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Developing a News Media Literacy Scale

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Abstract

Using a framework previously applied to other areas of media literacy, this study developed and assessed a measurement scale focused specifically on critical news media literacy. Our scale appears to successfully measure news media literacy as we have conceptualized it based on previous research, demonstrated through assessments of content, construct and predictive validity. Among our college student sample, a separate media system knowledge index also was a significant predictor of knowledge about topics in the news, which suggests the need for a broader framework. Implications for future work in defining and assessing news media literacy are discussed.

Keywords: Media literacy, news literacy, survey research, scale development, political knowledge, civic engagement

Introduction

At the center of media literacy is the notion that a gap between representation and reality exists in media messages,[1] and research suggests this is especially true of news media messages.[2] What sets news apart from media generally and makes it worthy of a separate investigation – and perhaps greater scrutiny – is the role it plays in democracy. News, unlike other media content, is expected to do the job of informing self-governing citizens,[3] a role that faces mounting challenges as traditional news outlets shrink and disappear. When we connect existing scholarship about the limitations of news media with the goals of media literacy education,[4] the implications for the potential importance of *news media* literacy are clear: Audiences could be better equipped to access, evaluate, analyze and create news media products if they had a more complete understanding of the conditions in which news is produced.

News media literacy is a subset of the broader field of media literacy,[5] yet it has received little scholarly research attention even as news literacy programs are being deployed in schools and colleges. We seek to develop measurement tools that will help evaluate effective approaches to teaching young people how to understand news and offer a way to investigate news media literacy's relationship with civic engagement and other variables. This study aims to create a well-validated measurement instrument that reflects emerging theoretical understandings of news media literacy. A proliferation of ad hoc approaches to the measurement of media literacy has left the field somewhat incapacitated in the face of our need to assess.[6]

Review of Literature

Concurrent with the growth of the field of media literacy, scholars and educators have sought to establish definitions for what it means to be media literate, and they continue to seek consensus on the various subsets of the broader field, such as information literacy, digital literacy, critical literacy, and news literacy.[7] Researchers even disagree on whether and where they have found consensus.[8] Hobbs has suggested that some disciplinary approaches are geared toward reinforcing dominant paradigms of the U.S. media system while others aim to question and change it.[9] Some scholars have expressed support for the

latter approach, emphasizing the need to facilitate critical analysis of media texts and the contexts in which they appear.[10] This includes a focus on the social, political, and economic environments that shape and influence media products. Based on previous media scholarship, we assume this will be an important component of news media literacy.

In this context, media literacy scholars have highlighted the need for approaches that encourage active democratic citizenship[11] and emphasize a combination of both knowledge and skills.[12] As Martens notes, "In particular, individuals need to acquire knowledge about key facets of the mass media phenomenon, such as media industries, media messages, media audiences, or media effects. Also, they should be able to apply this knowledge when accessing, analyzing and evaluating all kinds of media messages."[13] Our study applies this broad understanding of skills and knowledge to our efforts to gauge baseline levels of news media literacy. Establishing clear definitions and goals is the first step in developing measurement tools.

A Focus on News

We consider news media literacy to be an important educational goal because of its potential to foster increased news consumption, civic engagement, and democratic participation,[14] and by extension, to improve the conditions of citizenship and democracy. As facilitators of democracy, news media espouse a number of normative principles (e.g., journalism's first obligation is to the truth, journalism's first loyalty is to citizens, journalism should be independent and accountable),[15] but evidence points to structural limitations that inhibit journalism in performing these functions.[16] The knowledge requirements of critical media literacy suggest that it may be important for news media consumers to have some specific knowledge of the normative goals of journalism and the forces that influence news media content.

The range of influences on journalists and other media producers is well documented. For example, Daniel Hallin described the "sphere of legitimate controversy" and its role in the marginalization of views unacceptable to the mainstream.[17] Scholars such as Ben Bagdikian,[18] Robert McChesney,[19] and Noam Chomsky[20] often criticize the U.S. media system for being under the control of nondemocratic forces of crony capitalism and for serving as "effective and powerful ideological institutions that carry out a system-supportive propaganda function by reliance on market forces, internalized assumptions, and self-censorship, and without significant overt coercion."[21] Theories of framing, gatekeeping and agenda-setting also address how the news media select and emphasize certain aspects of reality.[22] Scholars have also written about the illusion of objectivity, which can provide journalism with an aura of scientific positivism at the expense of more comprehensive views of reality.[23]

Assessment and Evaluation

The need to assess the effectiveness of media literacy education in general has been one of the main concerns of scholars and educators in the field.[24] Research in developing methods for studying and evaluating the usefulness and effectiveness of media literacy education is limited but growing. Studies have confirmed that media literacy education can have an impact on attitudes and perceptions toward the production of media content.

Scholars taking quantitative approaches have demonstrated that media literacy interventions can have positive outcomes, based on measures of message comprehension, writing and critical thinking[25] or media structures and influence scales.[26] Researchers employing qualitative methods such as case studies[27] and ethnographies[28] likewise found that media literacy education can be effective and can also stimulate learning in non-media-related areas. Other studies measuring the effects of civic and media curricula on young people have found that participation in deliberative media instruction predicted news attention, issue salience, political discussion and other variables,[29] and civic-oriented service learning classes can lead to positive engagement among students and community members.[30] More closely related to our study, one experiment related to news found that a media literacy presentation could mitigate perceptions of bias,[31] while another found that education about the media system could increase skepticism as measured by credibility ratings of news stories.[32] Despite this evidence, the range of ad hoc approaches for assessing the effects of media education, employing different definitions and measures and failing to establish one or more types of validity, make it difficult to compare results across studies or over time. Our study may be

useful in helping to fill this apparent gap in the literature by identifying the strengths and weaknesses in individuals' levels of news media literacy and developing a well-validated empirical measure that can be used in a variety of settings and applications.

Focus of the Study

The purpose of this study is to develop an instrument to measure media literacy, particularly as it relates to understandings of news production and consumption. We seek to build our approach on the well-regarded British[33] and American[34] conceptualizations of media literacy, which focus on the perceived motivations of media producers, differing interpretations of media by audiences, and incongruities between reality and media's representation of it. Primack et al. used this framework to develop a scale of smoking media literacy.[35] Their scale, which measured attitudes and knowledge of tactics used by cigarette marketers, was effective in predicting current smoking, susceptibility to smoking, and anti-smoking attitudes. Bier et al. found a positive relationship between smoking media literacy and general media literacy, based on the same underlying theoretical framework.[36] In another scale development attempt, Arke and Primack used another media literacy framework to establish validity and reliability.[37] While they attempted to establish construct validity by comparing the scale to the related construct of critical thinking, the analysis was based on a very small sample of 34 students.

These three studies guide our current work to establish a scale with demonstrated reliability and validity. For example, while the Primack et al. study established content validity through focus groups, theory, and expert guidance, and found criterion-related validity through its ability to predict theoretically related outcomes, it failed to establish concurrent or discriminant validity to show how this construct was similar to and different from related constructs.[38] Bier and colleagues addressed concurrent validity by showing a relationship between smoking media literacy and general media literacy, but their general media literacy scale was constructed using theory only and assessed only through internal consistency.[39] Arke and Primack establish concurrent validity, but their limited sample leads to some doubts of the reliability of their measure.[40]

The literature in media literacy suggests relationships among media literacy and other concepts, but the inconsistent operationalizations of the chief concept could lead to unreliable and possibly invalid inferences. Our goal here is to start from the ground up, following guidelines used in psychometric literature, to build a valid and reliable measure.[41] Moreover, previous research suggests that media literacy may be topic-specific, so we more narrowly focus on citizens' news consumption and measuring *news media literacy* (NML).

Given our goals of developing a news media literacy scale and assessing its psychometric properties, we set forth three aims and related hypotheses:

Aim 1: Develop a NML scale based on previous research, theory, and focus groups, and assess internal content validity through factor analysis.

H1: Factor structure will reflect the theoretical basis of the scale.

Aim 2: Determine reliability of the NML scale across samples.

H2: NML scale will be internally consistent according to Cronbach's alpha values.
H3a: NML scale will show similar factor structure across samples.
H3b: Data from different samples will fit the hypothesized model, as shown by structural equation modeling.

Aim 3: Assess criterion-related (i.e. predictive) validity by assessing the NML scale's ability to predict scores on a current events quiz, and assess construct validity by comparing the NML scale to a media system knowledge index and the smoking media literacy scale.

H4a: NML scale will positively predict knowledge of current events.
H4b: NML scale will correlate positively with media system knowledge.
H4c: NML scale will correlate positively with the smoking media literacy scale (Primack et al, 2006).

Aim One – Developing the Scale

Methods

Our conceptual model was based primarily on the model used by Primack et al. in developing a smoking media literacy scale.[42] Specifically, their model includes three domains (see Table 1) – authors and audiences (AA), messages and meanings (MM), and representation and reality (RR). The AA domain addresses how authors, primarily motivated by the desire for profit, target specific audiences. The MM domain addresses the fact that messages contain value judgments that can be interpreted differently by different viewers, and that those messages are created with specific production techniques designed to affect audience attitudes and behaviors. The RR domain focuses on how media filter and omit information, thus affecting perceptions of reality.

Based on these three domains, as well as advice from experts in the field of media literacy, we developed 117 items meant to measure literacy about news. In many cases, items mirrored statements from the smoking media literacy scale, sometimes with only a word or two about news added to tailor an item to our purposes. For example, the smoking media literacy scale includes the MM2 statement, "Two people may see the same movie or TV show and get very different ideas about it," which we altered to become "Two people might see the same news story and get different information from it." Similarly, our RR1 item, "News makes things more dramatic than they really are," is adapted from the smoking media literacy scale item "Most movies and TV shows that show people smoking make it look more attractive than it really is."

After obtaining IRB approval, we first conducted focus groups to eliminate confusing items and to improve clarity of existing items. Focus groups were held with 17 college undergraduates. Fifteen items were removed as a result of their input.

The remaining 102 items were then converted into an online survey and administered to students from an undergraduate general education media course at a large Midwestern university. This was a convenience sample, however it provided the benefit of studying part of the population increasingly targeted for news literacy interventions. Again following the procedures employed by Primack et al., respondents were asked to use a Likert scale to indicate their level of agreement or disagreement with each statement (1=strongly disagree, 7=strongly agree). A total of 244 students completed the survey; responses from 37 participants were discarded because of excessive missing values, leaving 207 participants' responses for use in subsequent analyses. We then used a series of factor analysis procedures to 1.) Reduce the overall number of items, and 2.) Assess that factor structure to test whether it reflected the conceptual basis of the measurement.

Results

Principal components analysis was performed to reduce the overall number of scale items. Separate PCAs were performed on items within each conceptual area. Each analysis was constrained to one factor following the conceptual model developed in previous research. Only items with factor loadings above .45 were retained. These procedures left 36 possible items. A scree plot of the remaining 36 items further confirmed a one-factor solution. A principal axis factor analysis on these remaining items, for which only those items above .6 were retained, left 18 items. Three items were then eliminated because they were redundant or did not fit conceptually. The final 15 items (see Table 2) represented all three conceptual areas and were shown to be internally consistent among this pre-test dataset (α=.901). Therefore, Hypothesis 1,

which stated that the new scale would fit the conceptual model of news media literacy, was supported. Additionally, the Cronbach's alpha score suggests high internal consistency, thus providing partial support for Hypothesis 2.

Aim Two – Assessing Reliability Across Samples

Methods

To assess the reliability of the scale, the 15-item news media literacy scale was given to two additional college students samples: 1.) A sample of 189 students enrolled in a news media course for non-majors at a large Midwestern university, and 2.) A sample of 149 students enrolled in a journalism course at a large university on the Pacific coast.

In both samples, Cronbach's Alpha scores were computed to assess internal consistency of the scale across samples. To assess the degree to which these items produced factor structures similar to those in the original scale development sample, factor analysis using principal axis factoring was used. Additionally, structural equation modeling was used to perform confirmatory factor analyses to assess the fit of this one-dimensional model on the two additional college student samples.

Results

In both the Midwest (α = .931) and the Pacific coast (α = .859) samples, the scale was shown to be highly internally consistent. Taken together with the alpha score from the original scale development sample (α=.901), these scores provide ample support for Hypothesis 2, which stated that the scale would retain high internal reliability across samples.

In testing Hypothesis 3a, in the Midwest sample, the factor analysis indicated a strong one-factor solution, accounting for about 48% of the common variance. In the Pacific coast sample, factor analysis indicated a two-factor solution. However, the first factor accounted for a substantially larger percentage of the variance than the second factor (33% versus 11%). Therefore, there is partial support for Hypothesis 3a.

Structural equation modeling results showed some support for Hypothesis 3b. In the Midwest sample, the comparative fit index (CFI) was 0.952 and the root mean square error of approximation (RMSEA) was 0.065. In the Pacific coast sample, the comparative fit index (CFI) was 0.799 and the root mean square error of approximation (RMSEA) was 0.103. Byrne[43] suggests that Bentler's comparative fit index[44] was one of the more common statistics used for evaluating the fit between the data and a hypothesized model. CFI ranges from zero to one; scores closer to one indicate better fit. Although there is some discussion among statisticians as to a practical cutoff point, Byrne said that recent literature suggests a cutoff of .95.[45] Byrne also identified root mean square error of approximation (RMSEA) as a useful tool. RMSEA that is equal to or lower than 0.05 is considered a great fit, and scores between 0.08 and 0.1 are considered a moderate fit.[46] While the fit indices for the Pacific coast sample were somewhat weaker than expected, given the theoretical basis of the model as well as the good fit of the model on the Midwest data, we are confident of the structure of the news media literacy scale.

Aim Three – Assessing Predictive and Construct Validity

Methods

As the previous two sections demonstrated, the initial development of the news media literacy scale produced a 15-item scale that was both internally consistent and reliable across different samples. Furthermore, content validity was established in the first step through the use of theory, focus groups, and expert consultation. This section intends to establish criterion-related validity by showing the ability of the NML scale to predict knowledge of current events (H4a) and construct validity by establishing relationships between the related constructs of media system knowledge (H4b) and smoking media literacy (H4c).

Criterion-related validity, also called predictive validity, refers to the ability of a measurement scale to fit with other constructs that might be related. To test this, we measured current events knowledge by asking 13 questions from the Pew Political Knowledge Update.[47] Precise wording of some questions was adjusted to correct for time-sensitive discrepancies. For example, one question on the Pew survey, conducted in November 2010, asked who would be the new Speaker of the House when it convenes in January, but our survey, conducted in March, asked who is currently the Speaker. Respondents were given the same response choices Pew used. Respondents could mark "don't know," and were asked to indicate their response based on current knowledge without looking up the answer. The order of choices for individual questions was randomized. Responses were then dummy-coded to determine if a respondent got the answer correct (1=correct, 0=incorrect), and a news knowledge index score was computed by adding correct answers to individual questions. A higher score indicated greater news knowledge. We conducted ordinary least squares hierarchical regression to test whether NML would predict news knowledge, controlling for gender, age, and news media use. Both measures were assessed on both our Pacific coast and Midwest samples; therefore, we report two separate regressions (Tables 3 and 4).

To assess construct validity, we explored correlations between the news media literacy scale and two other related measurements: one that assessed knowledge of structural components of the media system and another that assessed smoking media literacy.

We first analyzed the relationship between our news media literacy scale and knowledge of the U.S. news media system's structure. An index of six factual statements about elements of the U.S. media system was presented, and respondents were asked to indicate if the statements were true or false. Respondents were also given the option of marking "don't know," and instructions told them to mark the appropriate box based on their current knowledge without looking up the answer. Items included such statements as "The Federal Communications Commission issues licenses to broadcasters," and "Media companies are often owned by big corporations that sell other products." Results were dummy-coded to indicate if a respondent gave the correct answer, and an additive score was computed to assess number of correct answers. The media system knowledge index was presented on both the Pacific Coast and Midwest samples; therefore, correlations for each sample are reported.

We also analyzed the relationship between the NML scale and the smoking media literacy scale. Primack et al. developed the latter scale using the same conceptual foundation we used to develop the NML scale.[48] This scale consists of 18 items that assessed similar dimensions as the NML scale, though it pertained to media literacy with regard to smoking-related messages. The smoking media literacy scale was assessed on the Pacific coast sample only.

Results

Hypothesis 4a posited that the NML scale would positively predict current event news knowledge. In the Midwest sample, the NML scale was not a significant predictor of news knowledge (Table 3). However, in the Pacific Coast sample, NML was a significant predictor, individually accounting for 8.1% of the variance in the dependent variable (Table 4). Therefore, Hypothesis 4a was partially supported.

With regard to Hypothesis 4b, we expected those with high scores on our news media literacy (NML) scale would also have higher knowledge of structural components of the media system. In both the Midwest (r = .267, $p < .05$) and the Pacific Coast (r = .180, $p < .05$) samples, NML was moderately correlated with system knowledge. Therefore, Hypothesis 4b was supported.

Finally, in testing Hypothesis 4c, the correlation between the news media and smoking scales was quite strong (r = .620, $p < .001$). Given the shared conceptual framework, establishing a relationship between the news media literacy and smoking media literacy scales not only helps build construct validity of the NML scale, but it also strengthens it in terms of content validity.

Discussion

This study attempted to contribute to understandings of media literacy generally and news media literacy specifically by developing and validating a measure of news media literacy. News media literacy (NML) is an important subset of general critical media literacy requiring independent investigation. We based our news media literacy scale on the conceptually similar smoking media literacy scale developed by Primack et al.;[49] the theoretical basis for their approach to smoking media literacy led us to believe the same framework might apply to news. Through this approach, we were able to demonstrate construct and content validity of our NML scale, as indicated by factor analysis (H1) and comparison to the related constructs of media system knowledge (H4b) and smoking media literacy (H4c). We also demonstrated the scale's internal consistency (H2) and reliability across samples (H3a, H3b). Finally, we found partial support for the scale's predictive validity (H4a) as measured by comparing our scale to respondents' knowledge of current events. Taken together, these findings suggest that our NML scale appears to do a good job of measuring news media literacy as we have conceptualized it based on previous research.

Now a few caveats. It is worth noting that both samples scored highly on our NML scale, which could mean that our respondents possessed high levels of literacy or that the attitude-based nature of the scale in which respondents report their level of agreement with statements about media fails to accurately assess critical understanding. It's possible that our respondents—first-and second-year college students—are simply more experienced test-takers who are better able to detect "right" answers on a survey than the secondary school students who were the chief subjects in previous research. We conclude that the attitude framework alone may not be appropriate for assessing literacy in adults, but future studies should continue to test this by employing samples of all ages and backgrounds. Also, future studies should be conducted with students who are not enrolled in any kind of media education class even if they are majoring in other fields.

Also of note is the fact that even though our respondents scored highly on our attitude-based news media literacy scale, respondents knew fewer than half of the six-question fact-based media system knowledge (H4b) items on average (Midwest sample, M=2.53, SD=1.58; Pacific sample, M=2.80, SD=1.52). While the low mean score on our media system knowledge index suggests that our questions may have been too difficult, these scores were more normally distributed than scores on the attitude-based scale, which was heavily positively skewed with little variance. This contrast suggests that while individuals may be highly knowledgeable about commonly held attitudes about news media, they may be less knowledgeable about how the news media system actually works. Considering how pervasive media are, it is not surprising that students have been exposed to and developed a variety of attitudes about media without factual knowledge about the media system. We believe it is important for individuals to develop informed attitudes toward news media operations and the normative goals of journalism.

With further refinement, we believe this can also be a helpful tool for teachers to assess news literacy, whether before or after an educational intervention. However, the links between news literacy, news knowledge and media system knowledge apparent in these data suggest the need for a broader conceptualization of news media literacy. Thus, we see strong evidence for incorporating information about the news media system into news media literacy education. These findings also lend support to a critical approach to media education, which advocates for teaching about political and economic contexts of media such as the kinds of facts about the media system we employed here.

Ultimately this study's value lies in its contribution to the conceptualization and development of news media literacy through the creation of an empirically validated measurement tool. We have evaluated the validity of an established literacy framework and proposed an alternative index that should at least complement the established attitude-based scales. Facts alone surely do not capture the whole meaning of literacy, but an attitude-based scale doesn't seem to accomplish this either. Future studies should explore other approaches to assessing media system knowledge, which we consider a promising new construct in the broader efforts to define and measure literacy of all types.

Table 1

Smoking media literacy framework from Primack et al. (2006)

Domain	Core concepts
Authors and audiences (AA)	AA1: Authors create media message for profit and/or influence
	AA2: Authors target specific audiences.
Messages and meanings (MM)	MM1: Messages contain values and specific points of view.
	MM2: Different people interpret messages differently.
	MM3: Messages affect attitudes and behaviors.
	MM4: Multiple production techniques are used.
Representation and reality (RR)	RR1: Messages filter reality.
	RR2: Messages omit information.

Table 2

News Media Literacy Scale Factor Loadings

Items	Factor loadings
AA1: The owner of a media company influences the content that is produced.	0.623
AA1: News companies choose stories based on what will attract the biggest audience.	0.611
AA2: Individuals can find news sources that reflect their own political values.	0.627
MM2: People pay more attention to news that fits with their beliefs than news that doesn't.	0.664
MM2: Two people might see the same news story and get different information from it.	0.715
MM3: People are influenced by news whether they realize it or not.	0.687
MM3: News coverage of a political candidate will influence people's opinions.	0.601
MM4: News is designed to attract an audience's attention.	0.673
MM4: Lighting is used to make certain people in the news look good or bad.	0.603
MM4: Production techniques can be used to influence a viewer's perception.	0.695
MM4: When taking pictures, photographers decide what is most important.	0.617
RR1: News makes things more dramatic than they really are.	0.643
RR2: A news story that has good pictures is more likely to show up in the news.	0.606
RR2: A story about conflict is more likely to be featured prominently.	0.631
RR2: A journalist's first obligation is to the truth.	0.630

Table 3. Hierarchical regression predicting Pew news knowledge scores with news media literacy scale; Midwest Sample *(N=189)*

	Model 1 *Demographics*			**Model 2** *Media Use*			**Model 3** *News Media Literacy Scale*		
	b	se_b	β	b	se_b	β	b	se_b	β
Gender	-1.820	.387	-.337 ***	-1.873	.404	-.347 ***	-1.923	.407	-.356 ***
Age	.142	.165	.061	.135	.169	.058	.107	.172	.046
Print news use				-.035	.253	-.011	-.036	.253	-.011
TV news use				-.087	.167	-.044	-.090	.167	-.046
Radio news use				-.076	.181	-.033	-.077	.181	-.034
Internet news use				.130	.172	.063	.093	.177	.045
News Media Literacy Scale							.192	.209	.071
R^2	.118			.122			.127		
Adjusted R^2	.108			.091			.090		

*$p < .05$
**$p < .01$
***$p < .001$

Table 4. Hierarchical regression predicting Pew news knowledge scores with news media literacy scale; Pacific Coast Sample *(N=149)*

	Model 1 *Demographics*			**Model 2** *Media Use*			**Model 3** *News Media Literacy Scale*		
	b	se_b	β	b	se_b	β	b	se_b	β
Gender	-.667	.475	-.121	-.320	.488	-.058	-.481	.470	-.088
Age	.133	.075	.154	.158	.074	.182*	.129	.071	.149
Print news use				.566	.229	.219*	.500	.220	.193*
TV news use				-.360	.178	-.204*	-.336	.170	0.191*
Radio news use				.142	.170	.076	.110	.163	.059
Internet news use				.066	.209	.033	.088	.200	.043
News Media Literacy Scale							1.004	.279	.288 ***
R^2	.047			.116			.196		
Adjusted R^2	.032			.075			.153		

*$p < .05$
**$p < .01$
***$p < .001$

Notes

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