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Accessing the News in an Age of Mobile Media: Tracing Displacing and Complementary Effects of Mobile News on Newspapers and Online News

Abstract

Legacy news media have invested substantially in developing digital and mobile news provisioning, alongside the widespread diffusion of information and communication technologies. Amid these developments, many people have shifted the ways they access the news in everyday life, with mobile devices gaining much significance. This has shifted the roles traditionally played by newspapers, television stations, radio broadcasters and news sites, ultimately relating to their democratic functions and the diminishing effect of their business models. This article will describe and explain displacing vis-à-vis complementary effects among age cohorts. It shows how the recent uptake of mobile devices has influenced news consumption via newspapers and news sites. It investigates three research questions, each focusing age cohorts in relation to single-media use, cross-media use and non-use. The article presents a statistical analysis of datasets nationally representative to Sweden and the specific case of evening tabloids. The data used originate from scientific omnibus survey projects conducted annually from 1986 to 2012 at the University of Gothenburg. The findings show that the public generally engage in single-media rather than cross-media news consumption, whereas age cohorts have developed divergent forms of single-media use: (1) the 1930s and 1940s age cohort are primarily single-media users in print, (2) the 1950s, 1960s and 1970s age cohorts are computer-oriented single-media users; and (3) the 1980s and 1990s age cohorts are mainly single-media users via mobile devices, but also cross-media users of mobile devices combined with a computer. As of 2012, the uptake of mobile news and cross-media news consumption reached new records, whereas the single-media use of printed newspapers reached a new low. The integrated theoretical framework proves useful for comprehending such transforming news consumption among age cohorts, and reveals the significance for legacy news media to explore and exploit the opportunities arising from mobile devices and tablets.

Introduction

Amid the widespread diffusion of digital and mobile information and communication technologies (ICTs), especially smartphones and tablets, the mediascape is changing in numerous ways. Mobile *phones* have since long been adopted and domesticated for mobile communication in everyday life, and have become a taken-for-granted part of everyday life (Ling, 2012). Technological developments and convergence, alongside the rise of mobile ecosystems totaling approximately one billion mobile applications, have paved the way for many mobile media uses. Mobile devices provide ubiquitous connectedness, enabling citizens to access the news literally whenever and wherever. Mobile devices are timely and prompt (Koivumaki et al., 2008), and pervasive. Thus, citizens easily develop and maintain habits with these (Oulasvirta, Rattenbury, Ma, & Raita, 2011). Moreover, mobile devices have opened new spaces for journalism (Westlund, 2008). They create opportunities for news usage, yet do not determine people to engage in such uses (Westlund, 2010). Recent empirical work reveals that mobile news is accessed much “whilst out and about generally”, but also in the home and workplace (Schrøder, 2014; van Damme et. al. 2015; c.f. Westlund et. al. 2011). These spaces of consumption are becoming increasingly important to study and theorise regarding mobile news (Peters, 2012) as well as the broader field of mobile media (Scolari, Aguado, & Feijoo, 2012).

The rise of mobile media has influenced the ways media and ICTs are used in everyday life, as well as how governments, authorities and commercial enterprises in numerous sectors function and operate. The political influence of mobile devices can be seen in the wider context of social change and democracy, such as the building of networks, the provision of

information, and the mobilisation of activists (Suárez, 2006; Hermanns, 2008; Bailard, 2009; Liu, 2013), as well as with regards to voting and making contributions to election campaigns (Martin, 2015). The changing role and democratic function of legacy news media thus makes a salient and important case of change inferred by the rise of mobile media. Ultimately, the future of the press, one of the legacy news media that has long served an important function for democracy and informed citizenry, has become increasingly uncertain. Newspapers' business models continue to generate significant revenues, especially via advertisements, although with diminishing effect. News media worldwide have, in recent years, turned to the provisioning of news via mobile devices. They are attempting to compensate for losses in readership and revenues from their traditional platforms, possibly broadening the base of citizens accessing news in everyday life (Nel & Westlund, 2012; Westlund, 2011). Both human- and technology-led approaches to repurposing and customising news for mobile devices are commonplace (Westlund, 2013), approaches relevant also when it comes to comprehending the agents involved in the broader context of news publishing (Lewis & Westlund, 2015). Locative news has formed an important area of innovation for news publishers (Nyre, Bjornestad, Tessem, & Oie, 2012; Goggin, Martin, & Dwyer, 2014). However, an American study shows that such attempts towards mobile news provisioning do not necessarily correspond to citizens' uses and needs (Schmitz Weiss, 2013).

Studies into whether the rise of “new” media will displace/replace or complement the “old” legacy media—such as early studies on the displacing effects of radio (Lazarsfeld, 1940) and television (Belson, 1961) on newspapers—certainly maintain their currency. This topic has been studied extensively regarding the inter-relationship between newspapers and online news via computers. A growing base of academic literature and industry reports point

to the uptake of mobile news in the United States (Mitchell & Rosenstiel, 2012; Rosenstiel et al., 2011, Sasseen et al., 2013; Karaliova et. al. 2015), various European countries (Fortunati, Deuze, & de Luca, 2014; Newman & Levy, 2013; Verbrugge et. al, 2013; Westlund, 2008; 2014) as well as in Asia (Chan, 2015; Kitamura, 2013; Li, 2013; Wei et. al. 2013). There are also studies of the cross-cultural differences in mobile media use between the United States and Germany (Humphreys et al., 2013) as well as between Sweden and Japan (Westlund, 2010). However, few empirical studies examine the role of mobile devices and tablets to describe and explain shifting patterns of news consumption, especially in relation to legacy news media such as newspapers and their printed and online news products.

Broadening the general perspective to mobile media and communication research, early attempts often focused on “who” (types of users), whereas more recent research has focused on “how” (types of uses) (Wirth et al., 2008). This article integrates these two perspectives by focusing on mobile news consumption in relation to other news platforms (“how”), among seven age cohorts (“who”).

This article will describe and explain displacing and complementary effects among seven distinct age cohorts. It focuses on how the recent uptake of mobile devices has influenced news consumption via newspapers and news sites. The findings derive from the statistical analysis of 27 consecutive and nationally representative postal-based survey projects in Sweden. The findings are placed into a framework integrating theoretical constructs on displacing and complementing effects. The article scrutinises how age cohorts have accessed news through printed newspapers (1986–2012), and also online news via computers (1998–2012), mobile devices (2010—2012) and tablets (2011–2012) in the Swedish evening tabloid industry. The article focuses on the platforms offered by Swedish

tabloid newspapers in order to identify direct patterns of complementarity and cannibalisation among one sort of news provider. Thus, it excludes television, radio, free dailies, etc.

A Theoretical Framework for the Study of Mobile in Transforming News Consumption

A variety of theoretical frameworks exist for the study of how innovations, such as mobile devices and tablets, are adopted, appropriated and diffused by different members of society (see Wirth et al. (2008) for a literature overview and conceptualisation). Some discuss that there are different levels of adoption, arguing that mobile news is part of a second stage of adoption, different from the rationale for the original adoption process (Li, 2013). This article does not focus on appropriation, but rather on how age cohorts use different platforms for news accessing, and consequently, if displacing or complementary effects exist.

Displacing and complementing effects form two strands of research termed the “medium-centric” and “user-centric approach”. For clarifying purposes, *single-media usage* (people using only one news platform) is distinguished from *cross-media news usage* (people using several complementary news platforms). A displacement effect occurs if a person or aggregated group of people were using newspapers and/or news sites, but have reduced or terminated their use of one of these. Conversely, complementary use may involve both maintaining or increasing the frequency and total time spent accessing the news. Regarding newspaper reading, there was a long period when only single-media use was possible (i.e. among evening tabloids’ platforms).

The medium-centric approach suggests that a zero-sum game occurs between old and new media; this typically results in the displacing effects of new media on old media. This

strand was originally developed in the 1970s through McCombs' (1972) principle of relative constancy (PRC) of communication expenditures. It was further theorised and investigated through the theory of the niche, suggesting that different media compete with each other depending on the types of content/functionalities they display and also the situations in time and space in which they are available (Dimmick & Rothenbuhler, 1984; Dimmick, 2003). In other words, the functional alternatives and gratifications of one medium may be displaced if another medium provides similar opportunities. Similarly, Newell et al. (2008) discuss *saturation* taking place when the appropriation of "new" media displaces the use of the media that was previously being used. Comprehensive accounts of shifting dynamics in media use from the annual surveys conducted by Nordicom show that Swedes increased their total media use by less than an hour from 1979 to 2012 (Carlsson & Facht, 2014). During these decades, a tremendous uptake of digital media has occurred, whereas legacy media have played a diminishing role in everyday life. Nevertheless, in this context, one must also acknowledge how media may have become naturalised and invisible (Deuze, 2012). This causes difficulties in responding to self-evaluations of media use. Moreover, there are nowadays enormous possibilities for cross-media use, such as with media multitasking and growing use of the mobile device as a second screen in front of the television and/or computer. Thus, different media serve people's varied purposes.

This leads to the user-centric approach, which presents the hypothesis that legacy and contemporary media can complement each other. This strand of research is critical towards assumptions that displacing effects will occur in the ecology of functional equivalence. It emphasises that research on news media consumption must account for people's needs and habits (Dutta-Bergman, 2004; Flavian & Gurrea, 2009), and that one news medium can serve

different needs to individuals (Van Cauwenberge et al., 2010). Following this, news consumption is marked by complexity and complementarity (Yuan, 2011). Furthermore, some people may have a relatively limited interest in news about significant events such as a presidential election or the Olympics. To these people, one news platform may easily displace another, with individuals deciding based on factors such as cost and availability. However, others have different needs, wishing to extract plentiful and diverse news about these events from a variety of news platforms. To these people, the newspaper, news site, tablet and the mobile device may all serve different and complementary purposes—before, during, and after the events.

As noted, contemporary studies have identified both displacing effects (Flavian & Gurrea, 2009; Nguyen & Western, 2006) and complementary effects (Gentzkow, 2007; Newell et al., 2008) of news sites on newspapers. Scientific literature does not provide a clear-cut answer to which of these holds most applicability. Conversely, mixed findings suggest both of these approaches are valid but contingent on age, sex, and education (Bergström & Wadbring, 2010; De Waal & Schoenbach, 2010; Westlund & Färdigh, 2011; Strömbäck et al., 2012). Recent studies also suggest that both displacing- and complementary effects are at play also with regards to mobile news consumption (Chan, 2015; Karaliova et al. 2015, Westlund & Färdigh, 2012). Following this, this study applies a theoretical framework open to hypotheses on both displacing and complementing effects, varying over time depending on age and the emergence of alternative news platforms.

Documenting the rise of mobile devices and tablets for accessing the news.

Having its offspring in the telephone and telecommunications, the mobile or cell phone has previously mainly functioned for interpersonal communication (via voice calls and messaging). Technological developments and convergence have led to a transition from being a mobile phone to becoming a multifaceted mobile device (Westlund, 2008). Nowadays, they provide users with a touchscreen interface, high-speed Internet connection, numerous customised applications and much more. Tablets provide similar affordances, making distinctions between the two challenging, although screen size and traditional voice calls mark distinguishable features.

Formative research on mobile Internet use indicates that accessing news scored high in usage ratio (Lee et al. 2005; Westlund, 2008). Mobile and tablet news consumption has certainly gained traction in recent years. Early research found mobile news to occupy the niche in the interstices of everyday life, at occasions such as commuting (Dimmick et al., 2011). However, it quickly also gained significance in various other contexts throughout the course of the entire day (Ericsson, 2011; Westlund et al., 2011). Many industry statistics reveal citizens turning to their mobile device for accessing the news immediately when they wake up, and also accessing mobile news at night.

The Pew Research Center has included measures for studying mobile and tablet news consumption among Americans in their annual survey projects from 2010 to 2012. Their 2010 questionnaire did not separate mobile devices from tablets, reporting that 47 percent of Americans used any of these for accessing “local news and information”; they also tended to complement these with accessing news from other news media (Rosenstiel et al., 2011). In 2012, by comparison, approximately one-third of those owning a smartphone and/or tablet used it for accessing the news on a daily basis. However, smartphone adoption surpasses that

of tablets (Sasseen et al., 2013). Another survey conducted in the United States in 2012 evidence the key role of the smartphone for mobile news consumption, compared to tablets and laptops (Karaliova et. al. 2012).

These findings can be compared to the situation in other countries, based on findings from cross-cultural research conducted in some European countries and the United States during 2012 and 2013 via Web-based surveys. The 2012 study found that mobile and tablet news consumption was relatively limited compared to online news via computers (Newman, 2012). However, in 2013, the relative contribution of mobile devices and tablets increased significantly (Newman & Levy, 2013). Similarly, repeated surveys (2008 and 2011) from Denmark (Schrøder & Kobbernagel, 2012), and annual survey data (2005–2012) from Sweden (Westlund, 2008; 2014) have witnessed a growing uptake of mobile news. The level of uptake has evidently varied significantly depending on age. Most empirical research suggests a wider adoption and use of mobile devices for news compared to tablets. This equation could potentially change if tablets enjoy a significantly higher level of diffusion. In this context, it is worth noting an American study conceptualising “newsfulness” as a measurement of the probability distinct media are used for accessing. The study found iPads were most “newsful” when accounting for weekly usage, whereas computers and iPhones scored highest when analysing daily use (Chyi & Chadha, 2012). Besides the platform values comprised by the concept of “newsfulness”, scholars have also discussed how users engage with mobile news in terms of worthwhileness (Schroeder & Larsen, 2010) and personal value (Costera Meijer, 2013).

The aforementioned research shows evolving news consumption patterns with mobile devices and tablets, offering evidence for how these are becoming naturalised into the

rhythms of what has been termed “media life” (Deuze, 2012) as well as “mobile news life” (Westlund & Bjur, 2013). To date, little is known about the effects mobile and tablet news consumption has had on newspaper reading and online news consumption via computers. Some recent cross-sectional studies have shown mobile news consumption gaining significance in a complementary fashion to legacy news media (Kitamura, 2013). Nonetheless, they also suggest the rise of mobile-only news consumption among specific generations (Westlund & Färdigh, 2012). Moreover, analyses of cross-media news consumption have revealed that some media repertoires involved pronounced use in the context of the home, whereas the use of mobile media (“media on mobile”) is positively related to use at work and when commuting (Taneja et al., 2012, cf. Dimmick et al., 2011). Other studies, although sampling only a selection of American college students, indicate that general routines of news consumption are positively related to mobile news consumption. The latter is considered an emerging complement to the former (see Chan-Olmsted et al., 2013 and Westlund & Bjur, 2013 for similar findings on Swedish teenagers). Recent empirical work from the Netherlands found that uses of the mobile Internet complements rather than replaces computers (Ongena et al., 2012). Meanwhile, American studies have revealed substantial differences between mobile vis-à-vis computer users of the Internet (Pearce & Rice, 2013), and users vis-à-vis non-users of mobile news (Martin, 2015). Also a study of the Flemish population reveal significant differences between distinct groups (van Damme et.al., 2015). Ultimately, limited research has studied and acknowledged this important shift in news consumption.

Study Rationale

This article aims to describe and explain the displacing and complementary effects in news accessing among seven age cohorts, for the specific case of Swedish evening tabloids. Extant literature suggests that age is a significant factor in scientific studies attempting to describe and explain media use. “Age” is often black boxed without any attempt to theorise and explicate its significance and meaning. Two important social dimensions of age should thus be acknowledged: (1) life course (Dimmick et al., 1979) and (2) generational belonging (Mannheim, 1952). Life course research suggests that individuals are geared towards *changing* their behaviours over life, resulting in both displacing and complementing effects. Research on generational belonging, conversely, posits people largely *maintain* their routinised behaviours formed at an early age. Previous empirical research has identified the interplay of both dimensions in explaining news consumption over time, using pre-defined generational classifications (Westlund & Weibull, 2013). Some have studied closely media usage patterns depending on age, in the form of cohorts from which the boundaries of specific media generations have been derived (Westlund & Färdigh, 2012). Ultimately, recent journal special issues refer to the daunting challenge of attempting to crystalise generations (with their diverse formative experiences and social developments), from each other and also in relation to life courses (Bolin & Skogerbø, 2013). Nevertheless, scholars have argued that formative events for generations include not only major historical events such as crises and wars, but also passionate relationships with media personalities and content (Bolin, 2014).

This article acknowledges the importance and complexity of age. However, it will not distinguish generational effects vis-à-vis life course effects. Rather than analysing on the basis of age at the time of responding to the survey (e.g. groupings such as 20–29 year olds),

this article will analyse age cohorts (here referring to the decade born). That is, the analysis traces news consumption patterns among the same age cohorts over time. It was considered appropriate to focus the analysis on age, since several studies have shown its significance for news consumption patterns (Bergström & Wadbring, 2010, De Waal & Schoenbach, 2010; Westlund & Färdigh, 2011). Three research questions are defined based on the synthesis of the discussion on age cohorts, the theoretical framework, and contemporary literature on mobile news. Each of the research questions focuses on news accessing in print, by computer, and via mobile and tablet:

RQ1: How has single- and cross-media news use evolved from 1986–2012?

RQ2: To what extent do distinct age cohorts engage in various forms of single-media use, cross-media use and non-use from 2010–2012?

RQ3: What is the explanatory effect of age cohort on single-media use, cross-media use and non-use during 2010—2012?

The article draws on data from 27 nationally representative scientific omnibus survey project datasets. The SOM Institute at the University of Gothenburg in Sweden has conducted data annually since 1986. Systematic probability sampling is employed, and with a net response rate varying from 60 to 70 percent over the years, the distribution of responses is representative of the Swedish population. The survey is distributed by postal mail to verify the respondents' identities, but can nowadays also be completed online.

This article analyses the range of platforms for which Swedish evening tabloids publish news: printed newspapers and online news via computers, tablet or mobile devices. Thus, this

study has excluded the analysis of how other news media providers publish news for these platforms, as well as other forms of news publishing. The focus on evening tabloids, however, offers a record for close scrutiny of how Swedes have maintained or changed their news consumption patterns, regarding a specific category of legacy news media providers. It is worth noting that newspapers have been generally active in mobile media innovation (Westlund, 2013), and is the main news provider people turn to with their mobile device (van Damme et. al. 2015). Respondents were asked to mark if they access news via these platforms on the basis of five different frequencies, ranging from “6–7 days” to week to “never”. Here, “3–5” and “6–7” days per week were merged into one variable: “frequent news usage”. This is the standard measure for evening tabloids in the Swedish newspaper industry. Moreover, the analysis of age cohorts breaks down the total population of study into smaller groups, and the number of respondents (n) is detailed in comments appearing in figures and tables. The discussion focuses on statistically significant figures.

By international comparison in terms of journalism content structure, Swedish evening tabloids forms a mix of evening tabloids and quality daily newspapers. *Aftonbladet* and *Expressen* comprise Swedish evening tabloids, two single-copy sold newspapers which have invested heavily in digital and mobile platforms. They have enjoyed an exceptional uptake among users of these platforms: *Aftonbladet* is the largest digital and mobile news provider in Scandinavia, and *Expressen* also places itself among the top. Notwithstanding their prevalent success in attracting frequent users of digital and mobile news, the difficulties in generating revenue from digital endeavours cast doubt on how evening tabloids will suffice from a long-term perspective.

Sweden has historically had a prominent newspaper market and public service system by international measures (Hallin & Mancini, 2004). It has one of the highest readership and newspaper circulations in the world, although Sweden has also suffered from continual decline over the last decade like other countries (*World Press Trends*, 2012). Sweden has become a digitally prolific nation with a relatively strong uptake of Internet and mobile media. By cross-cultural comparison, Sweden has both similarities and differences to countries such as Japan and the United States when it comes to news consumption. With regards to mobile news, earlier research showed that the Japanese perceive the usefulness of mobile news accessing more favourably than did Swedes, while at the same time being less willing to pay for such expenses (Westlund, 2010). Ultimately, this article offers detailed data on evolvments in the technologically advanced Western democracy of Sweden. Future empirical work is needed, preferably involving empirically-based cross-cultural comparisons, to fully assess and compare the findings revealed here in relation to developments taking place elsewhere.

Describing Transforming News Consumption among the Public

This section presents findings on news media consumption and how Swedes have gradually turned to evening tabloid news via available news platforms. It focuses on changes over time concerning the frequent usage of evening tabloids only in print, only by computer, only by mobile, and only by tablet (single-media use), as well as any combination of these (cross-media use). Firstly, it reports on the cumulative responses of frequent users of print, computer, mobile and tablet over time. Figure 1 reports a decline in the frequent use of printed evening tabloids, as well as the prevalent rise of online news with computers from the

late 1990s and onwards. Moreover, it also shows an uptake of mobile news accessing in recent years, whereas tablet news usage has revealed a more modest diffusion curve.

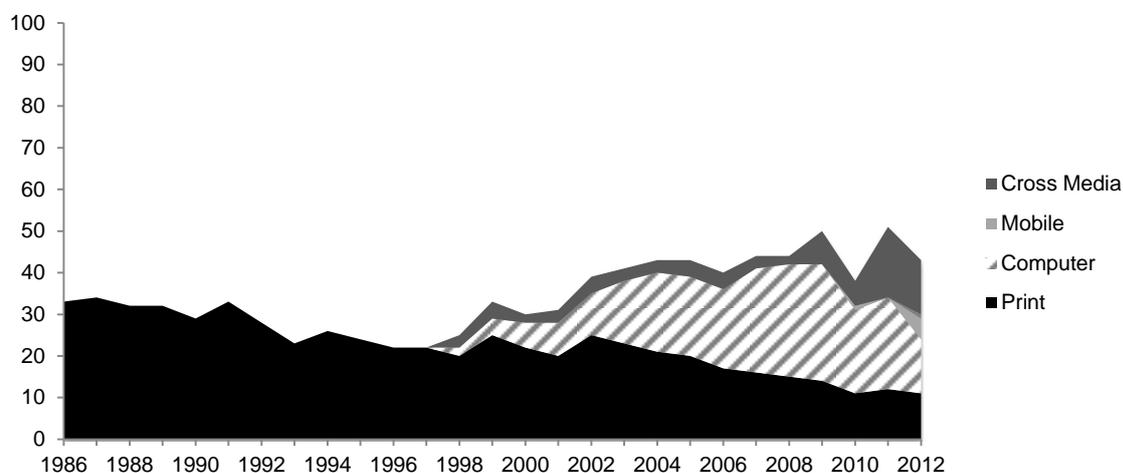


Figure 1. Swedes’ cumulative frequent news accessing of evening tabloids through print, computer, mobile and tablet from 1986–2012 (percent)

Note: The figure shows the cumulative frequent news accessing of evening tabloids through print, computer, mobile and tablet. Single-media use includes print, computer and mobile, but excludes tablet as an insignificant number use only these. Cross-media shows all possible combinations of frequent news accessing through print, computer, mobile and tablet. Frequent usage refers to at least three times per week.

Source: The National Swedish SOM survey from respective year, 1986–2012.

Cumulative news accessing forms an important departure point for understanding displacing and complementary effects, focusing on frequent single-media use vis-à-vis cross-media use of evening tabloids. The findings presented in Figure 2 evidence prevalent differences between single- and cross-media use and explore frequent usage of “only print”, “only computer”, “only mobile” and “only tablet” (single-media use), or combinations of these news channels (cross-media use) and the variation in displacement and complementary effects over time.

In compilation between 2010 and 2012, the three pie charts provide a strikingly clear evolving trend, namely how mobile is gaining traction. Moreover, it reveals that frequent use of evening tabloids in terms of single-media use in *both* “only print” and “only computer” is declining. Single-media use referred to “only print”, “only online” and “only mobile” in 2010, which then accounted for 53 percent, 29 percent and 2 percent, respectively. The studies conducted in 2011 and 2012 have led to the analysis of “only tablet”. However, it is also worth noting that the category “only computer” has changed from capturing all usage online in 2010 to only including the frequent use of evening tabloids through computers in 2011 and 2012. Nonetheless, there was a decline equal to 15 percentage points between 2011 and 2012. Moreover, the surveys conducted in 2011 and 2012 included the study of tablets for news, although few Swedes had domesticated these into their everyday life. The results from the 2012 survey show that frequent use of evening tabloids with tablets mainly occurs in combination with other platforms. Conversely, frequent mobile news use takes the form of both single-media use (an increase from 2 percent in 2010 to 12 percent in 2012) and cross-media use (frequent use of mobile and computer for news increased from 6 percent in 2010 to 16 percent in 2012).

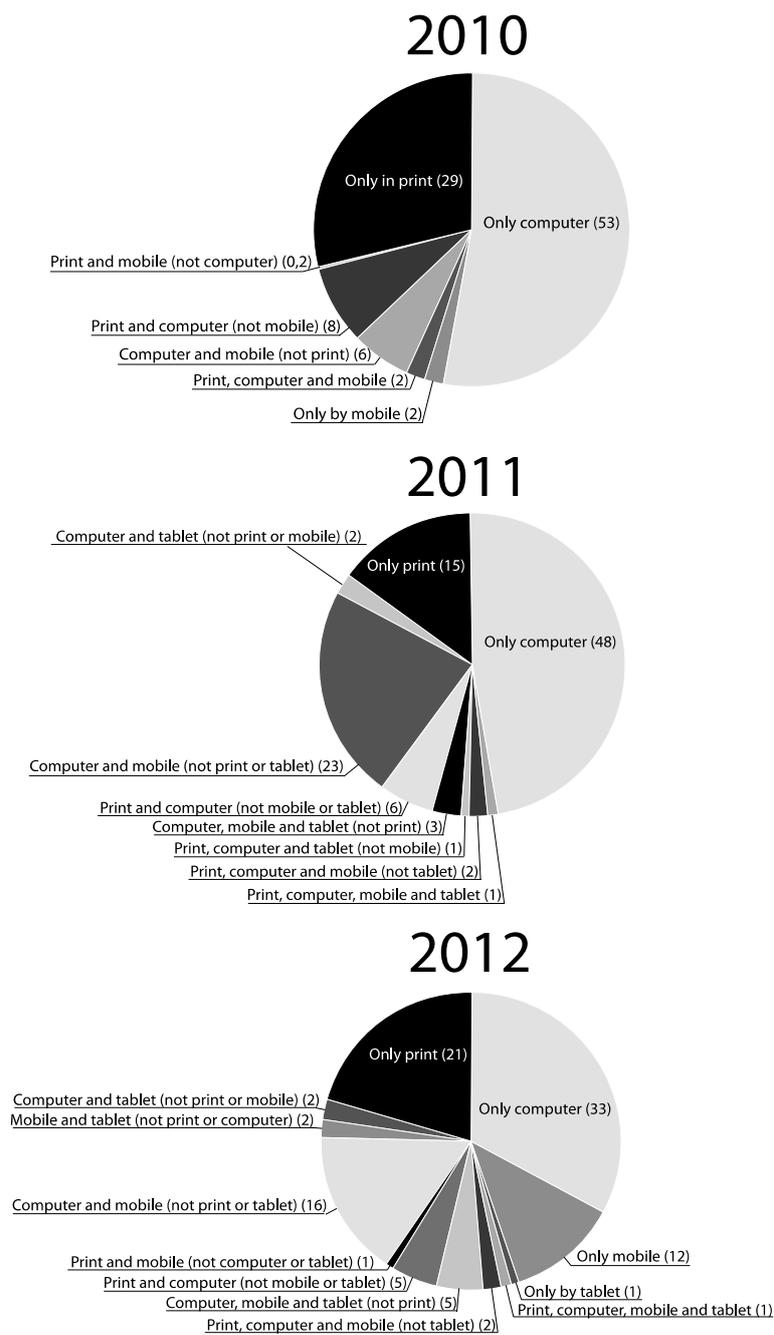


Figure 2. Frequent news usage in print and/or with computer, and/or with mobile and/or with tablet 2010-2012 (Swedish public 16-85 years, percent)

Note: Frequent usage refers to at least three times per week. Non-users have been excluded from the pie charts. The total number of respondents varied from 617 (2010), 731 (2011) and 633 (2012).

Source: The National Swedish SOM surveys, 2010-2012.

News Consumption among Age Cohorts

Next, this article analyses similarities and differences in news consumption among seven age cohorts, defined by the decade born, and ranging in the continuum from those born in the 1930s to those born in the 1990s. Figure 3 shows an overall account of frequent use from 2010 to 2012, that is, if respondents have expressed they use print, online, mobile or tablet to access media at least three times per week.

Figure 3 reports two salient findings significant for 2010 to 2012. Firstly, frequent use of evening tabloids scores the highest among the younger generations thanks to their digital news consumption (albeit with one exception). Secondly, frequent use peaks among the 1980s age cohort, but it is significantly lower among the 1990s age cohort. The 2010 findings show that 20 percent of people born in the 1930s were frequent users, which by comparison was 48 percent among the 1980s age cohort. Those born in the 1990s are an exception; this suggests that the young have not yet developed news accessing practices similar to those of slightly older age cohorts.

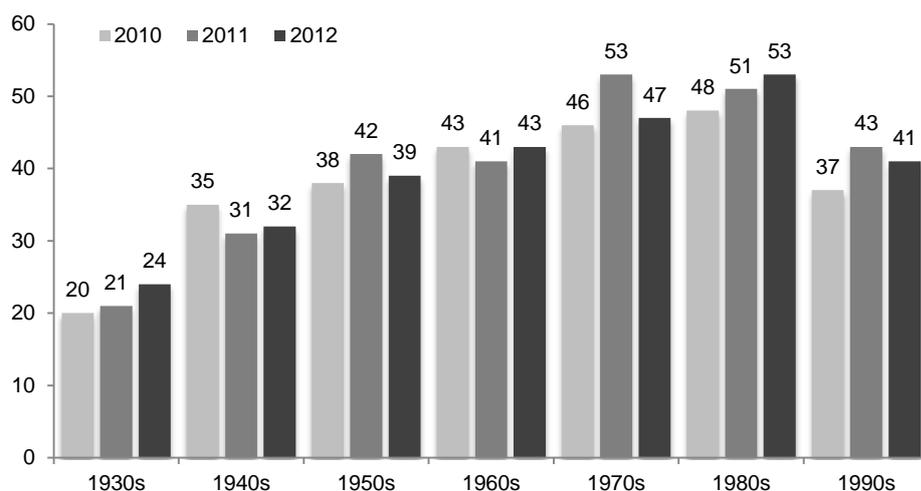


Figure 3. Frequent users in print, online, mobile and tablet among age cohorts in 2010–2012 (percent)

Note: Frequent usage refers to at least three times per week. The figure shows responses for frequent users in print, computer, by mobile and by tablet for each age cohort in 2010 to 2012. The number of responses for each cohort for 2010 was: ‘1930s’ n = 205, ‘1940s’ n = 301, ‘1950s’ n = 307, ‘1960s’ n = 271, ‘1970s’ n = 223, ‘1980s’ n = 162 and ‘1990s’ n = 123. For 2011, it was: ‘1930s’ n = 161, ‘1940s’ n = 325, ‘1950s’ n = 273, ‘1960s’ n = 269, ‘1970s’ n = 224, ‘1980s’ n = 179 and ‘1990s’ n = 116. For 2012, it was: ‘1930s’ n = 172, ‘1940s’ n = 324, ‘1950s’ n = 287, ‘1960s’ n = 326, ‘1970s’ n = 201, ‘1980s’ n = 188 and ‘1990s’ n = 103.

Source: The National Swedish SOM surveys, 2010–2012.

Previous research has produced mixed empirical evidence on displacing and complementary effects depending on age. Following this, Table 1 analyses responses for the full and multifaceted range of frequently using evening tabloids for print, computer, mobile and tablet among the seven age cohorts in 2010 to 2012.

The most salient result in Table 1 is that single-media use of evening tabloids constitutes the main proportion of frequent usage among the different age cohorts. Some are heavily oriented towards online news accessing with computers, others turn to print and some

to mobile devices. Although specific forms of cross-media use are typically less common in relative proportions, such use is gaining traction.

Table 1 Combinations of news usage in print and/or by computer, and/or mobile and/or tablet among different age cohorts in 2010–2012 (percent)

	1930s			1940s			1950s			1960s			1970s			1980s			1990s		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Only print	70	65	69	52	47	41	38	21	27	17	11	14	9	5	7	4	3	2	16	6	5
Only computer	30	32	24	41	41	36	48	59	42	65	49	41	67	48	28	65	46	24	43	44	7
Only mobile	0	0	0	0	0	0	1	0	5	3	0	11	3	0	19	1	0	22	7	0	31
Only tablet	0	0	0	0	0	2	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0
Print, computer, mobile and tablet	0	0	0	0	1	0	0	0	1	0	1	0	0	1	1	0	0	1	0	4	0
Print, computer and mobile (not tablet)	0	0	0	0	2	2	2	4	0	1	1	1	3	3	3	1	3	2	7	12	5
Print, computer and tablet (not mobile)	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Computer, mobile and tablet (not print)	0	0	0	0	0	1	0	0	3	0	3	6	0	5	6	0	4	10	0	2	5
Print and computer (not mobile or tablet)	0	0	7	7	3	12	9	10	6	8	8	4	9	3	3	11	6	0	16	2	0
Print and mobile (not computer or tablet)	0	0	0	0	0	0	0	0	1	1	0	1	0	0	2	0	0	2	0	0	0
Computer and mobile (not print or tablet)	0	0	0	0	3	2	2	6	9	5	22	17	9	33	23	18	37	30	11	30	45
Print and tablet (not computer or mobile)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Mobile and tablet (not print or computer)	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0	0	3	0	0	2
Computer and tablet (not print or mobile)	0	3	0	0	3	2	0	0	4	0	4	4	0	2	1	0	1	3	0	0	0
<i>Number of responses</i>	205	161	172	301	325	324	307	273	287	271	269	326	223	224	201	162	179	188	123	116	103

Note: Frequent usage refers to at least three times per week. The figure shows responses for frequent users in print, computers, by mobile and by tablet for each age cohort in 2010 to 2012. The number of responses for each cohort for 2010 was: ‘1930s’ n = 205, ‘1940s’ n = 301, ‘1950s’ n = 307, ‘1960s’ n = 271, ‘1970s’ n = 223, ‘1980s’ n = 162 and ‘1990s’ n = 123. For 2011, it was: ‘1930s’ n = 161, ‘1940s’ n = 325, ‘1950s’ n = 273, ‘1960s’ n = 269, ‘1970s’ n = 224, ‘1980s’ n = 179 and ‘1990s’ n = 116. For 2012, it was: ‘1930s’ n = 172, ‘1940s’ n = 324, ‘1950s’ n = 287, ‘1960s’ n = 326, ‘1970s’ n = 201, ‘1980s’ n = 188 and ‘1990s’ n = 103.

Source: The National Swedish SOM surveys, 2010–2012.

In 2010, the single-media use of mobile news was literally non-existent. Instead, cross-media use through the combination of “print and computer” and “computer and mobile” was most prevalent for all age cohorts, except those born in the 1930s. The same pattern repeats itself in the 2011 findings. In 2012, many of the usage patterns among age cohorts were retained, although one must note the exceptional uptake of mobile-specific single-media use. For instance, seven percent among those born in the 1980s reported using only their mobile frequently to access the news, while the corresponding figure for 2012 was 31 percent.

In summary, scrutinising the granularity of news accessing patterns among age cohorts, one finds that people born in the 1930s mainly access news from evening tabloid printed papers. The use of print thereafter continuously decreases among younger age cohorts, and almost appears at the bottom among people born in the 1980s. The accessing of news only from online news sites, on the other hand, plays a major part for those born in the 1970s (67 percent in 2010), whereas it is much less common among those born in the 1930s (24 percent in 2012). A final finding is that there literally is no age cohort with habits of accessing news by print and mobile. Conversely, in 2010, “only computer” constitutes the key news channel around which news consumption patterns, either single-media usage or in combination with print or mobile, is being formed. However, in 2012, this formation of news consumption patterns also includes single-media use and the accessing of news only through mobile.

Explaining Age Cohorts News Accessing 2010–2012

Logistic regression has been used for the explanatory analysis of nonlinear relations focusing on single-media use of newspapers, computers and mobiles (i.e. displacing effects), cross-media use (i.e. complementary effects) as well as non-usage in 2010, 2011 and 2012. Logistic regression has also been utilised for investigating the likelihood of non-usage, single-media use and cross-media use among seven age cohorts.

Table 2 illustrates the odds ratios, with significant effects shaded. The findings primarily evidence robust patterns among the age cohorts for all three years of study. The likelihood of accessing news only in print among older age cohorts was highest in 2012, while remaining prominent in 2010 and 2011. The likelihood followed a similar pattern over the years among the younger age cohorts, although it ranked lower. The patterns of cross-media use also confirm this finding. The likelihood of frequent cross-media use goes in the opposite direction and is lowest among older age cohorts, irrespective of which of the three years are in focus.

Table 2 Effects of age cohort on frequent single-media use, cross-media use and non-use of evening tabloids in print and/or by computer, and/or mobile and/or tablet 2010–2012 (odds ratio)

		1940s	1950s	1960s	1970s	1980s	1990s	Constant	Number of cases
SINGLE MEDIA USE:									
Only print	2012	6.15***	5.33***	4.46***	2.63**	1.52	1.04	0.03***	622
	2011	3.24***	2.75***	2.02**	1.28	0.70	0.65	0.07***	482
	2010	3.30***	3.84***	2.95***	1.65	0.65	0.27**	0.06***	522
Only computer	2012	2.06	4.30*	6.53**	7.21**	4.95**	4.88*	0.03***	205
	2011	0.31**	0.62	1.39	1.07	1.46	1.31	0.23***	294
	2010	0.32**	0.86	1.17	2.01**	2.36**	2.37**	0.19***	329
Only mobile	2012	0.00	0.00	0.15***	0.33**	0.68	0.92	0.14***	74
	2011	0.00	0.00	0.12**	0.36	0.80	0.82	0.06***	35
	2010	0.00	0.00	0.13	0.45	0.55	0.25	0.03***	11
CROSS-MEDIA USE:									
Print and/or computer and/or mobile and/or tablet	2012	0.06***	0.23***	0.34**	0.54*	0.87	1.23	0.30***	214
	2011	0.03**	0.21***	0.45*	0.90	1.37	1.42	0.18***	172
	2010	0.00	0.20***	0.37**	0.48*	0.75	1.19	0.14***	99
NON-USE:									
Neither print, computer, mobile nor tablet	2012	2.13**	1.50	1.09	0.92	0.78	0.61*	1.45	970
	2011	2.83***	1.71*	1.06	1.10	0.67	0.73	1.32	736
	2010	2.38***	1.06	0.92	0.77	0.67*	0.62*	1.73***	1036

Note: Anti-logarithmic regression coefficients (odds ratio). The reference category is ‘1930s’ where $\beta = 1.000$. Frequent news accessing by tablets has been excluded from the regression model due to a small number of respondents. * = significant at the .05 level, ** = significant at the .01 level, *** = significant at the .001 level.

There are tendencies (higher, yet insignificant figures) towards single-media mobile news usage among the younger age cohorts, with the exception of the 1990s age cohort in 2010. Based on the 2012 data, the coefficients corresponding to “only mobile” were more robust in 2012 compared to preceding years. In the same year, there was a peak in frequent usage by computer only among the 1970s cohort. The 1940s and 1950s age cohorts are single-media users “only in print” (a likelihood of 86 and 84 percent, respectively, in 2012). The 1960s and 1970s age cohorts were computer-oriented single-media users in 2012 (a likelihood of 87 and 88 percent, respectively). The 1980s and 1990s age cohorts, on the other hand, stood out as being both mobile-oriented single-media users and, above all, frequent cross-media users (a likelihood of 47 and 55 percent, respectively).

Despite partially insignificant coefficients, explained by a skewed distribution of responses, the findings suggest a clear pattern for non-usage. Non-usage was much more

likely among the 1940s cohort and less likely among the younger age cohorts, from an odds ratio of 2.13 (1940s) to 0.61 (1990s) in 2012. In contrast to the concerns about the young not accessing news, the results presented here suggest legacy news media benefiting from tackling the widespread non-usage among older age cohorts.

Concluding Discussion

The future of journalism lies with how legacy news media and emergent actors approach and manage the production and distribution of news in an age increasingly marked by digital and mobile media. The study of shifting single- and cross-media news consumption patterns among age cohorts from 1986 to 2012 – in this case, Swedish evening tabloids – is important for understanding the changing role news may play for social change, democracy and the everyday life of citizens. Scholars should acknowledge and examine the growing significance mobile devices and tablets play for how members of different age cohorts access the news.

Single- and cross-media usage has been analysed as a sort of operationalisation of displacing and complementing effects, while age cohorts has been used as the empirical measure of age. The 27 annual and cross-sectional survey studies (1986–2012) have traced how seven age cohorts maintain or change their news consumption as they travel through individual lifecycles in parallel to a changing mediascape.

The first research question asked how single- and cross-media news use has evolved from 1986–2012 (RQ1). For the case of Swedish evening tabloids, the findings evidence that the Swedish public mostly engage in single-media, rather than cross-media news consumption. The longitudinal data reveal a pronounced shift over time in single media use—

from mostly reading printed newspapers to using computers for online news. More recently, mobile devices have gained significance. This has resulted in a new way for single-media use, but also increased the more general levels of cross-media use (Westlund & Weibull, 2013).

The second research questions asked to what extent distinct age cohorts have engaged in various forms of single- and cross-media use from 2010–2012 (RQ2), while the third research question investigated the explanatory effect of cohort belonging for single-media use, cross-media use and non-use during 2010–2012 (RQ3). Three conclusions reveal the nature of these descriptive and explanatory inquiries in the case of Swedish evening tabloids. Firstly, non-usage was more common among the older than younger age cohorts. Secondly, approximately two-thirds within each of the seven age cohorts frequently engaged in single-media use. They commanded their attention to different media platforms. The older age cohorts (1930s and 1940s) turned mainly to printed newspapers, whereas those belonging to the 1950s, 1960s and 1970s age cohorts chose to access the news via computers. Moreover, the 2012 results showed that the 1980s and 1990s age cohorts have started developing a significant single-media and mobile-focused news consumption pattern. Thirdly, although opportunities existed for numerous cross-media combinations throughout 2010–2012, such behaviours were much less commonplace and significant than single-media use. The highest significant figures for cross-media news consumption were found among the 1970s cohort. The results from 1998 to 2012, however, indicate recent growth in cross-media news consumption. More generally, the results show how mobile devices and tablets are gaining significance for news consumption, and especially how these devices are attracting the young to access the news.

Next, this article reveals how the findings relate to the theoretical framework involving displacing and complementary effects. As discussed, literature has suggested mixed findings, especially regarding age variations. This empirical study has traced both single- and cross-media use over time – with varying prevalence and significance – among age cohorts. The concept of single-media use proves noteworthy, corresponding to how most age cohorts consume news in this study. The findings correspond to displacing effects: over time, one news platform is displaced (even replaced) by another. Percentages and odds ratios alike prove that specific age cohorts are more likely to engage in single-media use than others. The concept of cross-media use speaks to emerging patterns of complementary news consumption, indicating how distinct age cohorts frequently utilise more than one platform to access the news. The integrated theoretical framework of displacing and complementary effects is necessary to comprehend the nuances in news consumption among age cohorts. Moreover, the findings indicate a high level of variation in Swedes news consumption of evening tabloids, and thus that the plethora of platforms each play different roles in what Deuze (2012) refer to as “media lives”.

This study witnesses the necessity for legacy news media to gear towards compensating for the diminishing effect of the newspaper by exploring and exploiting the opportunities arising from emerging forms of news consumption. Mobile devices (and sometimes also tablets) provide personal addressability for various sorts of news delivery, strategic communication and marketing; this allows for the development of the audience as a commodity relationship newspapers have with their readers and users. Personalisation data can be matched with context-sensitive layers, relating to positioning services and the ubiquitous affordances of the mobile device. Thus, legacy media may certainly favour from

the ongoing shift towards mobile news consumption found accelerating in recent years, generating new revenue streams while developing more intimate relationships with their community and advertisers, possibly also leading to reducing costs. However, giants from the information search and social media spaces may also do so. They represent crucial threats considering shifting user habits and the need for companies to master algorithms and code. Future research should further investigate the dynamics of changing news consumption over time and among different groups, as well as more specific mobile news practices relating to how people follow the news via micro-blogs (Wei et. al. 2013), as well as how they engage in user-distributed content (Villi & Matikainen, 2015). There is also a need for expanding the geographical to other nations, preferably attempting to include cross-cultural empirical research.

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