Information Seeking and Emotional Reactions to the September 11 Terrorist Attacks

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Based on uncertainty reduction theory, this paper argues that individuals were motivated to seek information and learn about the September 11 terrorist attacks to reduce uncertainty about what happened. Results from a panel survey indicate that negative emotional response was a strong predictor of efforts to learn. Analyses also show that relative increases in newspaper, television, and Internet use from Wave 1 to Wave 2 were positively related to efforts to learn about the attacks. The findings extend uncertainty reduction theory to the mass media context thereby contributing to our understanding of uses and gratifications.

At any given time, thousands, perhaps millions of people are facing some kind of traumatic event. Such events are typically a very personal experience. Occasionally, however, a community or nation faces a large-scale traumatic event, and those who do not witness the catastrophe personally can nonetheless learn about it through the media. In the past, such events have included the Kennedy assassination and the Challenger disaster.[1] More recently, the September 11 terrorist attacks drew the attention of Americans, boosting media use and creating distress for many.[2]

Past research indicates that traumatic events experienced through the media can create strong negative emotional reactions.[3] In these situations, individuals often rely on news coverage to learn more about the tragedy. However, little research has assessed whether emotional reactions can trigger an increased effort to learn about traumatic events and whether this translates into increased media use.

In this study, we consider the relationship between emotional reactions to the terrorist attacks on September 11, 2001, in the United States, efforts to learn about the events, and changes in media use during a four-month period following the incident. In doing so, we integrate past research on personal reactions to traumatic events with research into the factors that predict media use, including gratifications sought. By

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J&MC Quarterly
Vol. 81, No. 1
Spring 2004
155-167

considering what led people to seek information about the attacks, we move beyond general information-seeking behaviors to topic-specific efforts and consider whether those efforts translate into increased use of television news, newspapers, and Internet news sources. In addition, we integrate ideas from interpersonal communication by suggesting that a desire to reduce the discomfort of uncertainty was a key factor explaining efforts to learn and media use in the aftermath of September 11.

Literature Review

Emotion and Information Seeking. Most life-altering events draw little attention from the media. Divorce, loss of property, or even the death of a loved one all take place in a highly personal realm. Whatever reactions individuals might have to such events are influenced by their direct experience, and their coping mechanisms are largely interpersonal.[4] Some events, however, are not directly experienced. When a crisis hits an entire community or nation, most people experience the event largely through the media.[5]

Nonetheless, researchers suggest that mediated crises generate genuine emotion for witnesses.[6] For example, people recount the powerful effect of the Kennedy assassination. For a generation, the question "Where were you when you heard he was shot?" remains meaningful and important. Researchers have found that many people reacted with grief, despair, and outrage, even though they had never met Kennedy and learned about the event primarily through television.[7] Similar reactions have followed the deaths of other prominent figures, such as Princess Diana.[8]

However, the deaths of prominent figures are not the only mediated events that provoke strong emotions. In 1986, the Challenger space shuttle exploded on live television, killing seven astronauts, including one schoolteacher. Even though many witnesses had never met the astronauts and had not paid much attention to the space program, researchers still found that some viewers experienced a powerful sense of grief and loss.[9] While it is difficult to compare such feelings to those experienced in non-mediated tragedies, it is nonetheless apparent that events portrayed on television and in newspapers can create very real emotions. Unfortunately, little research has considered how the emotions generated by such events translate into subsequent media behaviors, although one study raised an interesting prospect. Kubey and Peluso suggested that some people engaged in uncertainty reduction activities in the aftermath of the Challenger disaster, trying to gather more information about the explosion.[10] Efforts to learn more took a number of forms such as seeking scientific information, trying to find out what was likely to happen to the space program, and exploring the reactions of peers to the tragedy.

Scholars in interpersonal communication have shown a particular interest in explaining information-seeking behaviors.[11] One prominent line of research in this field has been uncertainty reduction theory. Initially proposed by Berger and Calabrese, this theory argues that individuals are uncomfortable with the uncertainty of initial interpersonal interactions, and that people engage in information-seeking be-

haviors to alleviate that uncertainty.[12] This theoretical conception results in seven axioms and twenty-one theorems, some of which have received empirical support.[13] The theory has been expanded to consider interactions other than initial encounters. For example, new employees are motivated to learn about their work environment not just because they wish to keep their jobs, but also because they are uncomfortable with their uncertainty about the workplace.[14] Researchers have also considered the factors that motivate people to reduce uncertainty about their health status.[15]

As initially proposed, uncertainty reduction theory has faced criticism from several scholars. Others have attempted to account for the failure of certain theorems by proposing alternative explanations. For example, Knobloch and Solomon consider the importance of intimacy, power, and information expectancies, and Sunnafrank argues that individuals attempt to reduce uncertainty only when they expect a positive outcome.[16] Despite these limitations, the core logic of uncertainty reduction theory remains strong: Individuals in uncertain situations are likely to feel discomfort, and information seeking is a viable solution to that discomfort in many contexts. Although uncertainty reduction theory has primarily been used in interpersonal communication research, this basic logic can be applied to mass communication research.

Mass communication can potentially serve as a source of uncertainty as well as a mechanism for information seeking. Kubey and Peluso illustrate the former point by demonstrating how a traumatic event portrayed in the media could lead to strong emotional reactions apparently driven by an underlying uncertainty.[17] Similarly, Pfau et al. suggest uncertainty can arise regarding political candidates who are only presented in the media.[18] However, these studies have subsequently measured interpersonal efforts to reduce uncertainty. Nevertheless, we expect that uncertainty arising from mass communication could lead to information seeking in a mass communication context.

The logic of uncertainty reduction theory can be expanded in another way: uncertainty may be associated with affect, particularly negative affect. Although the original conception by Berger and Calabrese considers uncertainty in cognitive terms, current psychological research suggests important links between affect and cognition.[19] In particular, uncertainty with its language of discomfort and discussion of liking seems closely linked to affect. Some scholars have linked uncertainty to affect or value issues.[20] Because our interest is in the logic of uncertainty reduction theory, we feel this logic readily accommodates the idea that negative affect can be an outcome of uncertainty.

Given the underlying logic of uncertainty reduction and the way in which mass communication and affect may be related to this logic, we can consider the likely relationship between emotional reactions to a traumatic event and information-seeking efforts. If, as Kubey and Peluso propose, emotional reactions to traumatic events are related to an underlying information shortage, people should attempt to reduce their uncertainty about the event by trying to learn more.[21] Efforts to learn more should be highly correlated with negative emotional reactions to an event. For example, studies have found individuals with strong emo-

tional reactions to tragic events are more likely to share information about the events, and Riffe and Stovall theorized that news use would also increase.[22] In the case of September 11, like the Challenger disaster, people experienced a range of negative emotions, including grief, anger, and powerlessness.[23] These emotions may have stemmed in part from underlying uncertainty about the event. In addition, people might have decided the origin of their affect was uncertainty and sought to alleviate it by seeking information. Both prospects suggest the following hypothesis:

H1: Negative emotional reactions to September 11 will be positively related to efforts to learn about the attacks.

This hypothesis may appear to contradict the mood management theory articulated by Zillmann and Bryant.[24] This theory proposes that people use media to regulate emotions. In particular, researchers have shown that people experiencing negative emotions often turn to uplifting programs such as situation comedies instead of more serious fare such as news.[25] Mood management addresses a situation in which emotional reactions are generated in response to personal events. However, our investigation centers on reactions to a mediated tragedy affecting an entire nation. In these broader situations, we expect people's media use strategies to be different, reflecting a desire to reduce uncertainty rather than manage moods.

Aside from negative reactions, the aftermath of the September 11 attacks may have also stimulated positive emotional reactions. A significant amount of coverage following September 11 focused on how communities pulled together to respond to the attacks, and people may have felt proud of their nation or inspired by these gestures. In fact, researchers studying public reaction to the attacks found that general positive affect remained steady and that patriotic feelings and civic pride rose after September 11.[26]

Positive affect such as patriotism and civic pride may be related to news use. Information may be calming for those who are excited. It may also appeal more to individuals who feel empowered or efficacious. Both to examine this possibility and as a general test of the applicability of mood management to reactions to mediated tragedies, we consider the following hypothesis:

H2: Positive emotional reactions to September 11 will be positively related to efforts to learn about the attacks.

Information Seeking and Media Use. Individuals hoping to learn about the September 11 attacks and their aftermath had no shortage of information resources given the saturation coverage of the events. The uses and gratifications approach to studying media has proposed that reasons for seeking information influence media choices.[27] In the case of September 11, people may have sought information about the attacks themselves, the recovery efforts, anti-terrorism efforts at home and abroad, and even the motivations of the terrorists. All of this falls into a

broad category of factual information. Within uses and gratifications, a desire to obtain such general information about current events—information seeking—is closely linked to news media use.[28] In addition, this association holds not only for newspaper and television use, but also for other sources of information, such as the Internet.[29]

Unlike traditional uses and gratifications research, this study looks at efforts to learn about a particular topic. While some uses and gratifications studies have found fairly weak associations between information seeking and news media use, those studies have tested overall information seeking and media-use patterns.[30] By looking at topic specific relationships, we expect to find a stronger association.

A mere association would not clarify whether efforts to learn led people to use media or whether media use made people feel they should learn more. Therefore, this paper uses data from a panel study to assess whether emotions in the weeks following September 11 were linked to *changes* in media use in the months after the attacks. Given the link between information seeking and news media use that consistently emerges in uses and gratifications research and theory, we hypothesize the following:

> H3a: Efforts to learn about the September 11 attacks will be positively associated with relative increases in television news use.
>
> H3b: Efforts to learn about the September 11 attacks will be positively associated with relative increases in newspaper use.
>
> H3c: Efforts to learn about the September 11 attacks will be positively associated with relative increases in Internet information seeking.

Methods

Data for the two waves of this study were collected using telephone interviews. Using a probability sample in Madison, Wisconsin, and its surrounding areas, Wave 1 yielded a sample of 657 respondents. The interviews for the first wave were conducted between 18 October and 7 November 2001. A combination of systematic sampling and a variant of random digit dialing were used to ensure the inclusion of unlisted phone numbers in the sample. Respondents were randomly selected from within each household. The response rate for the survey was 49.8%.

Data for the second wave were gathered by contacting all participants from Wave 1 of the study. A total of 341 respondents participated in Wave 2 of the study with a response rate of 51.9%. Data for Wave 2 were collected in March 2002.

Measurement.

Demographic Variables. To control for potential confounds, we included four demographic variables in the analyses for H1 and H2. Gender (female = 49.5%) was coded by the interviewer. Age (M = 43.41; s.d. = 16.5; ranges from 18-89) was measured by asking the

respondent's age on the last birthday. Education (M =15.52; s.d. = 2.75; ranges from 7-25) was measured by asking the respondent the highest year of school completed. Income (MDN = $30-50,000) assessed the respondent's estimate of total household income for the previous year.

Media-Use Variables. Three media-use variables, collected during both waves of the study, were used in this analysis: newspaper hard news use, television hard news use, and Internet news use. Newspaper hard news use at Wave 1 (Cronbach's alpha = .94; M = 27.2; s.d. = 10.9) was measured using four 10-point scale items: exposure to international affairs, exposure to national government and politics, attention paid to international affairs, and attention paid to national government and politics. Newspaper hard news use at Wave 2 (Cronbach's alpha = .97; M = 23.2; s.d. = 12.7) used the same item wording from Wave 1.

Television hard news use at Wave 1 (r = .82; M = 14.4; s.d. = 5.3) consisted of two items assessing the respondents' attention to both international affairs and national government and politics.[31] Television hard news use in Wave 2 (r = .84; M = 13.5; s.d. = 4.5) used the same wording as in Wave 1.

Internet use at Wave 1 (r = .68; M = 9.47; s.d. = 6.85) consisted of two items assessing the respondents' use of the Internet to follow news and search for information about politics. Internet use at Wave 2 (r = .75; M = 6.73; s.d. = 6.15) used the same item wording.[32]

Change variables indicating change in media use from Wave 1 to Wave 2 were created for television, newspaper, and Internet use by subtracting values at Wave 1 from values at Wave 2—all show overall declines in media use between the two data collection periods.

Emotion Variables. Emotional responses to the September 11, 2001, terrorist attacks were assessed using a battery of questions designed to tap both negative emotional responses such as anger and fear, as well as more positive responses such as pride and confidence. These items were all measured during the initial wave of the study. Both negative and positive emotional responses were included in this analysis in order to differentiate the impact each has on information seeking. Negative emotion (Cronbach's alpha = .74; M = 24.65; s.d. = 8.03) was composed of four items measuring fear, uneasiness, anger, and frustration. Positive emotion (Cronbach's alpha=.71; M = 18.46; s.d. = 6.58), was composed of three items measuring confidence, hope, and pride. Items were measured on a 10-point scale with 1 being "you have not felt this feeling" and 10 being "you have felt it very strongly."

Learning Behavior Variable. Learning effort (Cronbach's alpha = .86; M = 44.1; s.d. = 13.6) was measured using eight items addressing attempts to learn about different aspects of the terrorist attacks and the events that followed. Respondents were asked to indicate, on a scale of 1 to 10, how often they tried to learn about the terrorist attacks, other terrorist plots, ways to protect themselves, ways the government could protect them, Islamic culture and beliefs, the possibility of a war on terror, U.S. foreign policy, and different opinions on the war on terrorism. These items were measured during the second wave of the study.

TABLE 1

Hierarchical Regression Predicting Learning Behavior

	Learning Behavior
Demographics	
Gender[a]	.01
Income	.18**
Age	.05
Education	.09
Incremental R^2	5.2%**
Emotional Response	
Negative Emotion	.29***
Positive Emotion	.07
Incremental R^2	9.7%***
Total R^2	14.9%***

[a] Male = 1.

* $p<.05$, ** $p<.01$, *** $p<.001$

Note: Values given are final standardized coefficients.

Results

Hierarchical multiple regression analysis was used to test H1 and H2. For the regression analysis, demographics were included as controls in a first block with a second block used to test the unique additional variance accounted for by positive and negative emotion. The remaining hypotheses were tested using partial correlations controlling for demographics that show the relationship between change in media use and efforts to learn.

Table 1 shows the results of the first of these analyses, testing the predictors of effort to learn about the terrorist attacks. In addition to demographics, negative and positive emotion were included as possible predictors. In support of H1, negative emotion ($b = .29$; $p < .01$) was a significant positive predictor of effort to learn about the attacks. However, positive emotion ($b = .07$; $p = n.s.$) did not relate to effort to learn, failing to provide support for H2. Aside from emotions, which combined account for 9.7% of the variance for effort to learn, only income was a significant predictor of interest in learning. Specifically, people living in households with larger incomes were more likely to attempt to learn about the attacks.

Table 2 shows the relationship of effort to learn with changes in media use for newspaper, television, and Internet. In support of H3a, change in television news use from Wave 1 to Wave 2 was positively associated with efforts to learn about the attacks and their aftermath ($r = .23$; $p < .01$). H3b was supported as well, with change in newspaper use positively associated with efforts to learn ($r = .26$; $p < .001$). Similarly, in support of H3c, change in Internet use was positively associated with efforts to learn ($r = .30$; $p < .001$). In sum, the findings demonstrated in Table 2 show that when effort to learn was high, there was less of a decrease in media use from Wave 1 to Wave 2.

TABLE 2

Partial Correlation Matrix for Changes in Web, Television, and Internet Use and Effort to Learn Controlling for Age, Race, Gender, and Income

	Web Change	TV Change	NP Change	Learning
Web Change	—	—	—	—
TV Change	.16*	—	—	—
NP Change	.11	.34***	—	—
Learning	.30***	.23**	.26***	—

* $p<.05$; ** $p<.01$; *** $p<.001$; change variables are constructed as change from time 1 to time 2.

Table 2 also shows the relationships between each of the media use change variables. Change in newspaper use and television use was positively associated ($r = .34$; $p < .001$). Change in Internet use was somewhat related to change in television use ($r = .16$; $p < .05$). Internet use was not significantly related to newspaper use, however. This suggests a general similarity in patterns of media use, although the relationship between change in use of traditional media is somewhat stronger.

Discussion

Overall, these results show support for H1 and H3a, H3b, and H3c. Individuals who indicated a stronger negative emotional reaction to the terrorist attacks of September 11 subsequently reported greater efforts to learn about various topics connected to those attacks. However, positive emotional reactions showed no significant relationship with learning about the attacks. Clearly, affect can drive an interest in information. These data show that in the case of a traumatic event experienced through the media, negative feelings were actually linked to a desire to learn even more. Rather than avoiding information about an event that left people feeling angry or upset, those who experienced these negative emotions actually wanted to know more about the causes and consequences of the attack. Although these data do not directly measure how uncertain people felt following the attacks, one factor that could be driving both information seeking and negative affect is uncertainty reduction, a concept typically used to explain behavior in interpersonal contexts.[33]

Individuals who were interested in learning about the attacks turned to media to satisfy that interest. In supporting H3a, H3b, and H3c, the findings show that people who expressed an interest in learning about the attacks decreased their media use at a lower rate relative to those who were not interested. The use of panel data is valuable here because it shows that high levels of media use were not merely correlated with interest. Use of media does not appear to have created interest; rather, people who were more motivated to learn turned to the media

more than those who did not. Of course, given that levels of media use were unusually high immediately after September 11, this increased interest did not necessarily translate to increases in media use. Rather, while the level of media use dropped considerably for those who did not report an interest in learning about the attacks, it remained steadier for people who made efforts to learn.

In addition, these analyses provide insight into the relationship between types of media use. Television news was correlated with both newspaper and Internet information seeking. On the surface it might seem that Internet information seeking, because of its reliance on the written word, would be most similar to newspaper use. This was not the case in these data. One possibility is that individuals substitute use of one of these media for the other, turning either to the Internet or the newspaper to obtain similar kinds of information. Nevertheless, efforts to learn were linked to all three types of media use, suggesting that individuals perceive all three sources can help provide sought-after information. Further exploration of how individuals decide which medium to use in carrying out information seeking (and whether they turn to any medium) would clarify this finding.

In general, these findings provide an interesting expansion of uses and gratifications research. Unlike most traditional research in the area, which has looked at general patterns of gratifications sought, such as an overall need for information, the data presented here consider the effects of a very specific need: information about a major event. Such a specific need may serve as an intermediate step between general gratifications sought and specific media behaviors. Unfortunately, this study does not include a measure of patterns of gratifications sought for media in general. However, it may be that people who typically show interest in learning were especially motivated to learn about this event, which translated more directly to sharp differences in media consumption. Future research might consider this topic. Regardless, these data definitely show that particular needs can drive shifts in media use, moving beyond the mere correlation of broad patterns of interests and uses that characterizes much of the existing literature.

In addition, and perhaps most interestingly, this study reveals a way in which affect can drive news use. This mechanism runs contrary to the small amount of literature that examines emotion and patterns of gratifications sought. Unlike situations in which an individual looks to escape personal problems, the findings presented here show people seeking to find out more about national problems that have created personal emotions. One possible explanation, offered in the literature, comes from interpersonal communication: people may be trying to reduce uncertainty about the September 11 attacks. Faced with a sudden, dramatic change in their environment, individuals likely felt highly uncertain about the world. For some individuals, this uncertainty may have been particularly acute. That acute uncertainty offers a likely explanation for some of the negative affect measured in this study, an expectation backed by the logic of uncertainty reduction theory. Individuals with high levels of negative affect subsequently engaged in greater efforts to learn about the attacks, suggesting they may have at

least perceived their negative emotion to stem from a lack of information. Those efforts to learn, in turn, can easily be seen as efforts to reduce uncertainty and curb negative emotions.

Although these findings are valuable, some reservations are in order. In particular, the measure of interest in the attacks was not ideal. It called on respondents to recall particular efforts to learn about aspects of the attacks; those efforts may have been confounded with general use of media. Furthermore, because individuals were told to recall their overall pattern of behavior, they may have been recalling their heavy use of specific media immediately after the attacks. Although this should only weaken the relationship between interest and change in levels of media use, it could confuse the causal direction between interest and emotion. If individuals used media heavily to learn in the weeks after the attack, this might have driven their negative emotional reaction. Indeed, Cho et al. have found evidence for a link between media use and negative emotion that could be reciprocal.[34] This, of course, would suggest that negative emotion could cause and be caused by an increased interest in learning, as recalled by respondents.

In addition, the dramatic nature of the September 11 attacks leaves open the question of whether more typical news events can create emotional responses, drive interest, and change levels of news use. Anecdotally, many stories exist about how people flock to their televisions during important events, but further empirical investigation of this topic is needed. Beyond that, a future study that again used a panel design but that measured general patterns of gratifications sought as well as specific desire to learn about an important event, with measures administered at each wave of the study, would clarify some of the questions remaining in this study.

Nevertheless, this study revisits uses and gratifications research and provides insight into how people react to dramatic events such as the September 11 attacks. It reinforces the critical role emotion can play in shaping interest in and use of news media and reminds us that people actively decide to seek out information based on their interests, not just because media declare an event important. Furthermore, it suggests that emotion acts through a desire to reduce uncertainty about traumatic events. More than anything, though, this study reinforces the critical role mass media played in conveying information following the dramatic events of September 11.

NOTES

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