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## FlashReports

## Political ideology, exploration of novel stimuli, and attitude formation

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## ABSTRACT

In this study, the relations among political ideology, exploratory behavior, and the formation of attitudes toward novel stimuli were explored. Participants played a computer game that required learning whether these stimuli produced positive or negative outcomes. Learning was dependent on participants' decisions to sample novel stimuli and discover the associated valence. Political ideology correlated with exploration during the game, with conservatives sampling fewer targets than liberals. Moreover, more conservative individuals exhibited a stronger learning asymmetry, such that they learned negative stimuli better than positive. Mediation analyses revealed that the differences in learning were due to the extent of exploratory behavior during the game. Relative to liberals, politically conservative individuals pursued a more avoidant strategy to the game, which led to their development of a more pronounced valence asymmetry in learning and attitude formation.

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Over the past 50 years, a substantial amount of research has focused on distinguishing conservatism or right-wing ideology from liberalism or left-wing ideology (see [Jost, Nosek, & Gosling, 2008](#), for a review). The goal of much of this work has been to identify personality traits, values, and motives that differentiate these political ideologies. Generally speaking, conservatives are viewed as relatively traditional, dogmatic, and conforming, whereas liberals are viewed as more unconventional and flexible. Measures of conservatism have been associated with self-reported intolerance of ambiguity ([Sidanius, 1978](#)), greater need for closure ([Webster & Kruglanski, 1994](#)), and greater perceptions of the world as dangerous ([Altemeyer, 1998](#)). Liberalism has been associated repeatedly with the Openness to Experience dimension of the Big Five ([Carney, Jost, & Gosling, 2008](#); [Jost, 2006](#)). Liberals also score more highly on sensation-seeking scales ([Jost, Glaser, Kruglanski, & Sulloway, 2003](#)) and report being more egalitarian ([Conover & Feldman, 1981](#)).

Relatedly, it has been proposed that political ideology may be associated with differences in cognitive style (e.g., [Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950](#)). Conservatives may come to understand and organize their world in a more structured and rigid way, whereas liberals appear to be more open to complexity. To test this hypothesis, [Tetlock \(1983\)](#) coded 20 policy statements from US senators for the complexity of the arguments. Conservative senators exhibited less complex cognitive styles than liberal senators. That is, they were more “prone to rely on simple evaluative (good versus bad) rules in interpreting policy issues” (p. 123).

Moreover, conservatives have been found to be more rigid in their interpretation of situations and more severe in their judgments of others. In a series of studies, [Tetlock and colleagues \(2007\)](#) found conservatives to hold perpetrators of crimes more responsible for their acts and to endorse harsher punishments. Thus, more conservative individuals see the world as involving fewer “shades of gray” and also are more resolute in their judgments of others.

[Wilson, Ausman, and Mathews \(1973\)](#) further suggested that the psychological basis for political ideology may rest in the extent to which individuals fear the unknown. To test this possibility, participants rated a number of paintings that varied along two dimensions: simplicity–complexity and representational–abstract. More complex and abstract paintings were intended to represent less familiarity and more ambiguity. Conservative participants liked simple representational paintings the most, whereas liberal participants preferred the complex and abstract paintings. The authors interpreted these results as reflecting liberals' greater tolerance of uncertainty or unfamiliarity.

More recent work adds to the proposition that conservatives display greater sensitivity to fear and threats. [Lavine and colleagues \(1999\)](#) presented individuals with a message promoting voting behavior (an ideologically neutral topic) and manipulated message framing. The appeal was framed in terms of either the benefits of voting (e.g., “Voting allows one to be heard.”) or the loss associated with not voting (e.g., “Voting prevents your values from being undermined.”). Conservative participants rated the loss framed message as more persuasive and valid than the benefit framed message, whereas the opposite was true for liberal participants. The results may highlight a fundamental sensitivity to threats of loss among more conservative individuals.

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Thus, the available literature has outlined personality and motivational characteristics associated with political ideology. However, the evidence to date relies heavily on self-reports on trait-related inventories or inferences from participants' stated preferences. Questions still remain as to the broader implications of these tendencies for basic cognitive processes and behavioral decisions. If conservatives fear the unfamiliar and are relatively more sensitive to threat, whereas liberals are more open to novel experiences, then there may be fundamental differences in how individuals with varying ideologies approach their social world, acquire information, and form attitudes.

In a series of experiments, Fazio, Eiser, and Shook (2004) examined how individuals explore their environment and form attitudes toward novel objects. The research involved a computer game, BeanFest, in which participants imagined themselves in a world of beans. In order to succeed at the game, participants had to learn which beans were good (i.e., produced positive outcomes when approached) and which were bad (i.e., produced negative outcomes). Interestingly, participants consistently exhibited a learning asymmetry. Negative attitudes were learned better than positive attitudes.

The learning asymmetry was found to be largely the result of sampling behavior during the game. One of the BeanFest parameters involved feedback being contingent upon approach behavior. If approached, the true nature of the specific bean was revealed, because selection affected the participant's points. If participants chose to avoid a bean, however, they learned nothing regarding its value. Thus, any negative misconceptions that participants developed would be corrected only if they were willing to risk further sampling. Mediation findings indicated that individuals who engaged in more approach behavior during the game learned more about the true nature of each bean and exhibited a smaller learning asymmetry. Moreover, an experimental variation in which participants were provided full feedback (information about what would have happened if the bean had been selected) significantly reduced the learning asymmetry, to the point that it was not statistically evident.

If conservatives are more fearful of the unknown and liberals more open to new experiences, then political ideology may relate to attitude formation via direct experience. Politically conservative individuals may be relatively more cautious, limiting their exposure to novel targets, whereas liberals may approach new stimuli more indiscriminately. If true, liberals will expose themselves to a greater number of potentially negative stimuli, but will gain information from these experiences. The more avoidant behavior of conservatives will limit their negative experiences, but may lead to reduced information gain and, in particular, a lesser probability of correcting invalid assumptions of negativity. Thus, conservatives may come to hold a greater number of negative attitudes (and, hence, a less balanced perception of their world) than liberals. The current research uses the BeanFest paradigm to explore the relation between political ideology and fundamental processes of attitude formation via exploratory behavior. We expected participants who endorsed political conservatism to be less exploratory during the game (i.e., approach fewer game beans).<sup>1</sup> This less frequent sampling should, in turn, affect learning and attitude formation. Hence, more conservative individuals were expected to display a more pronounced valence asymmetry than more liberal participants.

<sup>1</sup> Our hypotheses were informed by the political ideology literature and by a serendipitous finding. A BeanFest study was conducted with participants who had completed a political ideology scale in an unrelated study. We found a correlation between approach behavior and ideology,  $r(60) = -.25, p < .05$ . More conservative participants approached fewer beans during the game. This finding encouraged the current study.

## Method

### Participants

Fifty-eight introductory psychology students (67% male) participated for course credit. Average age was 19.38 years old ( $SD = 2.19$ ; range = 17–30).

### Measures

Political ideology was assessed via two measures. The first concerned agreement with 13 belief statements involving clearly identifiable ideological stances (e.g., "Abortion is wrong, because everyone, even unborn babies, has the right to life."). Participants responded on a  $-2$  (disagree strongly) to  $+2$  (agree strongly) scale, with some items later being reverse-scored so that higher numbers reflected stronger agreement with conservative positions ( $M = -.18, SD = .58$ ). The measure displayed satisfactory internal consistency ( $\alpha = .71$ ). Participants also indicated their political self-identification on a scale ranging from Liberal (1) to Conservative (7) ( $M = 3.97, SD = 1.73$ ). The two measures correlated highly,  $r(56) = .59, p < .001$ , so a single composite was created by averaging the two standard scores.<sup>2</sup>

### BeanFest

The participant's goal in the BeanFest game is to accumulate points by making judicious decisions about which beans to accept (approach) and which to reject (avoid). Beans have either a positive or negative value. When accepted, the participant's point value, which ranges from 0 to 100, is adjusted according to the bean's value. If rejected, the participant's points remain unchanged. However, the participant does not receive any information about the rejected bean.

Participants begin the game with 50 points. Reaching 100 represents winning the game, and reaching zero represents losing. In either case, the game restarts at 50 points. Although the number of games played depends on the individual's success, participants complete the same number of trials (108).

The beans differ by shape (10 levels from circular to oval to oblong) and number of speckles (1–10). During the game, 36 beans, from six different regions of the  $10 \times 10$  matrix, are presented (see Fazio et al., 2004, for details). These were carefully selected, and assigned point values of  $+10$  or  $-10$ , in such a way so as to avoid any linear relations between shape or number of speckles and bean valence. Participants must associate each type of bean with the outcome it produces. To increase participants' engagement, a monetary incentive was provided. The payoff scheme was structured such that participants would receive \$1.00 for each win. For each loss, 50¢ would be deducted. Participants could receive \$0–\$10.

### Procedure

Upon arrival, participants were seated in individual cubicles and provided instructions for BeanFest. The game began with a practice block of six trials. The actual game was divided into three blocks of 36 trials; thus, all 36 beans were seen three times. During a trial, participants had to indicate whether they wanted to accept or reject the presented bean by pressing one of two buttons on a response box.

After the game, participants completed the test phase, which assessed their learning of the beans. Participants were presented

<sup>2</sup> All analyses were performed separately with the political beliefs scale and the identification measure. Similar results were found with each measure for both the correlational and mediational analyses.

with the beans in a random order and indicated whether they believed each bean to be “good” (i.e., increased points during the game) or “bad” (i.e., decreased points during the game). Following the test phase, participants completed a series of questionnaires for an ostensibly separate study, including the political ideology measures. Participants were then paid and debriefed.

## Results

First, participants' learning of the game beans was examined. Phi coefficients were computed assessing the relation between the bean valence (positive/negative) and a participant's classification of that bean during the test phase (positive/negative). The average phi coefficient was .30, which is much better than chance,  $t(57) = 9.09$ ,  $p < .001$ , indicating that, on average, participants did learn. To determine whether learning varied by valence, as in previous studies, the proportion of positive and negative beans correctly classified in the test phase was calculated. Overall, learning was well above chance for both positive beans ( $M = .60$ ),  $t(57) = 4.69$ ,  $p = .001$ , and negative beans ( $M = .69$ ),  $t(57) = 6.83$ ,  $p < .001$ . However, the negative beans were learned better than the positive beans,  $t(57) = 2.24$ ,  $p < .05$ , indicating a learning asymmetry.

Next, we examined the relations between the BeanFest indices and political ideology. The correlations are presented in Table 1. More conservative participants approached fewer beans during the game. Throughout the game, politically conservative participants pursued a more cautious strategy. Although political ideology did not relate to overall learning, it did predict the learning asymmetry (see Fig. 1). That is, more conservative participants exhibited a larger difference in their learning of the negative versus positive beans (in favor of the negative).

To determine if the relation between political ideology and the learning asymmetry was due to participants' game behavior, mediational analyses were performed. The average level of approach behavior during the game correlated with the learning asymmetry,  $r(56) = -.60$ ,  $p < .001$ ; the more one approached, the smaller the learning asymmetry. Controlling for approach behavior, the correlation noted earlier between political ideology and the learning asymmetry was no longer significant,  $r(56) = .13$ ,  $p > .30$ . A Sobel test (Mackinnon & Dwyer, 1993) revealed that the reduction in the correlation was significant,  $z = 2.16$ ,  $p < .05$ . Thus, the relation between political ideology and the learning asymmetry was mediated by participants' game behavior.

## Discussion

Utilizing the BeanFest paradigm (Fazio et al., 2004), the present study explored the relation between political ideology and attitude formation through direct experience. Political ideology was found

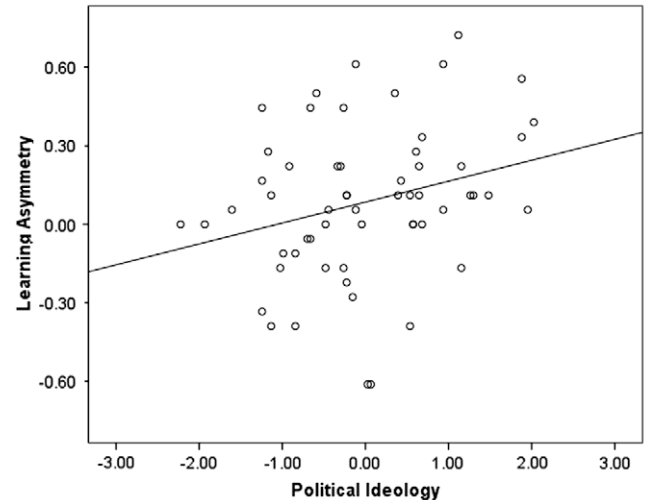


Fig. 1. Scatterplot and regression line relating political ideology (higher numbers reflect greater conservatism) to the learning asymmetry (proportion of negative beans correctly classified minus proportion of positive correctly classified).

to correlate with exploration in a novel situation. When confronted with novel objects that could be beneficial or harmful, politically conservative individuals tended to approach fewer objects than more liberal individuals. That is, conservatives adopted a more cautious strategy to playing the BeanFest game and learning about new targets.

Participants' decisions during the game ultimately had consequences for their learning of the game beans. Although there was no difference in overall learning, politically conservative participants demonstrated a greater disparity in learning of negative and positive beans than liberal participants. That is, political ideology predicted the learning asymmetry. Moreover, the correlation between the learning asymmetry and political ideology was mediated by approach behavior during the game. Participants' game strategies affected the information they gained about the bean world and, thus, the attitudes that they formed. As conservatives chose a more avoidant game strategy, they did not gain as much information about the beans, and any negative misconceptions were not corrected by subsequent sampling. Consequently, more conservative individuals tended to correctly identify more negative beans, but to miscategorize relatively more positive beans as negative. In effect, they overestimated the number of negative beans in the world. As liberals were willing to approach more beans, they gained more information about the beans and did not exhibit as strong of a learning asymmetry. They developed a more balanced perception of the world.

The findings from this study highlight some of the broader correlates of political ideology. Conservatives' intolerance of the unfamiliar (Wilson et al., 1973), perceptions of the world as dangerous (Altemeyer, 1998), and fear of loss (Lavine et al., 1999) were reflected in the cautious strategy adopted when playing BeanFest and learning about the novel objects. Liberals demonstrated more openness to new experiences (Jost, 2006) by exploring the new bean world to a greater extent. These different approaches to interacting with one's environment led to differences in attitude formation and participants' perceptions of the bean world.

The present study is limited by its correlational nature. Future longitudinal research could explore the development of conservatism versus liberalism and thus more clearly assess the relation between political ideology and willingness to explore. Nevertheless, this study provides clear evidence for the existence of relations among political ideology, exploratory behavior, and attitude formation. Moreover, the fundamental asymmetry between approach

Table 1

Correlations between BeanFest indices and political ideology.

Game behavior and learning indices	Political ideology <sup>a</sup>
Overall game approach behavior	-.30*
Block 1 approach	-.27*
Block 2 approach	-.27*
Block 3 approach	-.25*
Overall learning <sup>b</sup>	.08
Learning asymmetry <sup>c</sup>	.28*

<sup>a</sup> Higher numbers reflect greater conservatism.

<sup>b</sup> Phi coefficient between actual valence of bean and participant's classification of the bean during the test phase.

<sup>c</sup> Proportion of negative beans correctly classified minus proportion of positive correctly classified.

\*  $p < .08$ .

\*  $p < .05$ .

and avoidance has significant implications for an individual's worldview. The reluctance to explore that characterizes more politically conservative individuals may protect them from experiencing negative situations, for they are likely to restrict approach to known positives. However, as a result of information gain being dependent on sampling, this reluctance also promotes a presumption that the world is a relatively harsh place. Any invalid negative attitudes that they might develop are unlikely to be tested by further sampling. Hence, more politically conservative individuals believe the world to consist of more objects of which they must be wary than objects they desire. The greater approach behavior of more liberal individuals results in more information gain, but leaves them vulnerable to negative experiences as they sample objects about which they may be uncertain. Liberals may be more likely to find themselves in unsafe situations than conservatives. Thus, a more balanced worldview may come at the cost of experiencing more negative events.

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