Speaking Simply: The Efficacy of Linguistic Complexity in Oral Arguments for the Supreme Court of the United States

by

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Abstract

The Supreme Court of the United States has been the subject of significant research, including studies that use historical data to predict judicial decision-making. This thesis explores language as another dimension through which SCOTUS voting can be predicted. The paper attempts to understand whether there is a relationship between the language used by litigants who appear before the Court and the ultimate decision of its Justices. We hypothesize that plain language is more rhetorically persuasive than complex language. The paper uses readability indices to evaluate the accessibility of oration delivered before the Court. That data is tested using binary regressions, which do not reveal a relationship between complexity and success. The results suggest that linguistic simplicity has neither an advantageous nor disadvantageous role in argument before the Supreme Court.

Acknowledgements

I'd like to express my gratitude to my thesis advisor, Professor Arpit Gupta, who led me through this process with competence and kindness. His thoughtful questions and expertise helped me shape this inquiry. Without him, I would not have been able to complete this thesis.

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Thank you to my parents for their boundless support. NYU has offered me an unparalleled education that I would not have had access to without their decades of hard work. I love them.

Finally, I can't overstate the importance of my fellow classmates – and also Han's Deli on Broadway – when it came to navigating the recent months. I was lucky to be surrounded by such excellence.

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I. INTRODUCTION

The Supreme Court

The Supreme Court of the United States, hereafter referred to as 'SCOTUS' or 'The Court,' is the highest court in the American judiciary. The U.S. Constitution laid the framework for the SCOTUS in general terms: "The judicial power of the United States, shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish."[1] As the federal judiciary expanded, the Court was granted original jurisdiction in select circumstances only and would otherwise act as the highest appellate court in the United States.

Since its inception, the Court has seen its power grow significantly. Most notably, Chief Justice John Marshall established the principle of judicial review in the unanimous opinion for Marbury v. Madison (1803). He writes: "The authority given to the Supreme Court by the act establishing the judicial system of the United States to issue writs of mandamus to public officers appears not warranted by the Constitution."[2] That decision – which suggested that an element of law already passed by Congress was unconstitutional – positioned SCOTUS as the arbiters of constitutionality. That role has since shaped their growing influence and established their current responsibilities.

Today, the Court and its nine Justices receive thousands of annual requests for cases to be heard. They issue a *writ of certiorari* and accept only the cases of utmost national consequence. SCOTUS hears approximately 70 - 100 cases during their annual sessions lasting from October through April. In each case, the Justices receive written materials from the litigants and accept

[1] "Constitution of the United States: A Transcription." National Archives.
[2] "Marbury v. Madison." Legal Information Institute. Cornell Law School.

amicus curiae, or "friends of the court," briefs that are filed by interested parties. The issue at hand is then formally presented to the Justices by a petitioner and respondent for 30 minutes each during Oral Arguments, wherein the Justices ask legal questions and pose pointed hypotheticals. These oral arguments are delivered by legal professionals and directly precede the Court's decision-making process.

After deliberation, the Court issues an opinion that either affirms, reverses, or remands the ruling of the lower court. Each Justice may choose to write a concurring or dissenting opinion that details differences in their own legal understanding of the matter. The text of these opinions is treated as legal and constitutional doctrine. Every SCOTUS decision is of the utmost consequence to the United States judiciary.

Language in the Courtroom

Few cases ever reach the Supreme Court. Of the cases that make it to trial, an issue is much more likely to be decided by a jury of lay persons than the Justices of the Court. Litigators trained in oral argument are, for the most part, preparing to argue the intricacies of law in front of a lower judge or a group of average Americans.

Concision and simplicity are key tools when speaking in front of citizens who have been called away from their jobs, their homes, and their families. Juries are not comprised of legal experts. They are made of people who must be persuaded without being turned away by the legalese and complexity of the issues at hand.

In California, Coleman found that lay persons were better able to successfully comprehend and employ jury instructions that used plain language.[3] A litigant's verbal arguments must consider the jury as an audience. Simple language is more accessible than complex jargon. Levitt, in *Rhetoric in Closing Argument*, writes that "such plain speaking is not inconsistent with eloquence."[4]

A skilled litigator is trained in the law and persuasion alike. In oral arguments before a jury, the delivery of legal principles and facts is necessarily married to a rhetorical style. The presentation is understood through the language of the litigants. Hearings before the Supreme Court are recited before a vastly different audience, but the same rule holds true: the facts are understood and considered through the linguistic expression of the litigants.

Research Question

My aim is to investigate whether the rhetorical maxims that are common for jury trials – simplicity, clarity, concision – are predictors of success in front of the Supreme Court. Supreme Court Justices are distant from the average jury in education and legal understanding. My inquiry seeks to understand if the linguistic complexity employed by petitioners and respondents has a significant effect on the ultimate outcome of the case. Is plain language an advantageous style when speaking to the Supreme Court?

[3] J. Espinoza Coleman,., R.K.E. and Coons, J.V. 2017. "An Empirical Comparison of the Old and Revised Jury Instructions of California: Do Jurors Comprehend Legal Ease Better or Does Bias Still Exist?"
[4] Daniel P. Levitt. 1991. "Rhetoric in Closing Argument." *Litigation,* vol. 17, no. 2, p. 17-56.

II. LITERATURE REVIEW

Understanding the craft of persuasion in front of the Supreme Court involves a few areas of existing research. I examine both previous studies of the factors affecting SCOTUS decisions and textual analysis of politically motivated argument. I will also discuss the academic use of empirical methods that I later employ during analysis: readability indices.

Predicting the outcome of a given SCOTUS case is a complicated game. The Justices can be examined individually, and their political leanings can be used to create predictions. Cameron and Jee-Kwang utilized Segal-Cover scores, a measure that describes political ideology based on newspaper editorials, along with papers authored by the Justices themselves to create pre-nomination predictions of long-term issue voting.[5] Sim, Routledge and Smith built successive utility models using *amici curiae* briefs that demonstrated improved Justice vote prediction.[6] Guimerà and Sales-Pardo built a model that used the voting decisions of all other Justices in a case to predict the remaining Justice's decision.[7] The model proved more accurate than estimations based purely on the political associations of the given Justice. In a particularly unique study, Jacobi and Sag discovered that instances of SCOTUS Justices laughing, which is reliably recorded by the court reporter, have a direct negative relationship with a speaker's intended outcome.[8]

The increasing availability of empirical information about SCOTUS has cases opened the door for more comprehensive modeling. Spaeth et al. built a publicly available database that

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[5] Charles M. Cameron, and Jee-Kwang Park. 2009. "How Will They Vote – Predicting the Future Behavior of Supreme Court Nominees, 1937 – 2006." Journal of Empirical Legal Studies: 485 – 512.
[6] Yanchuan Sim, Bryan Routledge, and Noah A. Smith. 2016. "The Utility of Text: The Case of Amicus Briefs and the Supreme Court." Cornell University.
[7] Roger Guimerà, and Marta Sales-Pardo. 2011. "Justice Blocks and Predictability of U.S. Supreme Court Votes."
[8] Tonja Jacobi, and Matthew Sag. 2019. "Taking Laughter Seriously at the Supreme Court." Vanderbilt Law Review 72: 1423-96.

tracks docket information from 1816 to present day.[9] Ruger et al. built a predictive model using six of their own variables: circuit of origin, issue area, petitioner type, respondent type, partisan lean of lower ruling, and whether constitutionality was in question. They compared their results to predictions from legal experts and found that they predicted 75% of the Court's affirm/reverse decisions during the Rehnquist Court compared to the experts' success rate of 59.1%.[10] Katz, Bommarito, and Blackman used Spaeth's full dataset to develop an even more extensive model. Using only data available prior to the decision itself, the team achieved a 70.2% accuracy rate for case outcomes across more than two centuries of SCOTUS terms.[11]

Advances in both automated technologies and data availability have popularized text as data for political sciences. Textual analysis has been used to analyze documents from political decision-makers. Ruhl, Nay and Gilligan used direct actions by Presidents (executive orders, proclamations, memoranda, etc.) to perform a topic modeling analysis.[12] Laver, Benoit and Garry examined the language of British political texts with known ideologies to extract policy positions from unknown texts.[13] Fisher, Waggle and Leifeld used speeches given in the U.S. Congress to identify the decreasing political polarization in climate change discourse.[14] Slapin and Proksch developed a word-frequency algorithm that demonstrated success in tracking changes in German political parties from 1990 to 2005.[15] When the medium of a political

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[9] Harold J. Spaeth, Lee Epstein, et al. 2019 Supreme Court Database. Washington University Law.
[10] Theodore W. Ruger et al. 2004. "The Supreme Court Forecasting Project: Legal and Political Science Approaches to Predicting Supreme Court Decision-making." Columbia Law Review: 1150.
[11] Daniel Martin Katz, Michael J Bommarito II, and Josh Blackman. 2016. "A General Approach for Predicting the Behavior of the Supreme Court of the United States."
[12] Ruhl, J. B., John Nay, and Jonathan Gilligan. 2018. "Topic Modeling the President: Conventional and Computational Methods." George Washington Law Review: 1243–1315.
[13] Michael Laver, Kenneth Benoit, and John Garry. 2003. "Extracting Policy Positions from Political Texts Using Words as Data." The American Political Science Review: 311-31.
[14] Dana R. Fisher, Joseph Waggle, and Philip Leifeld. 2020. "Where Does Political Polarization Come From? Locating Polarization Within the US Climate Change Debate." American Behavioral Scientist: 70–92.
[15] Jonathan B Slapin. and Sven-Oliver Proksch. 2008. "A Scaling Model for Estimating Time-Series Party Positions from Texts." American Journal of Political Science: 705.

document can obscure its message, text analysis allows for an empirical understanding. Text analysis has also been used to gauge public reaction to political actors and decisions. Yoon and Lee analyzed the language in news coverage of political races in the United States and South Korea, finding less favorable tones in the coverage of female candidates when running against males.[16]

In my analysis, I use readability formulas to evaluate the accessibility of language. These formulations will be my means of quantifying the relative complexities in oral arguments. I explain their composition in the following section. The indices have been used in academia to analyze the ease with which complex information can be communicated. Goelzhauser and Cann used readability formulas to quantify the clarity of judicial opinions from U.S. state Supreme Courts.[17] Misra et al. used readability formulas to analyze the quality of online literature for patients with skull tumors, and concluded that the medical jargon rendered many of the available resources unintelligible for a mass audience.[18] Kaur used a similar analysis to investigate the relative clarity of university websites.[19] Stricker et al. assessed the readability of plain language summaries in academic psychology journals, finding that they were capable tools in communicating to non-experts.[20] Cann, Golzhauser and Johnson performed an equivalent analysis using language from political science articles.[21]

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[16] Y. Yoon., & Y. Lee. 2013. "A cross-national analysis of election news coverage of female candidates' bids for presidential nomination in the United States and South Korea." Asian Journal of Communication: 420–427.
[17] Greg Goelzhauser and Damon M. Cann. 2014. "Judicial Independence and Opinion Clarity on State Supreme Courts." State Politics & Policy Quarterly: 123.
[18] P. Misra, K. Kasabwala, N. Agarwal, J. A. Eloy, and J. K. Liu. 2012. "Readability Analysis of Internet-Based Patient Information Regarding Skull Base Tumors." Journal of Neurooncology.
[19] Sukhpuneet Kaur, Kulwant Kaur, and Parminder Kaur. 2018. "The Influence of Text Statistics and Readability Indices on Measuring University Websites." International Journal of Advanced Research in Computer Science: 403.
[20] Johannes Stricker, Anita Chasiotis, Martin Kerwer, and Armin Günther. 2020. "Scientific Abstracts and Plain Language Summaries in Psychology: A Comparison Based on Readability Indices."
[21] Damon M. Cann, Greg Goelzhauser, and Kaylee Johnson. 2014. "Analyzing Text Complexity in Political Science Research." PS: Political Science and Politics: 663.

Gómez and Sanchez-Láfuente performed an analysis on the readability formulas themselves, with a focus on language learning.[22] Their study emphasized the disparity amongst formulas but lauded their ability to determine the difficulty of texts. These are imperfect formulations for capturing the complexity of oral argument, but their history of quantifying accessibility in language makes them a useful stand-in when considering my data.

III. RESEARCH

Hypothesis

The objective of this paper is to examine the relationship between the complexity of speech used during oral argument and the corresponding success of the speaker. I hypothesize that argument which indexes as less linguistically complex will result in a higher likelihood of a favorable outcome. Similarly, I hypothesize that a large differential in the linguistic complexity between petitioner and respondent will predict success, with the simpler speaker having the advantage. I recognize that this hypothesis may be counter intuitive. Plain language is viewed as necessary when addressing a jury of lay persons, but SCOTUS Justices are steeped in legal understanding. They are uniquely capable of handling linguistic complexity. Jargon does allow litigants to utilize to the existing lexicon of legal argument. It is also a useful tool in creating precise argument and avoiding generalities. Complex language may offer its advantages to petitioners. However, I estimate that plain language is rhetorically engaging to all audiences. Moreover, concise and uncomplicated rhetoric represents clarity in thought. Clean explanation

[22] Pascaul Cantos Gomez, and Angela Almela Sanchez-Lafuente. 2019. “Readability Indices for the Assessment of Textbooks: A Feasability Study in the Context of EFL.” Vigo International Journal of Applied Linguistics: 31-52..

can be indicative of mastery in a subject: the speaker does not need to rely on overwrought language. A plain argument may well be a more convincing one. Complex language may have both benefits and disadvantages in SCOTUS argument. The results examined here – the ultimate outcome of a case – have a litany of factors and language itself may include a number of offsetting channels.

Data

The Supreme Court has remained a characteristically traditional institution while also striving to provide transparency to the public. Their sessions are held openly, and spectators are welcome to wait on line for one of the few seats available in the gallery. Although video recording has always been strictly forbidden, the Court has increasingly made its oral arguments available. Full written transcripts, as recorded by the Heritage Reporting Corporation, are available to the public dating back to 1968. Audio files became publicly available in 2010.

I randomly selected 100 cases from the past 30 years of SCOTUS sessions. All available cases were first organized by decade before selection began to achieve a roughly even distribution across the time series. With the list of cases, I retrieved the corresponding transcripts from the Court's online database.[23] I extracted the text of both the Petitioner and Respondent's oral arguments. The Justices' questions were not included, but the litigants' answers were. In the event that an *amicus curiae* was granted permission to appear on behalf of a party during oral arguments, their testimony was not included in the analysis. Generally, but not as a rule, the testimony of such parties is briefer than the primary litigants.

[23] Supreme Court of the United States. http://supremecourt.gov.

I cleaned each of the resulting transcripts, removing any cross talk and uniform formalities. Justices take an active role during oral arguments, frequently interrupting the litigants during their delivery and re-directing the discussion. See *Appendix A* for a sample transcript page that includes direct address between Justice and Petitioner. These exchanges are dutifully recorded in each transcript. I removed the clipped speech that would occasionally result from such a back-and-forth. For example, sentences fragments such as “I - ” were not included. Doing so would have disproportionately affected variables in the readability formulas, including sentence count and average word length. I was able to extract full speeches or representative samples of a minimum 1,000 words each from each litigant who appeared before the Court.

Then, I compiled each case and assigned its corresponding outcome. In SCOTUS cases, the majority opinion explains the Court’s holding regarding the legal questions and generally affirms or reverses the decision of a court that last heard the matter. In some cases, the Court will remand the case, sending it back to the lower court without issuing their own decision. The Court is generally invested more so in the overarching principles than the granular details in a case. The procedural history of a case may include several reversed and affirmed appellate decisions before the issue came to the Supreme Court. For that reason, it was necessary to examine the advocacy of petitioner and defendant in each of the cases in the dataset. The Court’s affirmation of a lower court’s ruling was only counted as a success for the petitioner if the previous ruling was also in their favor. Conversely, a reversed or remanded decision does not necessarily imply a success for the respondent: every outcome depends on the prior ruling. In some cases, the Court issues a more complex decision that must be parsed to determine success. For example, the recent case of Citizens United v. Federal Election Commission (2010) was decided in favor of Citizens United, the petitioner. However, the Court reversed judgement of the District Court’s ruling regarding one element, affirmed it with respect to another, and ultimately remanded the case for further proceedings.[24]

Accordingly, I used Oyez's register of Supreme Court decisions and the text of the majority opinions themselves to create a 'holding' variable.[25] The outcome of interest was whether the decision was in favor of the petitioner or the respondent. Each case was assigned a binary result where a score of 1 indicated a holding for the petitioner, while a 0 represented a holding in favor of the respondent. Of the 100 cases included in the dataset, 70 were decided favorably for the petitioner. There were two entries for which the Court had not yet issued a decision. See *Appendix E* for a table of holding frequencies.

Readability Indices

In order to evaluate the accessibility of arguments delivered to the Supreme Court, I use readability formulas. These formulas describe the degree of understanding required to comprehend a given piece of text. The Flesch Kincaid formulation, one of the most common readability indices, originates from the Naval Technical Training Command, who first developed the index to evaluate the complexity of their training manuals.[26] Each formula indexes to a relative degree of accessibility. The following readability formulas are used during my analysis: Flesch Kincaid Reading Ease, Flesch Kincaid Grade Level, Gunning Frog Score, SMOG Index,

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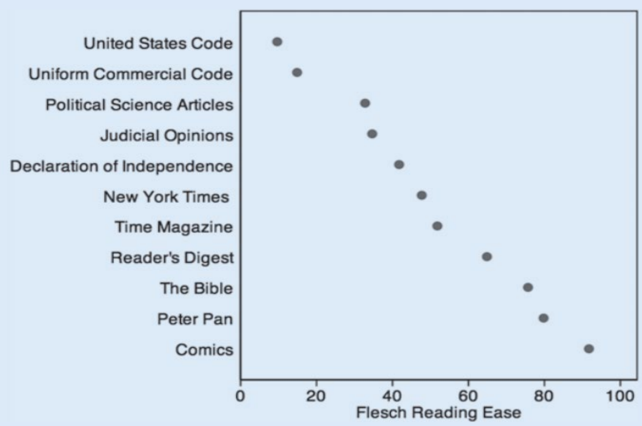
[24] "Citizens United v. Federal Election Comm'n, 558 U.S. 310 (2010)." 2010. Justia Law.
[25] "Cases." Oyez. 2020. http://www.oyez.org/cases/2019.
[26] Peter J. Kincaid, Robert P. Fishburne Jr., Richard L. Rogers, and Brad S. Chissom. 1975. "Derivation Of New Readability Formulas (Automated Readability Index, Fog Count And Flesch Reading Ease Formula) For Navy Enlisted Personnel." 56.

Coleman Liau Index, and Automated Readability Index. See *Appendix B* for the mathematical formulation of each index.

The Flesch Kincaid Reading Ease score has an inverse relationship with complexity. A higher score on the FK Reading Ease index represents a less difficult text. These scores typically range from 0 to 100. *Figure 1*, which originally appeared in Cann's "Analyzing Text Complexity in Political Science Research," illustrates the Reading Ease scores for common texts.[27]

Figure 1
Examples of Reading Ease



All other formulas used in this paper have a direct relationship with complexity. In order to approximate difficulty, each of the following indices corresponds to a grade level: FK Grade Level, Gunning Frog, SMOG, Coleman Liau, and Automated Readability Index. A piece of text that indexes at a 9.0 on any of these scales would be deemed fully comprehensible to a person in the 9th grade of the U.S. education system. Texts that score above a 12.0 are expected to be difficult or inaccessible for a reader who had not completed high school. The Average Grade

[27] Cann, Damon M., Greg Goelzhauser, and Kaylee Johnson. 2014. "Analyzing Text Complexity in Political Science Research." PS: Political Science and Politics 47: 663.

Level score is an average of all indices that correspond to a grade level. See *Appendix D* for a sample entry of all readability scores for the case of Mississippi v. Louisiana (1992).

Each readability formula considers some or all of the following: character count, word count, sentence count, and syllable count. The indices display variability in their results, but there is a high degree of correlation between the formulas. See below for a correlation table of all readability formulas used in this study:

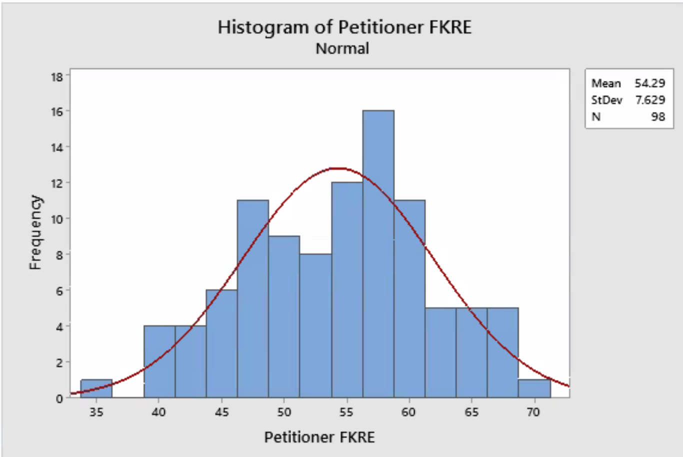
	Flesch Kincaid Reading Ease	*Flesch Kincaid Grade Level*	*Gunning Frog*	*SMOG*	*Coleman Liau*	*ARI*	*AGL*
Flesch Kincaid Reading Ease	1						
Flesch Kincaid Grade Level	-0.89772813	1					
Gunning Frog	-0.878429423	0.989725285	1				
SMOG	-0.943149257	0.943714324	0.947485306	1			
Coleman Liau	-0.650033535	0.341295189	0.326586084	0.502024087	1		
ARI	-0.869811613	0.978915704	0.964123853	0.908276085	0.3633025	1	
AGL	-0.939889923	0.983569689	0.977401953	0.967333848	0.481320786	0.978751884	1

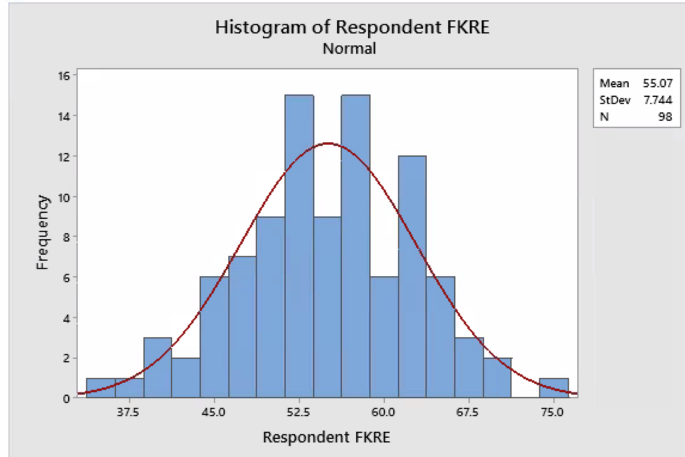
All readability indices, however, are most useful when considering written text. Their use in evaluating oral argument is atypical and not representative of their intended purpose. It must be noted that these formulas build an aggregate view of the orator's complexity. Insofar as they are applied consistently to each transcript, they can be used to assess the relative complexity of each argument.

To complete my data set, I used an online-based readability tool to perform these mathematical operations on my transcripts.[28] With the indices organized, I calculated the resulting AGL score for each piece of text.

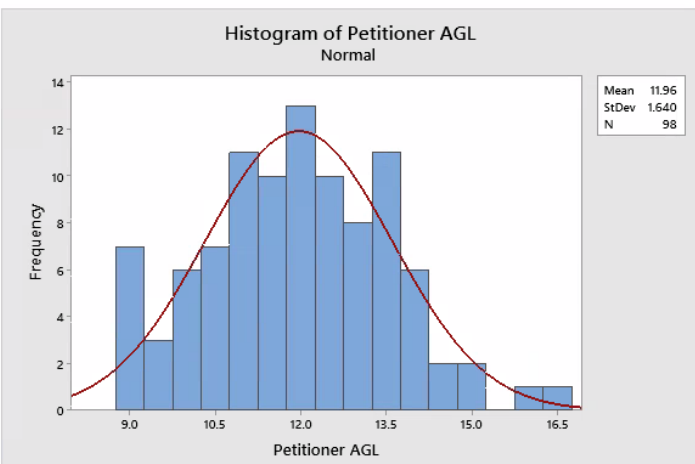
The following pair of histograms depicts the Flesch Kincaid Reading Ease score distribution for petitioners and respondents.

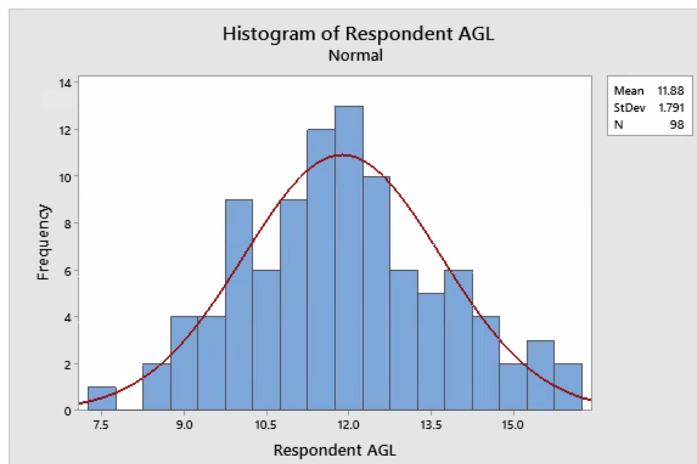
[28] Readability Test Tool. WebFX. http://webfx.com/tools/read-able/flesch-kincaid.html





The following pair of histograms depicts the Average Grade Level (AGL) score distribution for petitioners and respondents.





This data set includes 70 cases that were decided in favor of the petitioner and 28 cases that were decided in favor of the respondent. Before beginning my empirical analysis, I segregate the data based on these outcomes. The following table describes the average Flesch Kincaid Reading Ease and AGL scores of both petitioner and respondents in cases where the *respondent* succeeded.

Petitioner		Respondent	
FK Reading Ease	AGL	FK Reading Ease	AGL
55.9	11.5	53.7	12.0

The following table describes the average Flesch Kincaid Reading Ease and AGL scores of both petitioner and respondents in cases where the *petitioner* succeeded.

Petitioner		Respondent	
FK Reading Ease	AGL	FK Reading Ease	AGL
53.9	12.1	55.6	11.8

These descriptive statistics reveal a consistent pattern. In cases of respondent success, the respondents had higher average scores for complexity across the indices. In cases of petitioner success, the petitioners had higher average complexity scores.

Empirical Methods

My analysis attempts to understand the relationship between a binary variable, the SCOTUS holding, and the continuous readability score predictors. Accordingly, I use binary logistic regressions to model the potential relationship.

I run three series of tests. First, I examine the petitioner scores in isolation. Each readability index will be regressed against the holdings. Then, the same process is repeated with respondent scores only. For ease of comparison, I invert the binary variable such that a 1 represents a successful outcome for the respondent during this second series. This allows the regression equations to be read in parallel: each represents the likelihood of success based on the complexity of the speaker's argument. Finally, I use the differential between petitioner and respondent score to examine whether the relative complexities in a single hearing have a significant effect on the holding.

It will not be prudent to perform a multivariate regression using more than one readability index. Although each index calculates complexity in a different way, they produce similar results. There is a high degree of multicollinearity among the predictors. The analysis would not provide insight into whether one index was a stronger predictor than any other.

IV. RESULTS

Binary Regression

Each binary logistic regression produces a regression equation of the following form:

$$P(1) = \frac{\exp(Y')}{(1 + \exp(Y'))}$$

$$Y' = Coef - SE\ Coef\ (Continuous\ Predictor)$$

When considering the Flesch Kincaid Reading Ease scores for petitioners and respondents, the regression equations are as follows:

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(3.35 - 0.4444(FK\ Reading\ Ease))}{1 +\ \exp(3.35 - 0.4444(FK\ Reading\ Ease))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(0.89 - 0.033(FK\ Reading\ Ease))}{1 +\ \exp(0.89 - 0.033(FK\ Reading\ Ease))}$$

Each regression uses the binary result 1 to represent a successful holding for that speaker. As described, the Flesch Kincaid Reading Ease index *increases* as complexity *decreases*. The regression equations suggest that a lower FK Reading Ease score increases the likelihood of a successful verdict. Therefore, the equations imply a direct, positive relationship between complexity and success. These formulas suggest that greater linguistic complexity correlates with a greater chance of success.

When considering the Average Grade Level score, which encapsulates all other readability measures, the regression equations for both parties are as follows:

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-1.77 + 0.227(AGL))}{1 + \exp(-1.77 + 0.227(AGL))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.76 + 0.071(AGL))}{1 + \exp(-1.76 + 0.071(AGL))}$$

Grade Level indices have a direct relationship with complexity: as the score *increases*, the complexity also *increases*. These equations appear to imply that greater linguistic complexity correlates with a greater chance of success. Each Grade Level regression displayed a similar relationship. See *Appendix F* for a full list of regression equations for petitioner and respondent scores.

The odds ratio can be used to understand a predictor's effect in a binary logistic regression. As a rule, odds ratios that are greater than 1 indicate that an event is more likely to occur as the predictor increases. Odds ratios that are less than 1 indicate that an event is less likely to occur as the predictor increases. The following table describes the odds ratio for the preceding indices. See *Appendix G* for a list of odds ratios for all petitioner and respondent scores.

Appearance	**Predictor**	**Odds Ratio**	**95% Confidence Interval**
Petitioner	Flesch Kincaid Reading Ease	0.9566	(0.9009, 1.0156)

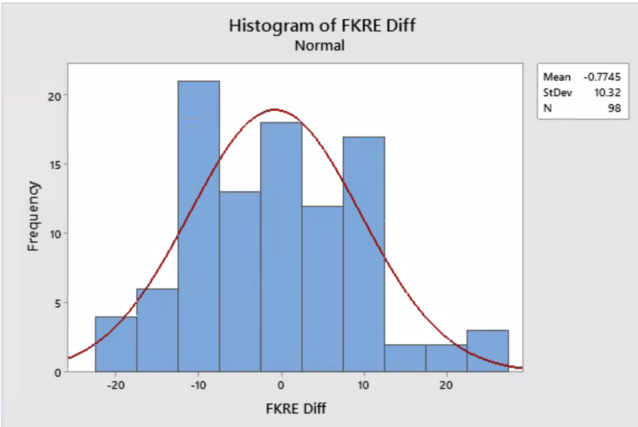
Respondent	Flesch Kincaid Reading Ease	0.9675	(0.9133, 1.0249)
Petitioner	Average Grade Level	1.2548	(0.9468, 1.6629)
Respondent	Average Grade Level	1.0733	(0.9393, 1.3725)

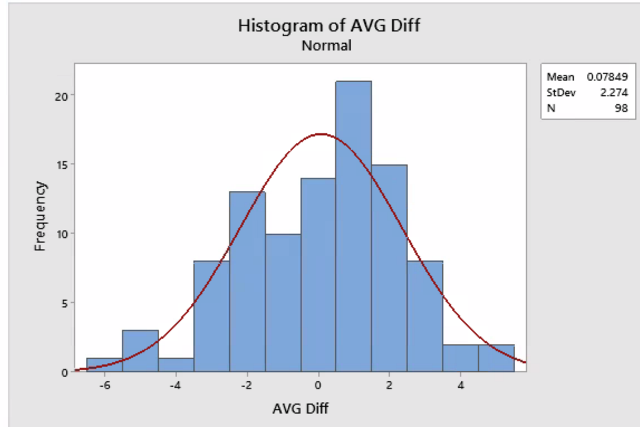
At first glance, the odds ratios above confirm the relationship implied by the regression equations. Both suggest that an increasing complexity score predicts an increasing likelihood of a favorable holding. However, the 95% confidence interval reveals the fault in that assumption. In every instance, the interval spans from a value less than 1.0 to a value greater 1.0. It can not be concluded, with 95% certainty, that the odds ratio for any predictor is less than 1. Nor can it be said with certainty that the odds ratio for any predictor is greater than 1. The regression does not represent a definite positive or negative relationship between the predictor index and the binary result. At a significance level of 0.05 ($\alpha = .05$), the relationship is statistically insignificant.

The above process is repeated for the differential readability scores. The differential for each index is calculated as the difference between petitioner and respondent scores. For a given index Z, the differential score is equal to

$$= Z_{\text{Petitioner}} - Z_{\text{Respondent}}$$

The following histograms depict the distribution of score differentials for the Flesch Kincaid Reading Ease and AGL indices.





The following are regression equations that use the differential Flesch Kincaid Reading Ease and AGL scores, respectively, as the continuous predictor. A positive binary response variable in these regressions represents a favorable holding for the petitioner. See *Appendix I* for a full list of differential regression equations.

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.922 - 0.0423(FK\ Reading\ Ease))}{1 + \exp(0.922 - 0.0423(FK\ Reading\ Ease))}$$

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.930 + 0.1573(AGL))}{1 + \exp(0.930 + 0.1573(AGL))}$$

These equations suggest that a greater differential predicts an outcome in favor of the petitioner. In other words: the greater positive difference in complexity between a petitioner's language and a respondent's language, the more likely the petitioner is to receive a favorable outcome. A negative differential represented a case in which the respondent used more complex language than the petitioner. These equations imply that, in those cases, the respondent had a predicted advantage. These equations might suggest that a litigant ought to maximize their use of complex language: whomever uses the least accessible language would have an improved chance of success. However, the differentials equations suffer from the same uncertainty of the prior results.

The following table captures the odds ratios for the FK Reading Ease and AGL differential indices. See *Appendix J* for a full list of odds ratios for the differential index equations.

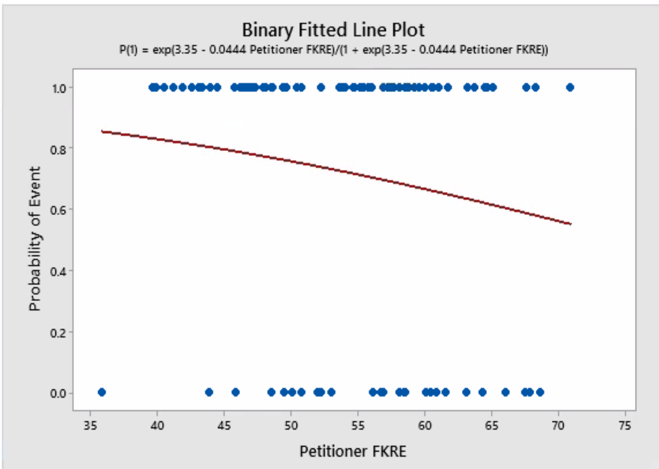
Predictor	Odds Ratio	95% Confidence Interval
Flesch Kincaid Reading Ease	.9586	(0.9175, 1.0015)
Average Grade Level	1.1703	(0.9623, 1.4233)

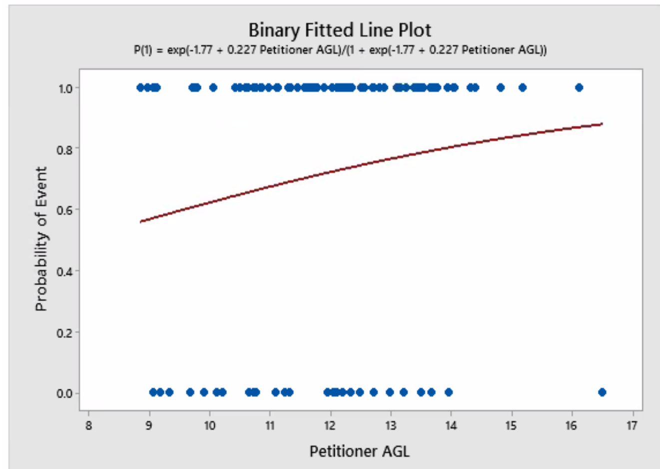
Although the odds ratios appear to confirm the positive relationship, both confidence intervals establish those results as statistically insignificant.

The results for the petitioner, respondent, and differential regression equations all follow the same pattern. Correlation in each appears to suggest that increasing complexity – as an individual speaker and relative to an opponent – predicts a greater likelihood of success. However, the confidence intervals fail to meet the $\alpha = .05$ requirement. The regression equations are not conclusive as to a relationship between the predictor and binary response variables.

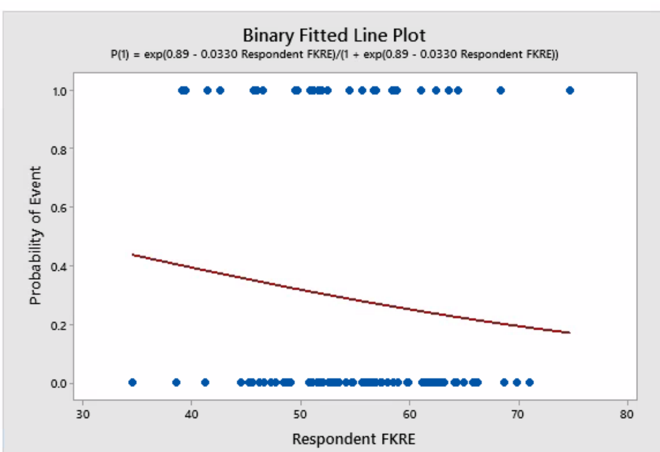
Regression Plots

The results of the binary regressions can be further explored using fitted line plots. The following are fitted line plots that illustrate the FK Reading Ease and AGL regression equations for petitioners.





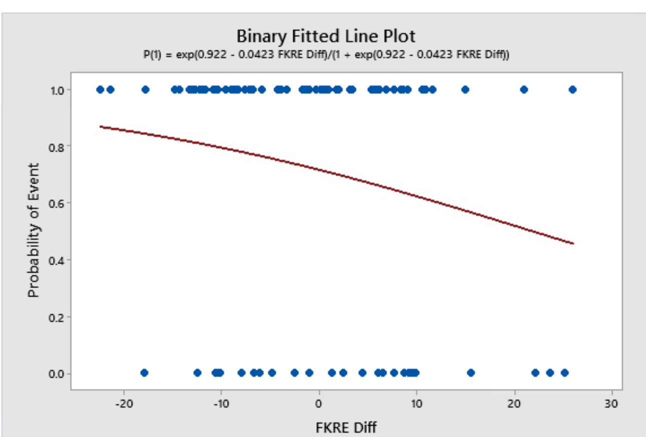
The following are fitted line plots that illustrate the FK Reading Ease and AGL regression equations for respondents.

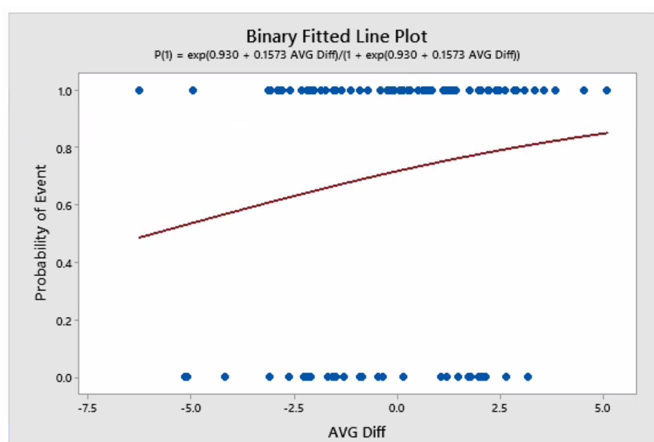


These charts illustrate the relationships described in the previous section. The goodness-of-fit between the linguistic data and the fitted line is quite poor. The below table describes the deviance and AIC values for the regressions. The models do not explain a significant amount of variance around their means. It can not be said that the graphs depict a significant correlation between linguistic complexity and SCOTUS decision. See *Appendix H* for a table detailing the goodness-of-fit for all petitioner and respondent regression equations.

Appearance	**Predictor**	**Deviance R-Sq**	**Akaike Information Criteria (AIC)**
Petitioner	Flesch Kincaid Reading Ease	1.86%	119.07
Respondent	Flesch Kincaid Reading Ease	1.09%	119.98
Petitioner	Average Grade Level	2.22%	118.66
Respondent	Average Grade Level	0.27%	120.94

Examining the differential index scores reveals a similar pattern. The following graphs illustrate the differential regression equations for FK Reading Ease and AGL indices.





These equations also displayed a significant degree of variance and an unusually high AIC value, per the below table. See *Appendix H* for a table detailing the goodness-of-fit for all petitioner and respondent regression equations.

Predictor	Deviance R-Sq	Akaike Information Criteria (AIC)
Flesch Kincaid Reading Ease	3.18%	117.54
Average Grade Level	2.16%	118.73

Only a small portion of the deviances are explained by the model. As in the prior series of tests, these models do not suggest a significant relationship between linguistic complexity differential and the likelihood of success.

V. POTENTIAL FUTURE RESEARCH

Although this study failed to yield conclusive results, there are multiple avenues for further research. The Supreme Court benefits from a rich dataset that is increasingly accessible. There is more work to be done in determining how Justices are influenced and, more generally, the role of language within the Court's chambers. There are three major areas of potential development: (1) increasingly detailed predictive research for SCOTUS voting, (2) using the language of the Court to study tangential topics, and (3) shifting focus to the language of the Justices themselves.

The existing research that predicts SCOTUS voting relies heavily on historical voting patterns. Spaeth's database, developed in conjunction with Washington University's law school, is a detailed resource that tracks granular details for every case.[29] Patterns in origin court, type of

[29] Harold J. Spaeth, Lee Epstein, et al. 2019 Supreme Court Database. 2019 Version Release 1. Washington University Law. http://scdb.wustl.edu/index.php.

respondent, and procedural history have netted successful algorithms. Similarly, predictions that utilize voting blocs among Justices have been shown to outperform expert prediction. Combining these proven tools with an analysis of language could offer a more complete picture of rhetorical influence. While it may be that linguistic complexity does not have a direct effect on the outcome of a hearing, there may be instances where its influence appears. My study did not consider the vote breakdown in each case. It may be that cases, which would otherwise be predicted to have a decisive margin of victory, may have been decided by a narrower margin. Examining exclusively split decisions (e.g.: 5-4, 6-3 votes) could be a productive avenue to assess the finer effects of language in the courtroom.

The language of the Supreme Court has implications beyond any case's holding. Aforementioned research papers have analyzed political trends by using text as data from public hearings and party manifestos. The language of the Supreme Court may be used to similar ends. The Court's politics tends to change more slowly than its counterparts in the legislative and executive branches, due to the lengthier tenure of its appointees. It may prove interesting to explore how political language has evolved over time in each of the United States' three federal branches. The language of litigants can also be used to assign ideological scores to different issues that are presented before the Court. Key word analysis can reveal the portion of SCOTUS cases that lean heavily to one side of the current political spectrum.

The study has also ignored a fundamental element in SCOTUS hearings: the language of Justices themselves. Oral arguments consist primarily of the litigants' oration, but the Justices are ever-present. Although they serve as arbiters of the law, the Justices also use the proceedings to advocate for their own beliefs. It may be possible to consider the role of Justices' comments in the persuasiveness of oral hearings. Justices direct their questions at the petitioners, but the pointed hypotheticals ultimately serve to convince their fellow adjudicators. Aggregating their questions and comments over the course of their tenure would result in a significant amount of text for any modern Justice. Utilizing text of SCOTUS Justices may well have a wide array of possible academic applications. Modern U.S. Presidents attempt to appoint Justices who agree with their political views. Analyzing the body of Justices' comments and opinions can reveal the degree of success, in that regard, that each appointment achieved. Their comments can also be analyzed using similar methods to this study: complexity and accessibility. There may be significant correlations between linguistic complexity and Justices' education, number of public appearances, and socioeconomic backgrounds. SCOTUS opinions are directly influential to the American public, but their complex language may render them inaccessible to most. Readability indices can be used to evaluate their complexity, just as Goelzhauser and Cann analyzed the accessibility of judicial opinions at the state level.[30] Finally, opinions can be used to examine how Justices use similar language to the oral arguments given in a case. A Justice's frequent use of one litigant's language may be another proxy by which persuasion in oral arguments can be explored.

VI. CONCLUSION

The regression analysis in this study did not reveal a statistically meaningful relationship between any readability index and the Court's holding in a case. This held true when examining petitioner scores, respondent scores, and the difference between litigant scores. The fundamental

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[30] Greg Goelzhauser and Damon M. Cann. 2014. "Judicial Independence and Opinion Clarity on State Supreme Courts." State Politics & Policy Quarterly: 123.

question remains unanswered: What role does litigants' language play in persuading the Supreme Court?

This inquiry was spawned from maxims of persuasion taught to young lawyers interested in persuading a jury. However, many legal matters never reach the ears of a jury. Issues are frequently settled in arbitration or before a lower judge during bench trials and preliminary hearings. Far fewer cases ever come close to the chambers of the Supreme Court.

It could even be said that the vast majority of legal issues never reach any sort of litigation at all. Matters that might become legal disputes are often solved with settlements, compromises, or perhaps a well-deserved apology. The language of persuasion has a heightened role in the courtroom, but the values of coherent explanation stretch far beyond the legal profession. Language matters. It behooves us all to consider both the accessibility and the content of our communication. We may never address the Justices of the Supreme Court, but language remains a powerful tool regardless of audience.

VII. APPENDICES

Appendix A: Sample Transcript

This transcript is from page 7 of Michael Kellogg's argument on behalf of the Petitioners from the SCOTUS Case Bell Atlantic Corporation, et al. v. William Twombly (2006).

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any one of the umpteen ways one could be negligent.
          MR. KELLOGG:  That is correct, Justice
O'Connor, but you have a direct context -- Justice
Ginsburg, you had a direct context in which an
eyewitness participant in the event is claiming
negligence on behalf of the driver of the car.  In
the instant case, we have no injury that's separate
from the alleged conspiracy, and we have no time,
place or participants for the alleged conspirators.
          JUSTICE BREYER:  But you do have a case --
anywhere, forget antitrust.  Suppose it's a tort
case, and the following complaint is filed.  My foot
hurts.  I've gone to Dr. Smith for 15 years.  I claim
he is negligent.  Is that valid?
          MR. KELLOGG:  I do not think so, because I
don't think --
          JUSTICE BREYER:  All right.  Now, if you
think that's valid, I understand that you think this
complaint does just what I said in the field of
antitrust.  But is there any case that you've come
across which would say a complaint just as I have
described it --
          MR. KELLOGG:  Yes.
          JUSTICE BREYER:  Either is valid or is not
valid.  You'd like to find one that says it's not
```

Appendix B: Readability Index Formulas

Where, in any given sample of text, the variables are as follow:

W is the number of words

S is the number of sentences

C is the number of characters

Sy is the number of syllables

M is the number of words that contain three or greater syllables

Flesch Kincaid Reading Ease

$$= 206.835 - 1.015 * \frac{W}{S} - 84.6 * \frac{Sy}{W}$$

Flesch Kincaid Grade Level

$$= 0.39 * \frac{W}{S} + 11.8 * \frac{Sy}{W} - 15.59$$

Gunning Frog Score

$$= .04 \frac{W}{S} + 100 * \frac{M}{W}$$

SMOG Index

$$= 1.0430 * sqrt\left(30 * \frac{M}{S}\right) + 3.1291$$

Coleman Liau Index

$$= 5.89 * \frac{C}{W} - \ .3 * \frac{S}{W} - 15.8$$

Automated Readability Index

$$= 4.71 * \frac{C}{W} + .5 * \frac{W}{S} - 21.43$$

Average Grade Level is a strict average of the Flesch Kincaid Grade Level, Gunning Frog Score, Colman Liau Index, SMOG Index, and Automated Readability Index.

Appendix C: Flesch Kincaid Reading Ease Table

Readability Score	***Difficulty Level***
90 – 100	Very Easy
80 – 90	Easy
70 - 80	Relatively Easy
60 – 70	Normal

50 – 60	Relatively Difficult
30 – 50	Difficult
0 – 30	Very Difficult

Appendix D: Sample Readability Output from <u>Mississippi v. Louisiana</u> (1992)

Petitioner							**Respondent**						
FK RE	FK GL	GF	SMOG	CL	ARI	AGL	FK RE	FK GL	GF	SMOG	CL	ARI	AGL
52.2	11.8	14.4	10.8	11.6	12.3	12.2	56.5	10.9	12.7	9.9	10.5	10.7	10.9

Appendix E: *Frequency of SCOTUS Decision Types*

Holding for	**Count**
Petitioner	70
Respondent	28
Pending	2

Appendix F: Regression Equations for Readability Indices

<u>For each index:</u>

Probability of Ruling for Petitioner uses the readability score from petitioner's argument to predict the likelihood of a favorable holding.

Probability of Ruling for Respondent uses the readability score from respondent's argument to predict the likelihood of a favorable holding.

<u>Flesch Kincaid Reading Ease</u>

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(3.35 - 0.4444(FK\ Reading\ Ease))}{1 + \exp(3.35 - 0.4444(FK\ Reading\ Ease))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(0.89 - 0.033(FK\ Reading\ Ease))}{1 + \exp(0.89 - 0.033(FK\ Reading\ Ease))}$$

<u>Flesch Kincaid Grade Level</u>

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-0.92 + 0.162(FK\ Grade\ Level))}{1 + \exp(-0.92 + 0.162(FK\ Grade\ Level))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.82 + 0.079(FK\ Grade\ Level))}{1 + \exp(-1.82 + 0.079(FK\ Grade\ Level))}$$

Gunning Frog

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-1.63 + 0.178(Gunning\ Frog))}{1 + \exp(-1.63 + 0.178(Gunning\ Frog))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.63 + 0.0489(Gunning\ Frog))}{1 + \exp(-1.63 + 0.0489(Gunning\ Frog))}$$

SMOG

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-2.10 + 0.289(SMOG))}{1 + \exp(-2.10 + 0.289(SMOG))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-2.19 + 0.121(SMOG))}{1 + \exp(-2.19 + 0.121(SMOG))}$$

Coleman Liau

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-3.01 + 0.0345(Coleman\ Liau))}{1 + \exp(-3.01 + 0.0345(Coleman\ Liau))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.23 + 0.028(Coleman\ Liau))}{1 + \exp(-1.23 + 0.028(Coleman\ Liau))}$$

Automated Readability Index (ARI)

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-0.68 + 0.1351(ARI))}{1 + \exp(-0.68 + 0.1351(ARI))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.28 + 0.0305(ARI))}{1 + \exp(-1.28 + 0.0305(ARI))}$$

Average Grade Level (AGL)

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(-1.77 + 0.227(AGL))}{1 + \exp(-1.77 + 0.227(AGL))}$$

$$Probability\ of\ Ruling\ for\ Respondent = \frac{\exp(-1.76 + 0.071(AGL))}{1 + \exp(-1.76 + 0.071(AGL))}$$

Appendix G: Odds Ratios for Readability Predictors

Appearance	Predictor	Odds Ratio	95% Confidence Interval
Petitioner	Flesch Kincaid Reading Ease	0.9566	(0.9009, 1.0156)
Respondent	Flesch Kincaid Reading Ease	0.9675	(0.9133, 1.0249)
Petitioner	Flesch Kincaid Grade Level	1.1761	(0.9273, 1.4917)
Respondent	Flesch Kincaid Grade Level	1.0823	(0.8822, 1.3278)
Petitioner	Gunning Frog	1.1952	(0.9546, 1.4964)
Respondent	Gunning Frog	1.0502	(0.8675, 1.2713)
Petitioner	SMOG	1.3353	(0.9532, 1.8705)
Respondent	SMOG	1.1284	(0.8370, 1.512)
Petitioner	Coleman Liau	1.4120	(0.9095, 2.1921)
Respondent	Coleman Liau	1.0286	(0.6497, 1.6825)
Petitioner	Automated Readability Index	1.447	(0.9413, 1.3920)
Respondent	Automated Readability Index	1.0309	(0.8748, 1.2149)
Petitioner	Average Grade Level	1.2548	(0.9468, 1.6629)
Respondent	Average Grade Level	1.0733	(0.9393, 1.3725)

Appendix H: Model Summaries for Readability Predictors

Appearance	Predictor	Deviance R-Sq	Akaike Information Criteria (AIC)
Petitioner	Flesch Kincaid Reading Ease	1.86%	119.07
Respondent	Flesch Kincaid Reading Ease	1.09%	119.98
Petitioner	Flesch Kincaid Grade Level	1.58%	119.40

Respondent	Flesch Kincaid Grade Level	0.49%	120.69
Petitioner	Gunning Frog	2.18%	118.71
Respondent	Gunning Frog	0.21%	121.01
Petitioner	SMOG	2.53%	118.30
Respondent	SMOG	0.54%	120.63
Petitioner	Coleman Liau	2.12%	118.78
Respondent	Coleman Liau	0.01%	121.25
Petitioner	Automated Readability Index	1.62%	119.36
Respondent	Automated Readability Index	0.11%	121.13
Petitioner	Average Grade Level	2.22%	118.66
Respondent	Average Grade Level	0.27%	120.94

Appendix I: Regression Equation for Readability Index Differentials

For each index Z, the differential score is equal to

$$= Z_{Petitioner} - Z_{Respondent}$$

Flesch Kincaid Reading Ease

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.922 - 0.0423(FK\ Reading\ Ease))}{1 + \exp(0.922 - 0.0423(FK\ Reading\ Ease))}$$

Flesch Kincaid Grade Level

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.932 + 0.1332(FK\ Grade\ Level))}{1 + \exp(0.932 + 0.1332(FK\ Grade\ Level))}$$

Gunning Frog

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.942 + 0.1234(Gunning\ Frog))}{1 + \exp(0.942 + 0.1234(Gunning\ Frog))}$$

SMOG

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.943 + 0.219(SMOG))}{1 +\ \exp(0.943 + 0.219(SMOG))}$$

Coleman Liau

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.89 + 0.243(Coleman\ Liau))}{1 +\ \exp(0.89 + 0.243(Coleman\ Liau))}$$

Automated Readability Index (ARI)

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.924 + 0.0850(ARI))}{1 +\ \exp(0.924 + 0.0850(ARI))}$$

Average Grade Level (AGL)

$$Probability\ of\ Ruling\ for\ Petitioner = \frac{\exp(0.930 + 0.1573(AGL))}{1 +\ \exp(0.930 + 0.1573(AGL))}$$

Appendix J: Odds Ratio for Readability Index Differentials

Predictor	Odds Ratio	95% Confidence Interval
Flesch Kincaid Reading Ease	.9586	(0.9175, 1.0015)
Flesch Kincaid Grade Level	1.1424	(0.9673, 1.3493)
Gunning Frog	1.1314	(0.9676, 1.3228)
SMOG	1.2448	(0.9837, 1.5752)
Coleman Liau	1.2746	(0.8970, 1.8112)
Automated Readability Index	1.0887	(0.9530, 1.2437)
Average Grade Level	1.1703	(0.9623, 1.4233)

Appendix K: Model Summaries for Readability Index Differentials

Predictor	Deviance R-Sq	Akaike Information Criteria (AIC)
Flesch Kincaid Reading Ease	3.18%	117.54
Flesch Kincaid Grade Level	2.14%	118.75
Gunning Frog	2.08%	118.83

SMOG	2.91%	117.84
Coleman Liau	1.61%	119.38
Automated Readability Index	1.35%	119.68
Average Grade Level	2.16%	118.73

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