

## ORIGINAL ARTICLE

## Political Online Information Searching in Germany and the United States: Confirmation Bias, Source Credibility, and Attitude Impacts

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*Before the 2013 German federal election, 121 participants completed a 2-session online study (which paralleled a U.S. study before the 2012 presidential election). They browsed online search results pertaining to 4 political issues while selective exposure was unobtrusively measured. In a 4 × 2 × 2 (topic × issue stance × source credibility) within-subjects design, the search results indicated either issue support or opposition, associated with low- or high-credibility sources. Hypotheses were derived from cognitive dissonance, approach-avoidance, and motivated cognition models. Findings yielded a confirmation bias. Attitude-consistent exposure uniformly reinforced attitudes; attitude-discrepant exposure uniformly weakened attitudes. Analyses with parallel U.S. data showed a stronger confirmation bias in the United States than in Germany.*

**Keywords:** Selective Exposure, Confirmation Bias, Politics, Online Search, Source Credibility, Attitudes, Comparative Studies.

doi:10.1111/jcom.12154

Research on how citizens approach political information and how they are affected by the selected information, especially during election campaigns, has a long history in communication science (see review by Knobloch-Westerwick, 2015). Since Lazarsfeld, Berelson, and Gaudet (1944) coined the term *selective exposure*, it has often been used to describe the phenomenon that information users prefer attitude-consistent messages over attitude-discrepant messages. A more specific term for this pattern is *confirmation bias* (e.g., Taber & Lodge, 2006). Especially in times leading up to elections, the confirmation bias could have important implications for

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democracy. In pre-election periods, citizens are usually more interested in political topics and parties than in times of political routine (e.g., Boczkowski, Mitchelstein, & Walter, 2012). The extent to which citizens come across attitude-consistent or attitude-discrepant messages has an impact not only on their strength of partisanship but also on their likelihood of political participation (e.g., Knobloch-Westerwick & Johnson, 2014; Knobloch-Westerwick & Meng, 2011), both of which ultimately can affect voting decisions and election outcomes.

Research evidence on the confirmation bias has not always been coherent (Donsbach, 2009). Yet in recent years, numerous studies demonstrated it with survey and experimental designs (e.g., Garrett, 2009; Knobloch-Westerwick & Meng, 2009). Some scholars even declared a “new era of minimal effects” (Bennett & Iyengar, 2008) due to the Internet facilitating selecting attitude-consistent messages. Importantly, empirical work on the confirmation bias in selective exposure to political messages before elections has predominantly been conducted in the United States. Thus, little is known about whether individuals generally prefer attitude-consistent political messages, as theoretical frameworks (Festinger, 1957; Taber & Lodge, 2006) suggest, or whether this is a phenomenon that is particularly pronounced or unique in the United States due to cultural and political circumstances. This study aims to add to our knowledge on selective exposure to political information, with data collected in Germany in 2013 before the federal elections, that is, the election of the German parliament (Bundestagswahl). In the following, we elaborate on the need to extend the research beyond the American context while also considering online information contexts. Hypotheses will be based on cognitive dissonance (Festinger, 1957), the approach-avoidance model (Lowin, 1967), and motivated cognition (Taber & Lodge, 2006).

### **Contextual factors of political information environments**

With empirical evidence for the confirmation bias predominantly based on U.S. data, concern is in place as to how this particular cultural and political context may shape citizens' selective use of political information. For instance, the United States has a clear-cut, very stable two-party political system, which creates a very different context than, for instance, the multiparty coalitional systems existing in many European countries. Using the coefficient for “effective number of parliamentary parties” (Laakso & Taagepera, 1979), the United States has 2.0 parliamentary parties compared to 3.72 in Germany (Carter & Farrell, 2010). A party system such as in the United States is thought to result from features of the electoral rules, with simple plurality (or “winner take all”) rules fostering the development of a two-party system; in contrast, proportional electoral rules, in which the number of seats that a party wins closely reflects the number of votes received, is thought to facilitate the development of a multiparty system (Duverger, 1917/1959). Germany is thus referred to as a moderate case of “power-sharing” political systems, whereas the United States represents a moderate “majoritarian” system (Lijphart, 2012; Wessler & Rinke, 2014).

Although a greater number of parties could involve greater competition among them and, thus, stimulate political deliberation (e.g., Nir, 2012; Wessler & Rinke, 2014), a high number of choices available to voters can also have negative effects on citizens' political attitudes: Surveys in multiparty European democracies show political polarization, but also political involvement, to be relatively low in those countries, especially among young people (e.g., Blekesaune, Elvestad, & Aalberg, 2012; Esser & De Vreese, 2007). These findings might partly be explained by a higher diversity of viewpoints, which voters need to make sense of and which might lead to greater political ambivalence and lower political interest and engagement (e.g., Lavine, 2001; Parsons, 2010). In contrast, if only two parties exist, as in the United States, they represent more distinct and, from a voter's perspective, more distinguishable choices, which can positively affect political involvement (Dalton & Anderson, 2011; Peter, 2004). But, this can also facilitate partisan selective exposure, as voters have a higher chance to recognize and select information congruent with their viewpoints (cf. Iyengar & Hahn, 2009; Mutz & Martin, 2001), which in turn helps bolster individual political beliefs (e.g., Dilliplane, 2011; Stroud, 2011).

Besides differences in political systems, the United States and Germany also differ in their media systems, particularly with regard to broadcasting. Commercialized and decidedly slanted channels such as Fox News in the United States are in stark contrast to the strong European public broadcasting that aims to provide a broad spectrum of political information and presents more diverse political viewpoints (e.g., Aalberg, Van Aelst, & Curran, 2010; Esser *et al.*, 2012; Semetko, 1996; Wessler & Rinke, 2014). Although U.S. journalism is traditionally more associated with impartiality than German journalism (e.g., Donsbach, 2010; Esser & Umbricht, 2013; Hallin & Mancini, 2004), current American news media markets have become exceedingly competitive, which has led news media to cater toward niche audiences through decidedly slanted coverage and commentary (e.g., Gentzkow & Shapiro, 2010).

In brief, the political party systems and the media systems of the United States and Germany differ substantially, with implications for political information use, involvement, and discourse. These differences provide grounds for testing the confirmation bias in Germany as a very different context than the U.S. context, which was predominantly utilized in prior research, and suggest that Germans will exhibit a smaller confirmation bias. The present work will draw on an online information search setting before the most important German election and thus extends a research design that was applied to the 2012 pre-election phase in the United States (Knobloch-Westerwick, Johnson, & Westerwick, 2015). Indeed, the present research procedure replicates our prior two-session online field study to the extent that it is possible with cross-cultural research in different language contexts. In both data collections, we used stimuli on issues of high political relevance in the respective countries. Two of the issues were identical because they played a role in both campaigns: minimum wage and universal health coverage. The other topics for Germany were military deployment and immigration [abortion and gun control in the United States].

### Confirmation bias in political information exposure

Selective information exposure has long been thought to be governed by a preference for messages that align with pre-existing attitudes and behaviors. In his theory of cognitive dissonance, Festinger (1957) suggested that encountering information that challenges an individual's views instigates discomfort, which results from inconsistent cognitions. Such cognitive dissonance and associated discomfort motivates individuals to avoid attitude-challenging messages (confirmation bias). The suggested confirmation bias has found empirical support in the realm of political information exposure based on U.S. data (e.g., Westerwick, Kleinman, & Knobloch-Westerwick, 2013). However, empirical studies on political selective exposure outside the United States are rare. Hence, it is unclear whether these theoretical concepts can be generalized beyond (e.g., Esser & Pfetsch, 2004; Hasebrink, 2012). Attitudinal effects on selective exposure therefore need to be tested in broader international contexts.

A few nonexperimental studies examined confirmation bias in a news consumption context in Germany (Donsbach, 1991; Noelle-Neumann, 1974), but they are over 20 years old and were conducted before the Internet era. The scarce, more recent experimental evidence from Germany suggests that the confirmation bias found in U.S. studies also applies to Western democracies other than the United States (e.g., Jonas, Graupmann, Fischer, Greitemeyer, & Frey, 2003; Mothes, 2014): A field study by Jonas et al. (2003) compared the information behavior by voters of the two leading German parties—Christian-Democratic Union (CDU) and Social Democratic Party of Germany (SPD)—after the CDU party donation scandal had become known to the public in 1999. The study found that CDU voters, compared to SPD supporters, showed a higher preference for information that was consistent with their political preferences and, thus, justified their voting decision. Further, Mothes (2014) recently conducted an experiment involving the 2010 political debate about German nuclear power plants: When asked to describe the topic to other people, both supporters and opponents of the issue selected more attitude-consistent than attitudinal-discrepant information.

These findings corroborate a confirmation bias, but caution is in place because they were based on one specific topic each. Further, Jonas et al.'s (2003) findings relied on self-reports, and Mothes's (2014) study was specific in that it looked at information selection that was to be shared with others. Given the small extent and the limitations of existing work on the confirmation bias among German media users, the present work will address a gap in the literature by testing the following hypothesis on a confirmation bias in a non-American sample. German users of political online information spend more time with attitude-consistent messages than attitude-discrepant messages (H1a). To test it, the study will use unobtrusive observation of selective exposure to political online messages on *several* topics before a federal election.

A key motivation for this study is to examine whether cultural context affects the confirmation bias—however, cross-cultural comparisons present many challenges: When collecting data before an election, which much prominent research on the confirmation bias has done (Knobloch-Westerwick & Kleinman, 2012), two different

electoral and cultural contexts come into play for the cross-cultural comparison, along with language and topic differences. Despite these challenges, the present data collection in Germany is as parallel as possible to an earlier data collection in the United States. Assuming that the German political and media system provides less selective exposure opportunities than the U.S. context, we will draw on these two data sets to test H1b as a second hypothesis. The confirmation bias suggested in H1a is less pronounced among German users of political online information than among U.S. users (H1b).

### **Confirmation bias and source credibility in the Internet context**

With more than three quarters (77%) of Germans using the Internet, 5.8 days per week and for 169 minutes per day on average (van Eimeren & Frees, 2013), implications for their political information use need to be considered (Bennett & Iyengar, 2008). Germans use online search engines more than any other online application (van Eimeren & Frees, 2013) and utilize them also for searching political content (Neuberger, 2012). Since 2002, more Germans seek information regarding the federal election in each election cycle (Gscheidle & Gerhard, 2013).

When seeking political information through standard search portals and engines, online users encounter content from a variety of sources, unlike the traditional media context—TV channel, radio channel, or newspaper—where just one source presents information. In contrast, an online search turns up content from sources with different levels of credibility on the same screen page. This feature of the online search context is particularly intriguing in light of the long-standing scholarly interest in source credibility for message persuasiveness (first suggested by Hovland & Weiss, 1951). For example, the elaboration likelihood model suggests that in the case of low involvement, media users will rely on peripheral cues such as source credibility when responding to a persuasive message—such that messages from high-credibility sources are more likely to induce an attitude shift toward the message stance than messages from low-credibility sources (Petty & Cacioppo, 1986). It is of great relevance how these source cues in online searches for political information might channel what content users actually attend to. It is plausible that users will prefer messages from high-credibility sources, as demonstrated with prior work based on U.S. pre-election data (Knobloch-Westerwick et al., 2015). Thus the following hypothesis will now be tested for the German case: In online information searches, users spend more time on messages from high-credibility sources than on messages from low-credibility sources (H2).

Regarding such selective exposure, Lowin's (1967) approach-avoidance model postulates that the confirmation bias is less pronounced for messages from low-credibility sources, as they are easily refuted and thus less challenging to pre-existing attitudes. Source credibility should affect perceptions of the refutability, such that the confirmation bias will be more pronounced for messages associated with high-credibility sources. Early studies testing Lowin's assumptions for the traditional offline context found some support for this hypothesis, both in the United

States and in Germany (Frey, 1981; Kleinhesselink & Edwards, 1975). However, to our knowledge, the very few recent studies examining approach-avoidance in online contexts could not replicate these findings. A survey of Internet users during the 2008 presidential campaign in the United States (Johnson & Kaye, 2013) and a first experimental examination for the online context based on a U.S. sample before the 2012 presidential election (Knobloch-Westerwick et al., 2015) found no support for this hypothesis derived from Lowin's model. As recent studies examining Lowin's approach-avoidance model in today's information environments are confined to the U.S. context, the present work will test Lowin's hypothesis again for online information searches in the German context: The effect in H1 is more pronounced for messages from high-credibility sources than low-credibility sources (H3).

### **Impacts of selective exposure to political information**

A modern variant of cognitive dissonance theory that focused on the political context is Taber and Lodge's (2006) approach to motivated skepticism (related to motivated cognition; Kunda, 1990). It includes the confirmation bias prediction, stating, "when free to choose what information they will expose themselves to people will seek out confirming over disconfirming arguments" (Taber & Lodge, 2006, p. 757). However, their approach emphasizes patterns in information processing that bolster pre-existing attitudes by also specifying a "*disconfirmation bias*, such that people spend more time and cognitive resources denigrating and counterarguing attitudinally incongruent than congruent arguments" (Taber & Lodge, 2006, p. 757).

While Taber and Lodge's (2006) own U.S. data-based experiment supported this notion, recent experimental U.S. data (Westerwick et al., 2013) challenged it by showing that the more time people spent on attitude-discrepant messages the more these attitudes were weakened. This finding is in contrast to the quoted suggestion on motivated cognition regarding disconfirmation. Such impacts of selective exposure to political messages on attitudes are evidently of great interest for the German context as well and will be examined with the following hypotheses: Longer selective exposure to attitude-*consistent* messages strengthens related attitudes (H4). Longer selective exposure to attitude-*discrepant* messages weakens related attitudes (H5).

## **Method**

### **Overview**

A two-session online experiment ( $N = 121$ ) was conducted and designed to be as parallel as possible to an earlier data collection in the United States before the 2012 presidential election (see Knobloch-Westerwick et al., 2015, for details). In the following, any differences that existed compared to the U.S. study will be specified in square brackets.

Participants first completed an online session that solicited attitudes toward various political issues relevant to the 2013 federal election in Germany, as well as general information about media use and political preferences. Session 1 collected measures of attitudes and other variables, related to four controversial target issues of

universal healthcare, minimum wage, military deployment abroad, and immigration restrictions, as well as distracter topics [in the U.S. study, the topics were universal healthcare, minimum wage, abortion, and gun control]. After 3 days, an e-mail invited participants for Session 2, which included an online browsing task with sets of online search results for each political topic. For each target topic, a search results page allowed access to four articles for 2 minutes. The online articles were varied in a  $2 \times 2$  within-subjects design: Among the four articles, each featured an attitude-consistent or attitude-discrepant view and was linked to a high- or low-credibility source. While participants browsed the search results, selective exposure to each page was unobtrusively logged in seconds. Once the browsing concluded, attitude measures from Session 1 were repeated to capture change.

### Participants

A sample of German residents was obtained through several means. First of all, participants were recruited from the DNN-IfK Barometer, a long-running telephone survey that tracks social and political attitudes among the city of Dresden, the largest city in the federal state of Saxony. Student participants were also recruited from communication courses at the Technische Universität Dresden and other neighboring colleges and universities. Finally, participants from these sources were asked to share the study with their acquaintances, in a snowball recruitment technique. DNN-IfK participants received a €15 Amazon giftcard for their participation; participants who recruited other participants received an Amazon giftcard worth €8 for each recruit. These procedures produced an initial sample of 182 individuals who accessed the first session. Of these, 29 did not return for the second session, 18 experienced technical difficulties or did not complete the second session, and a further 14 were screened out as inattentive outliers because they spent more than 100 seconds on at least one search results overview page (i.e., <20 seconds actually reading).

The resulting final sample consisted of 121 complete and valid cases. Of the four recruiting routes, 26% stemmed from the DNN online panel, 24% from the student research pool in East Germany, 23% from the student research pools in West Germany, and 28% from individual invites. The postal code variable reflected that 60% of participants resided in East Germany, 22% in Northern-West Germany, and 18% in Southern Germany. Women were slightly overrepresented at 58% (vs. 51% in the population) as were people with a college degree (55% vs. 23%, additional 50% in the population hold a vocational degree). Participants in the sample were also by and large younger: The mean age was 36 ( $SD = 15.4$ ) as compared to 43 in the population. For party preference, fewer participants favored the two major parties *CDU/CSU* and *SPD* as compared to the average population (see percentages for general population in parentheses in the following, adopted from Infratest, 2013): 33.9% (42%) favored the *CDU/CSU* party, 26.3% (13%) *Bündnis90/Grüne*, 17.8% (26%) the *SPD* party, 10.2% (7%) *Die Linke* party, 4.2% (5%) the *FDP* party, and 7.6% (7%) other. [The U.S. study included 227 nonstudent participants who were recruited through an e-mail snowball sampling technique (40.5% Ohio residents; 51.3% female;

85.9% White;  $M_{age} = 35.94$ ,  $SD = 10.31$ ; 39.4% Democratic, 26.1% Republican, 26.5% independent).] It can be argued that the deviations from the general population do not affect the external validity of the results because the present research focuses on the effects of general psychological patterns of information processing within a given political system that are rather independent of sociodemographic variables.

### **Procedure**

Participation was administered online through a platform specifically developed with Microsoft Silverlight. The application collected responses, displayed the online search results with a Latin square randomization approach across participants, and logged browsing. Each of the two sessions took about 20 minutes; they were completed at least 3 days apart.

#### *Session 1*

Participants received a personalized link to Sessions 1 and 2 so that the two separate data sets for each participant could be merged after both sessions had been completed. In the first session, participants were asked to avoid distractions and to take the session in one go. The session began with measures of attitudes, followed by attitude-related measures, partisanship, party identification strength, self-reported media use, and demographics.

#### *Session 2*

Three days after completing the first session, participants received an e-mail invite for the second session. Session 2 also instructed participants to avoid distractions and then displayed sets of online search results about four political issues. Participants were informed that browsing time was limited, without specifying the time span. The software allotted 2 minutes for each topic. Participants could freely navigate between an overview page that showed search results and the article pages for that topic. Once the 2 minutes elapsed, a pop-up message appeared. Clicking an "OK" button allowed participants to move to the next set of search results about the next topic. After search results had been displayed for all four topics, measures of source recall, attitudes, and political interest were administered. Lastly, a debriefing was shown.

### **Stimuli and pretest**

The stimuli were specifically compiled and pretested for the study [stimuli of the U.S. study were adopted from Westerwick et al. (2013)]. The context in which the stimuli were shown was a news search portal that displayed four articles associated with a keyword search (see illustration in Figure 1). A search box showed the search keywords "Bürgerversicherung" (health care) "Mindestlohn" (minimum wage), "Bundeswehr" (army), and "Zuwanderung" (immigration), along with the related set of search results; the sequence of topics was the same for all participants [the U.S. study used English terms reflecting the respective topics and used the sequence healthcare, minimum wage, gun control, and abortion]. For each topic, four text leads appeared as



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**Suchergebnisse**

Quelle: [Deutsches Institut für Wirtschaftsforschung \(www.diw.de\)](http://www.diw.de)  
**Mindestlohn - Schöneres Wort für Dumpinglohn**  
 Durch die Einführung von Mindestlöhnen wird der Niedriglohnsektor ganz legal ausgebaut. Mit festgesetzten Lohnuntergrenzen wird Armut zum Normalfall und die Schere zwischen Arm und Reich größer. [Zum Artikel](#)

Quelle: [Die wunderbare Welt der Wirtschaft \(www.diewunderbareweltderderwirtschaft.de\)](http://www.diewunderbareweltderderwirtschaft.de)  
**Mindestlohn: Eine Frage der Menschenwürde**  
 Niemand sollte trotz Vollzeit-Job immer noch auf Arbeitslosengeld angewiesen sein. Mit diesen Lohnsubventionen unterstützt der Staat unternehmerische Ausbeutung, die durch einen Mindestlohn endlich gestoppt werden kann. [Zum Artikel](#)

Quelle: [Mindestlohn-Blog \(www.mindestlohn-blog.de\)](http://www.mindestlohn-blog.de)  
**Mindestlohn: Arbeitslosigkeit ist vorprogrammiert**  
 Mindestlöhne würden das Aus für viele Geringverdiener darstellen. Lie Lohnuntergrenze wäre durch Mindestlöhne so hoch, dass Unternehmen zweimal überlegen würden, ob sie diese Arbeitskraft wirklich brauchen. [Zum Artikel](#)

Quelle: [Institut für Arbeitsmarkt- und Berufsforschung \(www.iab.de\)](http://www.iab.de)  
**Mindestlohn als Mittel gegen Armut**  
 Jeder sechste Deutsche ist armutsgefährdet. Das betrifft nicht nur Geringqualifizierte. Sogar Wirtschaftsexperten halten es für die beste Lösung, Mindestlöhne einzuführen, um den sozialen Abstieg zu stoppen. [Zum Artikel](#)

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**Figure 1** Example screenshot of online search results page.

search results and varied in a  $2 \times 2$  (issue stance  $\times$  source credibility) within-subjects design such that two lead texts supported an issue (e.g., establishing a minimum wage) while two lead texts opposed it. Furthermore, the online search results were associated with sources of low or high levels of source credibility. One “proissue” lead was linked with a low-credibility source and one “proissue” lead was linked to a high-credibility source, whereas the two “contraissue” leads were also linked to either a low- or a high-credibility source. Within each topic, high- and low-credibility sources for a given issue stance were systemically rotated with a Latin square design to avoid any confound between article and source. Further, the presentation order of all four articles within each topic was randomized to prevent any order effects. These articles (their headlines and leads) were previewed on an overview page, from which participants could click to read an individual article in full. From the article pages, participants could then click a button to return to the overview and choose other articles as desired.

The online texts were culled from news and lobbying sources and edited for length, stance consistency, and style. Each article consisted of a headline ( $M_{\text{words}} = 4.50$ ,  $SD = 0.52$ ), lead ( $M_{\text{words}} = 25.75$ ,  $SD = 0.45$ ), and body ( $M_{\text{words}} = 732.19$ ,  $SD = 0.66$ ).

All sources and URLs represented real websites relevant to the individual topic.

The headlines and leads were pretested in a separate survey with 28 German undergraduate students,  $M_{age} = 21.1$ ,  $SD = 1.86$ ; 32.1% male [for the U.S. study, 80 American undergraduate students participated in the pretest;  $M_{age} = 21.7$ ,  $SD = 1.60$ ; 46.3% male]. Subjects participating in the pretest did not take the main study. The pretests confirmed that news leads adhered to their desired manipulations: Articles were perceived as either strongly supporting or opposing the issue in question (see details in Appendix A) [for the U.S. pretest, see Westerwick et al., 2013]. Stance was tested with single item 11-point anchored scales ranging from  $-5 = \textit{strongly opposing (issue)}$  to  $+5 = \textit{strongly supporting (issue)}$ . It is relevant to note that the German pretest participants rated the leads as more slanted than the participants in the pretest for the parallel U.S. study did (the average across the 16 leads was 3.36 when using the absolute ratings for stance, compared to 3.07 for the pretest in the U.S. study). Interest between articles was similar (see Appendix A) when tested with single items on 7-point scales ( $1 = \textit{not at all interesting}$  to  $7 = \textit{extremely interesting}$ ). To manipulate source credibility, real URLs relevant to each political issue were selected that would convey high and low credibility (e.g., nonprofit institutes and personal blogs). In order to present stance by credibility in a  $2 \times 2$  within-subjects design, there was both a high- and a low-credibility source that corresponded to each stance on an issue. These sources were pretested as well. Credibility was assessed with the question “How credible are the following sources regarding news about (issue)?” with a Likert scale ranging from 1 to 7 ( $1 = \textit{not at all credible/extremely credible}$ ). The pretest demonstrated the expected differences in perceptions of credibility (see Appendix B for the German pretest results [for the U.S. pretest, see Westerwick et al., 2013], and Appendix C for the German question wording).

## Measures

### *Selective exposure*

The online research application logged reading behavior by recording hyperlink clicks to access an article or to return to the overview. Thus selective exposure was logged in seconds. The measure of selective exposure through software logging has been validated by Knobloch, Hastall, Zillmann, and Callison (2003) by correlating logged selective exposure time with retrospective estimated reading; it was found to represent actual reading very well (typical correlations are in the  $r = .80 - .90$  range). Further validation of observed reading behavior with eye movement that reflects reading was provided by Zillmann, Knobloch, and Yu (2001).

Participants' browsing was categorized by stance-by-credibility article manipulations to derive information on attitude-consistent and attitude-discrepant selective exposure for each topic (see Table 1), which was further differentiated by credibility of the associated sources. Exposure times for both attitude-consistent articles,  $D(121) = 0.056$ ,  $p = .20$ , and discrepant articles,  $D(121) = 0.066$ ,  $p = .20$ , did not deviate significantly from a normal distribution.

**Table 1** Descriptive Statistics (*M*, *SD* in parentheses)

	Health Coverage	Minimum Wage	Military Deployment	Immigration Restriction
Attitude (dichotomous, support), Session 1	56% <sup>a</sup>	85% <sup>b</sup>	29% <sup>c</sup>	38% <sup>c</sup>
Attitude (dichotomous, support), Session 2	54% <sup>a</sup>	75% <sup>b</sup>	33% <sup>c</sup>	50% <sup>a</sup>
Attitude (Likert), Session 1	4.37 <sup>a</sup> (1.64)	5.90 <sup>b</sup> (1.62)	2.83 <sup>c</sup> (1.69)	3.37 <sup>c</sup> (2.14)
Attitude (Likert), Session 2	4.38 <sup>a</sup> (1.80)	5.19 <sup>b</sup> (1.83)	3.03 <sup>c</sup> (1.81)	4.03 <sup>a</sup> (2.13)
Attitude-consistent exposure	48 <sup>a</sup> (41)	48 <sup>a</sup> (42)	55 <sup>a</sup> (40)	55 <sup>a</sup> (42)
Attitude-discrepant exposure	40 <sup>a</sup> (39)	50 <sup>a</sup> (41)	39 <sup>a</sup> (38)	43 <sup>a</sup> (43)

*Note.* Means and percentages within a row with different superscripts differ at  $p < .05$ .

#### *Dichotomous attitudes*

A response time task in Session 1 served to categorize participants' selective exposure as attitude-consistent and attitude-discrepant. A preliminary task served to familiarize participants with the task. Then, for 12 political issues including the four target issues, participants used two keys on their computer keyboard to indicate *Oppose* or *Support* based on brief verbal cues presented on-screen. Cues for the target issues were *Bürgerversicherung*, *Gesetzlicher Mindestlohn*, *Bundeswehr-Auslandseinsätze*, *Zuwanderungs-Beschränkungen* (transl.: universal health coverage, minimum wage, military deployment, immigration restrictions). Eight distractor issues helped to veil the research interest of the study.

Specifically, participants were presented with the following instruction (transl.): "In the following, you will be asked to indicate YOUR views regarding several policies and proposed policies. Press one of two keys to indicate whether you support or oppose a policy. The key with the symbol 'Z' indicates that you OPPOSE this issue. The key with the symbol '/' indicates that you SUPPORT this issue. [ ... ] Again, please answer each question as quickly as possible, but not so quickly that you might make errors." The descriptive statistics for the pre-exposure and post-exposure dichotomous attitude measures (support vs. opposition) of the four target topics are reported in Table 1. The next section provides validation of these measures of attitudes.

#### *Attitudes (Likert-type scale)*

While the dichotomous attitude measures served to categorize selective exposure into attitude-consistent and attitude-discrepant, Likert-scale attitude measures pre and post the browsing task captured attitude shifts. For each target and distractor issue, attitudes were indicated with a Likert-scale anchored with 1 = *strongly oppose* to 7 = *strongly support*. Participants were presented with the question "How strongly do you support or oppose the following policy?" (see Appendix C for German items).

The same cues as for the dichotomous attitude measures were used. Descriptive statistics for target attitudes, pretest and posttest, are reported in Table 1.

Only few participants (6.0% to 24.0%) [7.0% to 10.1% in the U.S. study] chose the scale midpoint; for none of the topics was the midpoint the most popular choice. Dichotomous attitudes were strongly correlated with Likert-type attitudes at Session 1 for each topic, ranging from  $r = .50, p < .001$  to  $r = .73, p < .001$ , attesting to the validity of the measures.

#### *Attitude shifts*

Scores for the Likert-scale attitude measures from Session 1 were subtracted from the repeated measures from Session 2. If participants had selected “oppose” in the dichotomous attitude measure in Session 1, the difference score was multiplied by  $-1$ . The resulting positive scores thereby indicate strengthened attitudes for both supporters and opponents of the policies, whereas negative scores indicate weakened attitudes. Attitude shift across all four German topics, ranging from  $-6$  to  $6$ , was  $M = -0.42$  ( $SD = 0.87$ ), which differed significantly from zero as well,  $t(120) = -5.31, p < .001$ .

#### *Political interest*

Political interest was captured with “Please indicate how closely you follow what’s going on in government and public affairs” and “... you have followed the news about the Presidential election in November 2012” (see Appendix C for German items), using the anchors  $1 = \text{Not at all closely}$  and  $7 = \text{Very closely}$ . The two items were highly correlated ( $r = .64, p < .001$ ) and thus averaged for a political interest score,  $M = 4.94, SD = 1.25$ .

#### *Internet search habits*

To capture how often participants used the Internet for information purposes, participants were asked “How frequently do you use the Internet to search for information?” (see Appendix C for German items). The response options *several times a day, about once a day, about every other day, several times a week, about once a week, and less frequently* were used. The most common response was *several times a day* (78%), followed by *about once a day* (11%).

## **Results**

### **Antecedents of selective exposure to political online content**

A  $4 \times 2 \times 2$  analysis of variance (ANOVA) with characteristics of the online search results as within-subjects factors (topic; source credibility; attitude consistency) was conducted, using selective exposure to the associated online texts as repeated measures.

H1a assumed that German users of political online information prefer attitude-consistent messages over attitude-discrepant messages. A confirmation bias indeed emerged,  $F(1, 120) = 4.85, p = .030, \eta^2_{\text{partial}} = .039$ , as participants spent  $M = 200$  s

( $SD = 90$ ) on attitude-consistent messages, compared to  $M = 166$  s ( $SD = 89$ ) for attitude-discrepant messages. For H2, messages associated with high source credibility indeed attracted longer exposure ( $M = 203$  s,  $SD = 89$ ) than those associated with low-credibility sources ( $M = 163$  s,  $SD = 89$ ),  $F(1, 120) = 6.99$ ,  $p = .009$ ,  $\eta^2_{\text{partial}} = .055$ . This finding aligns with the exposure behavior found in the U.S. study (Knobloch-Westerwick et al., 2015). Thus, credible sources were indeed more preferred for information searches in online settings than less credible sources. An interaction between attitude consistency and source credibility as suggested in H3, however, did not approach significance ( $p = .853$ ), in line with the findings of the U.S. study (Knobloch-Westerwick et al., 2015). In Germany, partisan selective exposure was thus not more pronounced for messages from high-credibility sources than from low-credibility sources. A post hoc power analysis of these within-subjects factors was conducted with G\*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) and yielded 97.20% statistical power to detect an effect size of at least  $\eta^2_{\text{partial}} = .02$ , allowing for a .50 correlation between within-subjects measures in G\*Power 3.1 (Faul et al., 2009). Thus, the sample was well powered to identify any interaction between source credibility and attitude consistency. Hence, the lack of support for H3 did not result from a lack of statistical power.

Lastly, topic had an effect on *overall* exposure,  $F(3, 360) = 16.392$ ,  $p < .001$ ,  $\eta^2_{\text{partial}} = .120$ , because participants spent more time on the overview for the first topic (health insurance) and less time on actual health insurance articles taken together, as they were orienting themselves on the search results page for the first time (see Table 1). Selective exposure was not affected by topic, with none of the interactions with topic even approaching significance (n.s.).

### Impacts of selective exposure to political online content

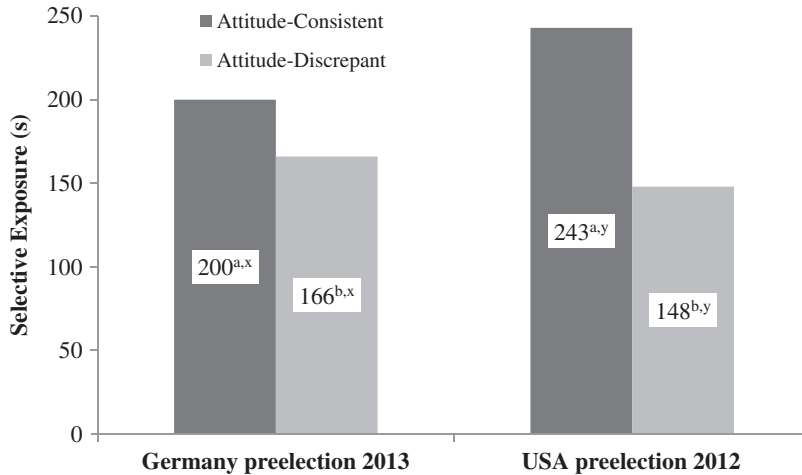
To test the assumption that longer selective exposure to attitude-consistent messages strengthens related attitudes (H4), individual regression analyses were run for each target topic, with attitude-consistent exposure as predictor. As numerous factors have been suggested to affect persuasion effects (e.g., McGuire, 2002), the analyses controlled for demographic factors (i.e., sex, age, student vs. nonstudent status) and recruitment approach, as well as participant characteristics related to political information use (i.e., political interest, strength of partisanship, and Internet use habits) and exposure context (i.e., selective exposure to messages linked to high-credibility sources). Just as in the U.S. context (Knobloch-Westerwick et al., 2015), attitude-consistent exposure of German participants uniformly reinforced attitudes across topics, with positive exposure effects ranging from  $\beta = .31$  to  $.45$  (see details in Table 2).

To test if longer selective exposure to attitude-discrepant messages weakens related attitudes (H5), individual regression analyses were run for each target topic, with attitude-discrepant exposure as predictor while including the same control variables as above. The weakening effect of attitude-discrepant exposure on German participants' attitudes, which was also found for the U.S. context (Knobloch-Westerwick

**Table 2** Impacts of Attitude-Consistent (AC) and Attitude-Discrepant (AD) Exposure on Attitude Shifts for Four Target Issues, Beta Weights (*p* values in parentheses)

	Health Coverage		Minimum Wage		Military Deployment		Immigration Restriction	
	AC	AD	AC	AD	AC	AD	AC	AD
Attitude-consistent exposure	.38 (<.001)	n/a	.45 (<.001)	n/a	.31 (.004)	n/a	.31 (.002)	n/a
Attitude-discrepant exposure	n/a	-.36 (<.001)	n/a	-.44 (<.001)	n/a	-.27 (.006)	n/a	-.31 (.002)
Control variables								
Gender	.08 (.402)	.08 (.405)	-.15 (.121)	-.15 (.119)	-.13 (.239)	-.10 (.355)	-.00 (.985)	-.00 (.981)
Age	.03 (.787)	.03 (.771)	-.06 (.580)	-.06 (.599)	.05 (.706)	.11 (.349)	-.01 (.908)	-.01 (.921)
Dresden residence	-.01 (.909)	-.01 (.909)	.07 (.405)	.07 (.413)	-.04 (.691)	-.04 (.719)	-.14 (.166)	-.14 (.164)
Student status	-.05 (.648)	-.05 (.658)	.01 (.907)	.01 (.913)	.02 (.884)	.02 (.874)	.00 (.979)	-.00 (.979)
Political interest	.00 (.973)	.00 (.999)	.06 (.558)	.06 (.565)	-.07 (.563)	-.06 (.608)	.07 (.547)	.07 (.549)
Strength of partisanship	.11 (.275)	.11 (.272)	-.06 (.507)	-.06 (.503)	-.13 (.219)	-.12 (.265)	-.05 (.636)	-.05 (.637)
Internet search habits	-.02 (.822)	-.03 (.806)	-.14 (.166)	-.14 (.172)	-.14 (.197)	-.16 (.159)	.03 (.750)	.03 (.752)
High-credibility exposure	-.07 (.501)	n/a	-.11 (.217)	n/a	.03 (.798)	n/a	-.04 (.696)	n/a
Low-credibility exposure	n/a	.07 (.468)	n/a	.11 (.212)	n/a	-.04 (.709)	n/a	.04 (.690)
<i>R</i> <sup>2</sup>	.185	.182	.260	.260	.144	.131	.116	.116

Note: Positive beta weights for attitude shift reflect attitude shift toward a stronger attitude, whereas negative beta weights reflect a weakened attitude.



**Figure 2** Selective exposure to political online content as a function of country and attitude consistency. *Note:* Means for the same country with different superscripts a and b differ significantly at  $p < .05$  in subsequent tests (with Sidak correction for multiple comparisons). Means of the same data series, comparing between countries, with different superscripts x and y also differ significantly at  $p < .05$ .

et al., 2015), was uniform across topics, with negative exposure effects ranging from  $\beta = -.27$  to  $-.44$  (see details in Table 2).

### Examining the confirmation bias cross-culturally

H1b suggested a less pronounced confirmation bias among German users of political online information than among U.S. users. To address this hypothesis, data from this study were merged with data from the parallel study conducted before the 2012 U.S. presidential election, which provided 227 valid cases (for details of this study, see Knobloch-Westerwick et al., 2015). An ANOVA utilized four selective exposure variables as repeated measures: time spent on attitude-consistent search results linked to high-credibility sources, time spent on attitude-consistent search results linked to low-credibility sources, time spent on attitude-discrepant search results linked to high-credibility sources, and time spent on attitude-discrepant search results linked to low-credibility sources. Country served as between-group factors.

Country as between-group factor yielded a main effect,  $F(1, 346) = 22.63, p < .001, \eta^2_{\text{partial}} = .061$ , because Germans spent less time on reading online texts, on average 366 s ( $SD = 49$ ) compared to 391 s ( $SD = 41$ ) for the American participants. Thus, Germans spent more time reviewing the online search results on the overview page and, as a result, devoted less time to viewing actual text pages than Americans did.

With regard to hypotheses testing, the confirmation bias emerged of course in this analysis as well,  $F(1, 346) = 46.17, p < .001, \eta^2_{\text{partial}} = .118$ . Importantly, as illustrated in Figure 2, data from the two countries differed in the extent of the confirmation. This difference was reflected in an interaction between attitude consistency as

within-group factor and country as between-group factor,  $F(1, 346) = 10.28, p = .001, \eta^2_{\text{partial}} = .029$ . Thus, participants in the United States indeed exhibited a significantly higher confirmation bias than German participants. Data from the two countries differed both for the selective exposure to attitude-consistent information (at  $p < .001$ ) and for attitude-discrepant information ( $p = .049$ ).

The analysis further yielded a main effect of credibility on reading times, regardless of country,  $F(1, 346) = 15.22, p < .001, \eta^2_{\text{partial}} = .042$  with  $M = 214$  s ( $SD = 85$ ) for articles associated with high-credibility sources and  $M = 178$  s ( $SD = 89$ ) for low-credibility articles.

## Discussion

The present work examined how German participants selectively read political online information, accessed through a search portal, before the federal election 2013. The results demonstrate that selective exposure was governed by a confirmation bias such that attitude-consistent information from an online search was preferred (supporting H1a)—this finding aligns with numerous studies conducted on the topic in the United States (Garrett, 2009; Stroud, 2010; Westerwick et al., 2013). Even though users generally spent more time with messages from high-credibility sources, in line with H2 and with prior findings from the United States (Knobloch-Westerwick et al., 2015), source credibility did not moderate the extent of the confirmation bias (H3 not supported). Hence, as in prior work with U.S. data (Johnson & Kaye, 2013; Knobloch-Westerwick et al., 2015), Lowin's (1967) approach-avoidance model was not confirmed with the present German data. While Lowin's model is plausible, perceived greater informational utility (Knobloch-Westerwick & Kleinman, 2012) of messages from high-credibility sources may counteract the effects of message refutability that Lowin suggested. In addition to selective exposure, impacts of this exposure were examined. Selective exposure to attitude-consistent messages uniformly strengthened related attitudes across all four topics (supporting H4), whereas selective exposure to attitude-discrepant messages uniformly weakened attitudes (supporting H5). The latter impact contradicts the motivated cognition framework (Taber & Lodge, 2006) yet replicates earlier findings based on U.S. participants (Knobloch-Westerwick et al., 2015). Related to this point, it was observed that all attitudes were generally weakened when comparing pre-exposure and post-exposure measures, regardless of selective exposure. The average attitude shifts for minimum wage and immigration restriction differed significantly from zero and were negative. Attitude shift across all four topics was negative and differed significantly from zero as well. Apparently, simply seeing online search results of which half are arguing against one's opinion has a dampening effect on one's political views. Both observations suggest that attitudes may be more vulnerable to change than traditionally thought. It will be an important task for future research to elucidate what message cues pave the way for defensive processing per Taber and Lodge's (2006) rationale and when recipients are more open to information that challenges their views such that views get swayed. Possibly, when viewing messages from sources that are strongly linked



to a certain issue perspective (as in the study by Taber & Lodge, 2006), recipients guard their attitudes more against the incoming challenging messages. If information is coming from various sources not associated with a stance, media users appear to incorporate it more readily into their own perspective. Seeing several sources argue against one's view might influence attitudes through processes per Noelle-Neumann's (1974) spiral of silence theory, because an alternative view may then seem more prevalent than previously believed.

The present work complements the solid evidence on a confirmation bias in selective exposure to political information that exists for the American context. More specifically, it extends it based on the German context before a key election. Importantly, in line with H1b, the confirmation bias was significantly weaker among German participants when compared to data from American participants (see details, Knobloch-Westerwick *et al.*, 2015). It should be noted that a meta-analysis on a "congeniality bias" in various domains (political, business, health, religious/value-related, or purchase information) by Hart *et al.* (2009) included research from North America and German-speaking countries but did not find a significant effect of this potential moderator. Yet for a political (pre-election) context, the present work suggests that the country setting matters. It is plausible that the German cultural and political context, with a strong public broadcasting system and multiparty coalitional political system, makes German media users more accustomed to exposure to messages that challenge their own pre-existing views. The American context, on the other hand, is characterized by polarized parties and features strongly slanted media outlets, which apparently fosters the seeking of "echo chambers" (e.g., Baum & Groehling, 2008; Garrett, 2009). Interestingly, data from both countries revealed a preference for messages from high-credibility sources.

The present investigation has limitations: Recruiting German participants before the election turned out to be very challenging, resulting in a relatively small sample size. On the upside, the sample was diverse in that it included nonstudents and participants from the various regions of Germany and included the whole spectrum of the German multiparty system in terms of party preferences. With any comparisons with findings derived from American samples, it will remain speculative as to what accounts for differences in the selective exposure patterns, because multiple contextual factors diverge in the two cultural and political settings and cross-cultural comparisons come with many caveats (e.g., Leung & van de Vijver, 2008). Strengths of the present work reside in the observational selective exposure measures, use of multiple political topics, and thoroughly tested stimuli. The online field study design increases ecological validity with participants attending to messages in their natural environment, which, however, comes with more distractions potentially causing error variance.

It is important to examine whether a confirmation bias governs selective exposure to political information, because this process is at the heart of what and how citizens learn about their political environment and strongly affects their political perceptions and, ultimately, behavior. The degree of this confirmation bias also affects the

communalities between citizens and thus the sociopolitical cohesion. It is important that the scholarly view of this process is not predominantly shaped by studies based on American samples. The present work suggests that differences exist in how media users from other countries select and respond to political messages. Yet the confirmation bias—perhaps the most debated aspect of political communication—emerged for German media users as well. Further work is needed to understand how citizens in different countries selectively attend to political information in the Internet era.

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**Appendix A: Stimulus Pretest for Online Search Results Leads**

Issue/Article Headline	Issue Support		Interest	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Bürgerversicherung</b>				
Bürgerversicherung: Schwache bleiben zurück	-3.9 <sup>a</sup>	1.1	3.9 <sup>a</sup>	1.6
Bürgerversicherung verstößt gegen Grundgesetz	-3.7 <sup>a</sup>	1.1	3.7 <sup>a</sup>	1.8
Bürgerversicherung als lebensrettende Reform	3.4 <sup>b</sup>	2.0	3.9 <sup>a</sup>	1.4
Ende der Ungerechtigkeit im Gesundheitssystem	3.9 <sup>b</sup>	1.0	4.0 <sup>a</sup>	1.2
<b>Gesetzlicher Mindestlohn</b>				
Mindestlohn – Schöneres Wort für Dumpinglohn	-3.7 <sup>a</sup>	1.4	4.4 <sup>a</sup>	1.4
Mindestlohn: Arbeitslosigkeit ist vorprogrammiert	-3.3 <sup>a</sup>	1.1	4.4 <sup>a</sup>	1.1
Mindestlohn als Mittel gegen Armut	3.0 <sup>b</sup>	1.5	4.4 <sup>a</sup>	1.4
Mindestlohn: Eine Frage der Menschenwürde	3.3 <sup>b</sup>	2.4	4.4 <sup>a</sup>	1.1
<b>Auslandseinsätze der Bundeswehr</b>				
Deutschlands fragliche militärische Ambitionen	-2.7 <sup>a</sup>	1.3	4.0 <sup>a</sup>	1.7
Humanitäre statt militärische Hilfe!	-2.6 <sup>a</sup>	2.3	4.3 <sup>a</sup>	1.7
Nachhaltiger Friede braucht militärische Absicherung	3.5 <sup>b</sup>	1.5	3.6 <sup>a</sup>	1.2
Terrorismus kennt keine nationalen Grenzen	3.9 <sup>b</sup>	1.6	3.9 <sup>a</sup>	1.9
<b>Zuwanderungsregulierung</b>				
Zuwanderungsregulierung: Schritt in die Vergangenheit	-3.3 <sup>a</sup>	2.8	3.7 <sup>a</sup>	1.5
Zuwanderer als Waffe gegen Fachkräftemangel	-2.5 <sup>a</sup>	2.2	4.3 <sup>a</sup>	1.6
Moderne Einwanderungspolitik braucht Regulierungen	3.2 <sup>b</sup>	2.4	3.9 <sup>a</sup>	1.7
Armutszuwanderungen belasten deutsches Sozialsystem	3.9 <sup>b</sup>	1.4	3.9 <sup>a</sup>	1.4

Note: Means in a column and set with different letters differ at  $p < .05$ .

**Appendix B: Stimulus Pretest for Sources**

Sources	Credibility	
	<i>M</i>	<i>SD</i>
<b>Health care</b>		
Deutsches Institut für Gesundheitsforschung (www.d-i-g.org)	6.0 <sup>a</sup>	0.7
Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (www.iqwig.de)	5.7 <sup>a</sup>	1.2
Versicherungsblogger (www.versicherungsblogger.com)	2.3 <sup>b</sup>	1.1
Gesundheit-Blog (www.gesundheit-blog.com)	2.6 <sup>b</sup>	1.3
<b>Minimum wage</b>		
Deutsches Institut für Wirtschaftsforschung (www.diw.de)	6.2 <sup>a</sup>	0.8
Institut für Arbeitsmarkt- und Berufsforschung (www.iab.de)	5.8 <sup>a</sup>	0.9
Die wunderbare Welt der Wirtschaft (www.diewunderbareweltderwirtschaft.de)	2.0 <sup>b</sup>	1.1

**Appendix B: Continued**

Sources	Credibility	
	<i>M</i>	<i>SD</i>
Mindestlohn-Blog (www.mindestlohn-blog.de)	2.5 <sup>b</sup>	0.9
Military deployment		
Institut für Friedensforschung und Sicherheitspolitik (www.ifsh.de)	6.7 <sup>a</sup>	0.9
Deutsche Gesellschaft für Internationale Zusammenarbeit (www.giz.de)	5.3 <sup>a</sup>	1.2
Transatlantikblog (www.transatlantikblog.de)	2.2 <sup>b</sup>	0.9
Zukunftskinder (www.zukunftskinder.de)	2.3 <sup>b</sup>	1.0
Immigration restriction		
Berlin-Institut für Bevölkerung und Entwicklung (www.berlin-institut.de)	6.0 <sup>a</sup>	0.8
Institut für Wirtschaftsforschung (www.ifo.de)	5.6 <sup>a</sup>	1.0
Demografie-Blog (www.demografie-blog.de)	2.1 <sup>b</sup>	1.3
Integrations-Blog (www.integrationsblogger.de)	2.4 <sup>b</sup>	1.1

Note: Means in a column and set with different letters differ at  $p < .05$ .

**Appendix C: German Question Wordings for Key Measures**

Variable	Question Wording	Scale
Article stance (pretest)	“Ist die Darstellung des (Themas) in diesem Artikel Ihrer Meinung nach strikt neutral oder entspricht der Artikel der Position der Befürworter bzw. der Gegner des (Themas)?”	−5 = <i>Voll und ganz gegen (Thema)</i> ; +5 = <i>Voll und ganz für (Thema)</i>
Article interest (pretest)	“Wie interessant finden Sie diesen Artikel?”	1 = <i>Überhaupt nicht interessant</i> ; 7 = <i>Sehr interessant</i>
Source credibility (pretest)	“Wie glaubwürdig finden Sie die folgenden Quellen für Nachrichten zu (Thema)?”	1 = <i>Überhaupt nicht glaubwürdig</i> ; 7 = <i>Sehr glaubwürdig</i>
Attitudes (Likert-type scale)	“Wie stark sind Sie für oder gegen die folgende politische Maßnahme?”	1 = <i>Voll und ganz dagegen</i> ; 7 = <i>Voll und ganz dafür</i>
Political interest	“Wie regelmäßig informieren Sie sich über das aktuelle Nachrichtengeschehen?”	1 = <i>Gar nicht</i> ; 7 = <i>Sehr regelmäßig</i>
	“Wie regelmäßig informieren Sie sich über das politische Geschehen zur Bundestagswahl im September 2013?”	1 = <i>Gar nicht</i> ; 7 = <i>Sehr regelmäßig</i>
Internet search habits	“Wie häufig nutzen Sie das Internet, um nach Informationen zu suchen?”	<i>Mehrmals pro Tag; Ungefähr einmal pro Tag; Aller zwei Tage, Mehrmals pro Woche, Einmal pro Woche; Seltener</i>