TITLE: Polarization of Political Attitudes and Values on the Internet

ABSTRACT: Laboratory experiments show that people online can be more powerfully affected by group norms. This has led some to suggest that the Internet could serve as a divisive social force, polarizing the public sphere. Many potentially relevant differences exist between the real Internet and online laboratory experiments, which raises the question of whether polarization does occur on the real Internet. This paper employs data from a representative sample survey of Pittsburgh, PA, to determine whether political attitudes and values of those who use the Internet for political purposes are more polarized. Polarization is measured both as extremity and mean absolute distance between all pairs of responses, a measure of clustering. The significance of polarization differences between Internet users and non-users is determined by statistical bootstrapping, with weights to control for intensity of Internet use. Findings show no significant polarization on the Internet, and trends imply modestly lower polarization.

KEYWORDS: Polarization, Political Ideology, Political Values, Internet

MANUSCRIPT WORD COUNT:
ACKNOWLEDGEMENTS: I would like to thank Peter Shane and the Markle Foundation for providing the resources to conduct the survey on which this paper is based. Special thanks to Joy Pixley for her contributions as a survey consultant and to Kim Falk-MacArthur for her superb work in supervising the survey. Kim is also to be credited for suggesting the SSI Death Index for identifying people who are deceased. Recognition goes to Gretchen Hunter, Kim Provenza, and Joe Provenza for their administrative contributions, as well as Monica Trejo and Peter Kavic whose contributions were above the call of duty.
Sunstein (2001) in his book Republic.com has charged that the Internet could dramatically polarize political discourse. He observes that the Internet, a medium that greatly enables choice, allows people to select only the information they want to hear and interact only with the likeminded. If political discussants on the Internet interact with more likeminded others, they are more likely to share a strong group identity, which research shows results in group attitude polarization. Shared group identity enhances polarization by making social desirability considerations more important, limit the pool of arguments available, and focus attention on the group (Petty, Wegener, & Fabrigar, 1997; Spears, Lea, & Lee, 1990). In addition, Sunstein taps research by Russell Spears and his colleagues (Postmes, Spears, & Lea, 1998; Spears et al., 1990) that shows that people who are visually anonymous, as people typically are online, are appreciably more susceptible to group norms than those who meet face-to-face, because the anonymity deindividuates (depersonalizes) the participants. This research finds far greater group polarization for online than face-to-face political discussants under certain conditions. Sunstein (2001) concludes that the potential selectivity of Internet discussion as well as the effects of the visual anonymity of the "wild" Internet will likely polarize political discussion in this medium, with adverse social consequences as the public sphere becomes populated by mutually hostile ideological camps.

It is noteworthy that Sunstein's analysis does not for the most part involve empirical data from actual users of the Internet. He relies on the plausibility of the assertion that Internet users will employ the Internet's capacity for selective focus to interact only with the likeminded. Likewise, Sunstein assumes that mechanisms found in laboratory experiments will generalize to the real Internet, which they might not. The
work of Spears and his colleagues involves very brief online interactions between people who know each other only by a code name and cannot discuss who they are. On the real Internet, interactions can be very long term and people can get to know each other quite personally (Baym, 1995). The effects of visual anonymity might well disappear in longer-term and less impersonal online interactions. Spears' results depend on deindividuation, a form of depersonalization that could well disappear in longer-term and more personal online interactions.

Stromer-Galley (2002), in contrast to Sunstein, uses open-ended interview data from a number of Internet political discussants to determine how these users react to the diversity of the Internet. She finds that her discussants are attracted to the Internet precisely because they want to hear a greater diversity of political views than they do offline. Stromer-Galley's findings run strongly counter to the first of Sunstein's claims and potentially the second. These findings, however, depend on a sample of a few dozen Internet users drawn from several visible Internet fora as opposed to invisible fora such as email. Additional evidence from a larger and more systematically random sample would add considerably to the evidence regarding polarization on the Internet.

More supportive of Sunstein, however, are Hill and Hughes's (1998) findings from a content analysis of randomly selected Usenet political newsgroups. They find that, of ideological threads, 71% were right wing and, of pro- or anti-government threads, 94% were anti-government. This indicates the possibility of polarization in these forums. More significantly, Hill and Hughes observe that ideologically-oriented newsgroups "protect their territory" by systematically attacking and driving out people who disagree with the ideological orientation of their group. On the other hand, they also find that the
majority of political groups are not ideological or pro- or anti-government and their study is of only one type of online fora.

This paper measures the polarization of political discussion on the Internet in terms of discussants' political values and key political attitudes such as ideology (Converse, 1964) and party identification (Campbell, Converse, Miller, & Stokes, 1960). The political science literature shows that political values, such as egalitarianism and individualism, play a crucial role in determining the American mass public's political judgments. Political values substantially affect preferences on policy issues, leaders' performance, and candidate evaluations (Feldman, 1988; Hurwitz & Peffley, 1987; Rasinski, 1987; Steenbergen, 1995), and are considered more determinative of public opinion than political ideology (Sniderman, 1993). In addition, racial attitudes play a key role in American public opinion beyond the effects of political values (Gilens, 1995). While political values are more stable than political attitudes, political values and attitudes can be modified through persuasion (McCann, 1997; Rokeach & Ball-Rokeach, 1989). Thus, a highly polarizing medium such as Sunstein's Internet should with time modify political values, not just attitudes.

Employing a 2001 representative sample mail survey of 1200 Pittsburgh residents, I examine whether respondents who discuss politics on the Internet differ from offline political discussants in terms of the polarization of their political values and attitudes. Polarization is measured both as extremity and mean absolute distance between all pairs of responses, a measure of clustering. The significance of polarization differences between Internet users and non-users is determined by statistical bootstrapping, with weights to control for intensity of Internet use. Findings show no
significant polarization on the Internet, either as attitude extremity or clustering, with trends implying less rather than more polarization.

**HYPOTHESES**

Political attitude and value polarization on the Internet would undoubtedly be responsive to a variety of factors. Besides the psychological mechanisms mentioned above, these include the sizes of Internet discussion groups, how selective participants are of the ideological likemindedness or diversity of their discussion partners, the inflow of new discussants such as those who have come online for the first time, the exit of current discussants, whether groups defend their "territory," the intensity of polarization processes, and so forth. The actual mechanisms involved in polarization can be extremely complex. I will focus here on some simple possibilities that might nevertheless cover a variety of outcomes from more complex dynamics.

No polarization may occur. Longer-term and more personal Internet discussions might not be subject to strong polarization pressures. Also, people may be subject to strong countervailing pressures from offline political discussions, which are more frequent for most people than online discussions.

Alternatively, polarization may take the form of primarily unipolar change. Imagine that most Internet discussion groups start with comparable distributions of attitudes and values. If a particular attitude, say liberalism, is prevalent, than polarization will usually move group participants toward more extreme liberalism. Unipolar polarization would likely result in attitudes and values of those who discuss online having a different mean than those who discuss politics offline. A number of studies find significant mean differences between attitudes and values among online and offline
discussants (Davis, 1998; Hill & Hughes, 1998; Norris, 2001). These studies, however, do not take into account the intensity with which participants engage in online discussion. Presumably, the more exposure a person has to online discussion, the greater should be unipolar polarization. In a previous paper based on the data examined in this paper (Muhlberger, 2003), I replicated the findings of prior research showing mean differences in attitudes and values among online and offline participants. When the amount of political discussion is taken into account, however, there were no significant mean differences. These findings strongly contradict the possibility of unipolar attitude polarization. Because unipolar polarization was covered in the earlier paper, it will not be further discussed here.

Another possibility is increased attitude and value extremity on the Internet. Suppose people select discussion groups based on likemindedness, as Sunstein suggests. Then people will self-select into groups with some bias, such as liberal or conservative groups. If so, polarization would cause groups with different attitude valences to move away from each other, resulting in attitudes and values that are more extreme than those encountered offline. Alternatively, if as Stromer-Galley (2002) suggests, people on the Internet seek to expose themselves to a greater diversity of political views their own views may change haphazardly, resulting in less extremity, at least if those views begin away from the center.

Finally, the Internet might affect the clustering of attitudes and values, not merely extremity. Suppose, as Stromer-Galley (2002) suggests, that online discussants seek out exposure to more diverse views. As exposure to a diversity of views move participants' attitudes and values haphazardly, prior clustering of attitudes—whether at the extremes,
the center, or elsewhere—will flatten out. This flattening out need not be correlated with increases in attitude extremity because initially extreme attitudes would move toward the center, potentially counterbalancing or even outweighing movements from the center to the extremes. Thus, to adequately test the increased diversity argument, it is necessary to measure the clustering of attitudes, not merely their extremity. If the diversity hypothesis is correct, there should be a decrease in the clustering of attitudes and values.

Alternatively, the presence on the Internet of large discussion forums that come from given ideological viewpoints and which tend to convert newcomers to those viewpoints might result in a greater "lumpiness" of views on the Internet, which would register as greater clustering.

Because virtually all outcomes could by hypothesized by some school of thought, the analyses below will report with one-sided p-values. Readers inclined toward a view contrary to the observed direction of an effect can double the p-values.

**METHODOLOGICAL AND STATISTICAL CONSIDERATIONS**

Attitude extremity will be measured here by the absolute distance of an attitude or value response from the mean of all the responses for that attitude or value. Clustering is measured here by a statistic I will call "Paired Mean Absolute Distance." Paired Mean Absolute Distance is the mean absolute distance between all pairs of responses for a given attitude or value. This statistic is highly similar to the Gini index, differing from it only by a proportion.

To address differences in political discussion rates, this paper will analyze, among other things, the distribution of values and attitudes in "discussion instances." For each respondent, the data have an indicator for approximate frequency of Internet (and overall)
discussion. The frequency of people's Internet discussion for a one-year period can be used to weight the political values and attitudes of discussants. If polarization occurs, it should be more intense the greater a person's involvement with online groups. Thus, weighting the data by frequency of online discussion should more clearly reveal polarization effects. If the effects decline, this is a strike against the polarization hypothesis.

The statistical method of choice for determining the significance of a difference in a statistic in two samples (Efron & Tibshirani, 1993). This methodology involves using resampling of the data itself to determine the statistical distribution of parameters such as mean differences. Advantages of the method include: It does not rely on the assumption of normally distributed statistics. It is robust for most kinds of parameter distributions and for small sample size. It is valid for partially non-independent data—for example, statistics based on two variables in which some observations contain data from the same person for both variables, while other observations contain data for only one variable. It also gives valid results for weighted data. Bootstrapping should give accurate p-values for both the extremity and clustering measures employed here.

METHOD

Participants

One thousand two hundred Pittsburgh residents of voting age were selected from Cole Information Services' "Marketshare" directory of the Pittsburgh area. Of all available directories, this directory comes closest to being an exhaustive list of adults in the Pittsburgh area. Data for the directory, which is updated biannually, comes from the Census, phone book, voting lists, obituaries, and other sources. Because of its
information sources, the directory likely overrepresents adults who have permanent residency and therefore underrepresents the economically disadvantaged. Nevertheless, the Marketshare directory is superior to alternative directories. A sample was drawn that stratified by gender, age, estimated household income, and geographical location.

Data was obtained from 524 respondents, with a response rate of 65%. Non-respondents and those who explicitly declined participation are counted toward the denominator of the response rate. Those not counted are the deceased, ineligible, and bad addresses. Death was determined by communications with people familiar with the respondent or from the Social Security Death Index. The ineligible include people who are younger than 18 years of age, not American citizens, or no longer residents of Pittsburgh. Respondents too perpetually ill or infirm to understand the survey or reply to it were also counted as ineligible. Respondents were counted as bad addresses if so indicated by the Postal Service, no valid phone number could be found via the Cole directory and several phone company directories, and the respondent did not appear in the Allegheny County Real Estate assessment web site, a comprehensive database of Pittsburgh property owners.

Survey respondents were 54% male and 46% female; had a median age of 47; and were 88% Caucasian, 8% African-American, and 4% other. Median and mean education was "Some college, No degree." Seventy-three percent of respondents owned their own home. Age-wise, the survey is representative of the population for the Pittsburgh area—the median age in the 2000 Census for Pittsburgh residents 20 years old and above was also 47. Responses slightly overrepresent males. They also overrepresent Caucasians, who make up 88% of the sample, but only 68% of the population according to the
Census. This may reflect underrepresentation of African-Americans in the Marketshare data. Alternatively, members of this group may be disinterested in politics or distrustful of how the survey data would be used. Although not a perfect random sample from the Pittsburgh area, respondents do represent a diverse cross-section of people.

Pittsburgh is an ethnically and class diverse community with a city population of 334,583 and over one million including surrounding areas, according to the 2000 Census. Neighborhoods range from suburb-like residential areas to areas of urban poverty. Although Pittsburgh is known to have a moderately high quality of life for a city its size, people intimately involved with public life in the city do not believe this leads to either an especially high level of political involvement or public dialogue.

**Materials and Procedures**

Respondents were first sent a one-page pre-notification letter indicating they had been selected for a Pittsburgh-wide mail survey being conducted by Community Connections, a non-profit and non-partisan community engagement project housed at Carnegie Mellon University. They were told the confidential questionnaire would arrive shortly with a small monetary gift and a coupon for a free Blockbuster video. They were also told that if they returned the questionnaire they would be entered into three lotteries in which they could win up to $300. The second mailing consisted of a similar explanatory letter, the gifts, and an 11-page questionnaire booklet, which would take about 20 minutes to complete. Three more mailings were sent. All letters stressed that we were interested in responses from everyone, not just from those interested in politics. During the period prior to the third mailing, research assistants attempted to phone all participants who had not yet returned the questionnaire.
Measures

Discussion Frequencies and Amount:

The questions for overall discussion frequency and amount were: "Think back on the times you have discussed political issues. On average, about how many times a month do you discuss political issues? [__ times a month] On average, about how many minutes do these discussions last? (Your best estimate is fine.) [__ minutes]." These questions were preceded by a definition of "political"—any issue for which at least some people call for a government solution—and questions meant to help respondents remember their political discussions. Overall discussion frequency, which is 90% offline discussion, was converted to offline discussion by subtracting online discussion frequency.

The other dependent variable, frequency of online political discussion, was measured by the question: "How often do you go online to:.... ...Express an opinion about a political or social issue to a bulletin board, on-line newsgroup, or email list? [Hardly Ever; Every couple months; Every couple weeks; 1-2 days per week; 3-5 days per week; Every day]" This question was based on Questions 63 and 66 of the Pew Research Center's Technology 1998 Survey. The online discussion question was converted to a more continuous scale by first stipulating the frequency per month represented by each response category (e.g., .5 per month for every couple months), taking the midpoint between two categories' frequencies to represent the break point at which respondents would choose one category or another, and then taking the midpoint between breakpoints to approximate the actual mean frequency represented by a response category.
To get an estimate of the accuracy of the scaling for the online discussion question, a comparable scaling for the continuous overall discussion frequency variable was tested. The continuous overall discussion frequency variable was converted to resemble the more categorical online discussion frequency variable by applying the breakpoints. The predicted mean values of overall discussion proved to be good estimates of the actual means, except for the most extreme responses. A more sophisticated approach, based on maximum likelihood estimation of a best gamma distribution, proved not to yield category mean estimates as good as the midpoint assignment method.

**Political Values and Attitudes:**

Political Interest—A weighted average of questions 310 and 313 of the 1952-1992 cumulative codebook of the American National Election Survey's (ANES) (1965-1992 version with response categories presented as labels on a 7-point scale). Weights were assigned by principle components analysis.

Political values—Averages of answers to Likert scale questions for humanitarianism, egalitarianism, economic individualism, traditionalism, and racism taken from the ANES. Short versions of these scales were employed. For egalitarianism, (moral) traditionalism, and racial resentment, the short scale was chosen based on William Jacoby's ANES report's recommendations regarding short scales for these items. Only one item from the racial resentment scale was used, because other items were judged too inflammatory for this survey. For individualism, one item from Feldman's (1983) recommendations for a short scale was used. And, for traditionalism, two of the three items are based on Steenbergen's (1995) recommendations for a short scale, while
the third item was selected because it has good corrected item-total correlation, best reliability, and best average inter-item correlation according to Steenbergen.

Egalitarianism items were: We have gone too far in pushing equal rights in this country. If people were treated more equally in this country we would have many fewer problems. One of the big problems in this country is that we don't give everyone an equal chance. The racial resentment items were: Over the past few years, blacks have gotten less than they deserve. Individualism: Any person who is willing to work hard has a good chance of succeeding. Hard work offers little guarantee of success. If people work hard they almost always get what they want. Moral Traditionalism: The newer lifestyles are contributing to the breakdown of our society. The world is always changing and we should adjust our view of moral behavior to those changes. Humanitarianism: All people who are unable to provide for their own should be helped by others. It is better not to be too kind to people, because kindness will only be abused. People tend to pay more attention to the well being of others than they should.

Political Attitudes—Party identification, ideology, internal and external political efficacy were also standard ANES questions.

Demographics—Standard demographic questions from the ANES and other sources.

RESULTS

The results are presented in sections that cover: a) whether the frequency of political discussion, a key variable here, adequately reflects total time spent discussing—the variable of interest; b) the reliability and validity of the frequency of discussion
questions, c) polarization as attitude and value extremity, and d) polarization as attitude and value clustering.

**Frequency of Discussion vs. Time Spent Discussing**

Because the survey did not contain a question about amount of time spent discussing politics online, analyses of Internet discussion instances depend on reported discussion frequencies. Amount of time spent, however, is the variable of real interest. So, it is important that frequency and amount of time spent discussing are highly correlated. The data do in fact show a $0.91$ correlation ($N=512$) between the frequency and amount of overall political discussion (both on and offline)—which was measured. The correlation of the logged versions of these variables was $0.88$. These correlations suggest that the frequency measure of online political discussion should be an excellent indicator of the amount of time spent in such discussion.

**Reliability and Validity of the Frequency Measures**

Measures of the frequency of political discussion are crucial to the analyses in this paper. Questions, however, can be raised regarding whether people can give answers to such questions sufficiently accurate that findings are not erroneous. Unobtrusive behavioral measures of online and offline discussion among the 524 respondents would, of course, be ideal. But, such measures would be very expensive to collect and are not available at this time. Thus, I turn to an examination of the trustworthiness of the survey measures. Three issues are at stake here: the overall accuracy of the frequency measures (reliability), whether response errors are biased in a particular direction (validity), and how robust the findings based on the measures are to error and bias. A subsequent
section will discuss the evidence that key findings are robust to error and bias, but this section considers the reliability and validity issues.

Good survey practices were followed to insure acceptable levels of error in the measures of frequency of political discussion. The frequency measures of overall political discussion and of computer-mediated discussion occurred after a definition of "political discussion" and examples of political issues. Also, they occurred after multiple questions meant to jog respondents' memories about their political discussions and their habits of computer use. These included questions about what political issues they discussed, where they discussed these issues, and how long ago their last political discussion occurred.

It was expected that respondents would base their impressions of the average frequency of their political discussions appreciably on their recollection of how long it had been since their last discussion. Indeed, average frequency of discussion and time duration since respondents' last discussion (converted into an estimate of average discussion frequency) have a high .60 correlation ($p<.001$, two-sided). This is a correlation that would pass in many factor analyses as evidence that two items measure the same underlying factor. To the extent these measures differ, they hopefully differ because respondents adjusted the average up or down based on their impression of how typical or atypical the elapsed time since their last discussion was—making it a more accurate measure of average frequency.

Perhaps the most compelling evidence that the discussion frequencies are not subject to excessive error can be found in another paper based on the same dataset that treats online and offline discussion frequencies as dependent variables in multivariate
regressions (Muhlberger, 2002). This paper finds that a variety of demographic, motivational, and computer access variables have significant and expected effects on the discussion frequencies. Some of these effects are non-obvious theoretical predictions. For instance, variables indicating willingness to engage in public and conflictual discussion have a much stronger effect on online than offline discussion frequency. It is implausible that measures that fit complex expectations so well are largely random noise or mere concoctions.

Another concern is non-random error due to people exaggerating the frequency of their participation to present themselves favorably. While political participation questions generally do invoke social desirability concerns, this may not hold for political speech because there may well be no social norm that people should speak about politics. On the contrary, in everyday life people often follow a norm of avoiding political discussion (Eliasoph, 1998).

A number of findings suggest social desirability bias is tame for reported discussion frequency. First, the average frequencies reported are highly plausible—the frequencies are very low and very unequally distributed. Half the respondents reported brief political discussions three or fewer times a month. The top 11% of respondents account for as many discussion instances as the bottom 89%. Finally, 85% of respondents indicated that they "hardly ever" discuss politics online, the lowest response possibility.

Second, substantial numbers of respondents were willing to take positions that run contrary to a norm in favor of political discussion. On one question, 57% of respondents did not disagree that people's political views are private matters. Fifty-two percent did
not disagree that their own political views were their "own business." Forty-seven percent indicated that a statement that they avoided discussing politics because of the potential for conflict was "moderately true" to "very true." Taken together, 89% of all respondents gave a response on at least one of these questions that runs contrary to a norm favoring political discussion.

A third finding suggests social desirability bias does not affect reported discussion frequency. The question regarding time elapsed since last political discussion involves recalling a specific discussion and should, therefore, be less susceptible to social desirability bias than responses to the average discussion frequency question. Thus, if such bias exists, an estimate of the average frequency based on time elapsed since the most recent discussion should on average be lower than responses to the average frequency question. In fact, however, discussion frequency based on time elapsed since the most recent discussion has a higher average than does the average frequency question (p<.001).

**Political Attitude and Political Value Polarization on the Internet**

Table 1 shows results for differences in the extremity of attitudes and values online and offline. The first column of results compares people who discuss politics online (those who claim they discuss politics online every couple months or more frequently) and those who discuss politics exclusively offline. Online discussants may also discuss politics offline. The numbers in each cell are the result of subtracting the average extremity of offline discussants from the average extremity of online discussants. The first column shows no significant differences in extremity between online and offline discussants. Two differences, for ideology and party identification, show statistical
trends (.05<p<.10). The first, ideology, is more extreme for online than offline discussants, while the opposite holds for party identification. A difference of .26 means that responses to the ideology question were on average about a quarter point farther from the mean value of ideology for online than for offline discussants. A .26 difference is modest given that attitudes and values are measured on a -5 to +5 scale. (The one exception is party identification, which is measured on a scale from -3 to +3.)

Table 1: Differences in the Extremity of Offline and Online Political Attitudes and Values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Online Political Discussants Vs. Offline Discussants</th>
<th>Online Vs. Offline Political Discussion Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difference in Extremity (p-value)</td>
<td>Difference in Extremity (p-value)</td>
</tr>
<tr>
<td>Egalitarianism</td>
<td>-.10 (.31)</td>
<td>.05 (.36)</td>
</tr>
<tr>
<td>Econ. Individualism</td>
<td>-.02 (.47)</td>
<td>†-.23 (.09)</td>
</tr>
<tr>
<td>Traditionalism</td>
<td>.11 (.25)</td>
<td>†-.44 (.07)</td>
</tr>
<tr>
<td>Humanitarianism</td>
<td>-.10 (.22)</td>
<td>.12 (.23)</td>
</tr>
<tr>
<td>Racism</td>
<td>-.09 (.33)</td>
<td>†-.34 (.10)</td>
</tr>
<tr>
<td>Ideology (Liberal)</td>
<td>†.26 (.05)</td>
<td>-.19 (.20)</td>
</tr>
<tr>
<td>Party ID (Democrat)</td>
<td>†-.23 (.09)</td>
<td>.08 (.29)</td>
</tr>
</tbody>
</table>

N
On=78; Off=394
On=333; Off=3,360

Note. N varies slightly by variable because of missing data. All p-values are bias-corrected bootstrapped, with resampling N=3000.

*p<=.05; †p<.10 All p-values are one-sided.

Column 1 of Table 1 does not take into account the frequency with which people discuss politics online or offline. If the polarization hypothesis is correct, those who participate more online should be more subject to polarization. The second column of
Table 1 seeks to take frequency of discussion into account by weighting the values and attitudes by the respondents' reported frequency of discussion. In effect, this compares the political attitudes and values represented by each instance of political discussion. A person who discusses politics twice as much online as another person will have twice as much effect on the extremity of the attitude or value. Column 2 shows no difference in extremities that are significant at the .05 level. It does, however, show three statistical trends, all of which are in the same direction: lower extremity for online discussion instances. A subsequent version of this paper could examine whether there is a jointly significant negative extremity for all seven statistics taken together. Multivariate analysis might also be possible, though the functional form would be difficult to determine. Also noteworthy is that the very nearly significant positive extremity difference for ideology in column 1 becomes negative in column 2. This suggests that, if real, the apparent extremity difference in ideology is probably not due to polarization but self selection.

Table 2 examines clustering, measured as the mean absolute distance between all pairs of responses for each value or attitude. The first column, for online versus offline discussants, shows a trend and a significant difference, both positive. A positive difference means there is less clustering for online than offline participants. For example, the difference of .34 for ideology indicates that the average distance between any response and all other responses is .34 greater for online than offline discussants. The significant value for ideology and nearly significant value for traditionalism are supportive of the diversity hypothesis—that people seek out diverse views online.
Table 2: Differences in the Clustering of Offline and Online Political Attitudes and Values

<table>
<thead>
<tr>
<th>Variable</th>
<th>Online Political Discussants Vs. Offline Discussants</th>
<th>Online Vs. Offline Political Discussion Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difference in Paired Mean Absolute Distance (p-value)</td>
<td>Difference in Paired Mean Absolute Distance (p-value)</td>
</tr>
<tr>
<td>Egalitarianism</td>
<td>-.24 (.15)</td>
<td>.03 (.50)</td>
</tr>
<tr>
<td>Econ. Individualism</td>
<td>.05 (.37)</td>
<td>-.22 (.16)</td>
</tr>
<tr>
<td>Traditionalism</td>
<td>†.31 (.08)</td>
<td>-.42 (.13)</td>
</tr>
<tr>
<td>Humanitarianism</td>
<td>-.09 (.34)</td>
<td>.14 (.17)</td>
</tr>
<tr>
<td>Racism</td>
<td>.06 (.35)</td>
<td>-.35 (.11)</td>
</tr>
<tr>
<td>Ideology (Liberal)</td>
<td>* .34 (.04)</td>
<td>-.21 (.23)</td>
</tr>
<tr>
<td>Party ID (Democrat)</td>
<td>-.13 (.20)</td>
<td>.09 (.24)</td>
</tr>
</tbody>
</table>

N | On=78; Off=394 | On=333; Off=3,360

Note. N varies slightly by variable because of missing data. All p-values are bias-corrected bootstrapped, with resampling N=3000.

*p<=.05; †p<.10  All p-values are one-sided.

Column 2 of Table 2, however, reveals no significant difference once the frequency of online discussion is taken into account. Moreover, the three lowest p-values are all negative. The absence of a significant positive difference and the inclination of the more significant differences to be negative does not support the diversity hypothesis. It is also noteworthy that the three most significant difference values in column 2 correspond to the values that show extremity trends in column 2 of Table 1. Thus, these values are both less extreme yet more clustered for online than offline, suggesting a clustering toward the center of the distribution.
SUMMARY AND DISCUSSION

Respondents in this data discuss politics online at a low but not negligible rate—9.8% of all discussion (Muhlberger, 2002). Even low rates of political discussion may serve an important role in signaling the public regarding which policies are in their interests (Lupia & McCubbins, 1998). Nevertheless, for the Internet to have substantial political effects, these effects would have to be quite large given the low overall level of Internet political discussion. The Internet, however, will most likely constitute a much larger percentage of all political discussion in the future. If so, whatever political effects the Internet will have at that time could matter greatly. Any effects of the Internet today could be a portend of things to come.

This paper tests whether, as Sunstein (2001) and Spears et al. (1990) contend, Internet political discussion increases attitude polarization. It extends this hypothesis to also consider the possibility that political values become more polarized. If the polarization hypothesis is correct, the attitudes and values of Internet discussants should be more extreme (farther from the mean) than of offline discussants. Alternatively, because higher amounts of discussion should lead to greater polarization, the attitudes and values of more frequent Internet discussants should be more extreme. This was operationalized as an increase in the polarization of attitudes and values weighted by frequency of discussion. Equivalently, this is polarization of the attitudes and values represented by instances of discussion. Table 1 finds no significant differences in polarization between online and offline discussants or discussion instances. In the case of discussion instances, however, all three differences that show a statistical trend are negative—indicating lower polarization online than offline.
This paper also tests a somewhat orthogonal hypothesis that Internet discussants seek out a diversity of views, with the likely outcome that their views will become more diverse and hence less clustered—either in the center or toward the extremes. A test of this hypothesis is whether opinion becomes less clustered in response to Internet exposure. This test also captures the possibility that Internet forums are more (or less) ideologically clustered and hence less diverse than offline forums. Table 2 finds one significant difference between online and offline discussants—online discussants prove less clustered in ideology, supporting the diversity hypothesis. When frequency of online discussion is taken into account, however, the statistic for ideology reverses sign and becomes non-significant. If the diversity hypothesis is correct, more frequent discussants should show less clustering, but they do not. Instead, the three statistics that are closest to significant for discussion instances indicate more rather than less clustering online.

As far as statistical significance is concerned, the online and offline worlds appear in these analyses to be indistinguishable. This both serves as a relief from the threat that the online world will divide society, and a concern for Internet researchers about whether the Internet has a net effect on the distribution of attitudes and values. On the other hand, a distinctive trend is seen in the direction of less attitude polarization on the Internet, a trend that can be further analyzed in subsequent versions of this paper.

BIBLIOGRAPHY


