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Selective Media Exposure and Increasing Knowledge Gaps in Swiss Referendum Campaigns

David Nicolas Hopmann¹, Anke Wonneberger²,
Adam Shehata³ and Jonas Højjer⁴

¹Department of Political Science, Centre for Journalism, University of Southern Denmark, Denmark; ²Amsterdam School of Communication Research ASCoR, University of Amsterdam, The Netherlands; ³Department of Journalism, Media and Communication, University of Gothenburg, Sweden; ⁴Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden

Abstract

This study aims to contribute to the discussion on how the growing opportunities for media choice influence gaps in political knowledge among those motivated to consume news versus those who are not. With more television channels available, it becomes easier to choose content matching personal interests. While several studies have analyzed trends in news consumption and motivations among different citizen groups, there are still very few studies that actually link these developments longitudinally to patterns of knowledge gaps. Using survey data from Swiss referendums held 1993–1999, we find that (1) gaps in political knowledge because of political interest have increased over time, and (2) political interest has become a stronger predictor of informational TV use.

To what extent are democracy and citizenship affected by the substantial transformations in the media environment that have taken place in the past couple of decades? Citizens today have more opportunities than ever to select media channels, outlets, and content that match their personal demands, interests, and preferences. Not only are the politically engaged able to seek out and consume an unlimited amount of political and current affairs information through a plethora of television and radio channels, newspapers and niche magazines, and online sources, but those lacking political interest are equally able to substitute such information for media content that more closely

All correspondence concerning this article should be addressed to David Nicolas Hopmann, Department of Political Science, Centre for Journalism, University of Southern Denmark, Campusvej 55, 5230 Odense M, Denmark. Email: dnh@sam.sdu.dk

matches their preferences. In short, we have gone from a low-choice to a high-choice media environment in which individual content preferences have become the key factor for understanding citizens' media use (Prior, 2007).

Some potential consequences of the increasing opportunities for media choice are growing gaps in both news consumption and political knowledge between citizens with different motivations (Bennett & Iyengar, 2008; Blekesaune, Elvestad, & Aalberg, 2012; Ksiazek, Malthouse, & Webster, 2010; Prior, 2007). In the low-choice era of the 1960s, 70s, and 80s, political information reached broad segments of the population through inadvertent exposure to television news. "Inadvertent" exposure implied that citizens who habitually watched evening TV had little chance of avoiding the news by switching to alternative channels. Today, faced with greater choice, several scholars have suggested the demise of the inadvertent news audience, which has led to increased differences between news-seekers and news-avoiders and widened gaps in political knowledge. Despite the attractiveness of this argument, the empirical evidence that more TV channels have led to widening gaps of news consumption and political knowledge is somewhat inconclusive for a number of reasons.

Most importantly, there are still very few longitudinal studies that investigate trends in both TV news consumption and political knowledge over time. While several studies have documented shrinking audiences for the traditional news media and even growing shares of news-avoiders over time (Blekesaune et al., 2012; Strömbäck, Djerf-Pierre, & Shehata, 2012), there is substantially less evidence that actually links these trends to widening gaps in political knowledge. One main reason for the lack of research focusing on how changes in the media environment influence patterns of information acquisition is the lack of knowledge measures that are both context-specific and comparable over a longer period. To be sure, we need measures of knowledge that tap awareness of political issues that are both democratically important and covered by the media at a particular point in time—topics that naturally will vary depending on what issues are on the political agenda. At the same time, despite variations in content, we need those measures to be functionally equivalent over time to enable longitudinal comparisons. That is, to assess the unique role of the media as an information source, we need to focus not on information that citizens are likely to have acquired earlier in life, such as knowledge about the political system, rules of the game, time-invariant party ideologies and issue positions, but rather on information they are likely to encounter through day-to-day surveillance of the political world.

The present study aims to contribute to the discussion on how growing gaps in political knowledge are influenced by the growing choice of TV channels. As noted above, while several studies have analyzed trends in news consumption among different citizen groups, there are still very few studies

that actually link these developments longitudinally to patterns of knowledge gaps. Using survey data from Swiss referendums held between 1993 and 1999, we focus on a basic, yet democratically crucial, type of political knowledge: awareness of what the referendums are about. More specifically, we study (1) how gaps in political knowledge owing to individual motivation and TV exposure have developed over time, and (2) whether motivation as indicated by political interest has become a stronger predictor of informational TV use over time.

The article is organized as follows: The next section delves deeper into the relationship between media environments, learning opportunities, and personal motivations. This section concludes with a number of hypotheses. Following these hypotheses is a description of the Swiss case. After presenting our data and method, we present our empirical analysis. The article closes by summarizing our findings and discussing the wider implications.

Learning: Opportunities and Motivations

The argument that increasing opportunities for media choice has led to growing gaps in news consumption and political knowledge is based on a more general theory of political learning. According to this theory, political learning is a function of both the information in the media environment and individual-level factors. Following this OMA-framework, learning about politics depends on the *opportunities* to encounter certain information, as well as on personal *motivations* and *abilities* to seek out and acquire this information (Delli Carpini & Keeter, 1996; Luskin, 1990; Prior, 2007).

Although political information opportunities can be defined as the availability of information in a given context (Delli Carpini, Keeter, & Kenamer, 1994; see also Esser et al., 2012), motivation typically refers to a citizen's own political interest and engagement. Even though the availability—and sheer amount—of political information has increased dramatically with the growing number of media outlets and the rise of the Internet, several scholars argue that the likelihood of encountering this information has become increasingly dependent on personal characteristics such as political interest (Bennett & Iyengar, 2008; Prior, 2007). The reason is that the same socio-technological and economic factors that have increased the supply of political information have—to an even larger extent—increased the availability of other types of content across a variety of media platforms, channels, and outlets. As a consequence, media consumers have become more selective in their media use. For those who prefer entertainment such as comedy, movies, sitcoms, or sports, the current media environment provides the possibility of satisfying such demands around the clock. Therefore, opportunities to incidentally encounter political information via news and current affairs programs have

decreased despite the fact that this type of content is more widely available than ever. In one of the most extensive treatments of these issues based on the U.S. case, Prior (2007) argues that:

As it becomes easier to find the ideal content at the ideal time, the chances that viewers encounter political information as an unintended consequence of watching a less-than-ideal program, perhaps even a news program, dwindle. Changes in the set of available media thus affect who follows the news, who learns about politics, and who votes—in short, they affect “the distribution of political power in a democracy” (p. 6).

According to Prior’s reasoning, the mechanisms behind learning from the news media during the low-choice era were *inadvertent exposure* and *passive learning* (Krugman & Hartley, 1970; Prior, 2007; Zukin & Snyder, 1984). Meanwhile, information acquisition in high-choice environments is driven by *selective exposure* and *motivated learning* (Bennett & Iyengar, 2008; Prior, 2007; Stroud, 2011). Television has been considered particularly important in this regard, primarily due to its tendency to attract large audiences (Prior, 2007; Schoenbach & Lauf, 2002), as well as its ability to convey political information in ways that facilitate learning among viewers with weaker motivation and cognitive resources (Graber, 2001; Neuman, Just, & Crigler, 1992).

Several studies speak to certain aspects of this argument, but research that targets longitudinal trends in political knowledge gaps from this perspective is scarce. Focusing on the relationship between learning opportunities and personal motivations, several studies clearly support the basic argument that the availability of political information in major news media influences the importance of individual-level factors as predictors of political learning (Barabas & Jerit, 2009; Curran, Iyengar, Lund, & Salovaara-Moring, 2009; Elenbaas, Boomgaarden, Schuck, & de Vreese, 2013; Elenbaas, de Vreese, Schuck, & Boomgaarden, 2014; Iyengar et al., 2010; Jerit, Barabas, & Bolsen, 2006; Nadeau, Nevitte, Gidengil, & Blais, 2008; Shehata, 2013). Whenever political information becomes more easily accessible in the media that citizens consume, the likelihood of inadvertent exposure and incidental learning seems to increase. By establishing this basic relationship, these studies indirectly suggest that as the probability of accidentally encountering political information decreases as a result of expanding media choice, personal motivations and preferences are likely to become stronger predictors of learning.

Shifting the focus toward patterns and trends in news consumption, there is little doubt that the audience for traditional news media such as newspapers, radio, and television is shrinking (Aalberg, Blekesaune, & Elvestad, 2013; Kim & Webster, 2012; Papathanassopoulos et al., 2013). Especially for TV news use, polarization among news-seekers and news-avoiders has been observed across cultures (Kim & Webster, 2012; Ksiazek et al., 2010). There is also

evidence that personal motivations have become more important for explaining differences in news consumption over time, but the relative importance of these individual-level characteristics may depend on other contextual factors (Blekesaune et al., 2012; Esser et al., 2012; see also Arceneaux, Johnson, & Cryderman, 2013, for experimental evidence of increased selective exposure to political information in the presence of choice). Even though increasing media supply, by definition, forces citizens to become more selective in their media use, one can—based on a number of studies of individual-level behavior—question the extent to which media consumers are driven by personal content preferences. For instance, some scholars argue that people rely on habits to cope with the abundance of media choices available to them. Factors such as channel loyalty, viewer inertia, and repeat viewing become crucial for understanding what people watch on television (Diddi & LaRose, 2006; LaRose, 2010; Rosenstein & Grant, 1997). Recent studies based on Dutch people-meter data showed that personal motivations played only a minor role for explaining citizens television news consumption compared with situational factors such as viewer availability, watching with co-viewers, and watching adjacent programs on the same channel (Wonneberger, Schoenbach, & van Meurs, 2011; 2012). These findings suggest that inadvertent news exposure is likely even in high-choice media environments, a conclusion the authors relate to structural characteristics of the larger media system (Wonneberger et al., 2012, p. 69).

Therefore, these previous results suggest that media consumption habits change slowly. In short, there are theoretical as well as empirical reasons to expect that gaps in knowledge have widened over time, and that gradual changes in patterns of news consumption—on television, in particular—at least partly account for these changes. At this point, however, there are very few studies that go beyond longitudinal trends in news consumption to capture consequences in terms of political learning. Furthermore, research on the contextual and individual determinants of news consumption indicates that the suggested path toward audience polarization and preferential media use depends on media environmental characteristics that influence the likelihood of inadvertent news exposure (Curran et al., 2009). On top of this, most studies on knowledge gaps originate from the United States, which is an outlier in the sense that it has no widely viewed public service television broadcaster. Such public service broadcasting, often with substantial news and current-affairs programming, is commonly found in other established democracies (Esser et al., 2012). Finding patterns similar to those reported in the U.S. case by Prior (2007) in a very different contextual setting would provide strong support for his reasoning on how changing media environments lead to increasing knowledge gaps in society.

Based on the above considerations on the OMA-framework and the need for further research, we seek to test three predictions. We hypothesize that

knowledge gaps between those high and low in political interest increase over time (H_1). That is, we expect that motivation to learn about politics over time becomes a more important predictor of political knowledge. In this vein, we hypothesize that knowledge gaps increase between those who use television as a source for political information and those who do not (H_2). As choice opportunities grow and the less politically interested viewers tune out political information, the audience still using television as a source for political information becomes increasingly homogenous in terms of political interest. Motivation is an important factor for explaining who learns from news media use (Eveland, 2001). We should therefore expect a stronger effect of informational television use on knowledge over time. Additionally, based on the literature review, we hypothesize that, over time, political interest becomes an increasingly important determinant of informational television use (H_3). That is, there is an increasing gap in informational television use between those highly interested in politics and those who are not interested in politics.

The Case of Switzerland

In this study, we analyze the relationship between political interest, television use, and political knowledge about referendums in Switzerland from 1993 to 1999. For this period, detailed data on political knowledge, media use, and political interest are available. We focus on television use because previous research, as mentioned, has documented the crucial role played by television *vis-à-vis* other types of media, especially by contributing to learning among viewers with weaker motivations and resources (Graber, 2001; Neuman et al., 1992; Shehata, 2013).

Similar to many other Western countries, Switzerland has witnessed a dramatically changing media market (Bonfadelli, 1999). The proportion of the Swiss (German-speaking) population with more than one TV set is steadily increasing. Of those owning a TV set, the proportion having access to cable or satellite TV is also steadily increasing. Hence, the average number of stations received has increased steadily from approximately six in 1980 to more than 13 in 1990 and 24 in 1998 (Bonfadelli, 1999, p. 18). As is also evident from Bonfadelli's (1999) research, some of the most dramatic changes occurred in the late 1980s. However, as discussed above, given the highly habitual character of media use, any effects of these changes in the media environment take time to unfold (Strömbäck, Djerf-Pierre, & Shehata, 2013; Wonneberger et al., 2012). Therefore, there is good reason to assume that changes will be traceable during the 1990s, the period for which data are available for our study.

What changes have been observed when it comes to television consumption patterns? First, some patterns seem, on the aggregate level, not to have changed much. For example, because of a substantial decline of public service viewing toward the end of the 1980s, during which the Swiss increasingly turned to foreign television from neighboring Germany, the market share of Swiss public service broadcasting has been fairly stable (Bonfadelli, 1999; Esser et al., 2012). However, beneath this aggregate picture of stability, substantial changes occurred that indicate an important transformation in news consumption patterns. For example, those watching the Swiss–German public service television station SF DRS increasingly watched its news, current affairs, and information programs, while use of its entertainment programming decreased from 1986 to 1996 (see Egger 1997, quoted in Bonfadelli, 1999). At the same time, more and more Swiss citizens reported using foreign TV as the most or second-most preferred source for entertainment media (Bonfadelli, 2003, p. 8). In 1988, 48% of the Swiss population reported a preference for Swiss public TV and 34% for foreign TV. But these numbers had changed dramatically by 2002, when 70% reported a preference for foreign TV and 44% for Swiss public service TV.

What do these changes imply? Recall that the OMA-framework emphasizes that the motivation to consume news and current affairs programming only comes into play when citizens actually have the possibility to choose different kinds of programming. Thus, it is not the changing media environment, *per se*, that affects exposure to news and current affairs, but selective exposure in a media environment in which it is possible to be selective. Following Bonfadelli (1999, p. 20), Swiss television exposure has indeed become more selective, and therefore, its audience has become more fragmented. What remains to be seen is whether the preferences of citizens are increasingly decisive for their acquisition of political knowledge.

Data and Measures

Typically, Swiss citizens are asked up to four times a year to cast their vote on a number of referendums. Following each of these voting dates, the so-called VOX survey is conducted with ~1,000 respondents and made publicly available for research purposes.¹ In these surveys, respondents are asked about their media use before the voting date and their specific knowledge of the different referendums on the ballot. Thus, the VOX surveys include indicators of political knowledge on the current issues at stake in a rolling cross-sectional design.

¹For more details on the data, see <http://forsdata.unil.ch/projects/voxit/> (last accessed 31 July 2013, see also Longchamp et al., n.d.). Note that we do not differentiate between optional referendums, mandatory referendums, or so-called popular initiatives.

A total of 21 voting dates were held between 1993 and 1999. The number of referendums on the ballot on the different voting dates differed between one and six issues ($M = 2.90$, $SD = 1.19$). We could only use data gathered in the period 1993–1999, as crucial measures were not collected before and after these years (political interest was not asked before, questions about media use were limited after).² In our empirical analyses, we focus on the most spoken language in multilingual Switzerland, German, spoken by about three-quarters of all eligible voters. After excluding cases with missing values ($n = 2,306$), 13,117 respondents remained in our subsequent analyses.

The dependent measures in our analyses are political knowledge and television use. For each referendum, respondents were asked whether they knew the title and contents of the referendum. The measure ranges from 0 to 2. If they knew both, respondents are assigned a “2”; if they knew either, they are assigned a “1”; and if they knew neither title nor contents, they are assigned a “0.” As the number of referendums per voting date ranged between 1 and 6, we first computed an average knowledge score for each respondent across all referendums per voting date, which then was divided by two. This yielded a political knowledge scale from 0 to 1 that was consistent over all voting dates ($M = 0.69$, $SD = 0.30$). Note that the number of referendums did not change linearly but fluctuated over time. Note also that there was only one voting date with only one referendum on the ballot, in all other cases more than one referendum was on the ballot on a given voting day.

While there are substantive strengths in our measure of knowledge (e.g., the same questions were posed at each time point), comparing knowledge over time is not without challenges. Such an analysis rests on the assumption of scale comparability, where, for instance, scoring 0 (lowest value) and 1 (highest) value means approximately the same thing both across and within time points, which is a strong assumption given that we have variations in the number of knowledge questions at each time point. We therefore included the number of proposals and campaign intensity as controls in our models. The number of proposals taps how many knowledge questions were posed, and we treat campaign intensity as a measure of the salience of each voting date in public discourse (as indicated by the average number of newspaper ads per voting date, see also Kriesi, 2007, p. 120),³ which is likely related to awareness of the campaign.

Media use is measured by asking respondents how they kept themselves informed during the campaign, as well as through which media, including television, they were exposed to pro and con arguments. Respondents could

²One possible voting date was excluded from the analyses. The referendum on December 6, 1992, about a possible Swiss entry to the European Economic Area presented an exceptional case regarding the intensity of the public debate, and it was excluded from the analysis.

³We are indebted to Hanspeter Kriesi for making the data on newspaper ads available. Note that political advertising on Swiss television is not allowed (Strunk & Gerth, 2011, p. 55).

answer either “yes,” “no,” or “don’t know.” The latter option was subsumed to no exposure yielding a measure of conscious campaign exposure ($M = .67$, $SD = 0.47$). Asking whether media have been used as a source for political information is obviously less than ideal; a direct measure of which television stations were used would have been preferable. Overall television consumption has not decreased in past decades (Bonfadelli, 2010). Because foreign (German) television has very limited news coverage of Swiss politics (and private Swiss television plays a limited role), it logically follows that those who report having used television as a source for political information primarily have used Swiss public service television. We return to this point in the results section. Self-reported exposure measures have to be used with caution because correct estimation and reporting are demanding tasks and susceptible to flaws (Dilliplane, Goldman, & Mutz, 2012; LaCour & Vavreck, 2014; Prior, 2009). However, as opposed to general news exposure, exposure to campaign information is a specific behavior during a specific period. Therefore, measures of these behaviors are likely less flawed than measures of general news exposure. Furthermore, social desirability might be less relevant for exposure to a specific campaign, as compared with general news exposure.

Respondents were asked about their general interest in politics with response options ranging from 1 (strongly interested) to 4 (no interest at all). Because only 6% of the sample reported no interest in politics, scores of 3 and 4 were merged. The variable was reversed to create a 3-point scale ranging from 1 (low interest) to 3 (high interest) ($M = 1.94$, $SD = .72$).

As individual-level control variables, we included, first, sociodemographics: age ($M = 47.12$, $SD = 17.31$), gender (50% female), and education (measured on three levels, $M = 2.21$, $SD = 0.66$). Second, we controlled for newspaper use ($M = 0.76$, $SD = 0.42$) and radio use ($M = 0.54$, $SD = 0.50$) as sources for political information—each measured in the same manner as television use. Third, and finally, partisanship—whether respondents identified with one of the political parties—was included ($M = 0.59$, $SD = 0.49$).

Analysis

The rolling cross-sectional nature of the data may cause an underestimation of standard errors (Wooldridge, 2003). Models derived from these kinds of data should, therefore, account for correlated error terms in a given sampling period, that is, in a given voting date. A common way to do so is to adjust standard errors, for instance, by clustering (Petersen, 2009). The models of political knowledge were estimated by feasible generalized least squares. Maximum likelihood (ML) estimators were obtained with standard errors that take the cross-sectional correlation into account. Likewise, logistic regression (logit) with clustered standard errors was applied for the models of

television use. Interaction terms with the voting date (count variable from 1 to 21) were included to assess changes of the impact of the proposed predictors over time. The variable voting date functions as a proxy for the changing media environment that is characterized by a growing abundance of TV channels.

To allow for a meaningful interpretation of the interaction coefficients, marginal effects and their 95% confidence intervals of the respective predictors were calculated separately for each voting date while keeping all other predictors constant at their sample means. This procedure allows us to assess the size and significance of the effects of political interest and TV use on knowledge, as well as the effect of political interest on TV use over the whole range of voting dates (Brambor et al., 2006). Because interpretation of marginal effects is less straightforward for the logistic regression model, differences in the effects for specific groups (low versus high political interest) were calculated for all voting dates.

Results

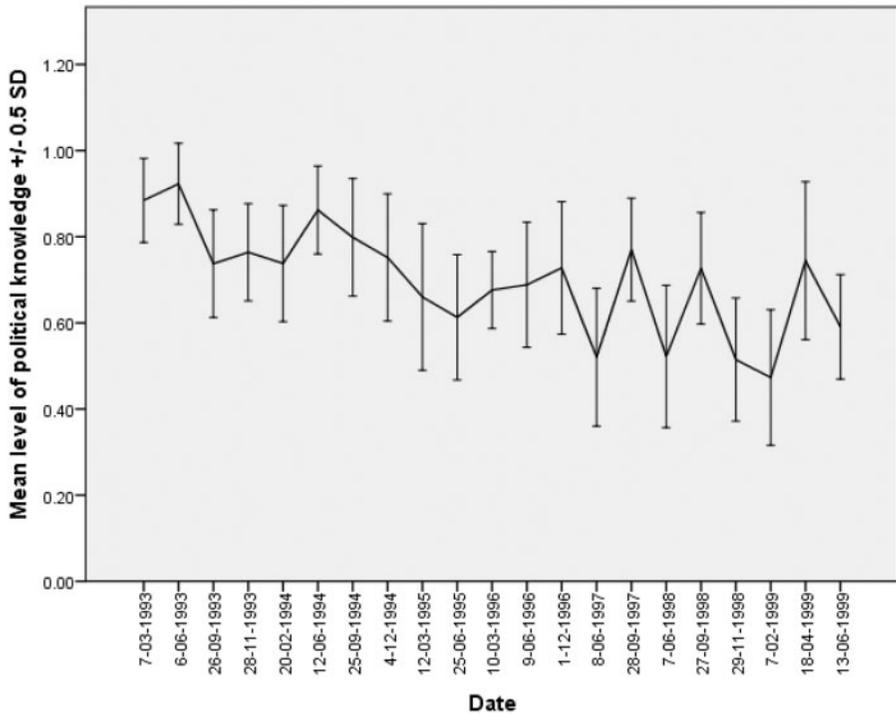
Generally speaking, the VOX data reveal that the mean level of political knowledge on Swiss referendums has been decreasing in the period of our study, from $M = 0.88$ ($SD = 0.20$) on the first voting date in 1993 to $M = 0.59$ ($SD = 0.24$) on the final voting date of our research period in 1999. If knowledge gaps are increasing over time, one would expect increasing deviations in political knowledge among citizens. Though Figure 1 documents a tendency of increasing variance over time, we do not find a clear linear trend of increasing knowledge gaps on the aggregate level. Therefore, in Table 1, we present a detailed analysis of the changes in individual knowledge levels over time.

Looking at Model 1 in Table 1, the results confirm that, over time, knowledge levels have been decreasing, documented by the negative impact of the date coefficient. More referendums on a given voting date were also associated with lower knowledge levels, while the campaign volume was positively related to knowledge. Knowledge levels were also positively related to political interest and education. We also show that knowledge levels correlated positively with media use as a source for political information.

We expected to find a significant positive relationship between political knowledge and political interest over time, which is another way of stating that knowledge gaps increased between those interested in politics, and those who are not. Motivations have become more important for political learning. As shown in Model 2 in Table 1, our analysis supports this assumption. To get a better grasp of this relationship between political knowledge, political interest, and time, Figure 2 graphically presents the marginal effects of political interest on knowledge per voting date. The plot shows that effects of political interest

Figure 1

Campaign knowledge over time, mean scores, and standard deviations



were significant for all dates and that the marginal effects of political interest on political knowledge increased from the first voting date in 1993 to the last one in 1999. The change over time is larger than it may appear at first sight. To reveal the magnitude of the changes, we used statistical simulation (King, Tomz, & Wittenberg, 2000; Tomz, Wittenberg, & King, 2003) to calculate expected values of political knowledge with 95% confidence intervals based on the regression model in Table 1 (Model 2) for the first and last referendum of our sample. The interaction term and the associated variables were set to meet the conditions of interest, whereas all other variables of the model were set to their mean. In 1993, those with a high interest in politics scored on average 0.14 higher on campaign knowledge ($M = 0.92$, 95% CI [0.90, 0.94]) than those with a low interest ($M = 0.78$, 95% CI [0.76, 0.80]). Although average knowledge levels decreased for both groups in 1999, the difference increased to 0.25, with 0.69 (95% CI [0.67, 0.71]) for the highly interested and only 0.44 (95% CI [0.42, 0.46]) for those with low interest. Given that the knowledge scale ranges from 0 to 1, an increase in the knowledge gap of 0.11 points and

Table 1
Prediction of Campaign Knowledge: Main Effects and Changes Over Time

Predictors	Model 1 <i>B (SE)</i>	Model 2 <i>B (SE)</i>
Age	-.00 (.00)	-.00 (.00)
Gender (female = 1)	-.03*** (.01)	-.03*** (.01)
Education	.03*** (.00)	.03*** (.00)
Political interest	.10*** (.00)	.07*** (.01)
Partisanship	.02** (.01)	.02** (.01)
Television	.05*** (.01)	.02* (.01)
Newspaper	.13*** (.01)	.12*** (.01)
Radio	.02*** (.01)	.02*** (.01)
Date	-.01*** (.00)	-.02*** (.00)
Date × political interest	—	.003*** (.001)
Date × television	—	.002* (.001)
Number of proposals	-.04*** (.00)	-.04*** (.00)
Campaign volume	.00*** (.00)	.00*** (.00)
Constant	.55*** (.02)	0.63*** (.02)

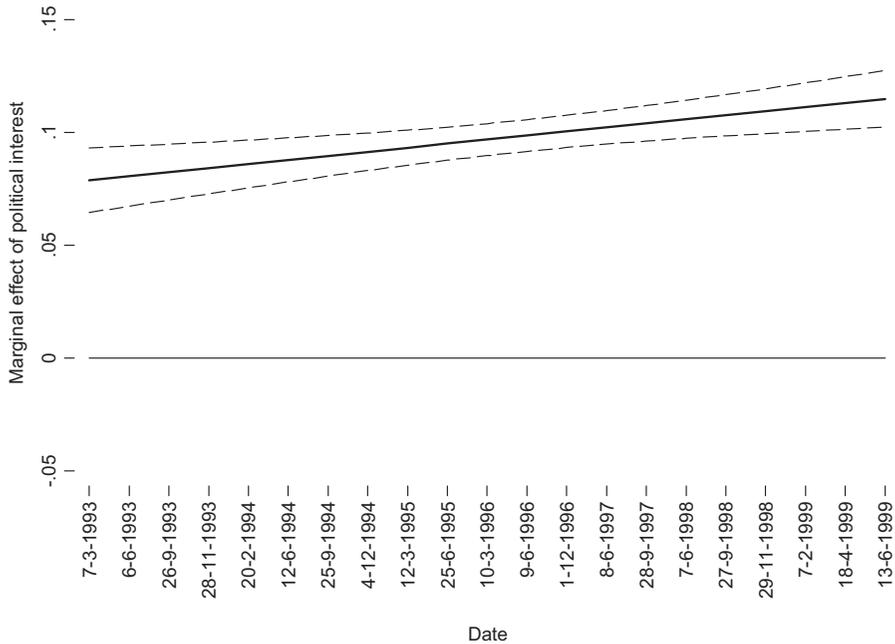
Note. Cell entries are estimates from feasible generalized least squares (FGLS) with clustered standard errors per referendum date. Bold coefficients mark hypothesized effects. $N = 13,117$. * $p < .05$; ** $p < .01$; *** $p < .001$.

an overall knowledge gap of 0.25 points are significant also in substantial terms.

Television was used as a source for information about the referendums by a majority of the respondents throughout our research period. The average level was $M = 0.73$ ($SD = 0.02$) at the first voting date in 1993 and $M = 0.70$ ($SD = 0.02$) at the last voting date in 1999. Exposure levels fluctuated, though, with lowest levels for the voting dates March 10, 1996 ($M = 0.56$, $SD = 0.02$) and April 18, 1999 ($M = 0.56$, $SD = 0.02$). We expected to find that the relationship between informational television use and political knowledge

Figure 2

Marginal effects of political interest on campaign knowledge over time. Effect sizes on campaign knowledge for each referendum date with 95% CI

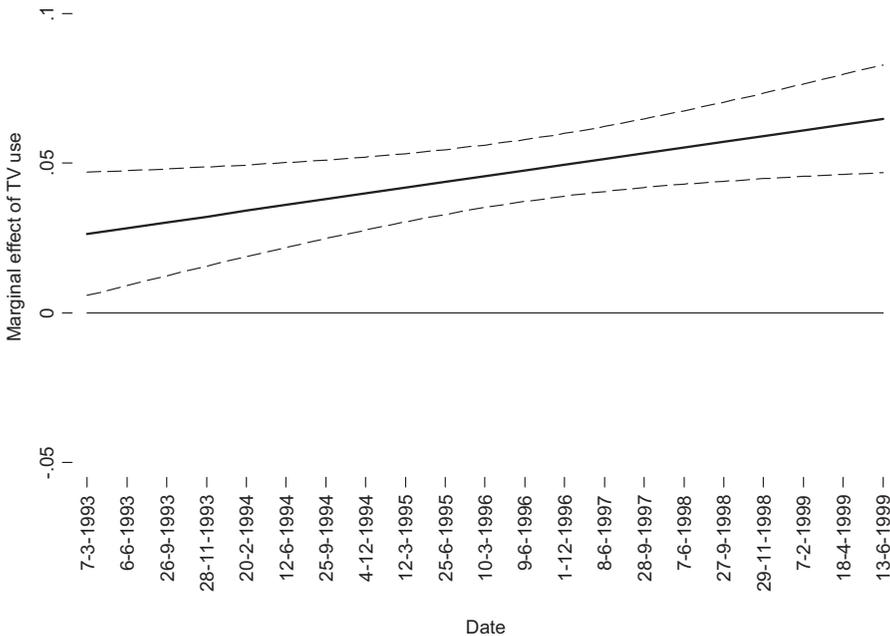


changed over time. As shown in Model 2 in Table 1, our analysis confirms this assumption, as well. Figure 3 depicts the changing effect of TV use on political knowledge. The plot shows a significant increase of the marginal effect of informational TV use on political knowledge over time. Calculating expected values in a similar manner to political interest revealed an increasing knowledge gap owing to informational TV use. In 1993, the difference in campaign knowledge between those using TV as a source for information ($M=0.90$, 95% CI [0.87, 0.92]) and those not using TV ($M=0.87$, 95% CI [0.84, 0.90]) was not significant. In 1999, by contrast, TV users ($M=0.54$, 95% CI [0.52, 0.56]) scored on average 0.07 higher on campaign knowledge than nonusers ($M=0.47$, 95% CI [0.46, 0.50]). This gap is similar to the increase in the gap reported for those high and low in political interest. In short, we find a substantially increasing direct effect of TV use on knowledge, which becomes no less substantial when recalling that our model also includes political interest over time, that is, the motivation to learn (Prior, 2007, pp. 78–84), and that it covers a fairly short period during which changes could unfold.

Summing up, our analysis so far has demonstrated that there is an increasing knowledge gap between those who use television as a source for

Figure 3

Marginal effects of television use on campaign knowledge over time. Effect sizes on campaign knowledge for each referendum date with 95% CI



information and those who do not, as well as an increasing knowledge gap between citizens with high and low political interest. Additionally, we posed the question whether the relationship between informational television and political interest changed over time, as suggested by the media choice literature reviewed above. As shown by Model 2 in Table 2, several factors are related to informational television use. Those who are more politically interested, but also consume other media (newspaper, radio) use television more often. Importantly, for understanding the crucial role played by television, we also see that its use is negatively related to education. That is, the television is a source of political information for the lower educated more than for the higher educated. Therefore, this finding emphasizes the different role of television *vis-à-vis* newspapers when it comes to informing the electorate, and it supports our decision to focus on television use in this study.

Our third hypothesis stated that, over time, gaps in informational television use would increase between those high in political interest and those who are low in political interest. Model 2 in Table 2, as well as the marginal effect plots in Figure 4, reveal an increasing influence of political interest on informational television use. That is, the difference in informational television use between those high and low in political interest increased. As there is no

Table 2
Prediction of Informational Television Use: Main Effects and Changes Over Time

Predictors	Model 1 <i>B (SE)</i>	Model 2 <i>B (SE)</i>
Age	.01*** (.01)	.01*** (.00)
Gender	-.19*** (.05)	-.19*** (.05)
Education	-.17*** (.03)	-.17*** (.04)
Political interest	.19*** (.03)	-.07 (.07)
Partisanship	.03 (.04)	.03 (.05)
Newspaper	.84*** (.05)	.83*** (.06)
Radio	1.21*** (.04)	1.21*** (.07)
Date	-.01 (.00)	-.05*** (.01)
Date × political interest	—	.02*** (.01)
Constant	-.88 (.12)	-.39 (.19)
McFadden's adjusted R^2	.127	.128

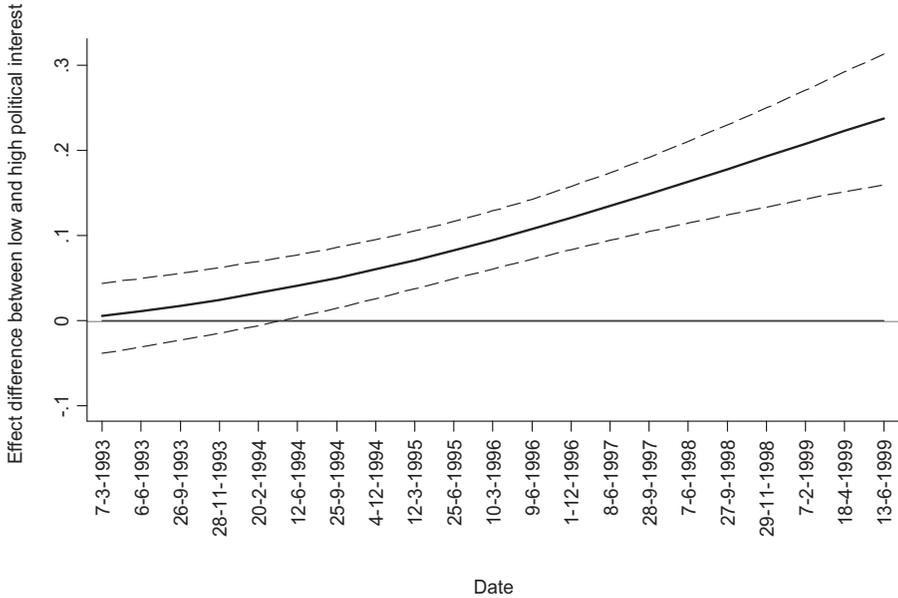
Note. Cell entries are estimates from logistic regression (logit), $N = 13,117$. Bold coefficients mark hypothesized effects. *** $p < .001$.

reason to assume that citizens low in political interest have turned away from television as such (cf. Bonfadelli, 1999, p. 20), they have probably turned to television stations not carrying much, if any, political information on campaigns, that is, commercial and foreign stations. Hence, over time, less politically interested citizens increasingly turned away from informational television use.

Again, specific values of the probability of television use with 95% confidence intervals were calculated based on the logistic regression model in Table 2 (Model 2). At the time of the first voting date in our sample in 1993, there was no significant difference in the probability of television use between those with low ($M = 0.73$, 95% CI [0.70, 0.76]) and high ($M = 0.72$, 95% CI [0.68, 0.76]) political interest. At the last voting date in 1999, however, the probability for those with low interest declined to 0.58 (95% CI [0.55, 0.61]), but the probability for those with high interest remained high at 0.74 (95% CI [0.68, .079]). Thus, within a fairly short period of seven years

Figure 4

Marginal effects of political interest on informational television use over time. Group differences in the probability of informational television use for each referendum date with 95% CI



from 1993 to 1999, the Swiss population went from no gap based on political interest to a substantial gap of 16 percentage points.

Combining the insights from the three hypotheses tested so far, one may wonder if a joint test would confirm an indirect effect on political knowledge of political interest mediated through the informational use of television, moderated by time. Given the nature of our data, testing such a moderated mediation, or conditional indirect effect, is not straightforward because the mediator in the analysis, informational television use, is a dummy variable. Therefore, we ran different models to test whether there is a significant indirect effect on political knowledge of political interested mediated through informational television use, moderating the indirect effect by time. Indeed, as one would expect based on the above analyses, such an indirect relationship emerges and increases over time (results not shown here).⁴

⁴In more detail, these models were a standard structural equation model (SEM) as well as a generalized structural equation model (GSEM) partly based on a Poisson regression (both models with robust standard errors) relaxing the assumption of the continuity of the mediator, which is not given in the case of a dummy variable. Detailed results are available from the authors on request.

Discussion

According to one of the most influential arguments in the growing body of literature on media choice, gaps in political knowledge are likely to widen between those motivated to seek out and follow news and current affairs programs and those lacking such motivation (Bennett & Iyengar, 2008; Mutz & Young, 2011; Prior, 2007). Despite the face validity and attractiveness of the argument, we still know relatively little about these trends—primarily because of the lack of longitudinal data enabling an integrated analysis of the development of political knowledge, news consumption, and personal motivations over time. Apart from the seminal studies conducted by Prior (2007), most research speaking to these questions focuses on the development of news consumption patterns (but not including effects on knowledge gaps), and they reach somewhat contradictory conclusions (Aalberg et al., 2013; Strömbäck et al., 2013; Wonneberger et al., 2012).

Thus, while few would deny that the opportunities for media choice have increased over time, there are still very few studies that systematically analyze the political and democratic implications of these trends in terms of both knowledge and news consumption using a longitudinal design. To contribute to these discussions, this study used data from Switzerland, investigating both changes in informational use and changes in knowledge gaps over time. Switzerland has seen substantial transformations of its broadcasting market with a growing number of commercial and foreign television channels available to viewers. The available data cover a period where the consequences of these media market transformations are likely to gradually unfold. Overall, we found that (1) gaps in political knowledge owing to political interest and informational TV exposure have increased over time, and that (2) political interest has become a stronger predictor of informational TV use. That is, our results lend support to the argument put forward by Prior (2007) and others, suggesting that as the opportunities to learn about, as well as to avoid, politics through various media increase, individual-level motivations become more important for understanding patterns of news consumption and information acquisition. In particular, our results showed similar trends over a relatively short period in a media setting rather different from the U.S. case, where most previous studies originate.

It is worth noting that despite relatively stable aggregate trends in the market share of Swiss public service channels, changes in viewing behavior still seem to have occurred at the individual level. While the share of viewers of these channels remains fairly constant, the audience composition appears to have shifted with a growing proportion of politically motivated viewers. In essence, these results point not to a shrinking television news audience, but to a changing audience—or, as several others have noted, a demise of the inadvertent audience for television news (Bennett & Iyengar, 2008; Esser et al., 2012; Prior, 2007).

One of the strengths of the present study is our measure of knowledge. By analyzing citizens' awareness of the contents of current referendums, we are able to capture a certain type of knowledge that is democratically important, context-specific but also functionally comparable across time. Compared with historical or political system knowledge usually acquired throughout the life course, this type of surveillance information is particularly likely to reach citizens via the mass media (Delli Carpini & Keeter, 1996; Jerit et al., 2006). Therefore, even though we cannot establish causality at the individual level based on the data used here, the focus on surveillance knowledge increases our confidence that the positive impact of media use at least partly reflects a learning effect. From a normative perspective, political knowledge—as well as its measurements—has been widely discussed in the literature, and different models of democracy certainly put stronger or weaker value on knowledge as a distinct citizen quality (Althaus, 2006; Delli Carpini & Keeter, 1996; Held, 2006; Lupia, 2006; Milner, 2002). While some see political knowledge as valuable in itself or as a critical component of informed and meaningful electoral behavior (for a discussion see Delli Carpini & Keeter, 1996; Milner, 2002), others have seriously questioned the value of using awareness of textbook knowledge as an indicator of civic and voter competence (Althaus, 2006; Graber, 2001; Lupia, 2006). As noted, however, our measure of knowledge is somewhat different in focusing on awareness of the contents of current referendums, which arguably is a much more distinct and goal-oriented form of knowledge, differentiating the referendum setting from presidential and parliamentary election contexts. It is certainly one thing to be aware of a current referendum and to know about its contents, but then disregard it as irrelevant from a personal or societal perspective. It is quite another thing to be totally unaware about the referendum. Thereby, our measure resembles more of a low-threshold form of knowledge tied to the notion of a “monitorial citizen” (Jerit et al., 2006; Schudson, 1998), who “[r]ather than try to follow everything, [...] scans the environment for events that require responses” (Zaller, 2003, p. 118).

The trends documented here could also be considered important given the time frame of our study, covering media environmental developments between 1993 and 1999. It would not be difficult to argue that the most radical transformations in terms of increasing media choice opportunities have occurred in the past decade, with the rapid proliferation of the Internet and related digital communications technologies allowing for extensive preference-driven media use. Despite the relatively limited time frame, our findings still capture growing gaps in news consumption and knowledge between citizens with different motivation levels.

One of the weaknesses of our study is obviously the available indicator of television use. Respondents were not asked about general media use, but

whether they specifically used television as a source for political information. Hence, we cannot demonstrate directly that those citizens not interested in politics increasingly turn away from public service broadcasting to commercial and foreign television. This trend we can only infer from our results showing that political interest becomes increasingly decisive for informational television use as well as political knowledge, while we know that aggregate television consumption was fairly stable in the same period (Bonfadelli, 1999, 2010).

While Switzerland is a special case in the sense that its political system is characterized by extensive direct democratic elements, we have no reason to assume that the patterns of our findings with respect to the relationship between political interest, television use, and political knowledge are unique to Switzerland. Most Western European countries have experienced an extensive commercialization and deregulation of their media markets and, therefore, changes in their media environment in the same period as Switzerland (Esser et al., 2012; Hallin & Mancini, 2004). This trend toward commercialization implies that introducing new media outlets to the market broke monopolies enjoyed by public service broadcasters. As a consequence, citizens now have a much more diverse supply of media outlets to choose from, rendering it easier for them to avoid media content they are not interested in. With the so-called “inadvertent” audience for news and current affairs coverage shrinking, gaps in political knowledge have likely been increasing elsewhere too.

Understanding the extent and causes of gaps in political knowledge is crucial for our efforts in understanding how democracy works in practice. Our study has made a small, but important contribution to the debate by documenting that media use is important for the acquisition of political information, but that there are increasing gaps in informational television use between people with high and low politically interest. Hence, it is no surprise that we also find increasing knowledge gaps among these groups of people. These findings are important, as previous studies have shown that knowledge is an important part in explaining voting behavior, including Swiss referendums (Christin, Hug, & Sciarini, 2002).

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Biographical Notes

David Nicolas Hopmann, Associate Professor of Media and Politics, received his PhD from the University of Southern Denmark (2009). His research focuses on mediated and interpersonal political communication and its effects.

Anke Wonneberger, Assistant Professor, received her PhD from the University of Amsterdam, the Netherlands (2011). Her research focuses on media use and advertising and its effects.

Adam Shehata, Assistant Professor at the University of Gothenburg. His research focuses on media use and effects.

Jonas Höijer, Statistician at the Karolinska Institutet, holds an MA in Statistics from Uppsala University, Sweden.