

UNIVERSITY OF CALIFORNIA SAN DIEGO

In the Name of National Interest: Persuasion in Security Politics

A dissertation submitted in partial satisfaction of the
requirements for the degree
Doctor of Philosophy

in

Political Science

by

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Chair

University of California San Diego

2018

DEDICATION

To my parents, In-Suk Wee and Joon Yong Sung,
who laughed and cried with me on the journey.

EPIGRAPH

The ship of state is the only known vessel that leaks from the top.

– James Reston (1946)

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ABSTRACT OF THE DISSERTATION

In the Name of National Interest: Persuasion in Security Politics

by

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Doctor of Philosophy in Political Science

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Professor Branislav L. Slantchev, Chair

How does information affect foreign policy? This dissertation explores the political dynamic of disclosure of classified information about national security and defense policy and its effects on foreign policymaking.

In Chapter 1, I introduce the subsequent chapters by discussing their research questions.

Chapter 2 confirms the prevalence of disclosure of classified information by anonymous sources in foreign policy reporting; 43.8 percent of all quotes in a corpus of news articles about drone strikes are attributed to anonymous individuals. Chapter 2 also shows that most of anonymously-sourced information is either neutral or supportive of the government's policies.

Chapter 3 analyzes the puzzling credibility of disclosure of pro-government classified

information (a “helpful leak”). I argue that credibility of unverifiable information leaked by anonymous sources stems from the perception that they may be leakers who reveal the truth and from the government’s stronger incentive to punish leakers of true than false information. The mechanism hinges on a trade-off that the government faces between allowing positive information to leak irrespective of its veracity and the need to assert bureaucratic control by prosecuting unauthorized disclosures. I show that this trade-off causes the government to prosecute some, but not all, truthful leaks of pro-government information.

Chapter 4 illustrates a dilemma for the government when punishing bureaucrats who disclose politically detrimental and classified information (“harmful leaks”). I argue the government’s dilemma over bureaucratic and political incentives drives the government’s sporadic punishment of harmful leaks. Although criminal punishment of harmful leakers establishes bureaucratic discipline, it deprives the government of maintaining plausible deniability of the damaging information. I show that this tradeoff between internal credibility and external credibility results in limited enforcement of secrecy.

Chapter 5 examines a political consequence of harmful leaks. I argue that these harmful leakers can effect a change in public opinion about foreign policy when they reveal their own identity. The revelation strengthens the public’s belief in credibility of the anti-government information provided by the leaker. This renders the government’s policy proposal unpopular among the public.

I conclude in Chapter 6.

Chapter 1

Introduction

Everyday citizens are inundated with media reports that quote “a senior government official who prefers to be anonymous.” Such disclosure of classified information about national security policy and military operations by unnamed bureaucrats via media outlets is common in democracies. Why does the audience—domestic public and elites as well as foreign actors—believe national security information provided by anonymous sources? Why are anonymous sources seen as a credible source of national security information? How does anonymous sourcing affect security politics?

Moreover, few bureaucrats have been publicly punished by democratic governments despite existing institutional tools to enforce secrecy. Why does the government not enforce secrecy? I address these puzzles in my dissertation entitled *In the Name of National Interest: Persuasion in Security Politics*.

The fundamental dilemma for governments and leaders in dealing with “leaks” is that there are times when they are incentivized to allow, utilize, or encourage the leaks. Contrary to conventional wisdom, leaks are not always politically detrimental to the government; they can actually serve as a tool for the government to shape the informational flow to the public as well as political foes. In particular, non-compliers of secrecy rules can be politically useful; punishment

of them can be legitimized in the name of national security. While whistleblowers are protected as a “fire alarm” by political institutions, leakers can be branded as those disloyal to their own country, deserving harsh punishment when politically convenient.

However, existing political science work has yet to delve into the Janusian nature of leaks and democratic governments’ consequential dilemmas in enforcing secrecy; instead, existing scholarship has focused on attributable, direct, and official communication by governments. Despite their prevalence, leaks were dismissed as irrelevant because they were considered as cheap talk or a symptom of bureaucratic infighting with no political impact. In a leak, the source—the sender of the message—is unidentified and unnamed; it is carried out by faceless, anonymous bureaucrats. It is also indirect—the message is transmitted by intermediaries, such as anonymous bureaucrats and media outlets, and not necessarily by the leader or other legitimate representatives of the government. On the surface, the anonymity and indirectness of leaks render them incredible and meaningless.

Yet there are cases of leaks that affected beliefs and attitudes of the domestic and international audiences in foreign policy. In 1917, the Wilson administration leaked the Zimmerman Telegram and persuaded the previously isolationist American public and elites to rally around the cause of World War I (Greenberg 2016; Tuchman 1985). George Kennan’s *Foreign Affairs* seminal article “The Sources of Soviet Conduct” (also known as the “X Article”), which called for U.S. policy of containment against the Soviet threat, was initially published in 1947 under the pseudonym “X” (Kennan 1947). Similarly, the 1986 leak purportedly by the Syrian regime or Iran’s radicals about the Ronald Reagan administration’s secret negotiations with Iran on American hostages in Lebanon and arms sales led to a major political scandal in the U.S. (Abel 1987), hurting Reagan’s popularity and constraining his presidency’s foreign policymaking power.

This dissertation aims to demonstrate the validity of leaks as democratic states’ informational tool in security politics. In particular, it will attempt to explain the prevalence of leaks about foreign policy and democratic governments’ incentives to allow or prevent them. The

dissertation will also address the effects of leaks on beliefs and attitudes toward foreign policy. It will discuss how they affect the audience's inference about the leaked information as well as their beliefs and attitudes about foreign policy, comparing them to attributable communication. The dissertation will also discuss the role of governments, bureaucrats, and media outlets in the leaks about foreign policy. By tackling these puzzles and questions surrounding leaks, this dissertation aims to highlight leaks' roles as a unconventional means for democratic governments for persuading the public and signaling to the adversary regarding national and international security.

This dissertation adopts a multi-method and interdisciplinary approach, using formal, computational, and experimental methods. In Chapter 2, I measure the prevalence of anonymous sourcing, using a pipeline of various Natural Language Processing tools. I propose a new measure, Anonymity Index, to assess the importance of anonymous sources. In Chapters 3 and 4, I use formal models to illustrate the political dynamic of anonymous sources' revelation of secrets and democratic governments' selective punishment of the anonymous sources. In particular, Chapters 3 and 5 include survey experiments about the effects of source attributability and punishment on information credibility and political attitudes. Substantively, Chapter 3 focuses on “helpful leaks”—leaks of pro-government information—whereas Chapters 4 and 5 focus on “harmful” leaks—leaks of anti-government information. Chapter 2 measures and compares both types of leaks.

Chapter 2

Anonymity Index: Automated Extraction and Classification of Journalistic Sources

Abstract

How prevalent is anonymous sourcing in media reports about foreign policy? While previous research has confirmed the prevalence of anonymous sources, it relied on small samples, unsystematic methods, and labor-intensive manual annotation and classification. I automatically extract and classify 36,670 quotes from *New York Times* articles on U.S. drone strikes published from 2001 to 2015, using a pipeline of Natural Language Processing tools. I also create Anonymity Index, an index assessing anonymity of the sources in each news article. My analysis confirms the prevalence of anonymous sourcing; 43.8% of all quotes were attributed to anonymous individuals. My analysis also documents the relationship between source types and sentiments of the information the sources convey.

2.1 Introduction

Recent political events have brought anonymous sources to the forefront of political debates in the U.S. The increase in politically motivated “leaks” in the early days of the Trump administration, former FBI director James Comey’s admission of orchestrating a “leak” of a memo via a friend as an anonymous source, and the *New York Times* op-ed penned by “a senior government official” who claimed to be part of the resistance inside the Trump administration underscore the importance of anonymous sources in recent political events. Journalists’ reliance on anonymous sources have been vehemently criticized by those in power, such as President Donald Trump, and fellow journalists, including the Public Editor of the *New York Times* (Spayd 2017).

Moreover, the rise of “fake news” and the increasing political polarization have led some to indiscriminately question the integrity of the traditional media and journalistic sources. It had been assumed that news credibility stems from the credibility of media outlets and their incentive to report accurate facts. It was assumed that, driven by reputational costs and economic incentives, reputable media outlets and journalists in democracies are tasked with verifying credibility of their sources and the information they provide on the public’s behalf. However, the public’s growing distrust of the media has led to skepticism about the media and their sources.

These events underscore the scholarly need to look beyond political leaders and media outlets as sources (e.g. Baum and Groeling 2009; Berinsky 2009; Zaller 1992) and “under the hood” of news sources; it is imperative to study journalistic sources as the root source of political information. Who are the journalistic sources? How do they differ? What information do they provide to the media outlets? Do different types of sources differ in the information they provide?

In this chapter, I automatically extract and classify journalistic sources from the *New York Times* articles on U.S. drone strikes published in 2001-2015, using a pipeline of state-of-the-art Natural Language Processing tools. My analysis confirms the prevalence of anonymous sources in foreign policy reporting; 58.14% of all quotes by individuals in the corpus can be attributed to

unnamed individuals.

My analysis also shows a non-linear relationship between source types and sentiments of the quotes. In general, quotes by unnamed sources were more negative than those by named sources. However, the relationship between degree of source anonymity and neutrality of quotes was non-linear; quotes by partially unnamed individuals were significantly more subjective compared to quotes by other sources; only 15% of the quotes by partially unnamed individuals were neutral whereas 21% by fully unnamed human sources and 20.2% by named individuals were neutral. This implies that partially unnamed sources may strive more to persuade affectively, rather than inform, readers, compared to fully unnamed sources.

2.2 Context

Journalism scholars have strived to document the occurrence of anonymous sourcing in news about foreign policy.¹ Many show that anonymous sourcing is prevalent in the domain. 15 percent of randomly selected articles about the Bosnia and Somalia conflicts in the *Los Angeles Times*, the *Washington Post*, and the Associated Press published in 1992-1994 included information attributed to an anonymous source. Among the articles' paragraphs quoting some source, 27 percent mentioned an anonymous source (Denham 1997). 71 percent of a sample of reports on foreign policy by 16 major newspapers and news networks published in the U.S. in 2003 quoted at least one anonymous source (Martin-Kratzer and Thorson 2007). 30 percent of a sample of news reports published in 2004 quoted at least one anonymous source. In a study of a sample of page-one stories in the *Washington Post* published from 1970 to 2000, 70.3 percent of all foreign stories in the sample included at least one completely anonymous source, such as a "senior White House official," and 48.5 percent contained at least one partially identified source, such as a "senior official," whereas the equivalent was 36.7 percent and 48.3 percent for stories

¹While acknowledging the prevalence of anonymous sourcing, some scholars have argued that it peaked in the 1960s-1970s and has recently become less frequent (Duffy and Williams 2011).

about national politics (Sheehy 2008; Sobel and Riffe 2016).

However, existing work on anonymous sources has generally relied on small samples, unsystematic methods, and labor-intensive human annotation and classification. They usually use randomly selected news articles about a specific topic published in a specific category or news outlet during a period of the researcher's own choosing. For instance, Denham (1997) studied a stratified random sample of 8,780 paragraphs of the articles on conflicts on Bosnia and Somalia published from 1992 to 1994 in the *Los Angeles Times*, the *Washington Post*, or The Associate Press. Kratzer and Thorson (2007) analyzed 8,884 articles in 16 major newspapers and 3,688 news stories from news programs broadcast on ABC, CBS, NBC, and PBS from randomly selected weeks in 2003 and 2004. Sheehy (2008) studied 224 page-one stories from the *Washington Post* published during randomly selected weeks from even-numbered years from 1970 to 2000. Duffy and Williams (2011)'s analysis was based on 1,283 articles from the *Washington Post* and the *New York Times* published in randomly constructed weeks in 1958, 1968, 1978, 1988, 1998, and 2008. Sobel and Riffe (2016) used 516 articles about the attack on the U.S. embassy in Benghazi published in the *New York Times*, the *Washington Post*, and the *Wall Street Journal* from September 11, 2012 to May 10, 2013. Speer (2017)'s analysis was based on 489 *New York Times* articles on the Iraq War published from 2005 to 2006. All studies used manual annotation, relying on human coding of the full or selected sample of articles.

2.3 Task Description

This chapter aims to not only detect and extract sources from newspapers but also to fully automate the process. Below I describe the task in more detail.

2.3.1 Extracting Attributions

In this analysis, I measure and extract attributions in a corpus of news articles about U.S. drone strikes published from 2001 to 2015. Natural Language Processing (NLP) researchers define an attribution “as a relation identifying a third party as the owner of an attitude towards some text” (Pareti 2015*b*, 169). An attribution consists of “the cue—the textual anchor signaling the relation; the content—the attributed material; the source—the entity the content is attributed” (Pareti 2015*a*, 1). Below is an example sentence with the source highlighted in blue and the cue in green.

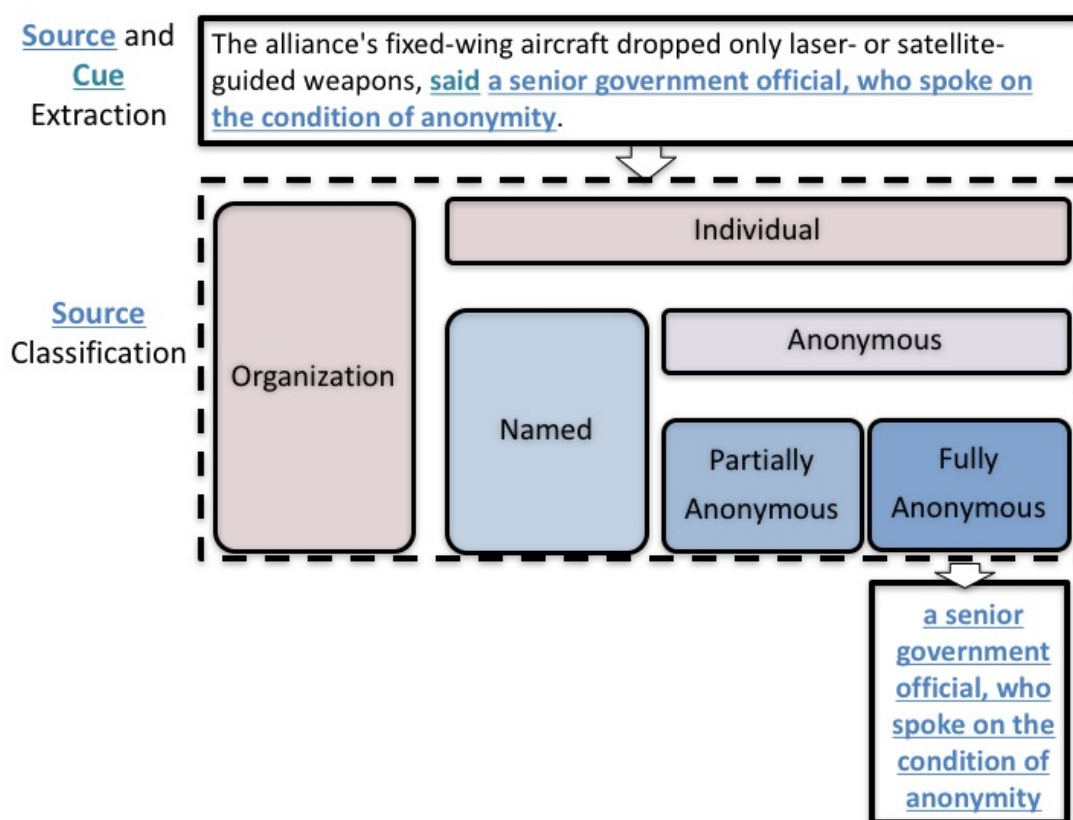


Figure 2.1: Task Description

Note that a sentence can include multiple sources and multiple instances of the content. However, an attribution always includes at least one cue word regardless of the number of sources and content phrases. In other words, an attribution is defined by a cue. Thus, I focus on extracting

and measuring an attribution—the minimum unit of analysis—with a unique pair of a source and a cue. Later in the analysis, I aggregate up to the document-level, deriving the Anonymity Index for each news article.²

2.3.2 Source Classification

In this analysis, I initially classify an extracted source into an organization or an individual. The source who is identified as an individual is then classified into a named (or attributable) or unnamed (or anonymous) individual. In addition, this study categorizes unnamed individuals into 2 types—partially anonymous or fully anonymous individuals, following Sheehy (2008). Partially anonymous individuals are the sources “who were partially identified by [...] institutional affiliation” (Sheehy 2008, p. 28) whereas fully anonymous individuals are the sources whose name and institutional affiliation are both masked. Such distinction is congruent with views of many journalists, including Ben Bradlee, the *Washington Post*’s former executive editor (Sheehy 2008).

According to this classification, the sources in Sentences (1) and (5) in Table 2.1 qualify as a source that is an organization since no individuals are identified. Sources in Sentence (2) should be classified as named (or attributable) since both their names and titles are revealed. Sentence (6) is an opening sentence of a *New York Times* article in the sample, providing a preview of statements by multiple sources mentioned in latter part of the article. Although the source mentioned in the sentence, “American officials,” may include both an attributable source and an anonymous source, it is classified as named since it explicitly includes an attributable source, President Obama. This reflects the conservative measurement of anonymous sources, enabling the author to guard against overestimating them. The source in Sentence (3) is classified as partially anonymous since his or her name is not given and the institutional affiliation is provided. The

²Most of the political science research using the text-as-data approach treats documents as the unit of analysis (Grimmer 2013; King, Pan and Roberts 2013; Grimmer, Westwood and Messing 2014; King, Pan and Roberts 2014; Baum and Potter 2015; Milner and Tingley 2015) because documents are considered to be the most meaningful unit to capture the author’s argument. Some journalism research on anonymous sourcing (Denham 1997) or recent political science work (Koehler-Derrick, Nielsen and Romney 2017) uses paragraphs as the unit of analysis.

source in Sentence (4) qualifies as a fully anonymous source since both his or her name and title are hidden.

Table 2.1: Source Extraction Task Examples (Sources in Bold)

Organization	Individual		
	Named Individual	Unnamed Individual	
		Partially Unnamed Individual	Fully Unnamed Individual
(1) CNN and ABC News reported Friday night that Mr. Zawahiri, an Egyptian, might have been killed in the attack, but their reports could not be confirmed (Article # 970).	(2) Brig. Gen. Carsten Jacobson, a NATO spokesman , said the exclusion of assassinations in the enemy activity data helped explain some of the discrepancies between NATO and United Nations data (Article # 205).	(3) A NATO spokesperson in Kabul could not confirm the strike or the death of the son, Ahmed Omar Abdul Rahman (Article #205).	(4) “Before we had arrested it, which means to that point, they weren’t making that forward progress,” said the official, who spoke on the condition of anonymity (Article #205).
(5) The White House announced Wednesday that it would release to Congress classified documents on drone attacks, but it’s not yet clear whether those include the full classified 2010 memorandum presenting the Justice Department’s legal reasoning (Article #2612).	(6) American officials, including President Obama , have strongly defended the drone strikes, arguing that the remotely piloted aircraft are by far the most precise weapon for eliminating terrorists (Article #78).		

2.3.3 An Automated Information Extraction and Classification Pipeline

I put together a pipeline of Natural Language Processing tools and ran the corpus through the pipeline. A generic pipeline of NLP tools for an information extraction task includes those for sentence segmentation, tokenization, part of speech tagging, and entity detection (Bird, Klein and Loper N.d.). In other words, raw text of a corpus has to be segmented into sentences

(sentence segmentation). Each sentence then needs to be broken down to tokens—usually words (tokenization). Each token needs to be assigned “a part-of-speech or other lexical class marker” (Jurafsky and Martin 2000, 300) that ranges from “NNP” for a token that is a singular proper noun to “VBD” for a past tense verb (part-of-speech tagging). Each token (or phrase) is then marked by a named entity recognition tool which categorizes a given entity into as a person, organization, or location. Below is a graphical depiction of the process.

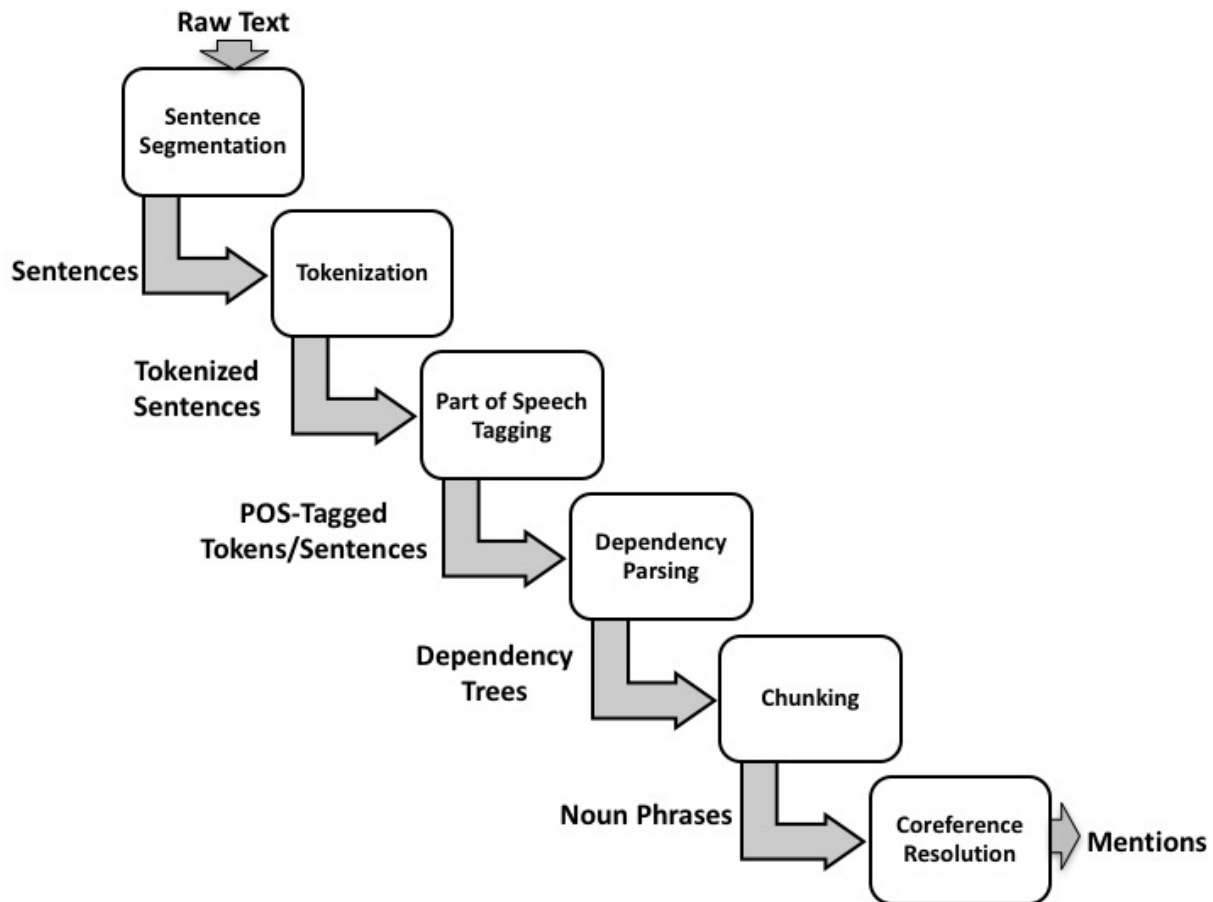


Figure 2.2: A Pipeline for Automatic Information Extraction and Classification

Additionally, my pipeline requires the process of stemming and lemmatization of tokens in order “to reduce inflectional forms and sometimes derivationally related forms of a word to a common base form” (Manning, Raghavan and Schütze 2008, 32), such as transforming the tokens

“am,” “are,” and “is” into “be.”³ This step is essential since I need to detect all lemmas and stems of the combined list of 520 verb cues by Pareti (2015b) and 53 reported verbs by Krestel, Bergler and Witte (2008). In other words, I need to detect and extract tokens such as “said” and “says” because their lemma is “say” which is included in the list of verbs.

Importantly, I use a list of verb cues identified by the NLP literature to detect and extract quotes.⁴ In general, most cues for attributions take the form of a verb. In an extensive analysis of attributions in the Penn Treebank, a corpus commonly used in NLP, 83% of the attributions included verb cues (Pareti 2015b). In her analysis of the *Wall Street Journal* corpus, Pareti (2015b) notes that the verb “say” was the most common cue, occurring in 9017 attribution relations. Next common were verbs “expect” (671 times), “add” (372 times), “think” (333 times), “report” (313 times), and “believe” (267 times) (p.193).

The pipeline also requires a dependency parser. A dependency parser provides information about grammatical relations between words that constitute dependency structures. A dependency relation consists of a word or phrase that serves a head and another word or phrase that serves as a dependent.⁵ Using the dependency information, my algorithm extracted noun phrases that functioned as the subject of a given verb cue.

I also add a coreference resolution module when measuring Anonymity Index. A source in one news article can be quoted multiple times, often by the use of pronouns or paraphrases. The coreference resolution module strives to account for different “mentions” of the same source.

Below is a list of the key NLP tools I used to construct the pipeline:

- Stanford CoreNLP (Manning, Surdeanu, Bauer, Finkel, Bethard and McClosky 2014)
- Python libraries spaCy and NLTK
- Google Cloud Natural Language tools

³Recent work has discussed the ramifications of different pre-processing on outcomes in unsupervised learning tasks (Denny and Spirling 2016).

⁴See the list of verb cues I used to detect quotes in Appendix A.

⁵There are various types of dependencies, such as subject, direct object, and indirect object.

2.4 Sample Data: A Corpus of News Articles on Drone Attacks

I measure the prevalence of anonymous communication in a corpus of newspaper articles about U.S. drone strikes. The initial corpus consisted of 2,855 articles published by the *New York Times* I found in a search on LexisNexis with key words “us AND drone AND (strike OR attack).” The articles were published between 1/1/2001 and 12/31/2015.

According to NLP researchers, a new corpus of documents needs to be “representative and balanced” (Pustejovsky and Stubbs 2012). They argue that the corpus should include both features you want to capture, those you do not aim to capture, and out-of-sample features. According to these criteria, *New York Times* articles on U.S. drone strikes from 2001 to 2015 are a “balanced” corpus of text since they are likely to cite both named and anonymous sources. They are also likely to include text with no source.⁶ Articles on drone strikes are also likely to be representative of news articles on foreign policy as the drone issue is quite salient in American foreign policy arena. Moreover, the *New York Times* is considered to be the most representative and influential media outlet “from which other mass media outlets take the most cues” (Bennett 1990, 113). Their reports on drone strikes are likely to be representative of all reports on drone strikes by the U.S. media.

Using the pipeline, I constructed the following three datasets with different units of analysis—AR Dataset, Source Anonymity Index Dataset, and Quote Anonymity Index Dataset. Below I show summary statistics of the 3 datasets. Each dataset includes variables at the attribution- and the document-level. Note that the document-level datasets are smaller because the indices are calculated for only quotes by individuals, not organizations, in each article. Thus, articles with only organizations as sources are dropped from the sample for the document-level

⁶However, it is difficult to have a completely balanced corpus as “this assumes the values to be known beforehand and it would not be representative of the corpus distribution where some feature values are indeed predominant and some rarely occurring” (Pareti 2015b, p. 66).

datasets.

Table 2.2: Summary Statistics of the AR Dataset (Unit: Attribution/Quote)

	count	mean	std	min	25%	50%	75%	max
Article Number	36670.0	1325.358086	827.170484	1.0000	623.0000	1266.5	2000.000	2854.0000
Sentiment Score (Categorical)	36670.0	0.904036	0.888985	0.0000	0.0000	1.0	2.000	2.0000
Sentiment Neutrality	36670.0	0.200518	0.400394	0.0000	0.0000	0.0	0.000	1.0000
Source Type	36670.0	2.613008	1.249497	1.0000	2.0000	2.0	4.000	4.0000

Table 2.3: Summary Statistics of the Source Anonymity Index Dataset (Unit: Document)

	count	mean	std	min	25%	50%	75%	max
Article Number	2436.000	1384.124	821.806	1.000	665.750	1360.500	2084.250	2854.000
Source Anonymity Index	2218.000	0.514	0.352	0.000	0.250	0.500	0.800	1.000
Word Count	2436.000	1333.220	1515.829	27.000	741.750	1068.500	1352.000	21759.000
Number of Sentences	2436.000	58.561	79.685	2.000	30.000	42.000	57.000	1430.000
Sentiment Score (Categorical)	2436.000	0.594	0.914	0.000	0.000	0.000	2.000	2.000

Table 2.4: Summary Statistics of the Quote Anonymity Index Dataset (Unit: Document)

	count	mean	std	min	25%	50%	75%	max
Article Number	2647.000	1411.226	822.109	1.000	693.500	1405.000	2116.500	2854.000
Quote Anonymity Index	2552.000	0.592	0.272	0.000	0.409	0.583	0.800	1.000
Word Count	2647.000	1292.531	1472.685	27.000	718.000	1042.000	1330.500	21759.000
Number of Sentences	2647.000	56.742	77.179	2.000	29.000	41.000	56.000	1430.000
Sentiment Score (Categorical)	2647.000	0.606	0.919	0.000	0.000	0.000	2.000	2.000

Source Anonymity Index is an index for the degree of sources' anonymity, measuring the proportion of fully and partially unnamed sources over all individual sources per article. Quote Anonymity Index measures the degree of quotes' anonymity and is an index for the proportion of quotes provided by fully and partially unnamed sources over all quotes. For instance, Source Anonymity Index is 0.333 and Quote Anonymity Index is 0.592 for Article #1 in the corpus. Article #1 included 69 quotes by individuals and organizations. 49 of the quotes were provided by 12 unique human sources. Of the 12 human sources, 8 were named and 4 were fully unnamed, making Source Anonymity Index equal to $4/12=0.333$. Of the 49 quotes, 29 quotes were by fully anonymous individuals and 20 were by named individuals, resulting in Quote Anonymity Index

of $29/49=0.592$.⁷

Below is a list of news articles with the highest and the lowest Quote Anonymity Index, that is, news articles with the highest (or lowest) proportion of quotes by anonymous individuals compared to quotes by attributable individuals (Tables 2.5 and 2.6).

Table 2.5: 30 News Articles with the Highest Quote Anonymity Scores in the Drone Corpus

Article Number	Headline	Date	word_count	Anonymity Index 3
1311	1393 One U.S. Prosecutor in Brooklyn Is Behind Many...	2010-07-07	1459	1.000
632	664 Tensions Between Afghanistan and U.S. Increase...	2014-01-16	828	1.000
1982	2114 Maneuvering in an Unsettled Mideast	2012-09-18	782	1.000
2348	2519 Policy At Its Worst	2010-10-09	775	1.000
1973	2105 A War, Before and After, Part 2	2013-03-17	1380	1.000
1972	2104 A War, Before and After	2013-03-16	1356	1.000
279	293 Evangelist for Al Qaeda Said to Be Killed	2012-06-06	783	1.000
1969	2101 The Mommy Trap	2005-02-20	2872	1.000
620	651 New Head of C.I.A.'s Clandestine Service Is Pi...	2013-05-08	830	1.000
621	652 C.I.A. Building Base for Strikes in Yemen	2011-06-15	354	1.000
626	657 German Limits On War Facing Afghan Reality	2009-10-27	1141	1.000
630	662 Pakistan: Military Strikes Kill At Least 23 in...	2013-12-20	335	1.000
1951	2082 A Toll Back Home in the Drone War	2015-04-27	1267	1.000
313	330 U.S. Strikes in Yemen Said to Kill 8 Militants	2011-07-15	389	1.000
1950	2081 Drones, Kill Lists and Machiavelli	2013-02-13	429	1.000
1944	2075 What They Said: The U.S. Election	2012-11-07	496	1.000
1930	2060 Does Great Literature Make Us Better?	2013-06-01	1822	1.000
1929	2059 Common Core Practice Drones, Stolen Art and ...	2013-03-22	1519	1.000
2367	2540 Under an Unblinking Eye	2011-08-03	1218	1.000
266	280 Qaeda Leader Reported Dead In Yemen Attack	2012-10-19	271	1.000
647	679 And Hate Begat Hate	2011-09-11	2243	1.000
1924	2054 Does Fiction Civilize Us?	2013-06-02	1818	1.000
262	275 Obama's Remarks at a News Conference	2013-08-10	7259	1.000
649	681 A Second Chance on Human Rights	2012-11-08	899	1.000
607	638 Global Warning	2010-10-14	697	1.000
1992	2125 Extralegal Drone Policy	2012-12-07	240	1.000
287	301 U.S. Drone Strike in Pakistan Is Said to Have ...	2015-01-05	341	1.000
2346	2517 Rethinking the 'Just War,' Part 1	2012-11-11	1949	1.000
2322	2492 Nogales Is Not Falluja	2013-06-20	602	1.000
310	326 A NATION CHALLENGED: THE BATTLE; Ugly Duckling...	2001-11-23	27	1.000

⁷Partially anonymous individuals are given the weight of 0.5 compared to the weight of 1 given to fully anonymous individuals when calculating both indices.

Table 2.6: 30 News Articles with the Lowest Anonymity Scores in the Drone Corpus

Article Number	Headline	Date	word_count	Anonymity Index 3
1079	1148 Man Is Held In a Plan To Bomb Washington	2011-09-29	504	0.000
1844	1966 THREATS AND RESPONSES: THE MILITARY; Top Gener...	2002-12-21	650	0.000
2454	2634 What Hath Rand Paul Wrought?	2013-03-10	863	0.000
2548	2744 On Its Return, Band Goes Right Back to the Basics	2014-04-19	457	0.000
1133	1208 Seeking a New Relationship With Pakistan	2013-10-25	523	0.000
2555	2752 Poll Shows Isolationist Streak in Americans	2013-05-01	223	0.000
802	847 A Spotlight on Drone Strikes in Pakistan	2011-08-19	617	0.000
1852	1974 Morning Agenda: The \$100 Billion Deal Day	2015-04-09	1818	0.000
1620	1725 Are You Sure You Want the Job?	2015-10-21	865	0.000
982	1045 Pakistan After Bin Laden: The killing shows wh...	2011-05-14	657	0.000
1269	1350 A NATION CHALLENGED: THE MILITARY BUDGET; Afte...	2001-11-08	1405	0.000
426	447 THREATS AND RESPONSES: MILITARY ANALYSIS; Figh...	2003-01-23	1409	0.000
2567	2764 In Los Angeles, Stadiums Battle Heats Up	2015-03-02	951	0.000
2127	2274 Spending Spree at the Pentagon	2003-02-10	563	0.000
95	100 How Drones Help Al Qaeda	2012-06-14	863	0.000
2305	2474 U.S. Proposal Would Arm Italy's Drones	2012-05-30	527	0.000
2015	2150 In Texas, the Race to Build in Harm's Way Outp...	2015-05-26	1270	0.000
1918	2048 Seeing Misunderstanding on Both Sides of U.S.-...	2013-10-23	1260	0.000
869	920 Mao's Rockets and Modern War, Part III	2011-12-19	1359	0.000
2578	2775 A Shipyard's Salute To the Jimmy Carter	2005-02-13	294	0.000
203	213 Live Blog: The State of the Union	2012-01-24	9247	0.000
1273	1354 The Pentagon's Scariest Thoughts	2003-03-20	1120	0.000
2213	2370 What's On Friday	2014-03-28	736	0.000
2208	2365 A Name for a Contractor, a Wealth Manager, a M...	2011-04-30	664	0.000
2072	2213 Qaeda Leader Confirms Death of His Deputy	2012-09-11	501	0.000
1931	2061 Senate Drops Bid to Report on Drone Use	2014-04-29	438	0.000
2203	2359 C.I.A. Vaccine Ruse May Have Harmed Pakistan's...	2012-07-10	168	0.000
1860	1982 The Listings: Jan. 5 - Jan 11	2007-01-05	16251	0.000
2441	2620 Iran Complains of Drone to Envoy	2011-12-12	208	0.000
1280	1361 9/11 Recalled - Islamabad	2011-09-12	906	0.000

2.5 Data Analysis

2.5.1 Source Classification

Below I show the number of ARs (quotes) by source type. Surprisingly, the plurality, 41.7 percent, of the quotes extracted from the corpus were by fully anonymous individuals, followed by 31.6% by named individuals and 24.4% by organizations. Only 2.1% of the quotes were from partially unnamed individuals.

Table 2.7: Source Classification (Unit: Attribution/Quote)

Source Type	Frequency Count	Relative Frequency
Organization	8,955	0.244
Named Individual	11,601	0.316
Partially Anonymous Individual	794	0.021
Fully Anonymous Individual	15,320	0.417
All	36,670	1.000

For document-level datasets, I focus on analyzing quotes by individuals and exclude those by organizations. The distributions of the two indices, Source Anonymity and Quote Anonymity, were largely similar. The mean Source Anonymity Index was 0.514 for 2,218 articles whereas the mean Quote Anonymity Index was 0.592 for 2,552 articles from the corpus.

2.5.2 Valence by Source Type

Conventional wisdom predicts that the type or valence of information should differ by source. Proponents of anonymous sourcing argue that sources should be allowed to mask their identity because they provide politically hurtful information and function as a whistleblower. I test this hypothesis by running a sentiment analysis of the quotes from the sample data and examining the relationship between valence and source type.⁸

⁸Sentiment scores were calculated using the VADER library in Python.

As expected, quotes by unnamed individuals tended to be more negative than those by named individuals. Of the 11,601 quotes by named individuals, 43.57% were negative and 36.19% were positive.⁹ Of the 16,114 by fully and partially anonymous individuals, 45.00% were positive and 34.25% are negative. The chi-square test showed that the difference in valence by source was significant at the 0.05 level.¹⁰

The difference in valence by anonymity of the source implies that persuasiveness of anonymous communication may be partially derived from the negativity of the information it conveys. Scholars have noted the negativity bias in attitudes (Petty and Cacioppo 1986), arguing that information with negative valence “tends to influence evaluations more strongly than comparably extreme positive information” (Ito et al. 1998: 887). The negative bias in anonymous messages may be what makes them persuasive. Scholars have noted that media reports of information with negative valence, such as casualties, draw more attention from the public, prompt the public to increase its demand for information, and enable them to obtain more information about conflicts (Baum and Potter 2008).

However, the relationship between source anonymity and valence is more nuanced when unnamed sources are disaggregated into fully and partially anonymous; after disaggregation, the degree of human sources’ anonymity was only weakly correlated with sentiment scores of the quotes supplied by them. Not all unnamed sources were alike; in fact, quotes by partially anonymous sources tended to be more positive than those by named sources. Compared to 36.1% of the quotes by named sources that were positive, 37.7% of the quotes by partially anonymous sources were positive (Table 2.8).¹¹

⁹Quotes with a sentiment score larger than 0 were classified as positive, smaller than 0 negative, and equal to 0 as neutral.

¹⁰The chi-square statistic is 11.192. The p-value is .003713.

¹¹The chi-square statistic is 45.3797. The p-value is < 0.00001. The result is significant at $p < .05$.

Table 2.8: Valence by Source Type (Unit: AR)

Source Type	Sentiment			All
	Negative	Neutral	Positive	
Organization	4,111 (0.459)	1,664 (0.185)	3,180 (0.355)	8,955 (1.000)
Named Individual	5,055 (0.435)	2,347 (0.202)	4,199 (0.361)	11,601 (1.000)
Partially Anonymous Individual	375 (0.472)	119 (0.149)	300 (0.377)	794 (1.000)
Fully Anonymous Individual	6,877 (0.448)	3,223 (0.210)	5,220 (0.340)	15,320 (1.000)
All	16,418 (0.447)	7,353 (0.200)	12,899 (0.351)	36,670 (1.000)

Furthermore, quotes by partially unnamed individuals were more non-neutral and affective than those by other sources (Table 2.9).¹² In general, fully unnamed individuals were the most neutral, followed by named individuals, organizations, and partially unnamed individuals. 21% of the statements by fully anonymous individuals, 20.2% of those by named individuals, 18.6% of the quotes by organizations, and only 15% of those by partially anonymous individuals were neutral.

¹²The chi-square statistic is 34.2984. The p-value is < 0.00001. The result is significant at $p < .05$.

Table 2.9: Sentiment Neutrality by Source Type (Unit: AR)

Source Type	Sentiment		
	Affective	Neutral	All
Organization	7,291 (0.814)	1,664 (0.186)	8,955 (1.00)
Named Individual	9,254 (0.798)	2,347 (0.202)	11,601 (1.00)
Partially Anonymous Individual	675 (0.850)	119 (0.150)	794 (1.00)
Fully Anonymous Individual	12,097 (0.790)	3,223 (0.210)	15,320 (1.00)
All	29,317 (0.799)	7,353 (0.201)	36,670 (1.00)

This implies that quotes by partially anonymous individuals may be used to affectively persuade, rather than inform, the readers. While quotes by fully anonymous individuals may be used to inform the readers, partially anonymous individuals may be given the leeway to express their own opinions and sentiments because they reveal their institutional affiliations, which signals their credibility or expertise. Consequently, partially anonymous individuals' display of stronger sentiments—both positive and negative—may be effective in persuading the readers affectively.

2.6 Discussion

In this chapter, I automatically extracted and classified 36,670 quotes from 2,855 *New York Times* articles on U.S. drone strikes published in 2001–2015, using a pipeline of Natural Language Processing tools. My analysis confirms the prevalence of anonymous communication; 43.8% of all quotes in the corpus were attributed to anonymous individuals.

My analysis also shows a non-linear relationship between source types and sentiments of the information they convey. While quotes by anonymous sources were more negative in valence than those by named sources, quotes by fully anonymous sources were significantly more neutral

than those by partially anonymous sources. This implies that partially anonymous individuals may strive to affectively persuade, rather than inform, the audience, compared to fully anonymous individuals.

This chapter makes substantive and methodological contributions to existing research on the politics of information. I automatically and systematically measure the prevalence of anonymous sourcing. I also move beyond document-level analysis and toward phrase- and sentence-level analysis of text. Additionally, this chapter uses syntactical information of text, moving beyond the common bag-of-words approach.

Chapters 2, 3, 4, and 5, in part or full, have been submitted for publication of the material. Suong, Clara H. 2018. *Anonymous Sources and the National Interest: Persuasion by Credible Confirmation*. The dissertation author is the sole author of this paper.

Chapter 3

Persuasion by Credible Confirmation

Abstract

Why is strategically helpful information about national security provided by anonymous sources viewed as credible? Existing research finds that public and elite perceptions about foreign policy are driven by cues from informed elites and the media. This research to date has focused on named elites as sources; it has yet to consider unnamed sources whose attributes are unknown. In theory, unverified, pro-government information provided by unnamed sources ought to be considered incredible. I argue that helpful national security information provided by anonymous sources can be credible because of the perceived potential for the sources to be punished by governments for revealing the truth. I also argue that criminal punishment of anonymous sources can result in political gains for the enforcing government by enhancing credibility of positive information about its foreign policy proposal and increasing domestic support for the proposal.

3.1 Introduction

On May 9, 1984, the *New York Times* quoted unnamed “naval intelligence analysts” who said the Soviet Union was building its first, larger than anticipated, and nuclear-powered aircraft carrier in a shipyard on the Black Sea at a pace faster than previously estimated (Halloran 1984). While unverifiable, this information exacerbated the American public and elites’ existing concern about the Soviet threat.¹

The American belief in the growing Soviet threat also coincided with the criminal case of Samuel Loring Morison. In 1985, Morison was sentenced to two years in prison for disclosing classified information to a media outlet under the Espionage Act.² While working as an intelligence analyst, he allegedly “leaked” American spy satellites’ 3 classified photographs of the Soviet Navy’s first nuclear-powered aircraft carrier being built at a shipyard on the Black Sea to the magazine *Jane’s Defence Weekly*. The magazine published the photographs on August 11, 1984 (Eberhard 1991; Tankard Jr. 1998).

These events present us with two puzzles. First, it is puzzling that the unverifiable information provided by anonymous bureaucrats was perceived as credible. Why is an anonymous bureaucrat, often quoted as a “senior government official who prefers to remain anonymous” by the news media, seen as a credible source of unverifiable information about national security policy and military operations? Intuition suggests that disclosure of classified information by anonymous sources ought to be treated as incredible since the “speaker attributes” (Lupia 2016) are unknown.³ Yet, anonymous sources are prevalent in the media. Such sources must matter somehow, or they would not be given so much space and attention. But, again, why are anonymous sources credible and when can they convey meaningful information?

Second, it is puzzling that Morison was punished so publicly. The U.S. government’s

¹95% of the respondents to a national survey fielded from May 21 to May 29, 1984 believed that the Soviet Union was a military or ideological threat to the United States (Public Agenda Foundation 1984).

²Morison was pardoned by President Bill Clinton in 2001.

³Extensive literature in economics shows that cheap talk can still be credible to the audience who shares preferences with the speaker (e.g. Crawford and Sobel 1982).

argument that Morison's leak damaged national security interests is not convincing. Morison did not disclose anything the American public and elites or the Soviet Union did not already know (Tankard Jr. 1998). The information Morison was accused of leaking in August 1984 had already been publicly revealed by the unnamed naval intelligence analysts in May 1984. Moreover, a photograph from KH-11, then a state-of-the-art spy satellite, had already been published in the magazine *Aviation Week and Space Technology* on December 14, 1981—long before the photographs were leaked by Morison. The photograph, which showed a new Soviet strategic bomber on a landing strip near Moscow, was also likely to have been leaked but no one was prosecuted. Furthermore, the Soviet Union had already been in possession of a detailed manual for the KH-11 spy satellites since 1978 (Eberhard 1991; Sulick 2013). William Kampiles, a former CIA employee, sold the manual to the Soviets in February 1978. The U.S. government knew that the Soviet Union had intimate knowledge of the spy satellites after arresting him in August 1978 and sentencing him to 40 years in prison in November 1978.

In fact, the leaks by the unnamed bureaucrats and Morison in 1984 were politically *helpful*, not harmful, to the U.S. government. They helped the Reagan administration credibly convey to the domestic public and elites that the “Evil Empire” was indeed militarizing, justifying the administration's hawkish stance toward the Soviet Union. At the time, the administration was battling Congress intent on cutting the defense budget and slowing down the military build-up that eventually peaked in 1985 (Wiris 2010). Moreover, the punishment of Morison helped the U.S. government credibly signal to the Soviet Union and the domestic audience that the U.S. possessed the capability to monitor Soviet military movements. The Morison trial in 1985 is credited with revealing more, but not damaging, information about the U.S. satellite photoreconnaissance capabilities (Monmonier 2002).

This paper argues that leaks of unverifiable and pro-government information about foreign policy by anonymous sources are prevalent. It also argues that credibility of the leaked information stems from the government's stronger incentive to punish leakers of true than false

information. Moreover, the government's public confirmation of helpful leaks results in political gains, indirectly increasing domestic support for its foreign policy proposal.

This paper focuses on *helpful* leaks, leaks of classified information that is strategically advantageous to the government when revealed. It does not focus on *harmful* leaks although some of my arguments can be extended to them. I focus on *helpful* leaks because they are more puzzling, hence more interesting. The government's incentives are clear regarding *harmful* leaks—it desires stop them. However, it is puzzling, and warrants exploring why, the government punishes leakers who reveal *helpful* information.

In the following section, I describe the puzzle in the context of existing literature in political science. The paper then describes a formal model that illustrates the dynamic of leaks and punishments by democratic governments. The section is followed by a discussion of empirical and experimental evidence for the model and its predictions. The paper then concludes.

3.2 Context and Contribution

Public opinion on foreign policy is driven by cues about and from elites (Berinsky 2007, 2009; Zaller 1992).⁴ However, both the public and elites are informed in large part by the media (Baum and Groeling 2009, 2010; Baum and Potter 2008, 2015; Slantchev 2006) which often rely on anonymous sources. Anonymous sources are prevalent in news reports, those on foreign policy in particular (Denham 1997; Hallin, Manoff and Weddle 1993; Kratzer and Thorson 2007; Sheehy 2008; Sobel and Riffe 2016).

This presents receivers of the information about foreign policy—the domestic public and elites as well as foreign actors—with a problem of interpretation. Much of the information is not readily verifiable; since the source is unnamed, one cannot use speaker attributes to assess its

⁴In contrast, some scholars perceive the public as more proactive processors of situational information about foreign policy, largely independent of elites (Gelpi, Feaver and Reifler 2006; Herrmann, Tetlock and Visser 1999; Jentleson 1992).

credibility (Druckman and Lupia 2016; Lupia 2016; Lupia and McCubbins 1998).

Anonymously-sourced information that is critical of the government could be persuasive (Baum and Potter 2015), especially if the government does not challenge its claims to veracity.⁵ Yet most of anonymously-sourced information is either neutral or supportive of the government's policies, contrary to the impression created by well-known leaks, such as Daniel Ellsberg's leak of the Pentagon Papers or Edward Snowden's leak of the National Security Agency's documents. In fact, information by anonymous sources is no more likely to be critical of government than information by named sources (Figure 3.1).⁶ More often than not, leaking is “a political instrument wielded almost daily by senior officials within the Administration” and “not solely nor even largely the province of the dissident” (Halloran 1983).

How are receivers to interpret anonymously-sourced information that is beneficial to the government? It cannot simply be taken as truthful—without knowing the identity of the source, it is impossible to judge its motives, whether the source has access to relevant information, and whether the information has been manipulated. But it cannot simply be discarded as inherently lacking in credibility—sometimes the information is eventually corroborated by other sources, and even without it, it would be hard to understand why so many of quoted sources in the media are anonymous.

Source credibility is more than—often the root of—media or news credibility (Carlson

⁵Leaks of *harmful* information by whistleblowers, their role in monitoring lower-level agents in a political hierarchy, and the incentive for a higher-level principal (Gailmard and Patty 2013)—such as politicians (Ting 2008), a higher court (Beim, Hirsch and Kastellec 2014), or the U.S. Congress (McCubbins and Schwartz 1984)—to protect or discourage them have been well documented by scholars of bureaucratic politics. Relatedly, scholars have discussed harmful national security leaks in the context of inter-state negotiations, arguing they render inter-state private communication credible (Carson and Yarhi-Milo 2017; Yarhi-Milo 2013). Less has been studied about leaks of pro-government information and their political effects. National security leaks, including those of pro-government information, have been discussed by U.S. legal scholars (Papandrea 2008, 2014; Pozen 2013; Vladeck 2008) but their discussion has focused on the sporadic enforcement of the leak laws and the clash between the First Amendment and national security. Pozen (2013) is the first legal work to delve into leaks' political consequences. I extend his work by specifying and formalizing the following: the type of information to which the government employs the strategy of lenient enforcement; and the government's differential informational and bureaucratic incentives to prosecute leakers. I also test the implications of helpful leaks' political dynamic with observational and experimental data.

⁶Over half of the quotes by anonymous sources conveyed positive or neutral sentiments in an analysis of my newly constructed dataset of 36,670 quotes with a unique algorithm. Details about the dataset are included in Chapter 2.

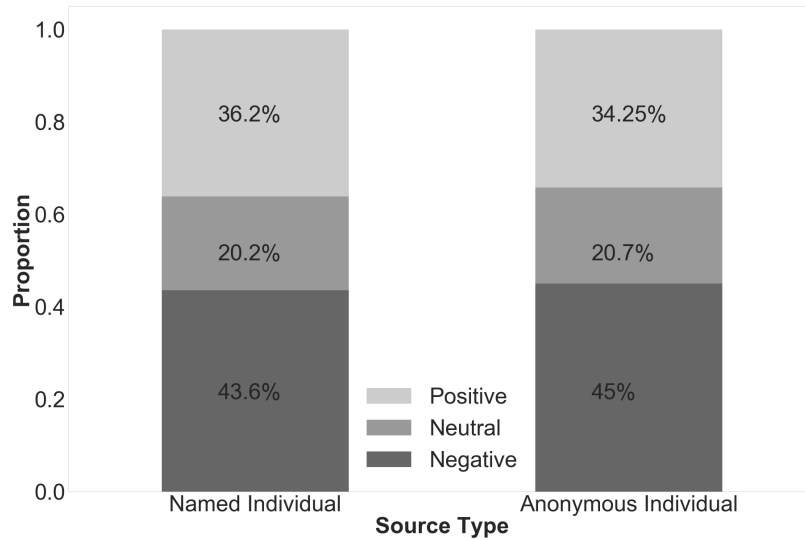


Figure 3.1: Sentiment by Source

2011). Journalism scholars and journalists alike have reflected on the adverse effect of pervasive anonymous sourcing on news credibility (Carlson 2011; Spayd 2017; Sternadori and Thorson 2009). Sources are usually dominant in their relationship with journalists in national news reporting (Gans 1979). Moreover, it is reputable media outlets, such as the *New York Times* and the *Washington Post*, that have largely benefited from anonymous sources' leaks by beating their competition with their superior access to senior officials (Pozen 2013, 580). It was also well-known journalists at reputable media outlets, such as Janet Cooke of the *Washington Post*, Jayson Blair of the *New York Times*, Jack Kelley of *USA Today*, who fabricated stories by using non-existing anonymous sources (Sternadori and Thorson 2009).

This article develops a theory that explains how unverifiable, anonymously-sourced, and pro-government information could be persuasive to potential receivers, be they members of the public, domestic elites, or foreign actors. Anonymously-sourced, pro-government information can be persuasive because of the potential for the source and the information to be confirmed by the government's public punishment. The mechanism hinges on a trade-off that the government

faces between allowing positive information to leak irrespective of its veracity and the need to assert bureaucratic control by prosecuting unauthorized disclosures. I show that this trade-off causes the government to prosecute some, but not all, truthful leaks of *helpful* information.

It is important to note that anonymous bureaucrats who reveal classified information to the media are equivalent to the “leakers” who can be but are not prosecuted by the government. In the United States, anonymous sources have been often characterized as bureaucrats “planting” pro-government classified information *with ex ante* authorization (Abel 1987; Hess 1984; Sigal 1973). Nonetheless, in theory all disclosures of classified information are eligible for criminal prosecution (Papandrea 2014; Pozen 2013; Vladeck 2008). The statutes and the case law in the United States have made it clear that “the government may prosecute most if not all employees, ex-employees, and contractors” for “virtually any deliberate leak of classified information to an unauthorized recipient” (Pozen 2013, 524-5) including a journalist.

It is also worthwhile to note that governments can be constrained in the short run by institutionalized secrecy, such as the U.S. classification system, when publicizing sensitive information. In the U.S., the inefficient and unwieldy classification system has led to nearly all information about foreign policy—including pro-government information—to be classified (“overclassification”) (Aftergood 2008; Richelson 2012). The declassification process is the only explicitly sanctioned means to disclose classified information and is “cumbersome, contentious, and irreversible” (Pozen 2013, 561).⁷

⁷The executive order governing the declassification, Executive Order 13526, defines steps for automatic declassification—which usually occurs 10 years after the initial classification—and declassification reviews. However, it does not sanction or define protocols for “declassifying information immediately in advance or by means of unattributed disclosures to the press” or “publicizing information while maintaining its classification” (Pozen 2013, 566).

3.3 Model

A bureaucrat, B , and the government, G , engage in a game of leak and prosecution over information that would benefit the government if it were to become public *and* if the audience believed that it was true. The audience could be relevant political constituents, the domestic public, domestic elites, or foreign actors; anyone, basically, whose response to the information is of interest to the government. The government benefits $V > 0$ if the audience determines that the information is true, and suffers losses $-V$ if the audience determines otherwise. Both the bureaucrat and the government know whether the information is true, but the audience is unsure. It believes it to be true with probability $t \in (0, 1)$, and false—that it is merely government propaganda—with complementary probability $1 - t$. This belief is common knowledge.

The interaction unfolds as follows. The bureaucrat in possession of the information decides whether to leak it or not. If B chooses not to leak, there is still a chance that the information will be revealed (e.g., as a result of investigative journalism). Let $m_t \in (0, 1)$ denote the probability that the media will publish the truthful information even if the bureaucrat did not leak it, and $m_f \in (0, 1)$ denote the corresponding probability that it falls for a plant of false information and runs with it. If neither the bureaucrat leaks information nor the independent media discovers it, then nothing is published and the game ends with both B and G getting payoffs normalized to 0.

If a leak occurs, the government decides whether to prosecute it, at cost $c > 0$, or not. Although G knows whether the information is true or not, it does not know with certainty whether the anonymous source was the bureaucrat. In any case, the government's decision ends the game, and the audience observes either a trial or an unchallenged leak. The payoffs are as follows.

Government. If G prosecutes, the trial reveals the veracity of the information, giving the government V if it is true and $-V$ if it is false. It also reveals whether it was B who leaked the information, in which case G receives an additional benefit $b > 0$ for having successfully asserted

bureaucratic control. Let $I_B \in \{0, 1\}$ be an indicator variable that takes the value of 1 if B was the source and 0 otherwise. The government's payoffs from prosecution are:

$$U_G(\text{prosecute when information is true}) = V - c + I_B \times b$$

$$U_G(\text{prosecute when information is false}) = -V - c + I_B \times b.$$

V reflects the revelatory nature of the criminal procedure—in democracies in particular. Governments often cannot prevent the criminal procedure from confirming that the leaked information is likely to be true and valuable enough to prosecute despite legal tools to maintain secrecy, such as the Classified Information Procedures Act (CIPA) in the United States. The CIPA aims to encourage the use of classified information in criminal cases but is ineffective in preventing the public from getting hold of the details from the trial. In the high-profile case of Thomas Drake, the CIPA was unable to stop the details of the trial from being publicly known (Pozen 2013).

If the government does not prosecute, then the audience forms a belief about the likelihood that the information is true, and the government's payoff is proportional to that belief, ranging from $-V$ if the audience is fully convinced that the information is just planted propaganda, to V if it is persuaded that the information is truthful. Where in this range the payoff lies is determined by the “veracity coefficient” $v \in [-1, 1]$, which is defined as follows. When an unprosecuted leak occurs, the audience only observes the information and the absence of a trial. That event, however, contains four possible situations: (1) true information uncovered by the media; (2) true information leaked by the bureaucrat; (3) false information uncovered by the media; and (4) false information leaked by the bureaucrat. Let $\mu_i \in [0, 1]$ for $i \in \{1, 2, 3, 4\}$ denote the audience's posterior belief that situation i has occurred (e.g., μ_2 is its belief that the unprosecuted leak

contains truthful information revealed by the bureaucrat). The veracity coefficient is defined as:

$$v = \mu_1 + \mu_2 - (\mu_3 + \mu_4) \in [-1, 1].^8 \quad (3.1)$$

It is important to realize that v is *not* the posterior belief that the leak is truthful ($\mu_1 + \mu_2$) but rather a measure of the size of credit (if positive) or debit (if negative) that the government derives from the inferences the audience will make when the leak is left to stand without prosecution.

Since the government also suffers a loss of $-b$ if B was the source of the leak but escaped punishment, G 's payoff from allowing the leak to go unchallenged is:

$$U_G(\text{not prosecute}) = v \times V - I_B \times b.$$

b reflects G 's opportunity cost of (or gain in) political control of the bureaucracy by not prosecuting (or prosecuting) B known to be deviant (Patz 2018). For example, b was manifest in President Eisenhower's fury after the *New York Times* published an article quoting unnamed "Army staff officers" about details of the U.S. Army's plans to reorganize its division structure to prepare for atomic warfare (Abel 1954, 1987). The source of the story was actually an army general who "was proud of his handiwork" of leaking to journalists about the politically opportune plans. Yet Eisenhower was "furious because no one had thought to brief or consult *him* on the sweeping changes proposed" (Abel 1987, 3).

We shall assume that the government benefits substantially from the audience believing

⁸The veracity coefficient reflects the underlying role of the audience as an actor in the extended game in which the audience chooses to believe the information revealed by an unprosecuted leak to be true or not, prefers not to be deceived by an unprosecuted leak, and forms Bayesian beliefs about the veracity of the information after observing an unprosecuted leak, μ_i for $i \in \{1, 2, 3, 4\}$ (each μ_i is defined in Appendix B.1). The audience's payoffs are: $U_A(\text{believe the information revealed by an unprosecuted leak to be true}) = I_N(1 - I_G)\{I_B + m_t(1 - I_B)\}$; and $U_A(\text{not believe the information revealed by an unprosecuted leak to be true}) = (1 - I_N)(1 - I_G)\{I_B + m_t(1 - I_B)\}$. I_N is an indicator variable with value 1 for the truth and 0 for a falsehood, I_G for G 's prosecution, and I_B for leaking. The current game is a reduced-form of the extended game.

that the information is true. More specifically, the costs of prosecution are not exceedingly high relative to these benefits. However, the government has to balance these benefits against its desire to assert control over its agents. While it might be willing to forego some loss of bureaucratic control, even the largest benefit of information is outweighed by serious erosion of that control:

Assumption 1. *For the government, $c < V$ and $b < V < 2b$.*

Bureaucrat. The bureaucrat’s payoffs have three components: altruistic—a benefit from the information being public, $\alpha > 0$; ego—the glow from being the source of that information, $+1$; fear—the cost for being prosecuted, $\beta > 0$ (Abel 1987; Hess 1984; Linsky 1991; Pozen 2013). Let $I_G \in \{0, 1\}$ be an indicator variable that takes the value of 1 if G prosecutes a leak and 0 otherwise. Presumably, all else equal, B prefers that the information being made public is true. Denote that preference with $\gamma \in (0, 1)$ so that the payoffs are:

$$U_B(\text{if false information becomes public}) = \gamma \times \alpha + I_B - I_G \times \beta$$

$$U_B(\text{if true information becomes public}) = \alpha + I_B - I_G \times \beta$$

B ’s ego payoff captures the nature of the “ego leak” intended to “satisfy a sense of self-importance” (Hess 1984, 70-1) or his “experience—the degrees of freedom, the opportunities for strategic behavior, the sense of self-importance, the intrigue, the thrill—of being an executive branch insider” (Pozen 2013, 585-6) in the game of leaks. The term α captures B ’s degree of preference alignment with G and motivates a “policy leak, a straightforward pitch for [...] a policy proposal” (Abel 1987, 9).

B ’s payoff structure highlights leaking’s role as a political instrument wielded by senior officials “to influence a decision, to promote policy, to persuade Congress and to signal foreign governments” (Halloran 1983). In a survey of 483 former and current senior government officials in the 1980s, 41.9% of the respondents admitted that they had “fe[lt] it appropriate to leak information to the press”—63.6% of whom said they did it “to consolidate support from the

public or a constituency outside government” and 73.4% “to gain attention for an issue or policy position” (Linsky 1991, 238).

We shall assume that the ego rent from being the source of the leak is fairly high (normalized to 1), but that although it outweighs the altruistic motive, it is in turn outweighed by the fear of prosecution:

Assumption 2. *For the bureaucrat, $\alpha < 1 < \beta$.*

This reflects the great economic and social costs imposed on the defendant B by the criminal procedure regardless of the outcome. Leak suspects “are liable to incur a wide range of psychic and professional costs, along with steep legal fees, from their time spent under investigation and indictment” (Pozen 2013, 553) even if they agree on pleas.

The solution concept is sequential equilibrium.

3.4 Analysis

Let λ_f and λ_t denote the probabilities with which *B* leaks false and true information. Let p_f and p_t denote the probabilities with which *G* prosecutes leaks of false and true information. By Bayes rule, when a leak occurs, the government’s belief that the bureaucrat was the source is

$$q_f = \frac{\lambda_f}{\lambda_f + (1 - \lambda_f)m_f} \quad \text{and} \quad q_t = \frac{\lambda_t}{\lambda_t + (1 - \lambda_t)m_t},$$

for information that is false and true, respectively. Sequential rationality yields the government’s best responses as functions of these beliefs:

$$p_f = \begin{cases} 1 & \text{if } q_f > q_f^* \\ 0 & \text{if } q_f < q_f^* \\ \text{mix} & \text{if } q_f = q_f^*, \end{cases} \quad \text{and} \quad p_t = \begin{cases} 1 & \text{if } q_t > q_t^* \\ 0 & \text{if } q_t < q_t^* \\ \text{mix} & \text{if } q_t = q_t^*, \end{cases}$$

where

$$q_f^* = \frac{(1 + v)V + c}{2b} \in (0, 3) \quad \text{and} \quad q_t^* = \frac{-(1 - v)V + c}{2b} < 1. \quad (3.2)$$

Finally, sequential rationality also yields the bureaucrat's best responses as functions of the government's strategy:

$$\lambda_f = \begin{cases} 1 & \text{if } p_f < p_f^* \\ 0 & \text{if } p_f > p_f^* \\ \text{mix} & \text{if } p_f = p_f^*, \end{cases} \quad \text{and} \quad \lambda_t = \begin{cases} 1 & \text{if } p_t < p_t^* \\ 0 & \text{if } p_t > p_t^* \\ \text{mix} & \text{if } p_t = p_t^*, \end{cases}$$

where

$$p_f^* = \left(\frac{1}{\beta}\right) \left[\gamma\alpha + \frac{1}{1 - m_f}\right] > 0 \quad \text{and} \quad p_t^* = \left(\frac{1}{\beta}\right) \left(\alpha + \frac{1}{1 - m_t}\right) > 0.^9$$

We can immediately establish a key result: the bureaucrat must always leak false pro-government information with positive probability (all proofs are in Appendix B.1).

Lemma 1. *The bureaucrat leaks false information with positive probability in every equilibrium ($\lambda_f > 0$).*

We know from Lemma 1 that the bureaucrat leaks false pro-government information with positive probability in every equilibrium. My main concern is with the possibility that the bureaucrat leaks truthful information with positive probability as well. I begin by showing that it is not possible for the bureaucrat to always randomize over true information.

⁹It is worth noting that p_f^* and p_t^* are entirely defined by exogenous variables, and even though they are both positive, they could also very well exceed 1. In these cases, the bureaucrat would leak information even if prosecution is certain. While this is not implausible, it is not likely to happen very frequently in practice (indeed, this is why the leaks are anonymous). I have relegated the analysis of these cases to Appendix B.2. Here I focus on the case that the bureaucrat could, at least potentially, be deterred by the prosecutorial threat. That is, the remainder of the analysis assumes that $p_f^* < 1$ and $p_t^* < 1$.

Lemma 2. *The bureaucrat must leak at least one type of information with certainty: there exists no equilibrium in which $\lambda_f \in (0, 1)$ and $\lambda_t \in (0, 1)$.*

This result implies that there are only three possibilities for the bureaucrat to leak truthful information in equilibrium: $(\lambda_f = 1, \lambda_t = 1)$, $(\lambda_f \in (0, 1), \lambda_t = 1)$, and $(\lambda_f = 1, \lambda_t \in (0, 1))$. We now rule out the first two possibilities:

Lemma 3. *The bureaucrat never leaks true information with certainty: there exists no equilibrium with $\lambda_t = 1$.*

The only remaining possibility is that the bureaucrat leaks false information with certainty ($\lambda_f = 1$) and sometimes leaks true information ($\lambda_t \in (0, 1)$). This yields the main result of the theoretical analysis:

Proposition 1 (Leak and Punishment). *The equilibrium, in which the bureaucrat leaks truthful information with positive probability, is unique and exists only if*

$$t > \frac{2V - c}{2V - c + (1 - p_t^*)m_t c} \equiv t^*. \quad (3.3)$$

In this equilibrium, the bureaucrat always leaks false information ($\lambda_f = 1$) and leaks truthful information with probability $\lambda_t \in (0, 1)$; the government never prosecutes false leaks ($p_f = 0$) and prosecutes truthful leaks with probability $p_t = p_t^ \in (0, 1)$; the audience credits the government for any leak it fails to prosecute ($v > 0$).*

Before analyzing the properties of this equilibrium, I characterize the full set of remaining equilibria. In all of them, the bureaucrat never leaks truthful information: $\lambda_t = 0$.

Proposition 2 (Sacrificing the Innocent). *There are two equilibria in which the bureaucrat never leaks truthful information ($\lambda_t = 0$):*

- (*Aggressive Prosecution.*) The bureaucrat leaks false information with probability $\lambda_f \in (0, 1)$; the government prosecutes these leaks with probability $p_f = p_f^*$ and always prosecutes truthful leaks ($p_t = 1$); the audience penalizes the government for any leak that it fails to prosecute ($v = -1$).
- (*Moderate Prosecution.*) The bureaucrat always leaks false information ($\lambda_f = 1$); the government never prosecutes these leaks ($p_f = 0$) but sometimes prosecutes truthful leaks with probability

$$p_t = 1 - \left(\frac{1-t}{t} \right) \left(\frac{2V-c}{m_t c} \right);$$

the audience credits the government for any leak that it fails to prosecute ($v = 1 - c/V > 0$).

This equilibrium exists only if

$$t > \frac{2V-c}{2V-c+m_t c} \equiv t^{**}.$$

In both, the government knowingly prosecutes the innocent bureaucrat with positive probability (it may or may not prosecute leakers of false information).

The two equilibria differ in the aggressiveness of the government's strategy, which ranges from prosecuting truthful leaks and sometimes prosecuting false ones (aggressive) to sometimes prosecuting truthful leaks and never prosecuting false ones (moderate). In both cases, however, the government prosecutes an innocent bureaucrat when the information is true because this is the only way to verify it and to either avoid a penalty or obtain a benefit from the audience when no prosecution occurs.¹⁰ Moreover, in both cases the government is *more* likely to prosecute when the information is true (and the bureaucrat is innocent) than when the information is false (and

¹⁰The semi-separating equilibrium (Aggressive Prosecution) is different from the one in Proposition 6 because of what happens when the information is true. When the bureaucrat is highly motivated (Proposition 6), the leak occurs despite the certain punishment. The government is prosecuting a bureaucrat known to have leaked the information. When the bureaucrat is more reasonable (Proposition 2), the leak does not occur when the punishment is certain. In the latter case, the government still goes after the bureaucrat it knows is innocent because doing so verifies that the information is true.

the bureaucrat might be guilty). The reason for this is that if the bureaucrat does not leak truthful information, the government can still take advantage of the fact that prosecution credibly reveals its veracity and is willing to sacrifice the bureaucrat.

Propositions 1 and 2 characterize all equilibria for a potentially deterrable bureaucrat. The aggressive prosecution equilibrium always exists, the moderate prosecution equilibrium exists only if $t > t^{**}$, and the leak and punishment equilibrium exists only if $t > t^* > t^{**}$.

Table 3.1: Equilibrium Strategies and Conditions

Equilibrium	Exists	Bureaucrat		Government		Veracity
		False	True	False	True	
Aggressive Prosecution	always	λ_f	0	p_f^*	1	-1
Moderate Prosecution	$t > t^{**}$	1	0	0	p_t	> 0
Leak & Punishment	$t > t^*$	1	λ_t	0	p_t^*	> 0

Table 3.1 summarizes the three equilibria we found. It shows that credible revelation of truthful information requires the government’s punishment of the bureaucrat. Because of the discovery process in trials, the government rarely prosecutes leaks of false information. The only case where this occurs with positive probability—the aggressive prosecution equilibrium—is when there is nothing to lose from that discovery: the audience would be certain that the information is false when the leak does not get challenged as well.

This is not the case in the other two equilibria, where leaving the leak unchallenged actually lends credence to it, and the audience rewards the government with positive inferences. In the moderate prosecution equilibrium, the bureaucrat never leaks the truth, so leaks of truthful information (which only happen in this equilibrium if the media somehow uncover it) are less likely than plants of false information (which are leaked with certainty): $m_t < 1$. In the leak and punishment equilibrium, the bureaucrat sometimes leaks the truth, so leaks of truthful information are also less likely than plants of false information (which are leaked with certainty): $(1 - m_t)\lambda_t + m_t < 1$. Since the government never prosecutes the false leaks but sometimes does

prosecute the true ones, it must be the case that the audience reduces its prior about the veracity of the information upon observing a leak go unchallenged in both equilibria. Since the prior was relatively high, this reduction does not wipe out the entire difference, and the audience ends up rewarding the government.

The leak and punishment equilibrium is epitomized by the U.S. case. Disclosure of classified information, including pro-government information, by unnamed bureaucrats occurs frequently inside the Beltway (Abel 1987; Hess 1984; Papandrea 2014; Sigal 1973). Yet the U.S. government has under-enforced secrecy, sporadically punishing leakers with criminal prosecution (Pozen 2013).

The U.S. government has been permissive despite ample legal base for it to punish leakers by criminal prosecution (Colaresi 2014). In theory, leakers may be prosecuted under the Espionage Act of 1917, the Intelligence Identities Protection Act of 1982, and the Uniform Code of Military Justice (Elsea 2013; Pozen 2013; Sagar 2013). This negligible enforcement led scholars to conclude that “the U.S. government’s leakiness has a significant intentional component” (Pozen 2013, 545).¹¹

The intentional under-enforcement has resulted in a plethora of unprosecuted leaks by anonymous sources in the United States (Pozen 2013), leading foreign adversaries to be concerned about U.S. intentions. For example, Zbigniew Brzezinski, President Carter’s National Security Advisor, admitted to orchestrating leaks to deter the Soviet Union from invading Poland during the Solidarity Crisis. He leaked “detailed intelligence to the effect that the Soviets were amassing troops, reports suggestive of imminent intervention [of Poland]” to warn the Soviets in 1980 (Abel 1987, 36). In late November of 1980, he also “sent a memo (designed to leak to the press) to [Secretary of State Edmund] Muskie and Defense Secretary Harold Brown listing the likely ramifications of a Soviet invasion” to encourage the Soviets’ internal disagreement (Vaughan 1999, 20).

¹¹In addition to the criminal procedure, the U.S. government has civil and administrative remedies to publicly punish leakers (Papandrea 2014). However, they have been rarely implemented (Pozen 2013).

During the Reagan administration, leaks about the Strategic Defense Initiative (SDI) proliferated (Hoffman 2010). In response, the Soviets wondered whether the SDI was “a large-scale disinformation operation of the Reagan administration” to obtain concessions from the Soviet Union in nuclear arms reduction (Andrew and Gordievsky 1993, 114). In particular, some Soviet officials “wondered if the Americans were deliberately trying to choke Moscow with fear by leaking a flood of information” about the SDI (Katayev (N.d.) quoted in Hoffman (2010, 53)).

Similarly, unprosecuted leaks were part of the administration’s political and diplomatic campaign against Muammar Gaddafi, the Libyan leader. For instance, the *Baltimore New American* published a story about imminent U.S. bombings against Libya quoting “a senior Administration source” on April 12, 1986 about 72 hours before the attack (Abel 1987, 43). Yet the administration neither protested the leak nor strove to find or punish the anonymous source (Halloran 1986, 12).

Moreover, unprosecuted leaks have revealed false and pro-government information. For example, the *Wall Street Journal* published on August 25, 1986 a front-page story about an impending crisis between the U.S. and Libya and the Defense Department’s completion of “plans for a new and larger bombing of Libya in case the president orders it” again, based on leaks by intelligence officials (quoted in Abel (1987, 37)). Similar articles appeared in the *New York Times* and the *Washington Post*. It was later discovered that the article was based on leaks of false information—a product of a secret disinformation campaign targeting Gaddafi and spearheaded by John M. Poindexter, Reagan’s National Security Advisor. The leaks were intended to keep Gaddafi preoccupied with concerns about a possible U.S. attack and internal opposition (Abel 1987).

3.5 Media Quality and Unprosecuted Leaks

The formal model implies that credibility of unprosecuted leaks by anonymous sources is affected by competence of the media. Recall that credibility of unprosecuted leaks was

determined by the veracity coefficient v defined in (3.1). Taking the derivative with respect to m_t , the probability that the media will publish truthful information even if the bureaucrat did not leak it, yields:

Lemma 4.

$$\frac{dv}{dm_t} = \frac{2t(1-p_t^*)(1-\lambda_t)(1-t)}{[t(1-p_t^*)\{\lambda_t + (1-\lambda_t)m_t\} + (1-t)]^2} > 0$$

In other words,

H 1. *If media outlets are seen as less competent, then unprosecuted leaks are seen as less credible.*

The less likely the media are to report true information, the more likely the government is to prosecute the bureaucrat for the leak. As the government becomes more likely to prosecute leaks of true information, the less likely the audience is to give credit to unprosecuted leaks.

In the United States, the media has been perceived as untrustworthy (e.g. Groeling 2013, Ladd 2011), reflecting a decrease in perceived competence of the media. Among the three administrations, the media were generally perceived as the most competent during the George H. W. Bush years and the least during the George W. Bush years according to public opinion polls (Cable News Network 1999; Cable News Network & Knight Ridder 1992; Gallup Organization 1997, 1998, 2000, 2001, 2002, 2003, 2004, 2005, 2007, 2008; University of Maryland 2003) as shown in Table 3.2.

The growing distrust in the media coincided with a decrease in credibility of unprosecuted leaks over the same period according to public opinion polls (Freedom Forum 1998a, 1998b; Los Angeles Times 1993; Pew Research Center 1997, 2005; USA Today 1989; Zogby International 1998) (Table 3.2). Unprosecuted leaks by anonymous sources were generally perceived as more credible during the George H. W. Bush administration compared to the Clinton administration. They were seen as more credible during the Clinton years compared to the George W. Bush years (c.f. Pearlstine 2007, pp.4-5).

Table 3.2: Media Quality and Credibility of Unprosecuted Leaks¹²

Administration	Media Quality			Credibility of Unprosecuted Leaks		
	Mean	By Poll	Poll Month and Year	Mean	By Poll	Poll Month and Year
George H. W. Bush	74%	74%	Aug. 1992	49%	49%*	June 1989
Bill Clinton	54%	53%	May 1997	39%	48%**	March 1993
		55%	Dec. 1998		52%***	Feb. 1997
		55%	Feb. 1999		17%***	Sep. 1998
		51%	July 2000			
George W. Bush	49%	53%	Sep. 2001	33%		
		54%	Sep. 2002			
		54%	Sep. 2003			
		49%	Dec. 2003			
		44%	Sep. 2004		10%*	Oct. 2004
					44%***	Oct. 2004
		50%	Sep. 2005		44%**	June 2005
47%	Sep. 2007					
	43%	Sep. 2008				

3.6 Observed Prosecuted Leaks

One might expect that when prosecuting leaks gets costlier, he will observe fewer leak prosecutions (e.g. Sagar 2013). I now show that this intuition is incorrect and that in fact the exact opposite would happen according to the formal model. I begin with an intuitive result: as the costs of prosecution go up, the bureaucrat is more likely to leak.

Lemma 5. *The bureaucrat is more likely to leak truthful information when the government's costs of prosecution increase: $\frac{d\lambda_t}{dc} > 0$.*

The *ex ante* probability that the audience observes a prosecuted leak in the leak and punishment equilibrium is:

$$\Omega = t[\lambda_t + (1 - \lambda_t)m_t]p_t^*$$

where we recall that only truthful leaks are ever prosecuted in this equilibrium. Taking the

¹²Questions about unprosecuted leaks include those about their accuracy,* appropriateness,** and whether they are approved by the respondent.***

derivative with respect to the costs yields:

$$\frac{d\Omega}{dc} = tp_t^*(1 - m_t) \frac{d\lambda_t}{dc} > 0,$$

where the inequality follows from Lemma 5. In other words,

H 2. *If prosecution becomes costlier for the government, the observable frequency of prosecuted leaks should increase.*

This result sounds counter-intuitive but the logic is simple. Increasing the costs of prosecution should make the government less willing to engage in it. The less likely it is to prosecute, the bolder the bureaucrat gets. However, as the bureaucrat becomes more likely to leak, the government has a stronger incentive to prosecute for the sake of asserting control. Thus, increasing the costs of prosecution pulls the government in different directions: the direct effect is to make it less likely to prosecute, but the indirect effect (through the bureaucrat's reaction) is to make it more likely to prosecute. In equilibrium, the two effects cancel each other out: when the costs go up and the bureaucrat leaks with a somewhat higher probability, the government's probability of prosecution remains constant at p_t^* .

This is congruent with the pattern of observed leak prosecutions and their political costs in the United States. During the Obama administration, there were eight cases of leaks, including the well-known cases of Manning and Snowden, in which the suspect was charged under the U.S. Espionage Act (Papandrea 2014; Pozen 2013). In contrast, only two were initiated by the preceding administration.¹³ The increase in the number of observed prosecutions during the Obama administration coincided with the increase in the government's costs of prosecuting leakers

¹³Thomas Drake was criminally charged by the Bush administration but indicted under the Obama administration. Criminal complaints against Bradley (later Chelsea) Manning in July 2010 and Edward Snowden in June 2013, cases of harmful leaks, were also filed by the Obama administration. No bureaucrat was criminally charged under the Espionage Act or the Intelligence Identities Protection Act for revealing the covert status of Valerie Plame, wife of Ambassador Wilson who criticized the Bush administration's claims about Iraq's nuclear weapons programs. I. Lewis "Scooter" Libby was sentenced to imprisonment for perjury and obstruction of justice but his sentence was commuted by President George W. Bush in 2007. He was pardoned by President Donald Trump in 2017.

(Table 3.3). The public was more opposed to leak prosecutions during the Obama administration than the Bush administration according to public opinion polls—implying that the government’s costs of prosecuting leakers were higher during the Obama administration.

Table 3.3: Leak Prosecutions’ Political Costs and Observed Frequency

Administration	Mean Public Opposition to Leak Prosecutions	Month and Year of Criminal Complaint* or Indictment**	Accused	Former Affiliation
George W. Bush	15%	May 2005*	Lawrence Franklin	State
Barak Obama	42%	Dec. 2009*	Shamai Leibowitz	FBI
		April 2010**	Thomas Drake	NSA
		Aug. 2010**	Stephen Kim	State
		Dec. 2010**	Jeffrey Sterling	CIA
		Jan. 2012*	John Kiriakou	CIA
		Aug. 2012*	James Hitzelberger	Navy

The high costs of prosecuting leakers coincided with an increase of leaking by bureaucrats, resulting in an uptick of observed prosecutions during the Obama administration. Note that it may rather be the greater likelihood of leaking, not that of prosecuting, that resulted in a greater frequency of *observed* leak prosecutions. In other words, the media portrayal of the Obama administration as being harsher toward leakers—its probability of prosecution was larger—than the Bush administration and waging a “war against leakers” (Liptak 2012) may be incorrect (Pozen 2013). The probability of prosecution is likely to have stayed constant during the Obama administration.

3.7 An Experiment on Political Effects of Leak Punishment

What are the political consequences of the government’s strategy? One might expect the prevalence of unprosecuted leaks and sporadicness of prosecuted leaks to harm the government. I show that this is not necessarily true.

Recall that pro-government information revealed by unprosecuted leaks is given some credibility by the audience who then credits the government (Proposition 3.3). However, pro-

government information revealed by unprosecuted leaks are perceived as less credible than the equivalent revealed by prosecuted leaks due to the veracity coefficient v .¹⁴ In other words,

H 3. *Prosecuted leaks are perceived more credible than unprosecuted leaks: $V > vV$*

Additionally, allowing some leaks by sporadic prosecution may be beneficial to the government. The government's equilibrium payoff in the leak and punishment equilibrium is:

$$\Psi = t\lambda_t\{p_t^*(V - c + b) + (1 - p_t^*)(vV - b)\} + t(1 - \lambda_t)m_t\{p_t^*(V - c) + (1 - p_t^*)vV\} + (1 - t)(vV - b).$$

For very pro-government information, the government's strategy can always render a positive equilibrium payoff, which is larger than the payoff from no leak by the bureaucrat and no discovery by the media. In other words,

Lemma 6. *Allowing some truthful leaks may be more beneficial for the government than no leak for a sufficiently large V : $\Psi > 0$*

The government's equilibrium payoff reflects its political gains via leaks of positive information. Recall that the audience includes the domestic public. Confirmation of helpful information, such as positive information about a policy proposed by the government, is likely to benefit the government by persuading the domestic public to support the policy. Accordingly, I am interested in testing the following hypothesis:

H 4. *(Foreign Policy Support): The more credible positive information about the government's policy proposal is, the more likely the policy is to be supported by the domestic public.*

The government's positive equilibrium payoff partially stems from the government's strategic use of the credibility gap between prosecuted and unprosecuted leaks denoted:

$$\Phi = (1 - v)V.$$

¹⁴Moreover, there is a positive correlation between the size of the bureaucrat's cost imposed by punishment and credibility of unprosecuted leaks ($\frac{dvV}{d\beta} > 0$).

The government's equilibrium payoff can be re-written as:

$$\Psi = \Phi p_t^*(t\lambda_t + t(1 - \lambda_t)m_t) + p_t^*((2b - c)t\lambda_t - ct(1 - \lambda_t)m_t) + vV(t\lambda_t + t(1 - \lambda_t)m_t + 1 - t) - b(t\lambda_t + 1 - t)$$

This implies that the government's non-zero probability of prosecuting, p_t^* , affects the degree to which the credibility gap, Φ , affects its equilibrium payoff Ψ . In other words,

H 5. (Mediation): *The effect of leak prosecutions on foreign policy support is mediated by perceived credibility of helpful information about the policy; the more likely prosecuted leaks of helpful information are viewed as credible compared to unprosecuted leaks, the larger the gain for the government from the increase in policy support.*

3.7.1 Survey Experiment

I tested these hypotheses in an online survey experiment about U.S. drone strikes abroad on a sample of Americans. Drone strikes have been generally popular with the American public since President George W. Bush's 2001 authorization to use them in the Global War against Terrorism (Kreps 2014; Pew Research Center 2015).¹⁵ Yet information about the strikes has been often unverifiable and transmitted to the public by anonymous sources (Pozen 2013).¹⁶

To track the causal path between a leak prosecution and foreign policy support, I used a between-subjects design with a randomized treatment as well as a mediator and an outcome item. The survey was fielded among respondents recruited through YouGov's Cooperative Campaign Analysis Project (CCAP) in late 2016.

The experiment included a vignette in which I manipulated whether the U.S. government prosecutes the anonymous source for leaking information about drone strikes.¹⁷ The mediator

¹⁵Public support for drone strikes is context-dependent, however (Kreps 2014; Schneider and Macdonald 2016).

¹⁶41.7 percent of the quotes extracted from a corpus of news articles about drone strikes were by fully anonymous individuals. See Chapter 2 for more information.

¹⁷The full experiment includes other treatments. Here I focus on the effect of prosecution of anonymous sources. See Appendix B.3 for analyses of the full sample.

item assessed the respondents' belief about the veracity of positive information about the strikes provided by the source. The outcome item measured their support for the strikes proposed by the government (e.g. Berinsky 2007, 2009; Gelpi 2010; Herrmann et al. 1999; Hurwitz and Peffley 1987; Johns and Davies 2012; Tomz and Weeks 2013).¹⁸

3.7.2 Results

Prosecuted leaks of pro-government information were perceived significantly as more credible than unprosecuted leaks of it (Hypothesis 3). Among the sample of respondents who read a news article quoting an anonymous source, source punishment increased their belief in success of the operation by 6.7 percentage points (Table 3.4). Specifically, 43.3 percent of the respondents assigned to the vignette with a prosecuted source believed in the strikes' success whereas 36.6 percent of those assigned to the vignette with an unprosecuted source did.

¹⁸The analysis in the section focuses on the effect of prosecution on credibility of the information about the drone strikes' success.

Table 3.4: Linear Probability Model of Perceived Credibility of Foreign Policy Success Information

	Perceived Credibility	
	(1)	(2)
Anonymous Source Prosecution	0.067** (0.031)	0.061* (0.033)
Age		-0.0001 (0.001)
Male		0.095*** (0.034)
White		0.076* (0.042)
Married		0.016 (0.035)
Education		0.001 (0.012)
Full-Time Employed		-0.028 (0.036)
Income		0.0005 (0.001)
Republican		0.021 (0.044)
Conservative		0.030* (0.017)
Constant	0.366*** (0.022)	0.164* (0.088)
Observations	979	883
R ²	0.005	0.029
Adjusted R ²	0.004	0.017

Note: *p<0.1; **p<0.05; ***p<0.01

Consistent with Hypothesis 4, respondents who believed in the success of the strikes were more likely to support them. In linear regression models of support for the strikes, the coefficient for credibility of the information about the strikes' success was significant at the 0.01 level (Table 3.5).

Table 3.5: Linear Probability Models of Foreign Policy Support

	Foreign Policy Support	
	(1)	(2)
Perceived Credibility	0.185*** (0.029)	0.136*** (0.029)
Age		0.004*** (0.001)
Male		0.102*** (0.029)
White		0.011 (0.036)
Married		0.064** (0.029)
Education		-0.015 (0.010)
Full-Time Employed		0.066** (0.031)
Income		0.0005 (0.001)
Republican		0.072* (0.038)
Conservative		0.101*** (0.015)
Constant	0.621*** (0.019)	0.032 (0.074)
Observations	979	883
R ²	0.039	0.212
Adjusted R ²	0.038	0.203

Note: *p<0.1; **p<0.05; ***p<0.01

There was an indirect effect of a leak prosecution on foreign policy support, supporting Hypothesis 5; the more likely prosecuted leaks were viewed as credible compared to unprosecuted leaks, the more likely respondents were to support the policy proposal. Causal mediation models

were run where the respondents’ support for military action was set as the outcome variable, their belief in the success of the drone strikes as the mediator variable, and punishment of the leaker as an independent variable.¹⁹ Table 5.6 documents the significant indirect effect (Average Causal Mediation Effect, ACME) of source prosecution on foreign policy support, showing that source punishment increased credibility of the helpful information, which increased foreign policy support. The coefficients for the ACME are positive and significant at the 0.1 level. In other words, a leak prosecution increased policy support only if it strengthened the respondents’ belief in the drone strikes’ success.²⁰

Table 3.6: Causal Mediation Models of Foreign Policy Support

Model	Effect	Estimate	95% CI Lower	95% CI Upper	P-Value
Model 1	ACME	0.012*	-0.002	0.027	0.072
	ADE	-0.028	-0.086	0.033	0.360
Model 2	ACME	0.012*	-0.002	0.028	0.078
	ADE	-0.029	-0.088	0.028	0.360

Note:

*p<0.1; **p<0.05; ***p<0.01

Mediation Model in Model 1: Probit Regression of Perceived Credibility ~Prosecution
 Outcome Model in Model 1: Probit Regression of Support for Drone Strikes ~Perceived Credibility+Prosecution
 Mediation Model in Model 2: Probit Regression of Perceived Credibility ~Prosecution+NYT
 Outcome Model in Model 2: Probit Regression of Support for Drone Strikes ~Perceived Credibility+Prosecution+NYT

3.8 Discussion

In this paper, I argue that anonymous sources who leak pro-government information can be perceived as credible due to governments’ strategic incentive to sporadically punish truthful leaks of classified information. In other words, information provided by an anonymous source is seen as believable due to the perception that he or she may be a leaker of truthful information who escaped punishment by the government.

¹⁹Both models were simultaneously estimated with the R package mediation (Tingley, Yamamoto, Hirose, Keele and Imai 2014) to parse out the indirect effect of source punishment on foreign policy support via perceived credibility from its direct effect on policy support.

²⁰However, source prosecution did not increase respondents’ support for the use of force if it did not strengthen their belief in the drone strikes’ success. The coefficients for the Average Direct Effect (ADE) were not statistically significant.

However, the power to impose punishment of anonymous sources also enables governments to use it strategically. Democratic governments have the institutional legitimacy to choose when and whether to enforce secrecy. Because it is the public punishment of the source that imparts credibility to the information disclosed by him or her, governments can choose to impose it when the information and the confirmation of its veracity are politically helpful. The confirmation of helpful information, in turn, can lead to domestic support for a policy proposal by the government. This implies that governments' legitimacy to enforce secrecy can function as a strategic tool to garner support for their foreign policy proposal.

A need for secrecy and the costs of transparency exist even in democracies (Colaresi 2014; Sagar 2013).²¹ Accordingly, the pervasiveness of leaks and breaches of secrecy by bureaucrats has been lamented by many leaders in the United States, including George Washington (Estes 2001). What they did fail to emphasize—intentionally or unintentionally—was that leaks of pro-government information can happen as well (Papandrea 2014).

Furthermore, claims of damage from leaks are often exaggerated in light of governments' tendency to over-classify information that is already known or inferable (Papandrea 2014). Even in the United States, rampant over-classification is prevalent (Aftergood 2008; Richelson 2012). Former top officials have noted that only 10 percent of classification was for the "legitimate protection of secrets" (Coakley 1991, 94) and the United States "might have been better off had there been more rather than fewer leaks" (Schlesinger Jr. 2004, 362).

Moreover, this paper implies that political costs of enforcing secrecy may have limited ability to constrain the government from abusing it. The formal model and an empirical analysis of its predictions show that public opposition to leak prosecutions did not directly affect the U.S. government's likelihood of resorting to them. This implies that leak prosecutions and secrecy rules may be abused by governments for political gains.

This is deeply troubling, given the history of secrecy abuse by democratic governments in

²¹Some non-democracies, China for instance, impose secrecy even on communication unrelated to national security (King, Pan and Roberts 2013, 2014).

foreign policymaking. In the United States, elites have misled or deceived the public about foreign policy via selective revelation or concealment of information. The Johnson administration's deception about the Gulf of Tonkin Incident (Reiter 2012), the Roosevelt administration's "blame-shifting" to Germany to rally the public around World War II (Schuessler 2010, 2013), and the Bush administration's pro-war campaign for Iraq War (Schuessler 2013) are some examples of the abuse of secrecy in the name of national interest. Secrecy can not only increase citizens' costs of monitoring elites in democracies (Lake 1999) but also presents a "secrecy dilemma," tension between governments' public accountability and foreign policy success (Colaesi 2014).

The current model can be extended to other forms of public and costly confirmation of unverifiable information beyond that by the judicial process. The government's public punishment can take the form of administrative sanctions that are made public as in the cases of the U.S. government's decision to dismiss then-Assistant Under Secretary for Defense Michael Pillsbury for leaking details about covert paramilitary operations in Angola and Afghanistan in 1986 (Papandrea 2008). The dynamics of governments' administrative measures are similar to those of their criminal action if both are public and costly to the government and its target and the revealed information is verified by a third-party.

Chapters 2, 3, 4, and 5, in part or full, have been submitted for publication of the material. Suong, Clara H. 2018. *Anonymous Sources and the National Interest: Persuasion by Credible Confirmation*. The dissertation author is the sole author of this paper.

Chapter 4

The Credibility Dilemma

4.1 Introduction

In 1973, the Nixon administration was beset with scandals and revelations of politically damaging information about the administration. The Watergate scandal was escalating after the *Washington Post*'s Bob Woodward and Carl Bernstein broke the first story on August 1, 1972 and revealed on October 10, 1972 that "FBI agents have established that the Watergate bugging incident stemmed from a massive campaign of political spying and sabotage conducted on behalf of President Nixon's re-election and directed by officials of the White House and the Committee for the Re-election of the President" (Bernstein and Woodward 1972). The Senate established the Select Committee on Presidential Campaign Activities on February 5, 1973, and the Committee's hearings started on May 17, 1973.

Coincidentally, it was also in May 1973 that Judge William Matthew Byrne Jr. dismissed all criminal charges against Daniel Ellsberg and his friend Anthony Russo, who were prosecuted by the Nixon administration under the Espionage Act of 1917. The government had prosecuted them on charges of stealing classified documents, the so-called Pentagon Papers, and disclosing classified information without authorization.

The Nixon administration's aggressive use of judicial tools against their "enemies"—the bureaucrats who revealed politically unsavory information without authorization and the media which published it—ultimately failed but left different legacies, constraining the former but liberating the latter. The court rulings were interpreted as the courts' espousal of the freedom of press and ruled out prior restraint as the executive branch's tool to impose its preference on the press (Ungar 1989). However, prosecution under the Espionage Act remains as a tool for the government to punish leaking bureaucrats to this day.¹

Yet questions remain. Why did the Nixon administration pursue an aggressive strategy against the bureaucrats who leaked classified information ("leakers") in the first place? Why did the administration punish propagators of information that was already revealed? The aggressive strategy inevitably brought more press coverage of the events and information that the administration would rather keep hidden or plausibly deny. In particular, the Nixon administration's aggressive pursuit of a criminal case against Daniel Ellsberg drew heavy criticism of the administration that was already unpopular.

Relatedly, why did the aggressive strategy fail to prevent leaks of truthful information? The administration was notoriously plagued with unauthorized disclosures of classified information. Was this simply a symptom of an inefficient, fractured administration plagued with bureaucratic infighting?

I argue the government's dilemma over bureaucratic and political incentives answers these questions. Facing leaks of hurtful information, the government faces a credibility dilemma when enforcing secrecy for national security purposes—whether to choose plausible deniability of politically hurtful information or bureaucratic control. The dilemma stems from the tradeoff between internal credibility for establishing bureaucratic discipline and external credibility for changing the political narrative.

This paper will proceed as follows. It will first discuss existing literature related to leaks

¹Pozen (2013, 516) refers to the legal system's protection of journalists who publish leaked information and lack of protection of leakers as the "source/distributor divide."

and the main argument. It will then describe a formal model and discuss its analysis. I then conclude.

4.2 Context

Disclosure of classified information by unnamed bureaucrats before it is formally declassified (a “leak”) is ubiquitous inside the beltway. In particular, leaks of information about national security that cast the U.S. government in a negative light, such as those about ineffective foreign policy outcomes, are common. Leaks eligible for criminal prosecution are estimated to occur 2-3 times a week (Pozen 2013). Yet contrary to the popular belief, the U.S. government has only sporadically punished those who leaked information on national security and defense with criminal prosecution (Pozen 2013).

Scholars have wondered about—and policymakers have lamented—the frequency of leaks of hurtful information and infrequency of secrecy enforcement (Pozen 2013). Some have attributed it to the logistical difficulty of identifying leakers. For instance, the U.S. government failed to identify the anonymous source quoted in the *Chicago Tribune*’s report on the Battle of Midway in 1942, resulting in a grand jury’s refusal to indict the newspaper for violation of the Espionage Act (Sweeney and Washburn 2013). Historians have later pointed to Commander Morton Seligman of the U.S. Navy as the leaker. However, war correspondent Stanley Johnston, who wrote the story, insisted that he obtained the classified information from “a piece of scrap paper that [he] had found in the cabin on the [USS] Barnett” on which he was embedded as a journalist (Sweeney and Washburn 2014, 45). Consequently, the government questioned Seligman but failed to identify him as the source or prosecute him.

However, these views do not account for or explore the political ramifications of leak punishment or the political dilemma for the government in enforcing secrecy. While leak laws are not easy to enforce, the government’s leniency stems more from its pursuit of its political

interests rather than the high cost of enforcement. In fact, Pozen (2013, 517) notes that “[t]he leak laws are so rarely enforced not only because it is difficult to punish violators, but also because key institutional players share overlapping interests in vilifying leakers while maintaining a permissive culture of classified information disclosures.”

Moreover, recent scholarship on whistleblowing hints at, but does not focus on, the leader’s political dilemma over between utilizing whistleblowers as a tool to monitor the bureaucrats and preventing whistleblowers from causing negative publicity. On one hand, the government wants to utilize whistleblowing as it can serve as a “fire alarm” (McCubbins and Schwartz 1984) in monitoring bureaucrats (Sagar 2013). Whistleblowers can function as a cheap, in-house monitoring mechanism for the leader than the expensive option of monitoring by “police patrol”; fire alarm monitoring only requires “establish[ing] rules, procedures and informal practices to enable ...[third actors]... to examine administrative decisions to charge agencies with violating ...[delegated]... goals” (McCubbins and Schwartz 1984, 166). In other words, monitoring bureaucrats via the decentralized means of whistleblowing—individuals’ voluntary efforts to call out wrong-doing by other bureaucrats—can be convenient for the leader; it does not require constant investment of organizational resources.

However, the leader may want to control whistleblowing and punish whistleblowers because they can cause him bad publicity and public embarrassment. Scholarship about bureaucratic politics often depicts whistleblowing as inherently hurtful to the immediate principal and helpful to a higher-level principal or those who monitor the immediate principal, such as the Congress. In fact, it is Congress—not the executive branch or its leaders—that has been proactive in protecting whistleblowers by adopting legislations to protect whistleblowers, such as the Federal Whistleblower Protection Act and the Intelligence Community Whistleblower Protection Act.

In particular, the executive branch and its leaders are often incentivized to maintain informational advantages by forcing bureaucrats, those in the intelligence community in particular, to keep secrets about foreign policy. Even democratic governments need to be secretive in foreign

affairs (Colaresi 2014) and the need for secrecy is often institutionalized. For instance, the U.S. Constitution explicitly allows the president to employ secrecy in the public interest as part of his executive privilege (Sagar 2013). In fact, overly frequent whistleblowing by deviant bureaucrats may have an adverse effect on bureaucratic performance (Ting 2008), leading the leader to balance ex ante incentives to encourage bureaucratic efforts and ex post incentives to encourage whistleblowing.

More broadly, the government—the executive branch in particular—seeks a minimum level of bureaucratic control and political responsiveness of bureaucrats (Moe 1985); bureaucrats may abuse their discretionary power by leaking politically damaging information. There is an inherent limit to the government’s allowance of leaks because they want to discourage whistleblowers who “air the dirty laundry in public” and cause bad publicity for the government.

Yet public punishment of deviant bureaucrats leads to confirmation of the information that the government desires to hide. While there are legal tools, such as the Classified Information Procedures Act (CIPA) which aims to encourage the use of classified information in criminal cases and to prevent defendants from “pressuring prosecutors to limit or abandon cases by threatening to reveal damaging material at trial” (Pozen 2013, p. 552), the government cannot prevent the criminal procedure from confirming that the leaked information is likely to be true and valuable enough to punish the leaker.²

In fact, the underlying dilemma between secrecy and control of agents is common in other domains of governance. For instance, terrorist organizations experience a tradeoff between keeping internal organizational details secret and enforcing control of “rogue” terrorists. Shapiro (2013, 4) notes “the terrorist’s dilemma” in which “leaders need to control how violence is executed and how finances are managed, but the tools to do so create some measure of operational vulnerabilities and therefore increase the likelihood of operatives being caught and a group

²Moreover, the Classified Information Procedures Act involves multiple steps the government must take to not harm defendants. It can be not only unwieldy to use but also ineffective in preventing the public from getting hold of the details from the trial (Pozen 2013).

compromised.” In other words, terrorist organizations and their leaders face a tradeoff between bureaucratic control and secrecy.

Similarly, private firms experience the dilemma over secrecy and effective control of employees when dealing with employees who violate non-disclosure agreements. Similar to the secret rules binding government officials, non-disclosure agreements “restrict employees from divulging trade secrets while employed at the firm or any time thereafter” (Marx 2011, 698) and are common in the technology industry. Taking legal action against the violators will help the firm send a deterrent signal to potential violators. However, doing so will confirm that the information disclosed by the violator is likely to be true.

4.3 Model

In this section, I sketch out a formal model that illustrates the dilemma between secrecy and bureaucratic control.

4.3.1 Actors and Strategies

Consider three strategic actors—a bureaucrat (B) and his government (G), and the audience (A). The bureaucrat chooses whether to disclose classified information as an anonymous source (“leak”). The government decides whether to prosecute the bureaucrat on charges of leaking the information. The audience chooses whether to believe in the veracity of leaked information.

There is one non-strategic actor in the game—Nature (N). Nature picks the type of hurtful information at the initial node, choosing either true (or accurate) with probability t or false (or inaccurate) information with probability $1-t$. Given the type of information and the bureaucrat’s decision not to leak it, Nature also chooses the probability for the information to be revealed by anonymous sources other than the bureaucrat, m_t for the truth and m_f for a falsehood. m_t represents the probability of true information being revealed by actors largely outside of a

democratic government's control, such as the news media, and m_f represents the probability of false information being revealed. For instance, a leak by Nature would include media reports that "look like they may contain leaks but are in fact based on public materials or sources outside the U.S. government," reflecting quality investigative reporting (Pozen 2013, 532-533). Overall, m_t and m_f collectively represent the vibrancy of the media environment, the former for accurate or true information and the latter for inaccurate or false information.

4.3.2 Sequence

The sequence of the game is as follows. At the initial node, Nature selects whether the information is true (or accurate) or false (or inaccurate). Given the information type, the bureaucrat chooses to leak as an anonymous source with probability l . If the bureaucrat does not leak, Nature reveals the information with probability m . If there is neither leaking by the bureaucrat nor revelation by Nature, the game ends with no information revealed to the public. If the bureaucrat leaks or Nature reveals the information as an anonymous source, information is revealed to the public as "anonymous communication." Given anonymous communication, the government has a choice to prosecute the bureaucrat and the audience chooses whether to believe in the veracity of the leaked information after observing the government's action or inaction.

The set up of the model reflects the political institutions that constrain democratic governments from directly punishing journalists but facilitates their punishment of bureaucrats for publicly revealing sensitive information. For instance, court rulings and "a shadow federal shield law" that codifies "a qualified reporter's privilege" in the United States show that the U.S. government has "expansive legal authority to prosecute employees who leak" but "minimal authority to stop members of the media who receive leaks from broadcasting what they learn, either through ex post penalties or prior restraints" (Pozen 2013, 515-6), as evidenced by the U.S. government's failure to restrain the *New York Times* and the *Washington Post* from publishing the Pentagon Papers (Altschuler 2015).

4.3.3 Information Sets, Beliefs, and Outcomes

In the model, the bureaucrat knows the type of the information conveyed by the anonymous communication (true or false) and the anonymous source's identity (himself or Nature). The government initially knows the type of the information with certainty and the identity of the anonymous source probabilistically. After anonymous communication occurs, the government forms Bayesian beliefs about the source, believing with probability q defined as $\frac{l}{l+(1-l)\cdot m}$ that the anonymous source is the bureaucrat and $1 - q$ that it is Nature. The audience initially knows neither type nor source of the information but has a prior t about the type. t is common knowledge. The audience updates its prior t after observing the choice of actions by the bureaucrat and the government.

This set up reflects democratic governments' informational advantage over the audience. It also represents their imperfect control of the information flow, which results in moderate difficulties in their leak investigations. It is difficult for governments to find the leaker due to "the secrecy that leakers may employ," the large number of individuals who have access to sensitive information, and journalists' practice to use "diffuse sourcing" intended to dilute their reliance on a sole source (Pozen 2013, 548).

From the perspective of the audience, there are three types of potential outcomes: those with no public revelation of information ("secrecy"); those with full revelation of information ("public exposures"); and those with residual uncertainty ("open secrecy"). In the first type of potential outcomes, no information is disclosed to the public and no anonymous communication occurs because both the bureaucrat and Nature do not reveal any information. The secrecy outcomes represent intentional concealment of information (Bok 1989) due to state secrecy.³

The second type of potential outcomes ("public exposures" or prosecuted leaks) is fully

³In the secrecy outcomes, the unrevealed information can be a deep secret which is "a secret the very existence of which is hidden from citizens" (Gutmann and Thompson 1998, 121) or from other officials (Pozen 2010). Alternatively, it can be a shallow secret, "known unknowns" (Rumsfeld 2002) that citizens know to be secret but their content is not known (Gutmann and Thompson 1998).

revealing. These outcomes refer to public exposures of the secret and identification of the source. In these outcomes, information is initially revealed to the audience by anonymous communication by the bureaucrat or Nature, the government prosecutes the bureaucrat, and legal proceedings following the government’s prosecution confirm whether the information is true and whether the bureaucrat is the anonymous source. The juxtaposition of secrecy and public exposure shows the “symbiotic relationship” between leaking and secrecy; after all, “without secrecy there would be no need to leak information” (Bok 1989, 217).

The third type of potential outcomes (“open secrecy” or unprosecuted leaks) results in residual uncertainty for the audience. In these outcomes, the information is disclosed to the public via an anonymous source. However, the government chooses to not prosecute the bureaucrat. These outcomes produce secrets about foreign policy that are revealed but lack official confirmation (Carson N.d.; Pozen 2010). In these outcomes, the public learns about the veracity of the information indirectly by making inferences about the government’s non-response.

In other words, the model assumes that the informational asymmetry among the bureaucrat, the government, and the audience can be resolved by a criminal trial which can be initiated by the government’s prosecution of the bureaucrat on charges of disclosing classified information without authorization.

The model also assumes that the audience forms Bayesian beliefs about the likelihood of the information disclosed to be true if the government does not prosecute the bureaucrat; the audience credits or debits the government with the veracity coefficient v defined as $-(\mu_5 + \mu_6) + \mu_7 - \mu_8 = -a$, reflecting the political reward given to the government when the audience infers that the damaging information is untrue and cost to the government when the audience infers it is true.

The four probabilities μ_5 , μ_6 , μ_7 , and μ_8 represent the audience’s Bayesian beliefs about the four possible pathways for the game to reach the ambiguous outcome of open secrecy given t , their prior belief about the information being true. As a result, the audience forms the following

beliefs about the type of information: true with probability $\mu_5 + \mu_6$; and false with probability $\mu_7 + \mu_8$. They form the following beliefs about the anonymous source: the bureaucrat with probability $\mu_6 + \mu_8$; Nature with probability $\mu_5 + \mu_7$.

4.3.4 Payoffs

Audience. The audience (A) chooses probability a with which it believes anonymous communication to be truthful. Its concave payoff function is:

$$U_A = - [t\{l_t + (1 - l_t)m_t\}(1 - p_t) + (1 - t)\{l_f + (1 - l_f)m_f\}(1 - p_f)](a - 1)^2 \\ - [t\{l_t + (1 - l_t)m_t\}p_t + (1 - t)\{l_f + (1 - l_f)m_f\}p_f]a^2$$

Bureaucrat. The bureaucrat (B)’s payoffs are affected by whether the information is withheld from the public, how the information is revealed (by his or Nature’s anonymous communication), and whether the government presses criminal charges against him. His payoff from the status quo in which no information is released is normalized to 0.

The bureaucrat gains α when anonymous communication about the truth occurs and $\lambda \cdot \alpha$ when anonymous communication about a falsehood occurs. These parameters represent the bureaucrat’s desire for the information to be publicly available (Pozen 2013). This highlights the motivation behind “a policy leak—a straightforward pitch...against a policy proposal, using documents or insider information in hope of getting more attention from the press than the information warrants,” such as Daniel Ellsberg’s leak of Pentagon Papers (Abel 1987, 19-20).

The bureaucrat obtains an additional payoff normalized to 1 when he leaks information and 0 when he does not. This captures the nature of the bureaucrat’s “ego leak” intended to “satisfy a sense of self-importance” (Hess 1984, 70-1) or his “experience—the degrees of freedom, the opportunities for strategic behavior, the sense of self-importance, the intrigue, the thrill—

of being an executive branch insider” (Pozen 2013, 585-6). For instance, Yeoman Charles E. Radford’s leaks of classified documents about the Nixon administration’s “tilt” to Pakistan and against India during the Indo-Pakistani war to syndicated columnist Jack Anderson is interpreted as an “ego leak” in which Radford, who was passed over for promotion, resorted to “ego-tripping” by leaking (Abel 1987, 18-9).⁴

The bureaucrat pays the cost of β if he is prosecuted by the government. I assume $\beta > 1 > \alpha$, reflecting the financial and career-related toll on bureaucrats accused of leaking (Pozen 2013).

Assumption 3. *For the bureaucrat, $\alpha < 1 < \beta$.*

Let l_f and l_t represent the probabilities with which B leaks false and true information, respectively. Let p_f and p_t represent the probabilities with which G prosecutes leaks of false and true information, respectively. Then B ’s payoff function is:

$$U_B = t[l_t\{p_t(\alpha + 1 - \beta) + (1 - p_t)(\alpha + 1)\} + (1 - l_t)m_t\{p_t(\alpha - \beta) + (1 - p_t)(\alpha)\}] \\ + (1 - t)[l_f\{p_f(\lambda\alpha + 1 - \beta) + (1 - p_f)(\lambda\alpha + 1)\} + (1 - l_f)m_f\{p_f(\lambda\alpha - \beta) + (1 - p_f)(\lambda\alpha)\}]$$

Government. The government (G)’s payoffs are affected by several factors: whether the information is disclosed or not; costs and benefits from pressing criminal charges against a suspected leaker; and what the audience infers about the information. If no anonymous communication occurs, the government gets the payoff of 0. If anonymous communication occurs and the government subsequently prosecutes the bureaucrat, the government obtains a payoff of v if the court confirms that the harmful information is false and $-v$ if the court confirms it is true.

ζ and κ represent the potential benefits and costs for the government when prosecuting the bureaucrat suspected of leaking. b reflects the government’s gain in bureaucratic control

⁴Radford admitted in December 1971 that he stole classified documents from National Security Advisor Henry Kissinger but denied leaking them to Anderson, however (Hersh 1983, 471-2).

(Moe 1985) by successfully identifying and prosecuting the bureaucrat who did leak, which is lost if the bureaucrat leaks and the government fails to respond. The opportunity cost reflects the government's bureaucratic cost from failing to act against leaks (Pozen 2013). Political costs for the government in pressing criminal charges are denoted κ . The government incurs the cost for prosecuting regardless of the outcome of the prosecution. Note that if the government prosecutes the bureaucrat when it is Nature who revealed the information, the government's prosecution "fails" and incurs the political cost.

If anonymous communication occurs and the government does not prosecute, the audience weighs the information supplied by an anonymous source whose identity remains unknown by v defined earlier. This results in the government's payoff of $v \cdot v$ from an unprosecuted leak.

G 's payoff function is:

$$U_G = t[l_t\{p_t(-v - \kappa + \zeta) + (1 - p_t)(vv - \zeta)\} + (1 - l_t)m_t\{p_t(-v - \kappa) + (1 - p_t)(vv)\}] \\ + (1 - t)[l_f\{p_f(v - \kappa + \zeta) + (1 - p_f)(vv - \zeta)\} + (1 - l_f)m_f\{p_f(v - \kappa) + (1 - p_f)(-av)\}]$$

I assume that the government benefits substantially from the audience believing that the information is untrue. In other words, the government benefits substantially if its prosecution changes the existing political narrative and leads the public to believe the harmful information that was leaked is actually false. More specifically, the costs of prosecution are not exceedingly high relative to these benefits. However, the government has to balance these benefits against its desire to assert control over its agents. While it might be willing to forego some loss of bureaucratic control, even the largest benefit of information is outweighed by serious erosion of that control:

Assumption 4. $\kappa < v < 2\zeta$ and $\zeta < v$.

4.4 Analysis

The solution concept is sequential equilibrium.⁵

We begin by deriving the veracity coefficient from the audience's posterior beliefs about a unprosecuted leak. If a leak occurs and is unchallenged by the government, the audience sets its belief a in equilibrium.

$$a = t(1 - p_t) [l_t + (1 - l_t)m_t] + (1 - t)(1 - p_f) [l_f + (1 - l_f)m_f],$$

and the four constituent types of unprosecuted leaks can be expressed as:

$$\begin{aligned} a \cdot \mu_5 &= t(1 - l_t)m_t(1 - p_t) & a \cdot \mu_7 &= (1 - t)(1 - l_f)m_f(1 - p_f) \\ a \cdot \mu_6 &= tl_t(1 - p_t) & a \cdot \mu_8 &= (1 - t)l_f(1 - p_f), \end{aligned}$$

By Bayes rule, when a leak occurs, the government's belief that the bureaucrat was the source is

$$q_f = \frac{l_f}{l_f + (1 - l_f)m_f} \quad \text{and} \quad q_t = \frac{l_t}{l_t + (1 - l_t)m_t},$$

for information that is false and true, respectively. Sequential rationality yields the government's best responses as functions of these beliefs:

$$p_f = \begin{cases} 1 & \text{if } q_f > q_f^* \\ 0 & \text{if } q_f < q_f^* \\ \text{mix} & \text{if } q_f = q_f^*, \end{cases} \quad \text{and} \quad p_t = \begin{cases} 1 & \text{if } q_t > q_t^* \\ 0 & \text{if } q_t < q_t^* \\ \text{mix} & \text{if } q_t = q_t^*, \end{cases}$$

where

⁵Equilibrium refinement for Nash equilibria, such as sequential rationality, is necessary to rule out unreasonable Nash equilibria. This is an extensive game with incomplete information with no proper subgame, rendering subgame perfect equilibria equivalent to Nash equilibria.

$$q_f^* = \frac{-(1-\nu)V+c}{2b} < 1. \quad \text{and} \quad q_t^* = \frac{(1+\nu)V+c}{2b} \in (0,3) \quad (4.1)$$

Finally, sequential rationality also yields the bureaucrat's best responses as functions of the government's strategy:

$$l_f = \begin{cases} 1 & \text{if } p_f < p_f^* \\ 0 & \text{if } p_f > p_f^* \\ \text{mix} & \text{if } p_f = p_f^*, \end{cases} \quad \text{and} \quad l_t = \begin{cases} 1 & \text{if } p_t < p_t^* \\ 0 & \text{if } p_t > p_t^* \\ \text{mix} & \text{if } p_t = p_t^*, \end{cases}$$

where

$$p_f^* = \left(\frac{1}{\beta}\right) \left[\lambda\alpha + \frac{1}{1-m_f}\right] > 0 \quad \text{and} \quad p_t^* = \left(\frac{1}{\beta}\right) \left(\alpha + \frac{1}{1-m_t}\right) > 0.^6$$

In equilibrium, the bureaucrat always leaks some information.⁷

Lemma 7. *There is no equilibrium in which the bureaucrat never leaks any detrimental state secrets.*

In particular,

Lemma 8. *The bureaucrat leaks true anti-government information with positive probability in equilibrium ($l_t > 0$).*

However, the bureaucrat does not always leak; there are some state secrets he can keep.

Lemma 9. *There is no equilibrium in which the bureaucrat always leaks detrimental state secrets.*

The bureaucrat also does not randomize over leaks of both true and false information.

⁶Here I focus on the case that the bureaucrat could, at least potentially, be deterred by the prosecutorial threat. That is, the remainder of the analysis assumes that $p_f^* < 1$ and $p_t^* < 1$. This implies a restriction on parameter values: $\frac{1}{1-m_f} < \beta - \lambda \cdot \alpha$, which also implies $\beta - \lambda \cdot \alpha > 1$.

⁷All proofs for this chapter are in Appendix C.

Lemma 10. *The bureaucrat must leak or withhold at least one type of information with certainty: there exists no equilibrium in which $l_f \in (0, 1)$ and $l_t \in (0, 1)$.*

This result implies that there are only three possibilities for the bureaucrat to leak truthful information in equilibrium: $(l_f = 1, l_t \in (0, 1))$, $(l_f \in (0, 1), l_t = 1)$, $(l_f = 0, l_t = 1)$, and $(l_f = 0, l_t \in (0, 1))$. We now rule out the first possibility:

Lemma 11. *The bureaucrat never leaks false information with certainty: there exists no equilibrium with $l_f = 1$.*

The remaining possibilities define the equilibria:

Proposition 3 (Political Bureaucrat). *In this equilibrium, the bureaucrat leaks inaccurate information with probability $l_f \in (0, 1)$ and always leaks true and anti-government information ($l_f = 1$); the government prosecutes false leaks with probability $p_f = p_f^* \in (0, 1)$ and never prosecutes truthful leaks ($p_t = 0$); the audience credits the government for any leak it fails to prosecute ($v > 0$). The equilibrium exists only if*

$$t < \frac{m_f c (1 - p_f^*)}{2V - c + (1 - p_f^*) m_t c} \equiv t^*. \quad (4.2)$$

Proposition 4 (Leak Criminalization). *There are two equilibria in which the bureaucrat never leaks inaccurate or false information ($l_f = 0$):*

- *(Discreet Bureaucrat) The bureaucrat leaks truthful information with probability $l_t = \frac{m_t c}{2b - c + m_t c}$; the government prosecutes false leaks with certainty ($p_f = 1$) and truthful leaks with probability $p_t = p_t^*$; the audience penalizes the government for any leak that it fails to prosecute ($v = -1$).*
- *(Leaky Bureaucrat) The bureaucrat always leaks true information ($l_t = 1$); the government*

sometimes prosecutes false leaks with probability

$$p_f = 1 - \left(\frac{t}{1-t} \right) \left(\frac{2V-c}{m_f c} \right)$$

and never prosecutes leaks of truthful information ($p_t = 0$); the audience credits the government for any leak that it fails to prosecute ($v = 1 - c/V > 0$), inferring that it is likely to reveal untrue anti-government information. This equilibrium exists only if

$$t < \frac{m_f c}{2V - c + m_f c} \equiv t^{**}.$$

In both, the government knowingly prosecutes the innocent bureaucrat with positive probability.

Criminalization of leaks occurs in both equilibria. The government prosecutes an innocent bureaucrat when the information is false to publicly claim that it is false and to either avoid a penalty or obtain a benefit from the audience when no prosecution occurs. Moreover, in both cases the government is *more* likely to prosecute when the information is inaccurate or false (and the bureaucrat is innocent) than when the information is accurate or true (and the bureaucrat might be guilty).

Propositions 3 and 4 characterize all equilibria for a potentially deterrable bureaucrat. The discreet bureaucrat equilibrium always exists, the leaky bureaucrat prosecution equilibrium exists only if $t < t^{**}$, and the leak and punishment equilibrium exists only if $t < t^* < t^{**}$.

Table 4.1: Equilibrium Strategies and Conditions

Equilibrium	Exists	Bureaucrat		Government		Political Credit from An Unprosecuted Leak
		False	True	False	True	
Discreet Bureaucrat	always	0	l_t	1	p_t^*	No
Leaky Bureaucrat	$t < t^{**}$	0	1	p_f	0	Yes
Political Bureaucrat	$t < t^*$	l_t	1	p_f^*	0	Yes

Table 4.1 summarizes the three equilibria we found. It shows unwillingness of the

government to punish leakers of the unwelcome truth. Because of the discovery process in trials, the government rarely prosecutes leaks of true information. The only case where this occurs with positive probability—the discreet bureaucrat equilibrium—is when there is nothing to lose from that discovery: the audience would be certain that the information is true when the leak does not get challenged as well.

This is not the case in the other two equilibria, where leaving the leak unchallenged actually led the audience to discount it and reward the government with positive inferences. In the leaky bureaucrat equilibrium, the bureaucrat never leaks inaccurate information, so leaks of false information (which only happen in this equilibrium if the media somehow uncover it) are less likely than true information (which are leaked with certainty): $m_f < 1$. In the leak and punishment equilibrium, the bureaucrat sometimes leaks inaccurate information but leaks of false information are also less likely than leaks of true information (which are leaked with certainty): $(1 - m_f)l_f + m_f < 1$. However, upon observing a leak go unchallenged, the audience is more likely to believe that the anti-government information is untrue since: the government never prosecutes the truthful leaks but sometimes does prosecute false ones in both equilibria; and their prior was relatively low. This results in the audience giving the government the benefit of the doubt.

Pervasive leaks of classified information that is politically damaging are common in the United States. In particular, the Nixon administration was awash with leaks of unflattering information despite its obsession with secrecy and aversion to leaks. Yet its strategy of inaction during the so-called Moorer-Radford affair exemplifies the informational constraint it faced.

From December 1971 to January 1972, syndicated columnist Jack Anderson published and distributed classified documents about the Nixon administration's covert "tilt" to Pakistan during the Indo-Pakistani war despite its outward neutrality (Ungar 1989). Anderson released full text of the classified documents from secret meetings of the National Security Council's Washington Special Action Group (Kutler 1999).

Investigators at the Department of Defense and the White House, which included David Young of the White House's "Plumber" unit, found in December 1971 that Navy Yeoman Charles E. Radford, who was working as a stenographer at the military liaison office attached to the National Security Council, stole over five thousand classified documents from the National Security Council for over a year. He had been instructed to spy on the National Security Council by high-ranking military officials, Admirals Rembrant Robinson and Robert Welander. The stolen documents were passed to the office of Admiral Thomas H. Moorer, Chairman of the Joint Chiefs of Staff (Hersh 1983).

Initially, Nixon "spoke gravely about prosecuting Admiral Moorer, along with others involved" (Rosen 2002). Nixon generally "regarded unauthorized leaks of internal government papers as a personal affront to his notions of presidential authority" (Kutler 1999, 2). It is not surprising that he initially considered punishing the leakers by criminal action.

However, he decided not to prosecute anyone involved. Radford was simply transferred to a remote post in Oregon. Moorer was retained as the Chairman of the Joint Chiefs of Staff and served his second term. Welander was reassigned. Their military liaison office was shut down (Hersh 1983; Rosen 2002).

Nixon was concerned about "the strong possibility of a far-reaching and political devastating scandal—whose ultimate target might become the immense power and secrecy of the White House decision-making mechanism" (Hersh 1983, 472). He realized that criminal action "could lead to public knowledge of the existence of the White House Plumbers" and their activities, such as the illegal break-in at the office of Ellsberg's psychiatrist on September 3, 1971 and fabrication of cables implicating John F. Kennedy in the assassination of the South Vietnamese leader Ngo Dinh Diem in 1963 (Hersh 1983, 477-8). He was also concerned that "disclosing the scandal could irreparably damage the armed services—something he felt the country could ill afford in the Vietnam era" (Rosen 2002).

However, the political expediency of allowing leaks of the unsavory truth go unpunished

was ultimately costly for the administration in the long run. It inadvertently resulted in leaks to be dominated by those of the truth than falsehoods.

4.5 Leak Criminalization and False Leaks

In the U.S., it is often disgruntled career bureaucrats, mid- to low-level employees in particular, who engage in leaks intended to embarrass the government rather than political appointees (Hess 1984; Pozen 2013). What explains this gap in leaking between political appointees and career bureaucrats? I argue that the difference in the government's gain from establishing bureaucratic discipline via criminal action can explain the different leaking behavior.

The formal model implies the following:

Lemma 12. *The bureaucrat is less likely to leak false anti-government information when the government's bureaucratic benefits from prosecution increase: $\frac{dl_f}{db} < 0$.*

In other words,

H 6. *If the bureaucratic benefit from criminal action increases for the government, the likelihood of the false leaks to occur should decrease.*

This also implies that if the bureaucratic benefit from criminal action increases for the government, bureaucrats' leaks of hurtful information are likely to be those of the truth than falsehoods. For the government, the benefit from establishing bureaucratic discipline via criminal action is larger when it targets career bureaucrats than political appointees. In the U.S., political appointees are usually individuals sharing preferences with the president and "monitor bureaucratic activity and communicate the president's vision to the press and agency employees, clients, and stakeholders" to influence policy outcomes (Lewis 2010, 7). They are also the most important source for the president's political control of the bureaucracy (Lewis 2010) because of their dependence on the president for the job; they can be hired and dismissed at will by the

president. In contrast, career bureaucrats can have tenure rights and enjoy institutionalized job security. Thus, they are more difficult for the president to control and seemingly disloyal and unresponsive to the president (Aberbach and Rockman 2001). As a result, criminal action is a tool for the president to discipline and control career bureaucrats rather than political appointees. Accordingly, criminal punishment of leaks has been often used as the government's tool to discourage leaks by career bureaucrats and assert bureaucratic control; the government has rarely targeted political appointees with it (Pozen 2013).

Recall that in the political bureaucrat equilibrium, the government never prosecutes leaks of harmful truth and occasionally prosecuted leaks of harmful falsehoods. Ironically, this strategy results in a greater likelihood for bureaucrats to leak accurate rather than inaccurate information. Moreover, the comparative statics of b indicates that a large b discourages career bureaucrats from leaking inaccurate or incomplete information. This results in their leaks to consist mostly of leaks of the truth rather than falsehoods.

The relationship between the U.S. government's larger bureaucratic benefit from criminalization of leaks by career bureaucrats and their inclination to leak truthful information implies that the same would hold for the degree of the federal bureaucracy's politicization and the prevalence of truthful leaks on a broader level. In other words, the less politicized the bureaucracy, the more likely leaks of anti-government information are to be those of truthful information.

This pattern is observed when comparing the levels of politicization and type of hurtful leaks by administration. The Nixon and the Ford administrations were notoriously plagued with leaks of damaging truth and their antipathy toward them.⁸ In addition to the Pentagon Papers and the Watergate scandal, the Nixon administration suffered hurtful leaks of information about the Strategic Arms Limitation Talks (Kutler 1999) and American secret bombing in Cambodia (*New York Times* 1976). The administration also suffered leaks about the Justice Department's criminal investigation targeting Nixon's Vice President Spiro Agnew for tax fraud and corruption,

⁸Many also note (and attribute the prevalence of leaks to) Nixon's obsession with secrecy (Abel 1987).

precipitating Agnew’s resignation on October 10, 1973 (Linsky 1991).

Table 4.2: Bureaucratic Benefit from Leak Criminalization and Frequency of False Leaks⁹

Administration	Year	Percentage of Political Appointees*	Total Number of Political Appointees**	G’s Relative Need for Bureaucratic Discipline	B’s Relative Likelihood of Leaking Detrimental Falsehood	Likely Type of B’s Hurtful Leaks
Richard Nixon	1972	0.094	2,681	High	Low	Truthful
Gerald Ford	1976	0.084	2,411	High	Low	Truthful
Jimmy Carter	1980	0.118	3,435	Low	High	False

The explosive impact of hurtful leaks during the Nixon and Ford administrations and the former’s aggressive stance toward leakers coincided with their need for bureaucratic discipline though criminal action. Such need stemmed from the low level of bureaucracy politicization during the Nixon and Ford administrations, implying the two administration’s comparatively high need to utilize criminal action for bureaucratic discipline.

4.6 Discussion

This chapter offers an argument for the puzzling occurrence of sporadic punishment of bureaucrats for their unauthorized disclosures of national security information. This paper underscores the perverse political incentives for a democratic government in public punishment of the bureaucrats. The model implies that a democratic government’s punishment of leakers is not a purely legalistic or bureaucratic decision but a political one with multiple factors to consider. In particular, inferences made by the domestic and international audiences about the veracity of politically damaging information lead the government to sometimes punish innocent bureaucrats and not punish guilty bureaucrats.

The chapter also emphasizes the coercive and unfair aspects of the state-society relationship in a democratic country. It showed that the government was willing to go as far as punishing

⁹Percentage of political appointees* is “total number of Senate-confirmed positions excluding part-time and non-salaried positions, appointees in the Senior Executive Service, and Schedule C appointees divided by the total number of federal civilian employees.” Total number of political appointees** is “total number of Senate-confirmed positions excluding part-time and non-salaried positions, appointees in the Senior Executive Service, and Schedule C appointees” (Lewis 2010). The data is from Chapter 4 of Lewis (2010), which is based on the so-called Plum Book, a quadrennial publication listing policy positions in the U.S. government.

innocent bureaucrats who did not leak information for informational advantages and political capital. The results lead us to view the relationship among secrecy, transparency, and political institutions in a new light. Many scholars have rightly concluded that democratic regimes are generally more transparent than non-democratic regimes due the existence of electoral competition, political opposition, and free media, which has implications in international crisis bargaining and dispute behavior (e.g. Baum and Potter 2015; Guisinger and Smith 2002; Potter and Baum 2014; Ramsay 2004; Schultz 1998, 1999; Smith 1998).

However, the mechanism outlined in the chapter also highlights the perverse incentives for a democratic government to seek informational advantages by unfair criminalization of leaks. It implies that the government's treatment of deviant bureaucrats is not fair: bureaucrats who leak true information are less likely to be punished than those who reveal false, inaccurate, or incomplete information.

Some caveats are worth mentioning. For parsimony, the model did not depict the media or the judiciary as a strategic actor, assuming rather than describing the former's likelihood of reporting new information provided by the anonymous sources and the latter's role of verifying the information.

Chapters 2, 3, 4, and 5, in part or full, have been submitted for publication of the material. Suong, Clara H. 2018. *Anonymous Sources and the National Interest: Persuasion by Credible Confirmation*. The dissertation author is the sole author of this paper.

Chapter 5

Costly Anonymity

Abstract

What is the political consequence of the government's enforcement of national security secrecy? In this chapter, unauthorized disclosure of classified information that is detrimental to the government (a "harmful leak") affects public opinion when the leaker's identity is revealed. Revelation of a leaker's identity strengthens the public's belief in credibility of the anti-government information provided by the leaker. This renders the government's policy proposal unpopular among the public, leading it to oppose it. I test this argument in a series of survey experiments.

5.1 Introduction

On June 6 and 7, 2013, British daily newspaper the *Guardian* revealed a “leak” of classified National Security Agency (NSA) documents. The documents included an order from the Foreign Intelligence Surveillance Court requiring Verizon Wireless, a telecommunications company, to hand over metadata from Americans’ phone calls to the Federal Bureau of Investigation (FBI) and the NSA and documents on the PRISM program that gives the NSA access to the servers of major technology companies, such as Apple, Google, Facebook, and Microsoft (Greenwald 2013a; Greenwald 2013b). The reports shocked the public, revealing the extensive surveillance of citizens by the U.S. government. The public outrage led to calls for a reform of the surveillance program. Consequently, new restrictions on the surveillance program was adopted in the Freedom Act which Congress passed in 2015 upon the expiration of the Patriot Act.¹

Interestingly, the *Guardian* initially did not attribute the unauthorized disclosure of national security information to any source. It was not until June 9, 2013 that Edward Snowden came forward that the source of the leak was identified (Mazzetti and Schmidt 2013). Was the information leaked by Snowden taken seriously because he “came out” as a named source? Or was his credibility derived from him risking the wrath of the U.S. government? Would the public have believed in the veracity of the information he revealed even if he had remained as an anonymous source? More broadly, how and to what extent do revelations of political hurtful information by anonymous sources result in political consequences?

I argue that anti-government information is perceived as less credible when revealed by anonymous sources than named sources. In other words, the public is less likely to believe politically hurtful information to be true when it is provided by anonymous leakers than named leakers. Anonymity costs leakers credibility as a source of information, and leakers are more persuasive and influential when they reveal their own identity. Leaks are likely to render public opposition of the government’s policy proposal when the leakers reveal their identity. My

¹However, critics argue that the reform was limited.

arguments are supported by a series of survey experiments.

5.2 Context and Contribution

Political rhetoric often aims to persuade the audience by influencing their attitudes and opinions about policies or candidates (e.g. Ansolabehere et al 1999; Ansolabehere & Iyengar 1994, 1995). However, political scientists have for long noted the public's lack of political information and little desire to devote time or efforts to learning about politics (Lupia and McCubbins 1998), which may result in the citizens' failure to monitor and constrain elites. In foreign policy, some scholars have even doubted that the American public possesses stable and meaningful policy dispositions (e.g. Almond 1950; Converse 1964; Converse and Markus 1979), mainly due to "the remoteness of international politics from everyday life" (Peffley and Hurwitz 1993, 61).

One efficient way for the public to overcome the scarcity of time and attention in processing political information is by utilizing cues about its source rather than assessing its content. Cues about the source serve as useful heuristics for the audience to assess the information. In particular, scholars have repeatedly pointed to the powerful effect of elite cues in attributable communication on foreign policy attitudes of the general public (e.g. Baum and Groeling 2010; Zaller 1992).² In other words, source credibility, "the extent to which an audience perceives a communicator as someone whose words or interpretations they would benefit from believing" (Lupia 2016, 87), is key in persuading the audience (Lupia and McCubbins 1998).

Source credibility is also crucial in determining war support, which is heavily influenced by cues by elites (Berinsky 2007; Berinsky 2009; Zaller 1992). Zaller highlights the decisive influence of elite cues, disseminated by the media, on mass attitudes toward the Vietnam War, saying "political awareness has important effects on mass attitudes, but [...] these effects differ across policies and across time, depending on the positions taken by political elites and reflected in

²In contrast, Bullock (2011) demonstrated that attitudes of the informed public are influenced by information as well as elite cues.

the mass media” (Zaller 1992, 107). His RAS models posit the resistance axiom which “makes no allowance for citizens to think, reason, or deliberate about politics” and assume that “individuals typically fail to reason for themselves about the persuasive communications they encounter [...] and rely on cues about the “source” of a message in deciding what to think of it” (1992: 45). Similarly, Berinsky (2007, 2009) asserts that events on the ground have little direct effect on public responses to war and that patterns of elite discourse and elite cues play a large role in deciding popular support for war. He contends that there is “little evidence that citizens make complex cost/benefit calculations when evaluating military action. Instead, [...] patterns of elite conflict shape opinion concerning war” (Berinsky 2007, 975) and that “typical individuals are not particularly knowledgeable about foreign policy events even in wartime. Hence, they tend not to incorporate much factual knowledge—such as casualty levels— into their summary judgments about a given event” (quoted in Baum and Potter 2008, 46).

However, existing research in political science has focused on named elites and media outlets as sources (e.g. Baum and Groeling 2010; Baum and Potter 2015; Zaller 1992); it has yet to consider unnamed sources quoted in the media as a political entity with own interests and design; unnamed sources and the information they provide had been treated as a type of cues by elites relayed by media outlets or cues from the media outlets themselves. Moreover, it had been assumed that information provided by unnamed sources is likely to be true as it is screened by media outlets which are incentivized to report the truth.

Yet many journalists and journalism scholars have argued that anonymous sources lead to less credibility of the news reports citing them. For instance, the *New York Times*’ public editor note that readers of the newspaper “despise” and are “suspicious [...] with reason” about the use of anonymous sources, citing a reader who complained that “[the use of anonymous sources] is poor journalism and deprives the reader of any way to evaluate, on their own, the credibility of those sources or the accuracy of the statements they make” (Spayd 2017). The *New York Times* was also recently criticized by fellow journalists (Frum 2018; Gessen 2018) for publishing

an op-ed by a “a senior official in the Trump administration” who claimed to be “part of the resistance inside the Trump administration” on September 5, 2018 (A senior official in the Trump administration 2018).

Suspicion toward anonymous sources existed in the 1970s–1980s despite the Deep Throat (who was later revealed to be then Federal Bureau of Investigation Associate Director Mark Felt) and the explosive reporting about the Watergate scandal by the *Washington Post*’s Bob Woodward and Carl Bernstein that relied on him in the 1970s. A 1979–1980 survey of 292 members of the American Society of Newspaper Editors showed that editors saw anonymous sources as a “necessary evil” (Culbertson 1980, 402). About 81% of the surveyed editors saw anonymous sources as less credible than named sources.

Yet experimental assessment of the effect of anonymous attribution on information credibility has been inconclusive, producing conflicting evidence. Sternadori and Thorson (2009) argued anonymous sourcing harms credibility of media reports. In contrast, Rains (2007) found that an anonymous source is deemed just as credible and influential as an identified source when the subjects assessed reports on health by an online media outlet. Matthews (2012) also found in his experiment that the effect of source attribution on the participants’ assessment of credibility and accuracy of news is limited and that their attitudinal characteristics are more significant determinants.

This chapter will test in online survey experiments whether anonymous sourcing will affect credibility of the information the source provides. It will also examine anonymous sourcing’s political impact—suppression of public opposition of the policy. The experiments will examine whether the expected decrease (increase) in credibility of politically hurtful information about a policy due to anonymous (named) sourcing will result in a decrease (increase) in public opposition to the policy.

5.3 Research Design

To measure the effect of anonymous sourcing on information credibility and policy support, this chapter utilizes casual mediation analysis. Identifying a long chain of causal mechanisms and mediation paths is difficult. Non-experimental methods of measuring mediation effects often leads to biased estimates (Bullock, Green and Ha 2010; Bullock and Ha 2010; Green, Ha and Bullock 2010). However, including mediators as randomly assigned treatments is also problematic. The “treatmentification” of mediators—direct manipulation of the mediators—may exacerbate the existing criticism about experiments’ external validity (Imai, Keele, Tingley and Yamamoto 2011; Imai, Tingley and Yamamoto 2013; Tingley et al. 2014). However, causal mediation analysis allows us to recreate a longer chain of events that is more externally valid than sets of factorial design experiments imperfectly replicating the mediation paths.^{3 4}

To track the causal paths with mediators, I use an experiment with treatments, mediator items, and an outcome item. The treatments include source attributability (anonymous or named) in a vignette. The mediator items include one that measures respondents’ belief in the veracity of information about the collateral damage of the government’s drone strikes against terrorists. The outcome item measures their support for the strikes.

Specifically, the survey instrument included a vignette and questions on war support as well as questions about the subjects’ demographic and attitudinal formation. Respondents were first asked to “read the following news article about a situation the United States could face in the future” that included a vignette (e.g. Berinsky 2007, 2009; Gelpi 2010; Herrmann et al. 1999; Hurwitz and Peffley 1987; Johns and Davies 2012; Tomz and Weeks 2013).

³The cost of adopting causal mediation experiments is that they may be subject to restrictive assumptions. In particular, it is difficult for experiment to satisfy the (global) Sequential Ignorability assumption, which allows researcher to nonparametrically identify the average causal mediation effects (ACME), since mediators in social science experiments often interact and correlate with other mediators. However, Imai and his co-authors have devised tools for experiments fewer constraints, allowing for multiple causal mechanisms and non-compliance in mediators.

⁴ Key measurements in causal mediation are: $\delta_i(t)$, indirect (unit) treatment effect (causal mediation effect, $\zeta_i(1-t)$: direct (unit) treatment effect, τ_i : total (unit) treatment effect. Total, indirect, and direct effects for $t \in \{0, 1\}$ are formally defined as the following (Imai et al. 2011): $\delta_i(t) \equiv Y_i(t, M_i(1)) - Y_i(t, M_i(0))$; $\zeta_i(t) \equiv Y_i(1, M_i(t)) - Y_i(0, M_i(t))$; $\tau_i \equiv Y_i(1, M_i(1)) - Y_i(0, M_i(0))$

The treatment of interest in this chapter varies attributability of the source quoted in the news report. This treatment varies whether the information was provided by a senior CIA official who spoke on the condition of anonymity or David S. Cohen, Deputy Director of the CIA.^{5 6} Below is a sample vignette with the treatments included in the parentheses.

Table 5.1: Vignette in CCAP and MTurk Experiments

[The New York Times/The Wall Street Journal]
U.S. Debates Drone Strikes in Country A
MAR. 17, 2019

WASHINGTON — The U.S. government is considering launching drone attacks on Country A in the Middle East, according to [a senior CIA official who spoke on the condition of anonymity/David S. Cohen, Deputy Director of the CIA]. Country A is believed to be harboring anti-American terrorist groups who are actively plotting imminent attacks against the United States and its citizens.

“The drone operations are likely to succeed in killing the militants,” said [the official/Mr. Cohen]. “But the number of civilian casualties is expected to be high,” he added.

After this revelation, the Justice Department confirmed that [it is not bringing criminal charges against/it is bringing criminal charges against][the official/Mr. Cohen] for disclosing details about the classified drone program.

After the vignette, respondents were asked to answer the following mediator question on news credibility.

- Suppose the U.S. decides [not] to launch drone strikes in Country A. Which of the following events do you think will have more than a 50% chance of being true? (Check all that apply.)
 - Country A is harboring anti-American terrorist groups.
 - The terrorist groups in Country A are plotting imminent attacks against the United States and its citizens.

⁵A David S. Cohen served as the Deputy Director of the CIA from 2015 to 2017.

⁶The second treatment is a dichotomous assignment of whether the source is criminally charged by the U.S. Department of Justice or not. The third treatment varies the media outlet, the *New York Times* or the *Wall Street Journal*. The combination of treatments in source attributability, source punishment, and media outlet results in 8 treatments.

- The drone attacks in Country A will succeed in killing the militants.
- There will be many civilian casualties.

Respondents were then asked the following question on their support for the drone strikes proposed in the vignette.

- Do you favor or oppose the U.S. launching drone strikes to attack the terrorist groups in Country A?
 - I strongly favor.
 - I favor.
 - I oppose.
 - I strongly oppose.

5.4 Data

The proposed survey experiment was fielded among two different groups of respondents: those recruited through YouGov’s Cooperative Campaign Analysis Project (CCAP); and those recruited through Amazon Mechanical Turk (MTurk).

Table 5.2 includes summary statistics from the pooled CCAP sample.⁷ To increase power, the experiment was fielded as a panel survey in two waves, one before the 2016 U.S. presidential election and one after it. The pre-election wave was fielded from September 29 to October 3, 2016 and the post-election wave from November 18 to December 18, 2016. A carry-over effect is unlikely; there was a gap of more than a month between the two waves. Subjects’ preoccupation by the presidential election helped subjects not feel constrained to respond the same in both waves (c.f. Hainmueller and Hiscox 2010, Tomz and Weeks 2013).⁸

⁷Summary statistics by wave are shown in Tables D.1 and D.2 in Appendix.

⁸See Appendix D for summary statistics by wave.

Table 5.2: CCAP Sample

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	1,916	0.66	0.47	0	1
Credibility of Foreign Policy Success Information	1,916	0.39	0.49	0	1
Credibility of Foreign Policy Cost Information	1,916	0.55	0.50	0	1
Treatment 1: Anonymous Source (vs. Named Source)	1,916	0.51	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	1,916	0.50	0.50	0	1
Treatment 3: Prosecution (vs. Non-Prosecution)	1,916	0.50	0.50	0	1
Age	1,916	50.41	15.92	20	96
Male	1,916	0.44	0.50	0	1
White	1,916	0.78	0.42	0	1
Married	1,916	0.53	0.50	0	1
Education	1,916	3.39	1.43	1	6
4-Year College or More	1,916	0.29	0.45	0	1
Employed Full-Time	1,916	0.42	0.49	0	1
Income	1,682	6.00	3.27	1	17
Republican	1,916	0.28	0.45	0	1
Democrat	1,916	0.40	0.49	0	1
Conservative	1,830	3.07	1.18	1	5
Wave	2,000	1.50	0.50	1	2
Weight	1,916	1.00	1.23	0.09	7.24

Note: This is an unbalanced panel dataset with 1000 observations in the first wave and 916 observations in the second wave.

For generalizability and replicability, I also include results from a partial sample of respondents recruited on Amazon Mechanical Turk for a separate experiment.⁹ The first wave of the MTurk experiment was fielded from November 6, 2016 to November 13, 2016. The second wave was fielded from February 26, 2017 to April 13, 2017. Table 5.3 below includes summary statistics of the MTurk sample from both waves.

⁹Not all respondents in the MTurk experiment were assigned to the treatments comparable to the CCAP experiment. Thus, the analysis includes only MTurk respondents who overlap with CCAP respondents in their randomly assigned treatments.

Table 5.3: Baseline MTurk Sample

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	1,030	0.42	0.49	0	1
Support for Drone Attacks (Ordinal)	1,030	0.46	0.26	0.00	1.00
Credibility of Foreign Policy Cost Information	1,063	0.78	0.41	0	1
Treatment 1: Unnamed Source (vs. Named Source)	1,063	0.51	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	1,063	0.49	0.50	0	1
Treatment 3: Prosecution(vs. Non-Prosecution)	1,057	0.51	0.50	0	1
Paying Attention to Politics	1,032	3.09	0.85	1	4
Most Important Problem: Foreign Policy	1,063	0.04	0.19	0	1
Republican	1,063	0.27	0.44	0	1
Conservative (Ordinal)	1,032	2.66	1.10	1	5
Age	1,030	36.95	12.20	19	81
Male	1,063	0.54	0.50	0	1
White	1,063	0.72	0.45	0	1
Education (Ordinal)	1,031	5.55	1.49	1	8
Married	1,063	0.38	0.48	0	1
Employed Full-Time	1,063	0.57	0.50	0	1
Income	1,031	6.21	3.41	1	15
Religion is Important	1,031	2.26	1.22	1	4
Wave	1,063	1.41	0.49	1	2

5.5 Results

As expected, the public perceived named leakers as more credible than anonymous leakers. Table 5.4 displays the results of linear regression models of perceived credibility of information about drone strikes' civilian deaths. Respondents were more likely believe in the prospect of the proposed drone strikes causing many civilian casualties when the information was provided by a named source than an anonymous source. The effect of named sourcing on credibility of information about policy costs was generally significant at the 0.05 or 0.1 levels for both groups of respondents. Source attributability increased information credibility by more than 3 percentage points among the CCAP sample and over 4 percentage points among the MTurk sample. 56.7 percent of the CCAP respondents assigned to read the news about civilian casualties from the drone strikes with a named source believed that the news was likely to be true whereas only 52.6 percent of the respondents who read the news report with an anonymous source saw it as credible.

Similarly, 80.3 percent of the MTurk respondents assigned to a named source believed in the veracity of the unsavory information, compared to 76.1 percent of those assigned to an unnamed source.

Table 5.4: Linear Probability Models of Credibility of Information about Foreign Policy Costs

	Credibility of Foreign Policy Cost Information					
	CCAP Sample			MTurk Sample		
	(1)	(2)	(3)	(1)	(2)	(3)
Source Attributability	0.041*	0.040*	0.031	0.042	0.055**	0.052**
	(0.023)	(0.023)	(0.024)	(0.025)	(0.025)	(0.024)
Prosecution		0.044*	0.041*		0.023	0.016
		(0.023)	(0.024)		(0.025)	(0.024)
New York Times		0.0002	-0.003		-0.029	-0.024
		(0.023)	(0.024)		(0.025)	(0.025)
Age			-0.001			-0.003***
			(0.001)			(0.001)
Male			-0.048*			0.006
			(0.025)			(0.025)
White			0.049			0.076***
			(0.030)			(0.028)
Married			-0.009			-0.013
			(0.025)			(0.028)
Education			0.004			0.019**
			(0.009)			(0.009)
Full-Time Employed			-0.024			-0.036
			(0.027)			(0.026)
Income			0.001			0.002
			(0.001)			(0.004)
Republican			-0.037			-0.087**
			(0.032)			(0.039)
Conservative			-0.053***			-0.028*
			(0.012)			(0.016)
Constant	0.526***	0.504***	0.703***	0.761***	0.762***	0.854***
	(0.016)	(0.023)	(0.067)	(0.018)	(0.024)	(0.072)
Observations	1,916	1,916	1,709	1,063	1,057	1,026
R ²	0.002	0.004	0.030	0.003	0.006	0.055
Adjusted R ²	0.001	0.002	0.023	0.002	0.003	0.044

Note:

*p<0.1; **p<0.05; ***p<0.01

Respondents who believed that the drone strikes will result in civilian casualties were also more likely to oppose the strikes. Perceived credibility of the information about policy costs was strongly associated with public opposition to the attacks. Among the CCAP sample, only 20.1 percent of those who did not believe the information to be true opposed the strikes whereas 45.2 percent of those who did believe it opposed them. Among the MTurk sample, 36.7 percent of the non-believers opposed the military action whereas a whopping 63.6 percent of the believers did.

The association was statistically significant at the 0.01 level (Table 5.5).

Table 5.5: Linear Probability Models of Foreign Policy Opposition

	Foreign Policy Opposition			
	CCAP Sample		MTurk Sample	
	(1)	(2)	(1)	(2)
Credibility of Foreign Policy Cost Information	0.251*** (0.021)	0.203*** (0.021)	0.269*** (0.038)	0.181*** (0.036)
Age		-0.005*** (0.001)		-0.003*** (0.001)
Male		-0.102*** (0.021)		0.027 (0.029)
White		-0.006 (0.025)		-0.002 (0.033)
Married		-0.043** (0.021)		-0.033 (0.032)
Education		0.018** (0.008)		0.018* (0.010)
Full-Time Employed		-0.026 (0.023)		0.005 (0.030)
Income		-0.0001 (0.0005)		-0.009* (0.005)
Republican		-0.118*** (0.027)		-0.167*** (0.045)
Conservative		-0.077*** (0.010)		-0.091*** (0.018)
Constant	0.201*** (0.015)	0.771*** (0.056)	0.367*** (0.034)	0.810*** (0.085)
Observations	1,916	1,709	1,030	1,026
R ²	0.070	0.218	0.046	0.184
Adjusted R ²	0.069	0.214	0.045	0.176

Note:

*p<0.1; **p<0.05; ***p<0.01

The experiments also show that source attributability results in public opposition of the government’s policy proposal. Table 5.6 shows estimates of the indirect effects (ACME) and direct effects (ADE) of source attributability on public support for drone strikes with credibility of the bad news about the strikes as a mediator among the CCAP sample as well as the MTurk sample.¹⁰

The source’s identifiability contributed to public opposition of the policy—either directly (in the case of the CCAP sample) or indirectly (in the case of the MTurk sample)—according to

¹⁰Effects of causal mediation were measured using the R package “mediation” by Imai et al. (2011).

the causal mediation models (Table 5.6). The coefficients for the Average Direct Effect (ADE) and the Average Causal Mediation Effect (ACME) are positive and significant at the 0.01 level for the CCAP sample and at the 0.1 level for the MTurk sample, respectively.

In particular, credibility of hurtful information about the policy was a statistically significant mediator through which source attributability affected public opposition to the policy. In other words, named sources increased credibility of the information about the strikes' human costs, which turned the respondents against the use of force.

Table 5.6: Causal Mediation Models of Foreign Policy Opposition

Model	Effect	CCAP Sample				MTurk Sample			
		Estimate	95% CI Lower	95% CI Upper	P-Value	Estimate	95% CI Lower	95% CI Upper	P-Value
1	ACME	0.010	-0.003	0.024	0.140	0.013	-0.002	0.030	0.106
	ADE	0.055***	0.012	0.097	0.002	0.027	-0.032	0.087	0.342
2	ACME	0.010	-0.003	0.023	0.140	0.013*	-0.003	0.031	0.094
	ADE	0.056**	0.012	0.098	0.010	0.034	-0.023	0.095	0.260
3	ACME	0.006	-0.005	0.018	0.304	0.009*	-0.001	0.020	0.082
	ADE	0.053***	0.014	0.092	0.004	0.038	-0.014	0.095	0.146

Note: *p<0.1; **p<0.05; ***p<0.01

Mediation Model in Model 1: Probit Regression of Perceived Credibility ~Source Attributability

Outcome Model in Model 1: Probit Regression of Opposition toward Drone Strikes ~Perceived Credibility+Source Attributability

Mediation Model in Model 2: Probit Regression of Perceived Credibility ~Source Attributability+Source Prosecution+NYT

Outcome Model in Model 2: Probit Regression of Opposition toward Drone Strikes ~Perceived Credibility+Source Attributability+Source Prosecution+NYT

Mediation Model in Model 3: Probit Regression of Perceived Credibility ~Source Attributability+Source Prosecution+NYT+Age+Male+White+Married+Education+Employed Full-Time+Income+Republican+Conservative

Outcome Model in Model 3: Probit Regression of Opposition toward Drone Strikes ~Perceived Credibility+Source Attributability+Source Prosecution+NYT+Age+Male+White+Married+Education+Employed Full-Time+Income+Republican+Conservative

5.6 Discussion

This chapter implies that leakers of anti-government information must reveal their identity in order to be perceived as credible. If they remain anonymous, the public is likely to discount the veracity of the information they reveal, limiting the political impact of their revelations and failing to persuade and engage the public.

These findings are extremely relevant to the political climate of 2018. Recently, many bureaucrats have “leaked” unsavory information about the Trump administration and its seemingly

erratic foreign policy. In particular, a senior government official whose identity was not revealed recently wrote an op-ed published in the *New York Times* in which the official criticized Trump and claimed to be part of the move to resist and contain Trump inside the administration. Yet this chapter implies that the anonymous senior government official's political impact is likely to be limited despite the media hype if the official continues to remain anonymous. By remaining anonymous, the official is protecting his or her job but paying the cost of anonymity—loss of credibility.

Chapters 2, 3, 4, and 5, in part or full, have been submitted for publication of the material. Suong, Clara H. 2018. *Anonymous Sources and the National Interest: Persuasion by Credible Confirmation*. The dissertation author is the sole author of this paper.

Chapter 6

Conclusion

In this dissertation, I argue that “helpful” national security information provided by anonymous sources is viewed as credible because of the perceived potential for the sources to be punished by governments for revealing the truth. By being anonymous, the source is signaling to the audience that he is risking punishment for revealing government secrets, especially about sensitive foreign policy issues. This justifies his anonymity and makes his communication potentially costly, imparting credibility to the information he reveals. Moreover, criminal punishment of anonymous sources can result in political gains for the enforcing government by enhancing credibility of positive information about its foreign policy proposal, increasing domestic support for the proposal, and credibly signaling to foreign adversaries.

The dissertation also discusses the dilemma governments face when enforcing secrecy of politically hurtful information. Governments can assert bureaucratic control by imposing criminal punishment on bureaucrats who reveal damaging information without authorization. However, this comes as a political cost. Criminal punishment would verify whether the hurtful information is true. The verification would be beneficial if the leaked information is false, allowing the government to change the initial political narrative. However, the verification is costly if the leaked information is true as it would confirm the veracity of the hurtful information. These

asymmetric motives drive the government to not punish leakers of the truth, resulting in a leak to be more likely to be truthful than false.

Foreign policymaking is often shrouded in secrecy. Such secrecy is often justified in the name of national interest. Secrecy is said to be necessary for information about issues such as “troop strength estimates and specific vulnerabilities, negotiating positions, [or] the content of decoded enemy communications, and the means and capabilities that obtained them” (Colaesi 2014, 4-5); revelation of such information may undermine foreign policy successes by “allowing a potential threat to either block the anticipated moves or increase the costs of militarized action” (Colaesi 2014). Elites and the public in democracies agree on the necessity of secrecy for national security reasons (Colaesi 2014). The consensus is often institutionalized as in the case of the United Kingdom’s Official Secrets Act (Sagar 2013; Colaesi 2014).

However, such secrecy may clash with democratic principles. Secrecy about foreign policymaking often aggravates the informational gap between the public and elites. It makes it difficult for a democratic public to hold elites accountable. It allows elites to mislead or deceive the public about foreign policy via selective revelation or concealment of information as in the case of the Johnson administration’s cover-up of the Gulf of Tonkin Incident (Reiter 2012), the Roosevelt administration’s “blame-shifting” to Germany to rally the public around World War II (Schuessler 2010, 2013), and the Bush administration’s pro-war campaign for Iraq War (Schuessler 2013)

Ironically, the recent technological development and the subsequent spread of social media are likely to aggravate the informational gap between the public and elites. The recent technological development and the subsequent spread of social media brought down the costs of supplying and consuming information, leading to a phenomenal increase of political information available to the public. It was widely assumed that this “democratization” of the information market would empower citizens in democracies, allowing them to be more informed, and prevent governments, both domestic and foreign, to manipulate information flows. It was assumed that an

information market with ample and accurate information, free from intervention by governments, would emerge in democracies with institutionalized protection of free press. It was believed that the new media environment would allow non-traditional media outlets to arise and create healthy competition with traditional media outlets. Pundits predicted that the increase in competition among media outlets would lead to more transparency in informational flows and prevent media outlets from reporting inaccurate facts. It was also believed that the increase in competition would prevent governments from becoming the sole “influencer” in the new media environment, allowing the new “watchdogs” to block governments from spreading false information, such as the war propaganda campaign by the U.K. government in World War I.

However, the rise of “fake news” and the alleged disinformation campaign by Russia in the 2016 U.S. presidential election showed that these optimistic predictions were wrong in three ways. First, more information about policies did not lead to higher quality of information available to the public. Second, the previously acclaimed democratization in the supply of information did not always decrease the influence of powerful political entities, such as domestic or foreign governments. Third, fast diffusion of information via multiple sources made it difficult to assess veracity of the information.

In particular, citizens nowadays face the difficult task of having to judge accuracy of information by sifting through layers of information provided by multiple sources in the complex environment of social media. The rise of fake news and the growing distrust of the media show the importance of verifying the original source of information; news consumers cannot—or are unwilling to—assume that the media has the incentive to report the truth. This dissertation is a step in the direction of focusing on the original source of political information. I hope this dissertation will contribute to and instigate further conversations about the public’s burden and need for verifying and assessing information about foreign policy.

Appendix A

Appendix for Chapter 2

Table A.1: List of Verb Cues

	Reported Verb	lemma	stem
0	say	say	say
1	expect	expect	expect
2	add	add	add
3	think	think	think
4	report	report	report
5	believe	believe	believ
6	want	want	want
7	note	note	note
8	agree	agree	agre
9	tell	tell	tell
10	announce	announce	announc
11	plan	plan	plan
12	hope	hope	hope
13	consider	consider	consid
14	estimate	estimate	estim
15	know	know	know
16	ask	ask	ask
17	call	call	call
18	argue	argue	argu
19	predict	predict	predict
20	cite	cite	cite
21	see	see	see
22	find	find	find
23	suggest	suggest	suggest
24	claim	claim	claim
25	contend	contend	contend
26	show	show	show
27	indicate	indicate	indic
28	post	post	post
29	decide	decide	decid
30	insist	insist	insist
31	declare	declare	declar
32	propose	propose	propos
33	warn	warn	warn
34	complain	complain	complain
35	require	require	requir
36	deny	deny	deni
37	intend	intend	intend
38	accuse	accuse	accus
39	disclose	disclose	disclos
40	decline	decline	declin
41	explain	explain	explain
42	acknowledge	acknowledge	acknowledg
43	attribute	attribute	attribut
44	concede	concede	conced
45	have	have	have
46	urge	urge	urg
47	admit	admit	admit
48	recall	recall	recal
49	allege	allege	alleg
50	charge	charge	charg
51	offer	offer	offer
52	conclude	conclude	conclud
53	write	write	write
54	worry	worry	worri
55	fear	fear	fear
56	feel	feel	feel
57	confirm	confirm	confirm
58	describe	describe	describ
59	promise	promise	promis
60	rule	rule	rule
61	assume	assume	assum
62	figure	figure	figur
63	order	order	order
64	seek	seek	seek
65	refuse	refuse	refus
66	recommend	recommend	recommend
67	view	view	view
68	allow	allow	allow
69	assert	assert	assert

Table A.2: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
70	approve	approve	approv
71	comment	comment	comment
72	caution	caution	caution
73	demand	demand	demand
74	oppose	oppose	oppos
75	speculate	speculate	specul
76	advise	advise	advis
77	question	question	question
78	like	like	like
79	maintain	maintain	maintain
80	anticipate	anticipate	anticip
81	blame	blame	blame
82	concern	concern	concern
83	discuss	discuss	discuss
84	stress	stress	stress
85	wonder	wonder	wonder
86	observe	observe	observ
87	state	state	state
88	suspect	suspect	suspect
89	understand	understand	understand
90	convince	convince	convinc
91	project	project	project
92	realize	realize	realiz
93	vow	vow	vow
94	contribute	contribute	contribut
95	express	express	express
96	look	look	look
97	plead	plead	plead
98	doubt	doubt	doubt
99	forecast	forecast	forecast
100	respond	respond	respond
101	value	value	valu
102	emphasize	emphasize	emphas
103	favor	favor	favor
104	persuade	persuade	persuad
105	put	put	put
106	reply	reply	repli
107	talk	talk	talk
108	criticize	criticize	critic
109	discover	discover	discov
110	recognize	recognize	recogn
111	request	request	request
112	support	support	support
113	suppose	suppose	suppos
114	threaten	threaten	threaten
115	unveil	unveil	unveil
116	learn	learn	learn
117	prohibit	prohibit	prohibit
118	reject	reject	reject
119	signal	signal	signal
120	determine	determine	determin
121	encourage	encourage	encourag
122	provide	provide	provid
123	reveal	reveal	reveal
124	specify	specify	specifi
125	hint	hint	hint
126	hold	hold	hold
127	prefer	prefer	prefer
128	reiterate	reiterate	reiter
129	saw	saw	saw
130	accept	accept	accept
131	bet	bet	bet
132	consent	consent	consent
133	mention	mention	mention
134	seem	seem	seem
135	continue	continue	contin
136	convict	convict	convict
137	imply	imply	impli
138	mean	mean	mean
139	praise	praise	prais

Table A.3: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
140	quote	quote	quot
141	refer	refer	refer
142	wish	wish	wish
143	authorize	authorize	author
144	defend	defend	defend
145	define	define	defin
146	felt	felt	felt
147	inform	inform	inform
148	make	make	make
149	pledge	pledge	pledg
150	point	point	point
151	portray	portray	portray
152	read	read	read
153	regard	regard	regard
154	force	force	forc
155	give	give	give
156	guarantee	guarantee	guarante
157	illustrate	illustrate	illustr
158	invite	invite	invit
159	remark	remark	remark
160	remind	remind	remind
161	rumor	rumor	rumor
162	testify	testify	testifi
163	try	try	tri
164	assure	assure	assur
165	confess	confess	confess
166	divide	divide	divid
167	file	file	file
168	foresee	foresee	forese
169	forget	forget	forget
170	interpret	interpret	interpret
171	list	list	list
172	name	name	name
173	press	press	press
174	quip	quip	quip
175	reason	reason	reason
176	reckon	reckon	reckon
177	boast	boast	boast
178	dismiss	dismiss	dismiss
179	guess	guess	guess
180	hail	hail	hail
181	identify	identify	identifi
182	ignore	ignore	ignor
183	include	include	includ
184	outline	outline	outlin
185	permit	permit	permit
186	push	push	push
187	answer	answer	answer
188	characterize	characterize	character
189	counter	counter	counter
190	credit	credit	credit
191	deem	deem	deem
192	disagree	disagree	disagre
193	forbid	forbid	forbid
194	impose	impose	impos
195	indict	indict	indict
196	instruct	instruct	instruct
197	interest	interest	interest
198	notice	notice	notic
199	present	present	present
200	prevent	prevent	prevent
201	reaffirm	reaffirm	reaffirm
202	recount	recount	recount
203	remember	remember	rememb
204	set	set	set
205	sing	sing	sing
206	sniff	sniff	sniff
207	speak	speak	speak
208	study	study	studi
209	sue	sue	sue

Table A.4: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
210	term	term	term
211	voice	voice	voic
212	wait	wait	wait
213	address	address	address
214	applaud	applaud	applaud
215	appreciate	appreciate	appreci
216	attempt	attempt	attempt
217	attest	attest	attest
218	await	await	await
219	block	block	block
220	calculate	calculate	calcul
221	challenge	challenge	challeng
222	compare	compare	compar
223	comply	comply	compli
224	condemn	condemn	condemn
225	decry	decry	decri
226	denounce	denounce	denounc
227	dictate	dictate	dictat
228	disappoint	disappoint	disappoint
229	discourage	discourage	discourag
230	dub	dub	dub
231	entice	entice	entic
232	equate	equate	equat
233	hear	hear	hear
234	imagine	imagine	imagin
235	joke	joke	joke
236	justify	justify	justifi
237	lament	lament	lament
238	laud	laud	laud
239	notify	notify	notifi
240	ponder	ponder	ponder
241	prepare	prepare	prepar
242	proclaim	proclaim	proclaim
243	profess	profess	profess
244	promote	promote	promot
245	prove	prove	prove
246	rely	rely	reli
247	repeat	repeat	repeat
248	satisfy	satisfy	satisfi
249	sentence	sentence	sentenc
250	shout	shout	shout
251	solicit	solicit	solicit
252	stipulate	stipulate	stipul
253	tout	tout	tout
254	advocate	advocate	advoc
255	affirm	affirm	affirm
256	aim	aim	aim
257	allude	allude	allud
258	appeal	appeal	appeal
259	approach	approach	approach
260	aspire	aspire	aspir
261	assail	assail	assail
262	back	back	back
263	ban	ban	ban
264	bar	bar	bar
265	brag	brag	brag
266	celebrate	celebrate	celebr
267	chastise	chastise	chastis
268	choose	choose	choos
269	clarify	clarify	clarifi
270	clear	clear	clear
271	commit	commit	commit
272	confide	confide	confid
273	contemplate	contemplate	contempl
274	deride	deride	derid
275	discern	discern	discern
276	dispute	dispute	disput
277	echo	echo	echo
278	elaborate	elaborate	elabor
279	empower	empower	empow

Table A.5: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
280	endorse	endorse	endors
281	ensure	ensure	ensur
282	exclaim	exclaim	exclaim
283	explore	explore	explor
284	fret	fret	fret
285	get	get	get
286	go	go	go
287	highlight	highlight	highlight
288	implore	implore	implor
289	introduce	introduce	introduc
290	involve	involve	involv
291	label	label	label
292	laugh	laugh	laugh
293	need	need	need
294	negotiate	negotiate	negoti
295	nickname	nickname	nicknam
296	object	object	object
297	paint	paint	paint
298	perceive	perceive	perceiv
299	pinpoint	pinpoint	pinpoint
300	prescribe	prescribe	prescrib
301	pronounce	pronounce	pronounc
302	publish	publish	publish
303	purr	purr	purr
304	raise	raise	rais
305	rat	rat	rat
306	reassure	reassure	reassur
307	rebuff	rebuff	rebuff
308	record	record	record
309	regret	regret	regret
310	release	release	releas
311	resent	resent	resent
312	restate	restate	restat
313	rethink	rethink	rethink
314	sense	sense	sens
315	snap	snap	snap
316	snort	snort	snort
317	stand	stand	stand
318	surprise	surprise	surpris
319	survey	survey	survey
320	theorize	theorize	theoriz
321	underscore	underscore	underscor
322	understate	understate	underst
323	uphold	uphold	uphold
324	volunteer	volunteer	volunt
325	vote	vote	vote
326	welcome	welcome	welcom
327	absolve	absolve	absolv
328	acclaim	acclaim	acclaim
329	account	account	account
330	assess	assess	assess
331	attack	attack	attack
332	avoid	avoid	avoid
333	battle	battle	battl
334	beam	beam	beam
335	become	become	becom
336	beg	beg	beg
337	begin	begin	begin
338	bemoan	bemoan	bemoan
339	bid	bid	bid
340	bill	bill	bill
341	brim	brim	brim
342	burble	burble	burbl
343	buttress	buttress	buttress
344	buy	buy	buy
345	capture	capture	captur
346	care	care	care
347	caricature	caricature	caricatur
348	castigate	castigate	castig
349	chide	chide	chide

Table A.6: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
350	chuckle	chuckle	chuckl
351	commission	commission	commiss
352	communicate	communicate	commun
353	concentrate	concentrate	concentr
354	concur	concur	concur
355	conspire	conspire	conspir
356	construe	construe	constru
357	contain	contain	contain
358	contest	contest	contest
359	convey	convey	convey
360	couch	couch	couch
361	counsel	counsel	counsel
362	count	count	count
363	croon	croon	croon
364	crow	crow	crow
365	cry	cry	cri
366	dare	dare	dare
367	deflect	deflect	deflect
368	delight	delight	delight
369	deliver	deliver	deliv
370	demonstrate	demonstrate	demonstr
371	demur	demur	demur
372	depict	depict	depict
373	desire	desire	desir
374	detail	detail	detail
375	detect	detect	detect
376	develop	develop	develop
377	diagnose	diagnose	diagnos
378	direct	direct	direct
379	disapprove	disapprove	disapprov
380	discipline	discipline	disciplin
381	disclaim	disclaim	disclaim
382	disincline	disincline	disinclin
383	dislike	dislike	dislik
384	disturb	disturb	disturb
385	downgrade	downgrade	downgrad
386	downplay	downplay	downplay
387	draw	draw	draw
388	dream	dream	dream
389	embrace	embrace	embrac
390	emerge	emerge	emerg
391	enable	enable	enabl
392	envisage	envisage	envisag
393	envision	envision	envis
394	erupt	erupt	erupt
395	establish	establish	establish
396	evaluate	evaluate	evalu
397	evince	evince	evinc
398	examine	examine	examin
399	exclude	exclude	exclud
400	exhort	exhort	exhort
401	exonerate	exonerate	exoner
402	expound	expound	expound
403	fantasize	fantasize	fantas
404	fault	fault	fault
405	feud	feud	feud
406	flay	flay	flay
407	flirt	flirt	flirt
408	focus	focus	focu
409	frighten	frighten	frighten
410	fume	fume	fume
411	gauge	gauge	gaug
412	gloat	gloat	gloat
413	grant	grant	grant
414	grip	grip	grip
415	grouse	grouse	grous
416	growl	growl	growl
417	grumble	grumble	grumbl
418	gush	gush	gush
419	harp	harp	harp

Table A.7: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
420	herald	herald	herald
421	impress	impress	impress
422	incline	incline	inclin
423	incorporate	incorporate	incorpor
424	induce	induce	induc
425	influence	influence	influenc
426	inquire	inquire	inquir
427	insinuate	insinuate	insinu
428	intejject	intejject	intejject
429	investigate	investigate	investig
430	irk	irk	irk
431	jump	jump	jump
432	lambast	lambast	lambast
433	lay	lay	lay
434	lecture	lecture	lectur
435	license	license	licens
436	limit	limit	limit
437	link	link	link
438	lobby	lobby	lobbi
439	love	love	love
440	mail	mail	mail
441	maintain	maintain	maintain
442	mandate	mandate	mandat
443	marvel	marvel	marvel
444	measure	measure	measur
445	mind	mind	mind
446	misstate	misstate	misstat
447	moan	moan	moan
448	mount	mount	mount
449	muse	muse	muse
450	nod	nod	nod
451	nominate	nominate	nomin
452	obligate	obligate	oblig
453	opt	opt	opt
454	pass	pass	pass
455	pay	pay	pay
456	peg	peg	peg
457	place	place	place
458	please	please	pleas
459	poise	poise	pois
460	preach	preach	preach
461	preoccupy	preoccupy	preoccupi
462	pressure	pressure	pressur
463	presume	presume	presum
464	pretend	pretend	pretend
465	prim	prim	prim
466	produce	produce	produc
467	proffer	proffer	proffer
468	prompt	prompt	prompt
469	protest	protest	protest
470	purport	purport	purport
471	quash	quash	quash
472	rave	rave	rave
473	reassert	reassert	reassert
474	re-emphasize	re-emphasize	re-emphas
475	reflect	reflect	reflect
476	reignite	reignite	reignit
477	relate	relate	relat
478	relieve	relieve	reliev
479	rename	rename	renam
480	renew	renew	renew
481	renounce	renounce	renounc
482	repute	repute	reput
483	resist	resist	resist
484	resolve	resolve	resolv
485	respect	respect	respect
486	restrain	restrain	restrain
487	review	review	review
488	romance	romance	romanc
489	ruminare	ruminare	rumin

Table A.8: List of Verb Cues (Continued)

	Reported Verb	lemma	stem
490	salute	salute	salut
491	schedule	schedule	schedul
492	score	score	score
493	scream	scream	scream
494	send	send	send
495	share	share	share
496	shrug	shrug	shrug
497	sigh	sigh	sigh
498	sign	sign	sign
499	spell	spell	spell
500	sponsor	sponsor	sponsor
501	stagewhispers	stagewhispers	stagewhisp
502	strive	strive	strive
503	swear	swear	swear
504	take	take	take
505	teach	teach	teach
506	tear	tear	tear
507	teem	teem	teem
508	terrify	terrify	terrifi
509	trouble	trouble	troubl
510	trumpet	trumpet	trumpet
511	turn	turn	turn
512	underestimate	underestimate	underestim
513	unleash	unleash	unleash
514	verify	verify	verifi
515	wad	wad	wad
516	whisper	whisper	whisper
517	witness	witness	wit
518	wrestle	wrestle	wrestl

Appendix B

Appendix to Chapter 3

B.1 Proofs

We begin by deriving the veracity coefficient from the audience's posterior beliefs. The total probability of an unprosecuted leak is

$$\eta = t(1 - p_t) [\lambda_t + (1 - \lambda_t)m_t] + (1 - t)(1 - p_f) [\lambda_f + (1 - \lambda_f)m_f],$$

and the four constituent events can be expressed as:

$$\begin{aligned} \eta \cdot \mu_1 &= t(1 - \lambda_t)m_t(1 - p_t) & \eta \cdot \mu_3 &= (1 - t)(1 - \lambda_f)m_f(1 - p_f) \\ \eta \cdot \mu_2 &= t\lambda_t(1 - p_t) & \eta \cdot \mu_4 &= (1 - t)\lambda_f(1 - p_f), \end{aligned}$$

where

$$\begin{aligned}\mu_1 &= \frac{t(1-\lambda_t)m_t(1-p_t)}{t(1-p_t)[\lambda_t+(1-\lambda_t)m_t]+(1-t)(1-p_f)[\lambda_f+(1-\lambda_f)m_f]} \\ \mu_2 &= \frac{t\lambda_t(1-p_t)}{t(1-p_t)[\lambda_t+(1-\lambda_t)m_t]+(1-t)(1-p_f)[\lambda_f+(1-\lambda_f)m_f]} \\ \mu_3 &= \frac{(1-t)(1-\lambda_f)m_f(1-p_f)}{t(1-p_t)[\lambda_t+(1-\lambda_t)m_t]+(1-t)(1-p_f)[\lambda_f+(1-\lambda_f)m_f]} \\ \mu_4 &= \frac{(1-t)\lambda_f(1-p_f)}{t(1-p_t)[\lambda_t+(1-\lambda_t)m_t]+(1-t)(1-p_f)[\lambda_f+(1-\lambda_f)m_f]}.\end{aligned}$$

Proof of Lemma 1. Suppose $\lambda_f = 0$ in some equilibrium. Then, $q_f = 0$, which implies that $p_f = 0$, so the government will not prosecute. But since $p_f = 0 < p_f^*$, the bureaucrat will leak, so $\lambda_f = 1$, a contradiction. \square

Proof of Lemma 2. Suppose there exists an equilibrium in which the bureaucrat mixes in both situations. Then the following must hold:

$$\begin{aligned}\lambda_f \in (0, 1) &\Rightarrow p_f = p_f^* \in (0, 1) \Rightarrow q_f = q_f^* \Rightarrow q_f^* < 1 \\ \lambda_t \in (0, 1) &\Rightarrow p_t = p_t^* \in (0, 1) \Rightarrow q_t = q_t^* \Rightarrow q_t^* > 0.\end{aligned}$$

Using the definitions from (3.2), we now obtain

$$q_t^* > 0 \Rightarrow c > (1-v)V,$$

which in turn means that

$$q_f^* = \frac{(1+v)V+c}{2b} > \frac{(1+v)V+(1-v)V}{2b} = \frac{V}{b} > 1,$$

where the last step follows from $b < V$. But this contradicts the equilibrium requirement that $q_f^* < 1$. \square

Proof of Lemma 3. Suppose $\lambda_t = 1$ in equilibrium. This implies that $q_t = 1 > q_t^*$, and so $p_t = 1 > p_t^*$, which in turn implies that $\lambda_t = 0$, a contradiction. \square

Proof of Proposition 1. Suppose $\lambda_t \in (0, 1)$ in equilibrium. This requires that $p_t = p_t^* \in (0, 1)$, which in turn requires that $q_t = q_t^*$. The latter is only possible if $q_t^* \geq 0$, which in turn implies that $q_f^* > 1$. But then $q_f < q_f^*$, and thus $p_f = 0$. (Recall that $\lambda_f = 1 \Rightarrow q_f = 1$.) We derive λ_t from the requirement that $q_t = q_t^*$. Since $\lambda_f = 1$, $p_f = 0$, $\lambda_t \in (0, 1)$, and $p_t = p_t^* \in (0, 1)$, we know that

$$\eta = t(1 - p_t^*)[\lambda_t + (1 - \lambda_t)m_t] + (1 - t) > 0,$$

which in turn tells us that $\mu_3 = 0$ and $\eta \cdot \mu_4 = 1 - t$. This yields

$$v = \frac{t(1 - p_t^*)[(1 - m_t)\lambda_t + m_t] - (1 - t)}{t(1 - p_t^*)[(1 - m_t)\lambda_t + m_t] + (1 - t)},$$

and so

$$1 - v = \frac{2(1 - t)}{\eta} > 0.$$

After some rearranging, this allows us to express $q_t = q_t^*$ as:

$$c - \frac{2(1 - t)V}{\eta} = \frac{2b\lambda_t}{\lambda_t + (1 - \lambda_t)m_t}.$$

This is a quadratic $a_2\lambda_t^2 + a_1\lambda_t + a_0 = 0$, with

$$a_2 = t(1 - p_t^*)(1 - m_t)[(1 - m_t)c - 2b] < 0$$

$$a_1 = 2t(1 - p_t^*)m_t[(1 - m_t)c - b] + (1 - t)[(1 - m_t)(c - 2V) - 2b]$$

$$a_0 = m_t[(1 - t)(c - 2V) + t(1 - p_t^*)m_t c]$$

Some algebra shows that the discriminant is $D = a_1^2 - 4a_0a_2 > 0$, so the equation has two roots.

We now examine which, if any, of these is a valid solution (between 0 and 1).

We first show that $a_0 > 0$ must obtain at a valid solution. Seeking a contradiction, suppose that $a_0 \leq 0$ and a positive root exists. Since $a_0 \leq 0$ can be written as $(1-t)(c-2V) \leq -t(1-p_t^*)m_t c$, we obtain:

$$\begin{aligned}
a_1 &= 2t(1-p_t^*)m_t [(1-m_t)c-b] - 2b(1-t) + (1-m_t)(1-t)(c-2V) \\
&\leq 2t(1-p_t^*)m_t [(1-m_t)c-b] - 2b(1-t) - (1-m_t)t(1-p_t^*)m_t c \\
&= t(1-p_t^*)m_t [2(1-m_t)c-2b-(1-m_t)c] - 2b(1-t) \\
&= -t(1-p_t^*)m_t [2b-(1-m_t)c] - 2b(1-t) < 0.
\end{aligned}$$

If $a_0 \leq 0$, then $D = a_1^2 - 4a_0a_2 \leq a_1^2$ as well, or, since $a_1 < 0$, $-a_1 \geq \sqrt{D}$, which we can rewrite as $0 \leq -a_1 - \sqrt{D} < -a_1 + \sqrt{D}$. But then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} < \frac{-a_1 - \sqrt{D}}{2a_2} \leq 0,$$

and so both roots are inadmissible. Therefore, $a_0 > 0$ is necessary for the solution to obtain. We can write this as (3.3).

Assume that (3.3) is satisfied, so $a_0 > 0$. We now show that only the larger root is admissible. Note that $a_0 > 0 \Rightarrow D > a_1^2$. If $a_1 \geq 0$, then we can write this as $-a_1 + \sqrt{D} \geq 0$, and then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} \leq 0 < \frac{-a_1 - \sqrt{D}}{2a_2},$$

so only the larger root is positive. If $a_1 < 0$, then $-a_1 - \sqrt{D} < 0$, and then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} < 0 < \frac{-a_1 - \sqrt{D}}{2a_2},$$

so only the larger root is positive. Therefore, the solution is

$$\lambda_t = \frac{-a_1 - \sqrt{a_1^2 - 4a_0a_2}}{2a_2}, \quad (\text{B.1})$$

which can be shown to not exceed 1 with some algebra. It is then straightforward to show that $t(1 - p_t^*)[(1 - m_t)\lambda_t + m_t] > 1 - t$; that is, that $v > 0$. \square

Proof of Proposition 2. Suppose that $\lambda_t = 0$, which requires that $p_t \geq p_t^* > 0$, which in turn requires that $q_t \geq q_t^*$. Since $\lambda_t = 0 \Rightarrow q_t = 0$, it follows that a necessary condition for this equilibrium is $q_t^* \leq 0$, or

$$v \leq 1 - \frac{c}{V}.$$

We shall examine the two cases separately. Suppose first that $q_t^* = 0$, so $v = 1 - c/V$. In this case,

$$q_f^* = \frac{(2 - \frac{c}{V})V + c}{2b} = \frac{V}{b} > 1,$$

which implies that the government will not punish leaks of false information ($p_f = 0$), which in turn implies that the bureaucrat will always leak it ($\lambda_f = 1$). Then, $\lambda_t = 0$, $\lambda_f = 1$, and $p_f = 0$ imply that

$$\eta = t(1 - p_t)m_t + (1 - t) > 0,$$

and it is readily verifiable that $\mu_2 = \mu_3 = 0$, $\eta \cdot \mu_1 = t(1 - p_t)m_t$, and $\eta \cdot \mu_4 = 1 - t$. This means that

$$v = \frac{t(1 - p_t)m_t - (1 - t)}{t(1 - p_t)m_t + (1 - t)}.$$

Setting this equal to $1 - c/V$ yields the equilibrium mixing probability for the government:

$$p_t = 1 - \left(\frac{1 - t}{t}\right) \left(\frac{2V - c}{m_t c}\right),$$

which is clearly less than 1. To ensure a valid probability, we require that it is also positive, or

$$t > \frac{2V - c}{2V - c + m_t c},$$

that is, the prior probability that the info is true must be sufficiently high. This completes the proof for the separating equilibrium with $\lambda_f = 1$ and $\lambda_t = 0$.

Suppose now that $q_t^* < 0$, so $v < 1 - c/V$. Then $p_t = 1$ irrespective of q_t , which in turn implies that $\eta = (1 - t)(1 - p_f) [\lambda_f + (1 - \lambda_f)m_f]$. There are two cases to consider, $p_f = 1$ and $p_f < 1$.

Assume that $p_f < 1$ so that $\eta > 0$. Then $\mu_1 = \mu_2 = 0$, and $\mu_3 + \mu_4 = 1$, which implies that $v = -1$, and so $q_f^* = c/(2b) < 1$.¹ If $p_f > p_f^* > 0$, then $\lambda_f = 0$, so $q_f = 0 < q_f^*$, which implies $p_f = 0$, a contradiction. If $p_f < p_f^* < 1$, then $\lambda_f = 1$, so $q_f = 1 > q_f^*$, which implies $p_f = 1$, a contradiction. If $p_f = p_f^*$, then the bureaucrat can mix. Since $p_f^* \in (0, 1)$, this also requires that the government is willing to mix, so $q_f = q_f^* = c/(2b)$. This pins down the bureaucrat's mixing probability:

$$\frac{\lambda_f}{\lambda_f + (1 - \lambda_f)m_f} = \frac{c}{2b},$$

which, of course, yields the equilibrium probability in (B.2). This completes the proof for the semi-separating equilibrium.

Assume that $p_f = 1$. Since $p_f = 1 > p_f^*$, it follows that $\lambda_f = 0$, so $q_f = 0$. But now $q_f^* > 0 = q_f$ implies that $p_f = 0$, a contradiction. There is no equilibrium here. \square

Proof of Lemma 4. $\frac{dvV}{dm_t} = \frac{2Vt(1-p_t^*)(1-\lambda_t)(1-t)}{[t(1-p_t^*)\{\lambda_t+(1-\lambda_t)m_t\}+(1-t)]^2}$. This quantity is positive as $p_t^* \in (0, 1)$ and $\lambda_t \in (0, 1)$ in the leak and punishment equilibrium. \square

Proof of Lemma 6. $V > b + c$ implies $vV - b > 2bq_t$ and thus $vV - b > 0$ since $c = 2bq_t + (1 - v)V$ in the leak and punishment equilibrium. Thus, $\Psi = t\lambda_t\{p_t^*(V - c + b) + (1 - p_t^*)(vV - b)\} +$

¹The audience penalizes the government because $p_t = 1$ but $p_f < 1$ mean that the only time the government fails to prosecute leaks is when they are false.

$$t(1 - \lambda_t)m_t\{p_t^*(V - c) + (1 - p_t^*)vV\} + (1 - t)(vV - b) > 0. \quad \square$$

B.2 Addendum: Proofs for an Undeterrable Bureaucrat

This section characterizes the equilibria for the cases where either $p_f^* \geq 1$ or $p_t^* \geq 1$ or both.

Proposition 5. *If $p_f^* \geq 1$ and $p_t^* \geq 1$, then the game has a unique sequential equilibrium, in which the bureaucrat always leaks and the government always prosecutes. If the audience ever observes unprosecuted leaks, it infers that the information is false and penalizes the government with $v = -1$.*

Proof. Since $p_f^* \geq 1$ and $p_t^* \geq 1$, it follows that $\lambda_f = \lambda_t = 1$ (the bureaucrat always leaks irrespective of veracity), which in turn means that $q_f = q_t = 1$ (the government knows that the bureaucrat has leaked).² Note now that since $q_t = 1 > q_t^*$, it follows that $p_t = 1$ (the government always prosecutes the leaker of truthful info). Putting all these together yields $\eta = (1 - t)(1 - p_f)$.

Suppose that $p_f < 1$ so $\eta > 0$. We then know that $\mu_1 = \mu_2 = \mu_3 = 0$ and $\mu_4 = 1$, which implies that $v = -1$. But then $q_f^* = \frac{c}{2b} < 1 = q_f$, which implies that $p_f = 1$, a contradiction.

Suppose that $p_f = 1$, so $\eta = 0$ and v is undefined. (Since the bureaucrat always leaks and the government always prosecutes, the probability of an unprosecuted leak is 0.) Since weak perfect Bayesian equilibrium does not specify beliefs after zero-probability events, we can assign some beliefs that would rationalize $p_f = 1$. In this case, any v such that $q_f^* \leq 1$. We know that any tremble $p_f < 1$ would yield $v = -1$, so we can assign this belief (it would obtain in a sequential equilibrium).³ □

²Technically, this holds strictly for $p_f^* > 1$ but since $p_f^* = 1$ is a knife-edge condition on the exogenous variables, the event of this occurring has measure zero, and we can ignore it.

³Alternatively, there is a perfect Bayesian equilibrium that is unique up to a specification of off-the-path beliefs (the probability distribution over equilibrium outcomes is the unique).

The essence of this result is mostly replicated when $p_f^* < 1$ but $p_t^* \geq 1$, as the following proposition shows.

Proposition 6. *If $p_f^* < 1 \leq p_t^*$, then the game has two equilibria. The first is the pooling equilibrium analogous to the one in Proposition 5. The second is a unique semi-separating equilibrium, in which the bureaucrat always leaks when the information is true and leaks with probability*

$$\lambda_f = \frac{m_f c}{m_f c + 2b - c} \quad (\text{B.2})$$

when the information is false. The government always prosecutes leaks of true information and prosecutes leaks of false information with probability $p_f = p_f^$. The audience infers (by Bayes rule) that any unprosecuted leak contains false information and penalizes the government with $v = -1$.*

Proof. Suppose now that $p_f^* < 1 \leq p_t^*$, which means that $\lambda_t = 1$, and thus $q_t = 1 > q_t^*$, so $p_t = 1$. By Lemma 1, $\lambda_f > 0$. If $\lambda_f = 1$, we replicate the pooling equilibrium from Proposition 5, so suppose instead that $\lambda_f \in (0, 1)$. Since the bureaucrat mixes, this requires that $p_f = p_f^*$, and since $p_f^* \in (0, 1)$ here, it follows that the government must mix as well, so $q_f = q_f^*$ is required. This tells us that $\eta = (1 - t)(1 - p_f^*) [\lambda_f + (1 - \lambda_f)m_f] > 0$. But then we know that $\mu_1 = \mu_2 = 0$ and $\mu_3 + \mu_4 = 1$, which implies that $v = -1$. This pins down $q_f^* = \frac{c}{2b} < 1$, which in turn yields the mixing probability through $q_f = q_f^*$:

$$\frac{\lambda_f}{\lambda_f + (1 - \lambda_f)m_f} = \frac{c}{2b},$$

which yields λ_f specified in the proposition. □

The equilibria from Propositions 5 and 6 are very similar in several important respects. First, the bureaucrat always leaks truthful information and the government always prosecutes these leaks. This is because the bureaucrat is highly motivated to make the information public and the

costs of punishment are not sufficiently high to deter that. On the government side, prosecution is attractive because the bureaucratic control will be asserted with certainty, and because the pro-government information will be verified whereas allowing the leak would cost if both control and the penalty of the audience (wrongly) inferring that the information is false. Second, the audience always penalizes any failure to prosecute leaks, either as a sequential requirement for off the path beliefs in the pooling equilibrium or as a result of Bayesian updating in the semi-separating one. When the information is false, the effect on the audience is irrelevant (as the penalty will be incurred whether prosecution occurs or not), so the government's only concern is asserting bureaucratic control. Since the bureaucrat is sometimes innocent, the government does not want to always prosecute (because of costs). In equilibrium, this trade-off is resolved such that the bureaucrat's optimal leaking strategy makes the government indifferent and so willing to play its optimal mixed strategy as well.

Proposition 7. *If $p_t^* < 1 \leq p_f^*$, then the game has two equilibria. The first is the leak and punishment equilibrium in Proposition 1. The second is a unique separating equilibrium, in which the bureaucrat always leaks when the information is true and never leaks when it is false and the government always prosecutes leaks of true and false information.*

Proof. Suppose now that $p_t^* < 1 \leq p_f^*$, which means that $\lambda_f = 1$, and thus $q_f = 1$. Suppose $q_f^* = q_f = 1$, which implies $q_t^* < 0$, consequently $q_t^* < q_t$, and thus $p_t = 1$ and $\lambda_t = 0$. However, this implies $c = 2b$, which cannot hold.

Suppose $q_f^* > q_f = 1$, which implies $p_f = 0$ and $\lambda_f = 1$, and $p_t = 1$. This requires $q_t > q_t^*$ and implies $p_t > p_t^*$, $\lambda_t = 0$, and $v = -1$. However, if $v = -1$ implies $q_f^* < 1$, which is contradictory. Suppose $q_f^* > q_f = 1$ and $p_t = 0$. This requires $q_t < q_t^*$ and implies $\lambda_t = 1$ and $q_t = 1$. This cannot hold since $q_t^* < 1$ according to (3.2). Suppose $q_f^* > q_f = 1$ and $p_t = 1 > p_t^*$ which require $q_t > q_t^*$ and imply $\lambda_t = 0$. However, these strategies imply $v = -1$ and $q_f^* = \frac{c}{2b} < 1$. Suppose $q_f^* > q_f = 1$ and $p_t = p_t^*$ which require $q_t = q_t^*$ and imply $\lambda_t \in (0, 1)$. This is equivalent to the leak and punish equilibrium (Proposition 1).

Suppose $q_f^* < q_f = 1$ which implies $p_f = 1$, $\lambda_f = 1$, $q_t^* < 0$, and thus $p_t = 1$ and $\lambda_t = 0$. Consequently, $\eta = 0$ and v is undefined. We can assign some beliefs that would rationalize $p_f = 1$. □

B.3 Experimental Data

B.3.1 Linear Probability Models of Credibility by Subsample

Similar to Table 3.4, the effect of leak prosecution remained statistically significant at the 0.05 level even after controlling for source attributability and media outlets.

Table B.1: Linear Probability Models of Perceived Credibility of Foreign Policy Success Information by Subsample

Perceived Credibility of Foreign Policy Success Information					
	Subsample with Anonymous Source	Subsample with Named Source		Full Sample	
Source Prosecution	0.067** (0.031)	0.099*** (0.032)	0.083*** (0.022)	0.083*** (0.022)	0.082*** (0.022)
Anonymous Source				0.016 (0.022)	0.016 (0.022)
New York Times					0.054** (0.022)
Constant	0.366*** (0.022)	0.334*** (0.022)	0.350*** (0.016)	0.343*** (0.019)	0.316*** (0.022)
Observations	979	937	1,916	1,916	1,916
R ²	0.005	0.010	0.007	0.007	0.010
Adjusted R ²	0.004	0.009	0.007	0.006	0.009

Note:

*p<0.1; **p<0.05; ***p<0.01

B.3.2 Linear Probability Models of Credibility with Random Effects for an Unbalanced Panel

Similar to Table 3.4, the effect of leak prosecution remained statistically significant in the equivalent linear probability models with random effects for unbalanced panel data. The models were estimated using the R package plm.

Table B.2: Linear Probability Models of Perceived Credibility of Foreign Policy Success Information with Random Effects for an Unbalanced Panel

	Perceived Credibility of Foreign Policy Success Information					
	Subsample with Anonymous Source	Subsample with Named Source	Full Sample			
Prosecution	0.064** (0.027)	0.100*** (0.028)	0.082*** (0.020)	0.082*** (0.020)	0.082*** (0.020)	0.078*** (0.021)
Anonymous				0.017 (0.025)	0.017 (0.025)	-0.002 (0.025)
New York Times					0.055** (0.025)	0.061** (0.025)
Age						0.00005 (0.001)
Male						0.095*** (0.026)
White						0.083*** (0.032)
Married						0.008 (0.026)
Education						0.003 (0.009)
Full-Time Employment						-0.053* (0.028)
Income						0.0004 (0.001)
Republican						0.059* (0.033)
Conservative						0.027** (0.013)
Constant	0.367*** (0.022)	0.332*** (0.022)	0.350*** (0.016)	0.341*** (0.020)	0.314*** (0.024)	0.122* (0.071)
Observations	979	937	1,916	1,916	1,916	1,709
R ²	0.006	0.012	0.008	0.009	0.011	0.037
Adjusted R ²	0.005	0.011	0.008	0.008	0.010	0.030

Note:

*p<0.1; **p<0.05; ***p<0.01

B.3.3 Probit Regression Models of Credibility

Similar to Table 3.4, the effect of leak prosecution was statistically significant in probit regression models of credibility.

Table B.3: Probit Regression Models of Perceived Credibility of Foreign Policy Success Information

	Perceived Credibility of Foreign Policy Success Information					
	Subsample with Anonymous Source	Subsample with Named Source		Full Sample		
Prosecution	0.173** (0.081)	0.261*** (0.084)	0.215*** (0.058)	0.216*** (0.058)	0.216*** (0.058)	0.212*** (0.062)
Anonymous				0.041 (0.058)	0.041 (0.058)	-0.007 (0.062)
New York Times					0.142** (0.058)	0.163*** (0.063)
Age						0.0001 (0.002)
Male						0.262*** (0.064)
White						0.224*** (0.080)
Married						0.007 (0.065)
Education						0.010 (0.023)
Employed Full-Time						-0.144** (0.070)
Income						0.001 (0.001)
Republican						0.166** (0.083)
Conservative						0.072** (0.032)
Constant	-0.342*** (0.058)	-0.429*** (0.060)	-0.384*** (0.042)	-0.405*** (0.051)	-0.477*** (0.059)	-1.010*** (0.180)
Observations	979	937	1,916	1,916	1,916	1,709
Akaike Inf. Crit.	1,316.739	1,242.447	2,556.259	2,557.761	2,553.811	2,248.519

Note:

*p<0.1; **p<0.05; ***p<0.01

B.3.4 Linear Probability Models of Foreign Policy Support

Similar to Table 3.5, respondents in the full sample who believed in the success of the drone strikes were also more likely to support them.

Table B.4: Linear Probability Models of Foreign Policy Support for the Full Sample

	Foreign Policy Support		
	<i>OLS</i>		<i>Panel Linear with Random Effect</i>
Perceived Credibility	0.193*** (0.022)	0.139*** (0.021)	0.097*** (0.020)
Age		0.005*** (0.001)	0.005*** (0.001)
Male		0.098*** (0.021)	0.104*** (0.025)
White		-0.015 (0.026)	-0.014 (0.031)
Married		0.045** (0.021)	0.047* (0.025)
Education		-0.019** (0.008)	-0.019** (0.009)
Full-Time Employed		0.039* (0.023)	0.029 (0.027)
Income		-0.0001 (0.0005)	-0.0001 (0.0005)
Republican		0.117*** (0.028)	0.123*** (0.031)
Conservative		0.083*** (0.011)	0.078*** (0.012)
Wave		-0.008 (0.021)	
Constant	0.586*** (0.014)	0.064 (0.063)	0.101 (0.065)
Observations	1,916	1,709	1,709
R ²	0.040	0.194	0.143
Adjusted R ²	0.039	0.189	0.138

Note:

*p<0.1; **p<0.05; ***p<0.01

B.3.5 Causal Mediation Models of Foreign Policy Support

Below are estimates of the indirect effects (ACME) and direct effects (ADE) of source prosecution on public support for drone strikes with perceived credibility as mediators among respondents in the weighted and unweighted full sample.

Table B.5: Causal Mediation Models of Foreign Policy Support for the Full Sample

Model	Effect	Full Sample				Weighted Full Sample			
		Estimate	95% CI Lower	95% CI Upper	P-Value	Estimate	95% CI Lower	95% CI Upper	P-Value
1	ACME	0.016***	0.006	0.027	0.002	0.016**	0.001	0.032	0.028
	ADE	-0.030	-0.072	0.011	0.152	-0.051	-0.119	0.019	0.156
2	ACME	0.016***	0.006	0.028	0.004	0.016**	0.001	0.035	0.030
	ADE	-0.030	-0.076	0.010	0.156	-0.049	-0.116	0.019	0.156
3	ACME	0.012***	0.004	0.022	0.004	0.011*	-0.001	0.026	0.084
	ADE	-0.021	-0.061	0.019	0.306	-0.033	-0.097	0.031	0.318
4	ACME	0.012***	0.004	0.022	0.002	0.012*	-0.001	0.028	0.068
	ADE	-0.024	-0.065	0.018	0.280	-0.032	-0.095	0.025	0.330

Note: *p<0.1; **p<0.05; ***p<0.01

Mediation Model in Model 1: Probit Regression of Perceived Credibility ~Anonymous+Prosecution+NYT
 Outcome Model in Model 1: Probit Regression of Support for Drone Strikes ~Perceived Credibility+Anonymous+Prosecution+NYT
 Mediation Model in Model 2: Probit Regression of Perceived Credibility ~Anonymous+Prosecution+AnonymousXProsecution+NYT
 Outcome Model in Model 2: Probit Regression of Support for Drone Strikes ~Perceived Credibility+Anonymous+Prosecution+AnonymousXProsecution+NYT
 Mediation Model in Model 3: Probit Regression of Perceived Credibility ~Anonymous+Prosecution+NYT+Age+Male+White+Married
 +Education+Employed Full-Time+Income+Republican+Conservative
 Outcome Model in Model 3: Probit Regression of Support for Drone Strikes ~Perceived Credibility+Anonymous+Prosecution+NYT+Age+Male+White+Married+Education
 +Employed Full-Time+Income+Republican+Conservative

Appendix C

Appendix to Chapter 4

Proof of Lemma 7. Suppose $l_f = 0$ and $l_t = 0$ in some equilibrium. Then, $q_f = 0$ and $q_t = 0$, which implies that $p_f = 0$ and $p_t = 0$, so the government will never prosecute. But since $p_f = 0 < p_f^*$ and $p_t = 0 < p_t^*$, the bureaucrat will always leak, so $l_f = 1$ and $l_t = 1$, a contradiction. \square

Proof of Lemma 8. Suppose $l_t = 0$ in some equilibrium. Then, $q_t = 0$, which implies that $p_t = 0$, so the government will not prosecute. But since $p_t = 0 < p_t^*$, the bureaucrat will leak, so $l_t = 1$, a contradiction. \square

Proof of Lemma 9. Suppose $l_f = 1$ and $l_t = 1$ in some equilibrium. Then, $q_f = 1$ and $q_t = 1$, which implies that $p_f = 1$ and $p_t = 1$, so the government will always prosecute. But since $p_f = 1 > p_f^*$ and $p_t = 1 > p_t^*$, the bureaucrat will never leak, so $l_f = 0$ and $l_t = 0$, a contradiction. \square

Proof of Lemma 10. Suppose there exists an equilibrium in which the bureaucrat mixes in both situations. Then the following must hold:

$$l_f \in (0, 1) \Rightarrow p_f = p_f^* \in (0, 1) \Rightarrow q_f = q_f^* \Rightarrow q_f^* < 1$$

$$l_t \in (0, 1) \Rightarrow p_t = p_t^* \in (0, 1) \Rightarrow q_t = q_t^* \Rightarrow q_t^* > 0.$$

Using the definitions from (3.2), we now obtain

$$q_t^* > 0 \Rightarrow c > (1 - v)V,$$

which in turn means that

$$q_f^* = \frac{(1 + v)V + c}{2b} > \frac{(1 + v)V + (1 - v)V}{2b} = \frac{V}{b} > 1,$$

where the last step follows from $b < V$. But this contradicts the equilibrium requirement that $q_f^* < 1$. □

Proof of Lemma 11. Suppose $l_f = 1$ in equilibrium. This implies that $q_f = 1 > q_f^*$, and so $p_f = 1 > p_f^*$, which in turn implies that $l_f = 0$, a contradiction. □

Proof of Proposition 3. Suppose $l_f \in (0, 1)$ in equilibrium. This requires that $p_f = p_f^* \in (0, 1)$, which in turn requires that $q_f = q_f^*$. The latter is only possible if $q_f^* \geq 0$, which in turn implies that $q_t^* > 1$. But then $q_t < q_t^*$, and thus $p_t = 0$. (Recall that $l_t = 1 \Rightarrow q_t = 1$.) We derive l_f from the requirement that $q_f = q_f^*$. Since $l_f \in (0, 1)$, $p_f = p_f^* \in (0, 1)$, $l_t = 1$, and $p_t = 0$, we know that

$$a = t + (1 - t)(1 - p_f^*) [l_f + (1 - l_f)m_f] > 0,$$

which in turn tells us that $\mu_3 = 0$ and $a \cdot \mu_4 = 1 - t$. This yields

$$v = \frac{-t + (1 - t)(1 - p_f^*) [l_f + (1 - l_f)m_f]}{t + (1 - t)(1 - p_f^*) [l_f + (1 - l_f)m_f]},$$

and so

$$1 - v = \frac{2t}{a} > 0.$$

After some rearranging, this allows us to express $q_f = q_f^*$ as:

$$c - \frac{2tV}{a} = \frac{2bl_f}{l_f + (1-l_f)m_f}.$$

This is a quadratic $a_2 l_f^2 + a_1 l_f + a_0 = 0$, with

$$a_2 = (1-t)(1-p_f^*)(1-m_f)\{c(1-m_f) - 2b\} < 0$$

$$a_1 = -2b\{m_f(1-p_f^*)(1-t) + t\} + (1-m_f)[c\{2m_f(1-p_f^*)(1-t) + t\} - 2tV]$$

$$a_0 = m_f[c\{m_f(1-p_f^*)(1-t) + t\} - 2tV]$$

Some algebra shows that the discriminant is $D = a_1^2 - 4a_0a_2 > 0$, so the equation has two roots.

We now examine which, if any, of these is a valid solution (between 0 and 1).

We first show that $a_0 > 0$ must obtain at a valid solution. Seeking a contradiction, suppose that $a_0 \leq 0$ and a positive root exists. If $a_0 \leq 0$, then $a_1 < 0$. If $a_0 \leq 0$, then $D = a_1^2 - 4a_0a_2 \leq a_1^2$ as well, or, since $a_1 < 0$, $-a_1 \geq \sqrt{D}$, which we can rewrite as $0 \leq -a_1 - \sqrt{D} < -a_1 + \sqrt{D}$. But then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} < \frac{-a_1 - \sqrt{D}}{2a_2} \leq 0,$$

and so both roots are inadmissible. Therefore, $a_0 > 0$ is necessary for the solution to obtain. We can write this as (3.3).

Assume that (3.3) is satisfied, so $a_0 > 0$. We now show that only the larger root is admissible. Note that $a_0 > 0 \Rightarrow D > a_1^2$. If $a_1 \geq 0$, then we can write this as $-a_1 + \sqrt{D} \geq 0$, and then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} \leq 0 < \frac{-a_1 - \sqrt{D}}{2a_2},$$

so only the larger root is positive. If $a_1 < 0$, then $-a_1 - \sqrt{D} < 0$, and then

$$a_2 < 0 \Rightarrow \frac{-a_1 + \sqrt{D}}{2a_2} < 0 < \frac{-a_1 - \sqrt{D}}{2a_2},$$

so only the larger root is positive. Therefore, the solution is

$$l_f = \frac{-a_1 - \sqrt{a_1^2 - 4a_0a_2}}{2a_2}, \quad (\text{C.1})$$

which can be shown to not exceed 1 with some algebra. It is then straightforward to show that

$$(1-t)(1-p_f^*) [l_f + (1-l_f)m_f] > t; \text{ that is, that } v > 0. \quad \square$$

Appendix D

Appendix to Chapter 5

Table D.1: Summary Statistics from the CCAP's Pre-Election Wave

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	1,000	0.66	0.47	0	1
Credibility of Threat Existence	1,000	0.51	0.50	0	1
Credibility of Threat Imminence	1,000	0.51	0.50	0	1
Credibility of Policy Success	1,000	0.36	0.48	0	1
Credibility of Policy Cost	1,000	0.51	0.50	0	1
Treatment 1: Anonymous Source (vs. Named Source)	1,000	0.51	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	1,000	0.50	0.50	0	1
Treatment 3: Prosecution (vs. Non-Prosecution)	1,000	0.50	0.50	0	1
Age	1,000	50.12	16.02	20	96
Male	1,000	0.44	0.50	0	1
White	1,000	0.77	0.42	0	1
Married	1,000	0.53	0.50	0	1
Education (Ordinal)	1,000	3.38	1.43	1	6
4-Year College or More	1,000	0.29	0.45	0	1
Employed Full-Time	1,000	0.42	0.49	0	1
Income	876	6.01	3.27	1	17
Republican	1,000	0.28	0.45	0	1
Democrat	1,000	0.39	0.49	0	1
Republican (Ordinal)	989	3.68	2.22	1	7
Conservative (Ordinal)	953	3.06	1.18	1	5
Weight	1,000	1.00	1.29	0.12	7.24
Wave	1,000	1.00	0.00	1	1
Field Period	September 29, 2016 - October 3, 2016				

Table D.2: Summary Statistics from the CCAP's Post-Election Wave

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	916	0.66	0.47	0	1
Support for Drone Attacks (Ordinal)	916	0.60	0.28	0.00	1.00
Credibility of Threat Existence	916	0.56	0.50	0	1
Credibility of Threat Imminence	916	0.51	0.50	0	1
Credibility of Policy Success	916	0.43	0.49	0	1
Credibility of Policy Cost	916	0.58	0.49	0	1
Comprehensive News Credibility Index	916	2.07	1.17	1	4
Treatment 1: Anonymous Source (vs. Named Source)	916	0.51	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	916	0.50	0.50	0	1
Treatment 3: Prosecution (vs. Non-Prosecution)	916	0.51	0.50	0	1
Age	916	50.72	15.81	20	96
Male	916	0.43	0.50	0	1
White	916	0.78	0.42	0	1
Married	916	0.53	0.50	0	1
Education	916	3.41	1.43	1	6
4-Year College or More	916	0.29	0.46	0	1
Employed Full-Time	916	0.42	0.49	0	1
Income	806	6.00	3.27	1	17
Republican	916	0.28	0.45	0	1
Democrat	916	0.40	0.49	0	1
Republican (Ordinal)	908	3.68	2.23	1	7
Conservative (Ordinal)	877	3.08	1.19	1	5
Wave	1,000	2.00	0.00	2	2
Weight	916	1.00	1.15	0.09	7.15
Field Period	November 18, 2016 - December 18, 2016				

Table D.3: Summary Statistics from the Baseline MTurk Sample's 1st Wave

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	621	0.41	0.49	0	1
Support for Drone Attacks (Ordinal)	621	0.45	0.27	0.00	1.00
News Believability of Threat Existence	630	0.74	0.44	0	1
News Believability of Threat Imminence	630	0.61	0.49	0	1
News Believability of Operational Success/Benefit	630	0.68	0.47	0	1
News Believability of Operational Cost	630	0.78	0.41	0	1
Comprehensive News Believability Index	630	2.80	1.25	0	4
Treatment 1: Unnamed Source (vs. Named Source)	630	0.51	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	630	0.49	0.50	0	1
Treatment 3: Prosecution/Investigation (vs. Non-Prosecution)	629	0.52	0.50	0	1
Paying Attention to Politics	620	3.05	0.85	1	4
Most Important Problem: Foreign Policy	630	0.04	0.20	0	1
Republican	630	0.26	0.44	0	1
Conservative (Ordinal)	620	2.61	1.07	1	5
Age	618	35.93	11.83	19	81
Male	630	0.56	0.50	0	1
White	630	0.73	0.45	0	1
Education (Ordinal)	619	5.50	1.48	1	8
Married	630	0.36	0.48	0	1
Employed Full-Time	630	0.57	0.50	0	1
Income	619	6.15	3.40	1	15
Religion is Important	619	2.24	1.21	1	4
Wave	630	1.00	0.00	1	1

Table D.4: Summary Statistics from the Baseline MTurk Sample's 2nd Wave

Statistic	N	Mean	St. Dev.	Min	Max
Support for Drone Attacks (Binary)	409	0.42	0.49	0	1
Support for Drone Attacks (Ordinal)	409	0.47	0.26	0.00	1.00
News Believability of Threat Existence	433	0.70	0.46	0	1
News Believability of Threat Imminence	433	0.54	0.50	0	1
News Believability of Operational Success/Benefit	433	0.64	0.48	0	1
News Believability of Operational Cost	433	0.78	0.41	0	1
Comprehensive News Believability Index	433	2.65	1.35	0	4
Treatment 1: Unnamed Source (vs. Named Source)	433	0.52	0.50	0	1
Treatment 2: New York Times (vs. Wall Street Journal)	433	0.48	0.50	0	1
Treatment 3: Prosecution/Investigation (vs. Non-Prosecution)	428	0.51	0.50	0	1
Paying Attention to Politics	412	3.16	0.84	1	4
Most Important Problem: Foreign Policy	433	0.04	0.19	0	1
Republican	433	0.28	0.45	0	1
Conservative (Ordinal)	412	2.72	1.14	1	5
Age	412	38.47	12.59	19	81
Male	433	0.53	0.50	0	1
White	433	0.72	0.45	0	1
Education (Ordinal)	412	5.62	1.51	1	8
Married	433	0.39	0.49	0	1
Employed Full-Time	433	0.57	0.50	0	1
Income	412	6.30	3.44	1	15
Religion is Important	412	2.29	1.23	1	4
Wave	433	2.00	0.00	2	2

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