Does Exposure to Online Media Matter?
The Knowledge Gap and the Mediating Role of News Use

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This study utilized a PEW media consumption survey to gauge specific links between socioeconomic status, online news use, traditional news use, and knowledge of public affairs. The analysis examined whether technological change could add to knowledge differences between social segments. A SEM procedure was conducted to test the assumptions of the knowledge-gap hypothesis. According to the findings, disparities exist between social classes in knowledge of public affairs. Socioeconomic standing strongly influences the choice that different segments of the population make in using traditional and online sources for information. Traditional news consumption mediates the gap-widening effect. Meanwhile, the findings indicated that online news use does not seem to contribute to political knowledge.

The knowledge-gap hypothesis (Tichenor, Donohue, & Olien, 1970) proposes that knowledge is unevenly distributed in society and that socioeconomic status (SES) is the key determinant of how much people know about public affairs. The role of SES exhibits in both direct and indirect ways. First, groups with higher status, typically expressed in terms of education, possess greater knowledge than lower-status groups. Second, high-status groups are better positioned to acquire and process public affairs information from the mass media. For that reason, the increase of information in a society acts to widen the gap in political knowledge between segments of society (Moore, 1987). In other words, the news media play a mediating role in creating the knowledge gap.

Highly relevant to knowledge-gap research is the literature examining the role different mass media channels play in informing about public affairs. Studies showed that the consumption of news from various media sources has differential effects on political learning (see Eveland & Scheufele, 2000; Kim, 2008; Norris & Sanders, 2003 for comprehensive reviews). Some scholars (Eveland & Scheufele, 2000; Jefferes, Neuendorf, & Atkin, 2003; Kim, 2008; Kwak, 1999; Liu & Eveland, 2005) have attempted to link

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patterns of media use among various segments of the population to disparities in knowledge of public affairs.

The current investigation expands on this line of research by addressing the mediating role of exposure to online and traditional news sources in producing the gap-widening effect. The knowledge-gap proposition implies that the introduction of new information technology would increase the gap between the information rich and information poor, because higher-status groups are at the vanguard of technological change (Donohue, Olien, & Tichenor, 1987; Tichenor et al., 1970). Recent survey data indicate that the diffusion of the Internet has created distinct audience segments in a changing news environment, where affluent and highly educated groups lead the way in using Web technology to get information (PEW, 2008, 2010, 2011). However, empirical research is far from conclusive about how online news may contribute to political knowledge (Kenski & Stroud, 2006). Some studies suggested that traditional news media remain the premier source of public affairs information (Ahlers, 2006; Althaus & Tewksbury, 2000; Livingstone & Markham, 2008; Tewksbury, 2003). This situation provides a unique opportunity to revisit the knowledge-gap hypothesis. Access and control over the use of new information technology alone may not necessarily translate into greater knowledge for higher-status groups. Arguably, the gap-widening effect of increased information is also contingent on the ability of a new mass medium to convey context-relevant knowledge.

The present study utilizes a Biennial Media Consumption Survey, sponsored by the PEW Research Center for the People and the Press, to test a theoretical model pertaining to the knowledge-gap hypothesis, news habits, and political learning. This work provides greater insight into the specific effects of Internet news use vis-à-vis traditional news use on political knowledge, thereby gauging how technological change could increase knowledge differences between social segments. The present study employs structural equation modeling (SEM), an advanced analysis, to examine more closely the assumptions about the link between media consumption and the knowledge gap.

Literature Review
Effects of SES on News Use, Political Knowledge

The knowledge-gap hypothesis states that the increase of information in a society is not evenly acquired by every member of that society. In their much-cited work, Tichenor et al. (1970) postulate:

> As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease. (pp. 159–160)

This theory is premised on a pre-existing gap in knowledge between those ranked high and low in SES, and it stresses the role of media input in widening that divide (Eveland & Scheufele, 2000). Apart from prior knowledge and relevant social contacts, there are three media-related factors that explain the knowledge gap (Tichenor et al., 1970). First, segments of the population are different in their ability to process, integrate, and interpret information. Affluent and educated groups are better equipped with

cognitive skills to comprehend complicated information and gain greater knowledge of public affairs (Eveland & Scheufele, 2000). Second, there is a difference between social classes in selective use, acceptance, and retention of information from the mass media. Those of high SES often opt for political news because they have a greater motivation to be involved in public affairs (Bonfadelli, 2002; Kim, 2008). Third, the structure of the mass media appears to make political information more accessible to an affluent audience. Most public affairs news is delivered by media that reorient coverage toward the middle and upper classes, thereby creating a disconnection with lower-status audiences (Donohue, Olien, & Tichenor, 1987; Tichenor, Donohue, & Olien, 1970).

Since the formal statement of the knowledge-gap hypothesis in 1970, many investigations have been carried out to test this proposition. Comprehensive reviews of the literature provided general support for the theory (Gaziano, 1997, 2010; Hwang & Jeong, 2009; Viswanath & Finnegan, 1996), with several studies demonstrating that SES is the cause of the knowledge gap. Furthermore, SES variables were found to influence the way people access and consume traditional and new media for informational purposes (Bonfadelli, 2002; Jefferes et al., 2003; Kim, 2008; Mitchelstein & Boczkowski, 2010; Wei & Hindman, 2011). Based on existing research, it seems logical to hypothesize about direct effects of SES on traditional media use, new media consumption, and knowledge of public affairs. As shown in Figure 1, SES holds the central position in the model:

H1a.   *SES has a direct, positive impact on Traditional Media Use.*

H1b.   *SES has a direct, positive impact on New Media Use.*
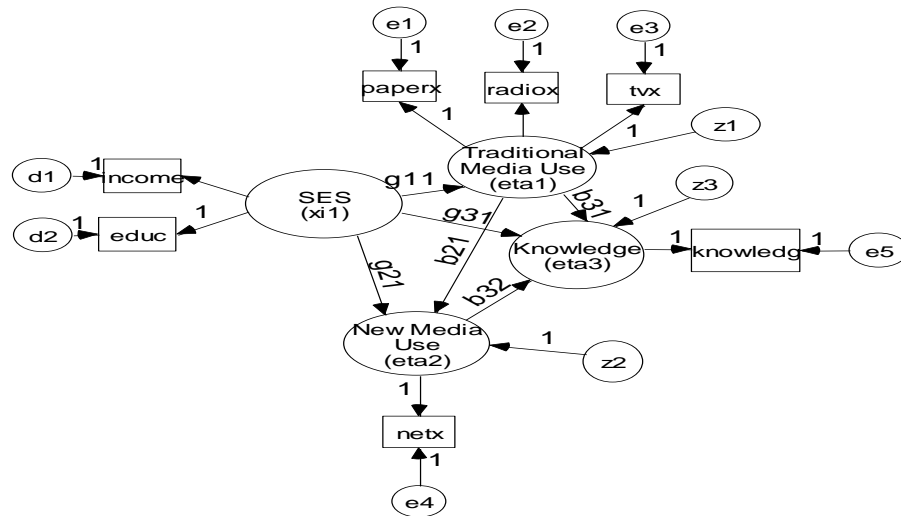
H1c.   *SES has a direct, positive impact on Knowledge.*

Figure 1. Hypothesized model: Measurement and structural components.
Influence of Traditional vs. New Media on Political Knowledge.

News Use and Mediation

Research that links patterns of media use to knowledge gaps tends to focus on traditional sources of political news (i.e., print and television). The pertinent literature shows sharp differences among social classes in their media habits, but remains largely equivocal about the relative influence on knowledge measures of news reading versus news watching. Several studies documented the superior learning effects of using newspapers as a source of public affairs information (e.g., Fraile, 2011; Jefferes et al., 2003; Kim, 2008; McLeod & Perse, 1994). Others suggested a stronger impact from watching television news (e.g., Eveland & Scheufele, 2000; Kwak, 1999). Findings were even contradictory among various studies conducted by the same researchers (e.g., Eveland & Scheufele, 2000; Liu & Eveland, 2005). Despite the inconsistencies, the original knowledge-gap hypothesis was generally supported (Hwang &

Jeong, 2009). Social classes differ in their knowledge of public affairs and in their media habits. Input gained from selective exposure to different forms of traditional news serves to exacerbate a pre-existing gap in knowledge (Eveland & Scheufele, 2000).

More recent work examines online news use as both an outcome of SES and a factor contributing to disparities in knowledge of public affairs. Relevant research has been conducted in different social settings. According to Bonfadelli (2002), affluent, highly educated groups in Switzerland dominated other groups in access to the Internet and online news use. A study in South Korea (Kim, 2008) showed that those with higher SES were more likely to use the Web for political news, which in turn allowed them to gain greater knowledge of public affairs. In the United States, scholars found a strong correlation between SES and Internet use and showed a political information knowledge gap between heavy and light users of information on the Internet (Jefferes et al., 2003; Wei & Hindman, 2011).

The knowledge-gap hypothesis, like many other mass communication theories, is built on a foundation of mediation (Holbert & Stephenson, 2003). Mediation exists when an independent variable affects a dependent variable indirectly through one or more intervening variables (Preacher & Hayes, 2004, 2008). In the knowledge-gap model, various forms of news use (traditional vs. online media) have the potential to act as variables located causally between SES and knowledge. In other words, SES is the "cause" of knowledge of public affairs, and media variables are "mediators" of this cause. SES causes differences in news habits, which in turn cause differences in knowledge (see Figure 1). The indirect pathways from SES to media input to knowledge represent the mechanism that explains the process through which SES exerts influence on political knowledge. This four-variable mediation, therefore, is expressed in terms of indirect effects:

H2a.   *SES has indirect, positive effects on Knowledge through Traditional Media Use.*

H2b.   *SES has indirect, positive effects on Knowledge through New Media Use.*

Highly relevant to the knowledge-gap literature is the study of news use and political learning. Research has examined how exposure and attention to different media channels help inform people about public affairs (for comprehensive reviews, see Chaffee & Frank, 1996; Norris & Sanders, 2003). The majority of relevant studies sought to compare the relative contributions of various traditional news sources on political knowledge. Empirical findings, however, were mixed, leading to contradictory claims.

At the one end of the spectrum is the "print superiority" perspective. Much early work often found newspaper reading a strong predictor of political learning (Clarke & Fredin, 1978; McLeod & McDonald, 1985; Miller, Singletary, & Chen, 1988; Patterson & McClure, 1976; Robinson & Levy, 1986). Robinson and Levy (1996) demonstrated that despite dwindling readership, newspapers remain America's premier source of public affairs information. More recently, Druckman (2005) reported that newspapers still play a significant role in informing about electoral politics. Newspaper reading helps enhance political learning because newspapers provide more political coverage (Tichenor et al., 1970), and the structure of print news facilitates information processing (Graber, 1987, 1994; Weaver & Drew, 1993). The impact of radio news may be less substantial; see Chaffee & Frank, 1996 for a review. Several scholars suggested that people get most of their news from television. Chaffee and colleagues (Chaffee & Schleuder, 1986;

Chaffee, Zhao, & Leshner, 1992; Marinelli & Chaffee, 1995; Zhao & Chaffee, 1995) examined attention to television news as a predictor of political knowledge. Their findings contradicted the "print superiority" view, suggesting that television news is at least as strong as print news in contributing to public affairs knowledge. This perspective corroborated a prediction by knowledge-gap theorists about a long-term shift toward television as an important news source (Donohue et al., 1987).

The diffusion of digital technology has led to a dramatic change in the media landscape. Against this backdrop, Meyer (2004) predicted the Internet would displace traditional sources in disseminating public affairs information. According to the latest statistics, 46% of American adults regularly go online for news (PEW, 2012). However, research remains unclear about the effects of Internet news on political knowledge (Kenski & Stroud, 2006; Kim, 2008). Findings were mixed as to whether online news may contribute to political learning as much as traditional news. Dalrymple and Scheufele (2007) found greater public affairs knowledge among online news users. Jennings and Zeitner (2003) suggested a null effect of Internet use on political learning, partly because online news is less accessible than traditional news (Brundidge, 2010).

Despite the continued growth of the Internet, online news use is still shaped by consumption of traditional media (Mitchelstein & Boczkowski, 2010). Many news users consume the Internet in tandem with traditional news sources (Dalrymple & Scheufele, 2007). When people go online for news, they often visit the sites of traditional media (Margolis & Resnick, 2000). The use of online news media complements rather than displaces the consumption of traditional news media (Ahlers, 2006; Livingstone & Markham, 2008). First, online news audiences choose to read public affairs information less frequently than surveys have suggested (Althaus & Tewksbury, 2000; Tewksbury, 2003) because the greater number of choices available on the Web reduces exposure to hard news stories (Darymple & Scheufele, 2007). Second, the public does not respond to online news as enthusiastically as it does to traditional news, considering online news an "inferior good" (Chyi & Yang, 2009). The most recent survey data suggest that more Americans (71%) continue to get news regularly from traditional media than from digital platforms (PEW, 2012). Overall, these findings point to mediation (Holbert & Stephenson, 2003; Preacher & Hayes, 2004) involving three variables in the hypothesized model. Traditional news use does influence knowledge directly, but new media input appears to act as a mediator in the relationship between traditional media use and knowledge of public affairs. Thus, the following effects are predicted:

H3.   *Traditional Media Use has both direct and indirect, positive effects on Knowledge through New Media Use.*

Although findings from previous studies are informative, research on the relationship between SES, patterns of news use, and disparities in political knowledge typically has been fragmented. Little work has been done to develop a conceptual model specifying and investigating specific linkages among these variables. The presumed role of technological change—as manifested in the diffusion of the Internet—in the gap-widening effect has not been examined closely. Empirical evidence in previous research has been mostly generated from simple data analysis methods such as regression or correlation, which inhibit the ability to draw inferences about directional relationships. In a step toward providing a nuanced understanding of linkages between news habits, technological change, and knowledge gap, the

present study utilizes a large data set and SEM to test the theoretical model presented in Figure 1. This technique allows an in-depth assessment of measurement and causal relations with a high degree of precision. SEM analysis is also robust in providing suggestions for possible model modifications, thereby contributing to theory development.

Method
Data Characteristics

The Biennial Media Consumption Survey (PEW, 2006), sponsored by the PEW Research Center for the People and the Press, obtained telephone interviews with a nationally representative sample of 3,204 adults living in the continental United States. A subset of 2,013 cases containing responses to questions measuring public affairs knowledge (Form 1 of the survey questionnaire) was selected for this analysis. In addition to the selected items, the data file also included information about respondents' gender, age, and race. With the sample size of 2,013 and a ratio of cases to variables of 288:1, the SEM procedure can be assumed to be appropriate. Prior to analysis, missing data were filled in with imputed (estimated) values using the expectation-maximization (EM) method in the SPSS software. The test for normality was also conducted. None of the absolute values of standardized skew and kurtosis indexes were quite extreme, considering the guidelines (skew $\leq$ 3.0, kurtosis $\leq$ 10.0) provided by Kline (2005). A screening of linearity showed no major cause for concern. Although survey data were collected in 2006, they are uniquely robust for the present study, which utilizes SEM to test a complex theoretical model. This model was fit to the covariance matrix produced by the raw data using AMOS statistical software (see Table 1 for input data).

Table 1. Input Data (Correlations, Means, Standard Deviations) for SEM Analysis.

Variable	1	2	3	4	5	6	7
SES indicators							
1. Education	1						
2. Income	.420	1					
Traditional media indicators							
3. Newspaper time	.180	.150	1				
4. Radio time	.148	.156	.088	1			
5. TV time	.008	−.033	.231	.079	1		
Single indicators							
6. Internet time	.225	.188	.030	.101	.038	1	
7. Knowledge	.375	.319	.282	.158	.170	.189	1
Mean	4.61	5.20	1.1704	1.049	1.977	.9146	1.52
Standard deviation	1.585	2.094	1.4859	1.525	1.769	1.98269	1.124
N	2,013	2,013	2,013	2,013	2,013	2,013	2,013

Model Specification

The main purpose of the SEM analysis is to identify the specific links between SES, online news use, traditional news use, and knowledge of public affairs. Seven indicators are used to measure the structural model. In the measurement portion of the structural equation model, SES is the exogenous, latent variable and is measured by two indicators (i.e., income, education). The remaining three latent variables in the model are endogenous. Traditional Media Use comprises three items that capture time spent using three traditional news sources (newspaper, radio, television). New Media Use is measured by a single indicator for time spent getting news from the Internet. Knowledge has only one measure— Knowledge Index (i.e., the sum of correct answers to three questions tapping knowledge of public affairs). With 18 free parameters to be estimated, the model is identified. The list of variables and indicators for each latent construct as well as the scale for each observed variable is presented in Table 2.

Model Estimation

Following Anderson and Gerbing's (1988) recommendations for two-step modeling that parallels the two-step rule for identification, I first specified the model as a CFA (confirmatory factor analysis) measurement model and tested its validity before evaluating the structural model. In the second step, the model was changed from a CFA to a hybrid model to test the solution and explore improved models with modification indexes. To that end, I randomly split the data in two subfiles. The first subfile consisted of 1,026 cases, and the second one comprised 987 cases. The first subfile was used to examine the model. I then assessed the solution with the second subfile. Finally, the complete data set was used to test the original model and to explore an "improved" model in consultation with modification indexes. Overall, a converged, admissible solution was obtained from each analysis.

Table 2. List of Latent Variables and Indicators for Each Latent Construct.

Latent variable	Indicator	Scale
SES	Education	1. None, or grade 1–8
		2. Grade 9–11
		3. Grade 12 or GED
		4. Technical, trade, or vocational school after HS
		5. Some college (including associate degree)
		6. College graduates
		7. Postgraduate training or professional schooling
	Income	1. Less than 10K
		2. 10K-less than 20K
		3. 20K-less than 30K
		4. 30K-less than40K
		5. 40K-less than 50K
		6. 50K-less than 75K
		7. 75K-less than 100K
		8. 100K-less than150K
		9. 150K or more
Traditional Media Use	Newspaper Time (time spent reading newspaper yesterday)	0. No/Don't know
		1. Less than 15 minutes
		2. 15–29 minutes
		3. 30–59 minutes
		4. 1 hour or more
	Radio Time (time spent listening to radio news yesterday)	0. No/Don't know
		1. Less than 15 minutes
		2. 15–29 minutes
		3. 30–59 minutes
		4. 1 hour or more
	TV Time (time spent watching TV news yesterday)	0. No/Don't know
		1. Less than 15 minutes
		2. 15–29 minutes
		3. 30–59 minutes
		4. 1 hour or more
New Media Use	Internet Time (time spent reading online news yesterday)	0. No/Don't know
		1. Less than 15 minutes
		2. 15–29 minutes
		3. 30–59 minutes
		4. 1 hour or more
Knowledge	Knowledge Index	0. All incorrect
		1. Only 1 correct
		2. 2 correct
		3. All correct

Results
CFA Measurement Model

The first three sections of Table 3 provide a model fit summary for the CFA on measurement model (see Kline, 2005, pp. 137–139, for a detailed discussion of criteria for fit measures). There is a consistent pattern in the values of selected fit indexes when the model was examined with each subset as well as with the complete data set.

The results yielded from the first subsample of 1,026 cases indicate marginal overall fit of the four-factor CFA model. The values of χ^2, NFI, RFI, TLI, CFI, and RMSEA did not meet the critical threshold. Only the GFI and SRMR indexes were in the acceptable range. A review of modification indexes suggests an error covariance between Newspaper Time and Radio Time. When the measurement errors were allowed to covary, the modified model fit well with improved values for all fit indexes (see Table 3, first section). The CFA on the second subsample of 987 cases provided similar results. The values of fit indexes became worse when the model was modified to allow for an error covariance between Radio Time and Internet Time as suggested by the modification indexes. Instead, when the measurement errors of Newspaper Time and Radio Time were allowed to covary (as suggested by the CFA on the first subsample), all fit indexes improved (see Table 3, second section). When the CFA was run with the complete data for all 2,013 cases, the analysis yielded similar results. The values of most fit indexes (χ^2, NFI, RFI, TLI, CFI, and RMSEA) were outside the acceptable range. Only the GFI and SRMR indexes met the critical threshold. Again, a review of the modification indexes revealed an error covariance between Newspaper Time and Radio Time. When the measurement errors were allowed to covary, the values of all fit indexes improved, resulting in a very good fit of the four-factor CFA model (see Table 3, third section).

Table 3. Model Fit Summary.

Data	Model	χ^2(df,p) p > .05	GFI ≥.95	NFI ≥.95	RFI ≥.95	TLI ≥.95	CFI ≥.95	RMSEA ≤.06	AIC <	SRMR ≤.08
	Measurement									
Set 1	Original	50.712 (10, p <.001)	.987	.927	.846	.872	.939	.063	86.712	.0410
(*n* = 1,026)	Modified	40.962 (9, p <.001)	.989	.941	.862	.889	.952	.059	78.962	.0340
Set 2	Original	48.932 (10, p <.001)	.986	.929	.851	.878	.942	.063	84.932	.0459
(*n* = 987)	Modified	37.279 (9, p <.001)	.989	.946	.874	.901	.958	.056	75.279	.0358
Complete	Original	95.261 (10, p <.001)	.987	.93	.854	.867	.937	.065	131.261	.0426
(*n* = 2,013)	Modified	74.375 (9, p <.001)	.989	.946	.873	.887	.951	.060	112.375	.0340
	Structural									
Set 1	Original	40.962 (9, p <.001)	.989	.941	.862	.889	.952	.059	78.962	.0340
(*n* = 1,026)	Trimmed	44.067 (11, p <.001)	.988	.936	.878	.906	.951	.054	78.067	.0353
Set 2	Original	37.279 (9, p <.001)	.989	.946	.874	.901	.958	.056	75.279	.0358
(*n* = 987)	Trimmed	38.904 (11, p <.001)	.989	.944	.892	.92	.958	.051	72.904	.0361
Complete	Original	74.375 (9, p <.001)	.989	.946	.873	.887	.951	.060	112.375	.034
(*n* = 2,013)	Trimmed	77.228 (11, p <.001)	.989	.944	.892	.906	.951	.055	111.228	.0344

Overall, the modified four-factor CFA measurement model in which measurement errors for Newspaper Time and Radio Time were allowed to covary (Figure 2) fit reasonably well. The values of GFI, CFI, RMSEA, and SRMR were within the acceptable range and better than those in the original model. The value of χ^2 was significant due to large sample size.
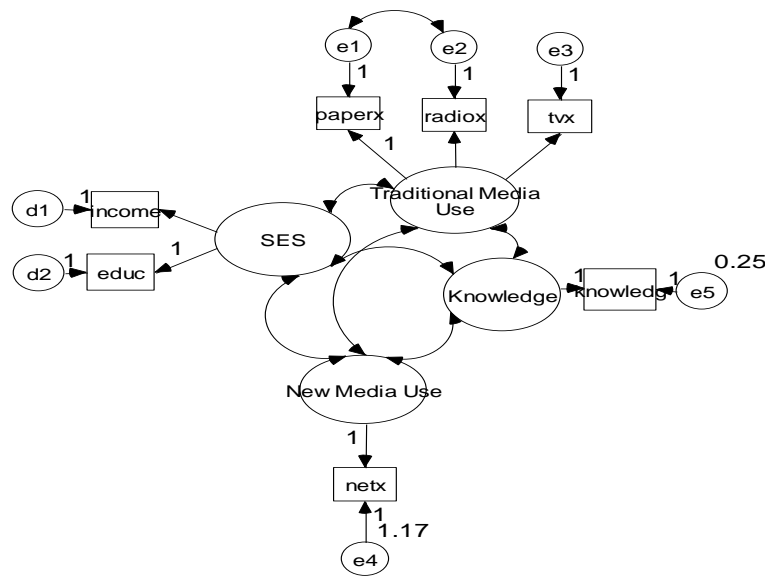
Figure 2. Modified measurement model with error covariance.

Structural Model

With an adequate measurement model, I proceeded to evaluate the structural model. At this point, I changed the free covariances among the latent variables to paths and added disturbance terms. The last three sections of Table 3 provide a model fit summary for the structural model. Again, a consistent pattern emerges when examining the values of selected fit indexes with each subset as well as with the complete data set. The fit of the original structural model is identical to that of the modified CFA model because the structural part is just identified. Specifically, when the model was tested with either the first subsample (n = 1,026), the second subsample (n = 987), or with complete data (n = 2,013), the values of GFI, CFI, RMSEA, and SRMR consistently exceed the critical threshold. The NFI index approached the desired value. Only RFI and TLI indexes were well below the .95 requirement. The value of χ^2 was significant due to the large sample. Thus, the model appears to be almost a perfect fit.

Over and above the fit of the model as a whole, however, a review of parameter estimates and standard errors for both subsets and the complete data set indicates that the paths from Traditional Media Use to New Media Use and from New Media Use to Knowledge were not significant. The model then was rerun with these two paths deleted. Table 3 (sections 4, 5, 6) compares fit indexes of the "trimmed" model (Figure 3) to that of the original model. When the trimmed model was tested with two subsamples and the complete data, the values of GFI, NFI, CFI, and SRMR remained the same or became worse, while the values of RFI, TLI, RMSEA, and AIC improved. Table 4 reports the standardized maximum likelihood estimates for all parameters of the four-factor structural model tested on the complete data set (n = 2,013) without the paths Traditional Media Use → New Media Use and New Media Use → Knowledge.
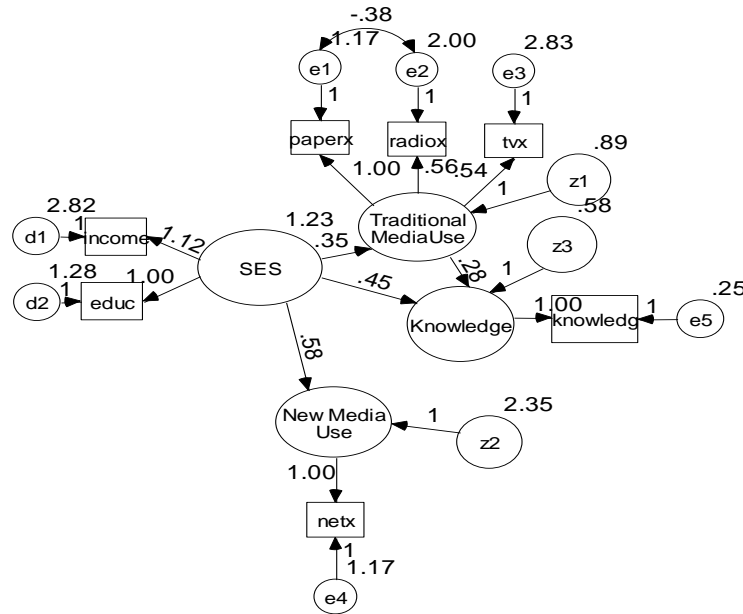
Figure 3. Trimmed structural model tested with complete data set.

Table 4. Parameter Estimates and Standard Errors for Structural Model (n = 2,013).

Parameter	Estimate	S.E.
Direct effects		
SES → Traditional Media Use	.380	.038
SES → Knowledge	.492	.039
SES → New Media Use	.386	.053
Traditional Media Use → Knowledge	.284	.058
Factor loadings		
SES → Educ	.701	
SES → Income	.596	.070
Traditional Media Use → Newspaper Time	.687	
Traditional Media Use → Radio Time	.376	.072
Traditional Media Use → TV Time	.310	.087
New Media Use → Internet Time	.838	
Knowledge → Knowledge Index	.895	
Measurement error covariance		
e1 ↔ e2	−.384	.105
Variances		
SES	1.234	.098
z1	.890	.173
z3	.577	.035
z2	2.348	.118
e5	.250	
e4	1.170	
d2	1.277	.082
d1	2.823	.128
e1	1.166	.173
e2	1.997	.099
e3	2.828	.101

Discussion and Conclusions

The purpose of the current undertaking is twofold. First, the study investigates the specific role of online news versus traditional news in distributing public affairs information to various social segments. This is a theoretical question that bridges issues related to technological change, media input, and uneven acquisition of political knowledge in society. Second, the study seeks to examine more closely the assumptions about the association between the knowledge gap, news use, and political learning. Whereas past research mostly relied on correlation and regression techniques to detect effects, I employed SEM to develop a complex model and specify relations among related variables.

Having been tested with the data in several ways, the original hypothesized model fits reasonably well. In exploring the "trimmed" model, the analysis identified three paths that reflect the direct impact of SES on Knowledge, Traditional Media Use, and New Media Use. An additional causal path from Traditional Media Use to Knowledge was also identified. The results indicate that SES holds the central position in the model, and it influences Knowledge both directly and indirectly. Traditional Media Use serves as the mediator in the model. Although SES is correlated with New Media Use, it does not impact Knowledge through this path.

According to the findings reported here, disparities exist between social classes in knowledge of public affairs. In addition, SES strongly influences the choices that different segments of the population make in using traditional and online media platforms for news. Affluent and educated groups are more active in seeking news from various channels and taking advantage of new technology to get the news. Heavier users of traditional news media are more knowledgeable about politics than light users. These results are largely consistent with the original knowledge-gap proposition (Tichenor et al., 1970) and the belief that exposure to traditional news produces meaningful learning. Put another way, traditional news media remain the most important source of political information (Ahlers, 2006; Fraile, 2011; Livingstone & Markham, 2008; Margolis & Resnick, 2000), playing a significant role in mediating the gap-widening effect.

More important, the present analysis indicates that online news use has not yet contributed substantially to political learning. The results contradict previous findings (Jeffres et al., 2003; Kim, 2008; Wei & Hindman, 2011) about the importance of Internet news in increasing knowledge of public affairs. One possible explanation for this lack of impact is that the Web medium gives users complete control over the process of information seeking. People may choose what information to receive or disregard (Dalrymple & Scheufele, 2007). Thus, online news is highly individualized and tailored to personal preferences, which limit its ability to inform about a broad range of issues relevant to the larger society. This is inherent in an argument that news consumers may spend less time seeking public affairs information online (Althaus & Tewksbury, 2000; Tewksbury, 2003) and perceive the Internet as an inferior source for news stories (Chyi & Yang, 2009). These findings seem to suggest that the introduction of new information technology may not necessarily widen the gap between the information rich and information poor. Leading the way in getting news online may not generate greater knowledge for affluent groups. However, it is probably reasonable to conclude that the trend of transition over to online sources as the

primary means of gathering political knowledge has not yet run its course. The shift toward the Internet as a key news source for learning about public affairs may be a long-term process.

This study and its findings have both theoretical and methodological implications for research at the intersection of knowledge-gap theory, technological change, news habits, and political learning. First, the current undertaking takes a step toward developing a more nuanced conceptual model to gauge how the use of new media versus traditional media for political learning by different segments may mediate the gap-widening effect. Past research tends to examine the role of the various news channels as independent predictors of the SES-based divide in political knowledge. The present study is among a few that look at the relative influence of different news choices among groups and how these options contribute to the knowledge gap. Second, this analysis challenges the notion that greater access to new information technology alone would immediately translate into greater political knowledge. It is conceivable to argue that the ability of a medium to convey specific public affairs information and users' motivation to seek that information through the use of new digital platforms would be stronger determinants of how much different groups know about politics. Third, the current undertaking encourages a more stringent approach to examining the links between SES, media input, and disparities in political knowledge. Previous studies have rarely adopted advanced data analysis methods like SEM to test the assumptions underlying the knowledge-gap theory (McLeod & Perse, 1994). By using SEM as a tool to study measurement and structural relationships among variables in the hypothesized model, the present analysis hopes to bring greater sophistication (Holbert & Stephenson, 2008) to this area of research.

Caution should be taken when interpreting the results. The specific nature of the data may influence the current analysis. Acknowledged is the fact that older people are more likely to respond to surveys. In this sample, the mean age was around 50. Arguably, younger people (the most active group online) would rely more on Internet news in seeking political information and enhancing their knowledge of public affairs. Second, the present study is somewhat constrained by the use of secondary data. Although the PEW survey with a nationally representative sample is appropriate for the SEM procedure, it is not ideal for measuring each of the constructs in the model. More specifically, measures of traditional news use were not linked to specific news content. Online news use and knowledge were measured by single indicators, which are subject to error. Moreover, knowledge questions focused on recognition of facts. This standard, composite measure of political knowledge has been criticized as insufficient (Hollander, 2005; Neuman, 1981). Previous research argued that the structure of Internet news (e.g., organization, interactivity, multimedia) enhances individuals' ability to gain integrated, conceptual understanding rather than knowledge of disconnected facts (Dalrymple & Scheufele, 2007; Eveland et al., 2004). In addition, measures of news exposure in this data set were based on individual self-reports, which may raise concerns about their validity (Slater, Hayes, Reineke, Long, & Bettinghause, 2009). Finally, the hypothesized model was tested with cross-sectional data, which limit the ability to provide a stronger claim regarding causal relations among variables.

In conclusion, this study is a step toward a more nuanced understanding of the knowledge-gap hypothesis as linked to news consumption on the cusp of technological change. The findings reported here need to be further verified with more recent data in addition to panel data collected from a sample representing a balance between older and younger respondents. Future research may also consider using

more sophisticated, multi-item measures of news use such as exposure or attention to specific public affairs information from various news channels. Subsequent studies should probe the role of news habits in mediating the gap-widening effect related to various new categories (e.g., domestic vs. international politics, issues of high and low publicity) and different dimensions of political knowledge (i.e., differentiation vs. integration). A more complex model than the one presented here is needed to take into account additional exogenous controls and possible moderated mediation (Preacher, Rucker, & Hayes, 2007) between SES and news habits in widening the knowledge gap. Rather than just focusing on causes and effects, it is important to inquire into the conditions under which news consumption across media platforms (traditional vs. online news sources) among different groups enhances or inhibits knowledge of public affairs. Age or generation-based differences, in particular, may help explain how particular groups of people use media connections to be informed about public affairs. Therefore, competing models should be tested for older and younger populations. Finally, communication processes and effects go beyond knowledge of issues or events. Future investigations may extend to political interest, attitudes, and, at the behavioral level, civic participation.

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