Real-time Internet news browsing: Information vs. experience-related gratifications and behaviors

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A R T I C L E   I N F O

A B S T R A C T

This study utilized lab observations with 49 subjects to observe what users encounter and how users behave in real-time Internet news browsing. We analyzed users' selection of news platform, exposure to different topics of news content, and usage of different presentation elements by coding the screen videos. In addition, survey data with the subjects allow us to explore the links between gratifications and Internet news browsing behaviors. Our analyses suggest that users exert their control through actively and selectively interacting with the news services at the platform, content and presentation level to fulfill their different gratifications. In specific, gratifications based on information utility and those based on usage experience show different relations with different kinds of news browsing behaviors. Both the theoretical and methodological contributions are discussed at the end of this paper.

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1. Introduction

The popularity of online news is often attributed to the high level of control users have to configure their news browsing experiences (Havick, 2000; Kleinberg, 2002). Survey evidence shows that the ability to search and select the news content users desire makes the Internet an attractive option for many (Pew Research Center, 2010; Tewksbury, 2005). In addition to studying how different technological features of the Internet influence news browsing behaviors, there is much work needed to be done in order to understand how Internet users strategically use the technological features in concert with user intention and cognition.

The uses and gratifications (U&G) approach is arguably the dominant paradigm of explaining media usages through emphasizing the psychological motives of media users (Williams, Phillips, & Lum, 1985). The basic proposition is that gratifications sought from media could predict media usage. As Ruggiero argued, "(u)ses and gratifications have always provided a cutting-edge theoretical approach in the initial stages of each new mass communications medium: newspapers, radio and television, and now the Internet" (Ruggiero, 2000, p. 3). The theoretical relevance of the U&G approach is particularly strong in the age of World Wide Web. Compared with traditional media such as newspapers and TV, the Internet is intentionally consumed, as the users must make deliberate choices about which website to visit and what to view (Rayburn, 1996; Zhang & Zhang, 2012). Researchers have applied U&G

to studying Internet news browsing. For instance, Lin, Michael, and Rasha (2005) found four dimensions of gratifications for both online and offline news media: entertainment, information scanning, interpersonal communication and information skimming. LaRose (2006) suggested three forms of user motivations for Internet news browsing: information seeking/surveillance, socialization and entertainment.

One potential problem with applying the U&G approach to the Internet news environment is that the items used for measurement are developed from traditional news media gratifications, which often leads to repetitive results and overlooks the Internet's unique features. There could be unique gratifications that are not prevalent in traditional news consumption. Another issue with previous studies is that the gratification items are seldom applied to predicting Internet news browsing behaviors, which makes it unclear how important gratifications are in shaping usages. The power of the U&G approach is yet to be verified with actual behavior data. As Ruggiero (2000) pointed out, "(a)lthough scientists are likely to continue using traditional tools and typologies to answer questions about media use, we must also be prepared to expand our current theoretical models of uses and gratifications" (p. 3).

This study is an attempt to take on the challenge to systematically capture real-time news browsing behaviors as well as analyze the linkage between users' gratifications and their behaviors. Screen videos were utilized to record what users encounter and how users behave in real-time Internet news browsing during lab observations with 49 subjects. A systematic coding scheme was generated to categorize Internet news browsing behaviors in terms of platform selection, content exposure, and presentation

usage. Survey data with the subjects show us what gratifications users have when they consume news online. Gratifications based on information utility emerged as a separate dimension from gratifications based on usage experience. The last step of our analyses tried to link gratification measures with behavior measures. We found that different motivations show different relations with different kinds of news browsing behaviors. Both the theoretical and methodological contributions are discussed at the end of this paper.

2. Gratifications from Internet news browsing

Scholars have proposed various ways to categorize gratification dimensions, such as the contrast between active and passive/ritualized gratifications (Rubin, 1984), the distinction between process and content gratifications (Cutler & Danowski, 1980), and multiple dimensions derived from social cognitive theories (Larose, Mastro, & Eastin, 2001). When reviewing the literature, we found that information utility and usage experience emerge as two major concepts related to media gratifications, each containing multiple subdimensions. Such a distinction has been a recurring theme in previous scholarship. Schramm (1949) proposed that media behaviors are conducted for either immediate or delayed reward: Immediate reward derives from usage experience such as the pleasure of getting immersed in the storyline when reading; while delayed reward is contingent on information utility, which has value to one's life that is only manifested after the immediate usage experience (e.g., a weather report helps one to prepare for the storm). Later scholars such as Katz, Blumler, and Gurevitch (1973) noted that gratifications could be derived from both media content and usage of media itself. Cutler and Danowski (1980) also proposed that individuals use media either for the content carried by a particular medium, or for the experience of using that particular medium. Although this dichotomy is, in a sense, simplistic, it could provide a theoretical starting point for categorizing numerous gratification items that have been discovered along the years of media evolution. Following this rationale, this study proposes to theoretically separate media gratifications into gratification based on information utility, and gratifications derived from usage experience.

2.1. Gratifications from information utility

People consume news for various reasons, the most significant among which is information. Kay (1954, p. 3) proposed that the conscious (and sometimes unconscious) motive for news reading is "to obtain new information." McQuail, Blumler, and Brown (1972) explained how political news on television is able to satisfy audiences' various information needs such as reinforcement of existing decisions, general surveillance of the political environment, and anticipated utility in future interpersonal communication. In general, gratifications related to information utility highlight that audience use the media in order to search for information that is useful to them. The Internet provides various sources for information and thus fulfills multiple types of information needs. Many identified Internet news gratifications could be ascribed to information utility, such as information scanning, interpersonal communication, information skimming (Lin et al., 2005), information seeking/surveillance, and socialization (LaRose, 2006).

2.2. Gratifications from usage experience

The benefits from news consumption are not merely based on gaining information, but also embedded in the way news is consumed. The fact that Web surfing itself could become addictive

suggests some under-examined gratifications from the perspective of usage experience. Young (1998) suggested that Internet surfing, including news surfing, is among the various forms of media or physical activities that one can engage in for the sake of the experience itself. This is related to the leisure aspect of Internet usage, which is an end in itself. As Johnson put it, "when one reads and views websites-whether it be BBC news, or Facebook or finding out the latest results of a sports tournament-one is learning at the same time one is engaging in leisure" (Johnson, 2009, p. 6). Lynette and Jerome (1983) discussed six components of psychological experience of leisure activities (i.e., intrinsic satisfaction, perceived freedom, involvement, arousal, mastery, and spontaneity), arguing that the components are ubiquitous across various situations. With extensive hypermedia features, news browsing on the Internet can generate rich usage experience (Chen & Wells, 1999; Hoffman & Novak, 1996) that satisfy the six motivations mentioned above. For example, serendipity of news navigation would meet the need for spontaneity, whereas the Internet affordance to customize information environment fulfills one's desire for mastery.

We argue that pleasure from usage experience is not only a psychological outcome but also a motivation that drives users to configure their media environment. Mood management theory posits that media users select media, especially interactive media such as the Internet (Mastro, Eastin, & Tamborini, 2002), in order to obtain their optimal mood state. The process is conceptualized as follows: "people initially arrange their environments (including media environments) in a random fashion, with arrangements that succeed in achieving hedonic ends leaving memory traces and serving as reinforcements, thereby increasing the likelihood of their occurrence in the future" (Zillmann, 2003, p. 86). In other words, gratifications based on usage experience influence users' exposure to news through influencing the formation of ritualized browsing behaviors or habits.

Gratifications from information utility and usage experience are not necessarily mutually exclusive, but complement each other by focusing on different aspects of news media usage. In order to further understand the theoretical distinction between information utility and usage experience, our first and second research questions are thus to explore the sub-dimensions that are associated with the two types of gratifications users seek to fulfill when browsing Internet news.

RQ1: What are the dimensions of information-related gratifications for Internet news browsing?

RQ2: What are the dimensions of experience-related gratifications for Internet news browsing?

2.3. Gratifications and news browsing behaviors

The process of online news browsing follows multiple stages: It first starts with certain gratifications sought by the users (e.g., passing time), then continues to the formation of behavioral intention (e.g., intention to read news), then to the selection of media to carry out the intention (e.g., choose online news provided by BBC.com), to the selective attention paid to certain content (e.g., read sports news), and to the last stage of involvement with the content (e.g., leave a comment to the sports news article) (Papacharissi & Rubin, 2000). In this sense, different gratifications should be linked to different aspects of media usage behaviors. Early scholars argued that goal-oriented media users pay more attention to the information conveyed by the media; while passive users follow the flows carried by media format and are less affected by the information (Krugman, 1965; Schramm, 1949). Rubin and colleagues (Rubin, Perse, & Powell, 1985) found out that time-killing motives contribute to low selectivity when watching television news; while instrumental gratifications are linked to high

selectivity. Users with instrumental gratifications also tend to engage in fewer distracting behaviors and be more involved in processing and sharing news content. Levy and Windahl (1984) also found that certain gratifications (e.g., entertainment and interpersonal utility) are positively correlated with distracting behaviors. Zhang and Zhang (2012) supplied a set of findings showing that different gratifications relate to different types of computer multitasking behaviors.

The Internet may bring out a tighter correlation between news activities and user motivations, compared to traditional media. With the proliferation of Internet technology, users could translate more easily their need and interest into usage behaviors. A survey (Daniel, Terry, & Spurgeon, 2010) revealed that there is a direct connection between gratifications and news website choices. Stephenson (1988) segmented news audience into three types: mature newsreaders, pleasure readers, and non-pleasure readers. The classification indicates various gratification dimensions which could influence users' behaviors. For example, mature newsreaders are apt to wide-ranging in their interests, with a "mix" of community, national and international news. Given the evidences presented above, the current study aims to empirically examine the connections between gratifications and real-time Internet news browsing behaviors.

In this study, Internet news browsing is operationalized as three dimensions: platform selection, content exposure and presentation usage. A news platform functions as an information system that serves Internet users with news information. Following the user-centered approach in this study, content is defined as news information encountered by the users. Presentation element is about the format of news content in a news platform. Platform, content and presentation constitute three major dimensions of Internet news browsing. Internet news users are considered as information and leisure seekers who both actively and selectively customize the three dimensions to meet personal needs. Our final research question thus investigates the influence of different gratifications on Internet news browsing behaviors.

RQ3: What are the relations between Internet news gratifications and platform selection, content exposure and presentation usage?

3. Method

Critics argue that traditional U&G methodologies, particularly those dependent on self-reported typologies rather than observable audience behaviors, generate suspicious outcomes (Ruggiero, 2000). People usually have little direct introspective access to the high-order cognitive processes that mediate their behaviors (Nisbett & Wilson, 1977) and therefore, may report themselves based on "a priori, casual theories influenced by whatever stimuli happen to be salient" (Rosenstein & Grant, 1997, p. 4). The self-report method may not be measuring the individual's actual behavior as much as his or her awareness and interpretation of the behavior. The serendipitous exposure and elusive behaviors are largely missing in self-reports.

In order to address the criticism, the current study utilizes screen videos, a type of real-time data, to extract direct and detailed observation about real-time news browsing. The videos capture not only platforms chosen (e.g., BBC.com), content selected (e.g., a news article on Sports), but also the various format elements encountered by users on the webpage (e.g., a news clip). The U&G approach is applied to explaining the linkage between gratifications and real-time Internet news browsing behaviors.

51 participants were recruited from a communication module in an Asian university to complete a two-section research and 49 of them finished the study. The first section was to answer a survey questionnaire and the second section was a laboratory observation of Internet news browsing, in which participants were asked to freely browse Internet news as they normally do in everyday life. This observation session lasted for 20–40 min. Participants' Internet usage activities shown on the computer screen were recorded using a software "icyscreen" pre-installed in the computers that they were using. Based on the screen videos, their platform selection, content exposure, and presentation usage were coded for statistical analyses.

3.1. Survey measurements

The pre-browsing questionnaire collected data about demographics, general Internet usage, Internet news usage and Internet news gratifications. With regards to general Internet usage, participants were asked to estimate: (1) the number of days in which they use the Internet during a typical week; and (2) the amount of hours they spend on the Internet during a typical day. Internet news usage is measured in three items: frequency (how many days in a typical week they get news from the Internet), duration (how many hours they spend on Internet news browsing in a typical news-reading day), and scope (the number of news websites one accesses on a regular basis).

Internet news gratifications were measured with two scales. A 17-item Likert scale measures gratifications from information utility (see Table 1) and a 23-item Likert scale measures gratifications from usage experience (see Table 2). The participants rated these items with numbers ranging from 1 to 7, while 1 means "extremely disagree", and 7 means "extremely agree." For gratifications from information utility, the question goes as follows: "To what degree would information gained from Internet news help you in the following situations?" Based on what Wilson and Walsh (2006) identified as basic information needs, including need for new information, need for elucidating information, need for confirming

Table 1
Factor analysis of gratifications from information utility.[a]

	Surveillance	Status	Opinion	Social utility
Make sense of the happenings	.873			
Learn about society	.847			
Keep up with what may influence my life	.743			
See what might happen	.730			
Find about daily life	.727			
Get immediate knowledge of big news events	.675			
Share with others what I have read in online news		.781		
Find something to talk about		.773		
Provide help to others		.759		
Get information that improves my future prospective in life		.728		
Find facts supporting my views			.843	
Know about something incongruent with my opinion			.820	
Obtain information that I can't find elsewhere			.764	
Find opinions consistent with my points of view			.712	
Help me find topics to tell others				.808
Discuss a range of topics with others				.753
Otherwise I can't keep up in conversations with people				.749
Variances explained	23.7%	18.7%	17.8%	15.0%

[a] Rotation Method: Varimax with Kaiser Normalization. Loads higher than .50 are reported.

Table 2
Factor analysis of gratifications from usage experience[a]

	Involvement	Freedom	Spontaneity	Mastery	Intrinsic enjoyment
I could get so involved that I would forget everything else	.895				
It is like "getting away from it all."	.893				
It helps me forget about the troubles of the day	.876				
It helps me forget my problems	.873				
It makes me feel like I am in another world	.856				
It totally absorbs me	.685				
It makes me feel less lonely	.669				
I do not feel forced		.915			
It is completely voluntary		.907			
I do it not because I have to but because I want to		.883			
I do not feel obligated		.708			
It satisfies my sense of curiosity		.653			
Others would not have to talk me into reading news online		.586			
It is a "spur-of-the-moment" thing			.945		
It happens "out of the blue."			.928		
I would not know the moment before it was going to happen			.847		
It is a spontaneous occurrence			.529		
I feel like a real champion				.952	
I feel like conquering the world				.918	
I feel I have been thoroughly tested				.840	
I get a sense of adventure or risk				.525	
Pure enjoyment is the only thing in it for me					.880
I enjoy it for its own sake, not for what it will get me					.561
Variances explained	23.3%	18.7%	13.5%	13.1%	6.0%

[a] Rotation Method: Varimax with Kaiser Normalization. Loads higher than .50 are reported.

information, and need for social interaction, 17 items were generated to tap into this concept.

Gratifications from usage experience are more of an immediate positive psychological state. Accordingly, the question is phrased as follows: "To what degree do you agree with the following statements about your feelings when you browse news on the Internet?" The gratification list is modified from Lynett and Jerome's scale of psychological experience of leisure activities (Lynette & Jerome, 1983). The original instrument included 6 components: intrinsic satisfaction, perceived freedom, involvement, arousal, mastery, and spontaneity. In addition, items from measurements of hedonic experiences or pleasure of media usage (Chen & Wells, 1999; Hoffman & Novak, 1996) were included to expand the scale.

3.2. Screen videos

Real-time Internet news browsing was measured by coding the participants' screen activities. One-to-one relationship was established between one video clip and one participant. Each video lasts from 20 to 40 min. If the participant browsed for more than 40 min, the first 40 min of the screen video were selected for analysis.

3.2.1. Page view

The basic coding unit is the viewing of a separate webpage (i.e., page view). Huang, Shen, Chiang, and Lin (2007) considered every webpage downloaded as a new piece of information gathered from the Web and therefore, a natural unit of measurement for a user-centric analysis of online information behavior. A page view starts from the moment that a web page appears in the Internet Explorer window, ends when the web page is closed, switched off or transferred to another web page. The coder watched the screen videos and recorded the starting and ending time for each page view by pressing the start button when seeing a page-view unit starts and pressing the stop button when it ends. Codes were assigned to each page view based on the screen activities during the period of that page view. The content analysis software "Nvivo 8.0" was employed to help to divide and assign codes to each page view.

At first, the coder differentiated news page views from non-news page views. A news page view features information as the major attraction. Non-news page views were not included for analysis. For news page views, platform, content, and presentation shown in the browser were further coded. If there were more than one Internet Explorer window on the screen, the coder would code the window that was placed at the natural focus of eyesight, i.e. at the front or occupying the biggest area of screen.

3.2.2. Platform code

Platform refers to the type of website shown in one particular page view. Each page view was assigned with one code representing one of the following website categories: news aggregating websites (e.g. Google news, Bing news), news booking/tagging websites (e.g., delicious.com, digg.com), online communities (e.g. news groups, bulletin boards), search engines (e.g., google.com), blogs, professional news portals (e.g. CNN, Channel News Asia), websites specializing in one type of news content (e.g. sports websites, entertainment websites), general information websites which may include news information (e.g. Wikipedia), and other websites.

3.2.3. Content code

A content code was assigned to a unit only when the content was related to news and the news content was identifiable. An index page was not awarded a content code, for instance. A content code represented one of the following news content types: world news (politics, economy and significant news events in the world), domestic news (politics, economy and significant news events in the country), local and community news (significant news events within the local communities), sports news, science and technology news, lifestyle news (e.g. fashion and health), entertainment news (e.g. movies, popular music, and celebrities), hobbies (e.g. cars and computer games), and general social news (e.g., petty crimes and soft news).

3.2.4. Presentation code

Presentation refers to the format in which the content is transmitted to the users. Codes were assigned to a page view if the

following elements appeared in that page view: news text, multimedia such as pictures and videos, indicative elements such as index and leads, discussions and comments, formatted data or tables, and other identifiable elements. More than one code were assigned when multiple types of elements appeared in this page view. If none of the elements appeared, no code was assigned.

All the above codes are dichotomous, indicating whether or not one platform, content, or presentation type appeared in that page view. Using this coding scheme, we transformed observed Internet news browsing behaviors into quantitative data. We then made an analysis based on the linkages between survey data and observation data. Each participant's demographic variables, Internet usage pattern, Internet news usage, and Internet news gratifications were input into logistic regressions as independent variables and behavior codes based on one's page views were input as dependent variables. Data were entered into SPSS 16 for analysis.

4. Results

The participants were college students in their early twenties (Mean = 21.1, SD = 1.05). Most of the participants were female (N = 35). They spent on average 6.76 days (SD = 0.66) online during a typical week, 5.63 h (SD = 2.29) on a typical day. 73.7% (N = 42) of the participants used the Internet every day. On average, participants got news from the Internet for 4.98 days of a week (SD = 1.92), spent 4.61 h on news browsing (SD = 4.11) in a typical news-reading day, and visited 5.24 different websites for news on a regular basis (SD = 3.69).

4.1. Gratifications from information utility

As the scale was not previously tested, principal component analysis was utilized to draw meaningful factors from these items. The resultant solution consists of four factors. Table 1 shows the factor loadings of gratifications from information utility. Surveillance (Mean = 5.42, SD = 1.04, Cronbach's Alpha = 0.894) emerges as the first factor, standing for the basic urge to know about surroundings that may influence one's life. This factor explains 23.7% of the variances. Status (Mean = 5.14, SD = 1.20, Cronbach's Alpha = 0.868) reflects more purposeful and active information collection in order to improve one's social status within his/her social network or improve his/her future life, which accounts for 18.7% of the variances. Opinion development (Mean = 5.06. SD = 1.36, Cronbach's Alpha = 0.886) refers to the gathering of information to support or compare with one's existing opinions or attitudes. This factor involves the need to elucidate new knowledge with original conception, thus the behavior related to this gratification is more selective and entails more intense cognitive processing compared to the two factors above. This factor explains 17.8% of the variances. Social utility (Mean = 4.65, SD = 1.39, Cronbach's Alpha = 0.838) represents a desire of information seeking in order to keep up with the conversation with others. Compared with the status gratification, which indicates an active attitude to improve one's status, social utility is a more passive need to simply stay connected with others and to keep oriented to social environment. This factor explains 15.0% of the variances. Together, the four factors account for 75% of the total variances.

4.2. Gratifications from usage experience

A principal axis factor analysis with varimax rotation was used to verify the previously tested factor structure of gratification from usage experience. After deleting cross-loading items, five factors were generated from the remaining 23 items. This factor loading partly corresponds to the six-factor structure of the original scale

(Lynette and Jerome, 1983). Table 2 presents the factor loadings of gratifications from usage experience.

The first factor, involvement (Mean = 3.87, SD = 1.68, Cronbach's Alpha = 0.951), relates to the feeling of entering a space distinct from daily life (Foote, 1966; Gordon, Gaitz, & Scott, 1976; Piaget, 1962; Riesman, 1963), pursuing a fantasy escape from reality (Berlyne, 1969; Stephenson, 1988), or an interlude from the ordinary (Dumazedier, 1974). It accounts for 23.3% of the total variances. The second factor is perceived freedom (Mean = 5.39, SD = 1.20, Cronbach's Alpha = 0.914). It is linked to the perception of voluntarily performing an activity, without coercion or obligation (Dumazedier, 1974; Ennis, 1968; Stephenson, 1988). This factor explains 18.7% of the total variances. The third factor is spontaneity (Mean = 4.48, SD = 1.35, Cronbach's Alpha = 0.892), which is associated with the feeling of things happening or being done in a natural way, without any planning or prediction (Lynette & Jerome, 1983). It explains 13.5% of the variances. Mastery is the fourth factor (Mean = 2.84, SD = 1.33, Cronbach's Alpha = 0.908), accounting for 13.1% of the variances. It's derived from the experience that one has the opportunity to test oneself or conquer the environment in some way (Murphy, Williams, Niepoth, & Brown, 1973). Intrinsic enjoyment (Mean = 4.69, SD = 1.30, Cronbach's Alpha = 0.773) emerges as the last factor, accounting for 6.0% of the total variances. This factor describes the hedonic feeling of performing an activity for its own sake. Together, the five factors account for 74% of the total variances.

4.3. Predicting Internet news browsing behaviors

In the following parts, each page view was taken as a case, consisting of platform, content, and presentation codes. The details of the frequency and percentage of each sub-category under the three codes can be found in Table 3. Sub-categories were ranked in the order of popularity. Our following analyses were based on choosing the three most popular sub-categories for each code (i.e., platform: professional websites, specialized websites, and general information websites; content: entertainment news, general social news,

Table 3
Descriptions of screen video codes (unit = page view).

		Frequency	Percentage
Platform	Professional websites	914	41
	Specialized websites	531	24
	General information websites	360	16
	Blogs	154	7
	Search engines	147	7
	Online communities	101	5
	Social news booking/tagging sites	12	1
	Others	23	1
	Total	2242	
Content	Entertainment	291	19
	General society	286	18
	Lifestyle	234	15
	Hobbies	225	14
	World news	125	8
	Sports	124	8
	Science and technology	102	7
	Local and community	98	6
	Domestic news	67	4
	Total	1552	
Presentation	Multimedia[a]	912	35
	Indicative[b]	821	31
	Text-only	804	30
	Discussion	71	3
	Formatted data or tables	31	1
	Total	2639	

[a] A combination of multiple media format such as pictures and videos.
[b] A combination of news index and news lead.

and lifestyle news; presentation: texts, indicative elements, and multimedia elements) to analyze.

We conducted three sets of hierarchical logistic regression models respectively for platform, content and presentation. The predictors were entered in three blocks. The first block included control variables such as demographic variables, Internet usage patterns, as well as Internet news usage. Other control variables were included considering the potential threats coming along with the data analysis method. Some participants may generate more page views in their sessions than other participants, and thus skew the overall results. Thus, total number of page views that one participant generated was input as a control variable. The order of a page view appearing in a browsing session may also affect the probability of the occurrence of certain platforms, contents, and presentation elements. Rules of human cognition and their interaction with information systems may govern the evolution of user activities over time during a news browsing session. For example, it was observed that the subjects tended to arrange news browsing driven by strong personal interest at the earlier stage of the session, and browsing of more general news content at the later stage. Hence, page view order was also included as a control variable.

The second block included Internet news gratifications related to information utility and the third block included gratifications based on usage experience. The results of hierarchical logistic regressions are reported in the following sections. Chi-Squares as well as Cox & Snell R-Squares increased with the adding of each block of variables in all the hierarchical logistic regressions. Therefore, for each dependent variable only the final model was presented.

4.3.1. Platform usage

Professional websites, specialized websites, and general information websites represent the three most popular categories of platforms found in real-time Internet news browsing sessions.

The regression results for each of the three platform types were reported in Table 4. The selection of professional platform is positively predicted by information gratification of status but negatively predicted by social utility. This may imply that the subjects treat professional journalism a source that can help with enhancing their social status but does little to keep up with the conversation with others, who are mostly college students in this study. When it comes to experience gratifications, both mastery and intrinsic enjoyment are two significant negative predictors. When using professional news websites, readers have to rely on whatever the editors provide. Those who want to exert control over their news experiences would find professional platform less likely to meet their needs.

The major attraction of a specialized website is its richness of information in a specific field. It is shown that the selection of specialized websites is negatively predicted by opinion development, which suggests that subjects are less likely to use specialized websites for forming or comparing opinions. Intrinsic enjoyment is another negative predictor of selection of specialized websites, which implies that such websites are not likely to fulfill the need of using the website for its own sake.

Selecting general information websites is positively predicted by opinion but negatively by social utility. Those who like to develop or compare opinions regarding issues are more likely to use general information websites for references whereas such information does not help much with keeping up with their social peers, who are mostly college students. Among the experience gratifications, mastery is the only positive predictor, as the process of checking out what is going on in the society on general information websites may bring a feeling of accomplishment.

4.3.2. Content exposure

Based on the popularity ranking, entertainment news, general social news, and lifestyle news were chosen for analyses. The

Table 4
Logistic regressions to predict platform selection.

	Professional		Specialized		General information	
	B	S.E.	B	S.E.	B	S.E.
Block 1						
Control variables						
Age	−.222[*]	.094	−.165	.130	1.291[***]	.210
Gender	.383	.209	−1.700[***]	.265	4.365[***]	.705
Internet usage hours per day	−.042	.031	.315[***]	.040	−.345[***]	.097
Internet usage days per week	−.884[***]	.132	.920[***]	.202	1.361[***]	.348
Number of news sites regularly visited	−.063[**]	.024	−.063	.039	−.002	.042
Internet news usage hours per day	−.025	.018	.036	.026	.159[***]	.037
Internet news usage days per week	.143[**]	.045	−.234[***]	.047	−.475[***]	.117
Total number of page views	−.018[***]	.003	−.004	.003	.038[***]	.006
Page view order	−.964[***]	.181	.140	.219	.449	.276
Block 2						
Gratifications – information utility						
Surveillance	.023	.094	.006	.103	.166	.290
Status	.486[***]	.067	−.047	.084	.325	.183
Opinion	.118	.074	−.382[***]	.090	.868[***]	.203
Social utility	−.162[**]	.058	−.067	.079	−.347[*]	.138
Block 3						
Gratifications – usage experience						
Involvement	.032	.052	.056	.066	−.094	.111
Freedom	−.035	.072	−.041	.102	−.133	.139
Spontaneity	−.064	.065	−.002	.079	.045	.167
Mastery	−.275[***]	.054	.077	.067	.245[*]	.118
Intrinsic	−.240[***]	.053	−.168[**]	.065	−.081	.113
Chi-Square	X^2 = 326.96, df = 18, p < .001		X^2 = 374.70, df = 18, p < .001		X^2 = 607.77, df = 18, p < .001	
Cox & Snell R Square	.155		.175		.268	

[*] p < .05
[**] p < .01
[***] p < .001

L. Zhang, W. Zhang / Computers in Human Behavior 29 (2013) 2712–2721

Table 5
Logistic regressions to predict content exposure.

	Entertainment news		General social news		Lifestyle news	
	B	S.E.	B	S.E.	B	S.E.
Block 1						
Control variables						
Age	−.343	.184	−.651***	.171	.632**	.196
Gender	1.843***	.397	−.046	.363	1.676***	.460
Internet usage hours per day	.210***	.054	−.005	.051	−.308***	.072
Internet usage days per week	1.162***	.280	.408	.256	.946**	.281
Number of news sites regularly visited	−.014	.045	−.098*	.040	−.006	.043
Internet news usage hours per day	−.061*	.029	−.070*	.033	.118***	.027
Internet news usage days per week	−.088	.062	.100	.071	−.501***	.083
Total number of page views	−.011**	.004	−.020***	.005	.002	.005
Page view order	−.216	.267	1.135***	.280	.873**	.319
Block 2						
Gratifications – information utility						
Surveillance	−.564***	.135	.851***	.180	.766***	.188
Status	−.530***	.100	.392***	.111	−.649***	.130
Opinion	.435***	.109	−.004	.114	.203	.138
Social utility	−.188	.099	−.280**	.085	−.390**	.121
Block 3						
Gratifications – usage experience						
Involvement	−.295***	.087	.457***	.094	−.360***	.092
Freedom	.485***	.136	.238*	.116	.262	.142
Spontaneity	.390**	.123	−.345**	.121	.191	.122
Mastery	.131	.092	−.645***	.108	.728***	.128
Intrinsic	−.001	.094	−.483***	.107	1.107***	.124
Chi-Square	X^2 = 240.65, df = 18, p < .001		X^2 = 189.79, df = 18, p < .001		X^2 = 435.14, df = 18, p < .001	
Cox & Snell R Square	.116		.093		.201	

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

results of regressions are reported in Table 5. Entertainment news in this study refers to the news related to entertainment, cultural products and cultural industry (e.g., movies, TV, music stars and products). Entertainment news browsing was found to be negatively motivated by surveillance and status but positively motivated by opinion. The subjects may rely on such news to develop or compare points of view regarding entertainment issues but do not see the relevance of such content to their monitoring of the environment and improvement of their own status. In contrast, entertainment news exposure is positively predicted by freedom and spontaneity but negatively predicted by involvement. Users are not trying to escape the reality when browsing entertainment news. Instead, they enjoy the sense of freedom and randomness entertainment news brings.

General social news refers to news content related to general society, such as petty crimes and soft news topics. Both surveillance and status are positive predictors of general social news exposure. It is consistent with the informative nature of this type of news. Browsing general social news is negatively predicted by social utility, probably because such news is hard to be shared with others who do not have common interest or knowledge background. Three experience gratifications, spontaneity, mastery, and intrinsic enjoyment, are all negative predictors. However, general social news is consumed to satisfy the needs of involvement and freedom.

Lifestyle news refers to news content of instrumental value to material life, such as fashion, food and health news. Lifestyle news exposure is positively predicted by opinion but negatively predicted by status and social utility. It may suggest that users of lifestyle news do not consider such news as helpful in enhancing their status or preparing them for social conversation. However, it does

help them to monitor what is going on in their immediate environment. Exposure to lifestyle news is positively predicted by mastery and intrinsic enjoyment. Surfing lifestyle content gives a sense of control and brings a feeling of intrinsic pleasure. However, it is negatively related to involvement, suggesting that it does not take people away from the reality.

4.3.3. Presentation elements

The presentation elements with highest popularity (i.e. multimedia elements, indicative elements, and texts) were chosen for analyses. The results of regressions are reported in Table 6. Information gratifications did not emerge to have any significant effect on choosing multimedia elements. People who seek involvement from news browsing are more likely to encounter pictures and videos in their navigational path while users who need a sense of mastery would circumvent multimedia elements. The need to find conversation topics discourages users from using indicative elements that may limit their chance of being exposed to topics that can be shared socially. In contrast, exposure to indicative elements is positively related to the gratification of freedom and mastery because again, such elements allow users to choose what they want to read. Choosing text-only news is negatively predicted by opinion and social utility, probably because those who are consciously looking for opinions and conversation topics would not spend too much time reading the news in-depth. Regarding experience gratifications, involvement is a positive predictor and spontaneity is a negative predictor of text reading. It is known that written text has this ability to immerse readers into the text flow and text reading is about maintaining attention on the text. Thus, spontaneity hardly gets along with this concentrated process.

Table 6
Logistic regressions to predict presentation usage.

	Multimedia		Indicative		Text-only	
	B	S.E.	B	S.E.	B	S.E.
Block 1						
Control variables						
Age	−.282[**]	.093	.033	.093	−.129[***]	.096
Gender	−.268	.198	.283	.202	−.888	.201
Internet usage hours per day	.098[**]	.031	.099[**]	.031	.002	.031
Internet usage days per week	−.053	.112	.181	.114	−.023	.115
Number of news sites regularly visited	.007	.022	−.049[*]	.023	−.009	.022
Internet news usage hours per day	−.002	.017	.008	.018	.010	.018
Internet news usage days per week	−.004	.042	−.158[**]	.043	−.054	.043
Total number of page views	−.014[***]	.002	−.004	.002	−.005[*]	.002
Page view order	−.404[**]	.174	−.820[***]	.178	−.033	.177
Block 2						
Gratifications – information utility						
Surveillance	−.076	.088	.002	.091	.176	.090
Status	−.088	.066	−.087	.065	.032	.066
Opinion	.143	.073	.126	.071	−.268[***]	.072
Social utility	−.003	.057	−.262[***]	.057	−.112[*]	.056
Block 3						
Gratifications – usage experience						
Involvement	.270[***]	.052	−.022	.051	.120[*]	.053
Freedom	−.072	.070	.197[**]	.072	.088	.072
Spontaneity	.030	.058	−.111	.061	.020	.059
Mastery	−.242[***]	.056	.234[***]	.051	−.234[***]	.054
Intrinsic	−.011	.050	.023	.052	−.078	.051
Chi-Square	X^2 = 190.47, df = 18, $p < .001$		X^2 = 155.38, df = 18, $p < .001$		X^2 = 170.53, df = 18, $p < .001$	
Cox & Snell R Square	.094		.078		.085	

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

5. Conclusions and discussions

Our findings show that the dimensions of information-related gratifications for Internet news browsing include surveillance, status, opinion and social utility (RQ1) and the dimensions of experience-related gratifications for Internet news browsing include involvement, freedom, spontaneity, mastery and intrinsic enjoyment (RQ2). This study also demonstrates the linkage between different dimensions of gratifications and different types of actual behaviors in real-time Internet news browsing (RQ3).

A variety of studies have applied U&G on Internet news browsing (e.g., LaRose, 2006; Lin et al., 2005). One potential shortcoming with such studies is that the items used for measurement are developed from traditional news media gratifications, which leads to repetitive results and misses out the unique features of the Internet. Our study shows that gratifications generated from traditional news usage tend to emphasize the content of news and its information utilities. In other words, users are motivated to use media for what the channels convey rather than the format or presentation of the channel itself. Considering the richness of online channels, the current study proposes that gratifications related to Internet news browsing have to include both information utility and usage experience. Everyday Internet usage, a big portion of which being news-related, should be seen as a practice of both information seeking and leisure seeking, the latter of which focuses on the gratifications from usage experience (Johnson, 2009, p. 9). Our research findings first suggest that the two categories of news-related gratifications, namely, information utility and usage experience, are distinct sets of concepts that include multiple dimensions. The two categories complement each other to explain different aspects of Internet news browsing behaviors. This categorization thus contributes to building a comprehensive measure of gratifications generated from Internet news browsing.

The second major contribution of this study is to empirically show that Internet news browsing behaviors are more than just being exposed to contents. Compared to treating news browsing as a single action, it is better to think about news browsing as a continuous process. This process starts from selecting a platform (e.g., websites) on computers and continues to choose specific content within the platform. Online news content is presented in multiple formats and a selection of presentation elements becomes the third step of news browsing. Our systematic coding of Internet news browsing not only suggests that such a process is common among users but also calls for more research on the two stages of news browsing that are often neglected by prior research, which are platform selection and presentation usage. These two stages are particularly salient in the online environment as print media often do not facilitate frequent platform switch whereas TVs limit the selection of presentation elements (i.e., video and audio only). Our research findings show that these behaviors are not only distinct actions but also driven by distinct motivations.

Empirically showing the linkage between gratifications and news browsing behaviors is the third major contribution this paper makes. The findings confirm the theoretical significance of the two-category approach to conceptualize gratifications as well as the multi-stage approach to conceptualize Internet news browsing behaviors. For example, mastery, or the feeling of control, significantly predicted seven out of nine dependent variables in different directions: Selection of general information websites, lifestyle news exposure, and indicative elements usage are positively driven by the need for mastery whereas selection of professional websites, general social news exposure, multimedia elements usage and text reading are negatively driven by this need. Another example is involvement, the sense of escaping the reality. It is found to positively predict general social news exposure, multimedia elements usage and text reading whereas negatively predict

entertainment news exposure and lifestyle news exposure. Although both gratification types and browsing behaviors are many, there are patterns we can summarize from research like ours to provide guidance to Internet news producers in order to understand which components of their news products appeal to which types of user gratifications.

Our last contribution is methodological. The fact that prior U&G research relied heavily on self-reported behaviors has been one of its critical weaknesses since the early days (Rosenstein & Grant, 1997; Ruggiero, 2000; Severin & Tankard, 1997). Despite various attempts to generate a more rigorous method, this flaw continues to exist. The current study responds to this weakness by taking advantage of the computer technologies (i.e., screen videos) to code real-time behaviors rather than relying on traditional self-reported data. A systematic coding scheme has been established to ensure the accuracy and consistency of transforming observed Internet news browsing behaviors to analyzable data. Such a coding scheme of platform selection, content exposure, and presentation usage can be used in any studies that are interested in Internet news browsing. It could even be modified and applied in researching other Internet behaviors such as social networking.

6. Limitations

One limitation of this study is the scope by which we define Internet news browsing. We identify platform selection, content exposure and presentation usage as major components of Internet news browsing behaviors. However, we are aware that such categorization is not comprehensive. For instance, it might be too simplified to capture the unique features of news platforms such as social-tagging systems and social network sites, which involve many interactive actions such as social games. How to integrate these unique technological features into our coding system is going to be the focus of our future research. We can expect that as new online platforms emerge, the measurement of Internet news browsing behaviors will have to expand accordingly.

The results should be viewed with cautions also because of the laboratory setting. Firstly, since the subjects were using a public computer, some elements of their customized browsing environment, such as bookmarks and history, were not present. One of the implications could be a biased representation of news platforms: They may tend to visit websites with memorable domains by keying in the URL or searching key words. Another bias could be the misrepresentation of the navigational path. As observed from the screen videos, without bookmarks and history records, participants often used search engines to locate a website that they have visited before and in some cases, they failed several times before finally starting browsing the website. In such situations, some of the measurements may not perfectly reflect the natural behavioral patterns. The observation data were collected from one-shot news browsing sessions. Some user behaviors, especially those are less frequent or associated with certain times and locations, are less likely to be captured. For instance, in reality, users can communicate with others to determine which platforms they want to choose but such behaviors are highly limited in a lab environment (see Zhang & Zhang, 2012, for the influence of situational factors on media behaviors). Future studies, if permitted by ethical reviews, should install automatic tracking software on subjects' personal computers and capture their browsing activities at multiple time points in natural settings.

Another weakness of this study is with regard to the subjects, who were all college students. Their interests in news are related to their particularities as a demographic group, which could be seen in the high popularity of entertainment news for example. As relatively younger users, they are also more likely to try out innovative technologies, which could be seen in the high popularity of multimedia elements. Their potentially high level of media literacy may also affect the platform they choose (e.g., specialized websites) and the presentation elements they attend to (e.g., indicative elements). Moreover, studies suggest that information searching behaviors of young people could be different from other age groups (e.g., Chin & Fu, 2010). Future studies should definitely testify our concepts, methods, measures, and procedures with other demographic groups.

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