Fear that the Internet promotes harmful political rumoring is merited but not for reasons originally anticipated. Although the network accelerates and widens rumor circulation, on the whole, it does not increase recipient credulity. E-mail, however, which fosters informal political communication within existing social networks, poses a unique threat to factual political knowledge. A national telephone survey conducted immediately after the 2008 U.S. presidential election provides evidence that aggregate Internet use promotes exposure to both rumors and their rebuttals, but that the total effect on rumor beliefs is negligible. More troublingly, the data demonstrate that rumors e-mailed to friends/family are more likely to be believed and shared with others and that these patterns of circulation and belief exhibit strong political biases.

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Concerns about the harmful consequences of political rumors are not new: They can be traced back to the time of the ancient Greek historian Thucydides, who observed that the spread of unverified information could be used to manipulate public opinion (Mara, 2008). Nor is media’s role in dirty politics a surprise. Print, radio, and television have long been used to promote misrepresentation and falsehood (Jamieson, 1992). Political rumors are often advanced as a form of propaganda (G. W. Allport & Postman, [1947] 1965); “wedge-driving rumors,” which seek to undermine group loyalties, are motivated by aggression and antipathy (Knapp, 1944); and rumors can serve to crystallize and justify hostile attitudes toward others (Knopf, 1975).

Recently, however, scholars have warned that the Internet may amplify the threat of manipulation through hearsay and falsehoods, ushering in an era of unprecedented rumoring (Ayres, 1999; Katz, 1998). On this view, the dynamics of the 2008 U.S. presidential election may exemplify technology’s potential to undermine Americans’ understanding of political reality—both because of the large number of false political rumors that were in circulation during the election season (Hargrove & Stempel, 2008), and because the American public embraced e-mail and the Web as tools for political learning and expression about the campaign in general (Kohut, Doherty,
Dimock, & Keeter, 2008) and rumors in particular (Weeks & Southwell, 2010). Belief in false rumors is politically important because many hold that liberal democracies are premised on an active citizenry informed by accurate information (Delli Carpini & Keeter, 1996). If citizen decisions are based on false information, or if they fail to view unverified information with a critical eye, the legitimacy of the political system is cast into doubt. At the extreme, some scholars worry that citizens could respond aggressively, even violently, to perceived threats based on unchecked rumors (Ayres, 1999).

Through an analysis of data collected in the wake of the 2008 U.S. presidential election, this article examines the question: Does Internet use contribute to more widespread acceptance of false rumors? The answer offered here is yes, but the mechanisms that drive this dynamic are somewhat different than scholars previously envisioned. Aggregate use of the Internet does not make rumor beliefs more likely, but e-mail in particular appears to be intensifying ideological divisions by facilitating a recursive process of accepting and disseminating partisan rumors. A review of the theoretical foundations of rumor circulation and a more specific set of predictions precede discussion of the empirical evidence.

Theoretical bases of rumor circulation

Political rumors are unverified information—information that lacks a secure standard of evidence—that spreads among a group of people because it promises to resolve uncertainty or provide new insight into important social or political phenomena (G. W. Allport & Postman, [1947] 1965; DiFonzo & Bordia, 2007). Although rumor scholarship dates back to the 1940s, few studies have examined how the Internet influences rumor dynamics (but see Bordia & DiFonzo, 2004; Bordia & Rosnow, 1998), and rumor scholars acknowledge the need for more theorizing and empirical research on this topic (DiFonzo & Bordia, 2007; Donovan, 2007). Early works dealing with Internet-based rumoring were largely speculative, focusing on attributes of the communication network that could encourage rumoring. Assertions that the Internet will promote the acceptance of unverified information, particularly political falsehoods, are grounded in several attributes of the communication medium. The low marginal cost of online information exchange has contributed to the emergence of vast numbers of political information outlets, representing an extraordinary breadth of political views (Bimber, 2003). The result is an environment in which any claim can find expression, from carefully vetted news to rumors and lies (Ayres, 1999; Katz, 1998), and in which paranoid allegations can acquire an air of legitimacy (Stempel, Hargrove, & Stempel, 2007). News consumers’ ability to assess the accuracy of this information is further undermined by information overload: An expanding universe of information, coupled with less gatekeeping, means that there are too many unverified claims to evaluate (Donovan, 2007; Graber, 1988). Furthermore, the Internet offers individuals access to large, geographically dispersed audiences, an attribute linked to rumor circulation in the mass media (Rosnow, 1980).
As a consequence, it is suggested the Internet has transformed how we as a society decide what constitutes fact (Katz, 1998), and may have “opened the door to misinformed reactions and ... chaotic behavior” (Ayres, 1999, p. 141). The implication would seem to be that the Internet promotes credulity, leading people to accept as fact what they would otherwise dismiss as hearsay. It is important to recognize, however, that although the Internet affords new behaviors, it does not necessarily change underlying psychological predispositions. With this in mind, it is perhaps unsurprising that evidence to date suggests that people process rumors that they encounter online in ways that are quite similar to rumors that they encounter offline (Bordia & Rosnow, 1998). The goal here is to articulate a series of theoretical mechanisms that guide online political rumor dynamics, balancing new communicative capabilities against stable psychology, to arrive at a clearer understanding of how unverified information circulates and finds acceptance today.

The first mechanism to consider concerns the pace of rumor circulation. As described above, the Internet clearly can facilitate the flow of unverified information, and preliminary empirical evidence suggests that e-mail and the Web are driving rumor transmission up (Bordia & Rosnow, 1998). This is important because rumor exposure promotes rumor belief. Although individuals often do exhibit skepticism toward rumors, there are many conditions under which they will accept unverified information as truth, as when rumors offer a plausible explanation of an uncertain political situation (see Shibutani, 1966). Thus, the more false rumors a person hears, the more opportunities the individual has to be fooled (e.g., F. H. Allport & Lepkin, 1945; Kapferer, 1989; Knapp, 1944). These observations provide the starting point for this research:

H1a: More frequent use of online political information sources is associated with exposure to more political rumors.

H1b: Exposure to more political rumors is associated with belief in more rumors.

Increasing rumor circulation is only a part of the story, though. One consideration that has been ignored to date is that the attributes of the Internet that facilitate rapid and far-reaching communication could also contribute to the spread of rumor rebuttals. Individuals generally do not want to be responsible for circulating false information, lest they be labeled a liar or a fool (Fine, 2007), and this creates some incentive for them to check the facts before acting on them (DiFonzo & Bordia, 2007). By providing access to more extensive political resources and enabling sophisticated information searches, the Internet helps individuals to do so. Mainstream news media, which is the most widely used online source of political news (Kohut et al., 2008), regularly provides corrections to inaccurate rumors. And when people hear about a rumor in the news, they often turn to the Web to learn more about it (Weeks & Southwell, 2010). In doing so, they may encounter one of a growing number of online resources through which people can check their facts, from the Pulitzer Prize-winning Politifact.com to the university-sponsored FactCheck.org and the nonprofit Snopes.com. Thus, the more someone seeks political news online, the more likely
that individual is to learn about rumor rebuttals. Ultimately, use of mainstream news and fact-checking services should promote more accurate beliefs, as belief in false rumors, even rumors that the individual is inclined to trust, tends to decrease in the face of strong counterarguments (Einwiller & Kamins, 2008).

H2a: More frequent use of online political information sources is associated with exposure to more political rumor rebuttals.

H2b: Exposure to more political rumor rebuttals is associated with belief in fewer rumors.

As noted above, early Internet rumor scholarship appears to imply that people are more likely to believe rumors that they encounter online than to believe those they encounter elsewhere. In other words, the more people get political information online, the more rumors they will believe even after controlling for the number of rumors they encounter. There are, however, reasons to question this claim. Scholars have concluded that rumorizing is best understood as an interpretive activity that allows people to manage uncertainty and threat (DiFonzo & Bordia, 2007; Rosnow, 1980; Shibutani, 1966). As such, rumors flourish in the face of anxiety, defensiveness, and uncertainty, factors unrelated to the transmission channel. This suggests that, contrary to early predictions about the Internet, the ease and speed with which rumors can be shared does not translate into an unprecedented willingness to accept rumors that traverse the network. The claim made here is that the Internet will not promote rumor beliefs beyond the effects of exposure to the rumor; instead, the influence of online political information acquisition on rumor beliefs will be mediated by its influence on rumor and rebuttal exposure.

H3: The influence of using online political information sources on rumor beliefs will be mediated by exposure to political (a) rumors and (b) rumor rebuttals.

A limitation of the discussion up to this point is that it treats online sources of political information as a monolithic whole. Although use of different sources of political information do tend to be correlated (Holbert, 2005), it is a mistake to ignore the diversity of the communication channels and information outlets that can be accessed via the Internet. Some of these channels are likely to promote the spread of unverified information, whereas others will be particularly useful for providing factual information. For instance, individuals communicating with one another informally via e-mail have fewer incentives to be factually accurate than a major news organization that publishes information on the Web, for several reasons. First, institutional trust is more dependent on reputation, and less subject to local negotiation, than interpersonal trust (Fine, 2007). Thus, if consumers discover that a news organization’s reporting is inaccurate, both trust in and use of the outlet will likely decline (see Gentzkow & Shapiro, 2006). In contrast, if an acquaintance is caught presenting inaccurate information, a conversation about the cause and significance of this event is likely to precede any decision about how to respond. Second, content posted on the Web is also more public than e-mail, and information
publicness has been shown to constrain intentional deception online (Guillory & Hancock, 2009). Public deceptions are more likely to be detected than those made in private, and thus individuals are more cautious about the kinds of claims they make publicly. These factors make e-mail the more likely conduit of political rumors. Blogs provide another notable example of difference across channels. Political blogs are often beholden to a particular ideology and may spread rumors, either because bloggers are too quick to trust information that is consistent with their political viewpoint or, in a few cases, because they adhere to the Machiavellian notion that the political stakes justify a little dishonesty. In contrast, news organizations and fact-checking Websites are specifically in the business of responding to rumor and misinformation, suggesting that people who use these outlets will encounter more rumor rebuttals. Thus, it is unsurprising that online reporting by the major news organizations following the 9/11 terrorist attacks were highly accurate, in stark contrast to other online sources (Lasorsa, 2003).

H4: Use of different online communication channels will influence rumor and rebuttal exposure differently.

The factors identified thus far suggest that the risk posed by the Internet of increasing acceptance of false political rumors is small, but this conclusion is premature. The Internet still has the potential to influence rumor in harmful ways, but the mechanisms by which this will occur have not yet been fully specified. These mechanisms are the topic of the next several hypotheses.

There are two processes facilitated by Internet-based communication that could contribute to significantly greater acceptance of false political rumors, and both are related to the use of e-mail. First, there is risk of a positive feedback loop or reinforcing spiral (Slater, 2007). As noted above, rumor exposure, whether it occurs online or offline, promotes a modest increase in rumor beliefs. E-mail, especially between people with prior offline relationships, is expected to be a particularly potent conduit for promoting belief in political rumors. This occurs for two complementary reasons: People are biased toward believing rumors from those they know and they have a tendency to share rumors that they believe.

There are several reasons that people may be inclined to assume that information from friends and family is accurate. Word-of-mouth referrals have long been understood to be exceptionally persuasive (Brown & Reingen, 1987). People tend to trust personal acquaintances more than they trust individuals who travel outside their social circles (Metzger, Flanagin, & Medders, 2010). This can occur because, although personal relationships among groups of individuals have many benefits, these ties can also exact a cost, encouraging conformity and stifling dissent (Portes, 1998). For example, there may be social pressure against fact-checking a claim made by someone to whom the individual is personally connected, as this could imply a lack of trust. People may also consider the sender to be in a better position to evaluate political information. Political communication scholars have long known that public understanding of politics is often shaped by intermediary opinion leaders (Lazarsfeld,
Political Rumors Online

R. K. Garrett

Berelson, & Gaudet, 1944), and rumor beliefs are no exception (Fine, 2007). Some members of an individual’s social network are likely to fill this leadership role, and messages from these individuals will tend to be viewed as trustworthy, reducing the probability that recipients will verify the information for themselves. In summary, individuals are expected to be uniquely biased toward believing rumors that arrive via e-mail from members of their social network.

H5a: E-mail from friends and family will promote rumor beliefs, both directly and indirectly.

Having received a rumor that they trust, people are inclined to share it with others. Individuals are more likely to circulate rumors they find credible (Rosnow, 1991), and belief in rumors learned from a personally known source make transmission more likely (Buckner, 1965; Lai & Wong, 2002). Internet users have a unique opportunity to disseminate rumors they find compelling. With just a few mouse clicks, a chain e-mail can be forwarded to tens or hundreds of recipients or shared via social network services such as Facebook or Twitter, allowing the rumor to grow exponentially as the process is repeated (DiFonzo, 2008; Sunstein, 2001).

H5b: Rumor beliefs will promote forwarding political e-mails.

Rumor circulation has always had an element of self-reinforcement: The more rumors someone encounters, the more likely he or she is to share them with others; and the more rumors that people share, the more opportunities that others have to encounter the rumors. E-mail, however, has the potential to accelerate this process of reinforcement. Rumor exposure could grow substantially as people turn to the Internet to learn about and share political news.

Unfortunately, it is not just that rumors shared among friends and family tend to spread more rapidly and are more likely to be accepted. Rumors spreading across social networks are also likely to be politically biased, which makes their accelerated flow more problematic. Social networks tend to exhibit homophily, including more likeminded individuals than individuals with whom group members disagree (Huckfeldt, Johnson, & Sprague, 2004; Mutz, 2006), and this pattern extends online, especially among politically oriented interest groups (Wojcieszak & Mutz, 2009). Thus, the individuals in one’s social network are more likely to have a shared viewpoint than not. Incoming political e-mails will tend to reflect these biases, producing disproportionate exposure to rumors that are consistent with an individual’s prior beliefs, and providing less informational diversity and fewer opportunities to detect inaccuracies (DiFonzo, 2010).

H6a: Political e-mails from friends and family will promote belief in more rumors about opposed candidates than supported candidates.

The rumors that people choose to believe also exhibit an attitudinal bias. Individuals are not purely rational information processors but instead act as “motivated tacticians” (Kunda, 1990; Schwarz, 1998), and consequently, their perceptions of
believability are often shaped by prior beliefs (Lord, Ross, & Lepper, 1979). Attitude-discrepant information is scrutinized more carefully and assessed more critically than is attitude-consistent information (Ditto & Lopez, 1992; Munro et al., 2002; Redlawsk, 2002; Taber & Lodge, 2006). Thus, individuals are more likely to believe rumors that reinforce their attitudes than those that do not (F. H. Allport & Lepkin, 1945; Einwiller & Kamins, 2008). And because individuals are more likely to share rumors that they find credible (Rosnow, 1991), attitude-based biases will also influence rumor transmission.

H6b: Rumors believed about an opposed candidate will promote more political e-mails to friends and family than rumors believed about a supported candidate.

In summary, the consequences of these biases in exposure and acceptance are that people are more likely to encounter rumors that support their prior political positions, they are more likely to believe rumors that support their viewpoint, and they are more likely to share these attitude-consistent rumors with others they know. And e-mail serves as an accelerant for these processes. In this way, individual predispositions and structural characteristics work in tandem to reinforce patterns of bias in exposure and belief in political rumors.

Methods
To evaluate these predictions about the Internet’s influence on rumoring, data were collected via a random-digit-dial telephone survey of individuals living in the continental United States \( (N = 600) \). The survey was conducted between November 6 and 20, 2008, the weeks immediately following the presidential election, by Abt SRBI, Inc. The survey achieved a response rate of 26.2%, calculated using American Association for Public Opinion Research (AAPOR) method two (RR2) and treating non-English speakers as ineligible (AAPOR, 2008).

The survey asked respondents about their exposure to 10 rumors that were circulating via e-mail during the 2008 election cycle, eight prominent false statements and two true statements (see Supporting information, Appendix S1 for question wording and statements). The order in which statements were presented was randomized across respondents. If respondents were familiar with a rumor, they were also asked whether they had encountered any information indicating that the statement was false, and what they believed the truth to be. Counts of the number of false rumors heard, the number of refutations encountered, and the number of false rumors believed were then computed for each respondent.

The statements were selected from lists compiled by FactCheck.org and Snopes.com and were chosen based on a variety of factors, including their reported prevalence and the strength of the evidence concerning their veracity. All eight untrue rumors included in the study are blatant falsehoods that no candidate had explicitly sanctioned and that fact-checking services had systematically refuted. Thus, the rumors analyzed are not a representative sample of unverified information circulating during the
Political Rumors Online

R. K. Garrett

The two true statements were included to help ensure that respondents considered the accuracy of each statement separately and to reduce the risk of a social desirability bias in responses. The intent was to discourage respondents from concluding that all the statements were false, and the data suggest that this strategy was effective: On average, respondents believed more than 1 of the 10 statements ($M = 1.26$, $SD = 0.05$). Even if individuals are biased in reporting which rumors they hear or believe, there is no reason to expect these biases to be correlated with online news use. That is, if there is an association between online activity and rumor exposure or beliefs, it presumably reflects a meaningful relationship between these two variables.

The data indicate that even among these high-profile rumors, circulation was modest. On average, respondents were familiar with fewer than three of the eight false rumors ($M = 2.82$, $SD = 0.06$). Contact with refutations was even lower, with respondents encountering challenges to less than half of the rumors they heard ($M = 1.23$, $SD = 0.05$). Despite limited contact with refutations, belief in false rumors was still quite low: The average number of false rumors believed is less than one ($M = 0.82$, $SD = 0.04$). Splitting the rumors by ticket, it is evident that the false statements about Democratic candidate Barack Obama were circulating more widely than those about Republican candidates John McCain and Sarah Palin. Respondents had heard just over half of the rumors about the Democrat ($M = 2.06$, $SD = 0.04$) versus less than one of the rumors about the Republicans ($M = 0.76$, $SD = 0.04$). Because these rumors were preselected by the research team, it is not known whether this reflects differences in the prevalence of rumors about the two tickets nationally or if it is because of differences in the prevalence of the specific rumors included in the survey. These differences do not have a substantive impact on the results of the study, however, as the emphasis is on changes in rumor contact and belief relative to Internet use, not on absolute exposure levels.

The survey also included a battery of 10 items concerning the frequency with which respondents used online political information sources to learn about the candidates’ campaigns, including e-mail, mainstream news sites, partisan blogs, and voter information sites (see Supporting information, Appendix S1 for question wording and descriptives). These measures are examined separately and are combined to create an index of online political source use ($Cronbach \alpha = .84$, range = 0–40, $M = 8.1$, $SD = 8.0$). Note that the survey did not ask respondents to indicate whether these sources directly contributed to rumor exposure as this level of detail is likely to be difficult for people to accurately self-report (Schwarz, 1999). Instead, the influence of online media is assessed statistically, by examining the relationship between use of these sources and rumor exposure and beliefs.

The survey also included a series of demographic questions, including age ($M = 53.4$, $SD = 15.9$), gender (47.5% male), education (93.1% high school graduate or higher and 37.8% bachelor’s degree or higher), race (82.8% White, 9.0% Black, 8.2%
other), party affiliation (33.0% Republican, 32.9% Democrat, 24.6% Independent, 10.5% other), political ideology (43.7% conservative, 38.0% moderate, 18.3% liberal), and political knowledge (based on the four-item National Annenberg Election Survey (NAES) measure, $M = 1.9, SD = 1.0$).

A comparison of respondent demographics to census data (2006 American Community Survey) indicates that the sample is reasonably representative of the U.S. population, although there are a few differences worth noting. Whites are overrepresented (census data: 73.9% White, 12.3% Black, 13.8% other) as are older Americans (census data indicate that 23.0% of the population are between the ages of 50 and 64 vs. 34.7% in this sample), and respondents are better educated than the American population at large (census data: 74.1% high school graduate or higher and 27.0% bachelor’s degree or higher). Although the political mood of the country has shifted over the past few years, 2004 NAES data still provide a useful benchmark for assessing the representativeness of respondents’ political orientations. The present sample exhibits a comparable breakdown in terms of party affiliation, although it is somewhat more conservative than would be expected based on NAES data (38.3% conservative, 38.7% moderate, 23.0% liberal). Respondents in this sample also scored substantially higher on the four-item political knowledge measure than those in the NAES survey ($M = 1.0, SD = 1.4$). In summary, this sample provides adequate representation of the national population. Although there are a few attributes on which the sample falls short, there is little reason to expect these attributes to influence the relationships between the variables examined here.

Results

The first hypothesis, H1a, concerns whether use of the Internet and online sources of political information leads people to encounter more rumors. These data indicate that it does. Rumor exposure is calculated by counting how many rumors a respondent heard, and this is modeled as the outcome of online political source use, controlling for important political and demographic characteristics, including use of offline media, campaign interest, partisanship, and age (Table 1, Column 1). As predicted, the coefficient on the aggregate measure of online news use is positive and highly significant when predicting exposure to false rumors. The magnitude of the effect of using online sources in comparison with other factors is also noteworthy. The influence of offline news, such as newspapers and television news, on rumor exposure is not significantly different than zero, indicating that the observed effect is not a product of media use generally. And a comparison of standardized coefficients (not shown in the table) reveals that online activity’s influence ($\beta = .19$) on rumor exposure is almost twice that of campaign attention ($\beta = .11$) and age ($\beta = .10$).

Other studies have shown that rumor circulation tends to translate into increased rumor beliefs, and the next hypothesis, H1b, seeks to confirm this in the context of this study. A regression model predicting the number of rumors believed, based on exposure after controlling for factors identified above, provides support for this
Table 1  Regressing Online News Use on Rumor Exposure, Rebuttal Exposure, and Rumor Beliefs

<table>
<thead>
<tr>
<th></th>
<th>Rumor Exposure</th>
<th>Rebuttal Exposure</th>
<th>Rumor Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online news use</td>
<td>0.03*** (0.01)</td>
<td>0.03*** (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td>Rumors encountered</td>
<td>—</td>
<td>0.37*** (0.03)</td>
<td>0.47*** (0.03)</td>
</tr>
<tr>
<td>Rebuttals encountered</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Offline news use</td>
<td>0.02 (0.02)</td>
<td>0.02 (0.01)</td>
<td>—</td>
</tr>
<tr>
<td>Support Obama</td>
<td>—0.58*** (0.13)</td>
<td>0.38*** (0.10)</td>
<td>—0.29*** (0.08)</td>
</tr>
<tr>
<td>Attention to campaign</td>
<td>0.21* (0.09)</td>
<td>0.16* (0.07)</td>
<td>0.11* (0.06)</td>
</tr>
<tr>
<td>Strong partisan</td>
<td>0.12 (0.13)</td>
<td>—0.07 (0.10)</td>
<td>0.26** (0.08)</td>
</tr>
<tr>
<td>Education</td>
<td>0.04 (0.04)</td>
<td>0.09** (0.03)</td>
<td>—0.06* (0.03)</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>0.01* (0.00)</td>
<td>0.01** (0.00)</td>
<td>—0.01* (0.00)</td>
</tr>
<tr>
<td>African American</td>
<td>—0.22 (0.23)</td>
<td>—0.02 (0.17)</td>
<td>—0.26 (0.14)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.12** (0.40)</td>
<td>—1.79*** (0.29)</td>
<td>0.18 (0.26)</td>
</tr>
<tr>
<td>Observations</td>
<td>503</td>
<td>503</td>
<td>503</td>
</tr>
<tr>
<td>R²</td>
<td>0.127</td>
<td>0.361</td>
<td>0.413</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses.
(*p < .05. **p < .01. ***p < .001.)

assertion (Table 1, Column 3). For every two additional rumors an individual hears, the average number of rumors believed increases by about one. This relationship is highly significant, and the effect is larger in magnitude than any other factor.

At this stage in the analysis, the data are consistent with early predictions concerning online rumoring: Getting political information online is associated with more rumor contact, which in turn promotes rumor beliefs. However, Hypothesis H2a suggests that Internet use will also promote exposure to rumor rebuttals. The evidence suggests that this is true as well. A regression model paralleling that of rumor exposure, but predicting rebuttal exposure while controlling for rumor exposure, finds that getting political information online is associated with more contact with rebuttals (Table 1, Column 2). The influence of this factor relative to the controls is strikingly similar to the results in the model predicting rumor exposure. Offline news use has no significant influence on exposure to rebuttals, and the magnitude of the standardized coefficient on online news use (β = .18) is almost double that of campaign attention (β = .10) and age (β = .10). Thus, going online promotes rebuttal exposure in much the same way that it promotes rumor exposure.

Hypotheses H2b goes on to make the intuitive, and empirically precededented, assertion that exposure to rumor rebuttals drives rumor beliefs down. A reexamination of the model predicting rumor beliefs (Table 1, Column 3) confirms that this is correct, as the coefficient on rebuttal exposure is negative and significant. Note, however, that the magnitude of this coefficient is only half of that of the coefficient on rumor exposure. In other words, rumor exposure does more to promote rumor beliefs than rebuttal exposure does to prevent them.
The next hypothesis addresses the question of direct versus indirect effects of online news use on rumor beliefs. Specifically, H3 asserts that use of online political information sources indirectly influences rumor beliefs and that its effect will be mediated by rumor and rebuttal exposure. A multistep multiple mediation test using bootstrap confidence intervals (CIs) for the indirect effect provides evidence (95% CIs are used throughout). Prior to introducing the mediators, online news use has a significant direct influence on rumor beliefs ($B = .01, SE = .01, p < .05$); however, it fails to achieve significance after their introduction (Table 1, Column 3). Interestingly, the total indirect effects are not significantly different than zero either (95% CI: between $-0.002$ and $0.013$). The reason appears to be that the indirect influences of rumor and rebuttal exposure (which are significant) effectively cancel one another out. The influence of online news use mediated by rumor exposure is positive (95% CI: between $0.007$ and $0.025$), but the influence mediated by rebuttal exposure and by rebuttal via rumor exposure is negative (95% CI: between $-0.003$ and $-0.012$ and between $-0.002$ and $-0.006$, respectively). In summary, the influence of online news use on rumor beliefs is significantly mediated by exposure to rumors and rebuttals.

The relationships described thus far can be integrated into a single path model linking media use with individual characteristics and rumoring behavior. To test the fit of this more comprehensive model, a confirmatory structural equation model was constructed (not shown). A model using the maximum likelihood estimation procedure confirms that fit is good per the guidelines recommended by Holbert and Stephenson (2002). The root mean squared error of approximation is 0.03 (90% CI: 0.00–0.05), well below the 0.06 maximum threshold, and the confirmatory fit index is 0.99, exceeding the minimum threshold of 0.95. As would be expected, the path estimates are comparable with those reported in the regression models above.

Collectively, these results suggest that the Internet has only a modest influence on rumor beliefs. Although individuals who use e-mail and the Web to get political news are familiar with more rumors, this online activity also promotes exposure to rumor rebuttals, and the net effect on rumor beliefs is very small. One notable shortcoming of these analyses, however, is the implicit assumption that all types of Internet use have the same influence on rumor dynamics. The next series of hypotheses challenge this assumption and attempt to present a more nuanced understanding of variation across the different modes of online communication.

Hypothesis H4 posits simply that examining the various online sources of political news separately reveals that they have different types of influence on rumor beliefs. Table 2 offers evidence that this is correct. Like Table 1, this table presents coefficients from a series of three regression models, each with a different dependent variable: rumor exposure, rebuttal exposure, or rumor beliefs. Instead of using the aggregate measure of online activity as a predictor, however, these models examine the influence of several constituent factors: e-mail from friends and family, voter information Websites (e.g., FactCheck), political blogs, and the Websites of major news organizations. Although quite similar in terms of overall explanatory power,
Table 2 Regressing Specific Online Source Use on Rumor Exposure, Rebuttal Exposure, and Rumor Beliefs

<table>
<thead>
<tr>
<th>Source</th>
<th>Rumor Exposure</th>
<th>Rebuttal Exposure</th>
<th>Rumor Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail friends/family</td>
<td>0.17*** (0.04)</td>
<td>-0.01 (0.03)</td>
<td>0.08** (0.03)</td>
</tr>
<tr>
<td>Major news site use</td>
<td>-0.04 (0.04)</td>
<td>0.06* (0.03)</td>
<td>0.00 (0.03)</td>
</tr>
<tr>
<td>Political blogs use</td>
<td>0.14* (0.05)</td>
<td>0.03 (0.04)</td>
<td>0.01 (0.03)</td>
</tr>
<tr>
<td>Voter information site use</td>
<td>0.04 (0.08)</td>
<td>0.17** (0.06)</td>
<td>-0.08 (0.05)</td>
</tr>
<tr>
<td>Rumor exposure</td>
<td>—</td>
<td>0.38*** (0.03)</td>
<td>0.46*** (0.03)</td>
</tr>
<tr>
<td>Rebuttal exposure</td>
<td>—</td>
<td>—</td>
<td>-0.26*** (0.04)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.63 (0.40)</td>
<td>-2.04*** (0.29)</td>
<td>0.12 (0.26)</td>
</tr>
<tr>
<td>Observations</td>
<td>509</td>
<td>509</td>
<td>509</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.150</td>
<td>0.366</td>
<td>0.424</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. Other controls shown in Table 1 were included in the analyses but have been omitted from the table for clarity. The coefficients on these factors did not change in sign or magnitude.

(*$p < .05$. **$p < .01$. ***$p < .001$.)

these models illustrate just how different the influence of these types of sources can be. For example, e-mail from friends and family and political blog use is positively linked to rumor exposure but use of voter information Websites and major news organization Websites is not. In contrast, voter information Websites and major news Websites promote exposure to rebuttals, as we might expect given the mission of the organizations behind such sites, but e-mail and political blog use do not. And only e-mail directly influences rumor beliefs. Collectively, these differences confirm that online sources of political information differ in terms of their implications for the spread and acceptance of rumors.

The last result also allows us to begin to assess Hypothesis H5a, the first in a series of predictions highlighting the more harmful mechanisms at work in online rumor dynamics. The observation that e-mail has a direct influence on rumor beliefs, even after controlling for both rumor and rebuttal exposure, suggests that e-mail may be an especially persuasive conduit for rumors. A mediation test using bootstrap CIs confirms that there are significant indirect effects as well. Adding rumor exposure to the model of beliefs cuts the effect of e-mail in half, and the effect of e-mail mediated by rumor exposure is estimated at 0.08 (95% CI: between 0.04 and 0.12). Thus, the hypothesis that e-mails from friends and family promote rumor beliefs both directly and indirectly is supported.

Rumor beliefs, which incoming e-mail promotes, are also anticipated to promote the forwarding of political information and e-mails, H5b. The first column of Table 3 reports a regression model predicting the frequency with which individuals forward political information to their friends and family, controlling for the same factors used in prior models. The results are unambiguous: The more rumors someone believes, the more frequently that individual is expected to forward political information via e-mail. The evidence for this pair of hypotheses suggests that sharing rumors via
Table 3 Regressing Rumor Beliefs on the Frequency of Forwarding Political Information

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>By Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rumors believed</td>
<td>0.21*** (0.04)</td>
<td>—</td>
</tr>
<tr>
<td>Obama rumors believed</td>
<td>0.30*** (0.05)</td>
<td>0.30*** (0.05)</td>
</tr>
<tr>
<td>Obama rumors × Obama support</td>
<td>—</td>
<td>−0.38* (0.16)</td>
</tr>
<tr>
<td>McCain rumors believed</td>
<td>—</td>
<td>0.07 (0.13)</td>
</tr>
<tr>
<td>McCain rumors × Obama support</td>
<td>—</td>
<td>−0.01 (0.17)</td>
</tr>
<tr>
<td>Support Obama</td>
<td>0.08 (0.10)</td>
<td>0.24* (0.12)</td>
</tr>
<tr>
<td>Online news use</td>
<td>0.09*** (0.01)</td>
<td>0.09*** (0.01)</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>0.01** (0.00)</td>
<td>0.01** (0.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.33 (0.29)</td>
<td>0.29 (0.29)</td>
</tr>
<tr>
<td>Observations</td>
<td>503</td>
<td>503</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.390</td>
<td>0.402</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. Other controls shown in Table 1 were also included in the analyses, but nonsignificant items have been omitted from the table for clarity. ($^*p < .05. ^{* *}p < .01. ^{* * *}p < .001$.)

e-mail is a self-reinforcing process that could greatly amplify rumor beliefs through repetition. Thus, although aggregate use of online sources does not promote rumor beliefs, e-mail among individuals who know one another does.

It was also posited that e-mails’ effects on rumor could be even more troubling given that individuals’ political biases shape both what they believe and what they are inclined to share with other people. Hypothesis H6a predicts that individuals are more likely to believe rumors about candidates they oppose than those they support. The test of this claim is a pair of regression models predicting rumor beliefs, one for each of the two presidential tickets (Table 4). The theoretical focus of the model is on the interaction between e-mails received and candidate preferences. As anticipated, the results indicate that e-mail generates a larger increase in rumor beliefs about the opposition. For rumors about both the Democratic and Republican tickets, e-mail has a significantly different influence on the beliefs of those who supported Obama than those who did not. It may be easier to interpret these interactions when presented visually. Figure 1 plots the number of rumors about Obama that an individual is predicted to believe based on the number of e-mails received per the regression model reported in Table 4 and treating Obama supporters and nonsupporters separately (95% CIs are also shown). The slope of the line for Obama supporters is not significantly different than zero. That is, e-mail does not influence Obama rumor beliefs among this group. The slope for nonsupporters, however, is significant and positive: The more political e-mails these individuals received from those they know, the more rumors they are expected to believe. A plot of McCain rumor beliefs exhibits a similar pattern (not shown). In this case, Obama supporters believe significantly more rumors as e-mail frequency goes up; nonsupporters do not. Thus, H6a is supported: political biases shape the link between political e-mails and rumor beliefs.
Figure 1  Predicted influence of e-mail on Obama rumor beliefs.
Note: Holding other variables constant at their mean.

The role of bias does not stop here. The final prediction is that rumor beliefs’ influence on political e-mail forwarding, established above, will also be molded by political attitudes. That is, rumor beliefs about an opposed candidate will do more to encourage the forwarding of political information than beliefs about a supported candidate (H6b). To evaluate this claim, return to Table 3, which presents a model of rumor beliefs’ influence on e-mail forwarding. The second column in this table splits rumor beliefs into two predictors: rumor beliefs about Obama and rumor beliefs about McCain. Candidate support is then used to moderate the influence of both factors. Here, the results only partially support the prediction. Rumor beliefs about Obama are significantly more likely to promote political e-mail forwarding among nonsupporters than among supporters. Support for the hypothesis is only partial because this pattern is not evident when looking at rumors about McCain. As noted at the outset of this article, one should not read too much into this difference as it may be an artifact of the low levels of familiarity that respondents had with the McCain rumors chosen for this study.

Discussion
In summary, fears that the Internet has harmful consequences for the circulation of political rumors are merited but not for the reasons originally anticipated. Predictions that the Internet, with its low transaction costs, high speed, and global reach, would facilitate the spread of rumors, and that individuals would unquestioningly accept
Table 4 Regressing Receipt of Political E-Mail on Rumor Beliefs, by Candidate

<table>
<thead>
<tr>
<th></th>
<th>Obama Rumors Believed</th>
<th>McCain Rumors Believed</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail friends/family (FF)</td>
<td>0.09*** (0.03)</td>
<td>-0.01 (0.02)</td>
</tr>
<tr>
<td>E-mail FF × Obama support</td>
<td>-0.10* (0.04)</td>
<td>0.06* (0.02)</td>
</tr>
<tr>
<td>Support Obama</td>
<td>-0.31*** (0.08)</td>
<td>0.13** (0.04)</td>
</tr>
<tr>
<td>Rebuttals encountered</td>
<td>-0.33*** (0.04)</td>
<td>-0.18*** (0.04)</td>
</tr>
<tr>
<td>Rumors encountered</td>
<td>0.55*** (0.04)</td>
<td>0.39*** (0.03)</td>
</tr>
<tr>
<td>Strong partisan</td>
<td>0.23** (0.07)</td>
<td>0.03 (0.04)</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>-0.01* (0.00)</td>
<td>-0.00 (0.00)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.20 (0.23)</td>
<td>-0.12 (0.12)</td>
</tr>
<tr>
<td>Observations</td>
<td>509</td>
<td>509</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.454</td>
<td>0.367</td>
</tr>
</tbody>
</table>

Note: Standard errors in parentheses. Other controls shown in Table 1 were also included in the analyses, but nonsignificant items have been omitted from the table for clarity.
(*p < .05, **p < .01, ***p < .001.)

these falsehoods, are not borne out by the data. Instead, two processes related to the use of e-mail combine to produce a troubling change in the flow of political rumors as more news consumers move online.

First, e-mail-based rumoring appears to function as a reinforcing spiral (Slater, 2007). The more political e-mails that individuals received from friends and family during the 2008 election, the more rumors they were likely to believe; and the more rumors individuals believed, the more political e-mails they sent. Second, this feedback loop exhibits a strong political bias. Receiving e-mails only promotes belief in rumors about candidates the individual opposes, and people are more likely to share political information with others as belief in rumors about the other candidate increases. Taken together, these processes threaten to intensify partisan divisions and promote political extremity as individuals’ perception of what constitutes “fact” increasingly reflects their political predispositions (Slater, 2007; Sunstein, 2009).

This dynamic may help to explain the persistence of a number of rumors well beyond the election season. For example, at the time of this survey (November 2008), about three in five Americans had heard the rumor that President Obama is not a natural-born citizen, which would render him ineligible to hold the presidency, and 10% believed it. Ten months later, fully four in five Americans were familiar with the rumor according to a survey conducted by the Pew Research Center (Kohut & Remez, 2009). The survey did not ask respondents whether the rumor was true, but Pew did find that 28% of Americans, and fully 39% of Republicans (vs. only 14% of Democrats), felt the issue had received insufficient coverage by news organizations, presumably because they considered it to be unresolved. The patterns evident in this study suggest that e-mail (but not necessarily the Web) may be contributing both to the rumor’s survival in the face of overwhelming counterevidence and to the distinct partisan divide in public response.
This study has limitations that should be addressed in future research. First, these analyses do not control for face-to-face interactions among family members. It is possible that e-mail is simply replicating these interpersonal interactions. Comparing the relative influence of political discussion online and offline could reveal an even more complicated dynamic. Even if this is the case, though, the role that e-mail plays in circulating information across geographically dispersed social networks remains a source of concern.

The study is also constrained in its focus on e-mail as a means of online interpersonal communication. Social networking services, such as Facebook and Twitter, have grown exponentially over the past several years (Boyd & Ellison, 2007). These services foster informal communication across network ties, especially among homogeneous groups of family members and close friends. It is possible that the dynamics evident in these data describing e-mail use may be replicated via social networking services, with potentially greater speed and reach given the size and scope of individuals’ online social networks (e.g., see Golder, Wilkinson, & Huberman, 2007). The risk is that the more people come to rely on these networks for political information, the faster rumors will spread and the more influence attitudinal biases will have on political beliefs.

The resulting pattern is complex, neither unequivocally good nor bad. It is encouraging to note that the integration of the political Web into American political life is not responsible for rampant belief in false rumors. Looking at Internet use in aggregate, it is evident that although rumors circulate more widely online, the overall number of rumors that people believe does not change substantively. This suggests that online or offline, most people respond cautiously to rumors that they encounter, at least among impersonal political information sources. For some, this may mean weighing evidence for and against a rumor before accepting it as truth, whereas for others, it might mean remaining skeptical of unverified claims (especially those that challenge their political predispositions). Thus, the Web promotes rumor circulation by virtue of the enormous reach of online outlets, but it is not increasing credulity on the part of the public.

The problem is e-mail, or more accurately, the social dynamics that drive how people use e-mail. Although most individuals do not thoughtlessly forward every rumor they encounter online, they are prone to spread falsehoods that strike them as plausible and that are consistent with their political predispositions and this practice rapidly and repeatedly reinforces political biases. The influence of this dynamic on rumor appears to be modest to date, but as online social media become more pervasive, the harmful consequences for public understanding of important political issues may pose significant challenges to the democratic process.

Acknowledgments

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Notes
1 False rumors about Democratic vice-presidential candidate Joe Biden were reported less frequently than the other candidates on Snopes.com and FactCheck.org and so they were excluded. To ensure that all four candidates were represented in the survey, one of the true statements concerned Biden.
2 The test was conducted in SPSS using the MED3C macro (Hayes, Preacher, & Myers, 2011).
3 It is interesting to note that levels of use for political blogs and fact-checking sites are comparable. Blogs are used by between 11 and 16% of the population according to this survey (with 95% CI), whereas fact-checking sites are used by between 16 and 23% of the population.

Supporting Information

Additional supporting information may be found in the online version of this article:

Appendix S1. Rumor and online series question wording.

Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.

References


网络政治传闻令人担忧的后果

【摘要：】

大家对网络传播不利政治传闻的担忧是有根据的，但其原因不是最初预期的。虽然网络加速和扩大谣言的流通，但是整体而言并不会增加信息接收者的轻信程度。然而，电子邮件这一在现有的社会网络中鼓励非正式政治传播的媒介对真实的政治知识具有独特的威胁。一个在 2008 年美国总统大选之后的全国性电话调查表明，互联网的增加使用加速对谣言和反驳谣言的接触，但对轻信谣言的总体影响是微不足道的。更令人担忧的是，数据表明通过电子邮件发送给朋友和家人的传言更容易被相信并被传播，并且，这些流通形式和信任表现出强烈的政治偏见。
Les conséquences troublantes des rumeurs politiques en ligne

Les craintes à l’effet qu’Internet promouvrait des rumeurs politiques nocives sont justifiées, mais pas pour les raisons anticipées à l’origine. Bien que le réseau accélère et élargisse la circulation des rumeurs, dans l’ensemble il n’augmente pas la crédulité des destinataires. Toutefois, le courriel, qui encourage la communication politique informelle au sein de réseaux sociaux déjà existants, pose une menace unique aux connaissances politiques factuelles. Une enquête téléphonique menée à travers les États-Unis immédiatement après l’élection présidentielle de 2008 offre la preuve que l’usage agrégé d’Internet promeut l’exposition tant aux rumeurs qu’à leur réfutation, mais que l’effet total sur la croyance en ces rumeurs est négligeable. Plus troublant, les données démontrent que les rumeurs envoyées par courriel aux amis et à la famille sont plus susceptibles d’être crues et partagées avec d’autres. Ces tendances de circulation et de croyance montrent de forts biais politiques.

Mots clés : élections, présidence, politiques, rumeurs, Internet, effets médiatiques, polarisation
Beunruhigende Konsequenzen von politischen Gerüchten, die online verbreitet werden


Schlüsselbegriffe: Wahlen – Präsidentschaftswahlen, Politik, Gerüchte, Internet, Medienwirkungen, Polarisierung
인터넷이 해로운 정치적 루머를 증진하다는 두려움은 연구할 가치가 있으나, 원래 기대되었던 원인들에 대한 것들은 아니다. 비록 네트워크들이 루머 확산을 가속화하고 확대하지만, 전체적으로 볼때 이는 수용자의 경신을 증대시키지는 않았다. 그러나 현존하는 사회적 네트워크에서의 정보적 정치 커뮤니케이션을 조장하는 이메일은 사실적 정치적 지식에 대한 독특한 위험을 보여주었다. 2008년 미국 대통령 선거직후 단행된 전화서베이에서, 공격적인 인터넷 사용은 루머들과 그들에 대한 반격 모두에 대한 노출을 증가시키는 것을 증명하였다. 그러나 루머신뢰에 대한 전체적 효과는 무시할 정도로 나타났다. 더욱 문제가 되는 것은 이들 데이터는 친구들과 가족들에게 이메일로 전달된 루머들을 더욱더 신뢰할 가능성이 높았으며, 다른 사람들과 공유하려는 경향이 높은 것으로 나타났다. 그리고 이러한 흐름과 믿음은 강한 정도의 정치적 편견으로 나타났다.