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Shawnya Lee Wethington
University of Arkansas, Fayetteville

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Readability of newspapers in Arkansas compared to
regional papers around the nation

A thesis submitted in partial fulfillment
of the requirements
for the Fulbright Honors College

By

Shawnya Wethington
University of Arkansas

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University of Arkansas

Readability of newspapers in Arkansas compared to regional papers around the nation

Introduction

Readability is an important aspect in the formula for developing strong and comprehensible newswriting. Having an understanding of how readability plays a role in readers' perception of the newspaper, as well as its articles and the news, can even shape the way future news is written. Therefore, it is worthwhile to spend time understanding the nuances of readability in different areas of the nation so that the news can be tailored to fit those areas specifically. Readability studies can also provide insight into how well a newspaper is serving its patrons by matching the reading levels in its circulation area. Readability poses an issue to newspapers as it is one of the factors that affect how well readers understand the printed news articles, and readers can be alienated by reading levels that are too advanced. If articles are written above a population's reading level, then area readers will lose an avenue of gaining information (Smith, 1984). In a time when circulation numbers are struggling and newspapers must compete against many forms of media outlets to gain readers' attention, finding the particular elements of newswriting that attract or repel readers will be useful for newspaper editors looking to expand and enhance their newspaper audiences. There are many components involved in making writing readable – including text size and font, sentence and word length, sentence and word complexity, interest of the topic, clarity of writing – but this article will focus mainly on the aspects of readability that have to do with difficulty of sentences, such as the length of words and sentences and the number of syllables per word. These calculations form the foundation of readability formulas, which are supposed to gauge the lowest possible grade level of readers who can comprehend the text (Bialik, 2008). Newspaper readability should be of particular interest to Arkansas citizens because, historically, this state has experienced low

literacy rates and education levels. Because of the important role that readability plays on newspapers, this article chose to study how Arkansas newspapers' reading levels compare to those in newspapers around the nation. The hypothesis is that the average reading level of newspapers in Arkansas will be written at a significantly lower reading level than the regional newspapers from other areas in the United States. However, as a whole, the newspapers are expected to be higher than a middle school reading level. This is an important issue, because readability is so essential to a reader's relationship to the newspaper and understanding the available news. Having news articles at a reading level close to that of the readers is important because it determines the vocabulary level and range that reporters should be aiming for. It can also be indicative of the education level in different geographic areas, as well as show how effective the education is.

History of Readability Issue

Readability formulas were first developed in the 1920s so that science teachers could find easier ways of explaining complex concepts. However, it was not until the 1940s that testing readability took off and was popularized, because by that time the formulas became a viable means for testing the issue. Rudolf Flesch was a Viennese lawyer who came to the United States to study education in 1938, and he was instrumental in developing and disseminating this readability research (By, 2000). In 1948, Flesch developed a measure that would become the base of one of the most popular readability calculators, the Flesch Reading Ease index. This index, along with the Flesch-Kincaid Grade Level calculator, is used within Microsoft Word programs. In the mid-20th century, another role of the readability formulas was to simplify complex newspaper writing. Then, in 1975, Flesch's work was tweaked by J. Peter Kincaid for use in the United States Navy, and this led to the Flesch-Kincaid Grade Level measure (Bialik,

2008). Flesch held the theory that readability was based on two aspects of a text: 1) word and sentence length, and 2) the level of human interest the piece has to motivate people to read the article, and this is partly determined by the presence of direct speech and personal references (Wanta and Gao, 1994). Flesch believed that the combination of these two elements led to a piece of writing's ability to be read with ease or difficulty.

Literature Review

Katherine McAdams found in her 1992 study *Readability Reconsidered* that interest in a topic was more important than readability in determining reader satisfaction. So, while ability to read an article can be important to a reader's understanding of the article, this does not replace the need for quality writing. This also suggests that an article written at a reading level higher than that of the average reader may not pose an issue or be a deterrent to readers as long as the topic is one that they find interesting. Her study found that the average newswriting was "readable enough." Census information has shown that the average person age 25 and older had an average educational level of about 12.3 years (Smith, 1984). This has not changed much, as the census information from the 2013 American Community Survey showed adults age 25 and up had a median educational attainment level of at least one year of college but no degree. However, this still leaves many members of the population with an educational level below that of the average resident. More than 40 million adults are functionally illiterate and an additional 50 million people have reading skills that are inadequate (Kirsh et al, 2002).

Reading difficulty varies among different types of news articles. Porter and Stephens said in their 1989 study that sports coverage and soft news score lower than hard news on readability tests. Danielson and Bryan also corroborated the fact, finding that people had the most difficulty in understanding the writing style of hard news stories (1964). Soft news includes articles on

fashion, entertainment, and human interest topics, whereas hard news includes topics covering politics, crime, business, and news at the local, state, national and international levels. However, it's not just hard news stories, but newswriting in general. Despite the commonly touted statement that news stories are written at a sixth-grade level (Whetmore, 1982), or that the average American reads at the eighth-grade reading level (By, 2000), many varieties of news articles routinely fall at a much higher reading level. In fact, many studies have disproved the common notion that news writers are writing at a middle school reading level. In 1973, Hoskins found Associated Press and United Press International wire copy to have average reading levels between the 13th and 16th grade level. Less than 20 percent of AP stories and 5 percent of UPI stories were in the 8th and 9th grade reading levels. Another study found that the top three paragraphs of news articles ranged from the 10th to 16th grade levels, and the lead paragraph scored even higher, between the 13th to 17th grade levels, meaning that some articles needed readers with education going beyond a four-year college degree (Wanta & Gao, 1994). McAdams found that the reading level necessary for understanding presidential coverage of the Washington Post and New York Times was at least college level (McAdams, 1990). Another trend that McAdams noted is that readability of newspapers has stayed quite similar in the latter half of the 20th century (McAdams, 1992).

Critics of readability formulas fault the formula's inability to include sentence complexity in the analysis. The formulas that rely on word and sentence length to calculate reading levels have no way of determining whether the words are familiar or obscure, so word or sentence length alone, or even measuring the number of syllables in a word, is not a perfect measuring tool. Shorter but uncommon words, such as "adz, auk, and lea," contribute to a lower reading level than common three-syllable words like "important and elephant" (Bialik, 2008),

and words such as these can throw off the scales. McAdams suggested that enhancing readability might go beyond shortening sentences and instead have more to do with the sentence structure and content (1992). Another issue not taken into account is having words or sentence fragments that have multiple meanings or vary by context, so these ambiguities can be underestimated in the calculations (Pyrzczak, 1976).

However, there is scientific backing to readability testing. Short words and sentences allow more efficient reading (By, 2000). Comprehension and sentence length are inversely correlated, so the longer a sentence is, the more difficulty an individual would have comprehending the text. After a news sentence surpasses 15 words, comprehension drops dramatically (Reiley, 1974). The readability formulas are still the only objective means of testing written copy quantitatively, and they are used by many different industries to help ensure that their materials are understandable. Oregon mandates that state income-tax returns reach a minimum score on the Flesch Reading Ease index, usually around a 60 (By, 2000), which is at the reading level of an individual in the 8th or 9th grade (Ryan et al, 2014) . Indiana, Vermont, Massachusetts, and South Carolina are among the states requiring that insurance policies score at least a 40 on the test (By, 2000), which is at the reading level of an individual between high school and college (Ryan et al, 2014). Manual estimates – or reading level estimates by individuals through personal assessment without the use of technology – vary greatly, as a study of Utah editors showed that they underscored by an average of 4.2 grade levels when estimating the average reading level of different news stories (Porter & Stephens, 1989). Judging the texts based on their own experiences, they thought the articles were written at a lower reading level than the Flesch readability scores in every single instance. Grade level estimates among the editors varied by as many as six grade levels in a single article. Additionally, the same article

found that editors frequently do not check the readability of their publications. A study of Utah reporters showed that only one in six daily newspaper managing editors have someone measuring the readability of the articles in their publication. The only estimates of readability were coming from the editors own guesses – not a methodological formula (Porter & Stephens, 1989). This lack of calculating readability is an issue because it shows that readability does not play an important role in the newspapers, even though this is an important factor in how newspapers are perceived.

There is also a great degree of grade level variation among the different readability calculators, as testing the same article oftentimes yields different results on the tests. As Ryan et al explained in their 2014 study “Evaluation of Printed Health Materials for Use by Low-Education Families,” the different readability tests will differ because the formulas used to compute them use different measures. Giving different aspects of readability more importance is what gives rise to so many unique readability calculators, and this comes through the different ways they measure word choice and usage, word or sentence length, or number of syllables (Smith & Taffler, 1992).

Research

As there are many different measures to calculate readability, the formulas used in this research were selected for two purposes:

- 1) To provide variety. Previous studies have shown that different readability tests calculate texts to different grade levels (Ryan et al, 2014). Therefore, a composite grade level that averages the scores of many readability tests would account for some of the discrepancies in formulas and weaknesses of individual tests.

2) To follow the work of previous readability researchers. Each measure used was also present in previous studies (Smith, 1984; Olmstead, 1993; Ryan et al, 2014). Smith used the Flesch Readability formula because it was the most popular readability calculator for use in journalism research. He also selected the Gunning Fog Index because it was another commonly used method of calculating readability in the journalism field. Finally, he chose to test the Dale-Chall Formula because, although it was less-widely used, at the time it was one of the most respected by education and literary professionals. The Flesch-Kincaid readability formula is calculated by $(L \times 0.39) + (N \times 11.8) - 15.59$, where L is average sentence length (number of words divided by number of sentences) and N is the average number of syllables per word (number of syllables divided by number of words). The Gunning Fog Index, is calculated by $[(L + N) \times 0.4] + 5$ years. The SMOG formula calculates N, and then the grade level is (the square root of N) +3 (Johnson and Johnson). The Coleman-Liau Index is calculated by the following formula, $0.0588L - 0.296S - 15.8$, where L is the average number of letters per 100 words, and S is the average number of sentences per 100 words (Scott). The new Dale-Chall Formula varies from the methodology of other readability calculators because it calculates average grade level by determining the percentage of words that would be familiar to fourth grade students, based on a list of 3,000 words. A higher percentage of words that are not on the reading list means a higher coordinating grade level (Ulrich). The “New” refers to an updated and expanded word list that was included in one of the authors’ later publications (Chall and Dale, 1995).

Method

To answer the research questions, this study used a sample of newspapers selected from different economic regions across Arkansas and America. Both Arkansas and America were divided into eight economic categories, so a newspaper was selected from each of the eight

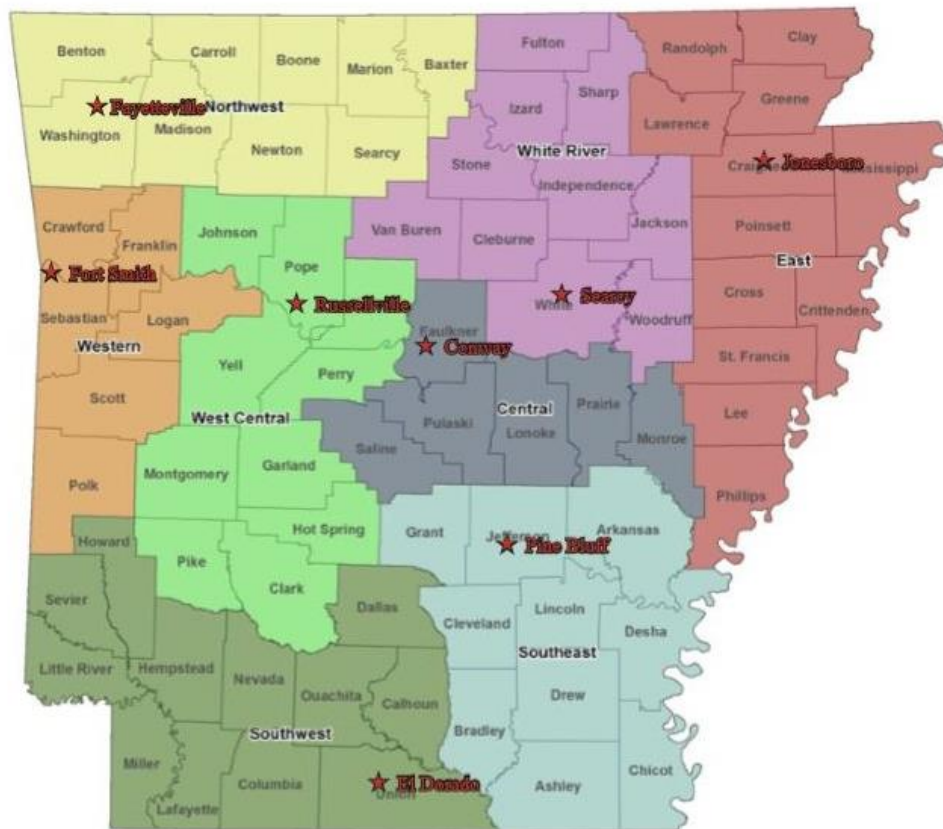
categories, for a total of 16 newspapers. In Edward Nissan’s study, “Comparing U.S. regions for selected economic and financial variables,” America was divided into these eight sections: New England, Mideast, Great Lakes, Plains, Southeast, Southwest, Rocky Mountain, and Far West.



The newspapers were further chosen based on their availability through NewsBank’s America’s News Source. The Hartford Courant was selected from the New England section; the Philadelphia Inquirer was selected from the Mideast section; the Cleveland Plain Dealer was selected from the Great Lakes section; the Minneapolis Star-Tribune was selected from the Plains section; the Atlanta Journal-Constitution was selected from the Southeast section; the Houston Chronicle was chosen from the Southwest section; the Denver Post was selected from

the Rocky Mountain section; and the San Francisco Chronicle was selected from the Far West section.

The Comprehensive Economic Development Strategy of the Association of Arkansas Development Organizations divided Arkansas into eight Planning and Development districts, which are: Northwest, White River, East, Western, West Central, Central, Southwest, and Southeast.



The Comprehensive Economic Development Strategy was developed by a subgroup commissioned by the United States Department of Commerce, so it is a useful division of the state of Arkansas into economic regions. This project marked Arkansas' first economic development plan, and this placed an emphasis on local government and the cooperation of the

planning and economic development factions of different municipal and county divisions. Therefore, these divisions were used to divide the state of Arkansas into economic regions.

The Arkansas Democrat-Gazette (Fayetteville) was selected from the Northwest district; the Daily Citizen (Searcy) was selected from the White River district; the Jonesboro Sun was selected from the East district; the Times Record (Fort Smith) was selected from the Western district; the Courier (Russellville) was selected from the West Central district; the Log Cabin Democrat (Conway) was selected from the Central district; the El Dorado News-Times was selected from the Southwest district; and the Pine Bluff Commercial was selected from the Southeast district.

A constructed week of November 2-8 in 2014 was chosen because it was the election week in an off-year election cycle. With election coverage as a guaranteed similar source of news material, the newspapers had a more unified content base during this week so that the study could better isolate reading ease from content variation. Political articles have previously been found as some of the more difficult articles for people to read (Anderson, 1966; Razik, 1969), so this helped unify the news results.

Five newspaper articles from each newspaper were tested each day in five different readability tests: Flesch-Kincaid Reading Ease, Gunning Fog Index, Coleman-Liau Index, the SMOG Index and the New Dale-Chall Readability Formula. The tests were done using Dave Child's free readability calculator (<https://readability-score.com/>), because this had all but the New Dale-Chall readability formula. Using the same website for all but one of the tests ensured uniformity for all but the New Dale-Chall formula, which proved more difficult to find online. However, the New Dale-Chall readability formula was available through a website by Alexis Ulrich (<http://www.mancko.com/readability-tests/en/>), so after each article was entered and the

results were recorded for the first website, the articles were entered into the second website and the New Dale-Chall formula scores were recorded. Each of these different testing formulas calculate the readability of a text as a grade level corresponding to the number of years of education a person would need to comprehend the text (Rollins & Lewis, 2013).

The articles were selected from the front-page sections of the newspapers, where possible. However, many of the Arkansas newspapers had a limited selection of articles or the news sections were not listed. Hard news is written at a higher reading level than soft news, such as sports columns (Porter and Stephens, 1989), and it is also perceived as more difficult, as McAdams found that international and national news was rated more difficult to read than sports articles (1992). Therefore, the unmarked articles were selected to best match the categories and topics in the articles from the papers around the nation. Articles were skimmed and selected for uniformity based on content, excluding articles with obituaries, sports results, and periodically scheduled columns. The selected articles fell in the news category, which included the following topics: local, state and national news and events; political coverage and enterprise stories. On three separate days – November 2, 5 and 8 – there are missing articles from one or more editions of different Arkansas newspapers. On these days, there were not five articles available that fit in the news category. Examples of unsuitable news items were obituaries, sports results or a bulleted list of news items. Instead of risking inaccurate results by testing the readability of an article that was not representative of a newspaper's average writing level, the newspapers on those days have fewer articles that were tested. None of the newspapers from around the nation had any days where there were insufficient articles for testing.

Each of the selected articles was always written by a local reporter. Since wire articles were found to be written at a higher reading level than non-wire articles, (Johns and Wheat, 1978), there were no wire stories calculated in this study. The exclusion of wire articles, as well as articles written by non-staff members, was done so that all of the written materials would accurately reflect the local reporters' writing levels. All but four of the articles were longer than 150 words. Of those four, none were below 100 words in length, which is the word length that Porter and Stephens used in their reading samples for their 1989 readability study with Utah editors. Ryan et al (2014) used two sample lengths, the smallest of which was 200-word samples, and the larger samples were 500 words. The average word count for the Arkansas news articles was 584 words, whereas the average word count per article for the papers around the nation was 809 words.

After running each article through the readability calculators and recording the grade level for each of the five calculations, the results were put in a Microsoft Excel document. There, the average grade levels were calculated for each publication, and for the regional and Arkansas papers as a whole, as well as in each reading test. From there, the data was also entered into IBM's statistical analysis software, SPSS Statistics, to see if the results were statistically significant.

Results

The results of this study have shown that, as expected, newspapers in both Arkansas and nationwide are written at an average reading level higher than that of the 8th grade. Also as expected, Arkansas newspapers were written at a lower reading level compared to the newspapers in different parts of the nation. The average Arkansas newspaper was written at a 10.19 grade level. This is more than three-fourths of a grade level different, as well as

considerably lower, than the average newspaper from around the nation in the sample, which was written at a 10.96 grade level. These figures include the average of all five readability tests.

Arkansas newspapers scored at a lower reading level in every readability test except one, the New Dale-Chall formula. This particular readability calculator scored Arkansas at an average 11.21 grade level. The papers from around the nation averaged an 11.02 grade level. The largest difference in scores occurred in the Gunning Fog Index, which scored the Arkansas newspapers on average 1.27 reading levels lower than the papers around the nation. Aside from the New Dale-Chall Formula, which had a 0.19 difference in reading levels, the next closest test was the Coleman-Liau Index, which had a 0.78 difference in reading levels between the two categories.

Arkansas Papers	Flesch-Kincaid	Gunning-Fog	Coleman-Liau	Smog	Dale-Chall	Word Count	Average
2-Nov	9.05	10.73	11.12	8.825	11.13	620.71	10.171
3-Nov	9.0125	10.78	10.685	8.6775	10.72	569.975	9.975
4-Nov	9.1675	10.74	11.5425	8.775	11.3025	471.1	10.3055
5-Nov	8.6487	10.2615	10.8359	8.4667	11.739	602.359	9.99036
6-Nov	9.1	10.91	11.415	8.8775	11.1575	555.775	10.292
7-Nov	9.2725	11.0125	10.965	8.845	11.1125	639.525	10.2415
8-Nov	9.1257	10.9857	11.4343	8.9686	11.3143	625.7429	10.36572
Total	9.053842857	10.77424286	11.14252857	8.776471429	11.21082857	583.5981286	10.19158286

Regional Papers	Flesch-Kincaid	Gunning Fog	Coleman-Liau	Smog	Dale-Chall	Word Count	Average
2-Nov	9.725	11.6425	11.7025	9.3025	10.935	1063.4	10.6615
3-Nov	9.995	11.78	11.47	9.465	10.935	742.725	10.729
4-Nov	10.1425	12.115	11.8	9.6	11.02	721.625	10.9355
5-Nov	9.9	11.525	11.9925	9.3925	11.1575	809.25	10.7935
6-Nov	10.515	12.1775	12.0625	9.9475	11.09	819.65	11.1585
7-Nov	10.44	12.44	12.0925	9.75	11.105	801.5	11.1655
8-Nov	10.605	12.61	12.3025	10	10.905	706.357	11.2845
Total	10.1889286	12.0414286	11.9175	9.63678571	11.0210714	809.215286	10.9611429

Additionally, when this data was run through IBM SPSS Statistic, the program showed that the difference in average reading level between Arkansas and regional newspapers was statistically significant in every circumstance, including mean score. As mentioned earlier, different readability calculators use different methods to calculate readability, so the SPSS calculation used the average score from the five readability measures to ensure that no one test was skewed or an outlier. The graph below shows the analysis of Arkansas and regional papers for each of the readability calculators, as well as the average of all the measures, which is under Mean Score. This tests the null hypothesis, which is that the two groups' means will be similar. Statistical significance is found in the sixth column, under Sig (2-tailed), because there are not enough publications to assume equal variance. The second row of numbers in which equal variance is not assumed is the number used, and each of these under the Sig. (2-tailed) column is significant because it shows that there is either zero or little correlation between the two groups, disproving the null hypothesis. Therefore, the original hypothesis for this paper is supported, and the results show that Arkansas newspapers as a whole are written at a significantly lower reading level than those of regional newspapers.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Flesch-Kincaid	Equal variances assumed	21.072	.000	-7.310	540	.000	-1.13584	.15539	-1.44107	-.83060
	Equal variances not assumed			-7.242	483.468	.000	-1.13584	.15683	-1.44399	-.82768
Gunning-Fog	Equal variances assumed	14.117	.000	-7.448	540	.000	-1.26807	.17025	-1.60251	-.93363
	Equal variances not assumed			-7.385	489.356	.000	-1.26807	.17172	-1.60546	-.93068
Coleman-Liau	Equal variances assumed	45.779	.000	-5.984	540	.000	-.77960	.13029	-1.03553	-.52367
	Equal variances not assumed			-5.895	429.447	.000	-.77960	.13224	-1.03952	-.51968
Smog	Equal variances assumed	27.712	.000	-7.053	540	.000	-.86572	.12274	-1.10682	-.62461
	Equal variances not assumed			-6.983	477.150	.000	-.86572	.12397	-1.10931	-.62213
Dale-Chall	Equal variances assumed	84.561	.000	2.340	540	.020	.19145	.08183	.03071	.35219
	Equal variances not assumed			2.295	384.082	.022	.19145	.08343	.02742	.35548
MeanScore	Equal variances assumed	26.380	.000	-7.030	540	.000	-.77156	.10976	-.98716	-.55595
	Equal variances not assumed			-6.957	473.162	.000	-.77156	.11091	-.98948	-.55363

Individually, none of the Arkansas papers had an average reading level above the papers from around the nation. The Jonesboro Sun had the lowest average reading level of all the newspapers, with an average 9.41 reading level among the five readability tests. The Arkansas Democrat-Gazette had the highest, averaging a 10.66 reading level among the five tests.

Publication	Flesch-Kincaid	Gunning-Fog	Coleman-Liau	SMOG	Dale-Chall	Word Count	Average
Arkansas Democrat Gazette	9.66	11.63428571	11.62285714	9.354285714	11.07428571	900.0857143	10.66914286
Jonesboro Sun	7.934285714	9.894285714	10.48571429	7.928571429	10.80571429	614.0857143	9.409714286
Fort Smith Times Record	9.494285714	11.24	11.48857143	9.117142857	11.49714286	567.6571429	10.56742857
Conway Log Cabin	9.046428571	10.68928571	10.94285714	8.653571429	11.13928571	449.1071429	10.09428571
El Dorado News Times	9.318181818	10.73333333	11.12121212	9.009090909	11.20909091	683.0606061	10.27818182
Searcy Daily Citizen	8.517241379	10.5137931	10.4137931	8.355172414	11.36551724	569.8965517	9.833103448
Russelville Courier	9.165625	10.4875	11.19375	8.565625	11.25	347.71875	10.1325
Pine Bluff Commercial	9.228571429	10.91428571	11.68571429	9.091428571	11.38285714	474.1142857	10.46057143

Publication	Flesch-Kincaid	Gunning Fog	Coleman-Liau	SMOG	Dale-Chall	Word Count	Average
Atlanta Journal Constitution	10.06285714	11.94571429	11.93714286	9.477142857	11.00285714	815.0285714	10.88514286
Minneapolis Star Tribune	10.04285714	12.1	12.17428571	9.648571429	10.86	818.3714286	10.96514286
Philadelphia Inquirer	9.854285714	11.51428571	11.98	9.608571429	11.15714286	851.5142857	10.82285714
San Francisco Chronicle	10.48	12.29142857	11.43714286	9.685714286	10.90571429	890.4571429	10.96
Houston Chronicle	10.34571429	12.47428571	11.98	9.711428571	10.89142857	951.4	11.08057143
Denver Post	10	11.75428571	11.82857143	9.388571429	11.16571429	623.7428571	10.82742857
Cleveland Plain Dealer	10.7	12.45142857	12.26285714	10.01714286	11.22571429	715.2571429	11.33142857
Hartford Courant	10.02571429	11.8	11.74	9.557142857	10.96	807.9714286	10.81657143

Interestingly enough, the Arkansas Democrat-Gazette's composite reading level is much closer to that of the papers around the nation, which range from a high of 11.33 reading level for the Cleveland Plain Dealer, to a low of 10.82 for the Denver Post, Hartford Courant, and Philadelphia Inquirer. Therefore, the Arkansas Democrat-Gazette is a little less than two tenths of a grade level below that of the lowest of the papers from around the nation, and it was roughly just one-third of a reading level shy of the average score for these papers around the nation, which was at the 10.9 grade reading level. The Arkansas Democrat-Gazette is the largest newspaper in Arkansas and it has a circulation range that is much closer to that of the papers around the nation, so this could be the most telling indicator of how well Arkansas is doing compared to the other parts of the United States.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Flesch-Kincaid	Equal variances assumed	3.920	.049	-1.866	313	.063	-.52921	.28365	-1.08731	.02888
	Equal variances not assumed			-1.606	39.991	.116	-.52921	.32947	-1.19510	.13667
Gunning-Fog	Equal variances assumed	2.841	.093	-1.297	313	.196	-.40743	.31408	-1.02540	.21054
	Equal variances not assumed			-1.135	40.262	.263	-.40743	.35887	-1.13258	.31772
Coleman-Liau	Equal variances assumed	.297	.586	-1.459	313	.146	-.29464	.20194	-.69197	.10268
	Equal variances not assumed			-1.548	44.503	.129	-.29464	.19031	-.67806	.08877
Smog	Equal variances assumed	.866	.353	-1.296	313	.196	-.28279	.21818	-.71208	.14651
	Equal variances not assumed			-1.191	41.127	.241	-.28279	.23753	-.76245	.19688
Dale-Chall	Equal variances assumed	.310	.578	.482	313	.630	.05321	.11036	-.16392	.27035
	Equal variances not assumed			.521	45.013	.605	.05321	.10220	-.15262	.25905
MeanScore	Equal variances assumed	1.279	.259	-1.511	313	.132	-.29217	.19341	-.67272	.08838
	Equal variances not assumed			-1.383	41.066	.174	-.29217	.21125	-.71878	.13443

However, although the Arkansas Democrat-Gazette is lower than the other regional newspapers, it is not different to a statistically significant degree. After running the data through SPSS, the following graph shows that the null hypothesis cannot be disproved. Again, the null hypothesis is that the two groups, in this case the Arkansas Democrat-Gazette and all the

regional papers, have mean reading levels that are similar to each other. The null hypothesis is not fully supported, however, as the significance for most of the tests, excluding the New Dale-Chall Formula, is very low. When looking at the Sig. (2-tailed) column under equal variances not assumed, it shows that the groups have some correlation, just not enough to prove or disprove the hypothesis. This is most apparent with the New Dale-Chall Formula and least so with the Flesch-Kincaid Grade Level Calculator.

Interview – In Light of Results

To better understand the results of the test, interviews were conducted with people who had ties to the various aspects of readability in the study. University of Arkansas journalism professor Dr. Patsy Watkins offered a perspective from a journalist's standpoint in a February 5 interview. One question that could be further researched is how reporters decide at what reading level they will write their articles. While there is the common notion that news articles should be written at a middle school reading level, this is often not the case. Watkins said that finding the genesis of the issue is determining if the writing was set deliberately at a certain level, or whether the writing was just a byproduct of a reporter's own writing and education level. Watkins said that she suspected that reporters wrote at their own reading level, so the more educated the reporter, theoretically, the more complex the writing would be. So, if reporters are writing at this lower level, it could be an issue if their schooling is not equipping the next generation of reporters to write at a higher level. Watkins said it was a cause of concern if the University of Arkansas journalism program and others in the state were not setting high enough standards for their students. However, Watkins questioned whether the Arkansas reporters are writing at a reading level that is below what their readers can actually deal with. She said that this is an issue that editors should examine and get feedback from their readers, because writing too simply

might be condescending, patronizing, or even frustrating to readers. Another issue that is not covered by the readability tests is sentence construction and clarity. Watkins suggested that future research look into sentence construction, as she said that reporters frequently use understandable or commonly used words, so whether the sentence can be easily deciphered would be a more pressing issue. She explained that sentence complexity is more of a deterrent for readers who are trying to understand an article, because readers will try to read an article just a few times before giving up if it is too complex. Therefore, testing the sentence complexity of newswriting would provide another indicator of whether current news-reporting practices are effectively serving readers. She also said that newswriting that is at too low of a reading level is an issue for Arkansas because it is not serving to challenge readers. Watkins said that other materials people will come in contact with would be at a much higher reading level, specifically insurance policies and credit card applications, so readers need to be exposed and introduced to upper-level reading materials. Setting a lower reading level does a disservice to newspaper readers.

This study also raises the question of issues with Arkansas literacy and reading levels. To get a better understanding of what this study might mean educationally, Diana Gonzales Worthen, University of Arkansas Teach Them All director and co-founder of OneCommunity Reads, *UnaComunidad Leyendo!*, was interviewed February 13 and 21. OneCommunity Reads, *UnaComunidad Leyendo!* is based out of Springdale and is part of the Arkansas Campaign for Grade Level Reading, whose stated goal is that all Arkansas children will read at grade level at the end of the third grade by 2020 (<http://www.ar-qlr.net/>). Gonzales Worthen said that the third grade is a critical time for children to read at grade level. She explained that when children are on track with their reading level at the third grade, they are more likely to graduate on time, as

well as be more likely to enroll in education beyond high school. She said that, right now, Arkansas is behind in reading proficiency across the board. That is why the state's reading level campaign is so important. Gonzales Worthen's work with OneCommunity Reads, *UnaComunidad Leyendo!* is centered on Latino and Marshallese families, so this goes beyond just helping the children who are struggling to read, but it also helps their family members, as it encourages them all to read as a family. This also addresses the issue of having people who are not fully fluent in English needing to read literature such as insurance policies. She said they work directly with parents, students, and the community, so that they all understand the importance of reading on the correct grade level. These immigrants also need to gather news, so Gonzales Worthen said that a lower reading level would make the newspapers more usable to people who are still learning the language. She said that she did not think of reading the newspaper as a way to increase literacy skills, but instead thought it was important to have the writing be at a level where the majority of individuals will get the most out of the articles and stay informed. She said that to her, newspapers were more of a venue for keeping the masses of people informed about an issue, and they are serving a variety of readers with a wide range of reading abilities. She agreed that a conversation between the newspaper staff and the public needs to occur to determine if the reading levels are at an acceptable level.

Conclusion

Arkansas journalists are writing news articles that are below the average reading level of newspapers around other parts of the nation. However, this is still above the reading level of many people who read at a high school reading level or below. An area for further study would be researching whether these writing styles are clearly written and understandable to readers. As former research showed, readability measures are not commonly used to test the grade levels of a

publication (Porter and Stephens, 1989), and this is also an area that is in need of further development. As this study shows, measuring the readability of news publications is an opportunity to see where an individual newspaper is in difficulty compared to other regions. The fact that Arkansas newspapers are at a lower reading level could be a cyclical issue if reporters educated in the Arkansas system stay in Arkansas, because reporters most likely write at their own reading level. Arkansas has often lagged behind other areas of the nation as far as reading levels and skills are concerned, so that could be contributing to the lower reading levels. Although this study attempted to measure Arkansas newspapers reading levels compared to newspapers in other parts of the nation, Arkansas' literacy initiatives like the Arkansas Campaign for Grade Level Reading could help to raise the reading levels of future generations of Arkansas reporters, which could increase the reading levels of articles in Arkansas newspapers. However, that will take years, so more needs to be done to help Arkansas stay competitive with other areas of the nation today.

Editors of Arkansas papers need to take readability into consideration when they are looking at ways to make their newspapers more appealing to potential readers, especially with the competition between newspapers and other types of media to be the primary form of news dissemination. While undershooting a population's reading level might not be an appealing option, overestimating the population's reading ability could alienate readers from understanding news. However, for Arkansas, the main issue is still having a lower reading level than other areas of the nation. This is an issue because it shows that Arkansas is still filling the catch-up role from the many decades of below-average education levels and literacy rates. As mentioned earlier, an area for further study would be among newspapers of similar circulation or population size in different regions. Due to limitations of time, scope, and funding, this study was unable to match

the different sizes of newspapers in Arkansas to similarly sized newspapers in the different regional areas. However, this research still provides a baseline for additional studies and shows that Arkansas is behind on newspaper reading levels, especially in certain areas of the state. From a circulation standpoint, the Arkansas Democrat-Gazette is on the same level as many of the regional newspapers. Although the results were not statistically significant, it is certainly worth noting that the Arkansas Democrat-Gazette was the newspaper that had the lowest reading level in comparison to the other regional papers of similar size. This shows that Arkansas newspapers need to strive to better their news content as well as strengthen their reporters' vocabulary and writing skills if they want to not only be competitive but also excel as a news group.

Finding which reading levels Arkansas readers, or readers in other areas, can understand and find appealing would be an area that future researchers should also cover. On the other hand, editors themselves might want to consider finding ways to gain feedback from their readers on the appropriate reading levels of articles, as it could vary largely by area, such as with the differences between the Jonesboro Sun averaging a 9.4 reading level and the Fort Smith Times Record, which averages a 10.6 reading level. The results from this study show that, as a whole, Arkansas newspapers still have a long way to go if they want to be competitive with newspapers in other regions of the United States. It is a necessary step in the process of improving the newspaper as it competes with other media forms.

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