

Media, Education, and Anti-Americanism in the Muslim World

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America has an image problem. Only one percent of people surveyed in June 2003 in Jordan or the Palestinian authority expressed a favorable opinion of the U.S.; 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).

One possible interpretation of these facts is that the residents of these countries are badly informed about important world events. Some evidence exists to support this hypothesis. For example, in survey results we report below, 78 percent of Indonesians, 87 percent of Moroccans, and 96 percent of Pakistanis said that they do not believe that a group of Arabs carried out the attacks on September 11. (This is not to say that residents of Islamic countries are less informed than those of the Western

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world: 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 September 11 terrorist attacks, despite the absence of any evidence to that effect).

Would a better informed Muslim world be less hostile to the United States? In addition to its relevance to the theory of belief and attitude formation,¹ this question has enormous implications for U.S. policy. Unlike many of the possible determinants of attitudes toward America in the Muslim world—culture, domestic politics, economic development, and religion—the amount and type of information available is a policy variable that is at least partially controlled by the American government.²

We use a unique survey dataset on over 10,000 respondents in 9 predominantly Muslim countries to explore the answers to two questions about the role of information in anti-American sentiment. First, are more informed individuals more sympathetic to the United States? Second, does the source of information matter? We study these questions in two contexts: news media and education.

The answer to the first question is generally negative. Although individuals with more exposure to the news media are consistently better informed, they are not necessarily more pro-U.S. in their attitudes. And while more educated individuals are better informed on all measures, the relationship between education and attitudes differs considerably across countries in both sign and magnitude.

By contrast, the answer to the second question is consistently positive. Individuals exposed to relatively more pro-Western media sources tend to be more pro-American in their attitudes. Evidence from linguistic heterogeneity lends additional credence to these findings: respondents in Arabic-speaking countries become relatively less

¹See Becker (2001), Glaeser (2002) and Glaeser (2003) for recent contributions to the economic analysis of belief formation and manipulation.

²For example, the Broadcasting Board of Governors oversees broadcasts of Voice of America radio in over 50 languages worldwide, and reaches young Arabic-speaking listeners with the recently launched Radio Sawa (Broadcasting Board of Governors, 2002). Also, the government could easily subsidize satellite broadcasts of existing American networks to the Middle East, and the dubbing or subtitling of these broadcasts in native languages.

favorable to the U.S. the greater is their interest in current events; the pattern is reversed for residents of countries in which English is a commonly spoken second language. A similar pattern emerges in the case of education: individuals in former British colonies (Pakistan and Kuwait) become more favorable to the U.S. with greater schooling, and the opposite relationship holds in former French colonies (Lebanon and Morocco).

Overall, then, our findings suggest that information per se is not a solution to America's public diplomacy problem. However, they do indicate that making Western news sources more available and attractive to the citizens of the Muslim world could be a successful intervention.

The rest of the paper is organized as follows. Section 1 describes the 2002 Gallup Poll of the Islamic World. Section 2 presents our results on the news media, and section 3 presents findings on education. Section 4 concludes.

1 Data

Our data come from the 2002 Gallup Poll of the Islamic World (The Gallup Organization, 2002). The survey consists of 10,004 responses from nine predominantly Muslim countries: Pakistan (2,043), 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.³

To construct each national sample, official statistics were used to stratify locations by demographic characteristics. Primary sampling units (PSUs) were then selected from each stratum, and households were selected in each PSU according to a pre-

³Further details on sample selection and survey methodology are available at <http://www.gallup.com/poll/summits/islam.asp>.

specified plan. Within a household, respondents were chosen according to the Kish Grid system to prevent selection bias.

Interviews were conducted in person in the respondent's home, and each 120-question interview typically took about one hour to complete. The survey 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. Appendix Table 1 summarizes the demographic characteristics of the sample, which is well dispersed across different cohorts and socioeconomic groups.

Our primary measure of attitudes toward anti-American terrorism comes from the following question:

There are many acts some people may do in life. I will read out to you 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. For ease of interpretation, we will generally code this question as a binary variable equal to 1 if the respondent feels that the September 11 attacks cannot be justified at all, and 0 otherwise. Unfortunately, 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 U.S.:

In general, what opinion do you have of the following nations?...The United States.

Respondents answer from 1, very unfavorable, to 5, very favorable. We recode the response to vary from 0 to 1. Though general opinions about the U.S. are of less

obvious policy relevance than feelings about terrorism, this question was asked in all 9 countries, thus allowing us to make more complete use of the available data.

Our measures of knowledge cover two types of information: politically loaded and politically neutral. Our measure of the first type comes from the following question:

According to news reports groups of Arabs carried out attacks against USA 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.

Our measure of politically neutral information is whether the respondent knows who Kofi Annan is, as derived from a question asking the respondent for opinions about various world leaders. We code a binary variable equal to 1 if the respondent expresses an opinion about Kofi Annan and 0 if she indicates that she is “not aware of” Kofi Annan. While a question quizzing the respondent about broad knowledge of world affairs would surely be a more useful indicator, this question captures some variation in attention to current events, is relevant to all countries in the sample and, as we will see, covaries sensibly with respondent demographics.

Table 1 summarizes the variation in the attitude and information measures across the countries in the sample. 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. Roughly 80 percent of respondents believe news reports about September 11, and about 70 percent claim to be aware of Kofi Annan.

2 News Media

2.1 Frequency of Media Use

One natural approach to measuring the effects of information on attitudes is to exploit variation in 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 listening to the radio 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.

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

$$\text{Dependent variable} = \alpha + \beta (\text{number of days a week read/watch/listen}) + X\gamma + \varepsilon$$

where X is a set of controls including country dummies and dummies for the demographic characteristics described in Appendix Table 1. In columns (1), (3), and (4), the dependent variable is binary, so the coefficients represent marginal effects from probit regressions of the probability that the dependent variable is equal to 1 on the right-hand-side variables. In column (2), the coefficients reported are from ordinary least squares (OLS) regressions.

So, for example, the coefficient in the first row of column (1) can be interpreted as the effect of reading a daily newspaper one more day per week on the probability that a respondent considers the September 11 attacks unjustified, holding fixed the respondent’s observable demographic characteristics. The effect is positive and statistically significant at the 10 percent level, and indicates that reading the newspaper one more day per week increases the probability of considering the attacks unjustified by .005.

Overall, the results in columns (1) and (2) suggest little or no effect of media use on attitudes. Within each attitude measure, effects vary wildly in sign and magnitude. For example, newspaper readership has a marginally statistically significant positive effect on the probability of thinking the September 11 attacks unjustified, television viewership has a statistically insignificant positive effect, and listening to the radio has an insignificant negative effect. None of the media use measures has a statistically significant effect in the same direction on both opinions about September 11 and general attitudes toward the U.S., indicating that whatever effects we do observe are not robust to different measures of attitudes.

One might be tempted to conclude that news media in the countries in our sample are simply not informative. Many of these countries have tight restrictions on media ownership (Djankov, McLiesh, Nenova and Shleifer, 2003) which have only recently been eroded by the rise of satellite television (Alterman, 1998).

The results in columns (3) and (4) refute this hypothesis. As column (3) shows, the probability of believing U.S. claims about September 11 is increasing in the use of newspaper, television, and radio. Though only the effect of television is statistically significant (at the 10 percent level), these findings are consistent with the view that media use increases knowledge. The evidence shown in column (4) is even more striking. 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 2.8 percent greater chance of knowing who Kofi Annan is, and this effect is statistically significant at the .1 percent level.

Thus the evidence indicates that although increased use of news media is associated with more knowledge but not necessarily more pro-U.S. attitudes. Additionally, knowledge of a politically neutral sort, such as the identity of Kofi Annan, seems more responsive to the frequency of media use than politically loaded knowledge such as the identity of the perpetrators of the September 11 attacks. This latter contrast

suggests the possibility that media “spin” might make the source of information received just as important as its quantity. In the next subsection, we investigate this issue using data on the choice of television news outlet.

2.2 Source of News

To study the role of the source of information in determining attitudes, we focus on two international news networks popular in our sample countries: CNN International and Al-Jazeera. CNN International, a twenty-four-hour English-language news broadcast, is by far the most popular Western news network broadcasting in the countries in our sample. A subsidiary of AOL Time-Warner, it claims to reach more than 10 million households and hotel rooms in the Middle East. Programming in the region originates from London, and is entirely in English, with the exception of brief segments broadcast in German.⁴ Content and format are both similar to the domestic version of CNN.

Al-Jazeera, a twenty-four-hour 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 2001.⁵ Broadcasting since 1996, Al Jazeera has been widely hailed for combining serious, high-quality reporting with a willingness to present alternative viewpoints on contentious issues.⁶ 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 2001), Al-Jazeera is probably

⁴Information obtained from cnnasiapacific.com/cnni/cnni_corpinfo/cnn/index.asp. September, 2003.

⁵Viewership figure cited in Campagna (2001).

⁶One author calls the station “a startling new experiment... [that] trumpets its bold independence and provides a forum for criticisms that otherwise [would] have difficulty finding an outlet” (Alterman 1998). Another 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 issues” (Campagna 2001).

the closest thing to independent television journalism the Arab World has ever seen.

While Al-Jazeera and CNN are thus similar in some respects, Al-Jazeera has also been widely criticized for taking an anti-American and even pro-terrorist stance in its reporting. Its coverage of the Palestinian conflict and the wars in Afghanistan and Iraq are said to strongly emphasize the suffering of civilians with limited coverage of the American or Israeli points of view.⁷ With regard to the events of September 11, Al Jazeera has frequently replayed taped messages of Osama bin Laden, reported the charge that Jews were warned in advance of September 11 not to go to work in the World Trade Center, and broadcast an interview with a French author who claims the towers were destroyed by US missiles (Campagna, 2001; United Press International, 2002).⁸ A *New York Times* critic, after an extended study of the station's coverage, wrote: "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). At least one prominent Al-Jazeera reporter has been arrested on suspicion of connections to Al-Qaeda (Reuters, 2003).

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, making dishes "as common in Cairo slums as they are in Dubai mansions" (Ajami 2001). Many more people watch the channels in public places such as cafes and restaurants.

Our study of these news networks takes advantage of two questions asked in the Gallup poll:

⁷See Ajami (2001), Campagna (2001), and Waxman (2001).

⁸With regards to the claim that Jews were warned not to go to work, a *New York Times* editorial claims this was "reported" on Al Jazeera. A station spokesman said a talk show host cited the charge and asked guests to respond (Campagna 2001).

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. From these two questions 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 numbers in Iran and Indonesia are as expected, and those countries are consequently dropped from our analysis. Overall, both networks are quite popular, with 7 percent of all respondents watching both Al-Jazeera and CNN in the last seven days, and 62 percent watching neither network. Dropping Iran and Indonesia, these numbers change to 10 percent watching both and less than 50 percent watching neither network.

Table 4 shows the results of regressions of our attitude and knowledge measures on dummy variables representing three of our four viewership categories. The dummy for the “neither” category has been omitted from the models, so coefficients in these regressions can be interpreted as measuring the attitudes or knowledge of a particular category *relative* to respondents who watched neither CNN nor Al-Jazeera in the past seven days. To avoid a confound with total amount of TV watched, we included only those respondents who indicated that they watch television seven days a week, or about 77 percent of the sample.

Column (1) shows the relationship between news networks and attitudes about September 11. Respondents who watched CNN only were 2.1 percent more likely to say that the attacks on September 11 were completely unjustifiable, although the

coefficient is not statistically significant. Al-Jazeera watchers were significantly less likely to consider the attacks unjustifiable, as were respondents who report having watched both CNN and Al-Jazeera.

The difference between the coefficients for the “CNN only” and “both” categories illustrates that the observed relationships are not driven by differences between households with and without satellite television. Any household with access to CNN also has access to Al-Jazeera and vice versa, so there is no difference in satellite access between the “CNN only” and “both” categories. Nevertheless, there is a sizable difference in attitudes.

The relationship between news network viewing and overall favorability towards the United States, presented in column (2) of table 4, reveals that CNN watchers are more favorable to toward the U.S. than Al-Jazeera watchers, with watchers of both networks closer to the Al-Jazeera only category than to the CNN only category. The coefficient on the “CNN only” variable approaches significance, and the coefficients on the “Al-Jazeera only” and “both” variables are significant at the one percent level.

In the case of the propensity to believe stories that Arabs carried out the September 11 attacks, column (3) shows that CNN watchers are more likely to believe these reports (though the difference is not statistically significant) and Al-Jazeera watchers are significantly less likely to believe them, relative to those who watch neither network. Respondents who report watching both networks are slightly less likely to believe that a group of Arabs carried out the attacks as respondents who watched neither network.

Turning finally to our most direct measure of knowledge, whether the respondent knows who Kofi Annan is, as column (4) shows those respondents who watch either or both networks are significantly more likely to know his identity than those who watch neither. In fact, 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 significantly better informed than those watching either one 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.

Overall, the evidence in table 4 suggests that, although CNN and Al-Jazeera convey similar amounts of basic information, that information has very different effects on attitudes depending on its source. However, our results raise obvious concerns about reverse causality: it may be that those with relatively more pro-U.S. attitudes are more likely to watch CNN than Al-Jazeera, and vice versa for those with relatively less pro-U.S. attitudes.

We address these concerns by using cross-country variation in the ability to access the two networks. The ideal way to deal with the reverse causality issue would be to have a source of exogenous variation in access at the *individual* level. However, the ubiquity of satellite access, combined with the particular limitations of our data set, mean we do not have any instruments that could function in this way. Using cross-country differences is a coarser approach, and the results will be subject to the criticism that they pick up the effect of other country-level differences unrelated to media. Keeping these limitations in mind, however, this will be a good check on whether the effects documented in the media regressions are spurious, or capture a causal relationship.

The specific country-level difference we exploit is the fraction of people able to understand English and Arabic. Since CNN broadcasts only in English (or Turkish in the case of CNN Turkey), and Al Jazeera only in Arabic, language is a strong constraint on an individual's ability to access the networks. Our basic approach is to compare knowledge and attitudes for individuals categorized along two dimensions: propensity to watch television news (captured by reported attention to current events), and the extent to which English and/or Arabic are widely understood in the individual's country. If current events junkies in Arabic-speaking countries differ in

knowledge or attitudes, compared to both those less interested in current events and those following current events in non-Arabic-speaking countries, we interpret this as an effect of the Arabic-language media (and particularly of Al-Jazeera). Similarly, we interpret the interaction between current events interest and living in a country where English is widely spoken as the effect of access to English-language news, for which CNN is by far the most important source.

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 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 not the first language. While it is used to some extent, especially for religious purposes, 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.

Measuring the number of people who understand English is more difficult. English is not the first language in any of the sample countries, and we are unaware of any accurate data on the fraction of people fluent in it as a second language. Nevertheless, two sources of information suggest strong differences among our countries. First, data to be discussed in section 3 show that English is a common language of university instruction in Saudi Arabia, Lebanon, Kuwait, Jordan, and Pakistan. Sec-

ond, the Linguasphere Register, a classification of “the world’s languages and speech communities,” lists Kuwait, Jordan and Pakistan as countries where English is widely spoken (Dalby et al. 1999). The latter is consistent with the fact that Kuwait, Jordan, and Pakistan are all former British colonies. Since colonial history seems the clearest way to separate the sample, we will categorize these three as countries where English is common. However, none of the qualitative results below change if we include Saudi Arabia and Lebanon as well. Finally, we add Turkey to the “English” category, not because English is widely spoken but because individuals there have access to broadcasts from CNN Turkey in their native language.

As a first step, we verify that the language categories relate in the predicted way to viewership of CNN and Al Jazeera. Table 3 shows that the fraction watching Al Jazeera in the Arabic-language countries is high, whereas it is essentially zero in the non-Arabic countries. CNN viewership is high in Kuwait, Turkey, and Pakistan, significant in Jordan, Lebanon and Saudi Arabia, and negligible in the remaining countries, roughly consistent with our categorization. A more accurate way to test the relationship is to run a regression of viewership on the interaction between the language variables and attention to current events. Focusing on the interaction removes any effect of differences between the country groups in average viewership, such as might be caused by differences in education or income. The results of this exercise go in the predicted direction: the interaction between English and current events has a significant positive effect on CNN viewership, but no effect on Al Jazeera viewership; the interaction with Arabic has exactly the reverse pattern.

We will estimate models of the form:

$$\begin{aligned}
 \text{Dependent variable} &= \alpha + \beta (\text{current events interest}) + \gamma (\text{country}) \\
 &+ \lambda (\text{Arabic} \times \text{current events interest}) \\
 &+ \rho (\text{English} \times \text{current events interest}) + \varepsilon
 \end{aligned}$$

and test the hypothesis that $\lambda < 0$ and $\rho > 0$ for attitudes, but $\lambda > 0$ and $\rho > 0$ for knowledge. This approach has the disadvantage relative to the regressions in table 4 that we will not be able to identify the precise networks or publications responsible for the effects, but has the advantage that our estimates will capture the effects of the general media environment on attitudes and information.

The results of this test are shown in table 5. In general, they validate our hypotheses. Column (1) shows that the probability that a respondent believes the September 11 attacks are unjustifiable rises more rapidly with current events interest in English-language countries, and rises less rapidly in Arabic-language countries. The former effect is statistically significant. Column (2) repeats this specification using general favorability toward the U.S. as a dependent variable, and finds similar results. In this case, it is the effect of Arabic-language interacted with current events interest that is statistically significant; the English-language effect is wrong-signed and statistically insignificant. As column (3) shows, effects on believing that a group of Arabs carried out the September 11 attacks go in the right direction, although they are not statistically significant.

Finally, column (4) demonstrates that both being in an Arabic-speaking country and being in an English-speaking country make respondents interested in current events relatively more likely to have heard of Kofi Annan. The coefficients on the two key interaction terms are of similar magnitude and are statistically indistinguishable. This is consistent with the finding in table 4 that both CNN and Al-Jazeera provide comparable amounts of information.

On the whole, then, our hypotheses are confirmed: those interested in current events and living in Arabic-speaking countries tend to be relatively well-informed but less pro-U.S. in their attitudes, while those who follow current affairs and live in relatively more English-speaking countries are both better informed and more pro-U.S. The evidence in table 5 thus serves to strengthen the case made by table 4 that

it is the source of information, not information itself, which affects attitudes.

3 Education

Even more than media, perhaps, the education system plays a critical role in determining the information available to individuals. We therefore study the effects of educational attainment on knowledge measures and attitudes toward the U.S. as a second test of our key hypotheses. We predict that more educated individuals will always be better informed, but will not necessarily be more pro-U.S. in their leanings. 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 dataset codes educational attainment into 7 categories, described in Appendix Table 2. As a first pass, we have converted these into approximate years of completed schooling, and estimated 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 the demographic characteristics described in Appendix Table 1. 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. To improve statistical precision, we assume that control variables have identical effects in all countries.

Column (1) reveals significant cross-country variation in the relationship between schooling and attitudes about September 11. Out of the seven countries for which data are available, two (Kuwait and Pakistan) show a statistically significant positive relationship between schooling and the probability of believing that the September 11 attacks are unjustifiable, three (Turkey, Iran, and Indonesia) show a statistically

insignificant positive effect, one (Lebanon) shows a statistically insignificant negative effect, and one (Morocco) a statistically significant negative effect.⁹

There is similar variability in the relationship between education and general attitudes toward the U.S., as shown in column (2). The association between schooling and the probability of believing that a group of Arabs carried out the September 11 attacks is somewhat more consistent: the coefficient on years of schooling is negative only in Indonesia, and it is not statistically significant.

By far the most consistent relationship is between schooling and the probability of knowing who Kofi Annan is: this relationship is positive and statistically significant in all 8 countries for which data are available. Thus, the cross-country variation in the relationship between schooling and attitudes cannot be attributed to variation in the informativeness of the education system.

What accounts for the differences in the education effect 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) and summarized in Table 7, provide a proxy for the extent to which Western sources of knowledge are used in instruction. An individual residing in a country whose universities use English as a primary or secondary language ought to have more access to English-language sources, especially if that individual is herself a university graduate.

Table 8 tests formally whether the effects of university education differ systematically depending on the country's typical languages of instruction. Here we parallel

⁹In light of these cross-country differences, it does not seem surprising that Krueger and Maleckova (forthcoming) find no consistent relationship between socioeconomic status and support for terrorism in Palestine.

table 5 and estimate models of the form

$$\begin{aligned} \text{Dependent variable} &= \alpha + \beta (\text{university education}) + \gamma X \\ &+ \lambda (\text{share teaching in English} \times \text{university education}) \\ &+ \rho (\text{share teaching in Arabic} \times \text{university education}) + \varepsilon \end{aligned}$$

where X is a set of controls including country dummies and dummies for the demographic characteristics described in Appendix Table 1.

Column (1) shows that the effect of having a university education on the probability of believing the September 11 attacks are unjustifiable is higher in countries with more English-language instruction, and lower in countries with more Arabic-language instruction. These differences are statistically significant and large: a change from 0 universities teaching in English to all universities teaching in English raises the university effect by 20 percentage points.

With respect to general attitudes toward the U.S., as column (2) shows there is no significant interaction between English instruction and university education, and a marginally significant negative interaction between Arabic instruction and university education.

As column (3) shows, the effect of education on the probability of believing that a group of Arabs carried out the September 11 attacks increases with the English share and decreases with the Arabic share, although only the interaction with Arabic-language is significant.

Finally, column (4) shows that there are no significant interactions between language of instruction and university education using as a dependent variable whether the respondent knows who Kofi Annan is. This result confirms that university education makes people generally better informed in all countries, and the differences only appear in politically charged measures of knowledge and attitudes.

4 Discussion

Our findings suggest that increased exposure to Western information sources could significantly reduce anti-American sentiment in the Muslim world. Encouraging the growth of Western media in Muslim countries is an attractive policy option, because it takes advantage of existing technologies (such as satellite television) and does not require direct military or diplomatic intervention in the affairs of sovereign states. Whether encouraging the growth of Western media in the Muslim world should take the form of networks operated directly by the U.S. government, subsidies to existing satellite networks to broadcast in the Middle East (ideally with translation into the region's native languages), or other interventions remains an important topic for future research.¹⁰

¹⁰See Peterson et al (2002) for a broader discussion of options for improving American public diplomacy.

References

- [1] Fouad Ajami. What the Muslim world is watching. *New York Times Magazine*, page 48, November 18 2001.
- [2] Jon B. Alterman. *New media, new politics? From satellite television to the Internet in the Arab world*. The Washington Institute for Near East Policy, Washington, DC, 1998. Policy Paper No. 48.
- [3] Ch. Muhammad Awais. *Directory of universities and their libraries of the Muslim world*. Deanship of Library Affairs, Umm Al-Qura University, Makkah Al-Mukarramah, 1987.
- [4] Gary S. Becker. Rational indoctrination and persuasion. *University of Chicago Mimeo*, March 2001.
- [5] Joel Campagna. Between two worls: Qatar's Al-Jazeera satellite channel faces conflicting expectations. *CPJ Press Freedom Reports*, October 2001. <http://www.cpj.org>.
- [6] David Dalby, David Barrett, and Michael Mann. *The linguasphere register of the world's languages and speech communities*. Linguasphere Press, Hebron, Wales, UK, 1 edition, 1999.
- [7] Simeon Djankov, Caralee McLiesh, Tatiana Nenova, and Andrei Shleifer. Who owns the media? *Journal of Law and Economics*, 46(2), October 2003.
- [8] The Pew Research Center for the People and the Press. *Views of a Changing World: June 2003*, volume 2 of *Pew Global Attitudes Project*. The Pew Research Center for the People and the Press, Washington, DC, June 2003.
- [9] Edward L. Glaeser. The political economy of hatred. *Harvard Institute for Economic Research Discussion Paper*, 1970, August 2002.
- [10] Edward L. Glaeser. Psychology and the market. *Harvard University Mimeo*, July 2003.
- [11] United Press International. Top al Qaida leaders interviewed. September 5 2002.
- [12] Alan B. Krueger and Jitka Maleckova. Education, poverty, political violence and terrorism: Is there a causal connection? *Journal of Economic Perspectives*. Forthcoming.
- [13] Broadcasting Board of Governors. *2002 Annual Report*. Washington, DC.

- [14] The Gallup Organization. *The 2002 Gallup Poll of the Islamic World: Executive Report*. The Gallup Poll Tuesday Briefing. Princeton, NJ, February 2002.
- [15] Peter G. Peterson et al. *Public diplomacy: A strategy for reform*. A Report of an Independent Task Force on Public Diplomacy. Council on Foreign Relations, New York, NY, July 2002.
- [16] Reuters. Jazeera says Spain arrests reporter for Qaeda link. *Reuters News Article*, September 5 2003.
- [17] Sharon Waxman. Arab TV's strong signal. *Washington Post*, page C01, December 4 2001.

Table 1: Summary of key variables

	9/11 attacks unjustifiable (%)	General attitude toward U.S. (Avg.)	Believe stories about 9/11 (%)	Know who Kofi Annan is (%)
Lebanon	62.4	0.474	42.4	96.0
Kuwait	25.7	0.438	11.1	96.5
Saudi Arabia	NA	0.275	NA	NA
Jordan	NA	0.295	NA	94.6
Turkey	55.6	0.492	51.5	37.8
Pakistan	40.9	0.202	4.1	53.0
Iran	55.8	0.224	20.3	60.4
Morocco	54.5	0.398	12.8	63.5
Indonesia	74.3	0.491	21.6	88.9
Total	52.3	0.346	21.5	69.9

Notes:

Individuals with missing data have been omitted from the table. Results are weighted as recommended by the data providers.

Table 2: Effects of media use

	(1)	(2)	(3)	(4)
	9/11 attacks unjustifiable	General attitude toward U.S.	Believe stories about 9/11	Know who Kofi Annan is
Model	Probit	OLS	Probit	Probit
Newspaper	0.0053 (0.0031)	-0.0007 (0.0015)	0.0017 (0.0023)	0.0275 (0.0026)
Television	0.0041 (0.0037)	-0.0038 (0.0019)	0.0056 (0.0033)	0.0190 (0.0029)
Radio	-0.0035 (0.0025)	0.0021 (0.0013)	0.0018 (0.0019)	0.0098 (0.0020)
N	8102	9607	7583	9203

Notes:

Individuals with missing data on dependent variable or key independent variable have been omitted from the table. Results are weighted as recommended by the data providers. 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. In probit specifications, coefficients reported reflect marginal effects.

Table 3: News network viewership by country

	Neither (%)	CNN Only (%)	Al-Jazeera Only (%)	Both (%)
Lebanon	36.88	5.1	46.25	11.77
Kuwait	7.87	2.58	46.49	43.06
Saudi Arabia	18.08	1.16	68.82	11.94
Jordan	39.38	1.08	52.69	6.85
Turkey	77.97	22.03	0	0
Pakistan	78.04	21.96	0	0
Iran	99.01	0	0.99	0
Morocco	61.56	0.24	36.57	1.63
Indonesia	99.39	0.61	0	0
Total	61.94	6.52	24.45	7.09

Notes:

Individuals with missing data have been omitted from the table. Results are weighted as recommended by the data providers.

Table 4: Effects of news source

	(1)	(2)	(3)	(4)
	9/11 attacks unjustifiable	General attitude toward U.S.	Believe stories about 9/11	Know who Kofi Annan is
Model	Probit	OLS	Probit	Probit
CNN only	0.0213 (0.0324)	0.0259 (0.0165)	0.0283 (0.0285)	0.0498 (0.0194)
Al-Jazeera only	-0.1018 (0.0260)	-0.0430 (0.0132)	-0.0678 (0.0183)	0.0792 (0.0170)
Both CNN & Al-Jazeera	-0.1753 (0.0339)	-0.0818 (0.0194)	-0.0091 (0.0282)	0.1232 (0.0210)
N	4262	5576	4150	5108

Notes:

Individuals with missing data on dependent variable or key independent variables have been omitted from the table. Results are weighted as recommended by the data providers. Results exclude respondents living in 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. In probit specifications, coefficients reported reflect marginal effects.

Table 5: Language, attitudes, and knowledge

	(1)	(2)	(3)	(4)
	9/11 attacks unjustifiable	General attitude toward U.S.	Believe stories about 9/11	Know who Kofi Annan is
Model	Probit	OLS	Probit	Probit
English × Current events	0.1741 (0.0695)	-0.0531 (0.0508)	0.0040 (0.0222)	0.3175 (0.1759)
Arabic × Current events	-0.0330 (0.0818)	-0.1450 (0.0523)	-0.0814 (0.0518)	0.3822 (0.1044)
Current events	-0.0477 (0.0571)	0.0034 (0.0313)	0.0515 (0.0139)	-0.1012 (0.0888)
N	6821	8338	6362	7873

Notes:

Individuals with missing data on dependent variable or key independent variable have been omitted from the table. Results are weighted as recommended by the data providers. Standard errors in parentheses are clustered by country to correct for intercorrelation among the error terms. All specifications include controls for country of residence. In probit specifications, coefficients reported reflect marginal effects.

Table 6: Education effects by country

	(1)	(2)	(3)	(4)
	9/11 attacks unjustifiable	General attitude toward U.S.	Believe stories about 9/11	Know who Kofi Annan is
Model	Probit	OLS	Probit	Probit
Lebanon	-0.0050 (0.0098)	0.0072 (0.0027)	0.0353 (0.0098)	0.0772 (0.0199)
Kuwait	0.0434 (0.0148)	0.0163 (0.0030)	0.0295 (0.0192)	0.0499 (0.0209)
Saudi Arabia	NA	-0.0003 (0.0035)	NA	NA
Jordan	NA	0.0100 (0.0028)	NA	0.0954 (0.0181)
Turkey	0.0101 (0.0102)	0.0042 (0.0021)	0.0125 (0.0109)	0.1190 (0.0137)
Pakistan	0.0499 (0.0086)	-0.0039 (0.0017)	0.0337 (0.0177)	0.1262 (0.0113)
Iran	0.0020 (0.0072)	0.0174 (0.0016)	0.0271 (0.0100)	0.1506 (0.0085)
Morocco	-0.0356 (0.0096)	-0.0030 (0.0022)	0.0289 (0.0115)	0.1961 (0.0182)
Indonesia	0.0115 (0.0211)	-0.0060 (0.0039)	-0.0165 (0.0231)	0.1473 (0.0220)
N	8102	9607	7583	9203

Notes:

Individuals with missing data on dependent variables or education have been omitted from the table. Results are weighted as recommended by the data providers. All specifications include dummies for gender, age, urban/rural status, marital status, and country of residence, using the categories shown in Appendix Table 1. Coefficients on controls are restricted to be identical across countries. In probit specifications, coefficients reported reflect marginal effects.

Table 7: Share of universities instructing in English

Country	No. of Universities Reporting Language	Pct. Instructing in	
		English	Arabic
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).

Table 8: Language and university education

	(1)	(2)	(3)	(4)
	9/11 attacks unjustifiable	General attitude toward U.S.	Believe stories about 9/11	Know who Kofi Annan is
Model	Probit	OLS	Probit	Probit
English share × University	0.2152 (0.0288)	-0.0252 (0.0769)	0.0542 (0.0477)	0.0174 (0.0860)
Arabic share × University	-0.1467 (0.0238)	-0.1022 (0.0551)	-0.0820 (0.0392)	-0.0438 (0.1075)
University education	0.0074 (0.0313)	0.1178 (0.0555)	0.0578 (0.0306)	0.1767 (0.0182)
N	8102	9607	7583	9203

Notes:

Individuals with missing data on dependent variable or key independent variable have been omitted from the table. Results are weighted as recommended by the data providers. Standard errors in parentheses are clustered by country to correct for intercorrelation 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. In probit specifications, coefficients reported reflect marginal effects.

Appendix Table 1: Demographic characteristics

	Share (%)		Share (%)
<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	Sub-urban	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% due to rounding. Results are weighted as recommended by the data providers.

Appendix Table 2: Education codes

Survey question: Could you please tell me the highest level you have reached?

Survey responses:

Category	Description	Approximate completed years
1	Do not have any formal education	0
2	Some elementary education/can read and write	3
3	Finished elementary ed. less than intermediate	6
4	Finished intermediate less than secondary	9
5	Finished secondary	12
6	College some university	14
7	University and above	16