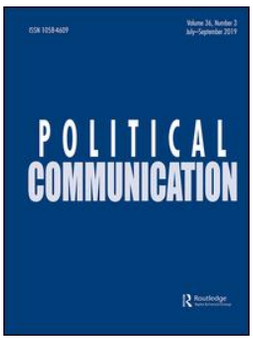

Political Communication

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/upcp20

# Increased Media Choice and Political Knowledge Gaps: A Comparative Longitudinal Study of 18 Established Democracies 1995-2015

Atle Haugsgjerd, Stine Hesstvedt & Rune Karlsen

**To cite this article:** Atle Haugsgjerd, Stine Hesstvedt & Rune Karlsen (2021): Increased Media Choice and Political Knowledge Gaps: A Comparative Longitudinal Study of 18 Established Democracies 1995-2015, Political Communication, DOI: 10.1080/10584609.2020.1868633

**To link to this article:** https://doi.org/10.1080/10584609.2020.1868633

POLITICAL COMMUNICATION
https://doi.org/10.1080/10584609.2020.1868633

Routledge
Taylor & Francis Group



# Increased Media Choice and Political Knowledge Gaps: A Comparative Longitudinal Study of 18 Established Democracies 1995-2015

Atle Haugsgjerd[a], Stine Hesstvedt[a], and Rune Karlsen[b]

[a]Institute for Social Research, Oslo, Norway; [b]Department of Media and Communication, University of Oslo, Oslo, Norway

**ABSTRACT**

We investigate the often-stated, but disputed claim in the political science and political communication literature that increasing media choice widens inequalities in political knowledge. The assumption is that in a high-choice media environment, the politically interested will consume more news while the uninterested will avoid such content, leading, in turn, to widening differences in political knowledge. Although previous studies show that high media choice increases political knowledge gaps in the United States, comparative longitudinal evidence is currently lacking. To fill this gap, we draw on data from four rounds of the Comparative Study of Electoral Systems. Overall, we do not find general support for the high-choice knowledge gap thesis. In most countries, there is no indication that inequality in political knowledge has increased over time. Building on recent insights from political communication research, we question key assumptions of the high choice knowledge gap thesis.

**KEYWORDS**

Political knowledge; high choice; knowledge gaps; increasing political knowledge inequality; news avoidance

## Introduction

While political institutions are typically characterized by stability or a process of slow gradual change, the political communication systems of established democracies are undergoing rapid and fundamental transformation as a result of technological, social and economic innovations that change audience behavior and challenge existing business models. In the heyday of broadcasting, the limited number of channels ensured huge audiences for each, and almost everyone consumed a shared minimum of news about politics and current affairs (Blumler & Kavanagh, 1999). Digitalization and disruptive technological innovations have undoubtedly increased the number of media platforms and the content on offer, providing countless choices (e.g., Napoli, 1999; Prior, 2005, 2007; Webster, 2014).

In the political science and political communication literature, it is a popular yet contested belief that this development has profound consequences for the distribution of political knowledge within a society (Prior, 2005, 2007; Van Aelst et al., 2017). For politically interested citizens, increased media choice affords greater opportunities to seek out news about politics and current affairs while politically uninterested citizens can more easily avoid such content. One supposed consequence of this divergence in media consumption is an increasing gap between information-rich and information-poor citizens in terms of political knowledge. This argument, which we

**CONTACT** Rune Karlsen rune.karlsen@media.uio.no Department of Media and Communication, University of Oslo, P.O. Box 1093, Blindern, 0317 Oslo, Norway.

Supplemental data for this article can be accessed on the publisher's website.

refer to as "the high-choice knowledge gap thesis", has been widely discussed in the literature following Prior's (2005, 2007) seminal studies (see Van Aelst et al., 2017).

The present study makes two contributions to this literature. Its main contribution is to empirically investigate the effect of changing media systems and increasing choice on the distribution of political knowledge in 18 established democracies. Despite widespread attention, there is a surprising lack of empirical evidence for the high-choice thesis. While there is evidence from the United States that increased media choice strengthens political knowledge gaps (Prior, 2005, 2007), few if any studies have investigated whether the distribution of political knowledge has actually become less equal over time (Van Aelst et al., 2017, p. 16). To the best of our knowledge, the present study is the first to investigate this matter, drawing on data from four rounds of the Comparative Study of Electoral Systems (CSES) from 1996 to 2015 – a period characterized by almost limitless growth in media choice. If the high-choice knowledge gap thesis is valid, political knowledge gaps should have increased during that time in all established democracies, as digital technology has undoubtedly increased media choice.

Our second contribution is to build on different strands of political communication literature that questions whether high-choice environments necessarily increase knowledge gaps, and critically discuss the idea that contemporary high-choice contexts induce inequalities in political knowledge. More precisely, we discuss how media preferences are likely to be constrained by channel repertoires (Taneja et al., 2012) and situational factors (Wonneberger et al., 2011), as well as by the architecture of the digital political communication system (Taneja et al., 2018). Taken together, we suggest that these factors buffer against greater inequality in political knowledge by limiting the extent to which people (willingly or unwillingly) avoid news about politics and current affairs.

The results of our empirical analyses offer little support for the high-choice knowledge gap thesis as a general theory. While knowledge inequalities endure in most countries, we find few signs of *increasing* inequality between information-rich and information-poor citizens across countries for the period 1996–2015. In the concluding section, we build on our theoretical discussion to discuss why we fail to find general support for the high-choice thesis. We highlight the need for further theoretical and empirical clarification of the relationship between media consumption, political interest, and high-choice media systems in future research.

## The High-Choice Knowledge Gap Thesis

The high-choice knowledge gap thesis builds on specific assumptions regarding agency (the individual preferences and appetites of users) and structure (the media environment) (cf. Luskin, 1990; Webster, 2014). In deciding what content to consume, individuals are seen to be driven by relatively stable media preferences and as purposeful actors with comprehensive knowledge about media content (e.g., Webster, 2014, p. 13). The media environment, on the other hand, is seen to determine consumers' opportunities for matching their personal preferences to the content offered.

In the "low-choice" media environment of earlier decades, the limited number of media options tempered the impact of heterogeneous individual preferences. Choice was constrained by the smaller range of channels, which also ensured larger audiences for each channel. Consequently, almost everyone consumed at least a shared minimum of news about politics

(e.g., Blumler & Kavanagh, 1999); many watched political news simply because they did not want to turn the television off, creating a large so-called "inadvertent" audience (Prior, 2005, p. 578). Because people were exposed to news, they learned about politics and current affairs, even if they were uninterested to begin with (Neuman et al., 1992).

The digital revolution fundamentally altered this situation. Internet technology has provided 24/7 access to countless media platforms and content types on multiple devices. Figure 1 visualizes the trajectory of this astonishing development. Across 18 established democracies, the graph tracks the proportion of the population who used the Internet daily from 1996 to 2015, as well as the mean across countries (highlighted). In 1996, only 7% of people in these countries used the Internet; by 2015, that figure had increased to more than 80%. The online versions of traditional outlets such as newspapers, magazines, radio and television, along with new types of platforms like blogs and social media, offer users a wide variety of content. An essential feature of this new landscape is the diffusion of high-speed broadband cable and mobile networks, making it possible to also distribute high-quality video content for the purpose of entertainment or news consumption twenty-four-seven.

Over the last two decades, then, people across established democracies have witnessed a digital revolution that has amplified personalization of media consumption (Chadwick, 2013). In other words, people can increasingly consume more of their preferred content and eschew anything they are less interested in (for a discussion, see Napoli, 1999, 2011; Neuman, 1991; Prior, 2005, 2007; Webster, 2005, 2014). This means anyone interested in politics can consume endless amounts of news content, while those interested in various forms of entertainment and sports can consume more of their preferred genre while avoiding news. In this high-choice digital environment, inadvertent audiences should be smaller than in a low-choice environment because people do not have to sit through content they are not interested in before or after the content they prefer (Prior, 2005, p. 579). Moreover, preferences and motivation might be more decisive in a high-choice

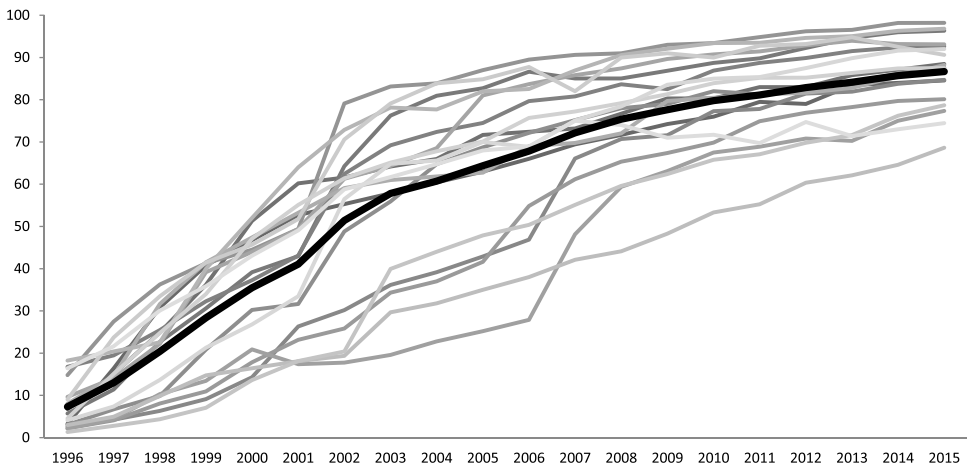


**Figure 1.** Daily individual internet use in 18 established democracies 1996–2015 (as percentage of population).

Mean across countries is highlighted in black.

Source: World Bank.

context, as the heterogeneous and unlimited supply of content renders traditional editorial decisions less influential (Wei & Hindman, 2011). Finally, fragmentation of media consumption is thought to be strengthened by social media platforms such as Facebook, which uses algorithms to streamline content that aligns with users' preexisting preferences (e.g., Bücher, 2012).

The supposed result of this process is a widening gap between the information-rich, who increasingly consume more news about current affairs and politics, and the information-poor, who consume less and less news of that kind. In the words of Achen and Bartels (2016, p. 37),

> Changes in the structure of the mass media have allowed people with an uncommon taste for public affairs to find an unprecedented quantity and variety of political news; but they have also allowed people with more typical taste to abandon traditional newspapers and television news for round-the-clock sports, pet tricks, or pornography, producing an increase in the *variance* of political information levels but no change in the *average level* of political information.

Prior's seminal studies (2005, 2007) remain the most convincing source of direct evidence for this high-choice knowledge gap thesis. Using individual-level panel data from the US, he demonstrated that content preference becomes a stronger predictor of political knowledge in a high-choice environment.

To investigate these matters further, we pursue four hypotheses. Our first hypothesis concerns the development of overall knowledge inequality within countries. Although the high-choice thesis is essentially about widening differences in political knowledge between specific groups, a widening gap in political knowledge between highly informed politically interested and less informed politically uninterested citizens will add to preexisting differences in political knowledge, and should thus increase the overall inequality level in the population. The first empirical implication we pursue is therefore that *inequality in political knowledge has increased over time in all established democracies* (H1).

It is possible, however, that inequality in political knowledge based on political interest increases without being reflected in a macro-level measure. For example, if knowledge differences between other social groups in the same period decreases, it may disguise the (alleged) widening gap between politically interested and politically uninterested. We therefore also study group-level differences in political knowledge over time. According to the high-choice thesis, increased overall knowledge inequality is assumed to be driven by a widening gap between politically interested citizens, who will become more knowledgeable, and the less interested citizens, who will become less knowledgeable. The most straightforward test of this argument is to study the impact of political interest on political knowledge over time. In addition, the impact of educational background is of interest as the highly educated are consistently found to be more politically interested than people with low education (Prior, 2018). Extensive research also shows that political knowledge levels are strongly predicted by education (e.g., Delli Carpini & Keeter, 1996), and that the highly educated tend to consume more political news than others (e.g., Esser & Steppat, 2017). Relatedly, and following the seminal work of Luskin (1990), citizens with higher education are not only more politically interested, but also have greater abilities to seek out information and acquire knowledge. Our second hypothesis, then, is that *political knowledge becomes increasingly stratified by political interest and education over time* (H2).

## Rethinking the High-Choice Thesis

Although the high-choice knowledge gap thesis has received widespread attention in the literature, recent political communication research also offers alternative perspectives on how the digital revolution has transformed media use. In this section, we argue that both theoretical and empirical insights from related strands of the literature lend weight to a counter-hypothesis that predicts *stability* in political knowledge inequality over time. To begin, we critically interrogate two essential assumptions of the high-choice thesis: the decisive role of individual preferences for media consumption and the purported disappearance of the inadvertent audience in high-choice contexts. As these two assumptions together create an expectation that more people will avoid news content over time, we also examine the existing empirical evidence for this belief.

Our starting point is the observation (Lekles, Sood & Iyeanger, 2017, p. 6) that although some individuals consumed news unintentionally in the low-choice environment, others probably did *not* consume news because it was not available at "a time they wanted to see it, or available in a format, style or ideological slant of their liking". If they missed the daily television news, alternatives were hard to come by. Today, on the other hand, everyone can choose to watch news on social media feeds and online sites, which means that there is a much lower threshold for consuming both entertainment and news.

This is important because the high-choice thesis rests on the assumption that individual preferences drive media consumption. Although this notion is widespread in much political communication research, it is also questionable (for a discussion, see Webster, 2014, pp. 23–48; Taneja et al., 2018, p. 1794). As Webster (2014, p. 14) noted, rationality is bounded in relation to media use.[1] The almost unlimited amount of content on offer in the digital media environment makes it impossible for anyone to be aware of all of their options. To cope with this abundance of choice, users typically construct so-called *media repertoires*, confining use to a manageable number of media outlets. Studies of media repertoires report considerable overlap in channel use between social groups (e.g., Taneja et al., 2012). Collectively, these findings suggest that increased media choice does not necessarily promote correspondingly strong diversification in actual media use.

Additionally, individual motivation is often constrained, and sometimes altered, by situational factors. From studies of television audiences, we know that the social viewing context and media structure shape news consumption patterns (Wonneberger et al., 2011), and studies of social media and digital media platforms have reached similar conclusions. While the influence of social networks on communication flows has been recognized for decades (e.g., Katz & Lazarsfeld, 1955), network effects become even more significant in high-choice digital media systems (Karlsen, 2015). In an important contribution, Taneja et al. (2018) highlighted what they characterize as *social media curation*. They argue that the structure of social media unifies news patterns across different groups, as online networks are seldom characterized by strong ties but are heterogeneous, based on weak ties between acquaintances (Taneja et al., 2018, p. 1794; Thorson, 2020). Accordingly, the clustered character of the digital news environment ensures a varied news diet for most users and homogenizes the media diet of different groups in terms of both genre and content (cf. Fletcher & Nielsen, 2017; Ksiazek et al., 2010; Taneja & Webster, 2016).

Finally, as a related point, the "power-law" distribution of media use probably also moderates individual preferences and background factors, as a few media sites attract most of the available

attention while the majority of outlets receive far less (Easley & Kleinberg, 2010). Accordingly, different social groups end up with relatively homogenous usage patterns (Taneja et al., 2018, p. 1794). This echoes findings from the literature on selective exposure, which argues that people with a specific and narrow news diet do not necessarily avoid incidentally encountered content (Stroud, 2017). Several recent studies report quite substantial incidental consumption of news on social media (e.g., Fletcher & Nielsen, 2018), suggesting that the disappearance of the inadvertent audience – which is crucial to Prior's argument – seems an inaccurate account of media use in a high-choice media environment.

This leads in turn to the empirical evidence for increasing news avoidance, which to date is best described as inconclusive (Van Aelst et al., 2017). Longitudinal studies of news consumption are commonly undermined by restricted measurements, as they only investigate usage of one or two media platforms (e.g., Aalberg et al., 2013; Blekesaune et al., 2012). For that reason, it remains unclear whether decreasing use of traditional media channels like television is substituted by a corresponding increase in use of newer channels (such as social media platforms). Further, the few longitudinal studies measuring *overall* news consumption have reported mixed results (e.g., Strömback et al., 2013; Karlsen et al., 2020).

Taken together, these findings offer an alternative perspective on how media use and news consumption affect the distribution of political knowledge in high-choice contexts. On that basis, we formulate the following counter-hypothesis: *Despite the transition from a low-choice to a high-choice media environment, overall inequalities in political knowledge, and knowledge gaps based on political interest and education, remain stable over time* (H3).

## Media Systems and Political Knowledge Inequalities: Scope Conditions

A final reason for investigating the high-choice thesis relates to cross-country differences. Large inequalities in political knowledge were reported in seminal US studies in the 1950s and 1960s (e.g., Berelson et al., 1954), and this has been reiterated in numerous subsequent studies (e.g., Bartels, 1996; Delli Carpini & Keeter, 1996). A growing number of comparative studies indicate that inequalities in political knowledge are smaller in European countries than in the United States (Fortunato et al., 2016; Fraile, 2013; Gordon & Segura, 1997; Milner, 2002; Vegetti et al., 2017). A few studies have recently linked these between-country differences to media environment characteristics, suggesting that the impact of increased media choice and changing media use is strongest in so-called "commercially oriented" media systems such as the US (see Aalberg & Curran, 2012; Aalberg et al., 2010; Banducci et al., 2017; Curran et al., 2009; Fraile, 2013; Fraile & Iyengar, 2014; Iyengar et al., 2010; Soroka et al., 2013; cf. Hallin & Mancini, 2004). For example, citizens in public service-oriented media systems acquire political knowledge at a higher rate than counterparts in market-oriented media systems (Iyengar et al., 2010), and exposure to broadsheets and public broadcasters narrows knowledge gaps within societies (Fraile & Iyengar, 2014; Soroka et al., 2013).

These findings suggest that the nature of the information environment may act as a countervailing force, cushioning the impact of increasing media choice on knowledge inequality (cf. Neuman, 1991). More precisely, because more hard news is available in prime time, and more people watch hard news, political knowledge gaps should be smaller in systems with a strong public broadcaster (Aalberg & Curran, 2012). Importantly, "infrastructural legacies", i.e., the traditional patterns of news use among citizens, may also be upheld even as the news environment changes (Taneja et al., 2018). In commercially oriented media systems, on the

other hand, it is easier for the less politically interested to avoid exposure to news content (Iyengar et al., 2010, p. 293). On that basis, our fourth and final hypothesis tests the proposition that *political knowledge inequality will increase less in countries with strong public broadcasters* (H4).

## Research Design and Data

In order to test our hypotheses, we need measures of political knowledge that are comparable over time. To that end, we use data from four waves of the CSES,[2] which to our knowledge offers the longest series of individual-level measures of political knowledge comparable over time and across countries. For present purposes, we use data from 18 established democracies that are covered in more than two CSES-waves. As parliamentary elections in different countries seldom take place simultaneously, we divide the study into five periods of four years each. In this way, we are able to generate an (almost) balanced country-year dataset. The data are weighted to correct for sampling biases; Table A1 in the appendix presents an overview of countries included and data availability for each period.[3]

We use four empirical approaches in the analyses. The two first analyses investigate the development of the overall knowledge distribution within different countries. To begin, we perform time-series cross-sectional regression analyses (TSCS) on the country-year data. The purpose of these analyses is to investigate whether political knowledge gaps have increased over time and whether any changes in inequality relate to changes in media systems. We use country-fixed effects to isolate within-country variation (Allison, 2009). Second, to capture any possible deviations from the main patterns, we investigate country-specific trajectories of knowledge inequality over time. We also examine developments in knowledge level distributions within countries over time. In the two final analyses, we turn to group differences in political knowledge. To assess the effect of education, we run a series of multilevel regression analyses using the CSES data (Hox, 2002). Unfortunately, the CSES does not include measures of political interest over time. We therefore also utilize data from the Norwegian National Election Study (NNES) which includes data on both political interest and education. Norway provides a relevant case as the country has experienced a transition from a particularly low- to a truly high-choice media environment since the 1990s (see Karlsen et al., 2020). Collectively, these approaches allow us to assess whether political knowledge has become increasingly polarized by political interest and education with growing media choice, and whether a strong public broadcaster conditions this effect.

### *Measuring Political Knowledge*

We measure political knowledge in two ways. Our main measure is often referred to as the party position approach (PPA), also known as ideological understanding, left-right knowledge or party system expertise (see Banducci et al., 2017; Fortunato et al., 2016; Gordon & Segura, 1997; Vegetti et al., 2017). In essence, the PPA captures citizens' knowledge of party positions on the left-right scale. Specifically, we compare respondents' evaluations of party positions on the left-right continuum with the parties' objective positions as rated by experts.

This approach has several benefits. First, the PPA measures voters' general level of knowledge about the party system and its most important actors: the political parties. The left-right scale is a useful cognitive heuristic, and also captures the extent to which voters

comprehend the basic political divisions within their party system and the ideological positions of those parties (Banducci et al., 2017; Vegetti et al., 2017). Second, for the purposes of this study, the *level of difficulty* of our measures must be similar across time (for a discussion, see for example, Elff, 2009). In our judgment, the PPA is the most convincing option to date in this regard as parties' ideological positions are fairly stable over time. Clearly, the PPA is not perfect in this respect, as its difficulty level may be affected by party system dynamics. To account for such changes, our analyses control for the effective number of parties and partisan polarization.

Despite its advantages, it can be argued that the PPA primarily addresses textbook knowledge unrelated to media use. On this view, citizens' knowledge of ideological positions at a certain point in time may have been acquired earlier in life or extrapolated from some basic general political knowledge.[4] To validate the PPA measure, we therefore also analyze factual political knowledge questions included in the CSES. Formulated by national election teams in each country, these questions assess citizens' knowledge about current national and political affairs. In contrast to the PPA, the knowledge questions measure dynamic knowledge about current issues covered by the media; for this reason, they serve as a valuable complement to our main dependent variable.[5]

To construct the PPA measure, we compare positioning of parties among respondents to the "correct" answers provided by experts. In the CSES, respondents were asked to position the largest and most relevant parties on an 11-point left-right scale.[6] Experts from each national election study team were asked to do the same, and we use these scores to define the objective position of each party. The dependent variable was constructed by calculating the absolute distance between respondent and expert judgments of a party position.[7] We included up to five (largest) parties. To ensure comparability across multi-party and two-party systems, we replicated all the analyses, measuring the position of only the two largest parties.[8] Our measure ranges from the theoretical value of zero (low ideological comprehension; both parties misplaced by 10 scale points) to 10 (perfect ideological comprehension; both parties placed correctly on the left-right scale).[9]

To construct our alternative dependent variable, we rely on factual knowledge questions. In each round of CSES, the national election team formulated three questions about politics or current affairs and provided three or four alternative responses. Our dependent variable is an index of the average number of correct responses to the three questions. The index ranges from 0 (i.e. none of three questions was answered correctly) to 1 (three correct answers).[10]

## Measuring Inequality in Political Knowledge

To measure *inequality* in political knowledge at the country-year level, we calculate Gini coefficients for every country-year in the sample based on the individual-level distribution of the PPA measure (within every country-year) described above.[11] The Gini coefficient was originally developed to measure inequality in income but can also be used to measure other types of inequality. In this case, a Gini coefficient of 0 expresses perfect knowledge equality – that is, everyone has an equal level of political knowledge. A Gini coefficient of 1 expresses maximum inequality, indicating that one person has full political knowledge while others have none.[12] Descriptive statistics per country and country-year can be reviewed in the appendix Table A15.

### Independent Variables

To measure media fragmentation, we use two carefully chosen proxies: level of Internet use in the population and level of broadband diffusion.[13] To our knowledge, no item measuring overall platform fragmentation in a comparative manner exists. With the spread of the Internet, all types of content – both political and nonpolitical – have increased to unmeasurable numbers available on numerous platforms. This allows users to consume their content of interest 24/7. Broadband diffusion is indicative of the types of content available to Internet users, such as high-quality video enabling streaming of television and movies. Thus, contexts where the Internet is widely used and broadband easily available are likely to be true high-choice environments.

To measure the strength of public broadcasters (PBs), we use PB market share within a media system based on ratings data from the CESifo DICE Report 3/2014.[14] As an alternative approach, we make use of Hallin and Mancini (2004) distinction between Polarized Pluralist, Democratic Corporatist, and Liberal media system models.

At the individual level, political interest and education are the main explanatory variables. In the NNES data, political interest is measured in four categories (very interested, interested, little interested and not interested), and we operationalize education in three categories: low, middle and high. Ideally, we would also have included measures of both political interest and education in our comparative individual-level analyses based on the CSES data, but unfortunately the CSES data do not include a measure of political interest over time. Thus, we have to rely on education alone in these latter analyses.

We introduce several control variables. At the country-year level, we include the economic Gini coefficient, as within-country socio-economic equality has consistently been identified as an important indicator of political knowledge (see e.g., Fraile, 2013).[15] To control for changes in the party system that might affect the dependent variable, we include a measure of the effective number of electoral parties as proposed by Laakso and Taagepera (1979). As partisan polarization might conflate with media system changes, we also control for partisan polarization using Dalton's (2008) polarization index. At the individual level, we control for well-known predictors of political knowledge: income, age, and gender (see e.g., Delli Carpini & Keeter, 1996). Descriptive statistics for all variables in our analyses are available in the appendix.[16]

## Results

To determine whether inequality in political knowledge has increased over time, and whether increased media choice plays some part in this process, our TSCS analyses investigate whether political knowledge inequality – operationalized as a Gini coefficient – is affected by a continuous time variable as well as by Internet use and broadband access. Because our focus is on within-country changes, we use country fixed effects in all models (Allison, 2009). We also include time fixed effects in various models, and we show results both with and without control variables due to the relatively small sample size.

Table 1 provides a first indication of our findings. Overall, there is little support for the high-choice knowledge gap thesis. Political knowledge inequality does not increase over time, and we do not find positive relationships between inequality and our two key

**Table 1.** TSCS analyses of inequalities in political knowledge (PPA).

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Year (Continuous) | 0.000 | 0.001 | | | | |
| | (0.000) | (0.000) | | | | |
| Internet Use | | | −0.000 | 0.000 | | |
| | | | (0.000) | (0.000) | | |
| Broadband Access | | | | | −0.002* | −0.001 |
| | | | | | (0.001) | (0.001) |
| Constant | −0.236 | −1.046 | 0.063** | 0.165* | 0.070** | 0.163* |
| | (0.647) | (0.705) | (0.010) | (0.059) | (0.009) | (0.059) |
| Two-way fixed effects | No | No | Yes | Yes | Yes | Yes |
| Control Variables | No | Yes | No | Yes | No | Yes |
| N | 69 | 68 | 69 | 68 | 68 | 67 |

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$. Model 1 and Model 2 only include country fixed effects. See Table A2 for control variables' coefficients.

explanatory variables, Internet access and broadband diffusion. Moreover, the results do not change when the control variables are added as discussed in the Methodology section.

Although the high-choice knowledge gap thesis as a general development is not supported by our first analyses, it remains possible that the expected pattern might occur in specific countries. To find out, we investigate country-specific trajectories of political knowledge inequality. Figure 2 plots the knowledge Gini coefficient over time within the 18 countries studied. Again, we see little evidence of increasing inequality. The figure shows that the main tendency is best characterized as stable, with small fluctuations. This result is supported by the analyses that employed factual knowledge index as the dependent variable (see Figure A3).

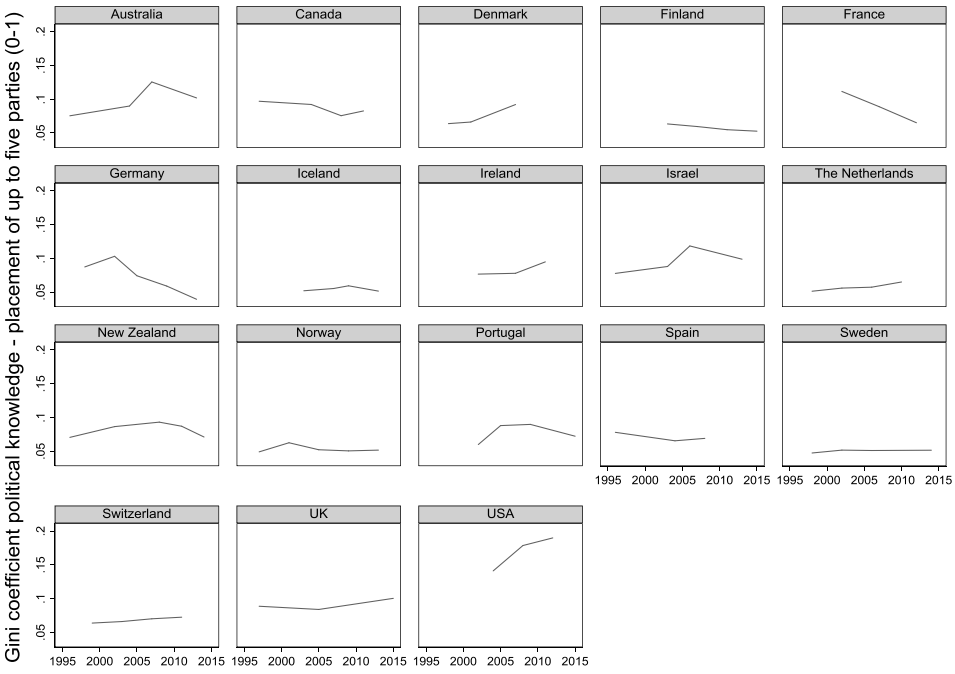


**Figure 2.** Political knowledge inequality in 18 established democracies by country: Gini scores based on PPA.

Furthermore, Figure 2 reveals that inequality is especially low and stable in countries like Sweden, Norway, Finland, Iceland and the Netherlands,[17] but there are some notable exceptions to this pattern. First, France and Germany exhibit decreasing inequality; second, there are slight increases in inequality in Australia, Israel, Denmark and the United States. The US case stands out, in that inequality starts at a relatively high level and continues to increase throughout the study period. This aligns with other evidence that the distribution of political knowledge in the United States deviates from developments in other media systems (e.g., Aalberg & Curran, 2012). Nevertheless, this finding should be treated with caution, as analysis of the factual knowledge index reveals no increasing gaps in knowledge between more and less educated Americans.[18]

Figure 3 unpacks these aggregate trajectories to investigate country-specific knowledge distributions in more detail. Here, citizens in every country-year are ranked as quintiles, showing how mean knowledge levels within these groups have developed over time. According to the high-choice thesis, inequality should occur as a result of increasing knowledge levels among the most knowledgeable *and* decreasing knowledge levels among the least knowledgeable.[19]

Once again, the high-choice knowledge gap thesis is not supported by the data. Figure 3 reveals that, in most countries, political knowledge is more or less stable for both the top and lower quintiles. The decreasing Gini coefficient in France and Germany (as seen in Figure 2) reflects an increase in the lowest quintile's level of political knowledge – contrary to the predictions of the high-choice thesis. Again, the US case stands out, as the knowledge level of the lowest quintile decreased considerably during the studied period. In other

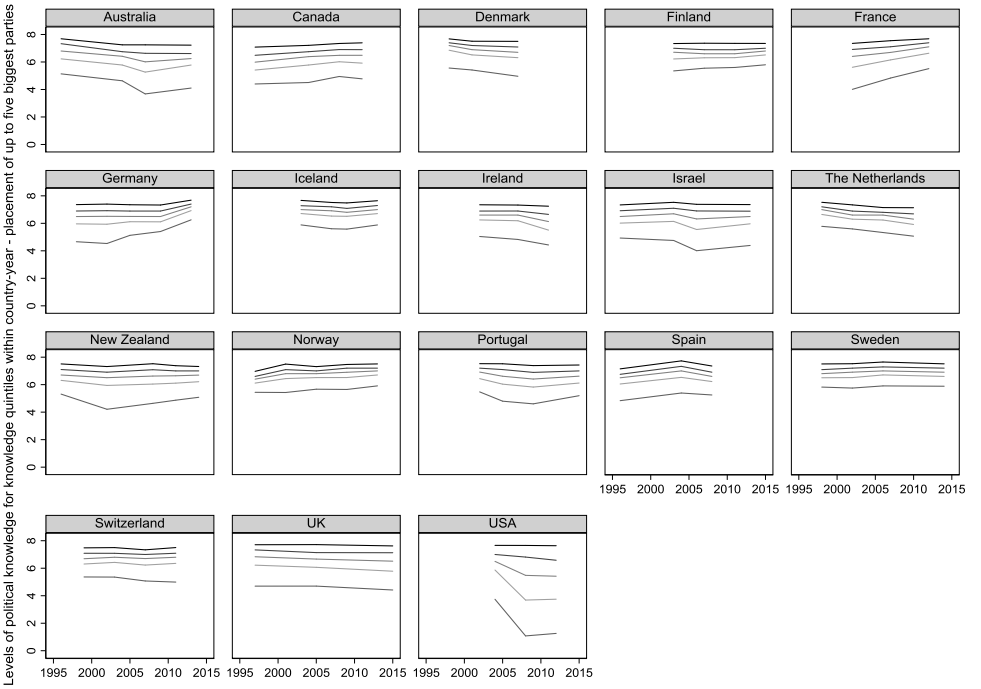


**Figure 3.** Absolute levels of political knowledge (PPA) in 18 established democracies by knowledge quintiles.

words, the increasing inequality in the United States evident in Figure 2 seems to be the product of the least knowledgeable becoming even less knowledgeable over time. In the concluding discussion, we further reflect on this result.

Next, we investigate whether political knowledge becomes increasingly stratified based on political interest and education over time (H2). Using pooled data from Norway for the period 1997–2017, we first run a series of multivariate regression models with political interest or education as independent variables, and political knowledge as the dependent variable. Figure 4 displays regression coefficients with 95% confidence intervals for political interest and education from six separate cross-sectional analyses, one for each wave of the NNES data (see Table A6 for complete results). The size of the coefficients is displayed on the X axis. Clearly, the high-choice hypothesis is not supported. As expected, there is a positive correlation between the two predictors and political knowledge, respectively, but these relationships do *not* become systematically stronger over time as the high-choice thesis predicts.[20] The substantive result remains the same when we use factual knowledge questions instead of the PPA measure as our dependent variable (see Table A7).

Finally, we test H2 in a series of regression analyses of all 18 established democracies using the CSES data (Table 2). In the hierarchical three-level regression model, political knowledge serves as the dependent variable and education as our key explanatory variable. We only present the coefficients of theoretical interest (see Table A8 for complete results).[21] Model 1 is the baseline while models 2, 3 and 4 introduce cross-level interaction terms to test whether

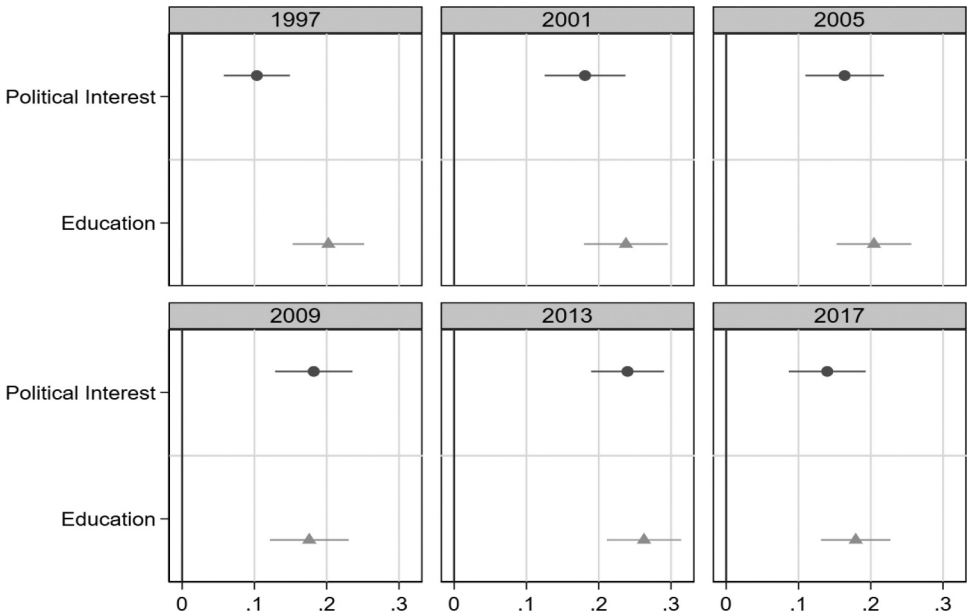


**Figure 4.** Magnitude of regression coefficients for political interest and education on political knowledge. NNES 1997–2017.

Coefficients estimated using OLS regression. Each model includes a control for age, gender and households' income level. See Table A6 in the appendix for complete results from the regression analyses. See Table A7 in the appendix for a replication of the results using factual knowledge questions as dependent variable.

**Table 2.** Three-level multilevel model of political knowledge (PPA).

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| *Level 1 Variables* | | | | | | |
| Education | 0.233** | 0.208** | 0.223** | 0.214** | 0.323** | 0.159* |
| | (0.036) | (0.037) | (0.050) | (0.036) | (0.105) | (0.073) |
| *Level 2 Variables* | | | | | | |
| Time (period) | −0.049 | −0.089 | 0.033 | 0.047 | −0.087 | −0.244 |
| | (0.063) | (0.063) | (0.080) | (0.090) | (0.059) | (0.141) |
| Internet Use | | | −0.007* | | | |
| | | | (0.004) | | | |
| Broadband | | | | −0.015 | | |
| | | | | (0.010) | | |
| PB Share | | | | | 0.007 | −0.000 |
| | | | | | (0.005) | (0.005) |
| *Cross-Level Interactions* | | | | | | |
| Education × Time | | 0.014 | | | | 0.077 |
| | | (0.026) | | | | (0.067) |
| Education × Internet Use | | | 0.000 | | | |
| | | | (0.001) | | | |
| Education × Broadband | | | | 0.001 | | |
| | | | | (0.002) | | |
| Education × PB Share | | | | | −0.003 | 0.001 |
| | | | | | (0.002) | (0.002) |
| Time × PB Share | | | | | | 0.004 |
| | | | | | | (0.003) |
| Education × Time × PB | | | | | | −0.002 |
| | | | | | | (0.002) |
| Constant (Fixed) | 5.528** | 5.186** | 5.641** | 5.164** | 4.610** | 4.819** |
| | (0.131) | (0.593) | (0.627) | (0.558) | (0.778) | (0.720) |
| *N Level 1 (respondents)* | 81371 | 80815 | 80815 | 79844 | 80815 | 80815 |
| *Level 2 (country year)* | 69 | 68 | 68 | 67 | 68 | 68 |
| *Level 3 (country)* | 18 | 18 | 18 | 18 | 18 | 18 |
| Log lik. | −1977197 | −1976460 | −1976459 | −1974736 | −1976457 | −1976453 |

$p < 0.05$, ** $p < 0.01$. Unstandardized coefficients with robust standard errors in parantheses. Maximum likelihood estimation. Fixed Intercept, random coefficient for education. Probability (sample) weights for level 1 units. Intraclass correlation (ICC) in null-model: country-level: 21.7%; country-year 36,0%. See Table A8 in the appendix for complete results.

education has become a stronger predictor of political knowledge over time and in parallel with growing Internet use and broadband access. In models 5 and 6, we explore whether a public broadcaster cushions the effect of education on political knowledge.

Unsurprisingly, all models reveal that education is the most important driver of political knowledge at the individual level. The three interaction terms in models 2 to 4 are nonetheless weak and statistically insignificant; in other words, we find little support for the idea that the gap between educational groups' knowledge levels grows over time. The models also suggest that increased access to internet and broadband does not affect the association between education and knowledge. These results are corroborated when using the factual knowledge index as the dependent variable, as well as by the analyses based on multiple imputations (see Tables A10 and A11).

Models 5 and 6 explore our final empirical expectation: that a strong PB (measured as market share) reduces polarization along educational lines over time. To investigate this assumption, we introduce a cross-level interaction between PB and education, as well as a three-way interaction term between PB, education and time. In these models, the effect of education does not relate to PB strength, and the effect of education does

not increase over time in systems with low PB viewership. Analyses using Hallin and Mancini's media system models rather than PB yield similar results (see Table A14).

## Discussion and Conclusion

Overall, we do not find support for the high-choice knowledge gap thesis as a general theory. Contrary to the high-choice thesis, our analyses provided little evidence that inequality in political knowledge increases over time, and increased Internet use and broadband access had no effect on knowledge inequality. Further, longitudinal analysis of Norwegian data showed that knowledge was not increasingly stratified by political interest and education from 1997 to 2017. The comparative multilevel analysis also indicated that education has not become a stronger predictor of political knowledge over time or in contexts with high levels of Internet use or broadband access. Overall, the results thus suggest that although increased media choice facilitates increasing personalization of media consumption, this does not necessarily mean that the information-poor escape the constant flow of political news coverage and that knowledge inequalities in high-choice societies increase accordingly.

In the theoretical section, we noted newer strands of research that help to clarify these results. In particular, we highlighted the "infrastructural" view of media use, suggesting that individual preferences are less pivotal than assumed in arguing for the high-choice knowledge gap (e.g., Webster, 2014, pp. 23–48). Preferences are constrained by channel repertoires (Taneja et al., 2012) and situational factors (Wonneberger et al., 2011), as well as by the architecture of the digital political communication system (Taneja et al., 2018). On this view, traditional and digital media infrastructures limit the extent to which people (willingly or unwillingly) avoid news about politics and current affairs. Indeed, there is empirical evidence that the inadvertent audience has not disappeared (e.g., Fletcher & Nielsen, 2018; Thorson, 2020), and the longitudinal evidence for increasing news avoidance is inconclusive (Karlsen et al., 2020; Strömbäck et al., 2013). In short, more choice does not necessarily lead to more news avoidance and increasing knowledge gaps.

In this article, we have focused mainly on the development of knowledge about party positions. As it reflects voters' basic understanding of the political system, this form of knowledge is essential to the ability to navigate the political landscape, and it is reassuring to find that inequalities do not increase as media platforms multiply. Our analysis of factual knowledge questions – which capture citizens' dynamic knowledge about current issues covered by the media – yielded largely similar results. However, we would like to emphasize that we do not consider these results conclusive in terms of how increasing media choice affects inequalities in political knowledge. Future research should explore inequalities in different types of political knowledge, including policy knowledge as well as more general political information (cf. Barabas et al., 2014). The lack of variables on media use is also an important shortcoming in the present study. The opportunity to link media consumption and political knowledge would have offered a more comprehensive picture of the impact of media preferences in societies transitioning to high choice. Unfortunately, the lack of relevant data makes this type of longitudinal study difficult to conduct. Panel-studies that include content preferences and media use should, however, provide valuable insights. Richer and more detailed measures of media system fragmentation would also be highly valuable. Nevertheless, we believe the present study provides a good point of departure for such future work.

Another important task for future research is to dig deeper into how specific groups react to the changing media environment. In their seminal work, Tichenor et al. (1970, pp. 159–60) argued that when mass media information increases, "segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease". In contrast to the high-choice thesis, they contended that when the *relative difference* between the information-rich and the information-poor increases, the latter do not necessarily become less knowledgeable (Tichenor et al., 1970, p. 160). In line with this proposition, we found that political knowledge in most countries is more or less stable for the lowest quintile of citizens.[22] One possible reason for this pattern is that a preference for one genre rather than another (e.g., entertainment over news) can lead to increased consumption of the preferred genre without reducing consumption of the other (e.g., Webster, 2014). Time spent on media consumption is not necessarily a zero-sum game, and different types of media consumption might increase simultaneously (Newell et al., 2008). A reformulation of the high-choice knowledge gap thesis along these lines may provide a better understanding of contemporary political knowledge dynamics. It could also serve to guide future research on how people with little political interest and resources relate to and learn from the different types of news made available by current digital media systems.

Although our findings do not support the high-choice thesis in general, we did find some evidence of increasing inequality in the United States. This result related mainly to information-poor citizens becoming less knowledgeable. On the one hand, the finding aligns well with Prior's seminal US studies (2005, 2007), as well as with previous studies of media systems and political knowledge that report striking differences between the United States and all other countries (e.g., Aalberg & Curran, 2012). On the other hand, these results must be treated with caution. Most importantly, our main dependent variable relies on citizens' placement of parties on the left-right scale, which is a less familiar concept in the United States compared to other countries in our sample. Our analysis of factual knowledge questions did not identify a similar increase in inequalities. One interpretation of these different results relates to affective polarization processes in the US. Increasing media fragmentation in the US is intertwined with political polarization of the media, and since the turn of this century, negative sentiments toward opposing parties and their voters have grown considerably (Hetherington & Rudolph. 2018). Hence, due to partisan media, a strong focus on misinformation and fake news (e.g., Allcott & Gentzkow, 2017; Lazer et al., 2018) and affective polarization in the electorate (Iyengar et al., 2019), voters might perceive parties as increasingly ideologically extreme, and therefore increasingly misplace these parties on the left right scale.

Overall, our results suggest that a high-choice media environment does not necessarily lead to a widening political knowledge divide between the information-poor and the information-rich. Although encouraging from a democratic perspective, this finding should nevertheless prompt us to think harder about how greater media choice influences media use, and in turn, political knowledge inequality. As the political communication systems of established democracies undergo rapid change, it becomes crucial to improve our understanding of these matters, both empirically and theoretically. This article identifies a number of avenues for future research in this regard. We should also keep in mind that for much of the study period, the choice was between television and radio channels, traditional newspapers, online text pages and low-quality online videos. The present media systems dominated by 24/7 on-demand and high-quality video

content offer quite different choices. In this environment, news and current affairs must always compete with favorite television shows or movies. Perhaps the era of real choice has just begun?

## Acknowledgments

We would like to thank the editors and the anonymous reviewers for very helpful comments and suggestions, and Christine Terjesdotter Bangum for research assistance.

## Notes

1. Moreover, the high-choice thesis considers media preferences to be exogenous to media use. However, preferences are sometimes shaped by media use (Ariely & Norton, 2008; Webster, 2014). This reciprocity complicates the mechanism underlying the high-choice thesis.
2. For detailed information about the dataset, see http://www.cses.org/.
3. We also verify the results by doing the analyses on a number of different samples (Table A4, A5, A12 and A13).
4. While we acknowledge that PPA knowledge is more static than knowledge about day-to-day political developments, recent studies suggest that PPA knowledge is more dynamic than this argument presumes (Banducci et al., 2017; Seeberg et al., 2017).
5. Clearly, factual knowledge questions also have certain limitations; their difficulty level depends largely on the salience of the topic, and this variability may distort longitudinal comparability.
6. Here, "largest parties" refers to those winning the largest proportion of the popular vote.
7. We also calculated scores using population mean placements as the objective position, and the two measures correlated strongly (0.88).
8. See Table A3, A9 and Figure A1, A2.
9. In our main analyses, respondents who answered *Don't know* are treated as missing observations (see for example, Mondak and Anderson (2004) for a discussion of this point). However, as nonrandom missing data may invalidate the generalizability of our findings, we also ran our models using multiple imputation; results are reported in Table A11.
10. *Don't know* answers are treated as missing observations.
11. Gini coefficients were calculated using the Stata software add-on *fastgini*.
12. We also constructed the alternative Palma measure of inequality, which is the ratio of the knowledge share of the top 10% to that of the bottom 40%. The two measures correlate empirically above 0.9.
13. For Internet use, we drew on data from the World Bank, available from http://data.worldbank.org/indicator/IT.NET.USER.ZS?end=2015&locations=AT&start=1960&view=chart. For broadband diffusion, we used OECD data, available from https://data.oecd.org/broadband/households-with-broadband-access.htm.
14. https://www.cesifo-group.de/DocDL/dicereport314-db1.pdf (As the United States is not included in this report, we used supplementary information from Aalberg et al. (2012, p. 18)).
15. Specifically, we use a Gini coefficient based on net income distribution, see http://data.worldbank.org/indicator/SI.POV.GINI.
16. Table A16 reports descriptive statistics from the TSCS-analysis; Table A17 the NNES analysis; and Table A18 the multilevel regression analysis.
17. See Table A15 for weighted and unweighted Gini coefficient scores for every country-year.
18. See Figure A4.
19. Here, the high-choice thesis departs from the original knowledge gap thesis, which does not anticipate a decline in knowledge levels among the information-poor (Tichenor et al., 1970, p. 160). We return to this issue in the concluding discussion.
20. Moreover, interaction terms between time and education, and between time and political interest in pooled regressions are not significant.

21. As the data vary across countries and years, the model has a hierarchical three-level structure; respondents (level 1) are nested in country-years (level 2), which are nested in countries (level 3). Time is included as an independent variable.
22. See also Jerit et al. (2006) who found that increased information flow builds political knowledge for all citizens, but that the highly educated learn more than lower-educated segments of the population.

## Disclosure Statement

No potential conflict of interest was reported by the authors.

## Funding

This work was supported by the Research Council of Norway [259161].

## Notes on contributors

***Atle Haugsgjerd*** (Ph.D. University of Oslo) is a senior research fellow at the Institute for Social Research, Oslo. His research interests focus on political behavior, electoral research, political trust, and the welfare state.

***Stine Hesstvedt*** (Ph.D. University of Oslo) is a senior research fellow at the Institute for Social Research, Oslo. Her research interests focus on political behavior and electoral research, as well as public policies and the role of expertise in governance and policymaking.

***Rune Karlsen*** (Ph.D. University of Oslo) is professor at the Department of Media and Communication, University of Oslo, and research professor at the Institute for Social Research, Oslo. His research interests focus on political communication, electoral research, political parties, and media effects.

## ORCID

Stine Hesstvedt http://orcid.org/0000-0001-5566-2720

## References

Aalberg, T., Strabac, Z., & Brekken, T. (2012). Research design. In T. Aalberg & J. Curran (Eds.), *How media inform democracy. A comparative approach* (pp. 15–29). Routledge.

Aalberg, T., Aelst, P. V., & Curran, J. (2010). Media systems and the political information environment: A cross-national comparison. *The International Journal of Press/Politics*, *15*(3), 255–271. https://doi.org/10.1177/1940161210367422

Aalberg, T., Blekesaune, A., & Elvestad, E. (2013). Media choice and informed democracy: Toward increasing news consumption gaps in Europe? *International Journal of Press/Politics*, *18*(3), 281–303. https://doi.org/10.1177/1940161213485990

Aalberg, T., & Curran, J. (Eds.). (2012). *How media inform democracy. A comparative approach*. Routledge.

Achen, C. H., & Bartels, L. M. (2016). *Democracy for realists: Why elections do not produce responsive government*. Princeton University Press.

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, *31*(2), 211–236. https://doi.org/10.1257/jep.31.2.211

Allison, P. D. (2009). *Fixed effects regression models*. Sage.

Ariely, D., & Norton, M. I. (2008). How actions create—not just reveal—preferences. *Trends in Cognitive Sciences*, *12*(1), 13–16. https://doi.org/10.1016/j.tics.2007.10.008

Banducci, S., Giebler, H., & Kritzinger, S. (2017). Knowing more from less: How the information environment increases knowledge of party positions. *British Journal of Political Science*, 47(3), 571–588. https://doi.org/10.1017/S0007123415000204

Barabas, J., Jerit, J., Pollock, W., & Rainey, C. (2014). The question(s) of political knowledge. *American Political Science Review*, *108*(4), 840–855. https://doi.org/10.1017/S0003055414000392

Bartels, L. M. (1996). Uninformed votes: Information effects in presidential elections. *American Journal of Political Science*, *40*(1), 194–230. https://doi.org/10.2307/2111700

Berelson, B. R., Lazarsfeld, P. F., & McPhee, W. (1954). *Voting: A study of opinion formation in a presidential election*. University of Chicago Press.

Blekesaune, A., Elvestad, E., & Aalberg, T. (2012). Tuning out the world of news and current affairs. An empirical study of Europe's disconnected citizens. *European Sociological Review*, *28*(1), 110–126. https://doi.org/10.1093/esr/jcq051

Blumler, J. G., & Kavanagh, D. (1999). The third age of political communication. *Political Communication*, *16*(3), 209–230. http://dx.doi.org/10.1080/105846099198596

Bücher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media & Society*, *14*(7), 1164–1180. https://doi.org/10.1177/1461444812440159

Chadwick, A. (2013). *The hybrid media system: Politics and power*. Oxford University Press.

Curran, J., Iyengar, S., Lund, A. B., & Salovaara-Moring, I. (2009). Media system, public knowledge and democracy: A comparative study. *European Journal of Communication*, *24*(1), 5–26. https://doi.org/10.1177/0267323108098943

Dalton, R. (2008). The quantity and the quality of party systems: Party system polarization, its measurement and its consequences. *Comparative Political Studies*, *41*(7), 899–920. https://doi.org/10.1177/0010414008315860

Delli Carpini, M. X., & Keeter, S. (1996). *What Americans know about politics and why it matters*. Yale University Press.

Easley, D., & Kleinberg, J. (2010). *Networks, crowds, and markets: Reasoning about a highly connected world*. Cambridge University Press.

Elff, M. (2009, April). *Political knowledge in a comparative perspective: The problem of cross-national equivalence of measurement* [Paper presentation]. MPSA 2009 Annual National Conference, Chicago.

Esser, F., & Steppat, D. (2017). News media use: International comparative research. In P. Rössler, C. A. Hoffner, & L. Zoonen (Eds.), *The international encyclopedia of media effects*. (pp. 1–17) Wiley.

Fletcher, R., & Nielsen, R. K. (2017). Are news audiences increasingly fragmented? A cross-national comparative analysis of cross-platform news audience fragmentation and duplication. *Journal of Communication*, *67*(4), 476–498. https://doi.org/10.1111/jcom.12315

Fletcher, R., & Nielsen, R. K. (2018). Are people incidentally exposed to news on social media? A comparative analysis. *New Media & Society*, *20*(7), 2450–2468. https://doi.org/10.1177/1461444817724170

Fortunato, D., Stevenson, R. T., & Vonnahme, G. (2016). Context and political knowledge: Explaining cross-national variation in partisan left-right knowledge. *The Journal of Politics*, *78*(4), 1211–1228. https://doi.org/10.1086/686689

Fraile, M. (2013). Do information-rich contexts reduce knowledge inequalities? The contextual determinants of political knowledge in Europe. *Acta Politica*, *48*(2), 119–143. https://doi.org/10.1057/ap.2012.34

Fraile, M., & Iyengar, S. (2014). Not all news sources are equally informative. A cross-national analysis of political knowledge in Europe. *The International Journal of Press/Politics*, *19*(3), 275–294. https://doi.org/10.1177/1940161214528993

Gordon, S. B., & Segura, G. M. (1997). Cross-national variation in the political sophistication of individuals: Capability or choice? *The Journal of Politics*, *59*(1), 126–147. https://doi.org/10.2307/2998218

Hallin, D. C., & Mancini, P. (2004). *Comparing media systems: Three models of media and politics*. Cambridge University Press.

Hetherington, M. J. & Rudolph, T. J. (2018) Political trust and polarization. In Uslaner, E. M. (Ed.) *The Oxford Handbook of Social and Political Trust* (pp. 579–597). Oxford University Press.
Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Erlbaum.
Iyengar, S., Curran, J., Lund, A. B., Salovaara-Moring, I., Hahn, K. S., & Coen, S. (2010). Cross-national versus individual-level differences in political information: A media systems perspective. *Journal of Elections, Public Opinion and Parties*, *20*(3), 291–309. https://doi.org/10.1080/17457289.2010.490707
Iyengar, S., Lelkes, Y., Levendusky, M., Malhotra, N., & Westwood, S. J. (2019). The origins and consequences of affective polarization in the United States. *Annual Review of Political Science*, *22* (1), 129–146. https://doi.org/10.1146/annurev-polisci-051117-073034
Jerit, J., Barabas, J., & Bolsen, T. (2006). Citizens, knowledge, and the information environment. *American Journal of Political Science*, *50*(2), 266–282. https://doi.org/10.1111/j.1540-5907.2006.00183.x
Karlsen, R. (2015). Followers are opinion leaders: The role of people in the flow of political communication on and beyond social networking sites. *European Journal of Communication*, *30*(3), 301–318. https://doi.org/10.1177/0267323115577305
Karlsen, R., Beyer, A., & Steen-Johnsen, K. (2020). Do High-choice media environments facilitate news avoidance? A longitudinal study 1997–2016. *Journal of Broadcasting & Electronic Media*, 1–21. https://doi.org/10.1080/08838151.2020.1835428
Katz, E. & Lazarsfeld, P. (1955). *Personal Influence*: *The Part Played by People in the Flow of Mass Communication.* Free Press.
Ksiazek, T., Malthouse, E., & Webster, J. G. (2010). News-seekers and avoiders: Exploring patterns of total news consumption across media and the relationship to civic participation. *Journal of Broadcasting & Electronic Media*, *54*(4), 551–568. https://doi.org/10.1080/08838151.2010.519808
Laakso, M., & Taagepera, R. (1979). The 'effective' number of parties: A measure with application to Western Europe. *Comparative Political Studies*, *12*(1), 3–27. https://doi.org/10.1177/001041407901200101
Lazer, D. M. J., Baum, M. A., Benkler, Y., Berinsky, A. J., Greenhill, K. M., Menczer, F., Metzger, M. J., Nyhan, B., Pennycook, G., Rothschild, D., Schudson, M., Sloman, S. A., Sunstein, C. R., Thorson, E. A., Watts, D. J., & Zittrain, J. L. (2018). The science of fake news: Addressing fake news requires a multidisciplinary effort. *Science*, *359*(6380), 1094–1096. https://doi.org/10.1126/science.aao2998
Lekles, Y., Sood, G., & Iyeanger, S. (2017). The hostile audience: The effect of access to broadband internet on partisan affect. *American Journal of Political Science, 61*(1), 5–20. https://doi.org/10.1111/ajps.12237
Luskin, R. C. (1990). Explaining political sophistication. *Political Behavior*, *12*(4), 331–361. https://doi.org/10.1007/BF00992793
Milner, H. (2002). *Civic literacy. How informed citizens make democracy work*. University Press of New England.
Mondak, J. J., & Anderson, M. (2004). The knowledge gap: A reexamination of gender-based differences in political knowledge. *Journal of Politics*, *66*(2), 492–512. https://doi.org/10.1111/j.1468-2508.2004.00161.x
Napoli, P. M. (1999). Deconstructing the diversity assessment: An audience-centered approach. *Journal of Communication*, *49*(4), 7–34. https://doi.org/10.1111/j.1460-2466.1999.tb02815.x
Napoli, P. M. (2011). Exposure diversity reconsidered. *Journal of Information Policy*, *1*, 246–259. https://doi.org/10.5325/jinfopoli.1.2011.0246
Neuman, R. W. (1991). *The future of the mass audience*. Cambridge University Press.
Neuman, R. W., Just, M. R., & Criegler, A. N. (1992). *Common knowledge: News and construction of political meaning*. Chicago University Press.
Newell, J., Pilotta, J. J., & Thomas, J. C. (2008). Mass media displacement and saturation. The. *International Journal on Media Management*, *10*(4), 131–138. https://doi.org/10.1080/14241270802426600
Prior, M. (2005). News vs. entertainment: How increasing media choice widens gaps in political knowledge and turnout. *American Journal of Political Science*, *49*(3), 577–592. https://doi.org/10.1111/j.1540-5907.2005.00143.x

Prior, M. (2007). *Post-broadcast democracy. How media choice increases inequality in political involvement and polarizes elections*. Cambridge University Press.

Prior, M. (2018). Hooked. *How politics captures people's interest*. Cambridge University Press. doi:10.1017/9781108355001

Seeberg, H. B., Slothus, R., & Stubager, R. (2017). Do voters learn? Evidence that voters respond to changes in political parties' policy positions. *West European Politics*, *40*(2), 336–356. https://doi.org/10.1080/01402382.2016.1245902

Soroka, S., Andrew, B., Aalberg, T., Iyengar, S., Curran, J., Coen, S., Hayashi, K., Jones, P., Mazzoleni, G., Woong Rhee, J., Rowe, D., & Tiffen, R. (2013). Auntie knows best? Public broadcasters and current affairs knowledge. *British Journal of Political Science*, *43*(4), 719–739. https://doi.org/10.1017/S0007123412000555

Strömbäck, J., Djerf-Pierre, M., & Shehata, A. (2013). The dynamics of political interest and news media consumption: A longitudinal perspective. *International Journal of Public Opinion Research*, *25*(4), 414–435. https://doi.org/10.1093/ijpor/eds018

Stroud, N. (2017). Selective Exposure Theories. In Kenski, K. & Jamieson, K. H. (Eds.), *The Oxford Handbook of Political Communication* (pp. 531–547). Oxford University Press.

Taneja, H., & Webster, J. G. (2016). How do global audiences take shape? The role of institutions and culture in patterns of web use. *Journal of Communication*, *66*(1), 161–182. https://doi.org/10.1111/jcom.12200

Taneja, H., Webster, J. G., Malthouse, E. C., & Ksiazek, T. B. (2012). Media consumption across platforms: Identifying user-defined repertoires. *New Media & Society*, *14*(6), 951–968. https://doi.org/10.1177/1461444811436146

Taneja, H., Wu, A. X., & Edgerly, S. (2018). Rethinking the generational gap in online news use: An infrastructural approach. *New Media & Society*, *20*(5), 1792–1812. https://doi.org/10.1177/1461444817707348

Thorson, K. (2020). Attracting the news: Algorithms, platforms, and reframing incidental exposure. *Journalism*, *21*(8), 1067–1082. https://doi.org/10.1177/1464884920915352

Tichenor, P. J., Donohue, G. A., & Olien, C. N. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly*, *34*(2), 159–170. https://doi.org/10.1086/267786

Van Aelst, P., Strömbäck, J., Aalberg, T., Esser, F., de Vreese, C., Matthes, J., Hopmann, D., Salgado, S., Hubé, N., Stępińska, A., Papathanassopoulos, S., Berganza, R., Legnante, G., Reinemann, C., Sheafer, T., & Stanyer, J. (2017). Political communication in a high-choice media environment: A challenge for democracy? *Annals of the International Communication Association*, *41*(1), 3–27. https://doi.org/10.1080/23808985.2017.1288551

Vegetti, F., Fazekas, Z., & Méder, Z. Z. (2017). Sorting your way out: Perceived party positions, political knowledge, and polarization. *Acta Politica*, *52*(4), 479–501. https://doi.org/10.1057/s41269-016-0029-6

Webster, J. G. (2005). Beneath the veneer of fragmentation: Television audience polarization in a multichannel world. *Journal of Communication*, *55*(2), 366–382. https://doi.org/10.1111/j.1460-2466.2005.tb02677.x

Webster, J. G. (2014). *The marketplace of attention. How audiences take shape in a digital age*. MIT Press.

Webster, J. G., & Ksiazek, T. B. (2012). The dynamics of audience fragmentation: Public attention in an age of digital media. *Journal of Communication*, *62*(1), 39–56. https://doi.org/10.1111/j.1460-2466.2011.01616.x

Wei, L., & Hindman, D. B. (2011). Does the digital divide matter more? Comparing the effects of new media and old media use on the education-based knowledge gap. *Mass Communication and Society*, *14*(2), 216–235. https://doi.org/10.1080/15205431003642707

Wonneberger, A., Schoenbach, K., & van Meurs, L. (2011). Interest in news and politics—or situational determinants? Why people watch the news. *Journal of Broadcasting & Electronic Media*, *55*(3), 325–343. https://doi.org/10.1080/08838151.2011.597466