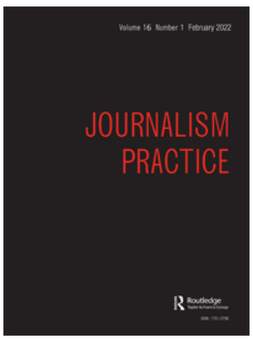

Routledge
Taylor & Francis Group

Journalism Practice

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rjop20

Written in Code: Exploring the Negative Effects of Acronyms in News Headlines

Alyssa Appelman

To cite this article: Alyssa Appelman (2021): Written in Code: Exploring the Negative Effects of Acronyms in News Headlines, Journalism Practice, DOI: 10.1080/17512786.2020.1867622

To link to this article: https://doi.org/10.1080/17512786.2020.1867622

JOURNALISM PRACTICE
https://doi.org/10.1080/17512786.2020.1867622

Routledge
Taylor & Francis Group

Written in Code: Exploring the Negative Effects of Acronyms in News Headlines

Alyssa Appelman

Department of Communication, Northern Kentucky University, Highland Heights, KY, USA

ABSTRACT

Through two experiments ($N_1 = 131$, $N_2 = 520$), this study looks at whether the negative effects of acronyms and abbreviations in headlines are based on their presence or their difficulty. In all, it finds support for a difficulty effect; people had lower content and source perceptions when they were shown a headline with unfamiliar acronym(s) compared with ones they knew, and they were more frustrated with those articles. These differences were moderated by *need for cognition*. In terms of a presence effect, people did perceive some differences in articles with acronyms in their headlines compared to those without, particularly if they were paying close attention, but those differences were much less pronounced. In other words, readers don't seem to be inherently bothered by the presence of acronyms in headlines; they seem to be bothered by the ones they don't understand. These findings suggest that journalists should strive to explain acronyms and abbreviations in headlines, rather than worry about avoiding them altogether. Implications for journalistic practice, reader engagement, and dual-processing theories of persuasion are discussed.

KEYWORDS

Acronyms; abbreviations; cognition; perception; headlines; experimental design

POTUS, SCOTUS, FLOTUS … journalists often use acronyms and abbreviations to streamline content, and this is particularly common when space is limited, such as in headlines. Typing *POTUS*, the argument goes, is significantly more concise than writing out *President of the United States*. Technically, of course, that is true: five characters is fewer than 30 (or 26, without spaces). Although journalists frequently use acronyms (Fumani 2016), many readers say their use bothers and annoys them (Appelman 2020). Why is this the case?

Two likely explanations emerge: perception and cognition. Acronyms might bother readers because they signal something about the source or content (i.e., the journalist sounds elitist, the content seems sloppy), or they might bother readers because they are confusing and difficult to understand. In other words, they might bother people because of their presence or because of their difficulty. Journalistic style guides, such as *The Associated Press Stylebook,* tend to assume a difficulty effect, though previous research is mixed.

Given negative public perceptions of the journalism industry (e.g., "American views," 2020; Gottfried, Walker, and Mitchell 2020), this study tests these possible explanations

CONTACT Alyssa Appelman appelmana1@nku.edu

in order to suggest possible solutions. If it's mostly about presence, then journalists should strive to avoid acronyms; if it's mostly about difficulty, then they should strive to explain them. In advancing research on acronyms and abbreviations in news articles (e.g., Nolan 1991a, 1991b), this study suggests industry solutions to an ongoing—but potentially fixable—problem.

Literature Review

Acronyms and Abbreviations in News Articles and Headlines

News articles frequently shorten words and phrases through the use of acronyms and abbreviations. "Something about acronyms is appealing to print journalists, so these abbreviations often appear in news stories" (Nolan 1991a). Journalists might refer to *SCUBA*, for example, instead of self-contained underwater breathing apparatus; they might refer to the *US*, instead of the United States. Linguistically, these examples reflect different constructs—"Strictly speaking, the term *acronym* refers to pronounceable abbreviations formed with the initial letters of a compound term, while *initialism* is the name for the same type of abbreviations that are 'unpronounceable'" (Izura and Playfoot 2012). In other words, *SCUBA* is technically an acronym while *US* is technically an initialism. However, these definitions have blurred: "Despite this original distinction, the label *initialism* is rarely used, while *acronym* has extended its meaning to pronounceable and unpronounceable abbreviations" (Izura and Playfoot 2012). This study uses the term *acronym* to refer to abbreviations, acronyms, and initialisms. This reflects the construct as defined by *The Associated Press Stylebook* (Froke et al. 2020)—"a word formed from the first letter or letters of a series of words" (1)—and as used in related studies of word-shortening in news content.[1]

Journalists tend to use acronyms where space is limited, such as in headlines. Appelman (2020) found 150 unique acronyms in headlines, subheadlines, and other display type in a six-constructed week sample (i.e., 42 issues) of *The Cincinnati Enquirer*. Fumani (2016) found an average of 52 acronyms and abbreviations per 1,000 headline words in a sample of the *Bangalore Mirror* (85-86). It is also fairly common for these acronyms to be published without explanation. Fumani (2016), for example, found that almost 90% of the acronyms, initialisms, and abbreviations in his headline sample were not explained (88).

Although the current widespread use of acronyms could be somewhat attributed to modern technology, such as texting (e.g., Drouin and Davis 2009) and social media (e.g., Sims 2017), journalistic use of acronyms is not new. Edwards (2015), for example, dates the first appearance of *POTUS* to an 1879 telegraph report. Baum (1955) documents the increase of acronym use in American English from World War I (e.g., *ANZACS*, for Australian and New Zealand Army Corps) through "the so-called 'alphabet soup agencies'" of the New Deal (e.g., *C.C.C.*, for Civilian Conservation Corps) (106) and World War II (e.g., *WAC*, for Women's Army Corps). He noted that the popularity of these acronyms was reflected in newspapers: "Since space is so limited for the news writer and especially for the headline writer, any contraction in bureau titles was an advantage" (106).

Acronym use poses a particular problem in headlines, where the limited space means limited context-clues; an acronym in an article can be explained in a follow-up sentence,

but an acronym in a headline wouldn't be explained until the article, itself. The presence or difficulty of an acronym is arguably more relevant when the explanation is farther away. Additionally, headlines are crucial for news consumption: Eye-tracking studies (e.g., Garcia, Stark, and Miller 1991; Holsanova, Rahm, and Holmqvist 2006) have consistently shown that headlines serve as "entry points," such that people tend to read headlines before most other elements. Dor (2003) defined headlines as "relevance optimizers" because, as he explains, "They are designed to optimize the relevance of their stories for their readers" (696). In fact, Piotrkowicz et al. (2017) created a model that predicted the popularity of news articles on social media based purely on their headlines. In other words, the consequences of acronym use in headlines are particularly relevant for journalists.

Negative Effects of Journalistic Acronyms

Although acronym use is a common journalistic practice with a substantial history, readers say it bothers and annoys them. When Appelman (2020) asked participants about unfamiliar acronyms in the media, about one-third indicated negative perceptions, such as annoyance and frustration, and about half said they try to figure out what the acronyms stand for, either by looking them up online or looking for context clues. When asked whether unfamiliar acronyms affect their desire to keep reading, about half said they do, at least some of the time.

This study empirically tests such effects. Specifically, it tests for potential effects of acronyms on *frustration* (Schmierbach 2010), *source perceptions* (McCroskey and Teven 1999), and *content perceptions*, including *message quality* (Sundar 1999), *message credibility* (Appelman and Sundar 2016), *newsworthiness* (Mayo and Leshner 2000), *enjoyment* (Oliver, Weaver, and Sargent 2000), and *informativeness* (Mutz and Reeves 2005).

It does so because of the significant implications for journalism. Recent media trends show negative public perceptions of the industry. In "American views 2020: Trust, media and democracy," for example, Gallup and the Knight Foundation found "deepening pessimism and further partisan entrenchment about how the news media delivers on its democratic mandate for factual, trustworthy information" (1). The report continues: "Many Americans feel the media's critical role of informing and holding those in power accountable is compromised by increasing bias" (1). Studies from the Pew Research Center have documented similar concerns. Gottfried, Walker, and Mitchell (2020), for example, found: "Many Americans remain skeptical toward the news media, questioning not only the quality of journalists' work but their intentions behind it." Although some people attribute these low trust levels to President Donald Trump's "anti-media antagonism" (Roig-Franzia and Ellison 2020), others note the long history of related concerns (e.g., Schudson 2019).

Despite such concerns, however, there is evidence of hope: In "American views" (2020), 84% of participants said news media was "critical" or "very important" to democracy; in Gottfried, Walker, and Mitchell (2020), 75% said it was possible to improve Americans' level of confidence in the media. That report continues, "While most Americans *want* to have personal connections with their news sources, many do not experience it." As they note, "more than half of U.S. adults say their news outlets do not particularly value them (57%) or that news organizations do not understand people like them (59%)."

Given this context, journalists can't afford to further alienate readers; rather, they can look for ways to better engage them. There are multiple reasons why readers might feel unvalued or misunderstood by media outlets, and each suggests avenues for improvement. This paper offers journalistic jargon in the form of acronyms and abbreviations as one such factor. As noted in Appelman (2020), "It could be that certain journalistic norms are off-putting to the general public, especially norms that give off an air of elitism … Unfamiliar acronyms, among other linguistic norms, could be further separating journalists from readers, which could be contributing to an already-growing distrust in the profession" (885). This project tests two possible explanations for the negative effects of acronyms in headlines—based on whether the relevant factor is presence or difficulty—in order to suggest possible solutions.

Explanation 1: A Presence Effect

One explanation for the negative effects of acronyms in news articles is perception. Acronyms might bother people because they signal something about the source or content. Their presence might signal negative source perceptions or negative content perceptions through quick, superficial processing. Readers might be noticing acronyms and abbreviations and quickly inferring elitism or sloppiness, for example, rather than more deeply considering meaning and application. In such cases, the presence of the acronym would be more relevant than readers' understanding of it. Dual-processing theories of persuasion distinguish between this sort of processing (called *heuristic* in the Heuristic-Systematic Processing Model; *peripheral-route* in the Elaboration Likelihood Model) and more thoughtful, deep processing (called *systematic* or *central-route*, respectively) (For more on HSM, see Chaiken 1980 and Chaiken, Liberman, and Eagly 1989; for more on ELM, see Petty and Cacioppo 1984).

Some previous research supports the possibility that acronyms bother people because they signal negative perceptions. One participant in Appelman (2020), for example, noted, "A writer or reader who overuses acronyms signals to me that they are trying to rush information and aren't concerned with the reader/viewer appropriately absorbing the information" (11) This notion of "signaling" suggests a perceptual effect. Nolan (1991a) also suggested this possibility by implying that acronyms can serve as jargon, or "verbal symbols of inside knowledge" (92). Readers could be perceiving acronyms as the jargon of the journalism industry, which could explain the negative effects of acronyms from a perceptual perspective.

If acronyms are bothering people because of perception—because they signal something about the source or content—then their presence would be more relevant than their difficulty. Therefore, this study considers a presence effect to reflect a perception problem. This possible explanation is tested through the study's first research question:

RQ1: Do article perceptions differ when headlines include acronyms?

Explanation 2: A Difficulty Effect

An alternative explanation for the negative effects of acronyms in news articles is cognition. Acronyms might bother people because they are confusing and difficult to understand. In the language of dual-processing theories mentioned above, readers could be

engaging in more thoughtful, deep processing. Readers might be carefully reading acronyms and abbreviations while they struggle to figure out what they mean. In such cases, the difficulty of the acronym would be more relevant than readers' perception of it.

Some previous research supports the possibility that acronyms bother people because they are confusing. One participant in Appelman (2020), for example, noted, "Why continue reading if you don't know what you're reading" (11). About half of the study's participants said they try to figure out unknown acronyms, either by searching online or looking for context clues. This notion of looking up the meaning suggests a cognitive effect. Journalism resources also tend to assume a difficulty effect. Textbooks and stylebooks include lists of acceptable, publishable acronyms (e.g., Brooks, Pinson, and Wilson 2017, 394–397), as well as specific cognitive warnings (e.g., "Do not use abbreviations or acronyms that the reader would not quickly recognize," Froke et al. 2020, 1). In the context of academic writing, Silvia (2007) also advises against overuse from a cognitive perspective: "Abbreviations and acronyms are useful only when they are easier to understand than the tortuous phrases they represent … Readers find rereading abbreviations more tedious than rereading real words" (64). These warnings suggests the possibility that the use of difficult acronyms should be avoided.

If acronyms are bothering people because of cognition—because they are confusing and difficult to understand—then their difficulty would be more relevant than their presence. Therefore, this study considers a difficulty effect to reflect a cognition problem. This possible explanation is tested through the study's second research question:

> *RQ2*: Do article perceptions differ when headlines include known acronyms compared to unknown acronyms?

Potential Moderating Effect of Need for Cognition

Finally, previous research suggests that acronym knowledge varies by person (e.g., Nolan 1991a), so this study looks at the effect of individual characteristics. In particular, it seeks to determine whether *need for cognition* moderates the negative effects of acronyms in headlines. *Need for cognition* refers to "an individual's tendency to engage in and enjoy effortful cognitive endeavors" (Cacioppo, Petty, and Kao 1984, 306). In his study of acronyms in news articles, Nolan (1991b) found that reader familiarity with acronyms and reader's *need for cognition* were key factors in understanding acronym effects: "Both of these characteristics vary among readers and presents mass media writers and editors with communication problems that appear not to be resolved by stylistic rules. … It is important to note that it is the reader's lexicon and makeup, not the writer's or the editor's, which is important here" (194). This leads to the study's final research question:

> *RQ3*: Does *need for cognition* moderate the effects of acronyms in headlines?

Methods

To answer these research questions, two experiments were conducted. The purpose of this design was to test for generalizability and replicability. The studies used different audiences, acronyms, and articles. Specifically, the first used a student sample, two acronyms, and one article; the second used an online sample, four acronyms, and two articles.

Because the stimuli differed, comparisons across studies were not conducted. Both studies were approved by the relevant Institutional Review Board.

Study Designs

Two between-subjects experiments were conducted online. In both studies, people read a sample news article with a randomly assigned headline that varied by acronym presence. In Study 1, the participants were equally divided across conditions: no acronym (n = 28), easy acronym (n = 40), difficult acronym (n = 37), both acronyms (n = 26). In Study 2, the "no acronym" condition was oversampled: no acronym (n = 251), easy acronym (n = 89), difficult acronym (n = 90), or both acronyms (n = 90). The first study's distribution allowed for useful tests of the difficulty effect, but it led to unequal groups when testing the presence effect; the second study oversampled the "no acronym" condition to address this concern.

Participants

Demographics

For Study 1, participants ($N = 131$)[2] were students from a medium-sized public university in the United States. They were recruited from undergraduate and graduate courses in multiple departments in exchange for extra credit. Ages ranged from 18 to 46 ($M = 22.99$, $SD = 4.91$). Based on free-response data, more identified as female (n = 73, 55.7%) than male (n = 57, 43.5%) or genderfluid (n = 1, .8%); more identified as White (n = 108, 82.4%) than Black (n = 9, 6.9%), Asian (n = 8, 6.1%), Mexican (n = 1, .8%), or mixed (n = 3, 2.3%). (Two did not answer the question regarding race).

For Study 2, participants ($N = 520$) were recruited through Qualtrics online panel services and compensated for participation. Ages ranged from 18 to 79 ($M = 39.82$, $SD = 14.19$). Based on free-response data, more identified as female (n = 328, 63.1%) than male (n = 187, 36.0%) or nonbinary (n = 1, .2%); more identified as White (n = 354, 68.1%) than Black (n = 97, 18.7%), Asian (n = 20, 3.8%), Hispanic (n = 29, 5.6%), mixed (n = 10, 1.9%), Native American (n = 2, .4%), Bosnian (n = 1, .2%), "Brown American," (n = 1, .2%), and Israeli (n = 1, .2%). (Four did not answer the question regarding gender, and five did not answer the question regarding race.)

Media Habits

Participants were all asked to indicate where they get the majority of their news; they were asked to select one media type from a list of seven. In Study 1, the most common selection was social networking sites (n = 69), followed by online newspapers (n = 23), broadcast news (n = 14), radio stations (n = 10), news aggregate sites (n = 9), and cable news (n = 6). (None selected "printed newspapers.") In Study 2, the most common selection was social networking sites (n = 129), followed closely by cable news (n = 121), then broadcast news (n = 99), online newspapers (n = 80), news aggregate sites (n = 36), radio stations (n = 30), and printed newspapers (n = 25). In both studies, the use of social networking sites and online newspapers suggests most participants consume the type of digital media examined in this study.

Stimuli

News Articles

In both studies, people read a sample news article with a randomly assigned headline that varied by acronym presence. Within each study, the articles and headlines were identical except for the acronym manipulation. In Study 1, the article (modified from Joyner 2018) discussed the raid of the office of Michael Cohen (President Donald Trump's lawyer) and the effect on the stock market. In Study 2, one article (modified from Nadler and Taylor 2019) discussed a governor's appointment for a U.S. Senate seat, and the other (modified from Tate 2020) discussed the National Park Service's initiative to temporarily waive fees. The articles were chosen because their headlines could reasonably make sense with the selected acronyms. They were also selected because of their timeliness and relevance. The headlines were all modified to allow for the acronym manipulations. Because Study 2 included two articles, those articles were also modified to be relatively equal in length to each other.

Acronym Manipulation

The acronym selections in both studies were based on Appelman (2020). All six acronyms were chosen from that study's content analysis of headlines; these were among the 27 most frequently found acronyms in that sample.

For Study 1, the selected acronyms were *FBI*, for Federal Bureau of Investigation, and *S&P*, for Standard & Poor's 500 index. In Appelman (2020)'s survey, *FBI* was more well-known than *S&P 500* (84.5% of the sample, compared to 40.8%), so they were selected as the *easy* and *difficult* acronyms, respectively (10, Table 2). *The Associated Press Stylebook* lists both as acceptable in all references (Froke et al. 2020). The headlines were written to include these acronyms as follows:

No acronym:	Stocks rise Monday; decline after report of bureau raid
Easy acronym:	Stocks rise Monday; decline after report of FBI raid
Difficult acronym:	S&P 500 rises Monday; decline after report of bureau raid
Both acronyms:	S&P 500 rises Monday; decline after report of FBI raid

For Study 2, the selected acronyms for the first article were *CEO*, for Chief Executive Officer, and *GOP*, for Grand Old Party (Republican Party); the selected acronyms for the second article were *US*, for United States, and *MLK*, for Martin Luther King Jr. In Appelman (2020)'s survey, *CEO* was more well-known than *GOP* (68.9% of the sample, compared to 54.4%), and *US* was more well-known than *MLK* (84% of the sample, compared to 77.7%),

Table 2. Means, Standard Deviations, and One-Way Analyses of Variance for the Effects of Acronym Presence and Difficulty on Readers' Perceptions in Study 2.

	None	Easy	Difficult	Both	F (3, 519)	p	η_p^2
Frustration	*2.88*(1.82)	*2.99*(1.87)	*3.01*(1.90)	*2.55*(1.80)	1.22	.30	.007
Source Perceptions	*4.89*(1.00)	*4.76*(.99)	*4.81*(.96)	*4.92*(1.05)	.56	.64	.003
Message Quality	*5.11*(1.32)	*5.08*(1.22)	*5.38*(1.26)	*5.32*(1.33)	1.46	.22	.008
Message Credibility	*5.02*(1.35)	*5.13*(1.27)	*5.36*(1.14)	*5.21*(1.40)	1.64	.18	.009
Newsworthiness	*5.13*(1.32)	*5.24*(1.24)	*5.27*(1.27)	*5.20*(1.36)	.33	.80	.002
Enjoyment	*4.40*(1.63)	*4.52*(1.38)	*4.49*(1.37)	*4.33*(1.82)	.29	.83	.002
Informativeness	*4.78*(1.40)	*4.69*(1.24)	*4.90*(1.38)	*4.93*(1.52)	.60	.62	.003

Notes: $N = 520$. Values presented as M(SD). All measured *1* = strongly disagree to *7* = strongly agree.

so they were selected as the *easy* and *difficult* acronyms, respectively (10, Table 2). *The Associated Press Stylebook* lists *CEO* and *US* as acceptable in all references; it lists *GOP* as acceptable only on second reference, and it does not include an acronym in its Martin Luther King Jr. Day entry (Froke et al. 2020). The headlines were written to include these acronyms as follows:

No acronym:	Governor appoints executive for Senate seat, defying Republican Party
Easy acronym:	Governor appoints CEO for Senate seat, defying Republican Party
Difficult acronym:	Governor appoints executive for Senate seat, defying GOP
Both acronyms:	Governor appoints CEO for Senate seat, defying GOP
No acronym:	National parks offer free admission for Martin Luther King Jr. Day
Easy acronym:	US parks offer free admission for Martin Luther King Jr. Day
Difficult acronym:	National parks offer free admission for MLK Day
Both acronyms:	US parks offer free admission for MLK Day

Manipulation Checks

Acronym Difficulty

Participants were shown nine common acronyms, including the ones manipulated for this study, in randomized orders and were asked (a) to explain what the letters stood for and (b) to give a general description of the entity the acronym represented (technique modified from Nolan 1991b, acronyms selected from Appelman 2020). The correct answers for *CEO*, for example, would be (a) Chief Executive Officer and (b) the highest-ranking person in a company. The prompt included instructions to not search online but to guess based on memory. Acronym identifications and explanations were then coded by the researcher as either *yes*, the acronym could be *mostly identified* or *mostly described* by the participant or *no*, the acronym could not. The *no* code included those who gave incorrect or nonsensical responses, those who left the answer blank, and those who wrote a variant of "I don't know."

In Study 1, the number of people who were at least somewhat familiar with each acronym was, in order of most familiar to least: *FBI* (n = 126, 96.2%), *CEO* (n = 117, 89.3%), *P&G* (n = 116, 88.5%), *HQ* (n = 113, 86.3%), *GE* (n = 109, 83.2%), *MLK* (n = 105, 80.2%),*GOP* (n = 72, 55.0%), and *S&P 500* (n = 47, 35.9%). (*US* was shown in this study, as well, but it was used as a filter question of attention.) In other words, *FBI* was the most well-known, and *S&P 500* was the least well-known, which confirms the acronym-difficulty manipulation. Based on the stimulus manipulation, 42 people were unfamiliar with the acronym(s) they were shown, and 61 were familiar with the acronym(s) they were shown.

In Study 2, the number of people who were at least somewhat familiar with each acronym was, in order of most familiar to least: *US* (n = 370, 71.2%), *FBI* (n = 342, 65.8%), *MLK* (n = 301, 57.9%), *HQ* (n = 283, 54.4%), *CEO* (n = 271, 52.1%), *GE* (n = 241, 46.3%), *P&G* (n = 201, 38.7%), *GOP* (n = 139, 26.7%), and *S&P 500* (n = 121, 23.3%). As predicted, *CEO* was more well-known than *GOP*, and *US* was more well-known than *MLK*, which confirms the acronym-difficulty manipulation. Based on the stimulus manipulation, 141 people were unfamiliar with the acronym(s) they were shown, and 128 were familiar with the acronym(s) they were shown.

Acronym Prominence

Participants were directly asked, "Was there an acronym or abbreviation in the headline of the article you just read?" and they could select "yes" or "no." In Study 1 about half (n = 73, 55.7%) answered correctly; they said there was an acronym if they were shown at least one, and they said there was not if they were not. Follow-up analysis showed no significant difference between people who saw an acronym (54.4%) and those who didn't (60.7%) in terms of their likelihood of getting the check right, χ^2 (1, $N = 131$) = .36, p = .549, Cramer's V = .05. Similarly, about half (n = 285, 54.8%) answered correctly in Study 2. Follow-up analysis, again, showed no significant difference between people who saw an acronym (53.5%) and those who didn't (56.2%) in terms of their likelihood of getting the check right, χ^2 (1, $N = 520$) = .37, p = .545, Cramer's V = .03. Additional tests in Study 2 also showed that this likelihood did not vary by stimulus article. This measure and its implications are discussed further in the limitations section.

Measures

Frustration

Participants indicated agreement with two statements from *1* = strongly disagree to *7* = strongly agree: "Reading the article made me frustrated" and "I felt angry while reading the article." They were highly correlated, so *frustration* was the average of the two items (Study 1: $r_s = .62$, $p < .001$, $M = 3.11$, $SD = 1.47$; Study 2: $r_s = .82$, $p < .001$, $M = 2.86$, $SD = 1.84$) (modified from Schmierbach 2010).

Media Source Perceptions

Participants were given the prompt "The sources of the article (i.e., the writer, editor, news organization) were … " and indicated how well several adjectives completed the sentence, from *1* = strongly disagree to *7* = strongly agree: intelligent, untrained, inexpert, informed, incompetent, bright, caring, interested in me, self-centered, concerned with me, insensitive, not understanding, honest, untrustworthy, honorable, moral, unethical, and phoney. The negative items were reverse-coded, and *media source perceptions* was the average of the responses (Study 1: Cronbach's α = .85, $M = 4.58$, $SD = .71$; Study 2: Cronbach's α = .88, $M = 4.86$, $SD = 1.00$) (McCroskey and Teven 1999).

Media Content Perceptions

Participants were given the prompt "The content of the article (i.e., the text) was … " and indicated how well several adjectives completed the sentence, from *1* = strongly disagree to *7* = strongly agree. *Message quality* was the average of responses to *coherent*, *clear*, *concise*, and *well-written* (Study 1: Cronbach's α = .85, $M = 4.25$, $SD = 1.37$; Study 2: Cronbach's α = .85, $M = 5.19$, $SD = 1.30$) (Sundar 1999). *Message credibility* was the average of responses to *accurate*, *believable*, and *authentic* (Study 1: Cronbach's α = .73, $M = 4.41$, $SD = 1.06$; Study 2: Cronbach's α = .85, $M = 5.13$, $SD = 1.32$) (Appelman and Sundar 2016). *Newsworthiness* was meant to be an average of responses to *important*, *informative*, *interesting*, *serious*, and *disturbing* (Mayo and Leshner 2000); however, reliability analysis suggested removing *disturbing*, so the measure was an average of the other four (Study 1: Cronbach's α = .68, $M = 4.65$, $SD = 1.04$; Study 2: Cronbach's α = .84, $M = 5.19$, $SD = 1.30$). *Enjoyment* was the average of responses to *enjoyable*, *boring* (reversed), and

entertaining in Study 1 (Cronbach's α = .81, *M* = 2.94, *SD* = 1.37) (Oliver, Weaver, and Sargent 2000); in Study 2, reliability analysis suggested removing *boring*, so it was an average of the other two items in that study (r_s = .36, p < .001, *M* = 4.43, *SD* = 1.58).

Participants also indicated agreement with six statements from *1* = strongly disagree to *7* = strongly agree (e.g., In general, I found the article to be informative; As a result of reading this article, I am more comfortable talking to friends about this issue) (Mutz and Reeves 2005). *Informativeness* was the average of the six scores (Study 1: Cronbach's α = .91, *M* = 3.97, *SD* = 1.42; Study 2: Cronbach's α = .91, *M* = 4.81, *SD* = 1.39).

Need for Cognition

Participants were asked to indicate the extent to which 18 statements were characteristic of them, from 1 = *extremely uncharacteristic of you (not at all like you)* to 7 = *extremely characteristic of you (very much like you)* (e.g., I would prefer complex to simple problems; I find satisfaction in deliberating hard and for long hours). This measure was created by Cacioppo, Petty, and Kao (1984) and used in Nolan (1991b)'s analysis of news acronyms. Half of the statements were negatively worded, and, therefore, reverse-coded. *Need for cognition* was the average of the 18 responses (Study 1: Cronbach's α = .87, *M* = 4.69, *SD* = .90; Study 2: Cronbach's α = .76, *M* = 4.26, *SD* = .79).

Results

A series of one-way ANOVAs were conducted to compare baseline effects of the four conditions on readers' perceptions. These tests showed no significant omnibus effects of condition on the outcome variables in either study. Tables 1 and 2 shows these results, as well as the means and standard deviations by condition.

Additional tests were then conducted to specifically address the research questions. *RQ1* asked about presence effects, so *t*-tests compared the no-acronym condition to a combination of the easy, difficult, and both conditions. Effect sizes were calculated using Becker (2000). *RQ2* asked about difficulty effects, so post-hoc analyses of the ANOVA tests compared the easy and difficult conditions. *RQ3* asked about the moderating effects of *need for cognition*, so interaction tests were conducted. Additional tests were also conducted that assessed potential moderating effects of noticing the acronym's presence or absence and knowing the acronym.

RQ1: Do article perceptions differ when headlines include acronyms?

Table 1. Means, Standard Deviations, and One-Way Analyses of Variance for the Effects of Acronym Presence and Difficulty on Readers' Perceptions in Study 1.

	None	Easy	Difficult	Both	*F* (3, 130)	*p*	η_p^2
Frustration	*2.88*(1.39)	*3.21*(1.51)	*3.08*(1.46)	*3.27*(1.54)	.41	.75	.009
Source Perceptions	*4.59*(.61)	*4.52*(.71)	*4.58*(.74)	*4.64*(.78)	.14	.94	.003
Message Quality	*4.76*(1.14)	*4.18*(1.25)	*4.16*(1.47)	*3.94*(1.56)	1.85	.14	.042
Message Credibility	*4.56*(1.00)	*4.30*(1.16)	*4.54*(.99)	*4.26*(1.06)	.70	.56	.016
Newsworthiness	*4.79*(1.07)	*4.58*(.94)	*4.78*(1.00)	*4.45*(1.21)	.72	.55	.017
Enjoyment	*3.23*(1.15)	*2.63*(1.28)	*3.02*(1.54)	*3.00*(1.46)	1.17	.32	.027
Informativeness	*4.47*(1.14)	*4.03*(1.23)	*3.89*(1.45)	*3.49*(1.76)	2.30	.08	.052

Notes: *N* = 131. Values presented as *M*(SD). All measured *1* = strongly disagree to *7* = strongly agree.

In Study 1, people perceived higher message quality without an acronym ($M = 4.76$, $SD = 1.14$) than with ($M = 4.11$, $SD = 1.40$), $t(129) = 2.25$, $p = .03$, $d = .51$, and they perceived higher informativeness without an acronym ($M = 4.47$, $SD = 1.14$) than with ($M = 3.84$, $SD = 1.46$), $t(129) = 2.12$, $p = .04$, $d = .48$. No significant differences were found regarding the other perceptions, but the mean differences suggest that, directionally, people seemed to perceive the articles that had acronyms in their headlines as generally worse than articles that did not.

In Study 2, people perceived lower message credibility without an acronym ($M = 5.02$, $SD = 1.35$) than with ($M = 5.23$, $SD = 1.27$), but this was not significant, $t(518) = 1.85$, $p = .07$, $d = .16$. When only looking at the people who read Nadler and Taylor (2019), this relationship was significant: People perceived lower message credibility without an acronym ($M = 4.60$, $SD = 1.22$) than with ($M = 4.96$, $SD = 1.17$), $t(258) = 2.43$, $p = .02$, $d = .30$. When only looking at the people who read Tate (2020), it was not. No significant differences were found regarding the other perceptions when considering both stimulus articles together, as well as separately.

Because the sample size was large enough, Study 2 also allowed for tests on the subset of participants who correctly answered the acronym prominence manipulation check. When only considering people who noticed the acronym's presence or absence (n = 285), several significant differences emerged. People who correctly answered the manipulation check perceived higher frustration with an acronym ($M = 3.28$, $SD = 1.93$) than without ($M = 2.61$, $SD = 1.72$), $t(280.46) = 3.11$, $p = .002$, $d = .37$, and they had lower source perceptions with an acronym ($M = 4.68$, $SD = .98$) than without ($M = 4.94$, $SD = 1.00$), $t(283) = 2.21$, $p = .03$, $d = .26$. They perceived lower message credibility without an acronym ($M = 4.89$, $SD = 1.38$) than with ($M = 5.36$, $SD = 1.26$), $t(283) = 2.96$, $p = .003$, $d = .36$, they perceived lower enjoyment without an acronym ($M = 4.18$, $SD = 1.68$) than with ($M = 4.77$, $SD = 1.46$), $t(283) = 3.19$, $p = .002$, $d = .37$, and they perceived lower informativeness without an acronym ($M = 4.61$, $SD = 1.50$) than with ($M = 5.02$, $SD = 1.23$), $t(283) = 2.47$, $p = .01$, $d = .30$. In other words, acronym presence seemed to increase content perceptions and decreased source perceptions for the people who noticed.

RQ2: Do article perceptions differ when headlines include known acronyms compared to unknown acronyms?

Post-hoc analyses of the ANOVA tests comparing the easy and difficult conditions showed no significant differences in perceptions in either study. The mean differences show that, directionally, the results were mixed, such that no clear pattern emerged. *T*-tests were then conducted to determine whether there were differences based on individualized acronym difficulty; that is, whether seeing familiar or unfamiliar acronym(s) affected perceptions. Results from the *acronym difficulty* manipulation check were used as the independent variables. In Study 1, the mean differences were directionally mixed here, as well.

However, several differences emerged when considering individualized acronym difficulty in Study 2. People perceived higher frustration with unfamiliar acronym(s) ($M = 3.38$, $SD = 1.80$) than with familiar ones ($M = 2.27$, $SD = 1.76$), $t(267) = 5.07$, $p < .001$, $d = .62$, and they had lower source perceptions with unfamiliar acronym(s) ($M = 4.55$, $SD = .86$) than with familiar ones ($M = 5.13$, $SD = 1.05$), $t(246) = 4.93$, $p < .001$, $d = .60$. People perceived lower message quality with unfamiliar acronym(s) ($M = 5.08$, $SD = 1.30$) than

with familiar ones ($M = 5.46$, $SD = 1.23$), $t(267) = 2.42$, $p = .02$, $d = .30$, they perceived lower message credibility with unfamiliar acronym(s) ($M = 5.02$, $SD = 1.36$) than with familiar ones ($M = 5.47$, $SD = 1.13$), $t(267) = 2.94$, $p = .004$, $d = .36$, and they perceived lower newsworthiness with unfamiliar acronym(s) ($M = 5.08$, $SD = 1.40$) than with familiar ones ($M = 5.41$, $SD = 1.12$), $t(263) = 2.18$, $p = .03$, $d = .26$. In other words, people had lower content and source perceptions when they were shown a headline with unfamiliar acronym(s).

RQ3: Does *need for cognition* moderate the effects of acronyms in headlines?

Interaction tests using MODPROBE (Hayes 2015) showed no significant moderating effects of *need for cognition* on the relationship between acronym presence and perceptions in either study. They also showed no significant moderating effects on the relationship between acronym difficulty and perceptions in Study 1; this was the case for both the assigned acronym difficulty condition and when considering individualized acronym difficulty.

However, moderating effects regarding acronym difficulty emerged in Study 2. *Need for cognition* significantly moderated the effects of the assigned acronym difficulty condition on enjoyment, $B = .64$, $SE = .27$, $p = .02$, and on informativeness, $B = .59$, $SE = 2.56$, $p = .02$. Seeing a difficult acronym significantly predicted lower enjoyment for people with low *need for cognition* scores ($B = -.52$, $p = .08$); it did not for people with high scores ($B = .45$, $p = .12$) or people at the mean ($B = -.03$, $p = .87$).[3] Seeing a difficult acronym also significantly predicted higher informativeness for people with high scores ($B = .61$, $p = .03$); it did not for people at the mean ($B = .17$, $p = .38$) or with low scores ($B = -.28$, $p = .31$).

Similar patterns emerged when considering individualized acronym difficulty. *Need for cognition* significantly moderated the effects of individualized acronym difficulty on enjoyment, $B = .56$, $SE = .25$, $p = .02$, and on informativeness, $B = .51$, $SE = .22$, $p = .02$. Seeing unfamiliar acronym(s) significantly predicted higher enjoyment for people with high *need for cognition* scores ($B = .64$, $p = .02$); it did not for people at the mean ($B = .21$, $p = .28$) or for people with low scores ($B = -.23$, $p = .39$). Seeing unfamiliar acronym(s) significantly predicted lower informativeness for people with low scores ($B = -.47$, $p = .05$); it did not for people at the mean ($B = -.08$, $p = .65$) or with high scores ($B = .32$, $p = .19$).

In other words, articles with difficult or unfamiliar acronyms in their headlines were perceived more positively by people high in *need for cognition* and more negatively by people low in *need for cognition*.

Discussion

Journalists often use acronyms and abbreviations to streamline content, but readers say their use bothers and annoys them. Why is this the case? Some studies suggest a perception problem: acronyms make journalists sound elite, or they make the content seem sloppy. Others suggest a cognition problem: acronyms are confusing and difficult to understand. In other words, acronyms in headlines might bother people because of either their presence or their difficulty.

Overall, this project provides support for a difficulty effect. People had lower content and source perceptions when they were shown a headline with unfamiliar acronym(s).

This included higher frustration, lower source perceptions, lower message quality, lower message credibility, and lower newsworthiness. *Need for cognition* moderated the effect of acronym difficulty on enjoyment and informativeness, such that articles with difficult or unfamiliar acronyms in their headlines were perceived more positively by people high in *need for cognition* and more negatively by people low in *need for cognition*. In terms of a presence effect, people did perceive some differences in articles with acronyms in their headlines compared to those without, particularly if they were paying close attention, but those differences were less pronounced. In all, these findings suggest that readers don't seem to be inherently bothered by the presence of acronyms in headlines; they seem to be bothered by the ones they don't understand.

Theoretical Implications

This project advances research on the prevalence and effects of acronyms and abbreviations in news articles (e.g., Fumani 2016; Nolan 1991a, 1991b). It also corroborates the short-answer responses from Appelman (2020), where many participants said acronyms bother and annoy them. In doing so, this project also advances research on dual-processing theories of persuasion. As discussed in the literature review, these theories distinguish between quick, superficial processing (*heuristic* or *peripheral-route*) and thoughtful, deep processing (*systematic* or *central-route* processing) (Chaiken 1980; Chaiken, Liberman, and Eagly 1989; Petty and Cacioppo 1984). This study proposed two competing explanations for the negative effects of acronyms in news articles: either a presence-based quick, superficial processing effect (e.g., readers notice acronyms and quickly infer elitism or sloppiness), or a difficulty-based, thoughtful, deep processing effect (e.g., readers carefully read acronyms to figure out what they mean). Because the effects in this study seem to be about acronym difficulty, rather than acronym presence, these findings support the cognition explanation. Theoretically, this suggests that acronyms in news articles are processed through more thoughtful, deep processing. These results, thus, advance knowledge and application of dual-processing theories of persuasion.

Industry Implications

Given negative public perceptions of the journalism industry (e.g., "American views," 2020; Gottfried, Walker, and Mitchell 2020), journalists can't afford to further alienate readers, especially for a problem as potentially fixable as excessive acronym use. How can the problem be addressed? These findings suggest that journalists should strive to explain acronyms and abbreviations in headlines, rather than worry about avoiding such constructions altogether. In terms of professional practice, this can include several initiatives. Journalists can strive to explain acronyms before first use, especially ones that readers are unlikely to understand. This can be difficult with the length constraints of headlines and social media posts, so journalists could also consider including glossaries of frequently used acronyms with their articles. This would allow them to continue using acronyms while ensuring reader comprehension. Journalists could also add other sidebars or photos to acronym-filled content that could act as context clues.

These suggestions echo industry implications discussed by previous research. Tuggle (2000), for example, made a similar recommendation regarding sports acronyms and terminology in news articles: "By adding a small bit of information about the meaning of the abbreviations in the box scores, newspapers can better serve the needs of a target audience" (11). Studies outside of the media context, too, have made similar recommendations. Mowery et al. (2016), for example, discussed this regarding medical patients confused over acronyms in clinical reports, and Reilly and Richey (2011) discussed this regarding voters confused over "obscure and legalistic" language on ballots. This project echoes their calls for explanation as a means of increasing reader engagement.

Limitations and Future Research

About half of the participants across both studies incorrectly answered the acronym prominence manipulation check: They either said they saw an acronym when they didn't, or they didn't notice the acronym(s) they were shown. This could mean that the participants really didn't notice the acronyms, which would suggest that either their negative effects are subconscious or that the manipulation was not strong enough. However, it also could be an effect of how the question was worded—the question didn't include a definition. As noted in the literature review, this study used the term *acronym* to refer broadly to abbreviations, acronyms, and initialisms. It is possible that participants either didn't know what an acronym was or that they were considering a different definition than the one in this study. Future studies could consider amplifying the manipulation, itself, as well as adding a definition to the manipulation check.

This study manipulated acronyms in the headlines, rather than in the articles. As discussed in the literature review, the purpose was external validity; acronyms are removed from context-clues in headlines, and headlines often affect which articles people read. Although the headlines were manipulated, the perception questions were about the articles. This study assumed a carry-over effect where being confused or frustrated by a headline would lead to confusion or frustration with the article; however, that connection was not directly tested. Future studies could consider directly asking people their opinions of the headlines to confirm whether headline perceptions affect article perceptions.

Additionally, future studies could test for potential negative effects of over-explaining acronyms. For example, readers who are familiar with an acronym might be annoyed or frustrated with obvious attempts at explanation (e.g., extra glossaries or sidebars) because they might think the reporter is being condescending. Other potential positive effects of acronyms could be explored, as well. Haard, Slater, and Long (2004), for example, found evidence that jargon increased credibility by making the source seem more sophisticated. Additionally, because acronyms can serve as cues regarding the relevance of articles to readers (Dor 2003), removing them might actually be more inconvenient. Future studies could test for such effects.

Finally, this study tested *need for cognition* as a potential moderator, but other individual differences could be considered, as well. Perhaps the effects of acronyms in headlines depend on other factors, such as general trust in news media or interest in the article topic. Perhaps a person's reading speed moderates these effects. Perhaps acronyms

bother people more in print than online because of the ease of online searching. Future studies could test these interactions.

Such studies could further contribute to understanding the negative effects of acronyms and abbreviations in news headlines.

Notes

1. For more on such distinctions, see Baum 1962; Glowka, Lester, and Edge 1998; Harley 2004.
2. 134 completed the study, but three were removed for not identifying *US* as an acronym for United States, which served as a filter question of attention.
3. "Low" scores are 1 SD below the mean; "High" scores are 1 SD above the mean.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

References

"American Views 2020: Trust, Media and Democracy". 2020. *A Gallup/Knight Foundation Survey*. https://knightfoundation.org/wp-content/uploads/2020/08/American-Views-2020-Trust-Media-and-Democracy.pdf.

Appelman, A. 2020. ""ALPHABET SOUP": Examining Acronym and Abbreviation Style in Headlines." *Journalism Practice* 14 (7): 880–895.

Appelman, A., and S. S. Sundar. 2016. "Measuring Message Credibility: Scale Construction and Validation with News Articles." *Journalism & Mass Communication Quarterly* 93: 59–79.

Baum, S. V. 1955. "From 'AWOL' to 'VEEP': The Growth and Specialization of the Acronym." *American Speech* 30 (2): 103–110.

Baum, S. V. 1962. "The Acronym, Pure and Impure." *American Speech* 37 (1): 48–50.

Becker, L. A. 2000. "Effect Size Calculators." *University of Colorado Colorado Springs*. https://www.uccs.edu/lbecker/.

Brooks, B., J. Pinson, and J. G. Wilson. 2017. *Working with Words: A Handbook for Media Writers and Editors*. 9th ed. Boston, MA: Bedford/St. Martin's.

Cacioppo, J. T., R. E. Petty, and C. F. Kao. 1984. "The Efficient Assessment of Need for Cognition." *Journal of Personality Assessment* 48 (3): 306–307.

Chaiken, S. 1980. "Heuristic Versus Systematic Information Processing and the use of Source Versus Message Cues in Persuasion." *Journal of Personality and Social Psychology* 39: 752–766.

Chaiken, S., A. Liberman, and A. H. Eagly. 1989. "Heuristic and Systematic Information Processing Within and Beyond the Persuasion Context." In *Unintended Thought*, edited by J. S. Uleman, and J. A. Bargh, 212–252. New York, NY: Guilford Press.

Dor, D. 2003. "On Newspaper Headlines as Relevance Optimizers." *Journal of Pragmatics* 35 (5): 695–721.

Drouin, M., and C. Davis. 2009. "R u Txting? Is the Use of Text Speak Hurting Your Literacy?" *Journal of Literacy Research* 41 (1): 46–67.

Edwards, P. 2015. "How POTUS Became the World's Most Powerful Acronym." *Vox*, September 27. https://www.vox.com/2015/9/27/9399029/potus-word-history.

Froke, P., A. J. Bratton, J. McMillan, P. Sarkar, J. Schwartz, and R. Vadarevu, eds. 2020. *The Associated Press Stylebook 2020-2022*. New York, NY: The Associated Press.

Fumani, M. R. F. Q. 2016. "Acronyms and Abbreviations Application in News Articles: A Comparative Study of Iranian and Indian Newspapers." *International Journal of English Language & Translation Studies* 4 (3): 81–90.

Garcia, M. R., P. Stark, and E. Miller. 1991. *Eyes on the News*. St. Petersburg, FL: Poynter Institute for Media Studies.

Glowka, W., B. K. Lester, and C. Edge. 1998. "Among the New Words." *American Speech* 73 (3): 297–312.
Gottfried, J., M. Walker, and A. Mitchell. 2020. "Americans See Skepticism of News Media as Healthy, Say Public Trust in the Institution Can Improve." *Pew Research Center*. Accessed August 31. https://www.journalism.org/2020/08/31/americans-see-skepticism-of-news-media-as-healthy-say-public-trust-in-the-institution-can-improve/.
Haard, J., M. D. Slater, and M. Long. 2004. "Scientese and Ambiguous Citations in the Selling of Unproven Medical Treatments." *Health Communication* 16 (4): 411–426.
Harley, H. 2004. "Why is it *the CIA* but not **the NASA*? Acronyms, Initialisms, and Definite Descriptions." *American Speech* 79 (4): 368–399.
Hayes, A. 2015. "SPSS Syntax Reference for MODPROBE macro version 2.0." *INDIRECT, SOBEL, MEDIATE, MODMED, AND MODPROBE*. http://www.afhayes.com/.
Holsanova, J., H. Rahm, and K. Holmqvist. 2006. "Entry Points and Reading Paths on Newspaper Spreads: Comparing a Semiotic Analysis with Eye-Tracking Measurements." *Visual Communication* 5 (1): 65–93.
Izura, C., and D. Playfoot. 2012. "A Normative Study of Acronyms and Acronym Naming." *Behavior Research Methods* 44 (3): 862–889.
Joyner, A. 2018. "Wall Street Rises but Pares Gains Late after Report of FBI Raid." *Reuters*, April 9. https://www.reuters.com/article/us-usa-stocks/wall-street-rises-but-pares-gains-late-after-report-of-fbi-raid-idUSKBN1HG1OP.
Mayo, J., and G. Leshner. 2000. "Assessing the Credibility of Computer-Assisted Reporting." *Newspaper Research Journal* 21 (4): 68–82.
McCroskey, J., and J. Teven. 1999. "Goodwill: A Reexamination of the Construct and its Measurement." *Communication Monographs* 66 (1): 90–103.
Mowery, D. L., B. R. South, L. Christensen, J. Leng, L.-M. Peltonen, S. Salanterä, H. Suominen, et al. 2016. "Normalizing Acronyms and Abbreviations to Aid Patient Understanding of Clinical Texts: ShARe/CLEF EHealth Challenge 2013, Task 2." *Journal of Biomedical Semantics* 7 (1): 43.
Mutz, D., and B. Reeves. 2005. "The New Videomalaise: Effects of Televised Incivility on Political Trust." *American Political Science Review* 99: 1–15.
Nadler, B., and A. Taylor. 2019. "Georgia Governor Brian Kemp Picks Kelly Loeffler for Vacated US Senate Seat, Defying GOP Wishes." *USA Today*, December 2. https://www.usatoday.com/story/news/politics/2019/12/02/kelly-loeffler-georgia-governor-brian-kemp-defies-gop-us-senate-pick/2588453001/.
Nolan, J. 1991a. "Acronyms in Newspapers: 'ASAP or SNAFU?'." *Newspaper Research Journal* 12 (1): 92–97.
Nolan, J. 1991b. "Effects of Cuing Familiar and Unfamiliar Acronyms in Newspaper Stories, an Experiment." *Journalism & Mass Communication Quarterly* 68 (1-2): 188–194.
Oliver, M. B., I. Weaver, and S. Sargent. 2000. "An Examination of Factors Related to Sex Differences in Enjoyment of Sad Films." *Journal of Broadcasting & Electronic Media* 44 (2): 282–300.
Petty, R. E., and J. T. Cacioppo. 1984. "The Effects of Involvement on Responses to Argument Quantity and Quality: Central and Peripheral Routes to Persuasion." *Journal of Personality and Social Psychology* 46 (1): 69–81.
Piotrkowicz, A., V. Dimitrova, J. Otterbacher, and K. Markert. 2017. "Headlines Matter: Using Headlines to Predict the Popularity of News Articles on Twitter and Facebook." In ICWSM, May. 656–659.
Reilly, S., and S. Richey. 2011. "Ballot Question Readability and Roll-off: The Impact of Language Complexity." *Political Research Quarterly* 64 (1): 59–67.
Roig-Franzia, M., and S. Ellison. 2020. "A History of the Trump War on Media — the Obsession Not Even Coronavirus Could Stop." *The Washington Post*, March 29. https://www.washingtonpost.com/lifestyle/media/a-history-of-the-trump-war-on-media–the-obsession-not-even-coronavirus-could-stop/2020/03/28/71bb21d0-f433-11e9-8cf0-4cc99f74d127_story.html.
Schmierbach, M. 2010. "'Killing Spree': Exploring the Connection Between Competitive Game Play and Aggressive Cognition." *Communication Research* 37 (2): 256–274.

Schudson, M. 2019. "The Fall, Rise, and Fall of Media Trust." *Columbia Journalism Review*, Winter. https://www.cjr.org/special_report/the-fall-rise-and-fall-of-media-trust.php.

Silvia, P. J. 2007. *How to Write a Lot: A Practical Guide to Productive Academic Writing*. Washington, DC: American Psychological Association.

Sims, S. 2017. "50 Acronyms Social Media Professionals Must Know." *Social Media Week*, January 19. https://socialmediaweek.org/blog/2017/01/must-know-social-media-acronyms/.

Sundar, S. S. 1999. "Exploring Receivers' Criteria for Perception of Print and Online News." *Journalism & Mass Communication Quarterly* 76 (2): 373–386.

Tate, C. 2020. "Get Free Admission to more than 100 National Parks on Martin Luther King Jr. Day." *USA Today*, January 16. https://www.usatoday.com/story/travel/experience/america/national-parks/2020/01/16/mlk-day-national-parks-free-jan-20-martin-luther-king-jr-day/4488682002/.

Tuggle, G. A. 2000. "Baseball Box Scores: Helpful Statistics or Sports Hieroglyphics?" *Newspaper Research Journal* 21 (3): 2–13.