Does New Media Substitute Old Media? A Cohort Analysis of Media Use in China

LI Weijia
Tsinghua University, Beijing, China

This study examines generational differences in media use based on pooled-data analysis of CGSS (Chinese General Social Survey) 2010-2015. In order to show a full picture of the substitutability between new and old media, the study brings age heterogeneity of respondents and time effect into consideration. This study distinguishes four generations based on the year of birth, with the “newspaper generation” (people who born before 1969), “broadcast generation” (1970-1979), “TV generation” (1980-1989), and “Internet generation” (born after 1990) and aims to explore whether generations differ in their frequency of media use. The research analyses five-year pooled data CGSS 2010-2015 (CGSS 2014 data is missing) to examine the influence of Internet on old media among different birth cohorts and how this effect changes over time. New media refers to the Internet; old media includes newspaper, broadcast, and television. The results are summarized as follows: First, for the “newspaper generation”, “broadcast generation”, and “TV generation”, Internet heavy users are usually more willing to use newspaper and broadcast as well. Internet heavy users are information seekers. They have a strong need of information and usually are involved in multi-tasking media activities. Nevertheless, only the Internet heavy users in “TV generation” will regard TV as another channel to get more information, which indicates that generations may adopt specific patterns of media use when they are young and remain faithful to those throughout their lifespans. “TV generation” have a stronger attachment to television than their previous and later generation. Second, in terms of the time effect, the empirical data proved that the broadcast shows a stronger vitality in digital age compared with newspaper and television. The frequency of broadcast use does not drop significantly until 2015. However, the frequency of newspaper and television use has shown a significant downward trend since 2011. Third, for the “Internet generation”, the use of the Internet has no effect on the use of other media. Even Internet heavy user, the one who has strong need of information, would not choose other media to search more information. This suggests that these digital natives would rather confine themselves to the Internet cocoon than collect new information through old channels. This study provides new insight to understand the current media ecology. The relationship between the new and old media is a changeable and dynamic process and cannot be simply understood as “more-more” or “more-less” relationship.

Keywords: Media Use Behavior, Generational Differences, New Media and Old Media

Introduction

According to the 41th China Statistical Report on Internet Development, up to December 2017, China’s Internet users amounted to 772 million. Internet penetration rate witnessed a sustained growth from 16.0% in...
DOS NEW MEDIA SUBSTITUTE OLD MEDIA?

2007 to 55.8% in 2017 (China Internet Network Information Center [CNNIC], 2018). Internet gradually becomes an indispensable part of daily life.

With the development of the technology, the relationship between the old media and the new media has been at the center of the discussion. The advent of Internet reshaped people’s media consumption habits. For example, data showed that more than 60% of Internet users in China watched online news every day (CNNIC, 2017). Some argued that people will spend less time on the newspaper. Traditional newspaper may not survive in the digital age and Internet will displace newspaper one day (Gaskins & Jerit, 2012; Taipale, 2013), while others are of the opinion that the Internet and newspaper have their own unique advantages and may coexist and even complement each other (Nguyen & Western, 2006; Westlund & Färödigh, 2011).

In fact, there is no definite conclusion about this topic until now. On one hand, new media can act as a substitute for existing media; on the other hand, as media repertoires have been identified, complementarity among media has been found, which means that people tend to use media combination to satisfy their needs. That is to say, studies have shown various or even contradictory findings, which can be explained under different theoretical frameworks and supported by empirical data, while few scholars have discussed why this issue produced inconsistent results. This study argues that previous researches generally ignored two elements: heterogeneity of respondents and time effect. Therefore, prior studies might generate mixed results.

The purpose of this study is to explore how the time spent on the Internet is associated with the time spent on traditional media, including newspaper, broadcast, and television. This study examines generational differences in media use based on pooled-data analysis of CGSS (Chinese General Social Survey) 2010-2015 and takes time effect into consideration in order to propose a relatively complete and reasonable approach to explore this issue and tries to reveal the real-world relationship between the new media and old media. New media refers to the Internet; old media includes newspaper, broadcast, and television.

**Literature Review**

**Substitutes or Complements: The Relationship Between the New Media and the Old Media**

Numerous studies have explored how the use of the Internet affects the usage pattern of old media and generally presented two contradictory results. Some researchers held the opinion that the Internet has displacement or substitution effects on old media, while others argued that these two media platforms complement each other. That is, the use of the Internet may even promote the use of the old media. The above two results can be simply summarized as “more-less” and “more-more” relationship, which seems to be contradictory but can be explained under different theoretical frameworks.

**Substitution hypothesis.** The “more-less” hypothesis (substitution hypothesis) argues that the use of Internet will reduce the time spent on the old media because the use of the Internet takes up the time people previously devoted to newspaper, broadcast, and television (Taipale, 2013; Brown, 2000). This hypothesis focuses on the media attributes and functionality, which involves the ideas of niche theory (Dimmick & Rothenbuhler, 1984), media richness theory (Daft & Lengel, 1984; Rice, 1993), and audience gratification opportunities (Dimmick & Albarran, 1994; Dimmick & Wallschlaeger, 1986). If media functions are similar, substitution effects may be existed. Consumers will choose the media which is able to satisfy their needs better.

Compared with the other two standpoints, the theoretical system of niche theory is more complete so this theory gradually becomes the dominant paradigm to understand the substitution effect. Dimmick and Rothenbuhler (1984) proposed niche theory to explain the competition among media industries. Niche overlap
and niche breadth are two key concepts of this theory. Niche overlap refers to the degree to which two media share the same resources (Dimmick & Rothenbuhler, 1984). Niche breadth measures “the area of a niche and contains both the number and magnitude of resources utilized by a population” (Sarrina Li, 2001, p. 261). For example, newspaper is a “specialized medium” with narrow-niche breadth, which only provides content for audience to read. In contrast, Internet is a “generalist medium” with wide-niche breadth because it is able to gratify users with broader range of needs, not only reading, but also watching, listening, and interacting, etc.

In a multi-choice media environment, all kinds of media are competing for audience time and attention, which is the scarcest resource nowadays (Hirschhorn & May, 2000). In this process, the winner is always the one with a wider niche breadth, such as Internet (Dimmick, Chen, & Li, 2004). To some extent, Internet is a “functional alternative” of newspaper which provides consumers with better gratification opportunities, so audiences are willing to choose Internet instead of paper media.

**Complement hypothesis.** The “more-more” hypothesis (or complement hypothesis, supplement hypothesis) breaks the competition-based framework and argues that Internet and traditional media are able to coexist and even complement each other. This hypothesis is usually user-centered which stresses the gratification of media consumers (Lee & Leung, 2008).

First, scholars employed use and gratification theory to explain why the time spent on the Internet is positively associated with the time spent on the other media. Use and gratification theory posits that people are able to select media to meet their specific needs (Katz, Blumler, & Gurevitch, 1974). A big movie fan not only watches films on TV, but also searches film resources from the Internet or buys VCDs.

Second, different media have different content profile so they may complement each other in functionality. For example, although the information on the Internet is abundant, print media is more content-intensive and provides more in-depth information (Nguyen & Western 2006). As a result, people may conduct a joint media consumption behavior (Lin, Venkataraman, & Jap, 2013). In addition, researchers argued that during the years when the Internet has just begun to emerge, people regarded printed newspaper and online news as two separate things and they tended to view these two platforms as complementing each other (Cao & Li, 2004; Chyi & Lasorsa, 1999).

The third explanation frame is that Robinson et al. (2002, p. 257) suggested that the Internet seems like a “time enhancer”, which enables people to be more efficient and productive in using other types of media. In fact, it is not a matter of time-competition, but a matter of time-intensification (Taipale, 2013).

**Why does the opposite result occur?** Researchers tried to explain why the same issue has produced two contrary results empirically and they basically proposed two interpretations: different research measurements and different research perspectives.

Different research measurements refer to different measurements of time. Previous studies followed two different time logics to measure the time spent on different media: “absolute time” and “relative proportions of time”. Research found that these two different time logics would produce inconsistent results (Lee & Leung, 2008). A majority of studies use “absolute time”. Generally, if the time spent on the Internet is significantly positive related to the time spent on the newspaper, the “more-more” hypothesis is supported. In contrast, “relative proportions of time” refers to the time spent on a certain media dividing the total media time budget. “Relative proportions of time” holds the idea that there is a mutually exclusive relationship among different media. Using one type of media will force people to give up others. Those studies are usually under a competition-based framework and generally draw a conclusion that the Internet has a displacement effect on newspaper.
Besides, others argued that these mixed results may be due to different research perspectives. Previous literatures presented two main research approaches: One is medium-centered and the other is user-centered (Lee & Leung, 2008). Just as mentioned above, medium-centered focuses on the media functionality. If two media functions are similar, they will compete with each other, which indicated that “more-less” relationships might be supported. However, recent studies also argued that different media formats have their unique advantages, so there is also a possibility of functional complementarity between the media (Nguyen & Western, 2006). From the user-centered perspective, different people have different media time budget. Those with more media consumption activities will possibly spend more time on both Internet and traditional media, which just because this kind of people really need information or they have a relative higher media budget and this is why the “more-more” relationship appears (Lee & Leung, 2008; Shah et al., 2002; Wurff, 2011).

Except for the above two points, this study argues that previous researches generally ignored two elements: heterogeneity of respondents and time effect. Therefore, prior studies might generate mixed results.

**Media Generation and Time Effect: Generational Differences in Media Use**

**Time effect in social science.** Time is an indispensable variable in the scientific research. Demographers, epidemiologists, and social scientists often deal with temporally ordered datasets. A systematic study of such data is termed Age-Period-Cohort (APC) analysis (Yang & Land, 2016, p. 1). An age effect reflects the change as a function of the age of individuals, period effects are variations over calendar years that influence all age groups simultaneously, and cohort effects are changes across a certain generation who experience an initial event such as birth or marriage in the same year or years. One common goal of APC analysis is to assess the effects of one of the three factors on some outcomes of interest net of the influences of the other two time-related dimensions (Yang & Land, 2006). Now the “age-cohort-period” method has been applicable to the humanities as well to other social science areas (Firebaugh, 1997).

However, in the actual study, the results of cohort effect analysis are often of greater research value. The typical structure of “age-period-cohort” data contains a lot of cohort overlap (Fu, 2008). Some researchers even argued that the patterns by age at one point in time may not reflect the effects associated with aging, which are more properly studied in cohorts. To some extent, the purpose of “age-period-cohort” analysis is to obtain the cohort effect and the “APC” analysis can be equal to cohort analysis (Smith, 2008; Hobcraft, Menken, & Preston, 1982). In view of this, this article focuses on cohort effect. But at the same time, considering the dynamics of the media environment, period effect is also incorporated into the model.

**Media generation and time effect.** Media is not only a technology, but also a context. The rise of the context as an increasingly important factor guiding media use calls for a media-sociological theory that is sensitive to everyday life media use situations. Some researchers have approached situations in media lives from the perspective of how media becomes appropriated as text, as object, but also as context (Bjur et al., 2014). To some extent, our life should perhaps be seen as lived in, rather than with media, that is a media life (Deuze, 2009).

Roger Silverstone emphasized the “double articulation” of media, which indicates the inseparability of media as material technology and as symbolic content (Silverstone, 1994). The duality impacts enormously on the way our experience is organized by media. Experience has been recently identified as an important cultural glue within generation (Vittadini, Siibak, Reifova, & Bilandzic, 2014).
Researchers who came later absorbed the ideas of the predecessor and further explored the relationship between media and generation. Hepp, Berg, and Roitsch (2017) created a concept called “media generation” to describe age groups of people who in their media appropriation share a specific experience space of mediatization. “Media generation” differs in the media they grew up with and different age cohort may have a stronger attachment to a certain media than their previous or later generation.

Further, some communication scholars believe that generations may adopt specific media usage patterns when they are young and remain faithful to these models throughout their lives (Goot & Beentjes, 2015; Westlund & Weibul, 2013). Therefore, “media generation” may differ in their current media use because of the difference of childhood media use experience (Goot, Rozendaal, Opree, Ketelaar, & Smit, 2018). From the perspective of empirical research, previous research distinguishes three “media generation” according to the year of birth, with the newspaper generation (Bolin & Westlund, 2009), TV generation (Mares & Woodard, 2006), and net generation (Hargittai, 2010) and proved that it is appropriate to identify the net, the TV, and the newspaper generation as groups that differ in their media use pattern (Goot et al., 2018).

Thus, time factor is an important element when considering the relationship between the new and old media. For this article, time element contains two dimensions: age difference and time effect.

First, few studies considered audience heterogeneity, especially the age difference. In fact, scholars have been thinking about the differences between generations in their media use for some time now (Peiser, 2000), but few academics have taken age-cohort differences into consideration when they tried to explore the impact of Internet on traditional media. People of different generations grow in different social contexts and form different media consumption patterns. Prior studies proved that younger people, who born in 1990-1999, are usually more inclined to Internet than earlier cohorts and are less interested in paper media (Cutler & Danowski, 1980). Therefore, it is necessary to perform an age-cohort analysis in terms of this issue, or the research may produce misleading results.

Second, the relationship between different media is dynamic and changeable. Measurements at different time points will generate different results because of the development of the society. Therefore, in order to demonstrate the evolution process of the Internet development in China, it is necessary to take a comparison between different years to observe the impact of the Internet on traditional media from a dynamic perspective.

In view of this, as an exploratory study, this paper tends to explore the relationship between the internet and the traditional media and takes heterogeneity of respondents and time effect into consideration.

Research question: In terms of people who live in different media generation, how does the Internet affect traditional media differently?

Method and Measurements

This research uses 2010-2015 Chinese General Social Survey (CGSS) data for the empirical analysis (CGSS2014 data is missing), N = 41,403.

The CGSS is a continuous academic survey project launched by Renmin University of China, which conducts cross-sectional surveys on more than 10,000 households of various provinces in mainland China once a year. All respondents are above 18 years old. Nowadays, CGSS data has become one of the most important data sources for the study of Chinese society. Since 2010, CGSS has opened a new module to ask residents about their media usage pattern, which reflects that media use behavior has gradually become an important issue for social transformation.
Dependent Variable: Frequency of Traditional Media Use

Respondents were asked about their frequency of newspaper, broadcast, and television use on a 5-point Likert scale ranging from 1 = “Never”, 2 = “Rarely”, 3 = “Sometimes”, 4 = “Often”, and 5 = “Always”. Questions are as followed “How often do you use newspapers/broadcast/television in the past year?”

Independent Variable: Frequency of Internet Use

A 5-point Likert scale (1 = “Never” to 5 = “Always”) was used to measure the respondents’ Internet use frequency. The question is “How often do you use the Internet in the past year?”

Control Variables

Control variables include “Gender”, “Education”, “Annual Income” (“annual income” is taken a log transformation in the regression analysis), “Political Status”, “Marriage”, “Nationality”, “Working Status”, and “Year”. Among them, “Gender”, “Political Status”, “Marriage”, “Nationality”, and “Working Status” are dummy variables, while “Education” is ordinal variable, including 1 = Without any education, 2 = Old-Style Private School, 3 = Primary School, 4 = Vocational High School, 5 = Vocational High School, 6 = High School, 7 = Technical Secondary School, 8 = Technical School, 9 = Junior College (adult higher education), 10 = Junior College (formal higher education), 11 = Undergraduate (adult higher education), 12 = Undergraduate (formal higher education), 13 = Postgraduate and above.

Birth Cohort (Media Generation)

According to the birth year of respondents, the study divided four birth cohorts at ten-year intervals, that is four-media-generation, “newspaper generation” (people who born before 1969), “broadcast generation” (1970-1979), “TV generation” (1980-1989), and “Internet generation” (born after 1990). Of the 41,379 respondents, 25,969 are “newspaper generation”, 7,966 are “broadcast generation”, 5,658 are “TV generation”, and 1,786 are “Internet generation” (see Table 1), using Stata14.0 for data analysis.

Table 1
Sample Profile (2010-2015)

| Variables                  | Media generation | Marriage                | Education             |
|----------------------------|------------------|-------------------------|-----------------------|
| Newspaper generation       | 25,969           | Single                  | 3,506                 |
| Broadcast generation       | 7,966            | Live together           | 261                   |
| TV generation              | 5,658            | Married                 | 32,498                |
| Internet generation        | 1,786            | Separation without divorce | 660                 |
| Gender                     | 2,0572           | Divorce                 | 289                   |
| Male                       | 20,572           | Bereft of one’ spouse   | 1,382                 |
| Female                     | 20,807           | Others                  | 2,783                 |
| Working status             |                  |                         |                       |
| I am my own boss           | 478              | Communist               | 11,040                |
| Individual business        | 2,940            | Democratic Party        | 430                   |
| Being employed by others   | 9,873            | League member           | 1,242                 |
| Migrant worker             | 330              | Crowd                   | 28,667                |
| Short-term hired labour    | 1,792            |                         |                       |
Table 1 to be continued

| Year | Han Nationality | Mongols | Manchu | Hui | Income (RMB/year) | 2010 | 2011 | 2012 | 2013 | 2015 |
|------|-----------------|---------|--------|-----|-------------------|------|------|------|------|------|
| 2010 | 37,904          | 129     | 321    | 856 |                   | 9,557| 486  | 171  | 1,481| 129  |
| 2011 |                 |         |        |     |                   | 4,644| 171  | 1,481|      |      |
| 2012 |                 |         |        |     |                   | 9,481|      |      |      |      |
| 2013 |                 |         |        |     |                   | 9,252|      |      |      |      |
| 2015 |                 |         |        |     |                   | 8,445|      |      |      |      |

Notes: “Gender”, “Political Status”, “Marriage”, “Nationality”, and “Working Status” are dummy variables.

Results

Descriptive Statistics

Figure 1 illustrates the overall media usage frequency from 2010-2015 (missing data for 2014). Firstly, during this period TV is the most frequently used medium compared with newspaper, broadcast, and Internet, which indicates that even in the digital media environment, TV is still the most important media resource. Secondly, the usage frequency of the Internet shows an upward trend while the use of traditional media has declined slightly on the whole.

![Media Usage Frequency](image)

Figure 1. Media usage frequency.

Figure 2 illustrates the media usage frequency among different media generations. It can be clearly seen from the line chart that the use of the internet varies greatly among people of different ages. Young people use the Internet more often than older people, while people from different media generation did not show any significant difference in traditional media consumption.
The Relationship Between the Internet and the Traditional Media Among Different Media Generation

The paper established three tables to explore the relationship between the Internet and the traditional media.

First, for the “newspaper generation”, “broadcast generation”, and “TV generation”, Internet heavy users are usually more willing to use newspaper (see in Table 2: $\beta_{N\cdot N\cdot G} = 0.1058$, $\beta_{N\cdot B\cdot G} = 0.08625$, $\beta_{N\cdot TV\cdot G} = 0.0797$, $p < 0.000$) and broadcast (see in Table 3: $\beta_{B\cdot N\cdot G} = 0.0911$, $\beta_{B\cdot B\cdot G} = 0.0560$, $\beta_{B\cdot TV\cdot G} = 0.0368$, $p < 0.000$) as well. Internet heavy users are information seekers. They have a strong need of information and usually involved in multi-tasking media activities. Therefore, the relationship between the Internet and traditional media is not complete substitute to some extent.

Nevertheless, only the internet heavy users in “TV generation” will regard TV (see in Table 4, $\beta_{T\cdot TV\cdot G} = 0.0410$, $p < 0.05$) as another channel to get more information, which indicates that generations may adopt specific patterns of media use when they are young and remain faithful to those throughout their lifespans. “TV generation” have a stronger attachment to television than their previous and later generation. Besides, it is worth noting that for the newspaper generation, people who born before 1969, the relationship between the Internet and the television is significant negative ($\beta_{T\cdot N\cdot G} = -0.0233$, $p < 0.05$), which indicates that there is a substitution effect between the Internet and television for this generation.

Second, for the “internet generation”, the use of the Internet has no effect on the use of other traditional media. Even internet heavy user, the one who has strong need of information, would not choose other media to search more information. This suggests that these digital natives would rather confine themselves to the internet cocoon than collect new information through old channels.

Third, in terms of the time effect, the empirical data proved that the broadcast shows a stronger vitality in digital age compared with newspaper and television. The frequency of broadcast use does not drop significantly until 2015 for all media generation. However, the frequency of newspaper use has shown a significant
downward trend since 2011, which indicates that from the perspective of media environment, the decline of the newspaper industry has become an indisputable fact and things may get worse in the near future.

Table 2

The Relationship Between the Internet and the Newspaper Among Different Media Generation

|          | N-N-G       | N-B-G       | N-TV-G      | N-I-G       |
|----------|-------------|-------------|-------------|-------------|
| Internet | 0.1058***   | 0.08625**   | 0.0797***   | 0.0310      |
| 2010     | (.          | (8.56)      | (6.85)      | (5)         |
|          | (-0.1458**) | (-1.96)     | (-2.6)      | (.          |
| 2011     | (-3.00)     | (-2.72)     | (-4.39)     | (.          |
|          | (-4.07)     | (-6.34)     | (-6.03)     | (.          |
| 2012     | (-0.1620**) | (-2.72)     | (-4.39)     | (.          |
|          | (-0.2955**) | (-6.34)     | (-6.03)     | (.          |
| 2013     | (-0.2955**) | (-7.12)     | (-6.03)     | (.          |
|          | (-0.6281**) | (-7.12)     | (-6.03)     | (.          |
| 2015     | (-0.6281**) | (-7.12)     | (-6.03)     | (.          |
| Constant | (2.77)      | (2.95)      | (4.5)       | (1.28)      |
| Controls | ——          | ——          | ——          | ——          |
| N        | 6,544       | 4,833       | 3,699       |             |
| p        | 0.0000      | 0.0000      | 0.0000      | 0.0000      |
| R-sq     | 0.2962      | 0.2416      | 0.1443      | 0.1261      |

Notes. 1. t statistics in parentheses; 2. N-N-G = The Relationship Between the Internet and the Newspaper for Newspaper Generation, N-B-G = The Relationship Between the Internet and the Newspaper for Broadcast Generation, N-TV-G = The Relationship Between the Internet and the Newspaper for TV Generation, N-I-G = The Relationship Between the Internet and the Newspaper for Internet Generation; 3. * p < 0.05, ** p < 0.01, *** p < 0.001.

Table 3

The Relationship Between the Internet and the Broadcast Among Different Media Generation

|          | B-N-G       | B-B-G       | B-TV-G      | B-I-G       |
|----------|-------------|-------------|-------------|-------------|
| Internet | 0.0911***   | 0.0566***   | 0.0368*     | 0.0359      |
| 2010     | (.          | (.          | (.          | (.          |
| 2011     | (0.94)      | (0.52)      | (-0.032)    | (1.20)      |
| 2012     | (0.0462)    | 0.0231      | 0.0055      | 0.0224      |
| 2013     | (0.0462)    | (0.52)      | (0.11)      | (0.15)      |
| 2015     | (1.91)      | (0.94)      | (-0.71)     | (-0.49)     |
| Constant | 1.3992***   | 0.3439      | 1.0632***   | 1.2301*     |
| Controls | ——          | ——          | ——          | ——          |
| N        | 6,544       | 4,833       | 3,699       | 728         |
| p        | 0.0000      | 0.0000      | 0.0000      | 0.0000      |
| R-sq     | 0.0994      | 0.1019      | 0.0677      | 0.0845      |

Notes. 1. t statistics in parentheses; 2. B-N-G = The Relationship Between the Internet and the Broadcast for Newspaper Generation, B-B-G = The Relationship Between the Internet and the Broadcast for Broadcast Generation, B-TV-G = The Relationship Between the Internet and the Broadcast for TV Generation, B-I-G = The Relationship Between the Internet and the Broadcast for Internet Generation; 3. * p < 0.05, ** p < 0.01, *** p < 0.001.
Table 4

|          | T-N-G | T-B-G | T-TV-G | T-I-G |
|----------|-------|-------|--------|-------|
| Internet | -0.0233* | 0.00979 | 0.0410* | 0.0218 |
| 2010     | (-2.53) | (0.87) | (2.52) | (0.49) |
| 2011     | -0.0447 | -0.0171 | -0.0892 | -0.0496 |
| 2012     | -1.24 | -0.34 | -1.41 | -0.24 |
| 2013     | 0.0223 | 0.0428 | -0.0714 | -0.372* |
| 2015     | -0.0114 | 0.00177 | -0.122* | -0.451** |
| Constant | 3.643*** | 4.228*** | 4.098*** | 3.643*** |

Notes. 1. t statistics in parentheses; 2. T-N-G = The Relationship Between the Internet and the TV for Newspaper Generation, T-B-G = The Relationship Between the Internet and the TV for Broadcast Generation, T-TV-G = The Relationship Between the Internet and the TV for TV Generation, T-I-G = The Relationship Between the Internet and the TV for Internet Generation; 3. * p < 0.05, ** p < 0.01, *** p < 0.001.

Conclusion and Discussion

This exploratory research tries to identify the real-world dynamic relationship between the Internet and the traditional media in the context of China. First the author divided four media generations according to the birth of year: newspaper generation, broadcast generation, TV generation, and Internet generation. Then the author used regression analysis and takes the audience heterogeneity as well as time effects into consideration to explore the relationship between the Internet and the traditional media.

On one hand, in terms of the relationship between the new media and the old media, previous researches have shown various, sometimes contradictory findings and the results can be simply summarized as “more-less” and “more-more” relationship. However, this paper argues that the relationship between the new and the old media is changeable and dynamic, which cannot be simply understood as “more-more” or “more-less” relationship. People from different media generations form different media consumption habits, which may influence their perceptions of the relationship between the old media and the new media. If taking audience heterogeneity and time effect into consideration, the relationship between the internet and the traditional media is changeable and uncertain.

Generally speaking, the relationship between the Internet and the newspaper can be summarized as “more-more”, “more-less”, and “unrelated”.

First, the new and old media mainly present a “more-more” relationship. Except Internet generation, internet heavy users are usually information seekers, who are more willing to read newspaper and listen to the radio. This conclusion is consistent with previous studies (Nguyen & Western, 2006; Lin, Venkataraman, & Jap, 2013; Cao & Li, 2004; Chyi & Lasorsa, 1999). This means that for most customers the Internet is complementary to newspapers and radio. The use of the Internet has not led to a decline in newspaper reading.
or radio listening. However, in terms of the relationship between the Internet and the television, the above “more-more” relationship only established in the television generation, which indicates that only this generation regards television and the Internet as complementary.

Second, the “more-less” relationship mainly existed in the elderly population. In terms of people who born before 1969, the relationship between the Internet and the television is significant negative, which can be explained by niche theory, that is the Internet has wide niche breadths which can meet the needs of users more comprehensively. Besides, this also indicates that the audience’s attention is limited; especially for elder people, the time spent on the Internet using takes up the time spent on TV using. Compared with the Internet and the television, the network’s appeal to the elderly is gradually increasing.

Third, for Internet generation, the relationship between the new media and the old media is “unrelated”. The time spent on the internet has nothing to do with the time spent on the other old media. Even Internet heavy user, the one who has strong need of information, would not choose other media to search more information. For these digital natives, old media may even not enter their media repertoire in the near future.

On the other hand, nowadays television is still the most important medium for Chinese people; however, on the whole, the frequency of television use has shown a significant downward trend since 2012, especially for young generation. In contrast, the frequency of broadcast use does not drop significantly until 2015, which indicates that broadcast shows a relatively stronger vitality compared with newspaper and television in this digital age.

This study has some limitations. First, Internet use can be subdivided into Internet use via personal computers and Internet use via mobile phone. Prior research has proved that different types of internet use may generate different results (Kitamura, 2013). In the further study it is necessary to take this difference into consideration. Second, the current research uses CGSS secondary data to analysis, which is reliable and authoritative but lacks details. Individual-level data which contains more detailed information such as the time spent on a certain media in minutes per day and the reasons behind the media preference will complement the present research.

**References**

Bjur, J., Schroder, K., Hasebrink, U., Courtois, C., Adoni, H., & Nossek, H. (2014). Cross-media use: Unfolding complexities in contemporary audiencehood. In N. Carpentier, K. C. Schroder, and L. Hallet (Eds.), *Audience transformations. Shifting audience positions in late modernity* (pp. 15-29). London: Routledge.

Bolin, G., & Westlund, O. (2009). Mobile generations: The role of mobile technology in the shaping of Swedish media generations. *International Journal of Communication, 3*, 108-24.

Brown, M. (2000). Bringing people closer to news. *Adweek, 41*(40), IQ26.

Cao, Z., & Li, X. (2004). Effect of growing internet newspapers on circulation of print newspapers in the U.S. *Conference Papers—International Communication Association, 1*.

Chyi, H., & Lasorsa, D. (1999). Access, use and preferences for online newspapers. *Newspaper Research Journal, 20*(4), 2-13.

CNNIC (2017). 2016 China’s Online New Media Users Report, China Internet Network Information Center, Beijing.

CNNIC (2018). The 41th survey report. Report, China Internet Network Information Center, Beijing.

Cutler, N. E., & Danowski, J. A. (1980). Process gratification in aging cohorts. *Journalism Quarterly, 57*(2), 269-276.

Daft, R. L., & Lengel, R. H. (1984). Information richness: A new approach to managerial behavior and organizational design. *Research in Organizational Behavior, 6*(1), 73.

Deuze, M. (2009). Media industries, work and life. *European Journal of Communication, 24*(4), 467-480.

Dimmick, J., & Albarran, A. B. (1994). The role of gratification opportunities in determining media preference. *Mass Communication Review, 21*(3/4), 223.
Dimmick, J., & Rothenbuhler, E. (1984). The theory of the niche: Quantifying competition among media industries. *Journal of Communication, 34*(1), 103-119.

Dimmick, J., & Wallenschlaeger, M. (1986). Measuring corporate diversification: A case study of new media ventures by television network parent companies. *Journal of Broadcasting & Electronic Media, 30*(1), 1-14.

Dimmick, J., Chen, Y., & Li, Z. (2004). Competition between the internet and traditional news media: The gratification-opportunities niche dimension. *Journal of Media Economics, 17*(1), 19-33.

Fu, W. (2008). A smoothing cohort model in age-period-cohort analysis with applications to homicide arrest rates and lung cancer mortality rates. *Sociological Methods & Research, 36*(3), 327-361.

Gaskins, B., & Jerit, J. (2012). Internet news is it a replacement for traditional media outlets? *The International Journal of Press/Politics, 17*(2), 190-213.

Goot, M. V. D., & Beentjes, J. W. J. (2015). Media use across the life-span. In W. Donsbach (Ed.), *The concise encyclopedia of communication* (pp. 373-374). Oxford: Blackwell.

Hargittai, E. (2010). Digital na(t)ives? Variation in internet skills and uses among members of the “net generation”. *Sociological Inquiry, 80*(1), 92-113.

Hepp, A., Berg, M., & Roitsch, C. (2017). A processual concept of media generation; the media-generational positioning of elderly people. *NORDICOM Review: Nordic Research on Media & Communication, 38*, 109-122.

Hirschhorn, L., & May, L. (2000). The campaign approach to change: Targeting the university’s scarcest resources. *Change: The Magazine of Higher Learning, 32*(3), 30-37.

Hobcraft, J., Menken, J., & Preston, S. (1982). Age, period, and cohort effects in demography: A review. *Population Index, 48*(1), 4-43.

Katz, E., Blumler, J., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. Blumler and E. Katz (Eds.), *The uses of mass communication: Current perspectives on gratifications research* (pp. 19-34). Beverly Hills, CA: Sage.

Lee, P. S. N., & Leung, L. (2008). Assessing the displacement effects of the internet. *Telematics & Informatics, 25*(3), 145-155.

Lin, C., Venkataraman, S., & Jap, S. D. (2013). Media multiplexing behavior: Implications for targeting and media planning. *Marketing Science, 32*(2), 310-324.

Mares, M. L., & Woodard, E. H. (2006). In search of the older audience: Adult age differences in television viewing. *Journal of Broadcasting and Electronic Media, 50*(4), 595-614.

Nguyen, A., & Western, M. (2006). The complementary relationship between the internet and traditional mass media: The case of online news and information. *Information Research: An International Electronic Journal, 11*(3), 211-216.

Peiser, W. (2000). Cohort trends in media use in the United States. *Mass Communication & Society, 3*(2/3), 185.

Rice, R. (1993). Media appropriateness: “Using social presence theory to compare traditional and new organizational media”. *Human Communication Research, 19*(4), 451.

Sarrina Li, S. (2001). New media and market competition: A niche analysis of television news, electronic news, and newspaper news in Taiwan. *Journal of Broadcasting & Electronic Media, 45*(2), 259-276.

Shah, D., Schmierbach, M., Hawkins, J., Espino, R., & Donavan, J. (2002). Nonrecursive models of internet use and community engagement: Questioning whether time spent online erodes social capital. *Journalism and Mass Communication Quarterly, 79*(4), 964-987.

Silverstone, R. (1994). *Television and everyday life*. London and New York: Routledge.

Smith, H. L. (2008). Advances in age-period-cohort analysis. *Sociological Methods & Research, 36*(3), 287-296.

Taipale, S. (2013). The relationship between internet use, online and printed newspaper reading in Finland: Investigating the direct and moderating effects of gender. *European Journal of Communication, 28*(1), 5-18.

Vittadini, N., Siibak, A., Reifova, I., & Bilandzic, H. (2014). Generations and media: The social construction of generational identity and differences. In N. Carpentier, K. C. Schroder, and L. Hallet (Eds.), *Audience transformations. Shifting audience positions in late modernity* (pp. 65-81). London: Routledge.

Westlund, O., & Färđigh, M. A. (2011). Displacing and complementing effects of news sites on newspapers, 1998-2009. *International Journal on Media Management, 13*(3), 177-194.

Westlund, O., & Weibull, L. (2013). Generation, life course and news media use in Sweden 1986-2011. *Northern Lights: Film and Media Studies Yearbook, 11*(1), 147-173.
Wurff, R. (2011). Are news media substitutes? Gratifications, contents, and uses. *The Journal of Media Economics, 24*(3), 139-157.

Yang, Y., & Land, K. (2016). *Age-period-cohort analysis* (1st ed.). Boca Raton, Florida: Chapman & Hall/CRC Interdisciplinary Statistics), CRC Press.

Yang, Y., & Land, K. C. (2006). A mixed models approach to the age-period-cohort analysis of repeated cross-section surveys, with an application to data on trends in verbal test scores. *Sociological Methodology, 36*(1), 75-97.