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How Technology Encourages Political Selective Exposure

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This article focuses on customizability technology and its implications for the Selective Exposure Theory. 2 important dimensions of customizability technology (i.e., user-driven vs. system-driven, and topic-based vs. ideology-based) are explicated. The potential relationship between these customizability dimensions and selective exposure is discussed. 2 models of customizability effects are developed incorporating various user-level and content-level variables, providing a detailed roadmap for future research on customizability technology. Theoretical implications of customizability technology beyond its effects on selective exposure are also discussed.

Keywords: Customization, Customizability, Personalization, Tailoring, Filtering, Selective Exposure, Deliberative Democracy, Participatory Democracy.

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In today's communication environment, individuals enjoy an unprecedented control over information (Bimber, 2003; Dylko & McCluskey, 2012). One form of this control—the technologically facilitated ability to customize one's information environment—is thoroughly explored in this article. Some scholars recently began recognizing that various technological elements of communication environment have significant implications for Selective Exposure Theory (Bennett & Iyengar, 2008; Knobloch-Westerwick, 2014; Prior, 2007). The detailed explication of customizability technology and the description of psychological process translating the presence of this technology into greater political information selectivity extends and refines Selective Exposure Theory.

Theorizing carried out in this article also has important implications for a larger debate about the Internet's impact on society and politics. There is disagreement in the literature about the nature of the relationship between the Internet and selective exposure, with some arguing that the Internet increases it (Bennett & Iyengar, 2008; Pariser, 2011; Sunstein, 2002) and others arguing that the Internet decreases or has no clear causal relationship with it (Garrett, 2009; Messing & Westwood, 2012). Focusing on customizability technology helps bring conceptual clarity to this important debate.

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Prevalence and theoretical importance of customizability technology

Information and communication industry insiders consider customizability (or personalization) to be a dominant element of today's and future information environment, influencing sectors such as education (e.g., tailoring online education programs to individual students, see Singh, 2014), mobile application development (e.g., using global positioning system coordinates to provide localized information to the user, see Burrus, 2015), marketing (e.g., targeting heterogeneous audiences based on their interests or location, see Dan, 2014), and many others (see Rainie, Anderson, & Connolly, 2014). Various customizability features are already extensively implemented by information technology giants such as Google, Amazon, Twitter, Yahoo, and numerous others. For example, Facebook is fundamentally based on the idea of customizability: Users begin by selecting which individuals and groups they want to be "connected" to and receive information from. They continue using Facebook by adding and removing specific individuals/groups from their Facebook information environment. In addition, Facebook analyzes users' profile information, users' interactions with members of their online social network, and information about their social network to suggest which other individuals those users might want to add as "friends" and to determine what specific content to display to each user (Pariser, 2011).

However, mere popularity does not necessarily make customizability technology theoretically important. As will be argued below, the primary theoretical reason to carefully study customizability is a strong potential of this technology to lead to greater levels of selective exposure (exposure to *more* attitude-congruent information and *less* attitude-incongruent information). Selective exposure was shown to increase political attitude polarization (Stroud, 2010), which was associated with higher levels of political participation (Mutz, 2006). This appears to be a desirable outcome from the perspective of the Participatory Democracy Theory, which greatly values widespread involvement of citizens in politics (Pateman, 1970). However, greater levels of selective exposure (and a corresponding increase in attitude polarization) is viewed as undesirable from the perspective of the Deliberative Democracy Theory, where frequent encounters with diverse points of view and civil discourse are of the utmost importance (Mutz, 2006).

Explication of customizability for research on political selective exposure

The idea of customizability (or customization, personalization, tailoring, individualization, adaptation, or various other names often used interchangeably in extant research) has already been extensively studied in such fields as marketing, information science, educational psychology, and computer science (Fan & Poole, 2006; Kasanoff, 2001; Riecken, 2000). Customizability is yet to be explicated for the political communication field (although some work in that area is already being done—see Beam, 2014; Thurman, 2011).

In this article, customizability is conceptualized to be a technology (or a technological attribute; see Eveland, 2003) that enables the user to modify her personal information environment by systematically and automatically excluding disliked sources and topics, and by selecting the preferred sources and topics that are then automatically and consistently displayed to the user.

One important dimension of customizability is whether it is *user driven* (where users take steps to adjust their information environment) or *system driven* (where the information system analyzes the users' browsing behavior or their online profile and customizes content based on that information without any steps by the users). Sundar and Marathe (2010) similarly differentiated between two types of customizability: "Personalization"—a form of customizability carried out by an information system that gathers data about the user (e.g., profile information, browsing history) and adjusts content for that particular user based on that data; "Customization"—a form of customizability that is carried out by user who adjusts "form and content of the interfaces" (p. 301). Also, Beam (2014), Fan and Poole (2006), and Instone (2000) differentiated between system-driven and user-driven customizability.

Another important dimension of customizability, especially in political communication context, is whether it is *topic* based (customizations are based on similarity between content topics and topics users are interested in) or *ideology* based (customizations are based on similarity between political ideology of content and political ideology of the users). This dimension falls under the "content customization" in Fan and Poole (2006) and Instone (2000) typology.

It is useful to differentiate customizability from manipulability (see Dylko, 2014; Dylko & McCluskey, 2012), with the latter referring to user's ability to alter content on a website (e.g., editing a Wikipedia article, uploading a YouTube video). Customizability is different from manipulability in that customizability affects only the information seen by a particular user who is customizing content on some website, whereas manipulability allows one user to modify content for all other users of the website.

Also, it is important to clarify the difference between customizing information and searching for information. As was mentioned above, customizability represents *automatic* and *consistent* exclusion, inclusion, and presentation of information. This is conceptually important because customizability facilitates the process whereby the user or information system filters information in or out on the basis of the user's relatively *long-term* content preferences, rather than temporary considerations arising during specific information retrieval episodes. This aspect of customizability technology is particularly important for understanding its potential effects on selective exposure, discussed next.

Theoretical models of user-driven and system-driven customizability technology effects on selective exposure

In this section, theoretical implications of customizability are discussed. The emphasis is placed on theorizing about potential effects of user-driven versus system-driven

customizability. This dimension is inherently more technological, and customizability technology is the main focus in this article. The theorizing that follows focuses on customizability likely effects and on how these effects are moderated and mediated by social and psychological factors. Such integration of technological and nontechnological factors recognizes that both types of factors are essential pieces of a larger puzzle—understanding selective exposure process—that need to be examined with equal care. Such integration also moves us away from the unhelpful deterministic view of technology's role, while still allowing us to recognize technology's importance.

Finally, it should be noted that the main goal of this article is theorizing about when customizability is used and how this might produce an effect on selective exposure (the goal is not development of a model describing all factors influencing selective exposure, or development of a model describing all relationships existing among those factors). Because of this goal, many variables and relationships between them are omitted (e.g., reciprocally causal relationship between selective exposure and customizability technology usage).

Technological piece of the puzzle

It is important to put the discussion of customizability technology effects in context of a broader debate on the democratic implications of the Internet. Some researchers posit that the development of the Internet (and cable television before it) *increased* selective exposure because of the greater diversity of political information and the simplicity of finding information supporting one's point of view (Bennett & Iyengar, 2008; Sunstein, 2002). At the core of this argument is the idea that the Internet-facilitated ability to control one's information environment and ability to create "Daily-Me-style" (Negroponte, 1995) information "cocoons" might lead to greater fragmentation and specialization among Internet users (Sunstein, 2002). Such fragmentation might occur along political ideology lines. Other researchers posit that the Internet might actually *reduce* selective exposure: because the Internet bridges geographical divides and removes social boundaries; because sometimes even disagreeing information is useful to individuals and such information is easy to find online; because social media demotes importance of partisan affiliation through social endorsements during the process of content selection and consumption; and due to other factors (Brundidge, 2010; Messing & Westwood, 2012).

Empirical evidence regarding the effects of the Internet on selective exposure is similarly inconclusive. There is evidence of Internet increasing selective exposure (Adamic & Glance, 2005; Knobloch-Westerwick & Meng, 2009; Lawrence, Sides, & Farrell, 2010), decreasing or having either no effect or mixed effect on selective exposure (Brundidge, 2010; Garrett, 2009; Garrett, Carnahan, & Lynch, 2011; Iyengar, Hahn, Krosnick, & Walker, 2008; Messing & Westwood, 2012).

The empirical studies examining implications of the Internet (some of which are cited above) generally operationalize "Internet use" as Internet news consumption, blog reading, participation in online political discussion forum, online political discussion, and in various other ways. Although such operationalizations validly

represent exposure to political information via the Internet, these operationalizations do not directly represent customizability technology, which is the focus of this article. Customizability technology appears to be a central causal agent in the argument that the Internet facilitates the development of the Daily-Me-style information environments and facilitates fragmentation along ideological lines. Focusing on customizability technology, as opposed to the Internet more generally, is arguably more helpful to resolving (or, at least, clarifying) the above debate on the implications of the Internet for selective exposure.

The only study testing the effects of customizability technology on selective exposure was carried out by Beam (2014). The study was set up as a mock gubernatorial election in Ohio. Two notable aspects of this study were as follows: (a) participants were instructed to carefully read various news articles, and (b) participants were told that they would be casting a vote for their preferred candidate at the end of the study. Participants were assigned to several customizability conditions, including system-driven ideology-based and user-driven ideology-based customizability conditions. Beam (2014) found that system-driven customizability *decreased* exposure to counterattitudinal content and user-driven customizability *increased* exposure to counterattitudinal content. In other words, system-driven customizability increased ideology-based selective exposure, whereas user-driven customizability reduced such selective exposure.

Beam's (2014) important work describes what happens to information consumption during preelection periods, and his findings partially match predictions made in this article (discussed below). However, it is possible that participants had their accuracy motivation primed by the study instructions (i.e., being told to carefully read articles and knowing that one will be voting in a mock election), which could have made counter attitudinal information temporarily more useful and desirable, increasing participants' willingness to consume such information (Cappella, Kim, & Albarracín, 2015). In addition, although Beam examines the influence of customizability technology on information consumption during the pre-election time period (which is an important time period, both from theoretical and practical points of view), his results might have more limited applicability to other time periods (i.e., when citizens do not anticipate voting in the near future).

Given that the empirical evidence regarding the Internet's implications for selective exposure is mixed and given that very limited evidence regarding implications of customizability technology exists, it is important to develop comprehensive models of customizability effects. Theorizing carried out in this article is a tangible step in this direction.

This article advances an argument that customizability technology can powerfully increase selective exposure. In this article, selective exposure refers to proportionally high levels of consumption of information that supports one's political beliefs or attitudes, and proportionally low levels of consumption of information that is counter to one's political beliefs or attitudes. A considerable number of recent studies found that most individuals have a natural predisposition to consume and process more

deeply information that matches their attitudes, while trying to avoid (although not completely, see Garrett, 2009) and processing less deeply information that is incongruent with their attitudes (Fischer & Greitemeyer, 2010; Hart et al., 2009; Iyengar & Hahn, 2009; Knobloch-Westerwick & Meng, 2009, 2011; Sweeny, Melnyk, Miller, & Shepperd, 2010; Taber & Lodge, 2006). Many earlier studies found mixed support for selective exposure (see Sears & Freedman, 1967 for review) and it is still not entirely clear why (Goldman & Mutz, 2011). Recent research also suggests that the tendency to seek out attitude-congruent information is greater than the tendency to avoid attitude-incongruent information (Garrett, 2009). Desire to minimize cognitive dissonance, desire to avoid media content perceived to be hostile or biased, attitude-congruent information being easier to process, and perception that attitude-congruent information is of higher quality are some of the main psychological explanations for selective exposure (Festinger, 1957; Garrett, 2009; Iyengar & Hahn, 2009; Knobloch-Westerwick & Kleinman, 2012).

Customizability technology is expected to amplify or facilitate individuals' preexisting tendencies, such as the above-described appetite for attitude-congruent information. In addition, individuals' time and cognitive resources are limited, and individuals have to prioritize such resources by selectively consuming information, especially today, when the amount of available information might appear overwhelming (Purcell, Rainie, Mitchell, Rosenstiel, & Olmstead, 2010). Given today's abundance of information, limited cognitive/time capacity of individuals, individuals' desire to seek out attitude-reinforcing information, and that individuals are likely to view customizability technology as helping them obtain attitude-reinforcing information more efficiently, it is argued that the presence of customizability technology should increase selective exposure.

It should be acknowledged that some individuals might prefer information that challenges them, and thus, selectivity for them might result in exposure to more diverse information. The effects of such selectivity might also be very different from the ones outlined in this article. However, based on the previously cited selective exposure research studies that converge on the finding that greater selectivity is associated with greater exposure to attitude-congruent information and less exposure to challenging information, this article takes a position that greater selectivity should lead to an overall increase in attitude-congruent content consumption and an overall decrease in the counter attitudinal content consumption.

Nontechnological pieces of the puzzle

Although customizability is likely to increase selective exposure, various social and psychological variables are expected to contextualize such an effect (i.e., act as moderators, mediators, and independent variables producing similar effect). Research on these variables is briefly summarized below. Figure 1a illustrates these variables and their theorized relationships for user-driven customizability and Figure 1b for system-driven customizability. Figure 1a is discussed first.

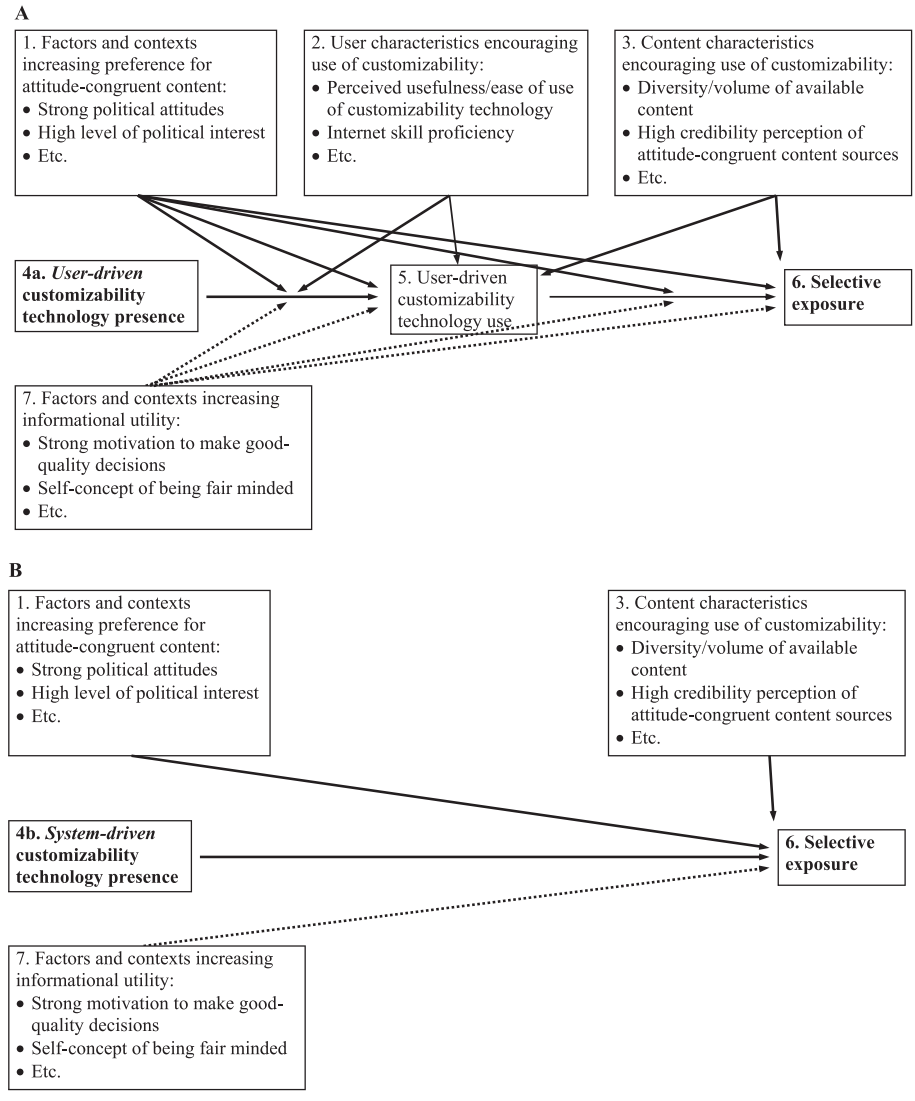

Figure 1 Models of (a) user-driven and (b) system-driven customizability expected effects. Solid arrow indicates expected positive effect, whereas dotted arrow indicates expected negative effect.

User-driven customizability technology use

Use of user-driven customizability (Box 5 of Figure 1) is theorized to be extremely important, possibly fully mediating (Baron & Kenny, 1986) the effect of user-driven customizability presence (Box 4a of Figure 1). If customizability is used for obtaining attitude-congruent content and used extensively, there will likely be a strong mediated effect of user-driven customizability presence on selective exposure (Box 6 of Figure 1) through user-driven customizability use.

Factors and contexts increasing preference for attitude-congruent content

Sweeny et al. (2010) argued that preference for attitude-congruent information is an individual difference variable and suggested that "certain people are more likely than others to … [avoid information] across situations" (p. 347). It appears useful to conceptually separate preference for attitude-congruent information (which is a psychological predisposition) from selective exposure (which is a behavioral manifestation of such predisposition). Although customizability technology might have a strong effect on selective exposure behavior, it seems unlikely that customizability technology would affect one's preference for attitude-congruent content (if such effect is present, it is probably very small). In other words, psychological predisposition to consume attitude-congruent content and selective exposure behavior appear to play very different roles in the proposed models of customizability effects.

There are various factors increasing preference for attitude-congruent content (Box 1 of Figure 1). Partisans (Iyengar & Hahn, 2009), individuals with stronger political attitudes (Holbrook, Berent, Krosnick, Visser, & Boninger, 2005), politically sophisticated (or knowledgeable) individuals (Mutz, 2006; Taber & Lodge, 2006), and politically interested individuals were shown to engage in selective exposure more (Mutz, 2006) and are expected to use user-driven customizability more. Politically sophisticated, interested, and partisan individuals developed crystallized political attitudes, and they are highly motivated to protect such attitudes, making them less likely to consume counterattitudinal information that challenges such attitudes (Taber & Lodge, 2006). In addition, Sweeny et al. (2010) suggested that the following individuals are characterized by high levels of selective exposure behavior: high "blunters" (individuals who prefer to distract themselves, instead of seek out information in a threatening situation) and certainty-oriented individuals (individuals who prefer to avoid situations providing new information about individuals themselves or their environment).

Preference for attitude-congruent content is theorized to be an independent variable directly increasing selective exposure. Assuming individuals see customizability technology as making selective exposure more easily obtainable, this preference for attitude-congruent content should also increase user-driven customizability use.

This preference is also expected to strengthen the relationship between user-driven customizability presence and use. Individuals with high levels of such preference are more likely to use customizability when this technology is present because they see customizability as effective means for engaging in selective exposure. In addition, because individuals with high levels of such preference might be motivated to use customizability technology in a way that enables selective exposure, such preference is expected to strengthen the relationship between customizability use and selective exposure.

User characteristics encouraging use of customizability

Various user characteristics can powerfully moderate the effect of user-driven customizability technology presence (Box 2 of Figure 1). The Technology Acceptance

Model, developed on the basis of the Theory of Reasoned Action, suggests that positive attitude toward the use of some technology, social norms favoring the use of a particular technology, high levels of perceived ease of use, and high levels of perceived usefulness of a particular technology lead to greater levels of technology use (Legris, Ingham, & Collerette, 2003; Venkatesh, Morris, Davis, & Davis, 2003). All four variables also appear capable of strengthening the relationship between presence and use of user-driven customizability. In addition, Knobloch-Westerwick and Meng (2009) found that heavy news consumers engaged in selective exposure more, possibly due to these heavy news users' tendency to sift through a great amount of information and, therefore, greater need to be selective. Therefore, frequency of news consumption might encourage one to use customizability technology in order to effectively cope with a vast amount of news information. Finally, Sundar and Marathe (2010) showed that power users utilized customizability features to their fullest extent, while nonpower users utilized them less. Therefore, having Internet use skills (or being a power user) should increase the use of customizability directly or strengthen the relationship between customizability technology presence and use.

Content characteristics encouraging use of customizability

One important content-related variable (Box 3 of Figure 1) is the quantity or diversity of available content. If content is scarce, individuals will likely consume whatever is available. If the content is abundant and diverse, individual preferences play a much stronger role in determining which content to consume or ignore (see Prior, 2007). Several selective exposure studies confirmed this theorizing (Hart et al., 2009; Mutz & Martin, 2001). One potential explanation is that individuals' limited time and cognitive capacity prevents them from attending to and processing all available content, which forces individuals to prioritize (Fischer, Jonas, Frey, & Schulz-Hardt, 2005). Similarity of content to one's political attitudes might become an important prioritization criterion, and customizability technology might act as a tool helping to sort through content while using that criterion (it should be acknowledged that other prioritization criteria, such as information novelty, popularity cues, or temporal relevance, are also plausible, see Knobloch-Westerwick, 2014). This mechanism is likely becoming more important in today's era of easily accessible and unlimited content.

Another content-related variable is source credibility. If the source is not perceived to be credible, and therefore, the content coming from that source is viewed as being of dubious quality, such content tends to be ignored (Sweeny et al., 2010). It is likely that a perception of low credibility of attitude-incongruent information source and perception of a high credibility of attitude-congruent information source will increase utilization of user-driven customizability technology and increase selective exposure.

Factors and contexts increasing informational utility

Informational utility is a perception that attitude-incongruent information is useful (Knobloch-Westerwick & Kleinman, 2012; Sears & Freedman, 1967). Making this perception salient can reduce selective exposure. Some factors and contexts increasing

information utility (Box 7 of Figure 1) are as follows: desire to know one's opponents' arguments in order to be able to counter those arguments more effectively; psychological need to view oneself as fair-minded; desire to be well informed; desire of the individuals who oppose the winning candidate during election campaign to learn about that candidate's positions in order to prepare themselves for the impact of the candidate's future policies; or when individuals are highly motivated to accomplish some specific goal they believe to be important (Garrett, 2009; Hart et al., 2009; Knobloch-Westerwick & Kleinman, 2012).

Informational utility is expected to produce effects that are exactly the opposite of preference for attitude-congruent content: Reducing the use of customizability for obtaining attitude-congruent content, reducing selective exposure, weakening the relationship between user-driven customizability presence and use, and weakening the relationship between user-driven customizability use and selective exposure.

Factors and contexts increasing informational utility are likely playing another theoretically important role. Slater (2007) suggested that many communication processes operate as reinforcing spirals (i.e., mutually reinforce one another, leading to spiraling effects). It was shown that the relationship between selective exposure and attitude polarization is reciprocally causal (see Stroud, 2010). However, most individuals do not fall into the trap of such a spiral and develop neither exceedingly high levels of attitude-based selectivity in their media usage (Webster & Ksiazek, 2012) nor exceedingly extreme political attitudes (Fiorina & Abrams, 2008). The explanation for this might be informational utility. Under certain circumstances, individuals find counterattitudinal information useful, which helps pull these individuals (and thus, our society more generally) away from the "abyss" of the downward spiral where attitudes become increasingly more polarized, leading to more selective exposure, leading to more and more polarization, and so forth. Thus, informational utility might be creating a "homeostasis" (self-balancing system, see Slater, 2007) effect, where the mutually reinforcing relationship between selective exposure and attitude polarization is weakened by informational utility, rebalancing information intake and adding stability to one's information consumption habits and one's political attitudes.

User-driven versus system-driven customizability technology

To remind the reader, system-driven customizability (Figure 1b) is represented by software code that does all of the customizing for the user. Mere exposure to information on websites that have such technology (especially, when it is coupled with ideology-based customizability) is likely to result in political selective exposure. Thus, the use of customizability (Box 5 of Figure 1) becomes irrelevant. Similarly, all variables affecting customizability use and not affecting selective exposure also lose their importance and are removed from the model pictured in Figure 1b. In other words, it is proposed that the effect of system-driven customizability technology presence on selective exposure is more direct and robust. It is possible that some users might try

to sabotage operation of a website that utilizes system-driven customizability (e.g., purposefully ignore precustomized content provided to them) because humans are known for their idiosyncratic use of technology (Bachen, Raphael, Lynn, McKee, & Philippi, 2008; Fulk & Boyd, 1991). However, such cases are expected to be rather rare. As was suggested above, users generally prefer content they agree with and they are likely to employ customizability technology in a manner that allows them to obtain such content. Therefore, it is argued that system-driven customizability technology presence (and the resulting delivery of customized content) should make it *more* likely that selective exposure will result, compared with absence of such technology, all else being equal.

Customizability technology is expected to play a substantial (but different) role in increasing selective exposure in both models. System-driven customizability (Figure 1b) is expected to directly increase selective exposure. User-driven customizability (Figure 1a) is also expected to increase selective exposure; however, this effect is mediated and moderated. Social and psychological variables are theorized to be just as important in both models because they are expected to produce direct effects on selective exposure (Figure 1a and b), mediate the effect of user-driven customizability (Figure 1a), and moderate the effect of user-driven customizability (Figure 1a). In other words, selective exposure is expected to occur without customizability technology; however, presence of customizability technology is expected to increase the likelihood and the degree of selective exposure.

Topic-based versus ideology-based customizability technology

Although conceptually the distinction between topic- and ideology-based customizability is clear, in practice it might be challenging to differentiate between them. Issue ownership research suggests that news coverage of various topics might inadvertently contain preference for one political party (and its ideology) over another because certain political parties are viewed as "owning" (or being more effective at handling) certain issues. For instance, the Democratic Party in the United States is thought of as being better at dealing with such issues as jobs or healthcare, whereas the Republican Party is thought of as being stronger on such issues as taxes and crime (Benoit et al., 2011; Walgrave, Lefevere, & Nuytemans, 2009). Similarly, it appears that some topics might "inherently" favor one political ideology or another. For example, if one is interested in firearms, it is likely that most of the technical information on this topic will come from a strong conservative or libertarian perspective. Thus, if topic-based customizability is used, the content displayed to the users might end up systematically favoring one party (and the corresponding political ideology) over another.

It is proposed that the use of political ideology-based customizability will result in greater levels of political selective exposure than the use of topic-based customizability. If an information system uses similarity of political ideology as one of the information search and presentation criteria (e.g., information favoring political ideology

of the user is shown higher on the search results page), the information the user ends up consuming will favor political ideology preferred by the user than if such criteria were not used.

As with the user-driven customizability, some variables are expected to mediate and moderate the relationship between topic- and ideology-based customizability and selective exposure. Utilization of user-driven topic- and ideology-based customizability, once again, appears to be a crucial mediator variable. If user-driven customizability technology is not utilized by the user, the effect of this technology will not be present. Importance of this mediator variable disappears for system-driven topic- and ideology-based customizability because software code implements all the customizations for the user, and often without any awareness of the user.

Also, the effect of topic-based customizability is expected to vary depending on how it is implemented. If topics available for customizing information are explicitly partisan (e.g., gun control, gay rights, second amendment, and atheism), then topic-based customizability might result in content favoring one political ideology over the other. This is especially likely if, for example, liberal users utilize topic-based customizability in a way that allows them to receive information on topics his/her political party "owns" (as discussed earlier). However, if topics are more general (e.g., Barack Obama, foreign policy, unemployment), and if such topics come from ideologically diverse sources, then it is likely that the degree of exposure to attitude-congruent content might be unchanged or even reduced.

In addition, some topics appear to be inherently more *a*political and, more importantly, more ideologically neutral than other topics. For example, the topic of mechanical operation of airplanes might have little political connection and, if any such connection exists, one political ideology is not likely to be favored over another in content on that topic. On the other hand, if one is interested in mechanical operation of firearms, the information encountered during research on this topic might favor conservative ideology due to a strong conservative and progun sentiment among gun enthusiasts and gun manufacturers.

Another major difference between topic-based customizability and ideology-based customizability appears to be the ability of the former to help users withdraw from politics. Some topics are inherently more political than others, which means that users might tune out of politics by customizing their information environment to include only *a*political topics (e.g., sports, entertainment, and celebrities). Convincing evidence confirming this theorizing was provided by Prior (2007), who showed that in an information environment where content options are abundant and varied, many individuals opt to avoid political content and increase consumption of entertainment-oriented content.

Combinations of various customizability types

In the real world, various forms of customizability coexist alongside one another within a single website. Therefore, it is useful to think of customizability technology

as a matrix of various combinations of user-driven, system-driven, topic-based, and ideology-based customizability features, as shown in Table 1.

It seems that customizability type 2 might be the most effective at increasing selective exposure levels. When this type of customizability is implemented, two different factors are "nudging" the user in the same direction: (1) Software code strongly prioritizes content that is ideologically similar to the user's political ideology. (2) Software code is operating unobtrusively and automatically, and even if user views herself as fair-minded and objective, this user will not realize how lopsided the content presented to her really is (Pariser, 2011). Thus, unless ideology-based customizations are excessive and obvious (alerting the user to what is happening), normal browsing behavior will result in significant selective exposure.

The customizability type least likely to lead to increased selective exposure appears to be type 4. In order for selective exposure to occur as a result of this type of customizability, the greatest number of conditions must be met: (1) user must take intentional steps to use customizability technology (Bozdag, 2013); (2) topics user chooses to receive information on must be (a) inherently political, and (b) inherently and systematically favor one political ideology over another.

It is possible that there is a nonlinear relationship between the presence of *user*-driven customizability technology and selective exposure. Too many user-driven customizability features might make users cognizant of putting themselves into the "Daily-Me-style" (Negroponte, 1995) information bubble or "echo chamber" (Sunstein, 2002). Such realization might make individuals feel guilty for not meeting their own expectations (i.e., expectations of being fair-minded and objective), and encourage individuals to reduce their selective exposure levels by refusing to utilize user-driven customizability technology. In addition, having too many customizability options might undermine user experience by making it difficult to decide which options to use and how to use them. Thus, very high levels of *user*-driven customizability technology presence might produce less selective exposure compared with moderate levels. On the other hand, it is possible that a linear relationship exists between *system*-driven customizability and selective exposure: The more system-driven customizability technology is present, the more selective exposure is produced.

Future research on customizability technology and its effects

This article answers a call for greater and more formal inclusion of information and communication technologies into communication theorizing (Bennett & Iyengar, 2008) and for a greater focus on psychologically important characteristics of our communication environment (Lang, 2013). More specifically, this article advances the field of media effects by thoroughly explicating customizability technology and by outlining a detailed program of research into the effects of customizability technology on selective exposure.

Table 1 Different Combinations of User-Driven, System-Driven, Ideology-Based, and Topic-Based Customizability

	User Driven	System Driven	User *and* System Driven
Ideology based	*Type 1*: Twitter user subscribes to other users based on similarity of their political ideology to her own.	*Type 2*: Google uses similarity of political ideology of the user and content as criterion for presenting search results (results with greater similarity are displayed higher on the page).	*Type 3*: User adds "friends" on Facebook based on how similar their political ideology is to the user's political ideology. Facebook also recommends "friends" to user based on similarity in their political ideologies.
Topic based	*Type 4*: User customizes Google alerts or Google News page to display news only on specific topics of interest to the user.	*Type 5*: When Amazon user purchases several books on the same topic, Amazon displays other books on the same topic in the "More Items to Consider" area.	*Type 6*: User subscribes to YouTube channels based on their topical orientations. Also, while user is watching a video on YouTube, she is shown topically similar videos in the "Suggestions" area.
Topic *and* ideology based	*Type 7*: Discussion forum member subscribes to "groups" existing on that forum based on these groups' topical focus, and adds "friends" on that same discussion forum based on similarity of their political ideology to his own.	*Type 8*: Facebook uses topical interests similarity and political ideology similarity as criteria for its software to prioritize what content and how often is displayed to users.	*Type 9*: YouTube, Facebook, and Google offer features for the users to customize content based on topical interest and political ideology. The websites also use software code making automated content recommendations based on users' topical interests and political ideology.

Note: Some of the examples are real (e.g., 1, 4, 5, 6, 7), whereas others are only hypothetical (although, they are plausible and technologically possible to implement). The main reason why it is difficult to confirm if hypothetical examples are real or not is that various social network, information search, and content-sharing websites guard their information presentation algorithms as trade secrets.

Customizability technology is widely believed to be a key trend in how the communication environment will evolve in the near future (Burrus, 2015; Rainie et al., 2014). Although this technology is already extensively implemented on many popular websites, an important question is: To what degree do major information and content companies use political ideology of users to customize content for those users?

It is impossible to know exactly which websites and how extensively utilize ideology-based customizations (especially system-driven customizations). The software algorithms used in content search and filtering by companies like Google to gain competitive advantage are guarded as trade secrets (Lohr, 2011). However, in some sense, it is irrelevant if today companies customize content for users based on the users' political ideology. Today, many such companies have vast volumes of data on their users (e.g., Facebook likes, Google searches, one's geographic location history, one's Internet browsing history) and algorithms exist that can help these companies pinpoint users interests, psychographic profiles, and political characteristics (Dalton, 2015; Dewey, 2014). If users find content customized based on their political ideology relevant and desirable, information and content companies will be technologically able to implement such customizations without much technical difficulty. In addition, as was discussed above, topic-based customizability technology can be used in a manner that allows one to obtain attitude-congruent content.

Importantly, there is evidence that ideology-based customizability is, in fact, being utilized today by major content and information companies. For example, during the 2012 U.S. presidential election campaign season, Microsoft launched an election portal that offered users many customizability features, one of which was filtering news sources by users' political ideology (users could adjust how much information and from what ideological point of view they want to receive on the portal, see Schwartz, 2012). Also, Pariser (2011) provides additional evidence that both Google and Facebook utilize system-driven, ideology-based customizability.

Another big question that needs to be answered is: If customizability technology is already implemented on many popular websites, what are the implications for democracy? It was theorized that for some individuals *user*-driven customizability technology might increase selective exposure, whereas for others the effect might be smaller. However, increasing implementation of *system*-driven customizability might strongly and directly increase selective exposure across the board. Only extensive experimental research can authoritatively determine the size of the effect on selective exposure (some of this important work is already being done, see Beam, 2014).

In addition to this experimental research, it is important to examine how much and what type of customizability Internet users prefer: user-driven, system-driven, topic-based, or ideology-based. If users' preference for customizability grows and if users prefer one form of customizability over the other, we can expect popular websites to meet users' demands by extensively implementing the technology

preferred by their users. Answering this question is important due to the expectation that system-driven, ideology-based customizability (type 2 in Table 1) might be more potent at increasing selective exposure than the other types of customizability described in this article.

In addition to the implications of customizability for selective exposure outlined here, this technology appears to matter to other political communication domains, such as gatekeeping, agenda setting, framing, and political learning. Today, traditional news organizations have a substantially smaller gatekeeping power than they had in the past (Williams & Delli Carpini, 2004). While traditional news organizations might still provide the bulk of information for audience consumption (Dylko, Beam, Landreville, & Geidner, 2012), the audience members can create their own gatekeeping structures and let in only the desired content from traditional news sources. Thus, customizability can be viewed as a technological mechanism through which traditional news organizations lose their gatekeeping power.

Also, a greater control over what information to let in or filter out greatly diminishes media's ability to influence what people should think about (i.e., agenda-setting ability; see McCombs & Shaw, 1972). Similarly, the ability to conveniently select preferred sources and preferred perspectives on various issues should diminish the power of the traditional news media to effectively frame the issues. Individuals can now choose sources that have certain perspectives from which the issues are framed. Consistently relying on sources that, just as consistently, favor specific frames diminishes framing ability of the traditional news media.

Finally, customizability technology might encourage deeper processing of political information, increasing political knowledge. Customizability technology helps the user obtain content that is perceived as more "relevant" (see Beam, 2014), and personal relevance is known to increase motivation to elaborate on (or deeply process) information, according to the Elaboration Likelihood Model (Petty & Cacioppo, 1986). An alternative psychological mechanism for the same effect (also proposed by Beam, 2014) is that cognitive load on the user is decreased when customizability technology is available to help sift through vast volume of information available to today's Internet users. When cognitive load during information identification and search is reduced, the user retains more cognitive resources that can then be used for deeper information processing.

Conclusion

The debate in the scholarly literature regarding the implications of the Internet for democracy (and for selective exposure, specifically) is continuing. This article addressed this disagreement by focusing on one key causal factor—customizability technology—and on the psychological process that might translate presence of this technology into selective exposure.

Even though this article cannot fully settle the debate, what appears to be clear is that customizability technology is too theoretically important to be excluded

from political communication theorizing. This article argues that customizability technology is very important for developing a full understanding of the selective exposure process in today's communication environment that is characterized by diverse and numerous content sources, media specialization, audience fragmentation, and greater user control over information (Bennett & Iyengar, 2008; Bimber, 2003). It is also helpful for understanding how today's information environment affects agenda-setting, framing, and political learning processes. Research on customizability technology's effects should help our field catch up with the latest technological developments and become more nuanced in its treatment of various information and communication technologies.

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