



Technology's Effects on British Spellings in America and American Spellings in Britain

Bethany A. Hailstone

This project examined British spellings in America and American spellings in Britain of words before, during, and after the appearance of technological innovations in communication, namely text messaging and the social media sites Facebook, Twitter, and Tumblr. Using three corpora, the frequencies of each spelling occurrence for the words centre/center, colour/color, apologise/apologize, analyse/analyze, travelled/traveled, leukaemia/leukemia, defence/defense, and analogue/analog in the years specified were noted. It was also noted how frequently different British spellings appear in the American corpora (COHA and COCA) and how frequently different American spellings appear in the British corpus (BYU-BNC).

Introduction

Innovations in communication through technology have affected the spread and use of language today. Because of this link between language and technology, I will examine how texting and social media as technological innovations in communication have affected the acceptance of spelling differences in British and American English. I will examine how frequently British spellings appear in America and how frequently American spellings appear in Britain.

Two such technological innovations—social media and texting—have affected everyday communications and have affected the clarity and correctness of written works (Burk 2013, 42). Burk (2013, 42) emphasizes technology’s effect on professionalism in writing by noting, “In this age of technology with email, texting, Twitter and Facebook, we are able to communicate with people without always being face-to-face. While this has opened the door for easier communication with people throughout the world, it has also created a culture that lacks professional appropriateness and generosity.” Thus innovations in communication technology have negatively affected professional communications on a global scale.

Because technology makes English a global language, spelling skills are important for international communication, and sometimes differences in spelling can cause problems for information sharing around the world. Clutton (2001) shows difficulties in international collaboration due to differences in spelling as it relates to medical findings and scholarly collaboration. In that study, Clutton (2001, 1) points out that “one of the many difficulties facing the editors of international scientific journals is the reconciliation of differences in spelling, terminology, and style. . . . A failure to produce a universally acceptable style will inevitably discourage potential contributors from one part of the world or another.”

As one example of difficulties in international communication, different medical professionals must understand each other when

discussing specific medicines. This communication can be problematic when medicines are referred to in multiple ways. As the study reveals, “most differences in the spelling of nonproprietary drug names are clearly recognized by international medical specialists, although many persist as a source of confusion to more provincial readers, e.g. veterinary students” (Clutton 2001, 1). To get around these differences, specific requirements have been set for medical products based on recommended International Nonproprietary Names (rINNs) or, in Britain, British approved names (BANs) (Clutton 2001, 1). As this study shows, spelling differences in world Englishes can negatively affect international collaboration, especially in written findings and communications.

As seen in international communication, spelling is worth studying because it affects comprehension in communication. Templeton (2002, 12) explains that a basic knowledge of spelling is what helps people, specifically students, to read and understand words. Templeton (2002, 12) notes, “we now understand that a common core of word or orthographic knowledge underlies students’ ability to read and spell new words.” Thus a basic knowledge of spelling is important when learning new communication skills.

With spelling’s effect on international communications and on how people understand language, there can be issues when, across varieties of English, there are spelling differences that can become accepted over time. Acknowledging these spelling differences around the world, one study stated that “people who speak [English] have the liberty of choosing between words known as Americanisms and those of British origin” (Molcut 2006, 160). Agreeing with this information, Yagoda (2011, B5) added that some American spellings are becoming acceptable in British English, and some British spellings are becoming acceptable in American English. Specifically, Yagoda (2011, B5) mentioned the British spellings of *grey* for American *gray* and British *amongst*, *amid*, and *whilst* instead of the American *among* and *while*

becoming widely used in students' writing in America. Varieties of English differ in their acceptance of different spellings, and this level of acceptance is changing constantly as the English varieties interact.

To understand differences in English varieties, it is important to understand that English spellings differ because varieties of English have different sound components that affect how words are spelled. As Treiman, Goswami, Tincoff, and Leever (1997, 243) describe, dialectal differences in phonology, or the sound components of language, cause specific spelling differences and errors among children because knowledge of spoken language affects how children learn spelling. Treiman and Berry (2000, 1429) conclude that dialects affect spelling when it is being learned, causing dialectal spelling differences both in children and in adults. Treiman and Berry (2000, 1429) explain that this is because one's individual understanding of phonology affects how one applies knowledge of sounds to language. Thus the phonologies of British and American English create spelling differences between the two English varieties.

Noting these spelling differences across world Englishes, this study will specifically examine British and American English spellings, and so it is important to note what differences exist between the two varieties. According to the Oxford Dictionary website, there are several types of spelling differences that are mostly morphological (dealing with word endings and letter groupings). The main differences, according to this website, are the following:

- -re endings (centre, center)
- -our endings (colour, color)
- -ise and -ize endings (apologise, apologize)
- -yse and -yze endings (analyse, analyze)
- *l*-doubling after a vowel (travelled, traveled)
- double vowel spellings (leukaemia, leukemia)
- -ence endings for nouns (defence, defense)
- -ogue endings for nouns (analogue, analog)

Some of these differences were fixed, and spelling the British form in America or the American form in Britain was not widely accepted; however, the spelling differences are becoming interchangeable and are increasing in acceptance (“British and American”).

Because technology has affected communication worldwide and may affect the spread of spelling differences or the leveling of those differences, it is important to note when each technological innovation appeared. Knowing when each of these technologies was first used in English will help us better see the effects of technology on English as we compare frequencies of spellings over time. These following technological innovations in communication have recently become popular and have affected language use around the world.

- Text messaging was invented in 1992, but it did not become widely used until after 1996 (“Text Messaging”).
- Facebook was created in 2004, but this study will examine its effects after 2005 because it was used by Ivy League school attendees before it was allowed to be used by the public (“Facebook”).
- Twitter was invented in 2006, but it was not until after its showing at the South by Southwest Interactive (SCSWi) conference in 2007 that it became popular with the public (“Twitter”).
- Tumblr was launched in 2007 and became popular that year (“Tumblr”).

Hypothesis

Based on information about spelling differences, international communication, and technological innovations, I hypothesize that frequencies of American spellings in Britain and British spellings in America will increase in the years that these technologies appeared, showing a possible connection between technological innovations in communication and the acceptance of spelling differences in British and American English.

Methods

In this study, I used the three corpora, COHA, COCA, and BYU-BNC to examine the frequencies of British spellings in America and American spellings in Britain. The following summarizes the content of the databases according to the information provided on each corpus's website:

COHA:

The Corpus of Historical American English (COHA) is the largest structured corpus of historical English. The corpus was created by Mark Davies of Brigham Young University, with generous funding from the US National Endowment for the Humanities. . . . COHA allows you to quickly and easily search more than 400 million words of text of American English from 1810 to 2009. You can see how words, phrases and grammatical constructions have increased or decreased in frequency, how words have changed meaning over time, and how stylistic changes have taken place in the language. (Davies 2010, COHA)

COCA:

The Corpus of Contemporary American English (COCA) is the largest freely available corpus of English, and the only large and balanced corpus of American English. This corpus was created by Mark Davies of Brigham Young University. The corpus contains more than 450 million words of text and is equally divided among speech, fiction, popular magazines, newspapers, and academic texts. It includes twenty million words each year from 1990 to 2012 and the corpus is also updated regularly (the most recent texts are from Summer 2012) (Davies 2010, COCA).

It also organizes information by year in five-year categories (Davies 2010, COCA).

BYU-BNC:

"This website allows you to quickly and easily search the 100 million word British National Corpus (1970s–1993). The BNC was originally created by Oxford University Press in the 1980s–

early 1990s and now exists in various versions on the web. Note that our version of the BNC was recently updated.” (Davies 2004)

To examine spellings in the corpora, I selected words according to the Oxford website’s list that are commonly spelled differently between the two English varieties. I then searched for their occurrences in the corpora. The words selected were:

- *centre/center*
- *colour/color*
- *apologise/apologize*
- *analyse/analyze*
- *travelled/traveled*
- *leukaemia/leukemia*
- *defence/defense*
- *analogue/analog*

I searched these words in the corpora and examined their frequencies per million to account for each corpus’s size. Because the BYU-BNC corpus covers only information from 1970 to 1993, and COCA’s totals include the years from 1993 to present, I used information from COHA’s sources in the 1980s to compare with BNC findings. By comparing COHA findings with BNC findings, I was able to examine general spelling differences in the corpora between British and American English before texting and social media came into use. I then examined the British spellings in COCA in the years from 1995–2000, 2000–2005, 2005–2010, and 2010–2012 because these were the groupings available in COCA charts. They included the years 1996, 2005, and 2007—the years in which texting, Facebook, Twitter, and Tumblr became widely used—as well as the most current year in the corpora, 2012. There was not an option to group by year in the BYU-BNC, nor was there information by year in the frequencies per million charts. Therefore, I only examined British spellings in America by year;

however, I did compare the frequencies per million in general totals for the two varieties when I compared COHA and BNC findings.

To analyze my data, I used a t-test of analysis (a statistical test that compares two groups or categories of data to see if they are significantly different from each other) to compare the frequencies of British spellings in COHA and the frequencies of American spellings in the BYU-BNC for statistically significant differences. The corpora were my two categories for this test. I then used an ANOVA test of significance (a statistical test which compares information from multiple groups or categories of data to see if they are significantly different from each other) to see if there was significant change overall from the earliest year (1996) to the latest year (2012) in COCA. The different years given in the COCA were the categories for this test. Based on this data, I made conclusions and discussed the effect technology has on spellings between British and American English, and I made inferences for what this reveals about technology's effect on the acceptance of the different spellings in these English varieties.

Results

After collecting the data from the corpora, I gathered the data and organized them into tables (see appendix) and then analyzed them for significant differences. In the COCA data the spellings of the word *center* seemed especially high in frequency when compared to the other words, so I conducted tests of significance for COCA information with and without the word *center* in the data. When I included COHA in the analysis, however, I still conducted statistical tests including the spellings for the word *center* because it was not the only high-occurrence word in the COHA. Therefore, *center* was not a single outlier for that data. The charts on the opposite page present the information gathered from the corpora.

Using the information gathered, I conducted statistical tests to see if there were significant differences between data results. First, I compared the COHA and BNC results to see if they were significantly different from each other. After conducting a t-test of significance to compare these two groups, I found a p-value of 0.308. Since a p-value of 0.05 or less is considered statistically significant, the results for this test were not significant. This means that the frequencies of British spellings in the COHA and the frequencies of American spellings in the BNC were not significantly different from each other.

Next, I compared the groups of data for the different years in COCA in an ANOVA test of significance. The test resulted in a p-value of 0.832, so it was again not significantly different. Without the spellings of center in those COCA groups, the p-value was 0.700. Thus, the British spellings' frequencies in COCA compared as groups of information according to years were not significantly different from each other with or without the word center.

Finally, I conducted an ANOVA test of significance to compare the British spellings in America over the years from COCA and included the information gathered in 1980 from COHA. The test of significance resulted in a p-value of 0.829, again showing that the frequencies of British spellings in America did not differ significantly over time.

Discussion

According to the data and the statistical analyses, there was no significant difference between the two varieties of English in their spelling frequencies in the corpora, and there was no significant difference in frequencies of spellings in the corpora by year at a p-value of 0.05. This means that the null hypothesis cannot be rejected, so two things can be inferred: technology did not have an effect on how frequently British spellings are used in America, and the frequencies for the two varieties are not currently significantly different. The differences in spellings per-

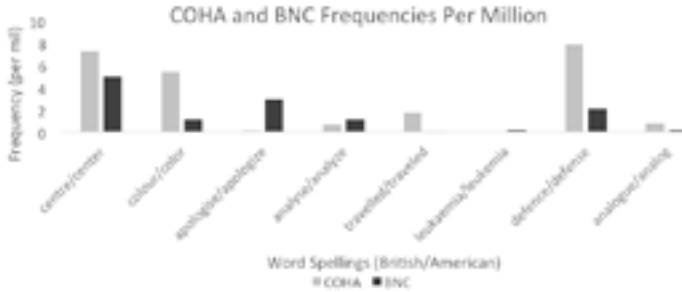


Figure 1.1. British spellings in COHA and American spellings in BNC frequencies per million

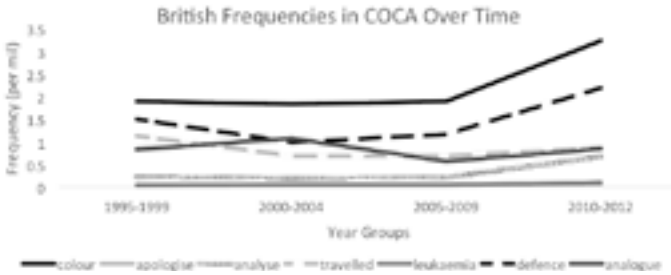


Figure 2.1. British spellings in COCA frequencies per million by year, excluding the center/centre outliers

sist, but the use of British spellings in America and American spellings in Britain is not influenced more or less by innovations in communication technology.

The data show that there were no significant differences between frequencies of British spellings in America and American spellings in Britain in the comparison of COHA and BYU-BNC data. Figure 1 shows that there are no significant differences in the two groups overall because each corpus's data do not have consistent patterns of one corpus containing more frequencies than the other. For example,

the American spelling for *apologize* in the BYU-BNC has a higher frequency than the British spelling *apologise* has in COHA. Looking down the graph at *defense*, there is a much bigger difference. The British spelling occurs more frequently in COHA than the American spelling in the BYU-BNC. Thus there are not consistent patterns of one corpus containing more frequencies than the other.

The data also show that there were no significant differences in frequencies of American spellings in Britain over time. This is best shown in Figure 2 because the lines do not consistently increase or decrease. The scale on the graph is small, ranging only from 0 to 3.5. In that time frame, the changes in frequencies were small and inconsistent. Because there was no significant difference, the acceptance of the different spellings did not change significantly over the time periods that included innovations in communication technology. Therefore, it cannot be inferred that technology affected the acceptance of American spellings in Britain or of British spellings in America.

Limitations

After I examined the data, I noted a few important limitations on the data that must be discussed. First, there were outliers in the COCA data because of the spellings for the word *center* when it was used as a proper noun. This particular word came up with many results in each corpus that were specific names, for example the *Yale Center for British Art* or the *National Travel Health Network and Centre* in London. When the names with British spellings are used in America, they are not changed to *center* (the American spelling) and when the names with American spellings are used in Britain, they are not changed to *centre* (the British spelling). This proper noun spelling could have affected my data by providing irrelevant examples and increasing the frequencies of British spellings in America and American spellings in Britain for the word *center*. Because the frequencies for that word in the

COCA data seemed surprisingly higher than for the other words (see Tables 1.1 and 2.1), I once again calculated the ANOVA test for the COCA results without the data for the spellings of *center*. These results, however, did not show any statistical significance. The results including *center* had not shown statistical significance either, so the outliers did not affect my analysis.

Another limitation on the data was the issue with dates in the BYU-BNC corpus and the different date groupings in COCA. The BYU-BNC corpus, which was the only BNC corpus to which I had access, only contains information from 1980 to 1993, and so the dates for technological innovations could not be applied to the American spellings in the British corpus. Frequencies per million, however, were still given for all the data for that word in both corpora, so I was still able to compare the British spellings in America with the American spellings in Britain by comparing the BNC data with data from COHA in the 1980s. I was also able to analyze the data by year for COCA, so I was able to look at the effect of technological innovations in communication on British spellings in America. Even so, that analysis was based on year groupings instead of individual years because the frequencies per million were given for every five years and then the latest three years (2010–2012). These year groupings, however, should not affect the data because these technological innovations in communication did not begin and end in the same year; rather, they continued to become popular and to expand in use as the years continued. Therefore, the year groupings gave a fair representation of the effect of technology on spellings over time instead of just on spellings one year at a time.

For future research, a British corpus with frequencies per million according to date could be used to examine American spellings in Britain with the same depth in which I examined British spellings in America in this study. Also, acceptance of the spellings could be examined using different means such as surveys or interviews to see how acceptable spellings of the two English varieties are in either na-

tion. Other technological innovations could also be examined for their effect on spellings today. Finally, another study could examine how different technological innovations have helped spread knowledge of spelling differences across world Englishes and could find if this has had an effect on global communications and interactions in the academic and business communities worldwide. These studies would add to the information found in this study that technological innovations in communication did not affect the acceptance of British spellings in America and American spellings in Britain.

References

- Burk, Brook. "BTW, Professionalism Still Matters, LOL!" *Parks & Recreation* 48, no. 8 (2013): 42–43.
- British and American Spelling. (2013). *Oxford Dictionaries* online, accessed March 1, 2014. <http://www.oxforddictionaries.com/us/words/british-and-american-spelling>.
- Clutton, Eddie. "Perpetuating the Sameness of American and British Spellings." *Veterinary Anaesthesia & Analgesia* 28, no. 1 (2001): 1–2. doi:10.1046/j.1467-2987.2000.00036.x.
- Davies, Mark. (2010). Corpus of Contemporary American English (COCA): 45 Million Words, 199–212. Available online at <http://corpus.byu.edu/coca/>.
- Davies, Mark. (2010). Corpus of Historical American English (COHA): 400+ Million Words, 1810–2009. Available online at <http://corpus.byu.edu/coha/>.
- Davies, Mark. (2004). BYU-BNC: British National Corpus. Available online at <http://corpus.byu.edu/bnc>
- "Facebook." *Wikipedia: The Free Encyclopedia*. Accessed November 4, 2013. <http://en.wikipedia.org/wiki/Facebook>.
- Molcut, Diana. "Differences Between British English and American English." *Analele Universitatii Din Craiova* (2006): 160.
- Templeton, Shane. "Spelling Logical, Learnable—And Critical." *ASHA Leader* 7, no. 3 (2002): 4.
- "Text Messaging." *Wikipedia: The Free Encyclopedia*. Accessed November 4, 2013. http://en.wikipedia.org/wiki/Text_messaging.
- Treiman, Rebecca, Usha Goswami, Ruth Tincoff, and Hilary Leever. "Effects of Dialect on American and British Children's Spelling." *Child Development* 68, no. 2 (1997): 229–245.
- Treiman, Rebecca and Christopher Barry. "Dialect and Authography: Some Differences Between American and British Spellers." *Journal of Experi-*

mental Psychology: Learning, Memory, And Cognition 26, no. 6 (2000):
1423–1430. doi:10.1037/0278-7393.26.6.1423.

“Twitter.” *Wikipedia: The Free Encyclopedia*. Accessed November 4, 2013.
<http://en.wikipedia.org/wiki/Twitter>.

“Tumblr.” *Wikipedia: The Free Encyclopedia*. Accessed November 4, 2013.
<http://en.wikipedia.org/wiki/Tumblr>.

Yagoda, Ben. “The Elements of Clunk.” *Chronicle Of Higher Education* 57, no.
18 (2011): B4–B5.

Appendix

Table 1

Frequencies per Million of British Spellings in COHA (in the year 1980) and American Spellings in the BYU-BNC

COHA words	Frequency per mil	BNC words	Frequency per mil
centre	7.31	center	5.03
colour	5.45	color	1.16
apologise	0.16	apologize	2.93
analyse	0.67	analyze	1.18
travelled	1.74	traveled	0.05
leukaemia	0.00	leukemia	0.21
defence	7.86	defense	2.11
analogue	0.83	analog	0.18

Table 2

British Spellings in the American Corpora by Year and Frequency per Million

Word searched in COCA/COHA	1980s (COHA)	1995–1999 (COCA)	2000–2004 (COCA)	2005–2009 (COCA)	2010–2012 (COCA)
centre	7.31	6.36	7.66	9.91	15.41
colour	5.45	1.89	1.84	1.89	3.24
apologise	0.16	0.05	0.05	0.06	0.08
analyse	0.67	0.23	0.20	0.21	0.67
travelled	1.74	1.13	0.69	0.69	0.87
leukaemia	0.00	0.03	0.05	0.06	0.10
defence	7.86	1.51	0.99	1.17	2.20
analogue	0.83	0.83	1.09	0.57	0.85