

Media, Education and Anti-Americanism in the Muslim World

Matthew A. Gentzkow and Jesse M. Shapiro

America has an image problem. Only 1 percent of people surveyed in June 2003 in Jordan or the Palestinian Authority expressed a favorable opinion of the United States. Favorability ratings elsewhere in the Middle East were almost all below 30 percent. Osama bin Laden was among the top three leaders most often trusted to “do the right thing” by survey respondents in Indonesia, Jordan, Morocco, Pakistan and the Palestinian Authority (Pew Research Center, 2003). Responses to similar questions by Americans reveal that the feeling is mutual: in a recent poll, only 24 percent of Americans expressed favorable views of Muslim countries overall (*USA Today*, 2002).

Moreover, this antagonism is not only driven by opposed interests or disagreement about the moral or ethical meaning of the events that have transpired. It also reflects radically different, and often distorted, perceptions of the facts themselves. In results we report below, 78 percent of respondents in seven Muslim countries said that they do not believe that a group of Arabs carried out the September 11, 2001, attacks on the World Trade Center. Likewise, according to the *Washington Post* (2003), 69 percent of Americans believe it is “somewhat” or “very” likely that Saddam Hussein was personally involved in the attacks, despite the absence of any evidence to that effect. In September 2003, 20 percent of Americans said that Iraq had used chemical or biological weapons against American troops, again clearly contradicting the available evidence (Kull, Ramsey, Subias, Lewis and Warf, 2003).

This picture resembles a phenomenon highlighted 80 years ago by Walter Lippmann (1922): “[W]hen full allowance has been made for deliberate fraud, political science has still to account for such facts as two nations attacking one

■ *Matthew A. Gentzkow and Jesse M. Shapiro are graduate students in economics, Harvard University, Cambridge, Massachusetts. Their e-mail addresses are gentzkow@fas.harvard.edu and jmshapir@fas.harvard.edu.*

another, each convinced that it is acting in self-defense. . . . They live, we are likely to say, in different worlds. More accurately, they live in the same world, but they think and feel in different ones.”

In this paper, we use data from a survey of over 10,000 respondents in nine predominantly Muslim countries to examine the correlates of these divergent perceptions, focusing in particular on media use and education.

We first examine how individuals’ overall quantity of media use and years of education relate to the accuracy of their beliefs, as well as to their favorability toward the United States. We find no effect of overall media use and at best a weak effect of total education. We then ask how these relationships differ among different media—specifically the satellite networks Al Jazeera and CNN International—and among education systems with different characteristics. We find that the effects of these specific information sources appear to be strong and widely divergent.

Some policymakers have suggested that increasing access to information in a broad sense will improve relations between the Muslim world and the west. For example, George Bush attributes negative attitudes like those cited above to America’s failure to adequately convey “the compassionate side of the American story,” pointing to the example of North Korean citizens who are kept unaware of the American food aid supplied to their country (State Department, 2002). World Bank President James Wolfensohn highlights “education and knowledge exchange” as a key to fighting terrorism and Nobel Peace Prize winner Elie Wiesel says: “The roots of terrorism nest in . . . the will to live in ignorance. . . . Education is the way to eliminate terrorism” (World Bank, 2003; Jai, 2001). The finding that overall education and media use are uncorrelated with attitudes toward the United States suggest that such predictions should be treated with caution.

Other writers have argued that increasing the supply of information need not lead to a greater convergence of beliefs. Glaeser (2003), for example, notes numerous examples of beliefs that are sharply and persistently different across countries. The study of confirmatory bias in psychology—most notably Lord, Ross and Lepper’s (1979) study of views on the death penalty—shows that giving additional information to subjects with different prior opinions can lead to divergence rather than convergence of beliefs. Recent models exploring the formation of beliefs emphasize that the incentives of information providers to manipulate public perceptions may play a crucial role (Mullainathan and Shleifer, 2003; Becker, 2001; Glaeser, 2002). Our finding that different media sources and education systems have widely divergent effects on beliefs lends support to this hypothesis.

The complexity of the setting and the limitations of a single cross-sectional data set make it impossible to separate the causal relationships among the variables we consider in a definitive way, and the findings should be interpreted with caution. Access to media and education may be shaping beliefs, but people with certain beliefs may also be more likely to seek out certain kinds of media and education. Even after taking such ambiguity into account, however, the results from a range of

different measures and specifications paint a surprisingly consistent picture that we believe sheds light on the role of information in shaping attitudes and beliefs.

Key Survey Questions

Our first step is to identify specific survey questions relevant to the issues sketched above. Our data come from the 2002 Gallup Poll of the Islamic World (Gallup Organization, 2002). The survey consists of 10,004 responses from nine predominantly Muslim countries: Pakistan (2,043 responses), Iran (1,501), Indonesia (1,050), Turkey (1,019), Lebanon (1,050), Morocco (1,000), Kuwait (790), Jordan (797) and Saudi Arabia (754). Other than a slight oversampling of urban households, the samples are designed to be representative of the adult (18 and over) population in each country.¹ Interviews were conducted in person in the respondent's home by local survey companies. The methodology was designed to be sensitive to local norms, for example, by having female interviewers for female respondents. The questions cover a number of areas, including basic demographics, frequency of media use, media choice, personal and religious values, attitudes toward the West, attitudes toward contemporary and historical figures and attitudes toward particular countries.

Fn1

T1

Table 1 summarizes the responses to four questions about knowledge and attitudes on which we will focus. The first question is intended to be a measure of politically neutral knowledge. It is drawn from a set of questions asking respondents' knowledge and opinion of various world leaders: Kofi Annan, Mahatma Ghandi, Nelson Mandela, Salahddine Al Ayyoubi, Tony Blair, George Bush, Amro Mousa and Kamal Attaturk. Many of these leaders are either strongly associated with the history of particular countries in our sample (for example, Ghandi for Pakistan and Attaturk for Turkey) or are strongly associated with the United States (like Bush and Blair). As a neutral measure, we focus on knowledge of Kofi Annan: we code a binary variable equal to 1 if the respondent expresses an opinion about Kofi Annan and 0 if the respondent is "not aware of" him. Overall, about 70 percent of respondents claim to be aware of Kofi Annan; the results for each country appear in the first column. All the results reported below are qualitatively unchanged if we replace the Kofi Annan variable with a measure of the total number of leaders of whom the respondent is aware.

Our second question, a measure of politically loaded information, comes from the following question: "According to news reports groups of Arabs carried out attacks against USA [*sic*] on September 11th. Do you think that this is true or not?" We code a binary variable equal to 1 if the respondent believes the news reports. Roughly 80 percent of the overall sample don't believe that Arabs committed the September 11 attacks, and the breakdown by country is shown in the second

¹ Further details on sample selection and survey methodology are available at <http://www.gallup.com/poll/summits/islam.asp>.

Table 1
Summary of Key Variables

	<i>Know Who Kofi Annan Is (Percentage)</i>	<i>Believe Stories About 9/11 (Percentage)</i>	<i>9/11 Attacks Unjustifiable (Avg.)</i>	<i>Favorability Toward U.S. (Avg.)</i>
Lebanon	96.0	42.4	0.75	0.47
Kuwait	96.5	11.1	0.52	0.44
Saudi Arabia	NA	NA	NA	0.28
Jordan	94.6	NA	NA	0.30
Turkey	37.8	51.5	0.81	0.49
Pakistan	53.0	4.1	0.68	0.20
Iran	60.4	20.3	0.77	0.22
Morocco	63.5	12.8	0.81	0.40
Indonesia	88.9	21.6	0.88	0.49
Total	69.9	21.5	0.75	0.35

Notes: Observations with missing data have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers.

column of Table 1. A separate open-ended question on the same topic provides additional evidence that these answers reflect radically different theories about the facts of September 11: those answering “no” most often cited the United States itself or Israel as behind the attacks, while the share of respondents answering “yes” correlates almost perfectly across countries with the share of respondents citing Al Qaeda.

Our primary measure of attitudes toward anti-American terrorism, with results shown in the third column, comes from the following question: “There are many acts some people may do in life. I will read out to you a number of these acts. I would like you to indicate to which extent it can be morally justified Events of September 11 in USA, that is, the attack on the World Trade Center and the Pentagon.” Respondents report an answer from 1, cannot be justified at all, to 5, completely justifiable. We recode the response to vary from 0 to 1 by subtracting the response code from 5 and dividing the result by 4. Only about half of respondents consider the September 11 attacks completely unjustifiable, and in Kuwait only about one-fourth of the population feels that way.² This question was not asked in Jordan and Saudi Arabia, so those countries will be omitted when our statistical analysis uses this variable.

We will also make some use of a question about general attitudes toward the United States, shown in the fourth column: “In general, what opinion do you have of the following nations? . . . The United States.” Respondents answer from 1, very

² Given the range of beliefs in our sample about the facts surrounding the September 11 attacks, it is not entirely obvious how responses about their moral justifiability should be interpreted. Saying the attacks are justifiable correlates strongly with other measures of anti-U.S. attitudes, however, consistent with the interpretation that this measure reflects general opinion about terrorist attacks on the United States.

unfavorable, to 5, very favorable. Again, we rescale the response to vary from 0 to 1. Though general opinions about the United States are of less obvious policy relevance than feelings about terrorism, this question was asked in all nine countries, thus allowing us to make more complete use of the available data.

News Media

Frequency of Media Use

One straightforward starting point to measuring the effects of information on attitudes is to exploit variation in overall exposure to news media. Survey respondents were asked three questions of the form: "How frequently do you {read daily newspapers/watch TV/listen to the radio} these days regardless of how much time you spent . . . in an average day?" Possible responses were 7 days a week, 6 days a week, . . . , 1 day a week, less often than one day a week or do not read/watch/listen. We have coded measures of media use to indicate the number of days a week the medium is used, with "less often" coded as .5 and "do not use" coded as 0.

T2

Table 2 shows the results of regressions of our four key knowledge and attitude measures on these three measures of media use frequency. Each cell presents the coefficient and standard error from an ordinary least squares regression of the form:

$$\text{Dependent Variable} = \alpha + \beta(\text{numbers of days a week read/watch/listen}) + X_\gamma + \varepsilon,$$

where X is a set of controls including country dummies and dummies for a set of demographic characteristics: age, schooling, urban/rural status, gender and marital status.

The results in column 1 show that all three media types have large and statistically significant effects on the likelihood of knowing who Kofi Annan is. For example, reading a daily newspaper one more day per week is associated with a 2.3 percent greater chance of knowing who Kofi Annan is, and this effect is statistically significant at the .1 percent level. Apparently, respondents who make greater use of news media are better informed about world events, even though many of these countries have tight restrictions on media ownership (Djankov, McLiesh, Nenova and Shleifer, 2003) that have only recently been eroded by the rise of satellite television (Alterman, 1998).

In contrast, column 2 shows that the probability of believing that Arabs carried out the attacks of September 11 is only weakly increasing in the use of newspaper, television and radio. The point estimates are small, and none of the effects is statistically significant, suggesting that increased use of news media may not substantially reduce misinformation about politically charged events. Overall, the results in columns 3 and 4 suggest no consistent effect of media use on attitudes. Within each attitude measure, effects vary in sign and magnitude. None of the

Table 2
Effects of Media Use

	<i>Know Who Kofi Annan Is</i>	<i>Believe Stories About 9/11</i>	<i>9/11 Attacks Unjustifiable</i>	<i>Favorability Toward U.S.</i>
Newspaper	0.0225 (0.0020)	0.0014 (0.0022)	0.0021 (0.0019)	-0.0007 (0.0015)
	0.0197 (0.0029)	0.0026 (0.0020)	0.0063 (0.0024)	-0.0038 (0.0019)
Television	0.0090 (0.0016)	0.0020 (0.0019)	0.0002 (0.0015)	0.0021 (0.0013)
	<i>N</i>	9203	7583	8102
				9607

Notes: Observations with missing data on dependent variables or key independent variables have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers.

media use measures has a statistically significant effect in the same direction on both opinions about September 11 and general attitudes toward the United States.

Thus, increased use of news media in this data is associated with more politically neutral knowledge, but neither less misinformation nor more pro-U.S. attitudes. In the next subsection, we investigate whether the source of information might help to explain this difference, using data on the choice of television news outlet.

Source of News

In this subsection we address the association between attitudes and source of news, focusing on the satellite networks Al Jazeera and CNN International.³ CNN International is by far the most popular western news network broadcasting in the countries in our sample, claiming to reach more than 10 million households and hotel rooms in the Middle East. Programming in the region originates from London and is almost entirely in English.⁴ Al Jazeera, an Arabic-language network broadcasting out of Qatar, is the most popular satellite news network in our sample countries and claims to reach 35 million viewers as of 2001 (Campagna, 2001). Broadcasting since 1996, Al Jazeera has been hailed for combining high-quality reporting with a willingness to present alternative viewpoints on contentious issues. For example, Campagna (2001) writes: "Al Jazeera has quickly become the most watched—and most controversial—news channel in the region, winning over viewers with its bold, uncensored news coverage, its unbridled political debates, and its call-in-show formats that tackle a range of sensitive social, political, and cultural

Fn3

³ Evidence detailed in Kull, Subias, Lewis and Warf (2003) suggests that source of news is also correlated with the misperceptions of recent events among Americans.

Fn4

⁴ This information was obtained from http://cnnasiapacific.com/cnni/cnni_corpinfo/cnn/index.asp. September, 2003.

issues.” It is, for example, one of the only Arab stations to have aired interviews with Israeli officials. With most of its senior staff having lived or been educated in the west (Alterman, 1998), Al Jazeera is probably the closest thing to independent television journalism currently available in Arabic.

While Al Jazeera and CNN are similar in certain respects, the viewpoints implicit in their coverage are very different. Al Jazeera has been criticized in the west for taking an anti-American and even a pro-terrorist stance in its reporting. Its coverage of the Palestinian conflict and the wars in Afghanistan and Iraq are said to have strongly emphasized the suffering of civilians with limited coverage of the American or Israeli points of view (Ajami, 2001; Campagna, 2001; Waxman, 2001). With regard to the events of September 11, Al Jazeera has frequently replayed taped messages of Osama bin Laden (Campagna, 2001), reported that Jews were warned in advance of September 11 not to go to work in the World Trade Center (*New York Times*, 2001) and broadcast an interview with a French author who claims the towers were destroyed by U.S. missiles (United Press International, 2002).⁵ According to one Middle East scholar, “Al Jazeera . . . may not officially be the Osama bin Laden Channel—but he is clearly its star. . . . The channel’s graphics assign him a lead role. . . . A huge, glamorous poster of bin Laden’s silhouette hangs in the background of the main studio set” (Ajami, 2001).

CNN, on the other hand, is frequently seen as giving a pro-Western slant to the news. Like many U.S. networks, CNN prominently displayed an American flag on its screen for more than a year after the September 11 attacks, although CNN International dropped its use of CNN domestic coverage soon after September 11 in response to controversy over its use of patriotic symbols (Lambe and Begleiter, 2002). In terms of the war in Iraq, a study of CNN’s coverage found that only 3 percent of U.S. guests interviewed expressed opposition to the war, compared with 27 percent opposition in the American public as a whole (Rendall and Broughel, 2003). The coverage of this war on CNN and Al Jazeera was analyzed by a *Wall Street Journal* media critic who concludes, “It’s the same conflict seen through two different lenses. CNN plays up technology and strategy and 3-D maps analyzed by retired generals. There are few civilians other than embedded reporters. On Al Jazeera . . . the conflict is messy, bloody and chaotic. Soldiers fire from dusty trenches; injured children fill hospitals” (Nelson, 2003).⁶

Both networks are freely available to any household with access to a satellite in all sample countries except Iran, in which satellite television is illegal, and Indonesia, in which the networks are available only through paid subscription services. The cost of a satellite dish is less than \$100, and dishes are “as common in Cairo

⁵ However, as Grant (2001) reports, “Yosri Fouda, deputy executive director of the London bureau of the television station Al-Jazeera, dismisses these conspiracy theories as the work of ‘half-educated people.’”

⁶ These quotes refer to the domestic broadcast of CNN, and our statistical results pertain to CNN International. Although the programming and coverage on the two networks are quite similar, they may not be identical in all the respects mentioned here.

Fn5

Fn6

slums as they are in Dubai mansions" (Ajami, 2001). Many people who do not have dishes at home watch the channels in public places such as cafes and restaurants. Of course, not everyone in our sample understands the languages in which these networks are broadcast, an issue to which we return in the next subsection.

Our study of these news networks takes advantage of two questions asked in the Gallup poll: "Which TV channel would you tune first nowadays to catch up on current world affairs? Which other TV channels did you watch at anytime in the past seven days?" Respondents were permitted to give any answer they liked; the surveyor did not prompt with a list of networks. We divided respondents into four categories: those who watched neither CNN nor Al Jazeera in the past seven days, those who watched CNN only, those who watched Al Jazeera only and those who watched both CNN and Al Jazeera.

Table 3 shows breakdowns of these four categories by country. The low viewership of Al Jazeera in Turkey, Pakistan, Iran and Indonesia is expected, since Arabic is not widely spoken in these countries; they are consequently dropped in this section of the analysis. In the remaining countries, both networks are popular, with 14 percent of all respondents watching both Al Jazeera and CNN in the last seven days and only 35 percent watching neither network.

To examine the relationship between viewership of these networks and our dependent measures, we estimate regressions of the form of the earlier equation with dummy variables for three of the four viewership categories, replacing the media variables on the right-hand side. The dummy for the "neither" category is omitted from the models, so the coefficients can be interpreted as measuring the attitudes or knowledge of those in a particular category *relative* to respondents who watched neither CNN nor Al Jazeera in the past seven days. All specifications include controls for education, gender, age, urban/rural status, marital status and country of residence as in Table 2.

Column 1 shows that those respondents who watch either or both networks are more likely to know Kofi Annan's identity than those who watch neither. The coefficient on "Al Jazeera only" is strongly statistically significant. There is no statistically significant difference in this measure of knowledge between those watching CNN only and those watching Al Jazeera only, and those watching both are about as informed as those watching Al Jazeera alone. This finding is consistent with the view that, while these two networks spin the news very differently, they both provide similar amounts of basic information.

Column 2 shows that for more politically charged beliefs—the propensity to believe stories that Arabs carried out the September 11 attacks—the picture is quite different. Most strikingly, those who watched only Al Jazeera are significantly *less* likely to believe these reports than those who watched neither network. One might have expected, on the contrary, that the sources of information available to those who watch no satellite news—stories heard from friends, reports in state-controlled media—would be the most conducive to maintaining inaccurate beliefs, particularly in light of the results from column 1. The other coefficients in column 2 show that compared to respondents who watched neither network, those who watched

Table 3
News Network Viewership by Country

	<i>Neither</i> (Percentage)	<i>CNN Only</i> (Percentage)	<i>Al Jazeera Only</i> (Percentage)	<i>Both</i> (Percentage)
Lebanon	36.9	5.1	46.3	11.8
Kuwait	7.9	2.6	46.5	43.1
Saudi Arabia	18.1	1.2	68.8	11.9
Jordan	39.4	1.1	52.7	6.9
Turkey	78.0	22.0	0	0
Pakistan	78.0	22.0	0	0
Iran	99.0	0	1.0	0
Morocco	61.6	0.2	36.6	1.6
Indonesia	99.4	0.6	0	0
Total	61.9	6.5	24.5	7.1
Total excluding Turkey, Pakistan, Iran and Indonesia	34.6	2.2	48.9	14.3

Notes: Observations with missing data have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers.

CNN only are more likely to believe reports that Arabs carried out the attacks (though the difference is not statistically significant), and those who watched both networks are slightly less likely to believe. Though the direction of causality in these regressions remains ambiguous, the results suggest that the two networks may have very different effects on beliefs.

Columns 3 and 4 show that the relationship of the two networks to attitudes—both toward terrorism and toward the United States—are also sharply divergent. Respondents who watched Al Jazeera only are significantly less likely to consider the attacks of September 11 unjustifiable, as are respondents who report having watched both CNN and Al Jazeera. The coefficient on watching CNN alone in this regression is not significantly different from zero. In terms of overall favorability toward the United States, CNN viewers are significantly more favorable, and Al Jazeera viewers significantly less favorable, than those who watched neither network. Surprisingly, those who watched both networks express less favorable attitudes toward the United States than those who watched Al Jazeera only, although this difference is not statistically significant.

Language and Reverse Causality

As we have stressed, the direction of causality in the regressions above is ambiguous. The relationship between media and attitudes may simply reflect the fact that those with relatively pro-U.S. attitudes are more likely to watch CNN, and those with relatively anti-U.S. attitudes tend to watch Al Jazeera. Reverse causality is less obviously a problem in regressions with factual knowledge on the left-hand side, but it is possible that some omitted variables influence both media choices and knowledge.

In this section, we address this concern by using country-level linguistic differences as a source of exogenous variation in access to Al Jazeera. Because the network broadcasts only in Arabic, residents of countries where Arabic is not widely spoken are effectively excluded. We combine this country-level difference with individual-level measures of attentiveness to news. If attention to the news has different effects on attitudes and beliefs in Arabic-speaking countries and non-Arabic speaking countries, we would interpret this as an effect of the Arabic-language media, and in particular of Al Jazeera. Based on the results of the previous subsection, we would predict that more current-events savvy respondents in Arabic-speaking countries will tend to exhibit less pro-U.S. attitudes, whereas the effect of current events interest in non-Arabic speaking countries will be positive or neutral.

While this specification is unlikely to be contaminated by reverse causality, it does raise other concerns. Ideally, we would have a source of exogenous variation in access at the individual level. Using country-level variation means that the media effect might be conflated with other differences between Arabic and non-Arabic countries. However, differences in overall beliefs or attitudes between the countries would not alone bias the results. The omitted variables would have to affect the beliefs and attitudes of those who are interested in current events *relative* to those in the same countries who are not. Such confounding effects may exist, and the results should therefore be interpreted with caution. But to the extent that the results in this section are consistent with those in Table 4, they will provide additional evidence that the association between media use and our dependent measures is causal.

The measure of attention to current affairs comes directly from the survey. Respondents were asked: “With respect to how much attention you pay to current affairs, would you say that you do not pay much attention (code 1), . . . , pay a lot of attention (code 5).” For ease of interpretation, we have again recoded the response to this question to vary from 0 to 1. The extent to which Arabic is widely understood is also relatively easy to code. In five of our countries—Lebanon, Kuwait, Saudi Arabia, Jordan and Morocco—Arabic is the first language and is spoken by virtually everyone. In the remaining four countries—Turkey, Pakistan, Iran and Indonesia—Arabic is used to some extent, especially for religious purposes, but the majority of people could not understand a news broadcast in Arabic. We therefore code the former countries as Arabic-speaking and the latter as not. This division is consistent with the results shown in Table 3: the fraction watching Al Jazeera in the Arabic-language countries is high, whereas it is essentially zero in the non-Arabic countries.

We estimate regressions with our same four questions as the dependent variables and current events interest as our primary independent variable, and allow the coefficient on current events interest to vary depending on whether the respondent is in an Arabic-speaking country. Table 5 shows the results of this exercise. The first column shows that the relationship between current events interest and politically neutral knowledge is weakly positive, with an almost identical coefficient in Arabic and non-Arabic countries. As in Table 4, this picture

T4

T5

Table 4
Effects of News Source

	<i>Know Who Kofi Annan Is</i>	<i>Believe Stories About 9/11</i>	<i>9/11 Attacks Unjustifiable</i>	<i>Favorability Toward U.S.</i>
CNN only	0.0447 (0.0230)	0.0718 (0.0548)	-0.0098 (0.0396)	0.0863 (0.0324)
Al Jazeera only	0.0727 (0.0125)	-0.0739 (0.0201)	-0.0762 (0.0163)	-0.0414 (0.0129)
Both CNN & Al Jazeera	0.0725 (0.0134)	-0.0126 (0.0276)	-0.1146 (0.0229)	-0.0632 (0.0185)
<i>N</i>	3,637	2,761	2,740	4,259

Notes: Observations with missing data on dependent variables or key independent variables have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers. Results exclude respondents living in Turkey, Pakistan, Indonesia or Iran and watching television fewer than seven days a week. All specifications include dummies for education, gender, age, urban/rural status, marital status, and country of residence, using the categories shown in Appendix Table 1, which is saved beside the copy of this article posted at the website (<http://www.e-jep.org>).

Table 5
Language, Knowledge and Attitudes

	<i>Know Who Kofi Annan Is</i>	<i>Believe Stories About 9/11</i>	<i>9/11 Attacks Unjustifiable</i>	<i>Favorability Toward U.S.</i>
Coefficient on current events:				
Arabic	0.1819 (0.1271)	-0.0398 (0.0743)	-0.0832 (0.0197)	-0.1604 (0.0482)
Non-Arabic	0.1748 (0.1921)	0.0472 (0.0164)	0.0171 (0.0238)	-0.0318 (0.0479)
<i>t</i> -statistic on test of different coefficients	0.03	-1.14	-3.25	-1.89
<i>N</i>	7873	6362	6821	8338

Notes: Observations with missing data on dependent variables or key independent variables have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers. Regressions do not include demographic controls, but results are robust to their inclusion. Standard errors in parentheses are clustered by country to correct for correlation among the error terms. All specifications include controls for country of residence.

changes for politically charged beliefs relating to September 11: in non-Arabic countries, those interested in current events are significantly more likely to have accurate beliefs about the attacks; in Arabic countries, the effect is negative, though insignificant. The relationship of current events interest to attitudes is broadly similar. In non-Arabic countries, the coefficient on current events is essentially zero, both for attitudes toward the September 11 attacks and general favorability

toward the United States. In Arabic countries, the effect is strongly negative on both measures. Taken together, these results are broadly consistent with those in Table 4, and they provide some evidence that the apparent effect of the news sources is causal.

Education

Education, like media, should be closely related to the beliefs people hold about current events. We predict that more educated individuals will always be better informed on the politically neutral measure, but will not necessarily have more accurate perceptions of September 11 or display more pro-U.S. attitudes. Moreover, we expect that the heterogeneity in the effects of education on attitudes will be related to the extent of western influence in the school system.

The Gallup data code educational attainment into seven categories, which we convert into approximate years of completed schooling: no formal schooling (zero years of school completed), some elementary school (three years completed); finished elementary school (six years completed); finished intermediate school (nine years completed); finished secondary school (12 years completed); some college (14 years completed); and university and above (16 years completed). We then estimate models of the form:

$$\text{Dependent Variable} = \alpha + \beta(\text{years of schooling} \times \text{country}) + X\lambda + \varepsilon,$$

where X is a set of controls including country dummies and dummies for demographic characteristics. Table 6 reports the country-specific education coefficients that result from this exercise. Each column reports the estimated marginal effect of education on the corresponding dependent variable for residents of each country.

By far the most consistent relationship is between schooling and our measure of politically neutral knowledge—knowing who Kofi Annan is. This relationship, shown in the first column, is positive in all eight countries for which data are available and is statistically significant in seven of the eight countries. The effect of education on belief that Arabs carried out the September 11 attacks is generally small and positive although the estimate is insignificantly negative in Indonesia. Schooling has a much stronger association with the politically neutral knowledge measure than the politically loaded one.

Column 3 reveals significant cross-country variation in the relationship between schooling and attitudes about September 11. Pakistan shows a statistically significant positive relationship between schooling and believing that the September 11 attacks are unjustifiable; Kuwait, Turkey, Iran and Indonesia show a statistically insignificant positive effect; Lebanon shows a statistically insignificant nega-

Table 6
Education Effects by Country

	<i>Know Who Kofi Annan Is</i>	<i>Believe Stories About 9/11</i>	<i>9/11 Attacks Unjustifiable</i>	<i>Favorability Toward U.S.</i>
Lebanon	0.0055 (0.0020)	0.0141 (0.0036)	-0.00002 (0.0027)	0.0072 (0.0027)
Kuwait	0.0037 (0.0025)	0.0049 (0.0030)	0.0044 (0.0034)	0.0163 (0.0030)
Saudi Arabia	NA	NA	NA	-0.0003 (0.0035)
Jordan	0.0112 (0.0032)	NA	NA	0.0100 (0.0028)
Turkey	0.0366 (0.0030)	0.0062 (0.0042)	0.0033 (0.0022)	0.0042 (0.0021)
Pakistan	0.0421 (0.0027)	0.0030 (0.0019)	0.0072 (0.0023)	-0.0039 (0.0017)
Iran	0.0479 (0.0020)	0.0075 (0.0026)	0.0018 (0.0018)	0.0174 (0.0016)
Morocco	0.0480 (0.0025)	0.0061 (0.0025)	-0.0071 (0.0020)	-0.0030 (0.0022)
Indonesia	0.0291 (0.0051)	-0.0043 (0.0066)	0.0014 (0.0036)	-0.0060 (0.0039)
<i>N</i>	9203	7583	8102	9607

Notes: Observations with missing data on dependent variables or education have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers. Standard errors in parentheses are clustered by country to correct for correlation among the error terms. All specifications include dummies for gender, age, urban/rural status, marital status and country of residence, using the categories shown in Appendix Table 1, which is available with this article at (<http://www.e-jep.org>). Coefficients on controls are restricted to be identical across countries.

Fn7 tive effect; and Morocco shows a statistically significant negative effect.⁷ There is similar variability in the relationship between education and general attitudes toward the United States, as shown in the fourth column.

What accounts for the differences in the education coefficient across countries? One candidate explanation is that some countries' education systems place relatively more emphasis on western information sources. To explore this hypothesis, we have collected data on the share of universities conducting regular instruction in English and Arabic for our nine sample countries. These data, compiled from Awais (1987), provide a proxy for the extent to which Western sources of knowledge are used in instruction.⁸

This language measure is also broadly correlated with the extent of British or

⁷ This finding that education has no consistent relationship with attitudes toward terrorism is consistent with the findings reported in this journal by Krueger and Malecková (2003), who find no consistent relationship between socioeconomic status and support for terrorism in Palestine.

⁸ For a summary of our data on these universities, see Appendix Table 2, which is available with this article at (<http://www.e-jep.org>).

American influence in the structure of the education system. In the four countries that have the highest percentage of instruction in English—Pakistan, Lebanon, Kuwait and Jordan—the major universities were all either founded directly by the British or American governments, or designed with extensive participation by British or American consultants. For example, the University of Punjab, which controls higher education standards throughout Pakistan, was founded by the British and modeled on the University of London. Two of the leading Lebanese universities, the American University of Beirut and Beirut University College, were chartered by the Board of Regents of the State of New York. Kuwait University was founded following a report by consultants from Cambridge, England, and American University of Beirut (Altbach, 1991). The structure of the University of Jordan (2003) was based on a report by a British delegation from Oxford, Cambridge, and the University of London. In the countries with the lowest English percentages—Turkey, Indonesia, Iran and Morocco—the models were either French, Dutch or independently developed (see Altbach, 1991, for a discussion of Turkey and Indonesia; and Clark and Neave, 1992, for Iran and Morocco).

T7

Table 7 shows the results of regressions that allow the effects of university education to differ systematically depending on the country's typical languages of instruction. The coefficients in the first two rows reflect the extent to which the estimated effect of university education varies with the language of instruction. They suggest that the specific characteristics of the education system captured by the language variable do not affect the provision of politically neutral information (like knowing who Kofi Annan is). For both politically charged beliefs and attitudes, however, the education effect varies systematically with language of instruction. The interaction between Arabic share and education is significantly negative for all three dependent measures; the interaction with English share is significantly positive when the dependent variable is attitudes toward September 11 and approximately zero for the other measures.

Conclusion

Our findings regarding both media and education suggest that increased exposure to information is not necessarily correlated with more accurate perceptions of world events. Instead, particular news outlets and education systems have very different relationships to these perceptions, with some appearing to exacerbate misinformation. Different information sources are also closely tied to both expressed support for terrorist activities and general attitudes toward the West.

To the extent that these relationships are causal, they suggest that exposure to a broader range of information sources could reduce hostility to America. From the U.S. perspective, a possible intervention would be to encourage the growth of

Table 7
Language and University Education

	Know Who Kofi Annan Is	Believe Stories About 9/11	9/11 Attacks Unjustifiable	Favorability Toward U.S.
English share \times University	−0.0476 (0.1441)	−0.0181 (0.0285)	0.1088 (0.0136)	−0.0252 (0.0769)
Arabic share \times University	−0.1934 (0.1249)	−0.0432 (0.0145)	−0.0783 (0.0119)	−0.1022 (0.0551)
University education	0.2709 (0.1974)	0.0823 (0.0318)	0.0085 (0.0168)	0.1178 (0.0555)
<i>N</i>	9203	7583	8102	9607

Notes: Observations with missing data on dependent variables or education have been omitted from the samples for the regressions reported in the table. Results are weighted as recommended by the data providers. Standard errors in parentheses are clustered by country to correct for correlation among the error terms. All specifications include dummies for gender, age, urban/rural status, marital status and country of residence, using the categories shown in Appendix Table 1, which is available with this article at <http://www.ejep.org>.

^{Fn9} western media in Muslim countries.⁹ This policy could include subsidizing broadcasts of western news sources in Arabic and other local languages of the Muslim world. Such efforts could be applied to CNN, as well as other networks such as the BBC or FOX that are not freely available in the Middle East at the present time. This proposal has been advanced, for example, in a recent *Washington Post* opinion piece (Satloff, 2003). A more controversial approach is for the U.S. government to sponsor the production and broadcast of original programming with a pro-American message. For example, government officials have recently launched a “Middle East Television Network,” called *Al Hurra* (“The Free One”) to be broadcast in Arabic throughout the Middle East (MacFarquhar, 2004). How the effects of such explicitly persuasive messages would differ from the subtler “spin” introduced by newscasts is a question outside the scope of this study and an important topic for further research.

■ *This paper is dedicated to the memory of Paul J. Battaglia. This paper would not have been possible without the support and encouragement of Martin Feldstein and the National Bureau of Economic Research. We thank Nava Ashraf, Ed Glaeser and seminar participants at Harvard University, George Mason University and the NBER for helpful comments and discussion, and Eric Nielsen and Richard Burkholder at the Gallup Organization for their assistance with the data. Thanks also to James Hines, Andrei Shleifer, Timothy Taylor and Michael Waldman of the journal for extremely helpful editorial suggestions. We acknowledge*

⁹ As Mullainathan and Shleifer (2003) point out, the effects of introducing new media will depend on how existing media reposition in response. For example, if Al Jazeera were to adopt a more anti-U.S. stance to differentiate itself from new western sources, introducing more such sources could actually increase the degree of anti-U.S. sentiment.

financial support from the Institute for Humane Studies (Shapiro), National Science Foundation (Shapiro) and Social Science Research Council (Gentzkow).

References

Ajami, Fouad. 2001. "What the Muslim World is Watching." *New York Times Magazine*. November 18, p. 48.

Altbach, Philip G., ed. 1991. *International Higher Education: An Encyclopedia*. New York: Garland Publishing, Inc.

Alterman, Jon B. 1998. "New Media, New Politics? From Satellite Television to the Internet in the Arab World." The Washington Institute for Near East Policy Policy Paper No. 48.

Awais, Ch. Muhammad. 1987. "Directory of Universities and their Libraries of the Muslim World." Deanship of Library Affairs, Umm Al-Qura University, Makkah Al-Mukarramah.

Becker, Gary S. 2001. "Rational Indoctrination and Persuasion." Mimeo, University of Chicago, March.

Campagna, Joel. 2001. "Between Two Worlds: Qatar's Al-Jazeera Satellite Channel Faces Conflicting Expectations." CPJ Press Freedom Reports, October; Available at <http://www.cpj.org>.

Clark, Burton R. and Guy R. Neave, eds. 1992. *The Encyclopedia of Higher Education*. Oxford: Pergamon Press.

Dalby, David, David Barrett and Michael Mann. 1999. *The Linguasphere Register of the World's Languages and Speech Communities*. Hes-
bron, Wales, U.K.: Linguasphere Press.

Djankov, Simeon, Caralee McLiesh, Tatiana Nenova and Andrei Shleifer. 2003. "Who Owns the Media?" *Journal of Law and Economics*. October, 46:2, pp. 341–82.

Editorial. 2003. "Why Al Jazeera Matters." *New York Times*. March 30, p. 4.

Editorial. 2001. "Censorship in Pashto and Arabic." *New York Times*. October 10, p. A18.

Gallup Organization. 2002. "The 2002 Gallup Poll of the Islamic World: Executive Report." Gallup Poll Tuesday Briefing. February.

Glaeser, Edward L. 2002. "The Political Economy of Hatred." Harvard Institute for Economic Research Discussion Paper No. 1970, August.

Glaeser, Edward L. 2003. "Psychology and the Market." Mimeo, Harvard University, July.

Grant, Linda. 2001. "Millions Believe 4,000 Jews Stayed Away from the World Trade Centre on September 11. Harmless Conspiracy Theory? Or Sign of a Virulent New Anti-Semitism?: Linda Grant on how the Arab World is Exporting an Old Hatred to the West." *The Guardian*. December 18, p. 2.

Huntington, Samuel P. 1993. "The Clash of Civilizations?" *Foreign Affairs*. Summer, 72:3, pp. 22–49.

Jai, Janet J. 2001. "Getting at the Roots of Terrorism." *Christian Science Monitor*. December 10; Available at <http://www.csmonitor.com/2001/1210/p7s1-wogi.html>.

Krueger, Alan B., and Jitka Malecková. 2003. "Education, Poverty and Terrorism: Is There a Causal Connection?" *Journal of Economic Perspectives*. Fall, 17:4, pp. 119–44.

Kull, Steven, Clay Ramsay, Stefan Subias, Evan Lewis and Philip Warf. 2003. "Misperceptions, the Media and the Iraq War." PIPA/Knowledge Networks Poll Report, October.

Kurtz, Howard. 2001. "CNN Chief Orders 'Balance' in War News." *Washington Post*. October 31, p. C01.

Lambe, Jennifer L. and Ralph J. Begleiter. 2002. "Wrapping the News in the Flag: Use of Patriotic Symbols by U.S. Local TV Stations after the Terrorism Attacks of September 11, 2001." Presentation at the Broadcast Education Association Convention, April.

Lippmann, Walter. 1922. *Public Opinion*. New York: Harcourt, Brace and Company.

Lord, Charles G., Lee Ross and Mark R. Lepper. 1979. "Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence." *Journal of Personality and Social Psychology*. November, 37:11, pp. 2098–109.

MacFarquhar, Neil. 2004. "Washington's Arabic TV Effort Gets Mixed Reviews." *New York Times*. February 20, p. A3.

Martinovich, Steven. 2002. "Root Cause of Terrorism?" *Jerusalem Post*. September 19, p. 9.

Mullainathan, Sendhil and Andrei Shleifer. 2003. "Media Bias." Mimeo, Harvard University, November.

Nelson, Emily. 2003. "Camera Angles: Battle for Viewers Colors TV Picture Coming from Iraq." *Wall Street Journal*. April 4, p. A1.

The Pew Research Center for the People and the Press. 2003. "Views of a Changing World: June 2003." Volume 2 of *Pew Global Attitudes Project*. Washington, D.C.: Pew Research Center for the People and the Press, June.

Rendall, Steve and Tara Broughel. 2003. "Amplifying Officials, Squelching Dissent." Fairness and Accuracy in Reporting (FAIR) Study. May/June; Available at <http://www.fair.org/extra/0305/warstudy.html>.

Reuters. 2003. "Jazeera Says Spain Arrests Reporter for Qaeda Link." Reuters News Article. September 5.

Satloff, Robert. 2003. "Wrong Answer to Al-Jazeera." *Washington Post*. April 4, p. A21.

Shelby, David. 2003. "Middle East Television Network Aims to Replicate Radio Sawa's Success." Department of State Washington File, September 25; Available at <http://usinfo.state.gov/regional/nea/>.

United Press International. 2002. "Top Al Qaida Leaders Interviewed." September 5; Available at <http://www.upi.com/view.cfm?StoryID=20020905-095447-1350r>.

University of Jordan. 2003. "Establishment and History." Available at <http://www.ju.edu.jo/about/establishmenthistory.htm>.

U.S. Department of State International Information Programs. 2002. "Bush on Terrorism, Gallup Poll, WMD." White House Report, February 27; Available at <http://usinfo.state.gov/regional/nea/>.

USA Today. 2002. "Poll Results." *USA Today*. March 5.

Washington Post. 2003. "Washington Post Poll: Saddam Hussein and the Sept. 11 Attacks." *Washington Post Online*. September 6; Available at <http://www.washingtonpost.com/wpsrv/politics/polls/vault/stories/data082303.htm>.

Waxman, Sharon. 2001. "Arab TV's Strong Signal." *Washington Post*. December 4, p. C01.

World Bank Group. 2003. "Wolfensohn Calls for Partnership in Education Issues." Available at <http://www.worldbank.org>.

Appendix Table 1
Demographic Characteristics

	<i>Share (Percentage)</i>		<i>Share (Percentage)</i>
<i>Age (years)</i>		<i>Urban/rural status</i>	
Missing	0.1	Missing	0.3
18–19	9.3	Urban	53.4
20–24	17.3	Suburban	18.2
25–29	15.4	Rural	28.2
30–34	14.5		
35–39	12.6	<i>Gender</i>	
40–44	9.7	Male	50.4
45–49	7.3	Female	49.6
50–54	5.2		
55–59	3.4	<i>Marital status</i>	
60+	5.4	Single	32.3
		Married with children	59.8
<i>Schooling</i>		Married w/o children	6.4
Less than primary	19.8	Other	1.6
Completed primary	35.0		
Completed secondary	34.5		
Completed university	10.7		

Notes: Shares may not add to 100 percent due to rounding. Results are weighted as recommended by the data providers.

Appendix Table 2
Share of Universities Instructing in English

<i>Country</i>	<i>Number of Universities Reporting Language</i>	<i>Percentage Instructing In English</i>	<i>Percentage Instructing In Arabic</i>
Lebanon	5	80	80
Kuwait	1	100	100
Saudi Arabia	8	75	100
Jordan	3	100	100
Turkey	18	11	0
Pakistan	18	100	0
Iran	14	21	0
Morocco	3	33	100
Indonesia	29	17	3
Total	99	43	20

Notes: Table is based on authors' calculations from Awais (1987).