

Cross-Platform News Media Repertoires and Their Political Implications

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With the expansion of news media platforms, news media usage patterns and their implications on civic and political engagement have become complex. To better understand these complexities, this study examines cross-platform news media repertoires and their associations with civic and political engagement. By using single-source data that merged electronic and survey measures of digital and traditional media usage, we investigated the formation of news media repertoires and the influence of news media repertoires on civic and political engagement. We found that South Korean media users form four cross-platform news media repertoires, which significantly differed in age, education, and region. A close examination of news media repertoires revealed that Traditional + Social News Users had higher odds of civic and political engagement compared with News Avoiders. The findings demonstrate how individuals navigate various media platforms and how a combination of such platforms differentially contributes to civic and political engagement.

Keywords: cross-platform news consumption, media repertoires, news consumption, civic engagement, political engagement, single-source

With several new technologies fundamentally reshaping the news media landscape, the way people across the world access and consume news has also significantly changed. News audiences now receive news content from numerous sources on multiple platforms (e.g., newspapers, magazines, television, radio, and websites) and devices (e.g., mobile phones, personal computers, and television sets). In 2016, digital platforms were the second-most prominent media platform for news consumption, with approximately 4 of 10 Americans consuming news primarily online, while only 20% obtained news in print (Matsa & Lu, 2016). This digital transition of news consumption is not merely confined to the United States. While TV is still the most popular medium for news and information in Western Europe, less than 25% of Western Europeans rely solely on a single platform (Mitchell, Sumida, & Walker, 2019). In South Korea, news consumption via

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social media and online portal sites (e.g., Naver and Daum) has substantially increased in the past decade, adding these new platforms to the diet of news sources (Korea Press Foundation, 2018; Newman, Fletcher, Kalogeropoulos, & Nielsen, 2019).

Though it is clear that global audiences get news and information from a variety of platforms, we have a surprisingly murky understanding of the repertoires people employ as they navigate the media environment. What is the relative importance of old and new media? How many people use only digital platforms or traditional platforms? How many avoid the news across all platforms? And how does a combination of these news media platforms relate to civic and political engagement? Extant research on *media repertoire* partially provides answers to these questions. Previous studies have examined the drivers, composition, and user characteristics of media repertoires (Hasebrink & Popp, 2006; Kim, 2016; Taneja, Webster, Malthouse, & Ksiazek, 2012), with more recent research linking media repertoires with their outcomes such as civic engagement and political participation (Diehl, Barnidge, & Gil de Zúñiga, 2019; Molyneux, 2017; Peters & Christian Schröder, 2018). What is lacking in existing research is further empirical evidence on the link between multiple news platform usage and civic and political engagement. In addition, most previous studies have been conducted in the United States or Western Europe without much investigation into other media systems that may corroborate or refute the findings from existing research. Another problem of extant research lies in the heavy reliance on self-reported measures of news consumption. Estimation of news media usage suffers from overestimation because of people's inability to recall all the instances of news exposure as news sources have been substantially increased (Prior, 2009).

The current study fills these gaps by adding empirical findings on news media repertoires, their composition and user characteristics, and the association between news media repertoires and civic and political engagement in South Korea. Methodologically, we use single-source data from Nielsen Company Korea. The single-source data include three-screen data, which electronically measure the usage of TV, personal computers (PCs), and mobile devices that are merged with survey data that are collected from a subset of the three-screen sample. The survey includes measures of traditional media usage, individual characteristics, and various indicators of civic and political engagement. By merging the behavioral and survey data at the individual level, we provide a comprehensive understanding of news usage across multiple media platforms with more improved measures of media usage and the political implications of cross-platform news usage in the subset of the panel. South Korea has observed an expansion of news media with the fast growth of social and mobile media. This study offers an up-to-date understanding of news consumption patterns across media platforms and their political implications in a non-Western context with a methodological advancement.

From Channel Repertoire to Media Platform Repertoire

In times when many media outlets compete for people's attention, individuals can easily find content that fits their views and expectations. This raises a question about how certain media platforms and content options are selected from the abundant news and information sources. The concept of *repertoire* has provided an answer to this question (Hasebrink & Hepp, 2017; Hasebrink & Popp, 2006; Lepa & Hoklas, 2015; Peters & Christian Schröder, 2018; Yuan, 2011). A repertoire refers to a selection of media choices that individuals use regularly (Webster & Phalen, 1997). Instead of consuming every option available, people

select a subset that appeals to their preferences, tastes, or beliefs (Hasebrink & Popp, 2006; Rubin, 2002; Yuan, 2011). People then regularly rely on these repertoires to cope with the oversaturation of information that reaches a person daily (Choi, 2016).

The scientific exploration of repertoires started with the investigation of TV channel repertoires, predicting the absolute size of repertoires (Ferguson, 1992; Heeter, 1985; Yuan & Webster, 2006). Subsequent studies have found that various factors influence the layout and size of repertoires (Yuan & Webster, 2006), such as individual characteristics (Ferguson, 1992), motivations, and attitudes (Ferguson & Perse, 1993; Neuendorf, Atkin, & Jeffres, 2001). Researchers have noted that focusing solely on news consumption via traditional media is no longer sufficient given the proliferation of media platforms and devices (Hasebrink & Popp, 2006). A growing number of studies have taken a comprehensive approach to understanding news consumption patterns across multiple platforms (Edgerly, 2015; Kim, 2016; Ksiazek, Malthouse, & Webster, 2010; Swart, Peters, & Broersma, 2017). Today, content is not only delivered on different platforms (e.g., TV, print media, radio, or mobile devices), but also in different modalities (e.g., social media) that enable audiences to participate in the process of distributing, contextualizing, and creating news in their own networks (Choi, 2016; Schmitz Weiss, 2013). In this study, we use the term "platform" as the "physical technology" (Gillespie, 2010) or "technological system for delivering content to users" (Webster, Phalen, & Lichty, 2013, p. 277), thus, news platforms refer to delivery systems such as print, TV, PCs, or mobile devices.

Studies on multiplatform news consumption noted that technological affordances influence how information is presented to and consumed by its users, which impacts the ways in which media users learn about political issues and engage in civic and political behaviors (Diehl et al., 2019; Molyneux, 2017; Peters & Christian Schröder, 2018). Specifically, varying degrees of technological affordances, such as information density (i.e., the ability to present more information with higher efficiency), immediacy (i.e., the ability to access news in real time), normalization (i.e., the degree of journalistic normalization on that platform), and interactivity (i.e., the extent to which the user's input is considered as part of the consumption experience) make each platform distinctive in terms of its strengths and weaknesses of conveying crucial information for civic and political engagement (Molyneux, 2017). Although conceptualizing or measuring such affordances is beyond the scope of this study, these attributes of media platforms (e.g., Eveland, 2003) impact temporal, organizational, journalistic, and relational aspects of news consumption, requiring a further examination of cross-platform news repertoires beyond news content itself.

Extant literature on news media has revealed the motivations for using different combinations of news outlets or identified patterns of repertoires and their composition and implications (Geers, 2020). We follow the latter approach and quantitatively examine the composition, formation, and implications of news media repertoires across different news platforms. Previous research has consistently found the existence of news avoiders (or minimalists) and news seekers (or news omnivores) with a varying combination of different platforms and outlets in between (Edgerly, 2015; Geers, 2020; Gong, Verboord, & Janssen, 2020; Kim, 2016; Ksiazek et al., 2010; Wolfsfeld, Yarchi, & Samuel-Azran, 2016). The formation of news avoiders and seekers are attributed to the role of news interest combined with the high-choice media environment that allows people to enact their preferences. Those who are interested in news can only consume news content that fulfills their needs, whereas those who are not interested in news can easily avoid any news

offerings in the current media environment (Prior, 2007). Beyond these two extreme repertoires, we can observe different combinations of news media repertoire depending on which aspect of news consumption we focus on. There are numerous ways to conceptualize and operationalize repertoire, for example, across devices, services, and content genres (Edgerly, Vraga, Bode, Thorson, & Thorson, 2018), but this study is mainly concerned with news platforms given that people have an orientation toward certain platforms when it comes to news consumption (Kim, 2016). Thus, we pose the following hypothesis and research question:

H1: Among cross-platform news media repertoires, news avoiders and news seekers will be identified.

RQ1: What other types of cross-platform news media repertoires emerge beyond news avoiders and news seekers?

The Formation of News Media Repertoires: Individual and Structural Factors

Initial studies on media repertoires focused on the composition and user characteristics associated with the configuration of media repertoires. We apply the framework of "duality of media" (Webster, 2011) to the formation of news media repertoires and examine how individual and structural factors influence the establishment of different news media repertoires. Media choice, in general or specific to news, is shaped by the interplay between individual (e.g., demographics, news interest, and individual taste) and structural (e.g., audience availability, programming strategies, and media environment) factors (Kim & Viswanathan, 2015; Wonneberger, Schoenbach, & van Meurs, 2011). When it comes to news media repertoires, previous research has shown that individual characteristics, such as age, gender, and socioeconomic status (SES), exert an influence on the use of different news media repertoires (Edgerly, 2015; Kim, 2016).

Among the various factors that compose the duality of media, we focus on age, education, and region. Age plays a crucial role in predicting which media repertoires audiences use. Younger individuals tend to obtain news from digital media rather than traditional outlets, whereas older adults are more likely to consume TV and print newspapers (Edgerly, 2015; Kim, 2016; Mitchell et al., 2019). Age also influences the number or variety of platforms used for news consumption. Younger adults are more likely to consume news across multiple platforms, whereas older adults tend to be single-medium or traditional news media only (Diehl et al., 2019; Westlund & Färdigh, 2015). Another important individual factor is SES, education in particular. In the United States, TV is the most popular news outlet among individuals with a secondary education or less. Nearly three quarters of media users obtain news from TV at least daily. People with higher education, on the other hand, receive news equally from online sources, TV, and radio (Mitchell et al., 2019). This suggests that a higher level of education will lead to a more diversified set of media platforms consumed, while a lower level of education will result in a more limited number of news outlets. Region is one of the structural factors that is directly related to which media offerings are available in a user's media environment. Those who live in the metropolitan area, compared with those in rural areas, have easier access to various media offerings, thus making one's news media repertoires larger or more diverse. In the South Korean context, Kim (2016) found that whether or not a person lives in a metropolitan area predicted the use of different news repertoires. She concluded that for residents in the metropolitan area, easier access to the Internet and tabloid newspapers seem to contribute to more active use of these repertoires, whereas less access to cable TV negatively impacted the formation of the "Cable TV Only" repertoire.

With the review and synthesis of previous research, we pose the following hypotheses and research question:

- H2: Younger media users will use news media repertoires with more diverse media platforms.*
- H3: Media users with higher education will use news media repertoires with more diverse media platforms.*
- H4: Media users living in the metropolitan area will use news media repertoires with more diverse media platforms.*
- RQ2: How do these individual (i.e., age and education) and structural (i.e., region) factors differentially contribute to the formation of cross-platform news repertoires?*

Political Implications of News Consumption Across Platforms

Although there has been much research on the political implications of mass media (Kanervo, Weiwu, & Sawyer, 2005) and digital media (Boulianne, 2020), these studies mostly focused on the influence of individual platforms, not cross-platform repertoires. More recent literature examined how the combination of media platforms (as opposed to individual platforms) influences civic and political engagement.

These studies provide a few noteworthy findings. First, most people use multiple platforms to obtain news and political information in both Western and non-Western contexts. Wolfsfeld, Yarchi, & Samuel-Azran (2016) found four political information repertoires, namely Avoiders, Traditionalists, Socials, and Eclectics (those who use both traditional and social media for news consumption). Edgerly (2015) identified six distinctive repertoires that are diverse in the use of platforms and partisan news sources. In an Asian context, Gong, Verboord, & Janssen (2020) found six cross-media repertoires—Voracious Omnivores, Moderate Omnivores, Communication Oriented, Digitally Focused, Minimal Users, and Print Interested—among Chinese young adults.

Second, when it comes to the political outcomes of cross-platform news consumption, extant research revealed an additive effect of the number of news platforms used on civic and political engagement, meaning that the more media platforms people use for news consumption, the higher the levels of civic or political engagement are (Diehl et al., 2019; Molyneux, 2017). Wolfsfeld and colleagues (2016) found that Avoiders, Traditionalists, Socials, and Eclectics exhibited different levels of political interest, knowledge, efficacy, and participation, with Eclectics showing the highest levels of political variables except for political efficacy. Similarly, Edgerly (2015) showed that News Omnivores exhibited the highest level of civic and offline political participation and the second highest for online political participation, compared with other repertoires with fewer platforms. Gong and colleagues (2020) showed that Voracious Omnivores and Print-Interested users have higher levels of political trust, engagement, and interest than other repertoire users.

As mentioned earlier, these differential effects of different news repertoires may be associated with different technological affordances, which shape the way news is delivered, presented, and consumed (Molyneux, 2017). Traditional news sources still function as an agenda setter (Djerf-Pierre & Shehata, 2017)

with its ability to reach a wider audience, whereas social and mobile media, with their interactive and networking affordances, can easily spread information about political actors and events (Tang & Lee, 2013) as well as mobilize people to engage in social or political causes online and offline (Masías, Hecking, & Hoppe, 2018). This suggests that there can be a synergy effect when different news platforms are used in combination compared with the situation when each platform is used in isolation. Thus, we pose the following hypothesis:

H5: Individuals who use more diverse media platforms in their news media repertoires will exhibit higher levels of civic and political engagement than those who use less diverse media platforms in their news media repertoires.

Methods

Data

To examine cross-platform news repertoires, individual and structural factors of cross-platform news repertoire formation, and the association between cross-platform news repertoire and civic and political engagement, this study used unique data obtained from Nielsen Company Korea. The data included Nielsen's three-screen data, which electronically recorded the usage of three media platforms (i.e., TV, PC, and mobile) from 1,503 panel members. A subset of the three-screen panel (N = 224) filled out a survey that included questions about using print newspapers, social media, and major portal sites' mobile apps (e.g., Naver and Daum) for news consumption, all of which could not be measured from the three-screen data. The survey also contained questions on political ideology and five types of civic and political engagement. By linking the three-screen data with the survey at the individual level, we created single-source data that provided news usage across multiple platforms, civic and political engagement, and individual characteristics. Despite this methodological innovation, it should be noted that the sample size was reduced to a total of 224 after merging the three-screen data and the survey. Compared with the general population of South Korea, our final sample is younger and more educated, which makes us cautious about making generalizations from this sample. The data were collected in March 2016. This period was chosen to avoid any major events that may have distorted people's regular media usage habits (e.g., award ceremonies or elections).

Measures

News Consumption by Platform

News consumption was measured for four media platforms (TV, print, PC, and mobile) using the following six news consumption items: TV news viewing, print newspaper reading, PC online (i.e., visiting newspaper websites on PCs), social media (PC and mobile combined), newspaper app usage on mobile devices, and news aggregator app usage on mobile devices. TV news viewing, PC online, and newspaper app usage on mobile devices came from the three-screen data. For website visits and mobile apps, the data recorded only visits to news organizations' websites or mobile app usage, which did not include news reading in major portal sites' (e.g., Daum and Naver) that function as news aggregators in South Korea. Print

newspaper reading, social media news reading (both PC and mobile), and news aggregators' mobile app usage came from the survey. Across all items, we calculated the frequency of using the respective media platform per month. For metered measures, we counted the number of days when respondents spent more than one minute per day on each platform (i.e., TV, PC, and mobile) during the one-month study period. For survey measures, respondents were asked how many days they read print newspapers, used PC and mobile for consuming news in social media, and used mobile devices for consuming news via news aggregators' mobile apps for the past month. The descriptive statistics of the news usage frequency variables are presented in Table 1. Because of the skewed distribution of these variables, they were first log-transformed before statistical analysis.²

Diversity of News Platforms

We operationalized the diversity of news media platforms by the number of news media platforms used. We created six binary variables that indicated whether an individual used the given news platform at least once per month. We summed the six binary variables to calculate the diversity of news platforms used, which ranges from 0 (no platform used) to 6 (all platforms used). On average, people used 3.67 platforms to consume news content (SD = 1.19).

Table 1. Descriptive Statistics of News Media Usage Frequency Variables (N = 224).

Variable	<i>M</i>	<i>SD</i>
Television news viewing ^a	18.35	10.25
Print newspaper reading ^b	5.35	8.54
PC online (visiting newspaper websites on PC) ^a	1.34	3.35
Social media news reading (avg of PC and mobile) ^b	10.85	8.86
Mobile news organizations' app usage ^a	1.96	4.45
Mobile news aggregators' app usage ^b	14.72	11.93

Note.

^a. Electronic measures obtained from three-screen data.

^b. Survey measures.

Individual and Structural Factors

As discussed in the literature review, we focus on age, education, and region as individual and structural factors that influence the formation of different news repertoires. Respondents were asked to provide their ages, and the age variable was categorized into the following age groups: 7–18 (6.70%), 19–29 (10.71%), 30–39 (10.27%), 40–49 (27.23%), 50–59 (29.46%), and 60–69 (15.63%). Education was measured using a binary variable with a value of 1 for those who at least enrolled in college or had a college

² The only missing item among news usage measures is reading news on major portal sites such as Naver or Daum on a PC. This is because of the constraint of the way Nielsen collects its clickstream data. We know how much time people spend on major portal sites in total, but not by content category within their sites. We had a measure of reading news on these companies' mobile apps collected from the survey, which can compensate this missing information to some extent.

degree or above (62.5%), which shows that the sample was highly educated. We created a binary variable that indicates whether a participant resides in Seoul, Incheon, or the Gyeonggi area (a metropolitan area in South Korea). Approximately 35% of the sample were living in the metropolitan area at the time of this study.

Civic and Political Engagement

Respondents were asked whether they had done any of the five types of civic and political engagement behaviors in the past month. These range from low-effort (or passive) to high-effort (active) engagement, depending on whether the respective behaviors require some forms of action. Low-effort engagement included signing an online or offline petition (55.36%) and making a donation (45.54%). High-effort engagement included participating in volunteer work (37.05%), attending a demonstration or protest (10.27%), and voting in the National Assembly election (76.79%).

Control Variables

We included the following user characteristics as control variables in our analysis: gender, income, and political ideology, which have been found to influence news media in extant literature but are not the focus of this study. Respondents were asked to self-identify their gender, income levels, and political ideology in the survey. More females (61.61%) were included in the sample than males (38.39%), which required us to exercise caution in generalizing the findings. Most respondents' monthly household income levels were between 3–5 million KRW (48.21%), followed by over 5 million KRW (27.23%), 1–3 million KRW (17.96%), and less than 1 million KRW (6.7%).³ Political ideology ($M = 6.02$, $SD = 2.08$) was measured using an 11-point Likert scale, from 1 indicating very liberal to 11 very conservative.

Analysis

To identify cross-platform news repertoires (H1 and RQ1), we conducted a *k*-means cluster analysis using the six news media platform items after standardizing these variables. We varied the value of *k*, from three to eight, and compared the performance of each of the solutions. Based on the pseudo-F statistics, approximate expected overall R-squared, and cubic clustering criterion (CCC), we determined that the optimal solution was a four-cluster solution and named each cluster by looking at its distinctive characteristics compared with other clusters.

To test H2, H3, and H4, we profiled age and education of the four news media repertoires identified from the cluster analysis. We then tested their statistical differences by conducting a one-way analysis of variance (ANOVA) for age. We also performed a post hoc analysis using the Duncan's multiple range test (DMRT) to identify which pairs of means produce statistically significant differences. We conducted a chi-square test for education (measured by those who have less than a college education versus those who have a college education or above) and for region (measured by those who live in a metropolitan area or not), respectively. To answer Q2, we ran a multinomial logistic regression model to see which individual and structural factors predict cross-platform news media repertoire membership.

³ One million KRW was equal to approximately \$800 USD in 2016.

To test H5, we ran five logistic regressions using the five forms of civic and political engagement (donating, petitioning, volunteering, protesting, and voting) as dependent variables, cross-platform news media repertoire membership as the independent variable, and individual and structural factors as control variables. We additionally included the diversity of news platforms used in the original model to see whether the absolute value of media platforms (besides news repertoires) has a positive association with civic and political engagement. For voting behavior, we included only the age groups that are eligible to vote (i.e., 19 years and older) in the logistic regression models.

Results

Cross-Platform News Media Repertoires

To identify news avoiders and news seekers (H1) and other cross-platform news media repertoires (RQ1), we ran a *k*-means cluster analysis using the six news platform variables after standardization. A 4-cluster solution was selected based on the three different criteria explained in the methods section. Table 2 presents the group means of each of the news platform usage variables for each of the four clusters, which confirms H1. Because these variables were standardized in the cluster analysis, in each cluster, the value 0 indicates the average level of news consumption of that particular news platform, with positive values above the average usage level and negative values below the average usage level.

The first cluster, News Avoiders, exhibited below-average values across all news platform usage, meaning that individuals in this repertoire showed low levels of news usage across platforms. This repertoire group was the second largest among the four groups (38.39%). The second cluster, Traditional + Social News Users, was characterized by using traditional news media, such as TV and print newspapers, combined with social media for obtaining news compared with users of other news media repertoires. They were less likely to access news organizations' websites or mobile apps, but more likely to use news aggregators' mobile apps to consume news. This was the largest group among the four news media repertoires (43.75%). The third cluster, Mobile + Social News Users, mainly used mobile and social media for their news consumption, meaning the members in this news media repertoire embraced both mobile (as platform) and social (as modality). Their level of traditional news consumption was below average. This was the third largest group and was comprised of about 11% of the sample. The last cluster, News Seekers, was the group that consumed news from a diverse set of news platforms. Those who belonged to this news repertoire consumed all six media platforms above average usage levels compared with those in other repertoires. Yet this group was the smallest (7.14%).

Table 2. Cross-Platform News Repertoires: Cluster Means Across News Platforms Used in the K-Means Cluster Analysis (N = 224).

News Repertoire	<i>n</i>	TV	Print Newspaper	PC Online	Social Media News	Mobile News App	Mobile News Aggregator App
Cluster 1: News Avoiders	86 (38.39%)	-0.07	-0.28	-0.14	-0.88	-0.29	-0.83
Cluster 2: Traditional + Social News Users	98 (43.75%)	0.04	0.22	-0.28	0.59	-0.36	0.66
Cluster 3: Mobile + Social News Users	24 (10.71%)	-0.06	-0.13	-0.27	0.23	2.47	0.20
Cluster 4: News Seekers	16 (7.14%)	0.24	0.34	2.88	0.80	0.05	0.10

Note. For cluster means across the news platform usage variables, a value of zero indicates the average level of news usage for that factor. Positive values mean above-average usage level of each factor, whereas negative values mean below-average usage level.

Individual and Structural Factors and the Formation of Cross-Platform News Media Repertoires

H2, H3, and H4 predicted the differences in age, education, and region across cross-platform news media repertoires in a way that younger, more educated metropolitan people will use cross-platform news repertoires with more diverse media platforms. Table 3 provides a summary of the user profile in each repertoire. For age, we conducted a one-way ANOVA to compare the mean scores for age across the four news media repertoires. There were significant differences between the group means for age at $p < .10$ level [$F(3, 220) = 2.16, p < .10$]. Post hoc comparisons using the Duncan's multiple range test (DMRT) indicated that the mean scores for the first three clusters and the latter three clusters were statistically different. More specifically, the mean scores for News Avoiders ($M = 3.83, SD = 1.55$) and News Seekers ($M = 4.69, SD = 1.14$) were significantly different. We found that the cross-platform news repertoires that were mainly used by younger people also had less diverse news platforms in their repertoires (e.g., News Avoiders), which was the opposite of the prediction. H2 was not confirmed.

As for education, we found a significant difference in the levels of education, measured by whether one advanced beyond high school education or not [$\chi^2(3, N = 224) = 13.60, p < .01$], across different news repertoire users. We observed a gradual increase of education obtained across news media repertoires from News Avoiders to Traditional + Social News Users to Mobile + Social News Users to News Seekers as shown in Table 3. Less than half of News Avoiders completed a high school education, exhibiting the lowest level of education among the four repertoire groups. On the other hand, over 81% of News Seekers advanced beyond high school education. Thus, H3 was confirmed. For region, there was a statistically significant difference in the proportion of those who live in the metropolitan area versus those who do not in some of the news repertoire users [$\chi^2(3, N = 224) = 8.89, p < .05$]. Specifically, only about a quarter of News

Avoiders were residing in the metropolitan area, whereas approximately 44% of News Seekers were living in the metropolitan area. The Traditional + Social News Users exhibited the highest proportion of the members residing in the metropolitan area. Thus, H4 was partially confirmed.

Table 3. Description of Demographic Profiles Across Cross-Platform News Media Repertoires (N = 224).

News Repertoire	<i>n</i>	Age	College (%)	Region (%)	Diversity of News Platforms
Cluster 1: News Avoiders	86 (38.39%)	3.83 ^a	47.67	24.42	3.05 ^e
Cluster 2: Traditional + Social News Users	98 (43.75%)	4.19 ^{ab}	68.37	44.90	3.88 ^f
Cluster 3: Mobile + Social News Users	24 (10.71%)	4.21 ^{ab}	75.00	33.33	4.25 ^f
Cluster 4: News Seekers	16 (7.14%)	4.69 ^b	81.25	43.75	4.88 ^g

Note. Mean scores with the same letter superscript are not statistically different.

RQ2 asked how individual and structural factors contribute to the formation of cross-platform news repertoires. As the News Avoiders repertoire were characterized by their lower-than-average news consumption across all platforms, we set this as the reference category and ran a multinomial logistic regression to predict the membership of cross-platform news media repertoire (see Table 4).

Table 4. Multinomial Logistic Regression Predicting the Membership of Cross-Platform News Media Repertoire (N = 224).

News Repertoire	Traditional + Social News Users		Mobile + Social News Users		News Seekers	
	Estimate (S.E.)	Odds Ratio	Estimate (S.E.)	Odds Ratio	Estimate (S.E.)	Odds Ratio
Intercept	-.11 (.84)		-.46 (1.23)		-2.77 (1.68)	
Age	.28* (.12)	1.31	.40* (.20)	1.49	.79** (.29)	2.20
Education (High school)	.47** (.17)	2.54	.77** (.29)	4.67	1.00** (.38)	7.45
Female	-.06 (0.16)	.88	-.19 (0.25)	.68	-.12 (.29)	.79
Income	-.02 (.19)	.98	-.32 (.30)	.72	-.25 (.38)	.78
Political Ideology	-.12 (.08)	.87	-.26* (.12)	.77	-.29* (.15)	.75
Region (Metropolitan)	.45** (.17)	2.47	.23 (.26)	1.58	.41 (.30)	2.23

Note. The News Avoiders repertoire is the reference category of the three models.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Each model shows a prediction model relative to the News Avoiders repertoire. Overall, the individual and structural factors used in this study (i.e., age, education, and region) as well as political

ideology were the significant predictors of using different repertoires: Compared with News Avoiders, (1) older media users had higher odds of becoming members of other news media repertoires. The odds get larger in the order of Traditional + Social News Users, Mobile + Social News Users, and News Seekers; (2) those whose education levels go beyond high school education had higher odds of using other news media repertoires. Again, the odds increase gradually for Traditional + Social News Users, Mobile + Social News Users, and News Seekers; (3) those who live in the metropolitan area had higher odds of being Traditional + Social News Users; (4) more conservative individuals had lower odds of becoming Mobile + Social News Users and News Seekers.

Political Implications of News Media Repertoires

H5 predicted that individuals who use more diverse media platforms in their news media repertoires will exhibit higher levels of civic and political engagement than those who use less diverse media platforms in their news media repertoires. We ran five logistic regressions using the five types of civic and political engagement as our dependent variables. We entered different news media repertoire membership as the independent variable in the model, using the News Avoiders as the reference category and individual and structural factors as controls. The results showed that, among the five models, those for donating and petitioning produced statistically significant results, as shown in Table 5. This finding suggests that using a different combination of news media platforms had more influence on low-effort or passive type of civic and political engagement behaviors.

Table 5. Logistic Regressions Predicting Types of Civic and Political Engagement (N = 224).

Predictors	Donating		Petitioning	
	Estimate (S.E.)	Odds Ratio	Estimate (S.E.)	Odds Ratio
Intercept	-1.35+ (.78)		.67 (.77)	
News Media Repertoire ^a				
Traditional + Social News Users	.48* (.24)	2.25	.56* (.24)	2.191
Mobile + Social News Users	-.27 (.35)	1.06	-.58 (.35)	.70
News Seekers	.12 (.41)	1.57	.25 (.42)	1.621
Individual and Structural Factors				
Age	.22* (.11)	1.25	.16 (.11)	1.17
Female	.15 (.15)	1.35	.26+ (.15)	1.70
Income	-.006 (.18)	.99	-.30+ (.18)	.74
Education (High school)	.08 (.16)	1.18	.29+ (.16)	1.77
Political ideology	.02 (.07)	1.03	-.07 (.07)	.93
Region (Metropolitan)	-.02 (.15)	.97	-.02 (.15)	0.95
	AIC=313.26		AIC=309.95	
	Log-likelihood=15.48+		Log-likelihood=19.57*	

Note. + $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

^a. News Avoiders is the reference category.

More specifically, in both models, we found that Traditional + Social News Users had higher odds of making a donation and signing a petition compared with News Avoiders. Directionally, News Seekers also exhibited higher odds of donating and petitioning than News Avoiders, whereas Mobile + Social News Users were less likely to engage in these two types of civic and political engagement behaviors. Among individual and structural factors, we found that age contributed to making a donation in a way that older people had higher odds of donating than younger people. Females, less affluent, and more educated people showed higher odds of signing a petition. These findings demonstrate the differential role each news platform plays in enhancing or dampening civic and political engagement, particularly for low-effort engagement behaviors, such as donating and petitioning. What is interesting about these results is that it was Traditional + Social News User repertoire that showed a significantly higher level of civic and political engagement behaviors, not News Seekers. This partially support H3.

Discussion

This study examined what cross-platform news media repertoires emerge among South Korean media users, how individual and structural factors influence the formation of each news media repertoire, and how different news media repertoires lead to various forms of civic and political engagement. Using single-source data that merged three-screen data and a survey conducted to the subset of the three-screen panel, this study identified four distinctive cross-platform news media repertoires, namely News Avoiders, Traditional + Social News Users, Mobile + Social News Users, and News Seekers. Consistent with findings from previous news repertoire studies, we found a significant portion of News Avoiders who consume news at the less-than-average level across all news platforms (Edgerly, 2015; Ksiazek et al., 2010; Lee & Yang, 2014). We also identified a few News Seekers whose news consumption is above average across all news platforms. This finding highlights the role of news preference in a high-choice media environment, where those with a lower preference for news can completely ignore news content, whereas those with a higher news preference can indulge their cravings for news across any media platform (Prior, 2007). The other two groups show different combinations of news media platforms and modalities, exhibiting different orientations as to whether they prefer traditional news media such as TV and print newspapers or using intermediaries such as social media or news aggregators' mobile apps (Kim, 2016).

What is interesting about the composition of cross-platform news media repertoires is the role that individual and structural factors play in establishing distinctive patterns of news consumption. Contrary to the expectation, this study found that older individuals tend to use more diverse news media platforms (i.e., News Seekers). We also found that college education experience is a significant predictor of which cross-platform news media repertoires people use. As predicted, those without college education experience are less likely to consume news from diverse news media platforms (e.g., News Avoiders), whereas those with college education experience use a various combination of news media platforms. One's media environment also exerts an influence on how one uses a combination of different news platforms. Our results demonstrated that a significantly smaller portion of News Avoiders reside in the metropolitan area where there is abundance in news media platforms and offerings.

When it comes to the association between news platforms and civic and political engagement, we found mostly a positive associations between Traditional + Social News Users and various types of civic and

political engagement behaviors, especially low-effort (passive) forms of civic and political engagement, compared with News Avoiders. Although we did not find any significant results for active forms of engagement, such as protesting or voting, this finding indicates the continuing importance of including traditional news sources in one's media repertoires in enhancing civic and political engagement (Gong et al., 2020; Kim, 2016; Molyneux, 2017). We did not measure political knowledge acquisition from each news media platform, but traditional news media may still function as an agenda setter (Djerf-Pierre & Shehata, 2017) or as a great source of political knowledge (Masías et al., 2018), which increases people's interests in social or political causes. When combined with social media, which allows the audience to use interactive features embedded in news articles to act, we can see the synergy between these two media on donation and petitioning.

However, the null effect of news consumption on protesting or voting makes us wonder what factors would promote such active forms of engagement. Participating in a protest could be influenced more by the cause or the organizing entity of the protest (e.g., citizens, grassroots organizations, or more established organizations). Given the fluid and spontaneous nature of protests, news consumption itself may not exert much influence on people's participation in protests. With the increasing use of instant messenger services for news consumption (e.g., WhatsApp, Facebook Messenger, or KakaoTalk in South Korea; Newman et al., 2019), these emerging channels with more instantaneous nature may be more actively used in organizing protests either physically or virtually.

It is also noteworthy that News Avoiders constitute the second-largest group among the four news media repertoire groups identified in this study. A growing number of studies have begun to investigate the phenomenon of news avoidance, focusing on the motivations or factors that shape people's tendency to avoid news (Palmer & Toff, 2020; Toff & Kalogeropoulos, 2020; Toff & Palmer, 2019). Consistent with previous findings, we observed that individual characteristics such as age and education influence news avoidance: Younger and less-educated individuals were more likely to become News Avoiders. We also revealed the role of one's media structure: Compared with other news media repertoire groups, News Avoiders were less likely to reside in the metropolitan area, indicating that less access or diversity in news media offerings in their media environment may have resulted in involuntary news avoidance. Given that news avoidance stems from the perception that news consumption has limited benefits, the lack of recognizing news consumption as a civic duty, and the loss of connection to a news community, whether altering these perceptions would encourage News Avoiders to build a habit of news consumption is an interesting avenue to explore in future research.

Methodologically, the strength of this study lies in its methodological innovation of combining metered audience data and cross-sectional survey data at the individual level. Survey measures of news consumption are known to be overestimated or suffer from respondents' inability to recall. At least three of our news measures (i.e., watching TV news, using news organizations' mobile apps, and accessing newspaper websites on PC) came from metered data, which improved accuracy and validity. However, because of the methodological constraints of metering technology or the nature of news medium, we needed to include self-reported measures of news consumption from the survey (i.e., reading print newspapers, using social media to consume news, and accessing news through news aggregators' mobile apps), which are still subject to the abovementioned pitfalls. On the one hand, our approach provides a comprehensive

picture of how individuals navigate various media platforms with less concerns of inaccuracy, mostly overestimation of news consumption (Prior, 2009) and incorrect estimation of news consumption and its association with other outcome variables (Guess, Munger, Nagler, & Tucker, 2019). On the other hand, the problem of sample representativeness as well as overreporting of media usage measures from the survey data still remains. Yet our methodological approach adds to the wider discussion of how social science research can benefit from integrating survey data and digital trace data (Stier, Breuer, Siegers, & Thorson, 2020).

Conclusion, Limitations, and Suggestions for Future Research

We address the limitations of this study, which stimulate ideas for future research. First, by choosing to merge the three-screen data and the survey, the sample size was reduced, and the representativeness of the sample was compromised. We must be cautious about making generalizations from this sample, since the individuals in this sample were younger and more highly educated than the general population of South Korea. Second, this study was cross-sectional, and we do not claim any causal relationships. Rather, we showed an association between cross-platform news media repertoires and other characteristics. Future research should use a panel design to see how the formation and usage of cross-platform news media repertoires influence political engagement and vice versa. Lastly, this study focused on platform diversity in conceptualizing diversity in repertoires, but did not consider other dimensions of diversity (e.g., sources, genres, or services) that may have different political implications. As Edgerly and colleagues (2018) noted, recent studies on news media repertoires have various approaches to repertoires, including types of media, the specificity of measurement, and the nature of the media. This study did not consider other dimensions of diversity in repertoires such as *genre* of news media outlets (e.g., hard versus soft news, infotainment), different genres of television news (e.g., news programs, current affair programs, debate programs), or ideological spectrum of news outlets (e.g., Ksiazek, Kim, & Malthouse, 2019). It would be interesting to include these other dimensions of diversity in news repertoires to detect more granular forms of cross-platform news media repertoires.

Overall, the findings indicate the need to have a holistic approach toward studying news consumption by considering multiple platforms. The composition, individual and structural factors, and political implications of using distinctive news media repertoires should be examined to gain a deeper understanding of the process and outcome of cross-platform news media usage patterns. This study also makes a methodological contribution by using a more advanced set of news consumption measures to provide a more accurate picture of individuals' media use diet. This study also fills the gaps in existing literature on the political impact of digital media (Boulianne, 2015; Skoric, Zhu, Goh, & Pang, 2016) by providing evidence of individual news media repertoires' influence on civic and political engagement from a non-Western national context. Consistent with previous research, we confirm the existence of News Avoiders and News Seekers as well as the role of individual and structural factors in forming cross-platform news repertoires. What is unique about our finding is that Traditional + Social News Users, not News Seekers, are positively associated with civic and political engagement. Members of this repertoire exhibit the highest level of using news aggregators (e.g., Naver or Daum), which is the main gateway to news access among South Korean media users (Newman et al., 2019). Given that the level of trust in mainstream news media is low in South Korea, the finding that those who heavily use news aggregators are more politically engaged than those who actively use traditional media suggests that it is not just the absolute number of news platforms

used, but the composition of news platforms that matters, especially including news platforms that media users trust (Nelson & Kim, 2021), when it comes to political outcomes of using different news repertoires. It would be interesting to see whether we see similar findings in countries where people rely on news intermediaries (e.g., search engines or third-party news aggregators) versus where people have different gateways to news (e.g., direct visits to individual news outlets or social media).

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