Intuition and Reflection as a Source of Individual Differences in Selective Exposure to Attitude-Congruent Political Information

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Abstract

Previous research has investigated whether differences in susceptibility to partisan-motivated reasoning are related to individual differences in the tendency to rely on intuition rather than effortful reflection. I extend this research from the phenomenon of motivated reasoning to the phenomenon of selective exposure to attitude-congruent information, an important factor in political polarization. In three studies, I use information-search tasks on the topic of gun control to measure the degree to which individuals prefer to seek information that will support their prior attitudes on the issue. In two of the studies, exposure to attitude-congruent information is found to be greatest among individuals who give intuitive but incorrect answers on the Cognitive Reflection Test. This suggests that individual differences in the tendency to rely on intuition, rather than reflect on and override intuitions when it is appropriate to do so, may be an important psychological basis of individual differences in selective exposure. Results from the third study are inconclusive. None of the three studies show any evidence of selective exposure among the most reflective, or least intuitive, individuals.

Introduction

The rise of cable television news and internet has made it easier for individuals to selectively expose themselves to information congruent with their opinions and beliefs (Stroud 2008). This increased selective exposure is potentially one of the causes of increased polarization in 21st Century American politics (Lelkes, Sood, and Iyengar 2017). However, although selective exposure seems to be common, there may be differences in the degree to which individuals engage in selective exposure (Chen et al. 2014). Among two individuals with equally strong opinions on a particular issue, one may be more likely than the other to seek only attitude-congruent information on that issue. This paper presents evidence that individual differences in selective exposure are driven in part by individual differences in the tendency to rely on intuition rather than effortful reflection.

Taber and Lodge (2006) suggest that confirmatory information seeking is closely related to motivated reasoning, as it helps individuals fulfill a motivation to maintain and bolster their prior attitudes and beliefs, and that both of these phenomena are driven largely by automatic implicit process. If motivated reasoning is a product of automatic or intuitive processes, then individual differences in the tendency to rely on intuition more than effortful reflection may produce differences in susceptibility to motivated reasoning and selective exposure. Arceneaux and Vander Wielen (2017) present an Intuitionist Model of Political Reasoning: individuals who have stronger intuitions and weaker motivations to engage in effortful reflection are more prone to partisan motivated reasoning. They show that less-reflective individuals, as measured by higher scores on the Need for Affect scale and lower scores on Need for Cognition, are more likely than others to judge a policy proposal based on its partisan source rather than its substance and are more likely than others to allow their opinions toward a politician of their own party to be influenced by debunked information if that false information is flattering toward the politician. However, their findings may be in conflict with other prior research which finds that the tendency to trust a scientific claim only if the claim makes one's preferred in-group look good is actually greater among more reflective individuals (Kahan et al. 2013).

While investigations of the effects of reflection and intuition on motivated reasoning are already

well under way, no research on the effects of reflection and intuition on selective exposure has yet been published. While they may be closely related, motivated reasoning and selective exposure are not the same phenomenon. Motivated reasoning is the tendency to evaluate or process information in a way that helps achieve the goal of reaching some desired conclusion, usually the goal of maintaining or supporting prior attitudes and beliefs. Selective exposure is the tendency to seek information that is congruent with prior attitudes and beliefs. Any previous research demonstrating an association between intuitive vs. reflective cognitive styles and motivated reasoning thus does not necessarily demonstrate an association between such cognitive styles and selective exposure. However, it is reasonable to suspect that such an association may exist. When searching for information on a political issue, the automatic or intuitive behavior would be to favor attitude-congruent sources, but individuals who possess a stronger disposition to reflection would be more likely than others to override that intuitive behavior and seek information from challenging sources. If this theory is correct, selective exposure should be observed to be more prevalent among individuals who score higher on measures of individual differences in reliance on intuition rather than reflection.

One method for measuring such individual differences is the Cognitive Reflection Test, or CRT (Frederick 2005). This test consists of three simple math questions, each designed to elicit a particular intuitive but incorrect response. For example: “A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?" The intuitive response is 10 cents, but the correct response is 5 cents. Calculating the correct answers to these questions should not require advanced mathematical skills, but to arrive at the correct response a respondent must first over-ride the intuitive response that initially jumps to mind. Performance on this test can thus be used as a measure of individual differences in the tendency to reflect on intuitions and over-ride them when it is appropriate to do so. This measure has been found to be better than measures of general cognitive ability at predicting performance on many heuristics-and-biases tasks and is a useful predictor of performance on such tasks even when controlling for general cognitive ability (Toplak, West, and Stanovich 2011). If individual differences in selective exposure to attitude-congruent information are partially a product of differences in reliance on intuition rather than

reflection, we should expect to observe that performance on the CRT predicts selective exposure when seeking political information: the correlation between information-search behavior and prior attitudes should be strongest among those who give the intuitive but incorrect responses to the CRT questions.

Methods

The hypothesis was tested using information-search tasks on a controversial political issue administered to three different samples. In each study, participants completed an online survey in which they reported their pre-existing attitudes toward gun control before completing an information-search task on the topic of gun-control. Studies 1 and 2 used a static information board administered through Qualtrics online survey software, and Study 3 employed a dynamic information board created in the Dynamic Process Tracing Environment (DPTE) developed by Lau and Redlawsk (Lau 1995; Lau and Redlawsk 2001). The Cognitive Reflection Test Frederick (2005) was used in each study to measure individual differences in reliance on intuition rather than reflection.

Samples. For Study 1, a sample of 358 United States residents was recruited through Amazon Mechanical Turk (MTurk). MTurk samples have previously been used by many political scientists and behavioral researchers and have been found to replicate experimental results obtained using other samples (Berinsky, Huber, and Lenz 2012; Mullinix et al. 2015; Coppock, Leeper, and Mullinix 2018). Because the sample used in Study 1 was also used to test other hypotheses in addition to those included in this paper, a two-stage quota-sampling procedure was used to generate a sample with a greater proportion of religious individuals than would be found in a typical MTurk sample. This was done because MTurk samples are typically less religious than the rest of the population (Clifford, Jewell, and Waggoner 2015; Lewis et al. 2015). While this sampling procedure may have made the sample more similar in religiosity to the U.S. population than it otherwise would have been, this should not be interpreted as a representative sample of the U.S. population. Study 2 included 919 residents of undergraduate student housing at a large university who were

recruited through an email offering residents a chance to win a lottery prize. Study 3 included 345 students who were recruited from undergraduate political science courses and were offered extra credit by their course instructors in exchange for their participation.

Static information-search task (Study 1 and Study 2). An information-search task on the topic of gun control was used to measure the tendency to seek attitude-congruent information.[1] Participants were told they would have an opportunity to learn about a controversial issue by reading arguments from both sides of the issue and that after doing so they would be asked to decide which side of the issue they support. The arguments used as stimuli, 8 pro-gun-control arguments and 8 anti-gun-control arguments, have been used previously to detect selective exposure in an information-search task (Taber and Lodge 2006). Participants were shown a list of links to the 16 arguments, each link clearly marked as a "pro" or "anti" item and each showing the first few words of the argument, and were told they would be able to read 8 of the 16 items. Each time a participant selected an item, the full text of that argument was displayed for them to read. After reading the argument, they then returned to the list of 16 items to select the next item to read. This continued until 8 items had been selected and read.

Dynamic information-search task (Study 3). Study 3 employed a different information-search task developed in the DPTE but featuring the same 16 gun-control arguments.[2] In this version of the task, the participant saw a series of boxes scrolling slowly down the screen in random order, each box showing the first few words of the text of an argument along with the name of one of the following pro- or anti-gun-control sources: The National Rifle Association, the Republican Party, the Democratic Party, or Citizens Against Handguns. Participants were told which side of the issue each of these organizations supports. The screen displayed up to six items at a time, but

[1] A demonstration of the static information-search task can be accessed at the following URL: https://bit.ly/2LHBRv4 and example screen-shots can be found in the Appendix.

[2] A demonstration of the dynamic information-search task can be accessed at the following URL using passphrase 277515 (browser must allow pop-ups and must allow Flash): https://bit.ly/2Ledd4c and example screen-shots can be found in the Appendix.

these items were continuously changing as old items fell off the bottom of the screen and new items appeared at the top. The participant could select any box to open it and view the full text of the argument. They could then close the item to return to the scrolling feed. The task continued for two minutes. Participants were free to view as many items as they wish in this time.

Measurement of pre-task attitudes. Prior to the information-search task, respondents reported their attitudes on gun control using a continuous slider ranging from "strongly oppose" to "strongly support." They also reported to what extent they prefer an increase or decrease in gun-control legislation using a continuous slider ranging from "large decrease" to "large increase". On each item, responses were coded to range from -1 to +1. The participant's pre-task gun-control attitude score is the mean of these two items.

Cognitive Reflection Test. To measure intuitiveness vs. reflectiveness, each participant was asked to complete the CRT. Studies 2 and 3 used the standard three-item test which includes the bat and ball question noted earlier. Study 1 used a modified version of the test due to concerns that some MTurk users may be habitual participants in academic research and thus may have previously been exposed to the CRT. To reduce familiarity, the context of some of the questions was modified while maintaining the fundamental logic behind each question. The text of the questions is available in the Appendix. The quantity of items on which a participant gave the intuitive but incorrect answer forms the participant's CRT-intuitive score, ranging from 0 to 3.

Other variables. Several other variables were measured to be used as control variables. All three studies included age, gender, political knowledge, level of interest in politics, partisanship, and ideology. Study 1 included level of education while Study 2, for which the sample consisted entirely of undergraduate university students, included grade-point average and number of completed course credits. Because prior research has found that selective exposure to attitude-congruent information may be more prevalent among individuals who are high in Need for Closure (Chen et al. 2014), Study 1 included six items taken from the Need for Closure Scale. Measurement methods and summary descriptive statistics for all variables are available in the appendix.

Data Analysis and Results

In Studies 1 and 2, the outcome variable is the quantity of pro-gun-control items viewed. Because the total quantity of items viewed is fixed at 8, a higher quantity of pro-gun-control items viewed also indicates a lower quantity of anti-gun-control items viewed. A positive correlation between this outcome variable and the pre-task level of support for gun control would represent selective exposure to attitude-congruent information. This correlation was predicted to be greater among the more intuitive, or less reflective, participants. In Studies 1 and 2, this can be tested using an ordinary-least-squares (OLS) regression model of the quantity of pro-gun-control items viewed that includes the following predictor variables: pre-task gun-control attitude, CRT-intuitive score, and a multiplicative interaction between the two. Each model also includes the control variables and an interaction between each control variable and gun-control attitude. All estimated parameters for the models can be found in the appendix. In each model, the parameter of greatest interest is the significant interaction term for gun-control attitude and intuitiveness, which indicates that the effect of prior attitudes on information-search behavior depends on the level of intuitiveness. The interaction coefficient is positive in Study 1 (0.466, p=0.002) and in Study 2 (0.249, p=0.017), indicating that the tendency of pro-gun-control individuals to view a greater proportion of pro-gun-control items (and anti- individuals to view a lower proportion of pro- items) is greater among the more intuitive participants.

The plots in Figure 1 show, based on the model from Study 1, the predicted quantity of pro-gun control items viewed (vertical axis) at each level of support for gun control (horizontal axis). The right panel shows predictions for individuals who give the intuitive but incorrect answers to all three CRT questions. The left panel is for those who give the intuitive answer for none of the questions. A positive slope can be interpreted as greater exposure to attitude-congruent information. The plots show a positive slope among the most intuitive (least reflective) participants but not among the least intuitive. Importantly, the slope in the right panel is greater than the slope in the left panel, once again showing that selective exposure is greater among the more intuitive or less reflective individuals. The slope of the lines in these plots can also be described as a marginal

Figure 1: Predicted values of the outcome variable with 95% confidence intervals based on an OLS regression model, holding all other variables at their means.

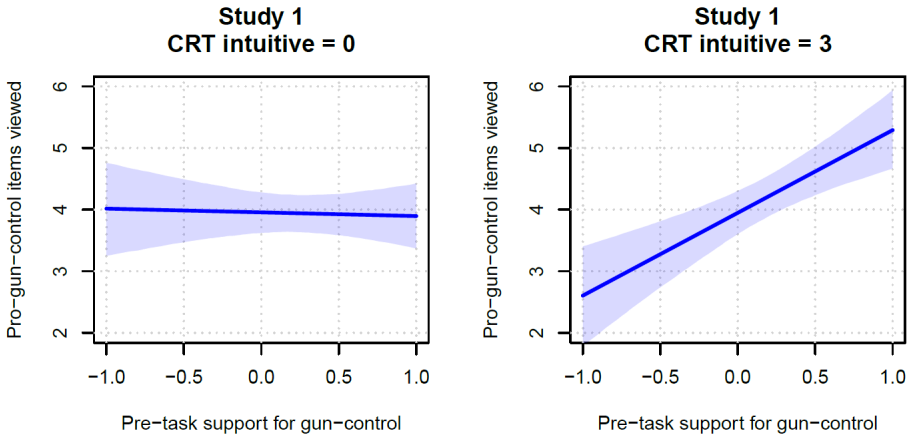
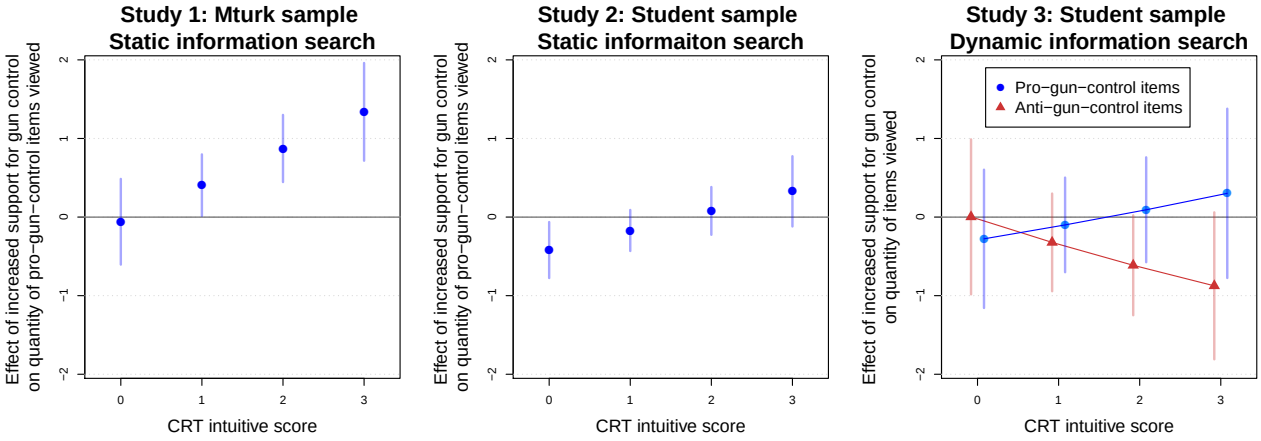


Figure 2: Average marginal effects with 95% confidence intervals, estimated based on an OLS regression model for Study 1, an OLS regression model for Study 2, and two negative binomial models for Study 3.



effect of support for gun-control on the quantity of pro-gun-control items viewed. Marginal effects plots are thus an alternative method of presenting this information in a smaller space. Figure 2 shows marginal effects of gun-control attitude at all four levels of the intuitiveness variable. In the plots for Studies 1 and 2, the vertical axis can be interpreted as the level of selective exposure to attitude-congruent information. Positive values on this axis represent a preference for congruent information, while negative values represent greater exposure to incongruent information. In these two studies, exposure to congruent information is greater among the more intuitive or less reflective individuals, as predicted.

In Studies 1 and 2 the count of anti items viewed is constrained to be equal to 8 minus the count of pro items viewed, but in Study 3 these two counts can vary independently. Study 3 thus has two different outcome variables: the count of pro-gun-control items viewed and the count of anti-gun-control items viewed. Each of these count outcomes is modeled using a negative binomial model in which the other outcome is included as a control variable. Each model also includes pre-task gun-control attitude, CRT-intuitive score, and a multiplicative interaction between the two. The control variables that were measured in Study 3 are also included in the model along with an interaction between gun-control attitude and each control variable. In the model of pro items viewed, the interaction coefficient for gun-control attitude and intuitiveness was predicted to be positive, indicating that among the more intuitive participants, support for gun-control increases the count of pro-gun-control items viewed more than it does among less intuitive participants. In the model of anti items viewed, this interaction coefficient was predicted to be negative, indicating that among the more intuitive participants, support for gun-control decreases the count of anti-gun-control items viewed more than it does among less intuitive participants. In the model of pro-gun-control items, the estimated interaction coefficient is 0.039 (p=0.469). For the anti-gun-control items, the estimate is -0.065 (p=0.224).

The third panel of Figure 2 shows estimated marginal effects of pre-task gun-control attitudes on each of the two outcome variables for Study 3. When the outcome variable is the quantity of pro-gun-control items viewed, a positive marginal effect of support for gun control could be interpreted as selective exposure to attitude-congruent or party-congruent information. When the outcome variable is the quantity of anti-gun-control items viewed, a negative marginal effect of support for gun control could be interpreted as selective exposure. If the theory presented in this paper is correct, the marginal effect of an increase in support for gun control on the count of pro-gun-control items viewed should increase as intuitiveness increases, whereas the marginal effect of an increase in support for gun control on the count of anti-gun-control items viewed should become more negative as intuitiveness increases. Although the estimated effects seen in the plot may appear to be moving in the predicted directions, these movements are not statistically significant.

Discussion

Prior research has suggested that individual differences in susceptibility to motivated reasoning may be driven by individual differences in cognitive style: partisan biases are stronger among individuals with a greater tendency to trust their intuitions rather than reflect on them effortfully (Arceneaux and Vander Wielen 2017). The current paper extends this research to a critical variable in this era of media choice and polarization: selective exposure. In three different studies, I test the hypothesis that, when seeking information on a controversial political issue, individuals who are more intuitive rather than reflective are more likely to selectively expose themselves to information that is congruent with their attitudes or party preferences. Results from two of the three studies clearly support this hypothesis. In a controlled information-search task on the topic of gun control, the tendency for pro-gun-control individuals to read primarily pro-gun-control information and anti-gun-control individuals to read anti-gun-control information is strongest among individuals who give intuitive but incorrect responses to questions in the Cognitive Reflection Test. These observed differences in selective exposure cannot be explained by differences in age, gender, level of education, political knowledge, political interest, or partisan leaning. Point estimates from the third study also appear to be consistent with the hypothesis, but the estimates from this study have wide margins of error and thus do not provide conclusive evidence. Finally, it is worth noting that none of the three studies found any evidence of selective exposure among the most reflective (or least intuitive) participants.

Limitations. A few limitations should be considered with these studies. First, these studies were conducted using convenience samples recruited from Amazon Mechanical Turk and university students. These samples may not be representative of the general public. Typical levels of selective exposure and levels of reflectiveness or intuitiveness among the public may be different from the levels found among students and MTurk users. However, there is little reason to suspect that intuitiveness would have a greater effect on selective exposure among students and MTurk users than it does among the general population. Second, any estimated effects of these variables should not be assumed to hold outside the range of values observed in the data for these variables.

A possible limitation of Studies 2 and 3 is that these two samples include few strong opponents of gun control. The effects reported in these two studies should thus be interpreted only as the estimated effects among people who range from moderate gun-control opponents to strong gun-control supporters. However, there is little theoretical reason to suppose that intuitiveness would increase selective exposure to attitude-congruent information among people ranging from moderate gun-control opponents to strong supporters but would not do so among strong gun-control opponents. The results from Study 1 should also be helpful in resolving any concerns since the data from Study 1 include a more evenly distributed range of gun-control attitudes. Third, these studies investigated selective exposure in only one policy area. Though it may seem unlikely, it is possible that individual differences in reflectiveness affect selective exposure to information that is congruent with gun-control attitudes but do not affect selective exposure in relation to any other issues. Future research should use other measures of selective exposure and should apply them in the context of other political issues to test the robustness of the findings of these studies.

Conclusion. As a whole, these three studies provide substantial evidence that selective exposure to attitude-congruent information may not be equally strong among all individuals. Selective exposure appears to be driven partially by reliance on intuition, and individuals who have a tendency to engage in effortful reflection may be more inclined to override that intuitive behavior. These findings have important implications. People who selectively seek information that supports their existing beliefs and attitudes are less likely to encounter information that could update their beliefs or alter their attitudes. If this behavior proliferates, it can produce a political environment with high levels of polarization in which opposing sides becoming increasingly isolated. The findings of these studies offer hope that there may be some segment of the population in which this phenomenon of selective exposure is not so prevalent. At least some individuals, those who are more reflective, may prefer to seek and consider all available information when forming their beliefs and opinions. These findings, and future research on individual differences in motivated reasoning and selective exposure, may bring us closer to learning how a more open-minded society can be achieved.

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