Emergence of Conspiracy Theories in Print Media

A Google N-gram Viewer Quantitative Analysis of Historical Trends from 1900 to 2008[i]

Kenneth Luck, Ph.D.

SUNY Sullivan – State University of New York

Abstract

Non-factual counter narratives that attempt to explain scientific advances and interpret political events through a distorted lens are often referred to as "conspiracy theories." Although a number of studies have emerged in the literature in recent years that examine conspiracy theories, no research study performed a massive culture-wide quantitative approach to investigating the emergence of conspiratorial trends across time using a corpus of digitized English-language texts. The purpose of this quantitative content analysis was to measure the frequency patterns of 15 conspiratorial-related n-grams between the years 1900 to 2008 using the Google Books N-gram Viewer English language 2012 version. The Google Books N-gram Viewer was launched in 2010 and contains a corpus of more than 15 million books, which represents approximately ~4% of all books ever published over two centuries and includes approximately 361 billion English-language words. The time-series plots word frequencies (y-axis) were compared against the yearwise sum results (x-axis) to assess the rising, peaking, and falling of particular 2- and 3-gram conspiracy-related phrases selected for this study. Results demonstrate that 11 out of 15 conspiracy theory n-grams increased from 1900 to 2008, emerging in response to historic events, political trends, and popular culture. Finally, Google Books N-gram Viewer remains a developing methodology that offers future researchers the ability to investigate cultural phenomena that was previously out of reach.

Keywords: conspiracy theories; N-gram, Google, political events; political trends; popular culture.

Introduction

Non-factual counter narratives that attempt to explain scientific advances and interpret political events through a distorted lens are often referred to as "conspiracy theories" (Imhoff & Bruder, 2014; Leman & Cinnirella, 2013). Although it remains impossible to know exactly when conspiracy theories were first conceived, the twentieth and early twenty-first centuries appear to be a time when conspiracies theories have gained solid footing in the minds of many groups and individuals.

Until recently, researchers have largely ignored the psychological underpinnings of conspiratorial ideation (Brotherton & French, 2014) and how conspiracism may develop as a recurrent trend throughout history, even though large numbers of individuals endorse conspiracy theories (Brotherton, French, & Pickering, 2013) conspiracy beliefs persist throughout the general population (Dagnall, Drinkwater, Parker, Denovan, & Parton, 2015), conspiracy theories have persisted over time (Oliver & Wood, 2014), and conspiracy theories occur in many regions of the world (Crawford & Bhatia, 2012; Iqtidar, 2016; Ortmann & Heathershaw, 2012; Yablokov, 2015).

The Google Books N-gram Viewer was launched in 2010 and contains a corpus of more than 15 million books, which represents approximately ~4% of all books ever published over two centuries and includes approximately 361 billion English-language words (Genovese, 2015; Pettit, 2016). As of September 2015, Pettit (2016) estimates that 11 psychological studies have been indexed in PsycINFO using Google Books N-gram viewer. Michel et al. (2011) notes that "[u]sage frequency is computed by dividing the number of instances of the n-gram in a given year by the total number of words in the corpus in that year."

Although in its infancy, the Google Books N-gram Viewer "offers a novel means of tracing cultural change over time. [It] offers exciting possibilities for cultural psychology by rendering questions about variation across historical time more quantitative" (Pettit, 2016).

To date no study has attempted to trace the frequency of conspiracy theories across time using the Google Books N-gram Viewer. This represents a significant deficiency in the literature, since new digital tools "represent a tremendous archive of human cognitions, affects, and behaviors that is accessible and measurable in unprecedented ways" (Pettit, 2016). New digital tools are creating new "possibilities for cultural psychology by rendering questions about variation across historical time more quantitative" (Pettit, 2016).

Theoretical Framework

One way to view the emergence of conspiracy theories is through the lens of a decline in social trust. Studies have emphasized that low interpersonal trust (Acar-Burkay, Fennis, & Warlop, 2014; Einstein & Glick, 2015), less faith in government institutions and services (Einstein & Glick, 2015), and paranoia (Oliver & Wood, 2014) play a role in the formation of conspiratorial ideas. Putnam (2000) found that beginning in the mid-20th century, levels of civic engagement and political participation began to decrease over the following decades. Over that same time period, increase in the interest of conspiracy theories as alternative epistemologies increased.

Also relevant is Mills (1956), who described "the power elite" as opinion shapers of a culture. This remains important because the Google n-gram data set that will be used in this study comes from print culture that is shaped by educated classes (Genovese, 2015; Pettit, 2016). The Mills (1956) and Herman and Chomsky (1988) "power elite" framework will be critical in helping to provide interpretation of the Google n-gram data used in this study. This framework suggests that educated classes primarily shape print culture and those opinions and interests primarily reflect the content of that culture.

N-Gram Viewer allows for the study of macrotrends by producing word frequency time-series plots, which will be visually assessed for this study (Clark, & Berkel, 2017; Lin et al., 2012; Michel et al., 2011; Roth, Clark, & Berkel, 2017). The time-series plots y-axis word frequencies will be compared against the x-axis yearwise sum results to assess the rising, peaking, and falling – trends and patterns – of particular 2- and 3-gram conspiracy-related phrases selected for this study. Data was analyzed throughout December 2018 to January 2019.

Word selection was guided by Greenfield (2013), in that, "frequently used words with a narrow range of semantic interpretation" were selected from the literature (Zeng & Greenfield, 2015). Additionally, although the English-language corpus indexed by N-gram Viewer includes texts from the year 1500, the years 1900 – 2008 were selected for this study. As pointed out by Zeng and Greenfield (2015), the Google Books N-gram Viewer's corpus ends in 2008.

Central Question

1. What is the emerging frequency of conspiratorial ideas from 1900 to 2008 in response to political trends, historical events, and popular culture?

Sub Questions

1. Do conspiracy theories reflect historic events and the popular culture of specific time periods?
2. Are conspiracy theories emergent across the left-right political ideological spectrum in the United States?

Hypotheses

1. (H_{01}) Conspiratorial ideas will not emerge in the aftermath of significant historic events as an attempt to explain, contextualize, or understand those events.
2. (H_1) Conspiratorial ideas will emerge in the aftermath of significant historic events as an attempt to explain, contextualize, or understand those events.
3. (H_{02}) The of conspiracy theories will not increase and decrease over time.
4. (H_2) The frequency of conspiracy theories will increase and decrease over time.
5. (H_{03}) Conspiracy theories will not be influenced by political trends of the time period in which they develop.
6. (H_3) Conspiracy theories will be influenced by political trends of the time period in which they develop.

7. (H$_{04}$) Conspiracy theories will not develop across the left-right political ideological spectrum.
8. (H$_4$) Conspiracy theories will develop across the left-right political ideological spectrum.

Assumptions

1. The search term's meaning remains consistent over time.
2. The Google Books N-gram Viewer contains books that are representative of print culture, which is primarily represented by the intelligentsia, journalists, and an educated elite.

Delimitations

1. This study is delimited to English language texts included in the Google Books N-gram Viewer corpus.
2. This study is delimited to the time period between 1900 and 2008.
3. This study is delimited to 15 conspiracy theory n-grams.

Limitations

1. This study is limited to the reliance upon print culture.
2. This study is limited to English-language popular and academic texts.

The need for continued research into the emergence of conspiracy theories within a historical and current context remains great. What some researchers have long assumed was a fringe topic of investigation has now blossomed into "fertile ground for psychological study" (Leman & Cinnirella, 2013), and the topic remains as timely as ever.

Previous research has focused on the psychological underpinnings of conspiracy theories (Brotherton & French, 2015; Leman & Cinnirella, 2013; Van Elk, 2015), the emergence of conspiracy theories in relation to specific historic events (Imhoff & Bruder, 2014; Oliver & Wood, 2014), and the negative impact of conspiracy theories on scientific knowledge (Lewandowsky, Gignac, & Oberauer, 2013), but no studies have taken advantage of emerging digital tools such as the Google Books N-gram Viewer to quantitatively analyze conspiracy theory n-grams across time using a corpus of digitized English-language texts. Finally, highlighting this issue will shed light on the emergence of conspiracy theories across time, fill a gap in the existing literature, and will provide context for current trends.

Literature Review

Hofstadter (1964) established some of the first scholarship on conspiracy theories, describing the "paranoid-style" strain in American politics. That said, however, much of the literature to date has been an attempt to better understand the psychological and cognitive underpinnings of conspiracism (Brotherton & French, 2015; Leman & Cinnirella, 2013; Van Elk, 2015), the global and political consequences of entertaining conspiratorial ideas (Imhoff & Bruder, 2014; Oliver & Wood, 2014), and the impact of conspiracy theories on scientific knowledge (Blaskiewicz, 2013; Jolley & Douglas, 2014a).

A number of recent articles in the literature have begun to explore the psychological mechanisms underlying how conspiracy theories form. Prior to the past decade, exploring the psychological roots of conspiracy theory formation remained of little interest to researchers, as large gaps and deficiencies in the literature have persisted (Brotherton & French, 2014). That said, however, in more recent years, researchers have begun to look at conspiracy theories through a psychological lens (Brotherton & French, 2015; Leman & Cinnirella, 2013; Van Elk, 2015). In addition, Dagnall, Denovan, Drinkwater, Parker, and Clough (2017) have described "[c]urrent academic interest in the psychological correlates of conspiratorial ideation [as] high."

These features include low levels of interpersonal trust (Acar-Burkay et al., 2014; Leman & Cinnirella, 2013), reduced uncertainty and ambiguity (Dagnall et al., 2015), and increased paranoia (Brotherton et al., 2013). With regard to the latter, paranoia, early researchers in both the psychology and political science literatures emphasized an individual's "paranoid style" and its role in a conspiracist worldview (Hofstadter, 1964; Oliver & Wood, 2014).

Recent literature explores the role of an individual's Need for Cognitive Closure (NFCC) and belief in conspiracy theories (Leman & Cinnirella, 2013). NFCC remains a tendency of individuals to reduce ambiguity and avoid uncertainty (Acar-Burkay et al., 2014). When presented with ambiguous or uncertain information, individuals with high NFCC tend to "seize and freeze" information that remains immediately accessible (Leman & Cinnirella, 2013). Additionally, because many conspiracy theories develop in response to major national and international historic events, such as the HIV/AIDS pandemic (Kalichman, 2014), individuals may rely on easily accessible or incomplete information to make a sense of a situation with unclear and ambiguous causes or origins.

Another dimension of NFCC that emerges in the literature involves the role of interpersonal trust. Studies have produced consistent findings highlighting the inverse relationship between low interpersonal trust and high NFCC (Acar-Burkay et al., 2014; Leman & Cinnirella, 2013). As a related concept to NFCC, low interpersonal trust remains relevant to the explanation of the formation of conspiracy theory beliefs. This finding remains illustrative because individuals who endorse conspiracy theories also have low levels of interpersonal trust (Acar-Burkay et al., 2014; Einstein & Glick, 2015). Trust remains vital to a healthy, functioning social system and to pro-social behavior. NFCC, low interpersonal trust, and a paranoid style of thinking may all be described as cognitive process and errors that, as the current literature suggests, create the psychological mechanisms of conspiratorial ideation (Acar-Burkay et al., 2014; Leman & Cinnirella, 2013; Oliver & Wood, 2014).

Similar to NFCC, individuals may mistakenly make biased attributions of intentionality (BAoI) to ambiguous stimuli (Brotherton & French, 2015). The critical difference between NFCC and BAoI remains that, with regard to the former, NFCC is a cognitive tendency of individuals to "seize and freeze" readily available information when facing ambiguity or uncertainty (Acar-Burkay et al., 2014), whereas BAoI remains a cognitive bias where individuals may assume intentionally behind ambiguous stimuli where intentionality may be absent (Brotherton & French, 2015).

A related concept to BAoI is the conjunction fallacy. The conjunction fallacy occurs when individuals may incorrectly "overestimate the likelihood of co-occurring events" (Brotherton &

French, 2014; Dagnall, et al., 2017). Described as a cognitive error in the literature, conjunction violations apply when two events may occur simultaneously and an individual infers causality between them. Moreover, the conjunction fallacy appears to work in concert with the aforementioned BAoI as a reasoning error that reinforces conspiratorial thinking.

A related concept is hypersensitive agency (Douglas, et al., 2016). Hypersensitivity agency is defined as "the tendency to attribute agency and intentionality where it does not exist or is unlikely to exist" (Douglas, et al., 2016). These twin concepts, BAoI and hypersensitivity agency, display a consistency in the psychological literature, highlighting an individual's NFCC, where randomness and coincidence remain unlikely to occur in the world, and all events are underpinned by agency and intentionality, usually by a powerful other or by a powerful group (Douglas et al., 2016).

Lantian, Muller, Nurra, and Douglas (2017) highlight that an individual's high need for uniqueness will "be more likely to believe in conspiracy theories." Need for uniqueness, as a thinking style, is defined by the authors as "the need (or desire) to be reasonably different from others" (Lantian et al., 2017). Need for uniqueness also therefore plays a role in the formation of conspiratorial ideas.

One example that emerges from the literature concerns the 2009 H1N1 influenza pandemic. That year, the H1N1 influenza strain originated in southern Mexico and quickly spread to North America, Egypt, Europe, and Indonesia (Smallman, 2015). In concert with the cognitive processes and errors theme identified in the psychology literature documented above (Acar-Burkay et al., 2014; Leman & Cinnirella, 2013), Smallman (2015) notes how conspiratorial narratives about the H1N1 influenza pandemic arose laden with "fear of capitalism and globalization" and mistrust of governments and governmental health interventions.

Additionally, the more recent outbreak of the 2015 Zika virus also was surrounded by conspiratorial ideas (Smallman, 2017). Conspiracies surrounding the 2015 Zika virus outbreak were similar to the 2009 H1N1 influenza pandemic. These conspiratorial causes ranged from narratives involving international actors to chemical companies to the Gates Foundation (Smallman, 2017). Conspiracies surrounding the Zika virus outbreak spread quickly across the digital information landscape, circulating across online platforms such as YouTube, blogs, podcasts, and other alternative media (Smallman, 2017). The manifestation of NFCC (Leman & Cinnirella, 2013) and medical mistrust (Clobert et al., 2015; Kalichman, 2014) during a disease outbreak such as the 2009 H1N1 influenza pandemic and the 2015 Zika virus outbreak appear to demonstrate the intersectionality of the aforementioned latent psychological dimensions of conspiratorial thinking and the manifest political reality in which they become realized in geopolitical space.

As large-scale global events, disease pandemics, for example, fit into Donskis' (1998) view that "[w]hatever happens in the world – including thinks which people as a rule dislike, such as war, poverty, shortages – are the results of direct design by some powerful individuals or groups." Thus, the concept of the victimhood (Ortmann & Heathershaw, 2012) and a powerful other (Imhoff & Bruder, 2014; Jolley & Douglas, 2014b) remains highly relevant to understanding the development of conspiratorial ideation in a geopolitical context.

Many conspiracy theories involve scientific claims or science-related public policy issues (Clobert et al., 2015; Kniveton, et al., 2014). From climate change (Kniventon et al. 2014) to health science (Jolley & Douglas, 2014a), scientific knowledge often becomes the subject of individual conspiracy theories. For years, conspiracy theories have emerged that challenge the consensus of climate scientists that human industrial activities and the emission of greenhouse gases are responsible for changes in climate that have been observed by climate scientists (Douglas & Sutton, 2015; Kniveton et al., 2014). In other words, this body of scholarship reveals that climate change denialists often doubt the established scientific consensus that the climate is changing and that this change is due to human activities (Douglas & Sutton, 2015). Empirical studies reveal that both the exposure and the acceptance of climate denialism remain harmful because these conspiracy theories decrease an individual's "intentions to engage in politics and reduce one's carbon footprint" (Jolley & Douglas, 2014b). As noted, conspiracy theories often involve large, socio-political global events (Dagnall et al., 2015), and conspiracy theories will, at times, involve a powerful other, often a government actor, with malicious intentions (Yablokov, 2015). Climate change denialism contains both features.

Research demonstrates that conspiracism takes hold throughout the entire political ideological spectrum (Imhoff & Bruder, 2014; Oliver & Wood, 2014). Lewandowsky, Gignac, and Oberauer (2013), however, note that since the 1970s, trust in science among American political conservatives has been most in decline, and, in particular, American political conservatives are more vulnerable than American liberals or moderates in accepting climate change denialist claims. As the scholarship illustrates, this has made climate science a polarizing issue among lawmakers and the public (Lewandowsky et al., 2013) and presents challenges for the dissemination and communication of science to the public (Jamieson, 2015).

A final area where conspiracy theories enable the rejection of scientific health knowledge remains in pharmaceuticals. The Big Pharma conspiracy theory has several variants, but proponents of this conspiracy theory claim vaccines are harmful (Jolley & Douglas, 2014a) and the use of pharmaceuticals to treat disease is often more dangerous than the disease itself (Blaskiewicz, 2013). The Big Pharma conspiracy theory encourages mistrust of conventional science-based medicine as well as the rejection of scientific health knowledge. As a result, complementary and alternative medicine (CAM) practices have been on the rise (Colbert et al., 2015). Colbert et al. (2015) found that individuals who turn to CAM, in particular acupuncture, mistrust science and conventional healthcare systems and medical interventions to treat disease. Medical mistrust and the rejection of scientific health knowledge appear to adversely affect an individual's health behaviors and health knowledge (Blaskiewicz, 2013; Colbert et al., 2015; Jolley & Douglas, 2014a).

Research Methodology

The purpose of this quantitative content analysis is to measure the frequency patterns of 15 conspiratorial-related n-grams between the years 1900 to 2008 using the Google Books N-gram Viewer English language 2012 version. N-Gram Viewer allows for the study of macrotrends by producing word frequency time-series plots, which will be visually assessed for this study (Lin et al., 2012; Michel et al., 2011; Roth, Clark, & Berkel, 2017). The time-series plots word frequencies (y-axis) will be compared against the yearwise sum results (x-axis) to assess the rising, peaking,

and falling – trends and patterns – of particular 2- and 3-gram conspiracy-related phrases selected for this study. Moreover, as noted by Zeng and Greenfield (2015), "[t]he method is based on the premise that books are a tangible and public representation of culture." This sentiment is echoed by Roth (2013), who notes that "the importance of concepts is often defined in terms of the frequency of their occurrence in given corpora."

Word selection was guided by Greenfield (2013), in that, "frequently used words with a narrow range of semantic interpretation" were selected from the literature (Zeng, R., & Greenfield, 2015). Words entered into Google N-gram Viewer for this study include: "conspiracy theory," "government conspiracy," "political conspiracy theories," "racist conspiracy," "terrorist conspiracy," "JFK conspiracy," "September 11 conspiracy," "UFO conspiracy," "communist conspiracy," "AIDS conspiracy," "medical conspiracy," "rightwing conspiracy," "leftwing conspiracy," "liberal conspiracy," and "conservative conspiracy."
Also, with the aim of analyzing the raw data for specific years, the case insensitive mode was chosen, and a soothing value of zero was accepted.

The instrument that will be used for this study will be the Google Books N-gram Viewer.
The more than 361 billion English-language words contained with the Google Books N-gram Viewer is a large enough sample to ensure validity and reliability (Genovese, 2015).

This study was conducted in accordance with Marywood University research policy, and the research proposal will be submitted to the Institutional Review Board (IRB) for exempt approval. Data were obtained using the research approaches outlined in the Method section for this project.

To test the hypothesis, a quantitative analysis using descriptive statistics were used. As discussed by Genovese (2015): "A virtue of n-gram research is that the reader can easily compare alternative search criteria and pass judgment on the author's choices. Because this is an exercise in descriptive statistics, and because the sample size is so large, a test of statistical significance would be uninformative." That said, therefore, for the purposes of this study, descriptive statistics will be relied upon, and reasons for n-gram patterns are discussed. The following subproblems were analyzed using descriptive statistics:

1. Do conspiracy theories reflect historic events and the popular culture of specific time periods?
2. Are conspiracy theories emergent across the left-right political ideological spectrum in the United States?

As guided by Roth (2013), "the null hypothesis will be rejected in favor of the alternative hypothesis (H_1) when the time-series plots produced by Google N-gram Viewer" increases or decreases for search terms at specific time periods in relation to the question. In other words, trends should be detected in the time-series plots produced by Google N-gram Viewer for search terms.

Analysis of Data

The central question – "what is the emerging frequency of conspiratorial ideas from 1900 to 2008 in response to political trends, historic events, and popular culture?" – was answered using the

graphs of data that resulted from Google Books N-gram Viewer searches (Montagne & Morgan, 2013). In Figure 4.1, results are presented for the 2-gram search for "conspiracy theory" for the timeframe 1900 – 2008. The graph for "conspiracy theory" shows little activity in the first half of the twentieth century until the decade 1950 – 1960 when the frequency begins to trend upward, peaking in the 2000s. This positive trendline over five decades demonstrates increased interest in conspiracy theories between the period 1950 – 2008. Moreover, conspiracy theories appear to increase in popularity over this time period as, according to Putnam's (2000) model, civic engagement and political participation decrease. The biggest peak occurs after the year 2000, when more individuals gained access to the internet and personal computers. The time period between 1990 and 2008 shows a significant increase in conspiracy theories, suggesting that conspiracism may increase with access to digital information and as civic engagement and political participation decrease (Putnam, 2000).

FIGURE 4.1 Results for the search for "conspiracy theories," 1900 – 2008. (source: own Google N-gram enquiry).
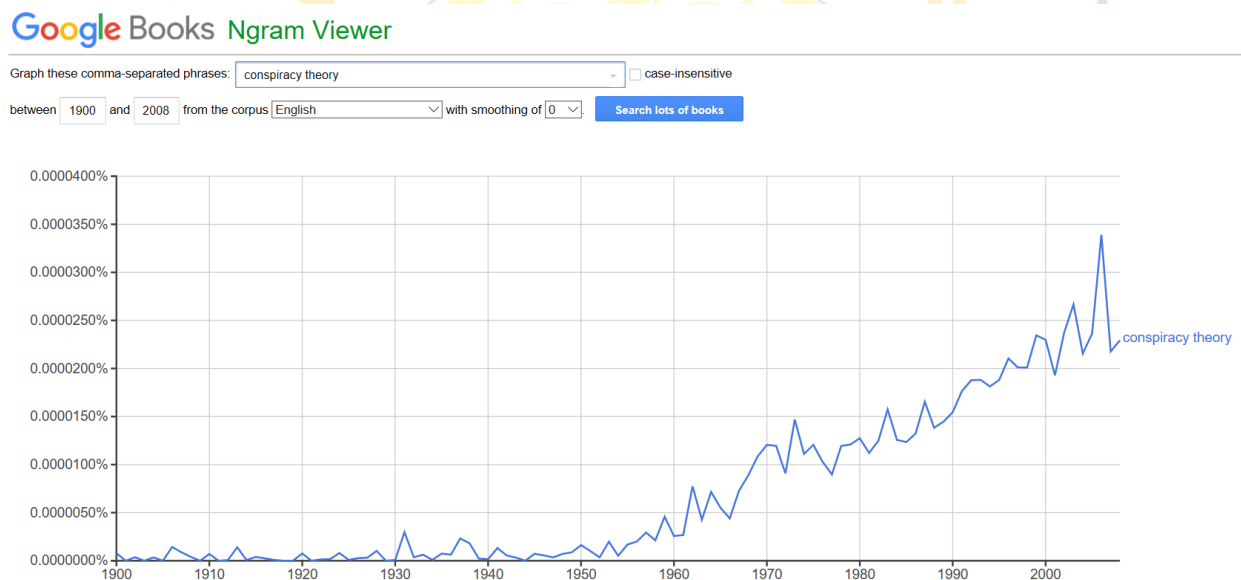
Figures 4.2 and 4.3 represent the search results for the terms "government conspiracy" and "political conspiracy" during the period 1900 – 2008. Similar to the search results for the term "conspiracy theory," the trendlines for the words "government conspiracy" and "political conspiracy theory" are positive and begin to increase after the year 1950. Additionally, all discussion of "conspiracy theory," "government conspiracy," and "political conspiracy" became prominent after the year 1950 and have increased since then. Rapid changes in politics, government, and technology after the second world war in the United States appear to cohere to the increase in conspiracy theories during this period.

The largest peaks for these 2-grams, "conspiracy theory," "government conspiracy," and "political conspiracy," all occur after the year 2000. Clicking on the link for the scanned books for this time period produces books advocating for particular conspiracy theories such as the assassination of President John F. Kennedy, the downing of TWA Flight 800, the shootings at Kent State in 1970 as well as other books attempting to debunk conspiracy theories. Moreover, the Google Books N-

gram Viewer data suggests that conspiracy theories emerge as a response to societal and political changes. The 2-gram "political conspiracy," for example, first appears in the late 1970s – after the Nixon Watergate scandal, and it peaks in the late 1980s following the Regan Administration's Iran-Contra scandal, again in the mid-1990s during the Monica Lewinsky/Whitewater scandals of the Clinton Administration (Irvine & Beattie, 1998), and in the mid-2000s after the terrorist attacks of September 11, 2001 (Crawford & Bhatia, 2012).

FIGURE 4.2 Results for the search "government conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
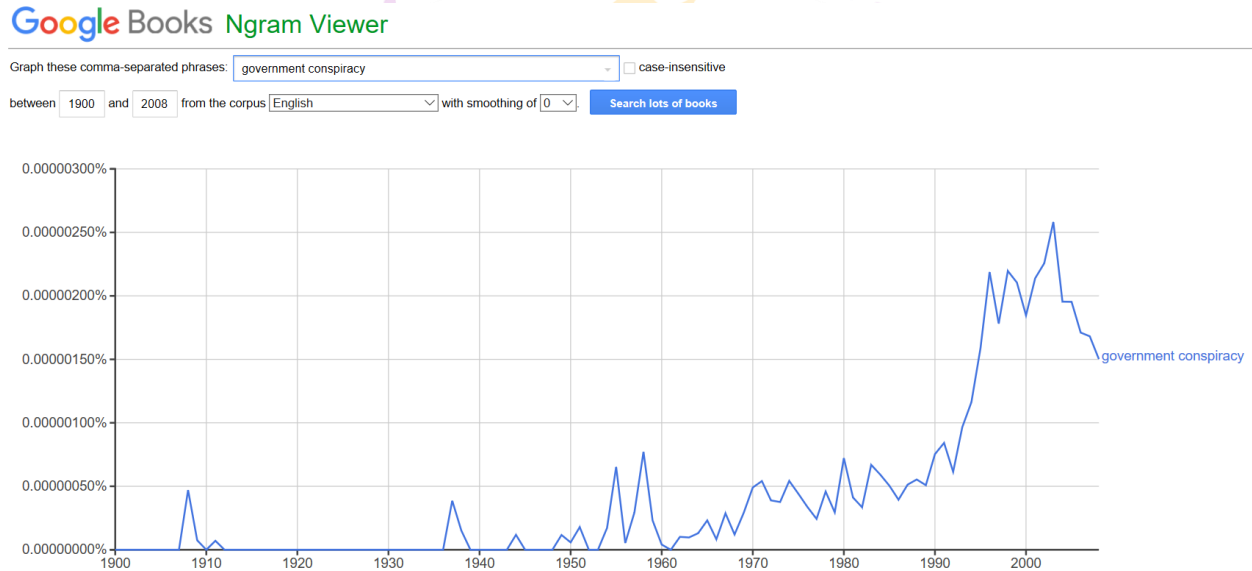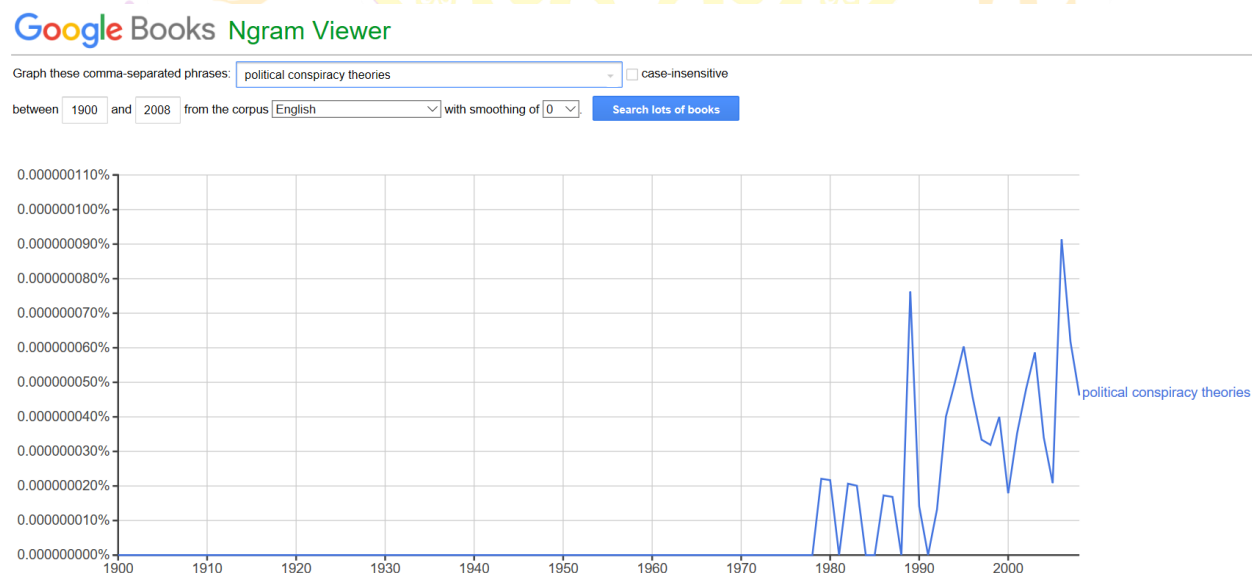

FIGURE 4.3 Results for the search "political conspiracy theories," 1900 – 2008. (source: own Google N-gram enquiry).

The quantitative changes detected by the Google Books N-gram Viewer data suggest that particular political events may also influence the emergence of conspiracy theories. In other words, conspiracy theories may emerge in the wake of particular societal events as an attempt by the conspiracist to make sense of those events (Brotherton & French, 2014; Dagnall, et al., 2017). Because conspiracy theories are macro in nature (Imhoff & Bruder, 2014; Oliver & Wood, 2014), establishing correlations between particular large-scale events and particular political conspiracy theories remains tenable.

Figure 4.4 illustrates the search results for the words "racist conspiracy." The first peak occurs in the year 1960. By the mid-1960s, the trendline appears to increase until reaching a significant peak in the late 1990s. This search was chosen because of the clear power differential between African-Americans and whites historically in the United States. Much of the literature describes many of the cognitive and social dimensions of conspiratorial ideation such as the concept of a powerful other (Yablokov, 2015) and lack of faith in government institutions and services (Einstein & Glick, 2015), which applies here. This N-gram Viewer data indicates just how conspiracy theories emerge over time in response to political trends and historic events.

Clicking on the link for the scanned books for this time frame reveals published content by African-American authors who – because of the historical systemic racism by whites against African-Americans in the United States – advocate for conspiracy theories, which to them explains the historical power differential between whites and African-Americans. As observed by Mattocks et al. (2017), some African-Americans endorse HIV-related conspiracy theories, and this may be because of the Tuskegee Syphilis Study, a 40-year Public Health Service study that left African-American men in rural Alabama untreated for syphilis.

FIGURE 4.4 Results for the search "racist conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
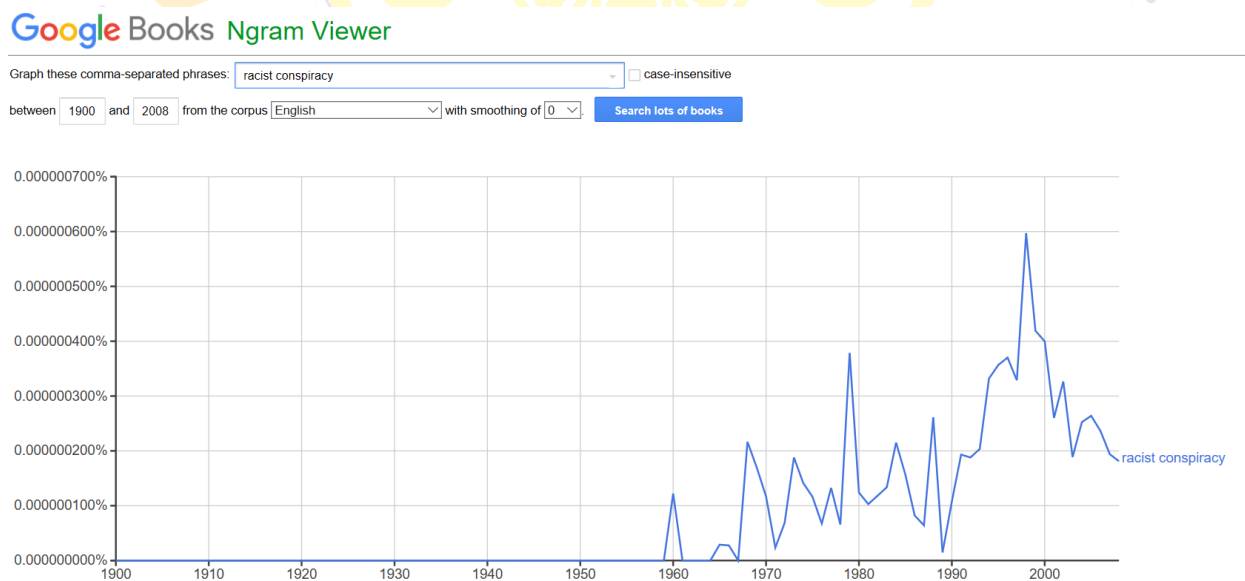
Moreover, the content of the timeframe 1900 – 2008 reflects particular historic events and conspiracy theories involving race. This demonstrates how conspiracy theories emerge in the wake

of particular historic events as a way to explain or contextualize those events. Specifically, the 2-gram "racist conspiracy" also may indicate how oppressed groups – in this case African-Americans – may use /conspiracy theories as a "weapon of the weak" (Scott, 1987) against perceived powerful others (Yablokov, 2015).

Sub-question 1

Sub-question one – "do conspiracy theories reflect historic events and the popular culture of specific time periods?" – was answered using the descriptive statistics produced by Google Books N-gram Viewer data. Figure 4.5 are the side-by-side search results for the 2-grams and 3-grams "JFK Conspiracy," "September 11 Conspiracy," "Terrorist Conspiracy," and "UFO Conspiracy" from 1900 to 2008. These data indicate trendlines for particular conspiracy theories over a century. Consistent with "conspiracy theories," "political conspiracy theories," and "government conspiracy," analyzed above, overall interest in these particular conspiracy theories appear to increase after 1990.

Interest in UFO conspiracies reach a peak in the year 2000, where the trendline turns downward. Throughout the 1990 – 2000 decade, Irvine & Beattie (1998) describe the "pre-millennium tension" of the period and popular culture interest in conspiracies and UFOs, which undoubtedly may have influenced this peak in UFO conspiracy theories. Additionally, many of the books that N-gram Viewer has archived regarding UFO conspiracies include mostly popular texts about government cover-ups of UFOs, declassified United States government documents from the Cold War era, and other related materials.

FIGURE 4.5 Side-by-side results for the search terms "JFK Conspiracy," September 11 Conspiracy," "Terrorist Conspiracy," and "UFO Conspiracy" from 1900 – 2008. (source: own Google N-gram enquiry).
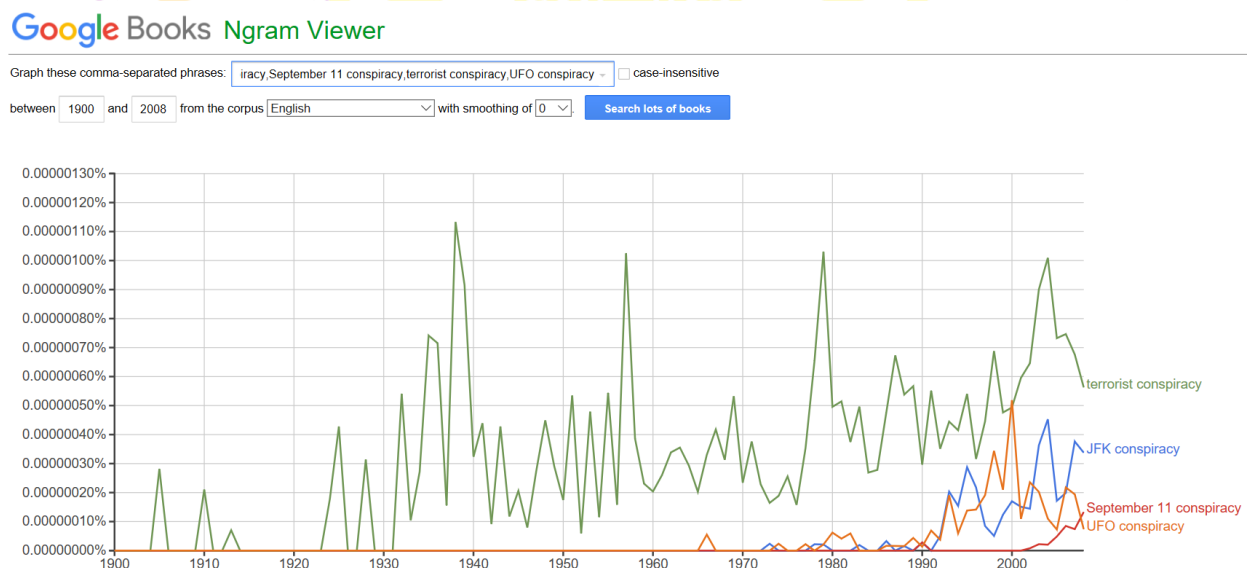

In the early 2000s, interest in all of the abovementioned conspiracy theories increase. After the September 11, 2001, terrorist attacks in the United States, the 3-gram "September 11 Conspiracy"

emerges in the data, indicating that that event triggered conspiratorial reactions, which is in line with Dagnall et al.'s (2015) finding that conspiracy theories develop in an attempt to explain large-scale, historic events. Finally, the 2-gram "terrorist conspiracy" first appears just after the year 1900, where it continued to reach a number of significant peaks in the 1930s, 1950s, 1970s, and 2000s. These data show that interest in a terrorist conspiracy has historical roots as well as contemporary relevance.

Figure 4.6 illustrates the search results for the 2-gram "communist conspiracy" from 1900 – 2008. The graph shows a significant spike in usage of "communist conspiracy" in the early 1950s, during the early period of the Cold War between the United States and the Soviet Union. This trendline coheres to prediction that conspiracy theories emerge as a reaction to popular culture and historic events. The peak occurs in the mid-1950s, during the paranoia of the McCarthy-era witch hunts in the United States. Moreover, after reaching initially high peaks in the mid-1950s and mid-1960s, the trendline turns downward, indicating decreased interest in "communist conspiracy" as the Cold War continued throughout the 1970s and 1980s.

FIGURE 4.6 Results for the search term "communist conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
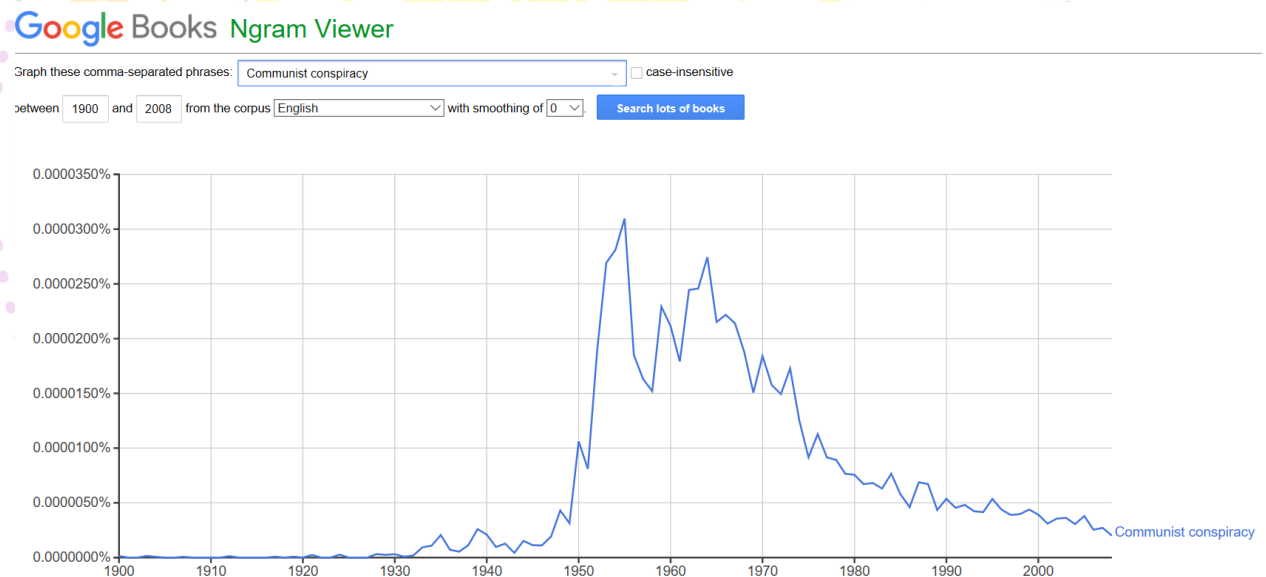
Figures 4.7 and 4.8 illustrate the search results for the 2-grams "AIDS Conspiracy" and "Medical Conspiracy" between the period 1900 – 2008. Conspiracy theories often develop in response to global pandemics (Kalichman, 2014; Smallman, 2015) and medical innovations (Clobert et al., 2015). The search results of Figure 4.7 confirm significant peaking after 1980, a time when the AIDS pandemic began to take root around the globe (Kalichman, 2014). From the early 1980s until 2008, interest in an "AIDS Conspiracy" increased throughout that period, providing additional evidence that conspiracy theories appear to emerge as an alternative epistemology to ambiguous information, such as during a global pandemic.

FIGURE 4.7 Results for the search for "AIDS conspiracy," 1900 – 2008. (source: own Google N-gram enquiry)

In Addition, Figure 4.8 illustrates the search results for the 2-gram "medical conspiracy" from 1900 – 2008. The results indicate several significant peaks from 1900 to 1960, indicating intense but short-lived interest in medical conspiracies. After 1960, however, the trendline for medical conspiracies appear to settle into a less intense but consistent pattern, which may reflect the "medical mistrust" indicated by Blaskiewicz (2013).

FIGURE 4.8 Results for the search for "medical conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
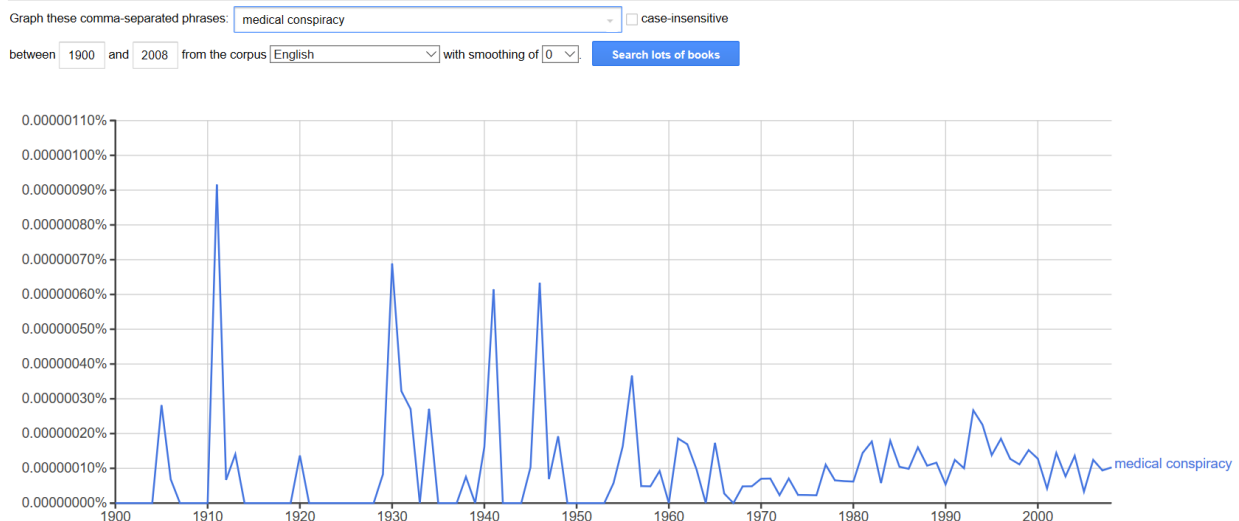

Sub-question 2

Sub-question two – "are conspiracy theories emergent across the left-right political ideological spectrum in the United States?" – was also answered using descriptive statistics produced by

Google Books N-gram Viewer. Search results indicate no activity for the search terms "leftwing conspiracy" and "rightwing conspiracy" from 1900 to the late 1940s. Then, from the late 1940s until 1980, "leftwing conspiracy" appears in a series of peaks. Much of the published content N-gram Viewer has achieved from this timeframe are books and articles that describe the rising fear of British and American conservatives against communism. By 1980, however, N-gram Viewer detects a quantifiable trend change whereby "rightwing conspiracy" peaks in the mid-1980s, decreases, then peaks again throughout the late 1990s and early 2000s.

The Google Books N-gram Viewer data contains "a mix of technical and popular publications" and, thus, captures an accurate snapshot of popular and academic English-language publications on a given topic over time (Pettit, 2016). Viewed through Putnam's (2000) model of decreased civic engagement and political participation, Mills' (1956) power elite, and Herman and Chomsky' (1988) manufacturing consent thesis – the views and opinions of elite, educated classes that are overrepresented in print culture remains baked into the Google Books N-gram Viewer data. Additionally, this assumption can help guide an accurate interpretation of the search results presented for sub-question two. With this in mind, it appears that the post-WWII period until 1980 remains dominated by concern of a leftwing conspiracy. The New Deal policies that began prior to the aforementioned period and the Great Society programs of the 1960s, along with legislation such as the Civil Rights Act and other societal changes that occurred throughout the decade, clearly influenced concerns of a leftwing conspiracy, as the Google Books N-gram Viewer data demonstrates. That concern changes, however, in 1980, where concern of a right-wing conspiracy emerges. These changes were almost certainly triggered by the election of Ronald Reagan in 1980 in the United States and the neoliberal policies of Margaret Thatcher in the United Kingdom during the same period.

FIGURE 4.9 Results for the search "leftwing conspiracy" and "rightwing conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
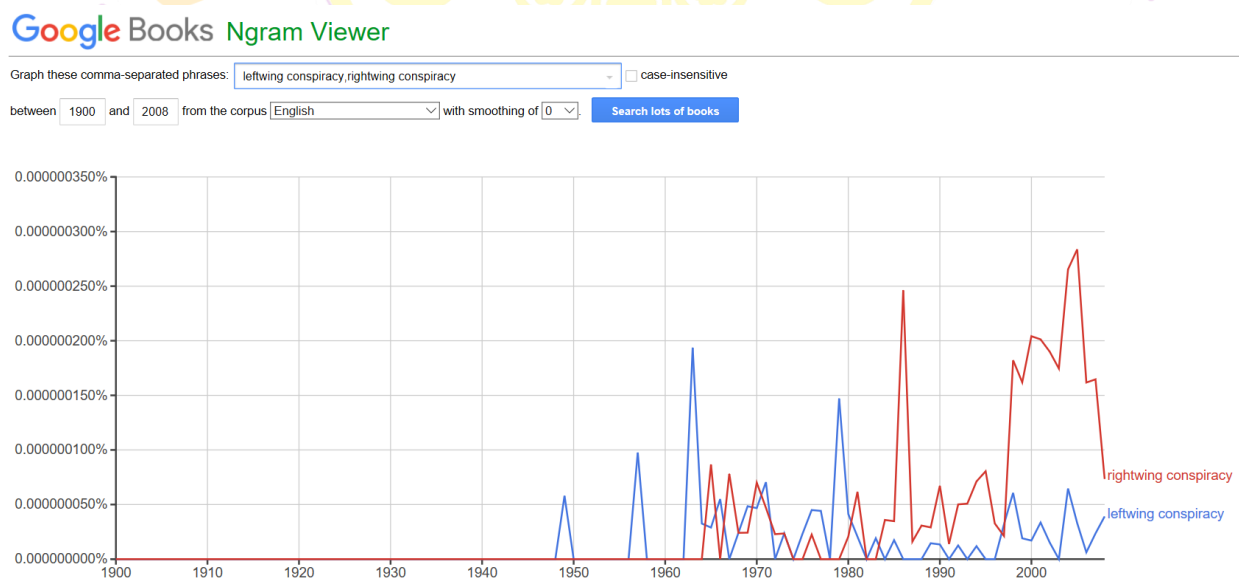

The years when peaking occurs, whether or not the trendline is positive or negative, and the precise words that the Google Books N-gram Viewer detects remains telling. The behavior of the n-gram

data peaks and the trend toward a concern over rightwing conspiracies since the 1980s suggest – and leftwing conspiracies prior to 1980 – two things. First, historical political events, such as the election of a president from a different party affiliation and the policies that follow, can trigger conspiratorial ideas from those opposite on the left-right ideological spectrum. Second, from the timeframe 1900 – 2008, concern over leftwing conspiracies remained prominent in the post-WWII to 1980 era, and concern over rightwing conspiracies became dominant in print culture after 1980. For example, in the 1990s, when the N-gram Viewer indicates an increase in rightwing conspiracies, much of the content taken into account includes articles by leftwing authors, who were concerned about rightwing conspiracies about President Bill Clinton (Kaiser & Chinoy, 1999). In fact, Hillary Rodham Clinton described "a vast right-wing conspiracy that has been conspiring against [her] husband since the day he announced for president" (Kaiser & Chinoy, 1999).

Next, Figure 4.10 are the Google Books N-gram Viewer search results for the words "liberal conspiracy," and "conservative conspiracy" from 1900 to 2008. The patterns that emerge for the terms "liberal conspiracy" and "conservative conspiracy" remain different from the search results for "leftwing conspiracy" and "rightwing conspiracy." Where there were no quantifiable results for the terms "leftwing conspiracy" and "rightwing conspiracy" in the N-gram Viewer data prior to the late 1940s, "liberal conspiracy" and "conservative conspiracy" appear earlier in the decades 1900s and 1910s. What is more, there appears to be significant spikes for "liberal conspiracy" in the 1940s. Since 1950, both "liberal conspiracy" and "conservative conspiracy" begin consistent trendlines.

Figure 4.10 also shows more concern over a "liberal conspiracy" since 1980 than a "conservative conspiracy." Further investigation reveals that most of the content written in the 1990s that N-gram Viewer archives refers to liberal conspiracy theories about conservative political trends of the time. This includes the popularity of conservative talk radio, which became increasingly popular during the 1990s (Devries, 1996).

FIGURE 4.10 Results for the search "liberal conspiracy" and conservative conspiracy," 1900 – 2008. (source: own Google N-gram enquiry).
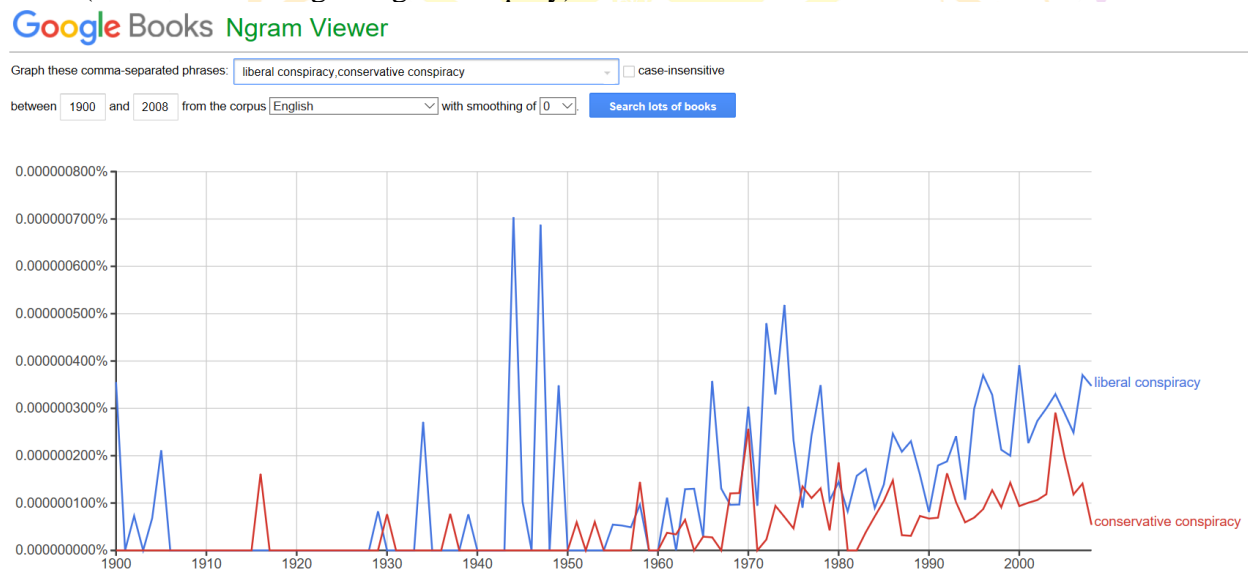
Additionally, the last significant spike in 2000 concerns content regarding another liberal conspiracy theory about the controversial supreme court decision, *Bush v. Gore* (Lund, 2011). Briefly, by the year 2000, five of the nine justices on the Supreme Court were appointed by Republican presidents. When the court decided *Bush v. Gore*, stopping the Florida recount thus handing the election to then-candidate George W. Bush, many liberal-leaning conspiracy theories emerged that claimed conservatives conspired to take the presidency (Lund, 2011). This example demonstrates how conspiracy theories emerge across the left-right political ideological spectrum.

Finally, Table 4.1 displays the frequencies for the 15 conspiratorial-related n-grams examined for this study. The "year" column for Table 4.1 indicates the first year of recorded data indexed by the Google Books N-gram Viewer for each phrase until the year 2008. Results indicate increases for 10 of the 15 conspiratorial-related n-grams. The 2-gram "conspiracy theory" had the largest increase of 22400% from 1900 to 2008 followed by the 2-gram "AIDS conspiracy," which increased 2400% from 1983 to 2008. The 2-gram "communist conspiracy" had the third largest increase of 1800% from 1925 to 2008.

Three n-gram phrases, "leftwing conspiracy," "medical conspiracy," and "conservative conspiracy" decreased overall from the first year of recorded data indexed by N-gram Viewer to 2008. "Leftwing conspiracy" decreased -16.95% from 1948 to 2008. The 2-gram "medical conspiracy" decreased -62.48% from 1905 to 2008. Additionally, the 2-gram "conservative conspiracy" decreased -66.67% from 1915 to 2008. The results for two politically related 2-grams, "liberal conspiracy" and "rightwing conspiracy" did not indicate an overall percent increase or decrease over the years examined for this study.

N-gram phrase frequency decreases may suggest that individual conspiracy theories come in and out of fashion over time. "UFO conspiracy" and "JFK conspiracy," for instance, remain prime examples, with the N-gram Viewer data suggesting that these conspiracy theories rise, peak, and decline over shorter time periods. Additionally, the majority of the n-grams examined for this study – 10 out of 15 – increased, indicating that, overall, since roughly 1950 conspiracy theories have been on the rise.

As shown in Figure 4.1, the 2-gram "conspiracy theory," which increased by 22400%, continues on a linear trendline from its first appearance in 1900 to 2008.

In summary, the descriptive statistics and the N-gram Viewer search results discussed above indicate that conspiratorial ideas emerge over time in response to particular political trends, historic events, and disease outbreaks. Additionally, a relationship exists between political trends and disease pandemics between 1900 and 2008 and the emergence of conspiracy theories. Finally, conspiratorial ideas emerge across the left-right political ideological spectrum in the United States. Therefore, there is evidence for accepting the proposed hypotheses. Thus, one can reject the null hypotheses that conspiratorial ideas will not emerge in the aftermath of significant historic events as an attempt to explain, contextualize, or understand those events; the frequency and trendlines of conspiracy theories will not increase and decrease over time; conspiracy theories will not be influenced by political trends of the time period in which they develop, and conspiracy theories will not develop across the left-right political ideological spectrum.

TABLE 4.1 Word frequencies from first year of recorded data indexed by the Google Books N-gram Viewer to the year 2008.

N-gram	Year	%	N-gram	Year	%	-%/+%
AIDS conspiracy	1983	0.000000025%	AIDS conspiracy	2008	0.000000625%	+2400%
communist conspiracy	1925	0.0000001%	communist conspiracy	2008	0.0000019%	+1800%
conservative conspiracy	1915	0.000000150%	conservative conspiracy	2008	0.000000050%	-66.67%
conspiracy theory	1900	0.0000001%	conspiracy theory	2008	0.0000225%	+22400%
government conspiracy	1907	0.00000049%	government conspiracy	2008	0.00000150%	+206.12%
JFK conspiracy	1973	0.000000025%	JFK conspiracy	2008	0.000000340%	+1260%
leftwing conspiracy	1948	0.000000059%	leftwing conspiracy	2008	0.000000049%	-16.95%
liberal conspiracy	1900	0.000000350%	liberal conspiracy	2008	0.000000350%	0%
medical conspiracy	1905	0.00000028%	medical conspiracy	2008	0.00000010%	-62.48%
political conspiracy theories	1978	0.000000022%	political conspiracy theories	2008	0.000000047%	+113.64%
racist conspiracy	1960	0.000000110%	racist conspiracy	2008	0.000000190%	+72.73%
rightwing conspiracy	1965	0.000000075%	rightwing conspiracy	2008	0.000000075%	0%
September 11 conspiracy	1990	0.000000025%	September 11 conspiracy	2008	0.000000130%	+420%
terrorist conspiracy	1905	0.00000025%	terrorist conspiracy	2008	0.00000058%	+132%
UFO conspiracy	1965	0.000000025%	UFO conspiracy	2008	0.000000075%	+200%

Discussion

To test the hypotheses, a quantitative analysis using descriptive statistics were used. The results are presented in percentages and parts per million (ppm). As noted by Roth, Clark, and Berkel (2017), the percentages represent ". . . the relative word frequency per million words in the Google

Book corpus," while "[t]he unit per million is used to avoid longer chins of digits after the decimal point." Both percentages and parts per million (ppm) were presented in the results.

The results of this study indicated that for H_1 conspiratorial ideas will emerge in the aftermath of significant United States historic events as an attempt to explain, contextualize, or understand those events (Fig. 4.5) showed that from 1973 to 2008 there was a +1260% increase in the 2-gram "JFK conspiracy," increasing from 0.000000025% (0.00025ppm) in 1973 to 0.000000340% (0.0034ppm) in 2008. Relatedly, after the terrorist attacks on September 11, 2001, there was a +542.9% increase from 2003 to 2008 of the 3-gram "September 11 conspiracy," increasing from 0.000000021% (0.00021ppm) in 2003 to 0.000000135% (0.00135ppm) in 2008. Finally, the 2-gram "AIDS conspiracy" increased +2400% from 1982 to 2008, increasing from 0.000000025% (0.00025ppm) in 1982 to 0.000000625% (0.00625ppm) in 2008. The hypothesis was supported; therefore, the null hypothesis was rejected.

Second, results indicated that for H_2 the frequency of conspiracy theories will increase and decrease between 1900 to 2008. Word search frequencies display this behavior for all 15 2-grams and 3-grams tested for this study. For the 2-gram "conspiracy theory" (Fig. 4.1), for instance, from 1900 to 2008 there was an overall +22400% increase. Between 2006 and 2008, however, the 2-gram "conspiracy theory" decreased –34.8%, from 0.0000345% (0.345ppm) in 2006 to 0.0000225% (0.225ppm) in 2008. Figure 4.2 shows the results for the 2-gram "government conspiracy." Results demonstrate that from 1992 to 1995, there was a +275% increase, from 0.00000060% (0.006ppm) in 1992 to 0.00000225% (0.0225ppm) in 1995. However, from 2003 to 2008 a –42.3% decrease occurred, from 0.00000260% (0.026ppm) in 2003 to 0.00000150% (0.015ppm) in 2008. The hypothesis was supported; therefore, the null hypothesis was rejected.

Third, the results for H_3 indicated that conspiracy theories will be influenced by political trends of the time period in which they develop. Figure 4.6 are search results for the 2-gram "communist conspiracy." The 2-gram "communist conspiracy" peaks in 1963 at 0.0000120% (0.12ppm) in the middle of the Cold War but slowly decreases throughout the 1970s, 1980s, and 1990s until reaching 0.0000019% (0.019ppm) in 2008 – a decrease of –82.4% from its peak in 1963. Additionally, Figure 4.5 shows the search results for the 2-gram "terrorist conspiracy." Between 2000 to 2004, there was a +100% increase for the 2-gram "terrorist conspiracy" following the September 11, 2001, terrorist attacks, from 0.00000050% (0.005ppm) in 2000 to 0.00000100% (0.01ppm) in 2004. The hypothesis was supported; therefore, the null hypothesis was rejected.

Finally, the results for H_4 indicated that conspiracy theories will develop across the left-right political ideological spectrum in the United States. Figure 4.9 are the search results for the two 2-grams "leftwing conspiracy" and "rightwing conspiracy." There are two large peaks for the 2-gram "leftwing conspiracy" in 1963 0.000000190% (0.0019ppm) and in 1979 0.000000149% (0.00149ppm). Relatedly, a search for the 2-gram "rightwing conspiracy" also displays large peaks. For example, a large peak occurs in 1985 0.000000149% (0.00149ppm) and in 2005 0.000000275% (0.00275ppm). These results suggest that conspiracism occurred on both ends of the left-right political spectrum in the United States during that timeframe. Moreover, Figure 4.10 are the search results for two related 2-grams, "liberal conspiracy," and "conservative conspiracy." There are several large peaks for the 2-gram "liberal conspiracy," occurring in 1944 0.000000700% (0.007ppm), 1947 0.000000690% (0.0069ppm), and in 1974 0.000000510%

(0.0051ppm). The 2-gram "conservative conspiracy" displays peaking in the years 1970 0.000000250% (0.0025ppm) and in 2004 0.000000290% (0.0029ppm). Again, these peaks suggest active conspiracism across the political spectrum during the years between 1900 and 2008. The hypothesis was supported; therefore, the null hypothesis was rejected.

The findings of this study are supported by Imhoff and Bruder (2014), for instance, which suggest that the endorsement of conspiracy theories transcends political party affiliation and identity in the United States. As the N-gram Viewer data indicate, there have been rises, peaks, and falls for both the 2-grams "leftwing conspiracy" and "rightwing conspiracy" as well as with the 2-grams "liberal conspiracy" and "conservative conspiracy" over the decades analyzed in this study, suggesting that conspiracy theories emerge across the left-right political ideological spectrum.

The finding that conspiratorial ideas will emerge in the aftermath of significant United States historic events as an attempt to explain, contextualize, or understand those events also may have implications for news media and social media. Increased frequencies found in the N-gram Viewer data in the aftermath of significant historic events in the United States (Figure 4.5) remains a consistent trend. Journalists and media content creators may consider, for example, taking proactive measures to guard against conspiracy-driven "fake news" in the aftermath of such events (Himma-Kadakas, 2017), as the likelihood of conspiracy theories emerging in the aftermath of a significant historic event remains high in light of this study's findings.

Additionally, the results of this study are also supported by Dagnall et al. (2015), which indicate that conspiracy theories emerge after large-scale, historic events, such as the terrorist attacks in the United States on September 11, 2001, and also form in reaction to the political trends and reflect the popular culture in the time period they emerge. The pattern – rising, peaking, and falling – for example, for the 2-gram "communist conspiracy" illustrates how a conspiracy theory reflects the time period in which it emerges. The fear of communism is hardly the threat that it once was in Western countries since the break-up of the Soviet Union in 1991, so it is not surprising that the N-gram Viewer data detects peaks for a "communist conspiracy" in the mid-1950s and mid-1960s – during the height of the Cold War.

The N-gram Viewer search results for "AIDS conspiracy" and "medical conspiracy" remains consistent with the findings of Kalichman (2014). Additionally, these findings support the contention of Mattocks, et al. (2017) that medical mistrust and skepticism toward government health agencies remains high for conspiracy theorists; moreover, the findings of this study additionally demonstrate that medical conspiracy theories tend to emerge after the onset of a global disease pandemic. It remains highly probable that similar conspiracy theory patterns will emerge after other recent global disease epidemics such as the 2009 H1N1 influenza pandemic (Smallman, 2015) and the 2015 Zika virus outbreak (Smallman, 2017), but since the Google Books N-gram Viewer corpus currently ends in 2008 (Zeng & Greenfield, 2015), and therefore there is no way to test this hypothesis with the current data set.

In the area of science communication, the results of this study remain particularly unsettling. Medical mistrust and skepticism toward government health agencies, which conspiracy theories tend to fuel (Mattocks et al., 2017), remains a threat to global health and safety. Additionally, conspiracy theorists tend to endorse the idea of a "powerful other" (Douglas et al., 2016; Yablokov,

2015), and medical interventions are often a top-down, group-level activity – such as the use of vaccines (Jolley & Douglas, 2014a) – so, conspiracy theories may also present challenges for creating public buy-in for implementing future top-down health strategies. Public health officials may consider implementing disease epidemic readiness education procedures to communicate with the public and stakeholders prior to implementing future top-down heath strategies or to prepare for the onset of a disease epidemic outbreak in order to ensure patient compliance. Conspiracy theories reduce interpersonal trust (Acar-Burkay et al., 2014; Leman & Cinnirella, 2013) and foster skepticism toward governmental agencies (Swami et al., 2013); therefore, getting in front of conspiracy theories prior to a disease epidemic may improve health outcomes.

In summary, conspiracy theories remain more than fringe collection of ideas held by a limited number of individuals. On the contrary, belief in conspiracy theories goes back decades and, as the findings of this study demonstrate, conspiracy theories are on the rise. Moreover, conspiracy theories can disrupt elections (Banks, 2017; Ohlin, 2017), undermine group-level medical interventions (Jolly & Douglas, 2014a), and have the potential to emerge across the left-right political spectrum. The implications of the findings of this study suggest that policymakers, educators, and the media need to consider how conspiracy theories may undermine their work. Simply labeling something a conspiracy theory does not necessarily reduce a person's belief in it (Wood, 2016). Understanding, therefore, that conspiracy theories may emerge in response to historic events, political trends, and popular culture may remain the first step toward devising corrective interventions that are aimed at reducing the belief in conspiracy theories

This study was also limited to 15 conspiratorial n-grams analyzed between the years 1900 to 2008. Future research using N-gram Viewer may focus on a different time period, measuring conspiracy theories prior to the year 1900, for example, to see if potential "proto-conspiracy theories" have emerged earlier in history. Additionally, due to the large Google Books N-gram Viewer data set used in this study, results remain generalizable, although such as with similar methodologies, results remain limited to the variables studied; or, in other words, results remain limited to the particular 15 n-gram phrases selected for this study.

In order to function, large institutions such as the government, the media, and the educational system require a minimal level of public trust in order to remain effective and useful to their constituents. In 1961, President Dwight D. Eisenhower warned of a "military-industrial complex," where public interests would become submissive to the interests of large bureaucracies. Although Eisenhower's fears of a military-industrial complex never materialized (Dunlap, 2011), large institutions remain the targets of conspiracy fear mongering (Dagnall et al., 2015; Imhoff & Bruder, 2014; Oliver & Wood, 2014), while maintaining a status of powerful others within the minds of many conspiracy theorists.

The findings of this study demonstrate that 10 out of 15 conspiracy theory n-grams have increased from 1900 to 2008, emerging in response to historic events, political trends, and popular culture. For example, peaking has occurred in the aftermath of the September 11 terrorist attacks in the United States (Figure 4.5), interest in communist conspiracies peaked in concert with the Cold War political trends of the 1950s and 1960s (Figure 4.6), and UFO conspiracies reached their apex in the year 2000 as a possible result of the "pre-millennium tension" of the late 1990s and the popular culture of the era (Irvine & Beattie, 1998). In particular, n-gram phrase frequency trends

such as "September 11 conspiracy" and "AIDS conspiracy" demonstrate how conspiracy theories emerge in the aftermath of a historical event, while the frequency trends of the 2-gram "leftwing conspiracy" and the 2-gram "rightwing conspiracy" illustrate how conspiracy theories increase and decrease over time in response to political trends.

Finally, the 2-gram "UFO conspiracy" and the 2-gram "communist conspiracy" show that conspiracy theories will emerge in the context of popular culture as defined by Parker (2011), as both UFO conspiracies – while peaking at the millennium – and communist conspiracies, which fluctuated throughout the Cold War years and had an impact not only on politics but also on popular films and television (White, 2015), remain arguably representative of the decades in which these conspiracy theories peaked in the N-gram Viewer data.

About the Author

Kenneth Luck earned his Ph.D. in Human Development in 2019 from Marywood University. He also holds a Master's Degree in Education and a Bachelor's Degree in Political Science from the same institution. He is currently a tenure-track Assistant Professor of Media Arts at SUNY Sullivan – State University of New York, where he teaches courses in media production, media history, and media writing.

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