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Media, Terrorism, and Emotionality: Emotional Differences in Media Content and Public Reactions to the September 11th Terrorist Attacks

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Research on print and broadcast media shows differences in cognitive and affective responses. We extend that research by combining content analysis and survey methods to examine medium differences in the emotional tone of coverage concerning the September 11 terrorist attacks, and audience differences in emotional reactions to the attacks. A computer-aided content analysis of national television and newspaper transcripts demonstrates that television news was consistently more emotional than print news. Further, a panel survey found use of television news was more

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309

strongly related to positive and negative emotional responses to the attacks than use of newspapers.

In recent decades, scholars have examined differences in effects between exposure to television and exposure to print media. Two key premises underlie this research endeavor. One can be labeled "Medium Theory," which assumes that differences in the formal features of electronic and print media—such as motion, combination of audio and visual tracks, and "live performance" of newsmakers on television—lead to different emotional and cognitive reactions. The other is rooted in sociocultural studies of televised "media events," which argue that television's use of "live broadcasting" and juxtaposition of news reports with dramatic video footage leads to collective experiences—both cognitive and emotional—of a major news event that are uniquely different from the experiences transmitted through print media.

However, claims of between-media differences are often made without explicit connections between media coverage and audience responses. Assertions about differences in effects are often made on descriptions of differences in formal features or differences in production processes between the two types of media without presenting direct evidence of the actual effects of such differences. This study makes an explicit connection. By using computer-aided content analysis and community surveys, this study examines differences in the emotional tones of newspaper and television coverage of the September 11, 2001 terrorist attacks and relates audience use of newspaper and television news to emotional reactions to the attacks.

The terrorist attacks were chosen for this study because the events were universally dramatic and emotionally evocative for an extended period of time, and saturated all mainstream media outlets. A nation-wide survey by the Pew Research Center (2001) showed intense and wide-ranging emotional reactions to the attacks. In addition, some data have shown that the media coverage of the attacks has been decidedly one-sided in presenting the nation, in unison, condemning the terror attacks and coping with the collective trauma (Carey, 2002; Schudson, 2002). These characteristics of the events offer us a unique opportunity to explore between-media differences in both coverage and effects.

Medium Differences and Narrative Emotionality

Researchers from a variety of perspectives and theoretical traditions have argued that television is more emotionally arousing than print media. Inspired by the ideas of Marshall McLuhan (1964), scholars have argued that television, with its combination of audio and visual tracks, its apparent real-life tempo, its nonlinear juxtaposition of video images taken at different times and locales, and so on, interacts with human senses in a unique way. It is thus capable of producing its own forms of thinking and communicating (Meyrowitz, 1985). Some also argue that these tech-

nical attributes interact with market forces to create a unique "media logic," a format of presentation that integrates visual images, tempo, and rhythm in the unfolding of a news story, depictions of personalities, and dramatization of human emotions to make television news qualitatively different from print-based journalism (Altheide & Snow, 1991).

Other scholars have argued for the uniqueness of television by focusing not on its technological attributes but on the social uses of the technology. As Schudson (1982) points out, "[T]he way the technology is used has a relation to, but is not fully determined by, the technology itself" (p. 97). To these scholars, the technological potential of the television medium is cultivated in a market-driven "showbiz" context. As a result, television news coverage is driven by broadcasting organizations' overarching desire for "good visuals," "good stories," and personalities—the key elements for conjuring higher ratings. In routine news coverage, such desire gets translated into "episodic" coverage (Iyengar, 1991), namely, concrete occurrences or events with little contextual or thematic connection. When a major news event occurs, television broadcasting goes "live," creating not only an enormous news hole, as is the case with 24-hour non-stop news coverage (Zelizer, 1992), but also the buzz and excitation in both newsrooms and society (Jacobs, 1996). Live television broadcasts turn celebrity journalists and authoritative figures into "star performers" (Becker, 1995) of an unfolding melodrama. They also turn news events into occasions for collective experiences of emotions (Dayan & Katz, 1992).

Television coverage of the terrorist attacks is said to have all these characteristics, including the networks' 90-hour-plus non-stop coverage, the repeated showing of horrific images and citizens' reactions, and news anchors' controlled but clearly visible displays of emotions as "Americans" (Carey, 2002; Schudson, 2002). Research has provided evidence that in terms of covering events such as terrorist attacks, television news tends to focus on stories about specific acts excluding related historical, economic, or social context (Ansolabehere, Behr, & Iyengar, 1993, pp. 51-53). Iyengar (1991) found that for news coverage of terrorism, episodic reports outnumbered thematic reports by a ratio of three to one. Other content analyses have also identified similar patterns in television terrorism reports (e.g., Altheide, 1987; Paletz, Ayanian, & Fozzard, 1982).

The strengths of the television medium in covering "breaking news" are said to be partly responsible for a subtle but significant shift in the orientation of print media. Newspapers have started to focus on providing in-depth, analytical coverage on existing issues, which has been called the "new long journalism" (Barnhurst & Mutz, 1997). Such in-depth, thematic, and analytical coverage is exemplified by the *New York Times'* coverage of the terror attacks (Schudson, 2002).

These theories provide a foundation to expect major differences in language and tone of television and newspaper coverage of the terrorist attacks. Indeed, the nature of the terrorist attacks as a "what-a-story" news event (Berkowitz, 1992) provided the conditions (including drama, uncertainty, and live breaking stories) that should amplify the emotional differences between television and newspaper content. In

addition, television journalists scrambling for information and reporting live from such scenes as "Ground Zero" and the Pentagon were able to capture the real-time reactions of political leaders and ordinary citizens as the events were unfolding. Much of the verbal content of television coverage was *spoken* "spontaneously" by emotionally-involved individuals rather than *written* deliberately by print journalists. As a result, television coverage was likely to be not only more episodic with clear visual markers of actors and scenes, but also more emotional in terms of verbal expression. Television cameras were also able to reveal the emotional reactions of television journalists who, as Americans, shared a collective sense of shock, grief, and anger. The teary appearance of Dan Rather on *The Late Show with David Letterman* is a good example of how this is likely to happen even though the national networks' coverage of the events was hailed as professional and emotionally restrained (Carey, 2002).

These arguments suggest three types of distinct emotional cues in television coverage: visual grammar (close-ups, zooms, cuts, video graphics, and so on), episodic composition, and emotionally-loaded words. Because this study analyzes television news transcripts, the first type of emotionality was not captured; however, we can still identify the indications of the latter two. Because of the factors described above, we tested the following hypothesis regarding the emotional content of television and print coverage of the September 11th attacks:

H1: The emotional content of television coverage of the September 11th terrorist attacks will be greater than the emotional content of newspaper coverage.

Medium Differences and Audience Emotionality

Scholars have made strong assertions about the distinct processes and effects of exposure to television and newspaper news coverage (Boorstin, 1978; Schwartz, 1981). Indeed, television has been viewed as more emotionally arousing as compared to print media. This is partly due to the technological features of television. As a potent conveyer of vivid images through its use of close-ups, zooms, slow motion, video graphics, and sound, television has the capacity to overcome limitations of time and distance, enabling viewers to feel a sense of "presence," as Lombard and Ditton (1997) put it. This ability to create subjectively "real" experiences is highlighted by Reeves and Nass (1996), who suggest that people respond to emotion-evoking images on television just as they do to similar stimuli in real life (see also P. J. Lang, 1984).

In addition, sociocultural theories of television news coverage contain hints that the same events—in this study, the September 11th terror attacks—might be experienced differently through television compared with newspapers. As discussed above, the distinct norms and patterns of news production in television journalism lead to greater emotionality in tone and verbal expressions in news coverage, which, in turn,

can elicit more emotional reactions from an audience attempting to make sense out of news coverage. Similarly, Roeh (1989) argues that the "romantic and melodramatic storytelling" practiced in broadcast journalism makes television news a vehicle for conveying emotion over information (p. 168). Thus, along with the technological features of television, emotional storytelling in television—which includes the tone, emotional cues, and verbal expressions—is also a crucial feature of television news that can elicit emotional responses. In this sense, we characterize the use of emotional language as a distinct dimension of content features of television messages as compared with print media.

Past research reveals that emotional elements in television coverage elicit emotional responses from viewers, which, in turn, influence processing of television messages (Detenber & Reeves, 1996; A. Lang, Dhillon, & Dong, 1995; Newhagen, 1998). Newhagen (1998), for example, found that compelling images on television news change the way viewers process news messages by eliciting emotional responses. Similarly, Detenber and Reeves (1996) also found that presentation mode and motion manipulation affect both the emotional and cognitive processing of television messages. In sum, this line of research claims that formal characteristics of television messages—emotion-laden images for Newhagen (1998), and motion and image size for Detenber and Reeves (1996)—can affect the emotional and cognitive responses independent of the content.

This paper is different from the previous studies of television effects on emotion in several ways. First, our conceptualization of emotional response is different from past studies. Emotional response is typically conceptualized as an immediate response to the specific characteristics of media messages. This common conceptualization of emotion corresponds to Damasio's (1994) definition of "primary emotion," which is an automated and subconscious reaction to a stimulus. This concept is exemplified in research by A. Lang et al. (1995) who viewed affective valence and arousal as responses to specific experimental stimulus. In this case, emotion is independent of, or a further precedent to, cognition (see Zajonc, 1984).

In this study, however, we consider emotional response as a psychological experience developed later, after the link between initial primary emotion, message characteristics, and situations has been identified and appraised. Our definition is similar to the notion of secondary emotion (Damasio, 1994; see also Frijda, 1986). In this view, emotion is more cognitively-generated and not evident from the specific characteristics of message stimuli (see Lazarus, 1984). This conceptualization permits us to look at both positive and negative emotional responses to the terrorist attacks because we go beyond the immediacy of initial emotional reactions, which may tend toward negative responses, to consider how some audience members may be able to connect their emotional reactions to the horrifying images of the attacks to a broader context. For instance, a primary emotional reaction that is negative may ultimately become a positive emotion, such as pride, once the situational characteristics are assessed (i.e., the images of people volunteering to help and the American flag waving atop the rubble). Thus, the emotional response measured in

this study is not an immediate reaction to the characteristics of mediated messages about the terrorist attacks, but secondary emotional appraisals about the attacks.

Specific to September 11th, in addition to powerful images and emotion-laden language, television also functioned as a key vehicle for collective emotional sharing, as postulated in Media Dependency Theory (Ball-Rokeach & DeFleur, 1976). Although this theory concerns increased dependency on media in general at the time of crisis, its direct extension is that reliance on a particular medium may be a contributory condition of the effects of that medium. In today's media environment, it is fair to say that for emotional needs, people depend on television more. This point is well illustrated by the telling front page of *The Onion*, the national satirical weekly, on the one year anniversary of the September 11th attacks. It asks the question, "Who will bring closure to a grieving nation?" As if suggesting an answer, the eye-catching graphic shows the logos of the six major broadcasters. Based on the notion that television, as a more emotion-laden medium than newspapers, elicits greater emotional responses, we propose the following hypothesis concerning the September 11th attacks:

H2: Television news use will be more highly related to emotional reactions to the terrorist attacks than will print news use.

Methods

To examine differences in the impact of television and print news on emotional responses to the terrorist attacks, both content analysis and survey methods were employed.

Content Analysis

The first phase of analysis examined differences in emotional content between television and newspaper news. Transcripts of television news broadcasts and newspaper stories were analyzed for the one-month period between the September 11th attacks and the start of community survey data collection. This was accomplished using a computer-aided content analysis program, Diction 5.0. The material for this analysis was drawn from the news content of five major television news networks (ABC, CBS, CNN, Fox, and NBC) and two major newspapers (*The New York Times* and *The Washington Post*) using the Lexis-Nexis searchable database. *The Times* and *The Post* were chosen not only because of their proximity to the events that occurred, but also because they target both local and national audiences. In this regard, these two papers are comparable to the national television news coverage that dominated the television networks after the attacks. These papers were not chosen to allow for generalizations to all newspaper content; however, given the events and the time frame from which our content sample was taken, we expect the

news stories in these papers to give an indication as to how most newspapers covered the events.

The sample was constructed by randomly assigning four coders to a set of days within the time frame starting on September 11, 2001, and ending on October 15, 2001—the day the survey went into the field. Coders then gathered news stories from the network or newspaper for the days to which they were assigned. Searches of the Lexis-Nexis electronic news database were conducted using the search phrase, "terrorist attack." All articles and transcripts were collected and stored in text files. Only transcripts and articles more than 100 words in length were used in the final analysis. The main body of each transcript or story was cut and pasted into a text document, a format compatible with Diction 5.0.

Diction 5.0 operates by using a series of databases to code content against pre-existing dictionaries of words representing certain linguistic categories. Coded text can then be compared to norms established for a variety of content domains ranging from newspaper coverage to television transcripts, from e-mail text to telephone conversations, to name a few. Diction 5.0 calculates variables by analyzing the presence of words or phrases that act as indicators of that variable. Output is given in the form of mean frequency scores for how often a variable appears for every five hundred words of a text, as well as the degree to which the test text differs from Diction 5.0's databases. Because values are generated in terms of how a body of text scores relative to one of Diction 5.0's databases, the nature of this output allows for comparisons of scores for two unique content sources (i.e., print content vs. television content).

Diction 5.0 has a number of preset variables that can be used to assess the linguistic content implied by a given text for factors such as aggression, blame, praise, satisfaction, tenacity, motion, and others. The analysis used in this study examined three distinct emotional concepts composed of two variables each. The first concept, *negative emotion*, consisted of the variables, aggression ($M = 6.24$; $SD = 2.30$) and blame ($M = 1.71$; $SD = 1.16$). Aggression implies "forceful action" and was indicated by the presence of words such as "crash," "conquest," "demolish," and "shove." Blame was indicated by the presence of words such as "mean," "stupid," and "cruel." The second concept, *positive emotion*, was composed of the variables, praise ($M = 3.56$; $SD = 2.05$) and satisfaction ($M = 2.11$; $SD = 1.23$). Praise implies the good qualities of a group or entity such as importance and intellect. Praise was indicated by words such as "delightful," "witty," and "vigilant." Satisfaction is associated with positive emotional states and was indicated by words such as "fun," "pride," and "good." The third concept, *emotional intensity*, was composed of the variables, tenacity ($M = 29.81$; $SD = 9.68$) and motion ($M = 4.33$; $SD = 1.24$). Tenacity implies confidence and was indicated by the presence of variants of the verb "to be." Motion implies movement and was indicated by words such as "fly," "leap," and "momentum." We chose to use Diction 5.0's preset categories because they have been validated by past research. However, we acknowledge that using previously constructed categories poses a limitation in that the

preset content categories do not precisely match the emotional responses measured in the survey.

Survey Methods

Survey data for this study employed a two-wave panel design with data collected through the use of telephone interviews. Using a probability sample of Madison, Wisconsin and its surrounding areas, wave 1 yielded a sample of 657 respondents. The interviews for this first wave were conducted between October 15 and November 7, 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%.

Survey data for wave 2 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 were collected in March of 2002. Question wording for variables used in this analysis was consistent from wave 1 to wave 2.

Measurement

Demographic variables. In order to control for potential confounds, we included four demographic variables in this analysis. Gender (female = 49.5%) was coded by the interviewer. Age ($M = 43.41$; $SD = 16.50$; range = 18-89) was measured by asking the respondent their age on their last birthday. Education ($M = 15.52$; $SD = 2.75$; range = 7-25) was measured by asking the respondent the highest year of school completed. Respondents also used a 6-point scale to estimate their total household income for the previous year (median = $30,000-50,000).

Values. In addition to the demographic controls, this study included variables tapping values expected to influence responses to the terrorist attacks. As dispositional factors, individual values and ideology have been theorized to be associated with political thinking, attitudes, and behaviors. Research has shown that values constitute a basis for opinions toward various social events (Ball-Rokeach & Loges, 1994; Sotirovic & McLeod, 2001) and that ideology affects political attitudes (Converse, 1964). Inglehart (1990) suggests the importance of materialism and postmaterialism for political behavior. Research also has found that paternalism and maternalism have a substantial influence on attitudes toward social issues (McLeod, Detenber, & Eveland, 2001; Silver & Weiss, 1992).

Considering the fundamental role of values in shaping attitudinal and behavioral dispositions, this study includes three different value sets as controls: (a) social and economic ideology; (b) paternalism and maternalism; and (c) material and postmaterialist values. Ideology in terms of social issues ($M = 3.50$; $SD = 1.69$) was measured by asking the respondents to indicate how liberal or conservative they were regarding social issues using a 1 to 7 scale with 1 being "very liberal" and 7

being "very conservative." Economic ideology ($M = 3.94$; $SD = 1.56$) was assessed in the same way.

Paternalism was composed of three items assessed on a ten-point scale (Cronbach's $\alpha = .69$; $M = 16.88$; $SD = 6.07$). Respondents were asked to indicate the extent to which their beliefs about the world are better than others (e.g., "I wish that I had more influence to get people to think like I do"). Maternalism was composed of two items (mean inter-item correlation $= .43$; $M = 16.25$; $SD = 3.29$), measuring respondents' concern for others (e.g., "It bothers me greatly to see other people get hurt"). In this case, the Cronbach's alpha value is relatively low (.60), but given the fact that reliability tests are sensitive to the number of items analyzed, the high value of the inter-item correlation between the two variables ($r = .43$) shows this scale to be reliable.

Material values (Cronbach's $\alpha = .69$; $r = .53$; $M = 15.54$; $SD = 3.62$) consisted of two items measuring the importance of maintaining order and economic growth. Postmaterial values (Cronbach's $\alpha = .63$; $r = .46$; $M = 15.73$; $SD = 3.44$) were also composed of two items assessing the importance of preserving personal privacy and providing opportunities for expression.

Media Use. Three media use variables were used in this analysis: newspaper hard news use, television hard news use, and Internet information exchange/seeking.[1] Hard news included items such as news about international affairs, national government and politics, and local government and politics. We considered the impact of the Internet because it provides a special case in that it combines aspects of both television and print media. For the same reason, we did not have specific hypotheses concerning Internet use and emotional reactions. Nonetheless, given its importance as a potential source of news in the aftermath of the attacks, we included it in our models as a control variable. Newspaper hard news use (Cronbach's $\alpha = .93$; $M = 51.66$; $SD = 19.25$) was composed of eight items assessing both the respondents' exposure and attention to hard news content found in newspapers. Television hard news use (Cronbach's $\alpha = .86$; $M = 26.12$; $SD = 9.34$) consisted of four items assessing the respondents' attention to hard television news content. Internet use for information exchange/seeking (Cronbach's $\alpha = .87$; $M = 15.38$; $SD = 10.48$) was constructed from three items assessing how often the respondent used the Internet to communicate with others, follow news developments, and search for information.

Criterion Variables. The criterion variables used in this analysis were positive and negative emotional responses to the terrorist attacks. Emotional responses were assessed using a battery of questions designed to tap both negative emotional responses such as uneasiness, frustration, anger, and fear, as well as more positive-type responses such as pride, hope, and confidence. Items were measured on a ten-point scale with 1 representing "you have not felt this feeling," and 10 representing "you have felt it very strongly." We included both negative and positive emotional responses in these items because of the expectation that some people reacted negatively to the attacks by expressing fear and anger. Other people, however, may have viewed the attacks as a rallying point for the American way of

life and thus reacted with feelings of pride and hope. Initially, factor analysis was used to validate negative and positive emotions as distinct dimensions across survey items. The first factor (Eigenvalue = 2.56) was composed of fear, uneasiness, anger, and frustration and was called "negative emotion." The second factor (Eigenvalue = 1.81), called "positive emotion," was composed of confidence, hope, and pride. The emotion items were summed to form two scales: negative emotion (Cronbach's α = .74; M = 24.65; SD = 8.03) and positive emotion (Cronbach's α = .71; M = 18.46; SD = 6.58).

Table 1
Factor Analysis and Reliability Test

	Factor 1	Factor 2
Afraid	.77	
Uneasy	.75	
Angry	.74	
Frustrated	.74	
Confident		.85
Hopeful		.82
Proud		.71
Eigenvalue	2.56	1.81
% of Variance	36.59	25.80
Cronbach's α	.74	.71
M	24.65	18.46
SD	8.03	6.58

Results

Medium Differences in Emotionality

Our first hypothesis predicted that television coverage of the September 11th attacks would contain more emotional content, both positive and negative, than newspaper coverage of the attacks. Diction 5.0 yielded mean frequency values for the six emotion variables. The results of t-tests indicate a clear pattern that television news transcripts had higher emotion scores than print news stories for five of the six emotion variables. For the negative emotion variable, "aggression," the difference between television and print coverage was not significant. For another negative emotion, "blame," however, the difference was significant (t = 152.78; df = 258; p < .001) in that television news contained more indicators of blame than print coverage.

Results for the positive emotional variables were consistent with the pattern demon-

Table 2
T-test Comparing Emotionality of Television News and Newspapers

Emotional Expressions	Television News ($N = 169$)	Newspaper ($N = 91$)	t-value
Aggression	6.20 (2.85)	6.31 (0.10)	−.38
Blame	2.38 (0.09)	0.47 (0.11)	152.78***
Praise	4.35 (2.11)	2.08 (0.20)	10.29***
Satisfaction	2.41 (1.11)	1.56 (1.25)	5.61***
Tenacity	36.08 (5.41)	18.18 (2.28)	30.14***
Motion	4.56 (1.27)	3.90 (1.07)	4.24***

***$p < .001$
Entries are mean values with standard deviation in parentheses.

strated first by the "blame" variable in that the television text had more emotional language than the print text. For "praise," there is a significant difference ($t = 10.29$; $df = 268$; $p < .001$). Television news included more language indicating praise than newspapers. Similarly, the pattern held for satisfaction ($t = 5.61$; $df = 268$; $p < .001$) with television news having a greater incidence of satisfaction indicators than newspapers.

Differences in non-valenced emotional intensity were also examined as part of this study. Consistent with the pattern established with the negative and positive emotional variables, there is a consistent medium difference for measures of emotional intensity. For the tenacity variable there is a significant difference ($t = 30.14$; $df = 268$; $p < .001$) in that television content had more instances of tenacity than did newspaper content. The pattern also held for the motion variable ($t = 4.24$; $df = 268$; $p < .001$) with television content having more indicators of motion than newspaper content. In total, five of the six tests provide support for hypothesis 1.

Media Effects on Emotional Response

Our second hypothesis predicted that emotional reactions of people who used high levels of television hard news would be associated with stronger emotional reactions to the terrorist attacks than would exposure and attention to print news. To test this hypothesis, we ran hierarchical regression analysis using the media variables to predict positive and negative emotional responses to the attacks and their aftermath while controlling for demographics and values (see Table 3).

For positive emotional responses, demographics (Incremental $R^2 = 5.7\%$; $p < .001$) and values (Incremental $R^2 = 15.5\%$; $p < .001$) accounted for a significant portion of the variance. For demographics, age was a marginally significant positive predictor and education was a marginally significant negative predictor. For values, conservative social ideology and material values were significant positive predictors with maternalism being marginally significant. Postmaterialism, on the other hand,

Table 3
Hierarchical Regression Predicting Emotional Responses: Cross-Sectional Analysis

	Emotional Response to Terrorist Attack Wave 1	
	Positive Emotion	Negative Emotion
Control Variables		
Demographics:		
Gender (Male = 1)	.01	−.12**
Age	.08	−.07
Education	−.08	−.06
Income	.03	−.02
Incremental R^2 (%)	5.66***	2.32*
Values:		
Ideology-Economic[a]	.07	−.06
Ideology-Social[a]	.11*	.01
Paternalism	.01	.04
Maternalism	.07	.22***
Materialism	.31***	.20***
Postmaterialism	−.09*	.06
Incremental R^2 (%)	15.47***	16.14***
Media Use: Wave I		
Newspaper Use	.01	.08
Television News Use	.08	.10*
Online Info-exchange	.01	.08
Incremental R^2 (%)	0.61	2.34***
Total R^2 (%)	21.74***	20.80***

[a]Very conservative = 7
*$p < .05$, ** $p < .01$, *** $p < .001$
Entries are final standardized beta coefficients.

was a significant negative predictor of positive emotional responses. After controlling for demographics and values, the block of media variables (television, newspaper, and the Internet) did not account for a significant portion of the variance.

For negative emotional responses to the attacks (see also Table 3), demographics (Incremental R^2 = 2.3%; $p < .05$) and values (Incremental R^2 = 16.1%; $p < .001$) accounted for significant portions of the variance. Gender was a significant negative predictor in that females were more likely to respond to the attacks with negative emotions. In terms of values, maternalism and materialist values were significant positive predictors. After controlling for demographics and values, media variables accounted for a significant portion of the variance (Incremental R^2 = 2.3%; $p < .001$). Specifically, the greater the exposure to television hard news ($\beta = .10$; $p <$

.05), the stronger the negative emotional response was. On the other hand, neither Internet use for information exchange nor print news use was significantly related to negative emotional responses to the terrorist attacks.

Assessing the Causality

In addition to cross-sectional analysis, our two-wave panel design allowed us to examine the direction of the relationship between media use and emotional responses. While the effects of media use on emotional responses have been well established, it is also plausible that emotional responses drive media use. Moreover, the relationship between media use and emotional response may not be unidirectional, but reciprocal. To better understand the nature and direction of these relationships, a series of hierarchical regression analyses were performed with newspaper, television news, and negative and positive emotional responses to the attacks (criterion variables) at time 2. The variance accounted for by the time 1 variables was controlled in this analysis (see Tables 4 and 5).

Table 4
Hierarchical Regression Predicting Emotional Responses:
Two-Wave Panel Design

	Emotional Response to Terrorist Attack Wave 2	
	Positive Emotion	Negative Emotion
Control Variables		
Demographics		
Gender (Male = 1)	.03	−.04
Age	.15**	−.02
Education	−.08	−.03
Income	−.08	−.01
Incremental R^2 (%)	6.32***	1.01
Emotional Response: Wave 1		
Positive Emotion	.48***	—
Negative Emotion	—	.41***
Incremental R^2 (%)	20.49***	16.90***
Media Use: Wave 1		
Newspaper Use	.03	−.03
Television News Use	.03	.11*
Incremental R^2 (%)	0.61	1.34
Total R^2 (%)	27.42***	19.25***

$*p < .05$, $** p < .01$, $*** p < .001$
Entries are final standardized beta coefficients.

Table 5
Hierarchical Regression Predicting Media Use: Two-Wave Panel Design

	News Media Use Wave 2	
	Newspaper News Use	Television News Use
Control Variables		
Demographics		
Gender (Male = 1)	.03	.08
Age	.11*	.10*
Education	.20***	.14**
Income	.14*	.08
Incremental R^2 (%)	17.69***	6.11***
Media Use: Wave 1		
Newspaper Use	.34***	—
Television News Use	—	.34***
Incremental R^2 (%)	9.72***	12.72***
Emotional Response: Wave 1		
Positive Emotion	.03	−.06
Negative Emotion	.01	.19***
Incremental R^2 (%)	0.10	3.31***
Total R^2 (%)	27.51***	22.14***

*$p < .05$, ** $p < .01$, *** $p < .001$
Entries are final standardized beta coefficients.

First, we ran two parallel hierarchical regression analyses to test the causal effects of media use on emotional responses. In these models, positive and negative emotional responses at time 2 were regressed on newspaper use and television news use at time 1 after controlling for emotion felt by respondents at time 1 (see Table 4). To assess the causal effects of emotional responses on media use, we ran another two parallel hierarchical regression analyses. In these analyses, newspaper use and television news use at time 2 were regressed on positive and negative emotional responses at time 1 after controlling for media use at time 1 (see Table 5). These analyses examined the causal direction between media use and emotional responses to see if media use was an antecedent to emotion, if emotion was an antecedent to media use, or both.

Consistent with hypothesis 2, the results indicated that heavier television news users sustained a higher level of negative emotional reactions to the terrorist attacks than heavier newspaper users. That is, the greater the exposure to television news in time 1, the stronger the negative emotion respondents showed at time 2 ($\beta = .11$; $p < .05$), even after controlling for the strongest predictor, negative emotion felt by respondents at time 1 ($\beta = .48$; $p < .001$). For positive emotional responses,

however, no significant effect of television news use was detected. Notably, neither newspaper exposure nor Web use in time 1 was related to positive or negative emotional reactions at time 2 when emotions felt by respondents at time 1 were controlled. The results indicate that television news use caused respondents' negative emotional responses whereas other media uses did not.

Simultaneously, it was found that respondents' negative emotional responses to the attacks at time 1 had a significant positive effect on television news use in time 2 (β = .19; p < .001), even after removing the influence of time 1 television news use (β = .34; p < .001). That is, those exhibiting stronger negative emotions were most likely to sustain their television news use. However, positive emotional reactions did not have such effects on television use. In addition, neither positive nor negative emotional response in time 1 was a significant predictor of newspaper and Web use in time 2 when controlling for previous use of these media. In sum, the causal analyses demonstrate that the relationship between television news use and respondents' negative emotions is reciprocal while newspaper use has no causal relationship with emotional responses. In contrast, positive emotion was not found to be causally linked to television news use.

Discussion

This study set out to investigate the differing effects of television news and newspaper use on people's emotional responses to the September 11th terrorist attacks. First, we identified differences in the emotional cues between newspaper and television news coverage of the terrorist attacks. We expected that television news would contain more emotional language than newspapers, independent of television's visual imagery. Then, based on expected differences in content, we hypothesized that television news would elicit stronger emotional responses to the September 11th terrorist attacks than newspapers.

Findings support the first hypothesis, suggesting that television news content was more emotional than newspaper coverage in terms of the language used to report on the terrorist attacks and their aftermath. Given the findings that visual imagery is a strong element in terms of eliciting emotions (e.g., Detenber & Reeves, 1996; Newhagen, 1998), the results of this study—that television news transcripts contained stronger emotional cues than newspaper stories—suggest that the visual and audio channels of television news operate in tandem.

Our second hypothesis was also supported, indicating that respondents who relied on television news experienced more positive and negative emotions toward the terrorist attacks. In contrast, newspaper use was not a significant factor in explaining people's emotional responses to the attacks. In addition, results from panel data indicate that the relationship between television news use and emotional reactions to the attacks is at least partly reciprocal. Television news use was a positive predictor of negative emotional response at time 2 even after controlling for the

emotional responses at time 1. We also found that negative emotional responses had a significant positive effect on television news use at time 2 even after removing the influence of time 1 television use.

These findings provide a unique understanding of television's influence on emotional responses to public events. It appears that television news leads people to become emotionally aroused, with these activated emotional responses concurrently driving future television news use. This is particularly true for negative emotional responses to the attacks. Overall, the findings provide evidence that television news is different from newspaper news not only in communication modality but also in its use of language. Furthermore, the differences both in modality and content generate differential effects on the audience.

The significance of this study lies in its integration of Medium Theory, with its focus on formal features, and research on content differences across print and broadcast media. Medium Theory considers only the formal differences in media. As a result, the impact of specific content is often overlooked. This paper demonstrated that there are distinct differences in the linguistic characteristics of newspaper and television news stories covering the same event. Additionally, the survey results from this analysis are consistent with the observed medium differences in that television use was a significant predictor of both negative and positive emotional reactions to the attacks whereas use of print media was not. By considering content differences, this paper provides a fuller explanation for why different media have different effects on audiences.

Implications for Emotional Differences in Media

The results of this study have implications that go beyond identifying different affective reactions for television and newspaper news users. This study suggests that political communication research should consider the role of emotional responses in public opinion and political judgment. Political knowledge has been a central concept as a dependent variable of political communication, and also as an independent variable for political behavior research. Compared to knowledge, emotion has been relatively neglected in studies of political communication (for exceptions, see Bucy & Newhagen, 1999; Lanzetta, Sullivan, Masters, & McHugo, 1985. However, this study found that what people gain from watching television news certainly includes emotional responses. Thus, we need to examine the role of emotional responses as a consequence of political communication processes and also consider it as antecedent to political cognition and behavior. For instance, emotional response to a social issue may be the result of exposure to televised news coverage, which then motivates political action and civic participation. Based on the literature in political psychology, we can also expect that emotional responses can function as a heuristic device in forming opinions and attitudes. Given the increasing role of television in political processes, the findings in our study suggest that

emotional response deserves a more thorough examination in future research in political communication.

Limitations and Suggestions for Future Research

This study examines content differences between print and television news under the assumption that the formal features of each would act to shape the respective content of each media. Accordingly, both the formal features and the content of a given medium have an impact on the user. Setting content differences as a conceptual mediator of the influence of formal features, we tried to examine the process in which different media generate different effects. This study, however, has not fully tested that model as we cannot say with any certainty whether the differences we found between self-reported television and newspaper use were due to formal differences or content differences. As a result, the nature of our study design has limited our ability to pinpoint the cause of the difference in effects between television and newspaper use.

Other factors may have limited our ability to see differences attributed to media use. First, the September 11th attacks likely produced unusually emotional news coverage in both print and broadcast media. This may have produced less distinct differences between media in terms of inherent emotional content. Moreover, the September 11th terrorist attacks seized the attention of the nation, and may have altered the traditional viewing patterns of the audience. People watched more television and read more newspapers in the aftermath of the attacks. Increases in the use of all media may have made exposure patterns less distinct. In other words, audience members were using atypically large doses of both television and print media. The fact that viewing patterns between television-dependent and newspaper-dependent media users were less distinct may have actually muted the nature of our observed effects by reducing the natural variation in media exposure patterns.

Given the nature of the content analysis used in this study, we may have missed certain characteristics of print and broadcast media that may further differentiate the emotional differences between these two media. Future research would benefit by including audio, video, and photographic elements of news coverage.

Further, future research should also consider both the content of the Internet as well as its impact on emotion. This will become more important as more people turn to the Internet to communicate with and learn about the world. Our data provide some evidence indicating that Internet use was not significantly related to either positive or negative emotional reactions to the terror attacks. This is not surprising for several reasons. First, the content of Internet news sources is far richer and longer, and more analytic and diverse, than that of television news mainly because there are no space limits on the Internet (Graber & White, 1999). Moreover, most of the information on the Internet is text-based, allowing users to engage in more thorough processing of the content. In addition, Internet users often go online to get more detailed information on stories first covered in the traditional media, particularly television news (Pew Research Center, 1999). This motivated use of Internet news

will result in more elaborative processing of the information. Taken as a whole, the features of Internet news sources and the patterns of Internet use should result primarily in cognitive rather than emotional effects. Building on these findings, future research needs to examine how the formal features and content of the Internet compare to those of television and print.

Note

[1] Patterns of intercorrelation among media use variables are very similar in wave 1 and 2: Newspaper use and television news use were correlated with each other strongly, with r's of .41 and .47 for waves 1 and 2, respectively. However, informational use of the Internet was relatively weakly correlated with newspaper use ($r = .12$ for wave 1 and $r = .02$ for wave 2) and television news use ($r = .10$ for wave 1 and $r = .13$ for wave 2). Despite these correlations, multicollinearity statistics indicate that media use variables are largely independent regressors in the regression equations with the values of tolerance ranging from .72 to .88 and with the value of variance inflation factor (VIF) ranging from 1.14 to 1.40.

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