = *$).

The real differences, however, start to emerge when we examine the breakdown of the pragmatic functions in the subcorpora (Figure 4).

A 4 × 5 contingency table will nearly always yield an overall significant result from a chi-squared test for independence (here $\chi^2 = 214.3$, df = 19, $p = ****$), and therefore post hoc residuals analysis is needed in order to identify the associations of interest (Sharpe, 2015). We use cell-wise chi-squared contributions — calculated as (Observed-Expected)$^2$/Expected — to highlight the significant cells (Table 3).

The post hoc test shows that SURPRISE/NOVELTY is the most evenly used function, with the Curators using it somewhat more than the mean and the Swedish users somewhat less. ELABORATION is likewise used fairly evenly, although the Swedish users use it more than the others and the Finns a little less. The main differences are observed in the Curators’ high use of POLITENESS/HEDGING and OPPOSITION, which can be traced back to their dialogic role as friendly
TABLE 3  Cell-wise $\chi^2$ contributions and sign of the residuals relative to the expectation. Notable residuals in bold

<table>
<thead>
<tr>
<th></th>
<th>Elaboration</th>
<th>Emphasising</th>
<th>Opposition</th>
<th>Politeness/hedging</th>
<th>Surprise/novelty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curators</td>
<td>0.65 (+)</td>
<td>30.1 (-)</td>
<td>24.2 (+)</td>
<td>18.8 (+)</td>
<td>7.1 (+)</td>
</tr>
<tr>
<td>Finnish</td>
<td>7.65 (-)</td>
<td>22.0 (+)</td>
<td>5.84 (-)</td>
<td>44.1 (-)</td>
<td>0.0 (+)</td>
</tr>
<tr>
<td>Norwegian</td>
<td>1.8 (-)</td>
<td>7.5 (+)</td>
<td>10.4 (+)</td>
<td>0.0 (+)</td>
<td>2.3 (-)</td>
</tr>
<tr>
<td>Swedish</td>
<td>15.8 (+)</td>
<td>0.2 (-)</td>
<td>1.7 (+)</td>
<td>4.8 (+)</td>
<td>8.9 (-)</td>
</tr>
</tbody>
</table>

FIGURE 5  Mosaic plot of sentence position by subcorpus [Colour figure can be viewed at wileyonlinelibrary.com]

digital ambassadors for Sweden, and their low use of EMPHASISING, which might be explained by their relative lack of a need to emphasise personal opinions due to their role as online ambassadors. By contrast, the NTS users, especially the Finnish users, used the EMPHASISING function more than the Curators. Also noteworthy is the Finnish users’ tendency not to use actually for POLITENESS/HEDGING, which all the other groups use more and in equal measure. This can perhaps be traced back to the semantic potential of the Finnish equivalent of ‘actually’, itse asiassa, which does not readily extend to politeness or hedging.

Figure 5 gives a similar breakdown of sentence positions in each subcorpus. Most notably, the Swedish and Norwegian users, whose sentence positioning of actually is nearly identical, appear to use the sentence medial position much more than the other users (89.6% for both Swedes and Norwegians vs. 63.1% for the Curators and 66.6% for the Finns). The Curators favour the final position more than the others (19.5% vs. a mean of 7%) and the Finnish users prefer the initial position (25% vs. the Curators’ 17.4%, the Norwegians’ 4%, and the Swedes’ 4.8%). According to Hasselgård (2009, p. 262), Norwegian has a strong preference for faktisk in the medial position, which supports the hypothesis that L1 influence continues to affect discourse marker placement even at high levels of proficiency (see Table 4).
<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Medial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curators</td>
<td>3.0 (+)</td>
<td>19.6 (+)</td>
<td>78.7 (–)</td>
</tr>
<tr>
<td>Finnish</td>
<td>71.7 (–)</td>
<td>5.6 (+)</td>
<td>15.0 (–)</td>
</tr>
<tr>
<td>Norwegian</td>
<td>58.5 (–)</td>
<td>27.9 (–)</td>
<td>17.6 (+)</td>
</tr>
<tr>
<td>Swedish</td>
<td>50.1 (–)</td>
<td>27.3 (–)</td>
<td>21.9 (+)</td>
</tr>
</tbody>
</table>

In Figure 6, the sentence positions and functions are given together as a mosaic plot to show contingencies. For clarity, each subcorpus is displayed as a separate panel.

Pooling all the data together, we see that the Swedish and Norwegian Twitter users position actually very similarly regardless of function, with the Norwegians using initial and final positions somewhat more than the Swedes for ELABORATION ($\chi^2 = 9.2, \text{df} = 2, p = ****$). The visually apparent differences in OPPOSITION and POLITENESS/HEDGING are not statistically significant. The Curators and Finns differ significantly from the Norwegians and Swedes across the board due to the strong preference for the medial position by the two latter groups. This is particularly interesting when we keep in mind that the Curators are also Swedish speakers. The Curators and Finns, although more similar to one another than with the Norwegians and Swedes, nonetheless differ significantly from one another when it comes to the preferred sentence position of actually for every function.

The predicted probabilities for each combination of group and function were calculated using multinomial logistic regression with the sentence-final position as base outcome, ELABORATION as the omitted level of the predictor 'function', and the Curators as the omitted level of the predictor 'group' ($n = 4,358$, log-likelihood = –3001.14, AICc = 6,034.41, adjusted pseudo-$R^2 = 0.12$; see Figure 7 and the Appendix). Multicollinearity is not an issue (VIF = 1.02).7
Relative Risk Ratios (see Appendix) indicate the ‘risk’ of the outcome belonging to the comparison level or the referent level with 1 as the threshold value; the terminology derives from the medical context, in which the statistic was first used. For example, when the outcome we are examining is the initial sentence position, we get $\text{RRR} = 1.6$ for the pragmatic function \textit{OPPOSITION} and $\text{RRR} = 3.16$ for the Finnish group. This means that the pragmatic function \textit{OPPOSITION} is a relatively strong positive predictor ($1.6 > 1$) for the initial position compared to \textit{ELABORATION} and that Finnish Twitter users are much more likely ($3.16 > 1$) to use the initial position than the Curators, our reference level for that predictor.

The not-significant $p$ values for several predictors in the model for the initial position are the result of the low number of observations, that is, there are too few instances of the Swedish and Norwegian NTS users using the sentence-initial position, or anyone using that position for \textit{EMPHASISING} or for \textit{SURPRISE/NOVELTY}. From the model, we can then calculate predictions for each sentence position based on the group of Twitter users and the pragmatic function (Figure 8).

6 | DISCUSSION

The meta-analysis of the frequencies of \textit{actually} in various corpora and the four-way comparison of functions and sentence positions of the discourse marker \textit{actually} reveal several noteworthy facts about how pragmatic context affects the use of discourse markers and how the presumed L1s of speakers affect discourse marker use in English as a lingua franca in the Nordic context. Firstly, the findings show that \textit{actually} is substantially and significantly more frequent on Twitter than in either traditional written or spoken contexts. Although this may be seen in part as a natural continuum of the gradual positive cline in the frequency of \textit{actually} in English (Krug & Sönning, 2018), the high frequencies in the NTS data can be attributable to the more personal nature of short-form asynchronous messaging on the
microblogging service. A good indication of this is that in the Twitter corpus used in this study, more than 28 per cent (1,230 out of 4,358) of the occurrences of actually either precede or follow the 1st person singular pronoun I or the contracted I’m. For comparison, the same proportion is only 6 per cent (5,896 out of 89,657) in the spoken section of the COCA corpus and 14 per cent (2,401 out of 17,525) in the Spoken BNC 2014.

In contrast to the NTS subcorpora, the Twitter users in the Curators subcorpus used actually at a frequency that was highly similar to contemporary spoken and written data from non-social media domains, which can really only be explained as an effect of the specific role that these users had at the time. As Aijmer (2015, p. 92) notes, discourse markers are particularly strongly associated with informal conversation, and the contrast observed between the Curators and the ‘regular’ Twitter users is in line with this claim. Although the proportional distributions observed in the data cannot explain usage frequencies in the population, the fact that the Curators used actually the least for EMPHASISING may further support the interpretation that the Curators did not use the @Sweden account for expressing strong emphatic opinions, but rather for light interaction about trivia and current affairs that pertain to Sweden.

The L1 hypothesis was posited in the beginning, namely that some differences could be observed in the use of actually between the non-Indo-European L1 (Finnish) and the two Germanic L1s (Swedish and Norwegian). This was largely shown to be the case, with the Swedish and Norwegian speakers showing extremely high similarity to one another, overwhelmingly preferring the medial position for the discourse marker — which, according to Hasselgård (2009, p. 262), matches the preferred position of the L1 equivalent, faktisk. By contrast, while the Finnish L1 speakers also use the medial position the most, they have a much greater tendency to also use the initial position. In Finnish, the translation equivalent of actually, itse asiassa, often occurs in the left periphery, especially when used to indicate OPPOSITION or to introduce NOVELTY.

How do the sentence positions relate to ‘native speaker’ use in English? We do not have access to directly comparable data from Twitter, but we can compare the findings with previous scholarship by Aijmer (2015, p. 94), who
FIGURE 9 Breakdown of sentence positions by corpus and compared to ICE-GB [Colour figure can be viewed at wileyonlinelibrary.com]

shows that the breakdown of the sentence position of actually in the ICE-GB corpus is 12.6 per cent initial, 66.7 per cent medial, and 20.8 per cent final (Figure 9). Compared to the four subcorpora in this study, it appears that the Curators come closest to this distribution, the main difference being that they use the sentence-final position more than the ICE-GB informants. The Norwegian and Swedish users overuse the medial position compared to ICE-GB, while the Finnish users appear to use the medial position at exactly the same proportion but overuse the initial position and underuse the final position.

7 CONCLUSION

This study of the discourse marker actually in English-language tweets written by Finnish, Norwegian, and Swedish Twitter users has revealed several previously unknown facts and raised a number of new questions. Firstly, we have observed that the Twitter users in our study generally use actually at a much higher frequency than ‘native speakers’ do in spoken discourse, with the surprising and intriguing exception of the Curators of Sweden, a specific group of Swedish users who acted as digital ambassadors of their country for short periods of time. Although more detailed analysis is needed, we surmise that the explanation may be that the Curators’ communicative context was less personally involved and that they aspired to self-edit more carefully than everyday Twitter users would. Secondly, we saw that there appears to be an L1 influence especially on sentence position, with the Norwegians and Swedes using sentence positions with an almost identical distribution. By contrast, the Finns and the Curators were closer to typical ‘native-speaker’ distribution. Thirdly, all four groups used actually in the different pragmatic functions in fairly equal measure, with some notable differences, which again may be explained by the Curators’ communicative context. Although we also observed some differences in the use of actually, which could be explained by differences in the pragmatic ranges of the Finnish, Norwegian, and Swedish equivalents of actually, this was not systematically analysed due to the scope of the paper. Further work is therefore needed. This study has also demonstrated both the usefulness and challenges
of linguistic data derived from social media with particular reference to world Englishes and ELF research. Although the datasets used were not excessively large by any means, acquiring similar-sized corpora of three varieties of authentic L2 English on a specific discourse marker would be a major data collecting task. At the same time, further work is needed before we have established baseline data for online language use. Consequently, although we are confident in the general direction shown by the findings, further work is needed before we can compare the findings with directly comparable ‘native-speaker’ data.

NOTES
1 The graphic interface may be accessed at www.cs.uef.fi/nts/
2 https://github.com/twitter/hbc
3 The official Curators of Sweden website may be accessed at https://curatorsofsweden.com/
4 The authors wish to acknowledge the work of students Esme Richardson-Owen, Jonna Mårtensson, Janin Laurer, Johannes Widegren, Amanda Silfver, Betty Budir ska, Matilda Davidsson, Nahid Altehmazi, Mal Nabawy, Lisa Persson Örtman, Robin Engström, Phoebe Jönsson, and Sigrid Svensson. A special thanks goes to Jamie Davis, who volunteered to carry out additional work on the Curators of Sweden data after the course was over. The students were aware of the purpose of the coding task and they gave their oral consent to the data being used in published research and to their names being publicly acknowledged in the resulting publication.
5 Given the magnitude of the differences observed, there is no reason to carry out inferential statistical analyses for significance. For example, to compare the Twitter corpus frequencies against those reported in previous studies or observed in the reference corpora. For details of the Log-likelihood test for significance, see Dunning (1993); for the effect size measure LogRatio, see Hardie (2014). Throughout the paper, we will report significance following the standard notation: >0.05 = ns, <0.05 = *, <0.01 = **, <0.001 = ***.
6 Although logistic regression does not produce a coefficient of determination R^2, a so-called pseudo-R^2 can be calculated using the formula 1-(L_1/L_0), where L_1 is the log-likelihood of the full model and L_0 is the log-likelihood of the model with only the intercept. The adjusted pseudo-R^2, which penalises R^2 for added predictors, can be calculated as 1-((L_1-K)/L_0), where K is the number of additional parameters over the null. Like R^2, adjusted pseudo-R^2 expresses the amount of variance that the model explains.
7 The variance inflation factor (VIF), calculated as 1/(1-R^2) for each predictor, estimates collinearity (read correlation) between predictors; high multicollinearity leads to unreliability in the coefficient estimates. With two predictors, there is only one correlation between them and thus both predictors have the same VIF score. VIF has a lower bound of 1 and no upper bound. Various threshold figures have been suggested, with some statisticians suggesting 2.5, others 5 or 10. There is no one correct threshold, but the VIF obtained in the present study, 1.02, indicates very good absence of multicollinearity, or high orthogonality.

REFERENCES


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**APPENDIX**

Logistic regression model for sentence positions ‘initial’ and ‘medial’.

<table>
<thead>
<tr>
<th>Outcome variable</th>
<th>Explanatory variable</th>
<th>Coefficient (95% CI)</th>
<th>Relative Risk Ratio (RRR)</th>
<th>Std error</th>
<th>Z score</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial (n = 687)</td>
<td>Emphasising</td>
<td>-0.31 (-0.65,0.03)</td>
<td>0.73</td>
<td>0.17</td>
<td>-1.78</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Opposition</td>
<td>0.47 (0.03,0.90)</td>
<td>1.6</td>
<td>0.22</td>
<td>2.11</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Politeness/hedging</td>
<td>-1.68 (-2.16, -1.19)</td>
<td>0.18</td>
<td>0.24</td>
<td>-6.81</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Surprise/novelty</td>
<td>-0.22 (-0.61,0.17)</td>
<td>0.80</td>
<td>0.2</td>
<td>-1.10</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Finnish</td>
<td>1.15 (0.87,1.41)</td>
<td>3.16</td>
<td>0.14</td>
<td>8.14</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Norwegian</td>
<td>-0.28 (-0.79,0.23)</td>
<td>0.75</td>
<td>0.26</td>
<td>-1.06</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Swedish</td>
<td>-0.0 (-0.51,0.50)</td>
<td>0.99</td>
<td>0.26</td>
<td>-0.01</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>(Intercept)</td>
<td>0.192 (-0.10,0.49)</td>
<td>1.21</td>
<td>0.15</td>
<td>1.25</td>
<td>ns</td>
</tr>
<tr>
<td>Medial (n = 3,146)</td>
<td>Emphasising</td>
<td>0.84 (0.55,1.14)</td>
<td>2.33</td>
<td>0.15</td>
<td>5.62</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Opposition</td>
<td>-0.39 (-0.80,0.02)</td>
<td>0.67</td>
<td>0.21</td>
<td>-1.83</td>
<td>ns</td>
</tr>
<tr>
<td></td>
<td>Politeness/hedging</td>
<td>-1.14 (-1.49, -0.79)</td>
<td>0.31</td>
<td>0.17</td>
<td>-6.41</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Surprise/novelty</td>
<td>0.64 (0.30,0.97)</td>
<td>1.89</td>
<td>0.17</td>
<td>3.72</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Finnish</td>
<td>0.61 (0.36,0.85)</td>
<td>1.81</td>
<td>0.12</td>
<td>4.91</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Norwegian</td>
<td>1.39 (1.05,1.73)</td>
<td>4.03</td>
<td>0.17</td>
<td>7.97</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Swedish</td>
<td>1.67 (1.31,2.04)</td>
<td>5.34</td>
<td>0.26</td>
<td>8.99</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>(Intercept)</td>
<td>0.89 (0.63,1.15)</td>
<td>2.44</td>
<td>0.13</td>
<td>6.65</td>
<td>***</td>
</tr>
</tbody>
</table>

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