Linguistic Changes in Foreign Policy Political Discourse

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The foreign policy of any nation has far-reaching consequences both domestically and abroad. Foreign policy encompasses the choices a nation makes in relation to entities outside the nation (Kaufman, 2010). Numerous studies have sought to elucidate the role of the executive (Crichlow, 2005; Dyson, 2008; Dyson & Preston, 2006) in creating policy and the attitudes of the public toward those policies (Cohrs & Moschner, 2002; McCleary, Nalls, & Williams, 2009; Sahar, 2009). Few studies, however, have examined the role of the legislature in shaping foreign policy. This dearth is unfortunate as the U.S. Congress has the power to declare war, limit the military engagement, and to control defense spending (Phelps & Boylan, 2002). Congress also reflects public opinion. Ansolabehere and Jones (2010) found that, generally, citizens have accurate perceptions of how their congressmen and women are voting and that approval of congressmen and women is influenced by how well their voting aligns with their constituencies’ preferences. Hence, the focus of this study will be on the U.S. Congress due to its importance in shaping policy.

As it is difficult to conduct typical studies with politicians, the language they produce is often used to draw conclusions about their attitudes and behaviors in research. One problem with many of these studies is size of their sample. Due to the time-consuming nature of linguistic studies, small groups of texts, such as all the statements by one president or one year of congressional speeches, are typically used restricting the conclusions which can be drawn to one person or time period. Automatic content analysis, such a tabulation of word frequencies, would allow for much larger samples of language to be analyzed. However, the studies which make use of this procedure often examine only the topics or policies that politicians address. To expand the literature, the current study will focus on a more basic word analysis to explore more complex constructs such as honesty and aggression in language. In this study, I seek to use word frequency analysis to understand U.S. congressmen and women’s positions and attitudes toward U. S. foreign policy with Iraq, Iran, and North Korea.

**Language**

Language is at the heart of politics. Politicians release press statements to their constituencies every day, give speeches on the floor of Congress, and engage in debate with others at committee hearings. All discourse is composed of two types of words: content and function. Content words reflect the substance of the discourse; these words convey ideas. Function words reflect the style of the discourse; these words reflect how the ideas are being conveyed. Categories of function words include pronouns and prepositions, whereas categories of content words can include concepts (nouns, adjectives) such as *money* and *death* (Pennebaker, 2011). The Linguistic Inquiry and Word Count software (LIWC; Pennebaker, Booth, & Francis, 2007) was developed to analyze language along within these categories of words. The LIWC analyzes a language sample by computing word frequencies for words in 82 language categories. See Table 1 for categories and examples. These function words have been linked to a variety of different constructs. Tausczik and Pennebaker (2009) provided a review of more than 100 articles which established the link between language and psychological constructs such as honesty, group cohesion, and social status. These reviewed studies found pronouns and verb tense to be indicative of attentional focus. The use of first person pronouns indicated a self-focus and the use of third person pronouns indicated an others-focus, while verb tense indicates temporal orientation. Furthermore, plural third person pronouns were found to indicate greater social status and group cohesion. Language can also fluctuate in response to major events. Tausczik, Faasse, Pennebaker, and Petrie (2012) found an increase in the use of death, health, and anxiety words in blogs and new outlets following a swine flu outbreak as well as a decrease in positive emotion words. Fernandez, Paez, and Pennebaker (2009) found an increase in the use of first person pronouns in writing responses from an American sample following 9-11 and an increase in the use of social words, third person pronouns, and cognitive processes in responses from a Spanish sample following the terrorist attacks in 2004.

These and other studies established how word frequencies could be used to explain psychological constructs in language. Pennebaker and King (1999) conducted several studies to establish the reliability and validity of the LIWC and to explore how language is related to larger psychological constructs. Using language samples from three different sources (psychiatric patients, college students, and psychological researchers), they found the overall reliability of the 82 categories to be .59. Then using the 15 categories with reliabilities greater than .60 and a sample of student writing assignments, factor analysis revealed four psychological constructs: Immediacy, Making Distinctions, The Social Past, and Rationalization. Whereas language categories give information about the frequency of word use, these constructs indicate different language styles reflecting underlying psychological processes. See Table 2 for formulas used to derive these factors. Pennebaker and King (1999) followed up on these initial studies to determine how these language factors related to motivation, personality, and demographic variables. They found that Immediacy positively correlated with classroom participation, neuroticism, and agreeableness and negatively correlated with need for achievement, openness to experience, SAT verbal scores, and need for cognition. Making Distinctions was found to be positively correlated with classroom participation and negatively correlated with need for affiliation, extraversion, conscientiousness, and positive affect.

In a study of blogs following 9-11, Cohn, Mehl, and Pennebaker (2004) utilized similar constructs using the word categories of the LIWC. Cognitive processing is reflected in the use of words such as *think* and *because* and indicates the level to which the writer or speaker seeks to understand and organize their thoughts. This concept is similar to the language factor, Rationalization, found in Pennebaker and King (1999) except cognitive processing does not account for emotion. Psychological distancing is a measure of the difference of the use of articles and longer words and the use of first-person singular pronouns, discrepancy words such as *would* and *could*, and present tense verbs. High levels of psychological distancing indicate an abstract and rational thought process whereas low levels of psychological distancing indicate a personal and experience-based thought process. Psychological distancing is the opposite of the Immediacy factor found by Pennebaker and King (1999). Cohn et al. examined more than 1,000 blogs from an online journal site over a period of time which spanned from two months before 9-11 to two months after and found that cognitive processing and psychological distancing increased in the two weeks following 9-11. After those two weeks, cognitive processing declined below baseline levels, and psychological distancing persisted for the entire six weeks of the study. Furthermore, they found that even blogs, which did not focus on the events of 9-11, still demonstrated these language changes to a lesser extent.

Newman, Pennebaker, Berry, and Richards (2003) explored the possibility of using word frequencies to predict deception. Participants were requested to tell the truth and to lie about their attitudes about abortion, their attitude about their friends, or the involvement in a mock crime. Deception was predicted by an increase in the use of negative emotion and motion words and a decrease in the use of first person singular pronouns, third person pronouns, and exclusive words. Word frequency was able to predict deception better than judges and better than chance. Bond and Lee (2005) then used the results of the Newman et al. (2003) study to classify the truthfulness of prisoners’ statements. Participants were placed into dyads with one participant providing a mix of true and false statements and the other participant judging the veracity of the first participant’s statements. Bond and Lee found that the Newman et al. formula for deception correctly classified 70% of statements correctly.

Pennebaker (2011) studied the language of terrorist groups to determine if language could predict aggression. Nearly 300 language samples were gathered from four Arabic extremist groups, two of which had committed violent terrorist attacks. In addition to the categories of the LIWC, Pennebaker also examined honesty, status, categorical thinking, and complex thinking. See Table 3 for the computational formulas of these constructs. Honesty represents the extent to which language used conveys truthfulness or deception. Status represents how the speaker or writer sees themselves in the social hierarchy of which they are a part. Categorical thinking represents a distant and static style of speaking or writing compared to a more fluid or dynamic style. Complex thinking indicated an intellectual or elaborate way of speaking or writing and represents the Making Distinctions factor found by Pennebaker and King (1999). Pennebaker (2011) found that the violent terrorist groups had less honest language as well as less categorical thinking and less cognitive complexity. Overall the language differences between violent and nonviolent terrorist groups suggest violent groups were more personal and charismatic whereas nonviolent groups were more intellectual. Pennebaker (2011) also found that violent terrorist groups used more simple words, more pronouns, more emotional words, and more inclusive words. One month prior to a terrorist attack, these groups used more personal pronouns, prepositions, conjunctions, and inclusive words while using fewer insight words, causation words, discrepancy words, tentative words, and exclusive words. From these findings, I will develop a linguistic construct formula to measure aggressive intent.

**Politics and Foreign Policy**

As the purpose of this study is to explore changes in political discourse, it is important to discuss how changes in the political environment can impact the behavior of politicians, which includes their language. Much of the research in this area focuses on executives (presidents and prime ministers) and foreign ministers. Leudar, Marsland, and Nekvapil (2004) studied the language of George Bush, Tony Blair, and Osama bin Laden following 9-11. They found that all three individuals used language to establish an “us versus them” dichotomy to rationalize past events and orient future actions. The differences were in that Bush and Blair identified “us versus them” distinctions based on social, moral, and political grounds whereas bin Laden made these distinctions using religious grounds. Dyson (2008) examined British prime ministers parliamentary responses to foreign policy questions from 1945-2008 for cognitive complexity markers within their language use. Words which indicate high cognitive complexity include *apparently*, *approximately*, and *otherwise*; low cognitive complexity words include *absolute*, *all*, and *overwhelming.* Dyson found differences between prime ministers and differences in variation such that some prime ministers were consistent in their complexity while other prime ministers seem to vary their cognitive complexity over time.

Dyson and Preston (2006) conducted a similar study to examine how the cognitive complexity of four U.S. presidents (Truman through Johnson) related to their use of historical analogy in the foreign policy statements. High complexity presidents (Eisenhower and Kennedy) were more likely to use sophisticated historical analogies and more likely to use analogies from other time periods and cultures than low complexity presidents (Truman and Johnson). Crichlow (2005) studied the policy preferences of U.S. foreign ministers for specific policy decisions. He found that conflict-oriented policy preferences were correlated with ministers’ distrust and belief in events ruled by chance while cooperative-oriented policy preferences were correlated with belief that others will be cooperative, belief in the stability of the future, and greater perception of control. With the exception of the belief that others will be cooperative, these relationships remain significant even when controlling for the level of provocation. To demonstrate the importance of ministers’ policy preferences, Crichlow found that the ministers’ policy preference was positively correlated with the official policy. Together, these studies demonstrate personal characteristics of executives, including their language use, can illuminate foreign policy preferences.

Several studies have been conducted examining the factors which influence the public’s attitudes toward foreign policy. Friese et al. (2009) found that the relationship between political orientation and support for the Iraq War was mediated by participant’s attribution of responsibility for the war. Participants who were led to believe that the U.S. lied about Iraq’s possession of WMDs were less likely to support the war than those lead to believe that Iraq did posses WMDs. Sahar (2009) also studied attributions of responsibility for the war in Afghanistan and the Iraq War. She found three major types of attributions: U.S. foreign policy in the Middle East, resentment of American successes, and terrorist personal traits. She then examined how these attributions related to patriotism, perceived threat, and support for war. In a 2001 sample, blind patriotism, which represents loyalty to one’s nation regardless of other factors, was positively correlated with the resentment attribution, perceived threat, support for the war in Afghanistan, and belief in the success of the War on Terror, and negatively correlated with the U.S. foreign policy attribution. Constructive patriotism positively correlated with all three attributions and perceived threat. In a 2005 sample, the correlations with blind patriotism remained the same except that the resentment attribution no longer correlated with blind patriotism. Constructive patriotism positively correlated with the U.S. foreign policy and terrorist traits attributes and negatively correlated with support for the Iraq War. Over time, blind patriotism, perceived threat, support for the war in Afghanistan, belief in success decreased while attributions of U.S. responsibility for the wars increased.

Cohrs and Moschner (2002) studied German students’ attitudes toward the Kosovo War and found that general attitudes toward war, which consisted of diffuse political support (conceptually similar to blind patriotism), militarism, and authoritarianism, positively correlated with support for the war in Kosovo. They also found some evidence of a confirmation bias such that those who were against the war selectively sought out information which reinforced those attitudes. McCleary, Nalls, and Williams (2009) conducted a similar study of American college students’ attitudes toward the Iraq War. They found that blind patriotism strongly predicted support for the war while militarism and concern for national security predicted support to a lesser extent. Constructive patriotism and concern for civil liberties predicted opposition to the war.

Though the research on legislatures is much less extensive, a couple studies have looked at factors involved in legislatures’ foreign policy preferences, primarily the U.S. Congress. Kriner and Shen (2014) studied political discourse and voting in the U.S. House of Representatives pertaining to the Iraq War. They found that, for Democrats, antiwar rhetoric positively correlated with the number of war casualties from their districts. Furthermore, as the number of casualties from their district increased, Democrats were more likely to vote against war measures. Grimmer (2010) examined the press releases from U.S. Senators in 2007 to demonstrate how language could illuminate their political priorities. He found that committee leaders tend to focus on topics related to their committees, that senators focus on topics important to their home districts, and that senators from the same state have more similar priorities than senators from different states. While these two studies how language of legislative bodies can be examined, neither of these studies has examined linguistic styles in the legislature which will be the focus of the current study.

Studying political language can be useful in predicting policy position and voting amongst politicians, and the following studies demonstrate some methods of accomplishing this. Laver, Benoit, and Gerry (2003) studied political discourse from the British, Irish, and German parliaments. Using reference texts which provided clear examples of different policy positions, they were able to predict policy positions of other political texts. For example, they found that politicians favoring less central control of education and health care used the word *choice* more often and politician favoring more central control referenced the benefits of central planning more often. Slapin and Proksch (2008) conducted a similar study which incorporated changes in positions over time using a liberal-conservative continuum. Using German political party manifestos over a span of 15 years, they found that their estimates of policy positions correlated highly with other methods of estimated policy positions such as hand-coding methods and expert surveys. Zirn and Sruckenschmidt (2014) used similar methods in a study of German politics to determine which members of a political coalition were assigned ministry positions. By comparing the linguistic similarity between each party’s manifesto and the coalition agreement, they were able to correctly classify 74% of the party assignment compared to a traditional hand-coding method using the overlap of keywords which classified on 47% correctly. Together these studies demonstrate the usefulness of language to understand political policies. The current study will seek to accomplish something similar, but focus on more basic language units to examine how real world events could be influencing policy preferences over time.

**History of U.S. Foreign Relations**

The focus of the current study concerns U.S. relations with Iraq, Iran, and North Korea. These three nations were named as the “axis of evil” by George W. Bush in 2002. These states have long been considered “rogue” states by the U.S and have been listed on the State Departments list of terrorist states. All of these nations have directly or indirectly engaged in terrorist attacks against Western states, and they have histories of pursuing nuclear weapon development as well as major human rights violations (Henriksen, 2012). Despite this, Caprioli and Trumbore (2005) found that while Iraq and North Korea are more likely than other states to be involved in conflict, only Iraq is more likely to be the instigator of conflict, and Iran is no more likely to be involved in conflict than other nations. Given this study, it will be crucial in the current study to examine how congressional language about each of these three nations may be different. In order to predict how foreign policy language has changed, it is important to understand the history of foreign relations with these nations. In addition, this history will also show some events which could have influenced congressional language at the time.

**Iraq.** Iraq became an independent nation in 1938 and initially had a good relationship with the U.S. When a military coup ousted the monarchy in 1958, Iraq leaned more toward the Soviet Union which put it at odds with the U.S. However, as the Cold War drew to a close, Iraq provided a counterpoint to Iran which was perceived as a greater threat by the U.S. In fact, when Iraq went to war with Iran in 1980, the U.S. supported Iraq allowing them to buy military hardware from U.S. companies, providing them with intelligence information about Iran, and taking them off the list of terrorist states. U.S. relations with Iraq began to sour in 1990 when Saddam Hussein, the dictatorial leader of Iraq, began to vehemently speak against U.S. influence in the Middle East. Relations turned hostile later in that year with the Iraqi invasion of Kuwait. After diplomatic solutions failed, the U.S. plus a coalition of other nations took military action against Iraq in January 1991 and forced Iraqi troops to withdraw from Kuwait within two months. From then on, the U.S. took a harsher stance against Iraq, employing economic sanctions, nuclear weapons inspections, no-fly zones, covert operations to oust Hussein, and occasional overt operations such air strikes. While little changed in Iraq in the mid to late 1990s, foreign issues due to the conflict in Eastern Europe and domestic issues relating to oil imports softened the U.S. position toward Iraq. The terrorist attacks of 9-11 greatly impacted U.S. foreign policy toward the Middle East. War hawks in the White House, such as Dick Cheney and Donald Rumsfeld, pushed for action based on reports suggesting developments of weapons of mass destruction (WMDs) in Iraq. British intelligence confirming these reports, later found to be incorrect, was a major impetus for the U.S. invasion of Iraq in March 2003 (Henriksen, 2012).

Following the onset of military presence in Iraq, several important events in the war are worth noting. The first is that by May of 2003, President Bush announced the end of “major combat operations” in Iraq. However, in August 2003, insurgents bombed the United Nations headquarters in Baghdad killing 22 and prompting the withdrawal of several UN organizations (Bergen, 2011). In 2004, support for the war waned as the mistreatment of Iraqi prisoners became public knowledge and as doubt was raised about the veracity of the intelligence information about the Iraqi possession of WMDs which was major justification for the war (U.S Foreign Policy Timeline, 2008). In January 2005, a new Iraqi government was elected; however, the election was highly contested by the Iraqi Sunnis (Bergen, 2011). Then, in January 2007, President Bush authorized more military personnel to be sent to Iraq and in May of 2007, Congress approved an increase in funding for the war (U.S Foreign Policy Timeline, 2008).

**Iran.** As with Iraq, U.S. relations with Iran were not always hostile. During the World War I, Iran served as a peripheral battleground for the Turks, Russians, and British. Following WWI, the modern Iranian state was formed under military leader, Reza Khan, who inaugurated as the first shah of the Pahlavi dynasty. Reza Khan pushed for modernization in Iran which angered many conservatives as did his concessions to the British oil company, Anglo-Persian Oil, which controlled much of the oil in Iran. World War II saw further foreign intervention in Iran by the Soviet Union and Great Britain. Reza Khan was forced to abdicate, and the throne went to his son, Mohammad. The U.S. intervened to push the Soviet Union and Great Britain out of Iran and to assist in the development of the nation under the shah. Many in Iran grew to resent this intervention. Then, in 1951, Mohammad Mossadeq, became prime minister with a socialist-leaning parliament. The oil industry was nationalized which angered British and American interested causing both nations to boycott Iranian oil. The boycott in turn caused massive economic problems for Iran. Although the American intervention ended up played an insignificant role in proceeding events, the coup which led to the removal of Mossadeq, and the consolidation of the shah as absolute monarch cemented the animosity of many Iranians against the U.S. (Henriksen, 2012).

Resentment against the decadent shah and his Western allies grew fulminating in the 1979 revolution bringing the religious leader, Ayatollah Khomeini, to power and turning Iran into a conservative anti-Western theocracy. Iranian hostility toward the U.S. was made clear in 1979 with the taking of the U.S. embassy in Tehran. American diplomatic and military actions failed to secure the 52 hostages taken from the embassy. A backdoor weapons deal orchestrated by the Reagan administration led to the release of the hostages over a year after the original attack. Relations with Iran continued to be hostile with the U.S. siding with Iraq in the Iran-Iraq War and U.S. military aid to Kuwait to protect them from Iranian attacks. Iran also supported numerous terrorist attacks against American targets in Lebanon in the 1980s. Relations remained relatively static through the 1990s. Following 9-11, Iran cooperated with U.S. intervention against the Taliban in Afghanistan for a short time. Soon after, Iran was once again funding various terrorist organization s throughout the Middle East designed to both conduct anti-Western activities and to support Shiite organizations in the more liberal Middle Eastern states (Henriksen, 2012).

The Iranian quest to develop long-range missiles and nuclear weapons cemented its hostile relationship with the U.S. In 2002, international nuclear inspections found Iran to be in violation of international nuclear agreements. Iran refused to back down from its uranium enrichment program which stalled any negotiated with the West. Iran finally suspended its nuclear activities in 2004. The nuclear program was quickly restarted however in 2006 by newly elected president, Mahmoud Ahmadinejad. New sanctions against Iran were implemented in 2007. In response to President Obama’s requests to reopen diplomatic talks, Iran test fired a long-range missile. Civil unrest broke out in Iran in 2009 which quelled within the year and during which the U.S. remained neutral. In 2010, U.S. adopted stricter sanctions against Iran blacklisting many Iranian banks for funding nuclear weapon development. The numerous protests of the Arab Spring in 2011 prompted further U.S. concern in the Middle East the possibility of Iranian influence expanding in the region materialized. Continued Iranian efforts to develop nuclear weapons keep the U.S. wary of the theocratic nation (Henriksen, 2012).

**North Korea.** The final nation of the “axis of evil” is the totalitarian, communist regime of North Korea. Following WWII, the Korean peninsula was freed from Japanese rule. The Soviet Union became the primary influence in what would become North Korea, and the U.S. exerted influence in the soon-to-be South Korea. This separation cemented itself when in 1950 the leader of North Korea, Kim Il Sung, invaded South Korea beginning a three year proxy conflict which has never technically ended. Even after an armistice was signed, North Korea continued to provoke both South Korea and the U.S. going as far as seizing an American ship in 1968. North Korea cemented itself as a rogue state with its development and quest for nuclear capabilities. The Soviet Union restrained North Korea, but with the fall of the Soviet Union, North Korea was free to freely pursue its nuclear agenda. Initially, the U.S. did nothing assuming North Korea would collapse just as the Soviet Union had. Mobilization of the North Korean army and evidence of nuclear advances forced the U.S. to respond in some way. Not wanting to spark another war on the peninsula, the U.S. attempted to negotiate with North Korea trying to tempt them with light-water reactors which would provide energy without allowing nuclear weapon materials. In 1994, under the new North Korean leader, Kim Jong Il, an agreement was reached to halt North Korea’s nuclear quest. Relations stabilized for a time, but heated up again in 1998 when North Korea test-fired a long range missile and seemed to be violating the nuclear arms agreement (Henriksen, 2012).

U.S. attention was quickly diverted to Afghanistan and Iraq following 9-11, however, evidence of North Korea’s steadily developing nuclear program kept relations tense. In 2005, after two years of negotiations with the Six-Party Talks, an agreement was finally reached with North Korea whereby they agreed to abandon their nuclear quest and readmit UN inspectors in return for foreign aid. Unfortunately, the agreement coincided with the discovery by the U.S. Treasury that North Korea had been counterfeiting U.S. currency prompting the U.S. to blacklist the bank through which North Korea had been laundering money. North Korea retaliated in 2006 by firing several missiles and carrying out a nuclear test violating their new agreement. In 2007, a new agreement was reached which included a new provision that the U.S. would remove North Korea from the list of state sponsors of terrorism. The agreement came to naught however, as North Korea refused to hold up its end even after the U.S. released North Korean assets frozen in the blacklisted bank. In 2008, the U.S. discovered that North Korea had aided Syria in developing its own nuclear program. Further negotiations were attempted, but by the time President Bush left office in 2009, little progress had been made (Henriksen, 2012).

Under President Obama, policy toward North Korea remained mostly the same, but North Korean actions spurred the U.S. to action. Violating previous agreements, North Korea launched another missile with crashed into the Pacific in April 2009. In response the U.S. went to the U.N. to enforce harsher sanctions which were only partially agreed. North Korea responded by ousting nuclear inspectors and testing a nuclear device. This back and forth between the U.S. and North Korea went on with the U.S. imposing sanctions and North Korea retaliating with threats and actions such as arresting two American journalists and capturing South Korea fishing vessels. In 2010, North Korea bombed a South Korean naval ship as well as a South Korean island. Late 2011, Kim Jong-Un became the new leader of North Korea who despite agreeing in 2012 to suspend nuclear testing announced plans to launch a satellite (Henriksen, 2012).

**Purpose and Hypotheses**

The purpose of this study is to examine linguistic changes in the foreign policy discourse in Congress pertaining to U.S. relations with Iraq, North Korea, and Iran. Specifically, I will explore changes in language reflecting metalinguistic constructs in response to major events in foreign relations such as missile launches and major human rights violations.

*Hypothesis 1*: Complex thinking, cognitive processing, and psychological distancing will increase following acts of aggression perpetrated by Iraq, Iran, and North Korea.

*Hypothesis 2:* Honesty, status, and categorical thinking will change in response to acts of aggression as a function of party affiliation.

*Hypothesis 3:* Aggressive intent will be greatest in speeches about Iraq and North Korea.

**Method**

**Sample**

The data for this study will consist of speeches drawn from the Congressional Record for both the Senate and the House of Representatives. All speeches from 1998 to 2013 pertaining to U.S. relations with Iraq, Iran, and North Korea will be collected. This data collection should culminate into a final sample of approximately 1800 speeches.

**Measures**

**Metalinguistic Constructs.** Speeches will first be analyzed using the Linguistic Inquiry and Word Count. The LIWC measures 82 word categories such as pronouns, verbs, and emotion. From these categories, metalinguistic constructs will be calculated. Specifically, the following constructs will be calculated: honesty, status, complex thinking, categorical thinking, cognitive processing, psychological distancing, and aggressive intent.

**Demographics.** For each speech, the following demographic information will be collected: speaker’s name, region, chamber of Congress, date of speech, state the speaker represents, and length speaker has been in Congress.

**Procedures**

Data will be collected using the Congressional Record which is an online archive of everything said on the floor of both chambers of Congress available through U.S. Government Printing Office. The archive is organized by year, month, day, and chamber of Congress. For each day and chamber, a file exists for each debate/speech for that day. Each file could have one or multiple speakers. Files with multiple speakers are typically debates on specific legislation such as the Authorization for the Use of Military Force in Iraq. Each file is given a title which specifies the subject of the speech/debate. These titles were scanned for the keywords *Iraq, Iran,* and *North Korea.* These files will be downloaded as pdfs or text files. Files will then be processed such that each file includes everything that was said by a given speaker on a given day about a given region and is in a format readable by the LIWC. Each file will be cleaned such that no labels or long quotes were included in the frequency analysis, and obvious spelling errors will be corrected. Word frequency analysis will then be conducted for each file using the LIWC.

**Proposed Data Analytical Technique**

In order to capture the true longitudinal nature of the data, I propose to analyze the data using nonparametric regression. Given that I wish to examine how language changes over time, it is important to be able to capture the non-linear nature of the changes. By using a nonparametric approach, a wider range of functions can be estimated. A nonparametric regression equation allows both the slope and the direction of the slope to change. It accomplishes this by estimating each point of the regression line based on the average of a specified interval surrounding that point. A smoothing spline is used to smooth out the curve; the amount of smoothing depends on the data. Optimally, the smoothing spline creates a smooth curve without losing the true shape of the regression line. The shape of the line can then be analyzed to determine how the outcome measure changes (Bowman, 2006; Faraway, 2006).

For the current study, the outcome measures will be the seven metalinguistic constructs. Separate regression models will be calculated for each constructs. Each construct will be plotted over time (1998-2013) to determine changes in language use. The three different regions (Iraq, Iran, and North Korea) and the party affiliation of the congressmen and women will also be taken into account to determine if language use is dependent on these variables as well as if language change is dependent on these variables. For example, Democrats may have higher cognitive complexity than Republicans or at the onset of the war in Iraq, aggressive intent may increase only when discussing Iraq and not when discussing Iran or North Korea. Once the different models are calculated, the party and regional differences will be explored. Also, the models will be examined to determine if changes in the usage of the different constructs can be tied to events from foreign relationships with the three regions.

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Table 1

*LIWC Categories and Examples*

|  |  |  |  |
| --- | --- | --- | --- |
| Constructs | Examples | Constructs | Examples |
| **Pronouns** | | **Cognitive** **Mechanisms** | |
| First person singular | I, me, mine | Insight | think, know |
| First person plural | we, us, our | Causation | because, effect |
| Second person | you, your | Discrepancy | should, would |
| Third person singular | she, him | Tentative | maybe, perhaps |
| Third person plural | they, their | Certainty | always, never |
| **Verbs** | | Inhibition | block, stop |
| Past tense | went, had | Inclusive | with, include |
| Present tense | is, does | Exclusive | but, without |
| Future tense | will |  |  |
| **Other** | | **Personal Concerns** | |
| Adverbs | very, really, quickly | Achievement | hero, win |
| Articles | a, an, the | Money | cash, owe |
| Prepositions | to, with, above | Religion | church, mosque |
| Conjunctions | and, but, whereas | Death | bury, kill |
| Negations | no, not, never |  |  |
| Quantifiers | few, many, much |  |  |
| **Social-Emotional** | | **Relativity** | |
| Social processes | talk, they | Motion | arrive, go |
| Positive emotion | love, nice | Space | down, in |
| Negative emotion | hurt, hate | Time | end, until |

*Note*. These categories were selected from the larger LIWC output offerings as the most common categories used in research.

Table 2

*Metalinguistic Construct Formulas*

|  |  |  |
| --- | --- | --- |
| Construct | Formula | Reference |
| Honesty | I-words + words/sentence + big words + exclusives + conjunctions + insight + time + motion – discrepancies – social – you – impersonal pronouns – positive emotion | Newman, Pennebaker, Berry, & Richards (2003) |
| Status | we-words + you-words – I-words | Pennebaker (2011) |
| Categorical thinking | articles + prepositions + big words – verbs | Pennebaker (2011) |
| Complex thinking | exclusive + conjunctions + words/sentence + negations + insight + cause-inclusive | Pennebaker (2011) |
| Cognitive processing | insight + causation | Cohn, Mehl, and Pennebaker (2004) |
| Psychological distancing | articles + big words - I-words – discrepancy – present tense verbs | Cohn et al. (2004) |
| Aggressive Intent | pronouns + emotion + inclusive – big words | Pennebaker (2011) |

*Note.* The formulas listed are based on the z scores of the LIWC categories percentage of the document.