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The dark side of technology: An experimental investigation of the influence of customizability technology on online political selective exposure

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ABSTRACT

We investigated whether there is a causal relationship between the presence of customizability technology (i.e., technology that allows individuals/websites to tailor the information environment according to user's preferences) and political selective exposure. We found that various forms of customizability technology (especially, system-driven customizability) increase selective exposure in the context of online political news consumption. Moreover, customizability technology has a stronger effect on minimizing exposure to counter-attitudinal information than it has on increasing exposure to pro-attitudinal information. The effect of customizability on selective exposure was particularly strong for ideologically moderate individuals. This study extends the understanding of the selective exposure process in today's communication environment and clarifies the implications of the Internet for deliberative democracy theory.

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1. Introduction

Information and communication industry experts consider customizability technology (often referred to as personalization, tailoring or customization) to be a key element of the modern information environment that affects marketing, education, and many other areas (Dan, 2014; Rainie, Anderson, & Connolly, 2014). Even though this technology can potentially undermine the deliberative democratic processes — by reducing exposure to political opinions different from one's own (Bennett & Iyengar, 2008; Sunstein, 2002) — so far, relatively little research has directly examined the political implications of customizability (see Bakshy, Messing, & Adamic, 2015; Beam, 2014). In their review of the literature on customizability technology, Zuiderveen Borgesius et al. (2016) concluded that: "… in spite of the serious concerns voiced — at present, there is no empirical evidence that warrants any strong worries about filter bubbles." (p. 10).

In this article, we report the results of an experiment that challenge this conclusion and that demonstrate the harmful effects of customizability technology on democracy. We tested whether system-driven, user-driven, and aggregated customizability technology increased clicks on and time spent reading pro-attitudinal political articles and decreased clicks on and time spent reading counter-attitudinal political articles. The results of our experiment showed that customizability technology increased exposure to pro-attitudinal information and decreased exposure to counter attitudinal information, thus, encouraging selective exposure. We also showed that such effects were moderated by one's ideological extremity (the observed effects were stronger among ideologically moderate individuals). Our findings contribute to a better understanding of which technological factors (and under which

conditions) increase selective exposure (see Knobloch-Westerwick, 2014) and facilitate the development of online echo chambers (Sunstein, 2002) and filter bubbles (Pariser, 2011). Our results also help further the research on what political effects are produced as a result of the changes in our communication environment (Bennett & Iyengar, 2008).

2. Literature review

2.1. Selective exposure

Selective exposure is the behavioral tendency to consume relatively high amount of pro-attitudinal and relatively low amount of counter-attitudinal information, and has been shown to exist in variety of contexts and populations (Dvir-Gvirsman, Tsfati, & Menchen-Trevino, 2016; Fischer & Greitemeyer, 2010; Iyengar & Hahn, 2009; Knobloch-Westerwick & Meng, 2011, 2009; Sweeny, Melnyk, Miller, & Shepperd, 2010; Taber & Lodge, 2006). Some psychological drivers of selective exposure are: The need to minimize cognitive dissonance, the desire to avoid media content perceived to be hostile or biased, the fact that it is cognitively easier to process attitude-congruent information, and the perception that pro-attitudinal arguments and sources are of higher quality (Garrett, 2009; Iyengar & Hahn, 2009; Knobloch-Westerwick & Kleinman, 2012). In the context of political information consumption, selective exposure is important because it increases political attitude polarization (Stroud, 2010), which is normatively undesirable from the perspective of deliberative democracy theory. This theory places a premium on frequent exposure to information that challenges one's political beliefs and attitudes, promoting tolerance of disagreement, civil discourse, and high-quality public policy (Mutz, 2006).

2.2. The internet and customizability technology

Some researchers argue that the development of cable television, and later, the Internet has profoundly changed our information environment, and, in the process, increased selective exposure (Bennett & Iyengar, 2008; Pariser, 2011; Sunstein, 2002). They argue that the Internet can facilitate development of information echo-chambers, leading to political fragmentation of Internet users (Sunstein, 2002). Other scholars believe that concerns about echo-chambers online are overblown and expect the Internet to produce either no effect or even produce the opposite effect – a decrease in selective exposure – due to the inherent ability of the Internet to cross geographical and social boundaries, the sheer diversity of information available online, counter-attitudinal information being occasionally useful and easy to find, and other factors (Brundidge, 2010; Dvir-Gvirsman et al., 2016; Messing & Westwood, 2012; Weeks, Ksiazek, & Holbert, 2016; Zuiderveen Borgesius et al., 2016).

A number of studies empirically examined this issue. Barbera, Jost, Nagler, Tucker, and Bonneau (2015) found that Twitter discussions on explicitly political issues resembled an echo chamber (took place among politically like-minded individuals), whereas Twitter discussions on current events did not. Boutyline and Willer (2016) showed that ideologically extreme Twitter users placed themselves into homophilous (politically like-minded) networks. Weeks et al. (2016) showed that media repertoires of Republicans and Democrats are similar, concluding that individuals are not creating partisan echo chambers. Jacobson, Myung, and Johnson (2016) showed evidence of partisan echo chambers in discussions taking place on prominent liberal-leaning and conservative-leaning Facebook pages. Flaxman, Goel, and Rao (2016) found that use of social media sites and search engines was associated with greater selective exposure (but, they also showed evidence of these

information channels promoting exposure to politically opposite perspectives).

We believe that a key mechanism through which the Internet might influence the creation of echo chambers (and, thus, increase selective exposure) is customizability technology. Customizability is a technology allowing users or information system to very efficiently and effectively tailor users' information environment by enabling systematic and automatic exclusion of disliked sources, topics and opinions, and inclusion of preferred sources, topics and opinions (Dylko, 2016; Dylko & McCluskey, 2012). This technology customizes content based on users' *long-term* predispositions and preferences (Bozdag, 2013). Customizability technology has two important variants: User-driven (where users modify their information environment) and system-driven (where software code modifies users' information environment) (Beam, 2014; Instone, 2000; Sundar & Marathe, 2010).

Although many studies (some of which were cited above) examined the impact of the Internet on selective exposure, to date, the only study that experimentally tested the effects of customizability technology on political selective exposure was carried out by Beam (2014). Beam found that system-driven customizability increased political selective exposure and that user-driven customizability reduced it. Beam's (2014) work is theoretically important, as it describes how customizability technology influences political information selectivity during the crucial pre-election periods. The present research extends Beam's study by addressing some of its potential limitations. It is possible that subjects in Beam's study might have had their accuracy motivation temporarily primed by being instructed to carefully read articles and by being told that they will be voting in a mock election at the end of the experiment. Priming accuracy motivation makes counter-attitudinal information temporarily more attractive, decreasing selective exposure (Cappella, Kim, & Albarracín, 2015; Fischer & Greitemeyer, 2010). Also, whereas Beam examined information consumption during a pre-election time period (when individuals anticipate casting a vote in the near future), it is equally important to examine more routine information consumption scenarios during which individuals are likely to be more motivated by a desire to avoid cognitive dissonance and a desire to protect one's self esteem.

Customizability is a technological tool, which, like many tools, helps individuals achieve their goals and amplifies individuals' pre-existing tendencies, such as the inclination to engage in selective exposure. The same psychological factors encouraging selective exposure (e.g., the need to minimize cognitive dissonance, the desire to avoid ostensibly hostile or biased media content, pro-attitudinal information being easier to cognitively process, the perception that pro-attitudinal arguments and sources are more credible, see Garrett, 2009; Iyengar & Hahn, 2009; Knobloch-Westerwick & Kleinman, 2012), should encourage the use of customizability because it might help individuals engage in selective exposure more efficiently and effectively. Additionally, today's abundance of information (see Kalyanaraman & Sundar, 2006) might force individuals to be more selective than ever, and force individuals to rely on various technologies to cope with information overload. We believe people are likely to view customizability technology as a tool that helps them obtain attitude-reinforcing information more efficiently during routine political news consumption, and we propose that the presence of customizability technology should increase political selective exposure during routine consumption of political news information (H1).

As described earlier, *system*-driven customizability is a software code that requires virtually no intentional or conscious effort on the part of the individual for customization to occur. In a political information context, such software code (1) prioritizes content that is