

Arabs as Terrorists: Effects of Stereotypes Within Violent Contexts on Attitudes, Perceptions, and Affect

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Objective: Test the effects of stereotypic video game portrayals with and without violence on attitudes toward the stereotyped group. **Method:** Two experiments tested the effects of stereotypic video game portrayals of Arabs in a violent and nonviolent context on implicit and explicit attitudes and perceptions of Arabs. **Results:** In both experiments, participants who played an antiterrorist game displayed heightened anti-Arab attitudes relative to participants who played a nonviolent game. In Experiment 1, those who had played a Arab-terrorist game were more likely to draw “typical” Arabs with stereotypic traits, negative affect, and weapons. In Experiment 2, inclusion of Arab characters in a nonviolent game was sufficient to increase anti-Arab attitudes, but the Arabs-as-terrorists game yielded even stronger effects. **Conclusion:** These results are important for three reasons. First, results suggest that video game stereotypes can prime negative and aggressive perceptions, attitudes, and affect toward the stereotyped group. Second, this effect appears larger when the stereotyped group is portrayed in a violent-terrorism context than in a nonviolent context. Third, playing a terrorism themed game even without Arab characters led to higher anti-Arab attitudes, suggesting the presence of a strong associative link between terrorism and Arabs in the sampled population.

Keywords: stereotypes, aggression, video games, Arabs, terrorists

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“I’ve been doing this for 31 years and I’ve never seen such antipathy towards Muslim workers.”—Mary Jo O’Neill, regional attorney of the Equal Employment Opportunity Commission’s Phoenix office. (Greenhouse, 2010, para. 8)

Although considerable racial progress has been made in the United States since the 1960s, old stereotypes and prejudices thrive and new

ones have arisen, exemplified by the new popularity of the term “ragheads” in reference to Arabs and Muslims. A decade after the terrorist attacks of September 11, 2001, discrimination in the work place against persons *perceived* to be Arabs or Muslims is rising (e.g., Greenhouse, 2010). The outcry over construction of Cordoba House near the World Trade Center in New York further illustrates the intensity of these prejudices. The present studies examine the effects of media stereotypes of Arabs on negative attitudes toward Arabs, in both violent and non-violent video games.

For most Americans, media are the primary source of information about Arabs and Muslims (e.g., Nisbet, Ostman, & Shanahan, 2008). The frequency of Arabs and Muslims in American media is more common today than 10 years ago, but negative images are much more prominent than positive ones (e.g., Shaheen, 2009). Negative Arab stereotypes have been observed across media types including newspapers (e.g., Nacos

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& Torres-Reyna, 2007), TV and movies (e.g., Shaheen, 2009), children's literature (e.g., Schmidt, 2006), and web animations and flash-based games (e.g., Van Buren, 2006). Across these outlets, Arabs and Muslims are frequently linked with violence and terrorism, perpetuating the stereotype that Arabs and Muslims are terrorists.

This stereotype may be more prevalent within video games than in any other form of media. Being an Arab video game character is almost synonymous with being a terrorist (e.g., Dill, Gentile, Richter, & Dill, 2005; Sisler, 2008). Games such as *Call of Duty 4: Modern Warfare* (Activision, Inc., 2007), *America's Army* (U.S. Army, 2002), *Conflict Desert Storm II: Back to Baghdad* (SCi, Gotham Games, 2003), *Delta Force: Black Hawk Down* (Nova-Logic, 2003), *Counter Strike Condition Zero* (Valve Corporation, 2004), and *KumaWar* (Kuma Reality Games, 2004) have missions that take place in Middle Eastern settings or in anonymous Middle East-like settings. In most of these games the enemy is depicted by a set of schematized stereotypic Arab/Muslim attributes (e.g., turbans, long, loose clothes, dark skin color, and facial hair) (Sisler, 2008). All such enemies look visually identical in terms of facial features and clothing (Machin & Suleiman, 2006). The backgrounds and settings present the Middle East in a stereotypically traditional fashion with images of deserts, camels, Bedouins, and caliphs. The U.S. soldiers are usually shown having powerful and expensive weapons and gear. The Arabs are depicted as "terrorists with car bombs and truck bombs"; "suicide bombers with explosives strapped to their bodies," and "angry mobs of Arabs wielding AK-47s" (Chick, 2003, para. 4). What are the effects of playing such games on the game players?

Theoretical Basis: Effects of "Aggressive Targets"

Media are powerful sources of social learning that teach and reinforce certain ideas about infrequently encountered groups. How learning occurs through the media can be understood through several sociocognitive theories such as Social Learning Theory (Bandura, 1977), Script Theory (Huesmann, 1998), and the General Aggression Model (GAM: Anderson & Bushman, 2002). Given its focus on aggressive stimuli and

its application in various video game effects studies (e.g., Anderson et al., 2010), we focus on GAM in this article.

Similar to other social-cognitive models, GAM assumes that our memories, thoughts, and decisions are based on complex associative networks of nodes representing cognitions and emotions. One's experience (real or virtual) influences development of links and associations between concepts. Concepts that are frequently activated simultaneously become interconnected over time, forming highly accessible knowledge structures. Knowledge structures influence perceptions, guide interpretations, and influence behavior.

Specific to the present studies, GAM views video game play as a series of learning trials that activate certain kinds of associations in the short term (priming processes) and that with repeated exposure can lead to long-term changes in knowledge structures and schemas (learning processes). For example, each learning episode with stimuli that depict Arabs as terrorists is likely to prime, activate, and strengthen this stereotypic association, ultimately leading to its automatization. These immediate activations may influence one's attitudes, beliefs, perceptions, and expectations of Arabs as being aggressive and violent. In addition to cognitive effects, these learning episodes may also influence affect toward Arabs and ultimately influence one's behavioral scripts. For example, being exposed to stimuli in which Arabs are presented as hostile and aggressive may increase the likelihood of perceiving a seemingly neutral interaction with an Arab as threatening or aggressive, thereby influencing the course of the interaction.

Although any stereotypic presentation of social groups can create and reinforce stereotypes (Greenberg, Mastro, & Brand, 2002), presenting a group as violent and as appropriate targets of justified violence may be especially damaging to beliefs about that group. With repeated exposure such depictions may increase violent attitudes, perceptions, and expectations as well as anger and aggressive actions toward the depicted group. Such easily accessible, well-rehearsed knowledge structures may facilitate the expression of aggression. The implications of this development are significant. Anderson and Carnagey (2004) state that "a person who repeatedly 'learns' through experience or

through cultural teachings that a particular type of person is a ‘threat’ can automatically perceive almost any action by a member of that group as dangerous,” which can “easily lead to a ‘shoot first, ask questions later’ mentality” (p. 173). In short, repeated exposure to portrayals of certain groups as terrorists systematically “teach” a person that members of those groups are a threat. Automatic use of these knowledge structures may influence aggressive perceptions and attitudes (e.g., Arabs are terrorists/violent), related emotions (e.g., anger and fear), and behaviors (e.g., aggressive actions) toward members of these groups.

Goals for the Present Studies

Although numerous studies have tested GAM’s prediction that observing violent events primes aggressive cognitions, to date no studies have tested GAM’s predictions concerning perceptions, beliefs, or attitudes about stereotyped groups. According to the priming aspects of GAM, if our sampled population (midwestern U.S. college students) has learned the “Arabs as terrorists” association, then games that portray Arabs as terrorists *or* that include a terrorism theme will prime this stereotype, leading to negative perceptions, attitudes, and affect toward Arabs. Thus, there were three main goals for the present studies: (1) Test the hypothesis that brief play of an Arab-terrorist, or even a non-Arab terrorist game, can increase anti-Arab attitudes; (2) Further examine which aspects of Arab-terrorist games contribute to anti-Arab attitude (stereotypic portrayal of Arabs, terrorism, violence, or some combination); and (3) Assess self-reported exposure to information about Arabs in the mass media and in person, to see whether such exposure was related to anti-Arab perceptions, attitudes, and affect.

Assessment of anti-Arab attitude was done through both implicit and explicit measures. Implicit attitudes are thought to be primarily associative in nature, shifting in response to recent experiences (Dasgupta & Greenwald, 2001). Furthermore, implicit attitudes are less subject to social desirability and experimental demand artifacts. Explicit attitudes and beliefs about prejudice could also be altered by exposure to stereotype consistent actions in a video game. Witnessing (and in fact, causing) such actions may cause shifts in stereotypes. For

example, playing a violent game with Arab-terrorist targets may increase access to similar memories of violent and terrorist actions by Arabs and may therefore lead players to alter their explicit judgments of Arabs.

Experiment 1: Methods

Overview and Design

Experiment 1 tested two specific hypotheses relevant to the first overall goal of the study. Hypothesis 1 was that playing a stereotypic terrorism video game (with and without Arab targets), relative to a nonviolent no-target game, will increase negative implicit and explicit attitudes toward Arabs. We included a Russian-terrorist version of the violent game to see whether the terrorism cue was sufficient to prime the Arab group category and thereby increase anti-Arab attitude. If the terrorism cue is sufficient in activating the Arab group category, then the Russian game should yield effects similar to the Arab-terrorist game (despite not directly priming the Arab group category). If the terrorism cue does not prime an Arab-as-terrorist knowledge structure, then the Russian-terrorist condition should yield Arab attitudes similar to the nonviolent condition. Of course, the terrorism cue might well prime the Arab stereotype sufficiently for only some participants, which could lead to an intermediate anti-Arab attitude effect.

Hypothesis 2 was that playing a game with Arab-terrorist targets will influence perceptions of Arabs, as assessed by a drawing task in which participants are asked to draw a “typical” Arab. Again, if the terrorism cue is sufficient to prime the Arab group category, participants in the Russian-terrorist condition will yield results similar to participants in the Arab-terrorist condition. We used a drawing task to assess perceptions for two main reasons. First, unlike most current implicit and explicit measures, drawings go beyond assessing evaluative good–bad tags and have the potential to translate people’s underlying outgroup schemas into *physical* entities that display how people think of, perceive, or “see” others. In this sense, drawings can be more informational than standard measures. Second, the kinds of traits and characteristics drawn likely represent the most accessible stereotypes people have of that group, and these perceptions are especially likely to influence

judgments and decisions within intergroup interactions (e.g., Inman & Baron, 1996).

Participants

Two hundred twenty-four participants were recruited from introductory psychology courses at Iowa State University. They received two course credits for their participation, which typically lasted 60–90 min. Nineteen participants were rated as suspicious based on their answers to a structured funnel debriefing, so their data were deleted. Suspicion rate did not vary significantly by condition, $p > .20$. Data from one participant who used a cell phone throughout the session were also deleted. Of the remaining participants, 102 were men, 100 women, 2 unidentified, and 164 self-identified as White or Caucasian. The mean age was 19.57 ($SD = 1.71$).

Procedure

Participants first read and signed an informed consent document. They were told that the objective of the study is to observe video game effects on visual attention. Visual attention would be assessed through a computerized categorization task and a drawing task. Next, participants answered questions assessing their sources of information about various racial/ethnic groups, including Arabs. Of most relevance to the present research, participants were asked about their sources of information about Arabs on a four-item scale ($\alpha = .71$). Items were answered on a 10-point scale anchored at 1 = *least informative source* and 10 = *most informative source*. Three of the items assessed media sources: “My information about Arabs comes from . . . movies, newspapers, and TV.” The fourth item, “my primary source of information about Arabs is direct contact,” was reverse scored. Therefore, higher scores indicate that the participant rated media as their primary source of information about Arabs, whereas lower scores indicate that direct contact was a relatively more important source. This *Arab information source* variable was used as a covariate in all analyses for two reasons. First, doing so allowed tests of whether this individual difference variable was related to attitudes toward Arabs. Second, it allowed tests of whether differences moderated the effects of the video game manipulation. No such moderating effects

occurred, so Arab information source was kept as a simple covariate in all reported analyses. Participant also recorded their gender, age, race, religious affiliation, and socioeconomic status (based on parental income and education).¹

Next, participants received standardized instructions and practiced their randomly assigned single-player video game. Once participants were comfortable with the main controls, experimenters asked participants to put on headphones and closed the cubicle door. After playing their assigned game for 30 min, participants completed the Implicit Association Test (IAT) assessing attitudes toward Arabs. Then, participants answered questionnaires assessing their explicit attitudes, video game evaluations, and demographic information. Next, participants completed a drawing task with colored pencils. Finally, participants were probed for suspicion, debriefed, and dismissed.

Video Games

Participants were randomly assigned to play either a version of *Counter Strike* with Arab terrorists, a version of *Counter Strike* with Russian terrorists, or a nonviolent golf game.

Counter Strike: Arab terrorists. In this game the main character is part of a U.S. counterterrorist squad on a mission in a stereotypical Middle Eastern setting (e.g., sand, date trees, dome structures, and Arabic script on walls). The objective is to either eliminate enemy forces, which consist of four members, or dismantle the bombs they are trying to set up within a fixed time frame. The enemy targets in this version have stereotypical Arab traits (e.g., tan or dark skin, facial hair, face masks or turbans, AK47s, desert fatigues).

Counter Strike: Russian terrorists. This was the same as the Arab condition except the mission was in a Russian setting (e.g., snow) with Russian terrorists (e.g., light skin color, no facial hair, snow fatigues).

3D Ultra Mini Golf Adventures. In this game (Sierra Online, 2007), the main character

¹ Because there were few non-White participants, race was coded as a dichotomous variable (1 = *White*, 2 = *non-White*). Only one participant self-identified as Muslim. There were no significant main or interactive effects of the demographic variables in Experiment 1. Adding these variables to the analyses did not change the main results in any significant way.

tries to putt the golf ball into a clearly marked hole. As the player advances, golf courses become more complicated.

Video game evaluations. As in many video game studies, we assessed how fun (11 items, $\alpha = .92$) and difficult (four items, $\alpha = .70$) participants found their assigned game (cf. Anderson & Dill, 2000). Such measures often are useful in media effects studies because of the challenges associated with trying to match existing games on dimensions that are not the primary focus of experimental manipulations (detailed analyses involving these factors can be found in the online supplemental materials).²

Dependent Variables

Implicit attitude. We used the IAT to measure implicit negative attitudes toward Arabs. The IAT measures the relative strength of associations between pairs of concepts. When completing an IAT, participants rapidly classify individual stimuli that represent category and attribute into one of four distinct categories with only two responses (see Greenwald, Nosek, & Banaji, 2003, for a detailed overview of the IAT). The underlying assumption of the IAT is that responses will be facilitated—faster and more accurate—when categories that are closely associated in memory share a response, compared with when they do not (Greenwald, McGhee, Schwarz, 1998). Ten Arab and 10 European male first names were selected from Park, Felix, and Lee (2007). In addition, 10 pleasant and 10 unpleasant words were selected from Greenwald and colleagues (1998). Some blocks of trials paired Arab-pleasant and European-unpleasant responses, whereas other blocks paired European-pleasant and Arab-unpleasant responses. Additional practice and control blocks were included, as is standard in IAT procedures (Greenwald et al., 2003).

Explicit attitudes. Three explicit attitude scales assessed anti-Arab attitude: Semantic Differential Items, Attitudes Toward Other Groups (Pratto, Sidanius, Stallworth, & Malle, 1994), and Blatant and Subtle Prejudice (Pettigrew & Meertens, 1995). Items assessing attitudes toward other ethnic groups were included using similar statements to reduce suspicion.

Correlations among the three explicit and the implicit Arab attitude measures are reported in Table 1. Results suggested that combining the

Table 1
Correlation Coefficients and Alphas (on the Diagonal) of Arab-Focused Semantic Differential, Attitude Toward Other Groups, Blatant and Subtle Prejudice Scales, and IAT D-scores: Experiment 1

	1	2	3	4	5
1. Semantic differential	0.96				
2. Attitudes toward other groups	0.70***	0.79			
3. Blatant and subtle prejudice	0.62***	0.61***	0.86		
4. Explicit Arab attitude composite	0.88***	0.88***	0.85***	0.95	
5. IAT D score ^a	0.15*	0.07	0.15 ⁺	0.13	na

Note. *ns* range from 188 to 201. IAT = Implicit Association Test; na = not applicable.

^a Implicit Arab attitude as measured by the IAT.

⁺ $p = .05$. * $p < .05$. *** $p < .001$.

three explicit measures would be simpler and more informative than separate analyses. We created a single explicit anti-Arab attitude measure by standardizing the three explicit measures and taking their average. This overall explicit scale was positively but nonsignificantly correlated with implicit Arab attitude, $r = .13$, $p = .08$.

Drawing task. Participants were asked to draw a “typical” Arab and Caucasian man and woman.³ The Human Figure Drawing is a free-response instrument. The idea is that the request to draw a figure, identified by group label, activates existing schema of that social group. Previous research has demonstrated that Human Figure Drawings can be used for assessment of social images and social influences (e.g., Bartal & Teichman, 2005). Participants were given a stapled drawing packet and a ziplock bag of

² The video game manipulation had no significant impact on the fun and difficulty ratings, $F_s < 1$. Statistically controlling for these scores did not change the main results in any appreciable way, so they will not be discussed further.

³ The drawing packet also instructed participants to draw a “typical” African American and Latino man and woman in order to reduce suspicion. Although not directly relevant to the goals of this study, analyses of these drawings yielded a pattern similar to, yet significantly different from, the Arab drawings for all three game conditions.

24 Crayola colored pencils. The order in which participants were asked to draw each of the groups was counterbalanced across participants.

Two raters blind to game condition coded the drawings on the following dimensions: affect, stereotypical appearance, and presence or absence of a weapon.⁴ The ratings for all dimensions showed substantial interrater reliability (all κ s \geq .95). Disagreements between raters, which occurred in eight drawings, were reconciled by a third rater. Images that could not be coded were assigned missing values on that dimension.

Affect. Affect was judged from the facial expression. Drawings with a smile or upward lip line were scored +1. Drawings with a straight lip line and straight eye brows were scored 0. Drawings with a downward lip line and downward eye brows were scored -1.

Stereotypic appearance. Stereotypic appearance was judged based on the number of stereotypic attributes⁴ drawn relevant to each ethnic group (0 = no stereotypic attributes, 1 = one or two stereotypic attributes, 2 = three or more stereotypic attributes). Stereotypic attributes for Arab men included facial hair, turbans, and long dresses; stereotypic attributes for Arab women included hair covering (i.e., hijab), facial veil, and long dresses. For Caucasian men stereotypic attributes included blue eyes, blonde hair, and baseball caps; stereotypic attributes for Caucasian women included blonde hair, blue eyes, and dresses.

Weapon. Raters coded whether the drawn image displayed a weapon (e.g., gun, knife, bomb) or not (0 = no weapons drawn, 1 = one or more weapons drawn).

Experiment 1: Results

Implicit Arab Attitude: *D*-scores

IAT data were converted to *D* scores using the standard Greenwald and colleagues (2003) procedures. Positive *D* scores indicated faster responses to Arab + unpleasant associations than to an Arab + pleasant associations, relative to the corresponding European associations. The mean *D* score across all participants was $M = 0.50$; $SD = 0.31$, indicating an overall anti-Arab implicit attitude, $t(175) = 21.37$, $p < .001$. Each group's mean also was significantly greater than zero, $ps < .001$.

A one-way ANCOVA was conducted with game type as the experimentally manipulated variable and Arab information source as a covariate. Planned contrasts were conducted. Arab information source was not a significant predictor of implicit attitude, $F < 1$. As predicted, game condition significantly influenced implicit anti-Arab attitude, $F(2, 175) = 3.87$, $p < .05$. The Arab-terrorist game yielded significantly greater anti-Arab attitudes than the nonviolent game, M s = .58 and .41, SD s = .31 and .36, respectively, $F(1, 175) = 7.74$, $p < .01$, $d = 0.42$. The Russian terrorist game ($M = .50$, $SD = .27$) fell between the other two and was not significantly different from either, $ps > .10$. These results support the hypothesis that playing a video game involving stereotypic Arab-terrorists increases negative implicit attitudes toward Arabs, at least temporarily, relative to nonviolent game play. They further suggest that games involving terrorism increase implicit anti-Arab attitudes even when they do not include Arab characters.

Explicit Arab Attitudes

The video game effect was significant, $F(2, 186) = 3.15$, $p < .05$. Participants who played either the Arab-terrorist ($M = .15$, $SD = .88$) or Russian-terrorist ($M = .10$, $SD = .76$) game had significantly greater explicit anti-Arab attitude scores than those who had played the nonviolent game ($M = -.22$, $SD = .95$), F s(1, 186) = 5.44, and 4.13, $ps < .05$, d s = 0.34 and .30, respectively. Furthermore, Arab information source was positively, although nonsignificantly, associated with explicit anti-Arab attitude, $F(1, 186) = 3.29$, $p = .07$, $b = .11$.

In sum, playing a violent video game involving terrorism increased explicit negative attitudes toward Arabs, relative to nonviolent game play, even when no Arab characters or Middle Eastern scenery were in the game. Furthermore, participants who reported greater media sources of Arab information and less direct contact with Arabs displayed slightly greater negative explicit attitudes toward Arabs.

⁴ Research team members created coding dimensions and criteria for the drawings after examining a subset of the drawings but without knowledge of the video game condition of the participants. A different pair of raters applied the criteria, again blind to video game condition.

Drawing Task

A mixed-model repeated-measure ANCOVA, with Arab information source as covariate, was performed on the appearance and affect measures. The weapons measure was coded dichotomously, so chi-square analyses were used. Figure 1 displays examples of drawings made of the “typical” Arab and Caucasian male and female.

Stereotypic appearance. A 3 (video game: Arab-terrorist, Russian-terrorist, Nonviolent) \times 2 (drawn ethnic group: Arab, Caucasian) \times 2 (gender of drawing: male, female) ANCOVA was run, with Arab information source as the covariate. Video game yielded a significant main effect, $F(2, 151) = 6.60, p < .01$. The means for the Arab-terrorist, Russian-terrorist, and nonviolent game were $M_s = 1.1, 0.87, \text{ and } 0.83$, respectively. The Arab-terrorist game yielded significantly more stereotypical traits than the Russian-terrorist or the nonviolent games, $F_s(1, 151) = 9.04, 9.88, p_s < .01, d_s = 0.49, 0.51$. See Table 2.

The Arab information source main effect was significant, $F(1, 151) = 3.91, p < .05, b = .07$; participants who relied more heavily on media sources tended to draw more stereotypical pictures. Interactions involving Arab information source were all nonsignificant, $p_s > .10$.

The main effect of gender of drawing was significant, $F(1, 151) = 28.43, p < .01$. Women ($M = 1.04$) were drawn with more stereotypic attributes than men ($M = 0.82$). The gender

drawn by ethnic group drawn interaction was also significant, $F(1, 151) = 19.46, p < .01$. Arab women ($M = 1.18$) were more likely to be drawn with stereotypical traits than Arab men ($M = 0.76$). No such difference was found in Caucasian drawings (CFemale $M = 0.91$; CMale $M = 0.87$).

Of more importance is the group drawn by video game interaction, $F(2, 151) = 2.58, p < .08$. As can be seen in Table 2, and as confirmed by a planned interaction contrast, the Arab-terrorist game produced more stereotypic Arab drawings than the Russian-terrorist and nonviolent games, but these two games did not significantly affect Caucasian drawings, $F(1, 151) = 5.16, p < .03$.

Affect. Affect was based on the facial expression of the drawn individual ($-1 = \text{negative}$, $0 = \text{neutral}$, $+1 = \text{positive}$). Most of the Arab female drawings could not be coded for this dimension because their faces were covered with a veil. Thus, only the male drawings for both groups were included in these analyses. The same type of mixed model ANCOVA was run.

Group drawn, $F(1, 165) = 29.34, p < .001, d = 0.84$, and game type, $F(2, 165) = 8.96, p < .001, d = 0.47$, yielded significant main effects, whereas Arab information source did not, $F < 1$. As shown in Table 2, drawings of Caucasians displayed more positive affect ($M = 0.76$) than drawings of Arabs ($M = 0.49$). Participants who had played the Arab-terrorist game drew char-



Figure 1. Sample human figure drawings of the “typical” Arab and Caucasian male and female.

Table 2
Effects of Video Games on Stereotypic Appearances and Affect of “Typical” Arab and Caucasian Drawings

Dependent variable	Video game condition			Game main effect
	Arab terrorists	Russian terrorists	Nonviolent	
Arab stereotypic appearances	1.23 ^a (0.59)	0.91 ^b (0.69)	0.77 ^b (0.72)	$F(2, 151) = 6.53^{**}$
Caucasian stereotypic appearances	0.98 ^a (0.53)	0.82 ^a (0.49)	0.89 ^a (0.43)	$F(2, 151) = 1.50$
Arab affect	0.16 ^a (0.83)	0.52 ^b (0.65)	0.80 ^c (0.46)	$F(2, 165) = 12.18^{****}$
Caucasian affect	0.69 ^a (0.47)	0.81 ^a (0.44)	0.79 ^a (0.41)	$F(2, 165) = 1.26$

Note. Game condition values are means with standard deviation in parentheses. Within each row, means that do not share a superscript are significantly different at $p < .05$.

** $p < .01$. **** $p < .001$.

acters with significantly less positive affect than those who played the nonviolent or the Russian-terrorist games, $F_s(1, 165) = 17.05$ and 7.95 , $p < .01$, $d_s = 0.64$ and 0.44 , respectively. The difference between the Russian-terrorist and nonviolent conditions was nonsignificant, $F(1, 165) = 2.22$, $p > .05$.

Of more interest is the video game by group drawn interaction, $F(2, 165) = 8.81$, $p < .01$. Game type had a significant main effect on affect of Arab drawings, $F(2, 165) = 12.18$, $p < .01$, but not on Caucasian drawings, $F < 2$, $p > .10$. As shown in Table 2, participants in the Arab-terrorist condition were the most likely to draw Arab men with negative affect, followed by participants in the Russian-terrorist, and nonviolent game conditions. All three of these conditions significantly differed from each other ($p_s < .05$)—Arab-terrorist versus nonviolent, $d = 0.80$; Arab-terrorist versus Russian-terrorist, $d = 0.48$; and Russian-terrorist versus nonviolent, $d = 0.35$.

Weapons. There were no weapons drawn for Caucasian men and women. Only one participant drew an Arab woman with a weapon; that participant was in the Arab-terrorist condition. Of the 12 participants who drew a weapon in the Arab male category eight were in the Arab-terrorist condition and four were in the Russian-terrorist condition. As expected, the percentage of participants who drew a weapon in their Arab male drawings significantly differed by video game, $\chi^2(2, N = 218) = 7.29$, $p < .05$. The exact ratio for weapons drawn for the Arab-terrorist, Russian-terrorist, and nonviolent game conditions were 8/75 (10.7%), 4/78 (5.1%), and 0/65 (0%), respectively. These results provide support for the hypothesis that

playing a game in which Arabs are targeted will increase the likelihood of viewing them as aggressive. Consistent with other results, the Russian-terrorist game appeared to prime negative Arab perceptions.

Experiment 1: Discussion

Consistent with Hypothesis 1, participants randomly assigned to play the Arab-terrorist game displayed higher implicit and explicit anti-Arab attitudes than participants who played the nonviolent game. Russian-terrorist game participants also displayed more negative attitudes toward Arabs than those in the nonviolent game, though this effect was significant only for the explicit measure. This suggests that the terrorism cue is sufficient to prime the Arab group category. Given the frequent association of Arabs and terrorism in the media, participants are likely to think of Arabs when they think of terrorism and vice versa. The results of the Arab information source individual difference variable on explicit negative attitudes toward Arabs also supports the idea that reliance on media sources for information about Arabs (instead of direct contact) increases anti-Arab attitudes, most likely through social learning processes. However, the weakness of that result suggests caution until it is replicated.

Consistent with Hypothesis 2, relative to the Russian-terrorist and nonviolent game conditions, the Arab-terrorist condition increased the likelihood of drawing the following: Arab men and women with stereotypical traits, Arab men with negative affect, and Arab men with a weapon. Thus, brief exposure to video games portraying Arabs as terrorists can increase per-

ceptions of Arabs as mean and aggressive. The drawing results also identify attributes that are considered prototypical. Other research suggests that prototypical group members are recognized and categorized quickly (e.g., Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). Outgroup members who do not fit the prototypical stereotype are less likely to be recognized and categorized as members, essentially serving as a stereotype-maintenance technique.

Experiment 2: Methods

Design and Overview

Experiment 2 further explored the goal of identifying features of video games that might influence outgroup attitudes. Of particular interest is the extent to which the attitude findings of Experiment 1 resulted from terrorism cues, display of stereotypic Arab characters, or violence cues. Experiment 2 had five between-subjects game conditions, four of which can be thought of as constituting a 2 (terrorism theme: present/absent) \times 2 (Arab characters: present/absent) design. This 2 \times 2 design allows tests of potential additive and interactive effects of terrorism theme and stereotypic Arab characters. The fifth game condition used a violent shooter non-terrorist game, to allow specific tests of whether the terrorism versus nonviolent game effects are uniquely produced by the terrorism theme or merely by the presence of violent content. The Arab information source scale from Experiment 1 was included as a covariate in all analyses.

Prior studies have focused primarily on the influence of media stereotypes on cognitions. However, because of the importance of affect in prejudice and discriminatory behaviors (Mackie, Smith, & Devos, 2000), we added a negative Arab affect measure to Experiment 2. We hypothesized that games containing elements of terrorism and games containing stereotypic Arab characters would induce more negative affect toward Arabs than games without terrorism elements or Arab characters.

Participants

Eighty-two women, seven unidentified sex, and 203 men from introductory psychology courses at Iowa State University participated.⁵ The mean age of participants was 19.42, ($SD =$

1.78). Nine were dropped because of high suspicion during the structured debriefing. Thirty-three additional participants did not complete the Arab information source items and were dropped, leaving a total sample of 250.

Procedure

The cover story and procedures were the same as in Experiment 1, with three exceptions: (1) A 10-item measure of social desirability was added (Strahan & Gerbasi, 1972; $\alpha = .95$);⁶ (2) The drawing task was dropped; and (3) A measure of negative affect toward Arabs was added. Similar to Experiment 1, participants completed the four-item *Arab information source* scale ($\alpha = .76$) prior to game play. Participants were randomly assigned to play one of the following five games for 30 min: a violent video game with Arab terrorists, a violent game with Russian terrorists, a nonviolent minigolf game without Arab characters, a nonviolent strategy game with Arab characters, and a violent first-person shooter game with no terrorism elements or Arab characters. Participants then completed the Arab IAT and a series of questionnaires assessing: participants' feelings and attitudes toward several ethnic groups, video game evaluations, and demographic information. Finally, participants were probed for suspicion, debriefed, and dismissed.

Video Games

Three of the games were the same as in Experiment 1. The fourth game was *Arabian Lords*, (BreakAway Games and Quirkat, 2004) a nonviolent strategy game in which players take the role of a merchant with the goal of expanding one's business within various Middle East cities. The game includes stereotypic Middle Eastern settings and characters. The fifth game was *Unreal Tournament 2004*, a first-person shooter that makes no reference to terrorism, Arabs, or Middle Eastern settings (Epic Games, 2004) (see detailed analyses on

⁵ Because gender had no reliable effects in Experiment 1, we did not attempt to control the sign-up procedure for Experiment 2 to ensure equal numbers of male and female participants.

⁶ There were no significant effects of social desirability on implicit or explicit anti-Arab attitudes or negative Arab affect, $ps > .10$, so it will not be discussed further.

the video game evaluations in the online supplemental materials).⁷

Measures

Implicit and explicit Arab attitudes. The implicit and explicit Arab attitude measures were the same as in Experiment 1. The composite explicit anti-Arab attitude scale ($\alpha = .93$) was positively correlated with implicit Arab attitude D scores, $r = .14$, $p < .05$.

Feelings toward other groups. Participants rated the extent to which they feel positive, negative, anger, fear, furious, afraid, threat, disgust, pride, and hostility toward Arabs, from 1 (*not at all*) to 7 (*extremely*) (Mackie et al., 2000). These 10 items were imbedded in a larger 30-item questionnaire that contained similar items for African Americans and Latinos to reduce suspicion. For the Arab items, $M = 2.35$, $SD = 0.77$, $\alpha = .96$.

Demographics. Participant gender, age, race, religious affiliation, and socioeconomic status (based on parental income and education) were also assessed.⁸

Experiment 2: Results

Analyses included all five groups so that a common error term could be used in all tests. The 2 (terrorism theme: present/absent) \times 2 (Arab character: present/absent) analyses were conducted by using appropriate contrasts for the two main effects and their interaction (see detailed analyses on the contrasts used in the online supplemental materials).

Preliminary Analyses

As in Experiment 1, no participants had problematic response latency problems, but computer errors reduced the IAT sample somewhat. Negative Arab affect correlated positively with both implicit ($r = .20$, $p < .01$) and explicit ($r = .68$, $p < .001$) anti-Arab attitudes.

Main Analyses

Implicit Arab attitude. The grand mean of the IAT D scores was significantly larger than zero, indicating an overall negative attitude toward Arabs, $M = .60$, $t(225) = 27.75$, $p < .001$. Each of the five group means was significantly greater than zero, all $ps < .001$. As in Experi-

ment 1, the Arab information source covariate did not predict implicit attitude, $F < 1.0$.

The 2 (terrorism theme: present/absent) \times 2 (Arab character: present/absent) contrast-based ANCOVA yielded the hypothesized main effect of terrorism. Those who had played a terrorism game displayed significantly greater implicit anti-Arab attitudes ($M = 0.69$, $SD = 0.29$) than those in the nonviolent game conditions ($M = 0.53$, $SD = 0.39$), $F(1, 225) = 10.76$, $p < .01$, $d = 0.44$. The Arab character main effect was not significant ($F < 1$). The Arab character by terrorism interaction was not significant, $F(1, 225) = 3.14$, $p < .08$, but there was a trend for the terrorism theme effect to be slightly larger on Arab-character based games than on non-Arab games. Figure 2 presents the group means for all three dependent variables in z -score form.

A planned contrast comparing the mean D score of those who played *Unreal Tournament* (violent game without terrorism, $M = 0.58$, $SD = 0.29$) to the average of the two terrorism game ($M = .69$) conditions was significant, $F(1, 225) = 3.97$, $p < .05$, $d = 0.27$. Furthermore, *Unreal Tournament* did not differ from the mean of the two nonviolent games, $F < 1$. These results suggest that the terrorism element, not the mere presence of violence, caused the increased implicit anti-Arab attitude after playing the terrorist games.

A planned contrast comparing the Arab-terrorist game ($M = 0.74$, $SD = 0.27$) with the nonviolent Arab game ($M = 0.49$, $SD = 0.38$) also was significant, $F(1, 225) = 13.31$, $p < .001$, $d = 0.49$. Furthermore, the nonviolent Arab game did not differ from the golf game, $F(1, 225) = 1.15$, $p > .25$, suggesting that it is the portrayal of Arabs as enemy/terrorist targets that caused an increase in implicit anti-Arab attitude, not merely the portrayal of stereotypic Arab characters and setting. This finding is unique; most current literature on media stereotypes is focused on general effects of stereo-

⁷ As in Experiment 1, two video game evaluation scales (11 "fun" items and 4 "difficulty" items) were administered after game play. Adding these variables to the analyses did not change the main results in any appreciable way.

⁸ As in Experiment 1, race was categorized as a dichotomous variable (1 = *White*, 2 = *non-White*). None of the participants self-identified as Muslim. None of the demographic variables had significant effects on any of the three dependent variables. Adding these variables to the analyses did not change the main results in any appreciable way.

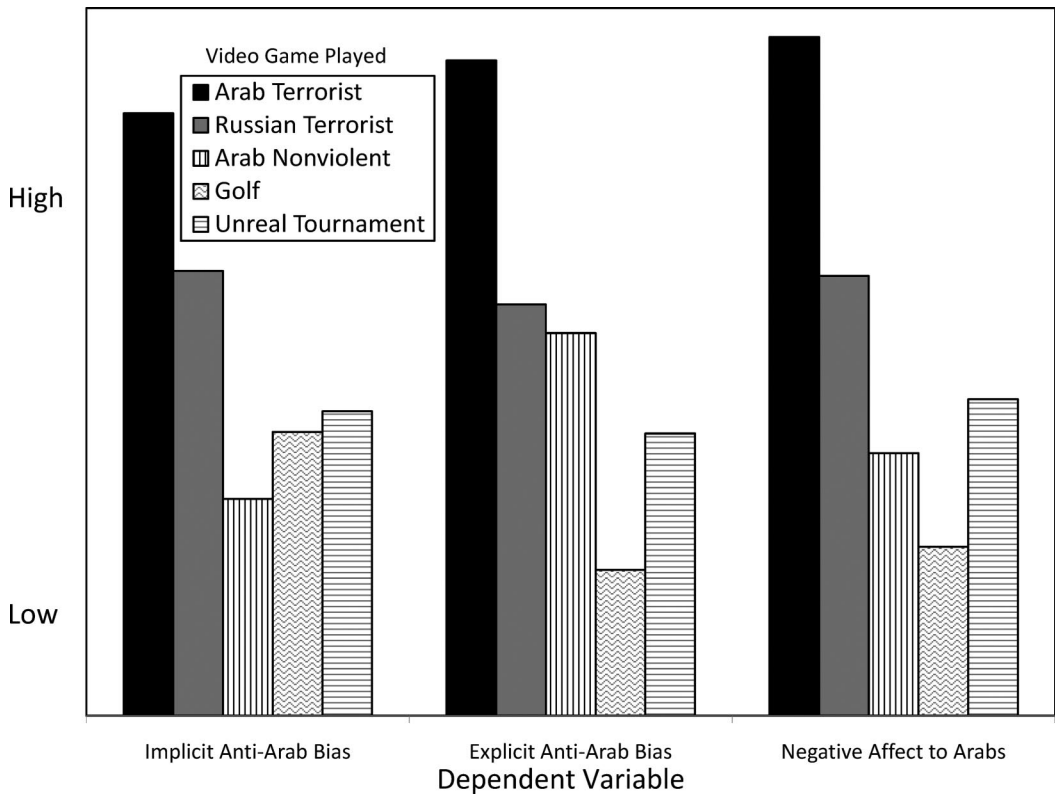


Figure 2. Standardized means for all five games for each of three dependent measures in Experiment 2.

typic portrayals, not on whether they occur within or without the context of violence.

Explicit Arab attitudes. As in Experiment 1, Arab information source was positively associated with explicit attitudes, $F(1, 246) = 6.33$, $p < .02$, $b = .13$. Reliance on media instead of direct contact with Arabs was associated with negative explicit attitudes toward Arabs.

A 2 (terrorism theme) \times 2 (Arab characters) ANCOVA yielded significant main effects of terrorism theme and of Arab characters, $F_s(1, 246) = 14.61$ and 8.72 , $p_s < .01$, $d_s = 0.49$ and 0.38 , respectively. The two-way interaction was nonsignificant, $F < 1$. Those who played a terrorism themed game displayed greater explicit anti-Arab attitudes than those who had played a nonviolent game, $M_s = 0.25$, -0.17 , respectively. Those who had played a game with Arab characters displayed greater negative attitudes toward Arabs than those who had played a game without any Arab characters, $M_s = 0.21$, -0.13 , respectively.

The average of the two nonviolent games did not differ from *Unreal Tournament*, $F(1, 246) = 1.23$, $p > .25$. However, the nonviolent Arab game yielded significantly lower anti-Arab scores than the Arab-terrorist game but significantly higher scores than the golf game ($M_s = 0.03$, 0.38 , -0.38 , $SD_s = 0.83$, 0.91 , 0.71), $F_s(1, 246) = 4.84$, 6.88 , $p_s < .05$, $d_s = 0.28$; 0.33 , respectively. Interestingly, this suggests that video game portrayals of Arabs can lead to more negative explicit Arab attitudes even when Arabs are portrayed in a neutral context. In our participant population, the mere activation of either an Arab schema or a terrorist schema led to more negative explicit attitudes toward Arabs. Of course, the significant difference between the Arab-terrorist and the Arab-nonviolent games showed that the Arab-as-terrorist portrayal produced a stronger anti-Arab attitude effect than the mere portrayal of Arabs in stereotypical ways.

Negative affect toward Arabs. As with explicit attitudes, the Arab information source covariate was positively associated with negative affect toward Arabs, $F(1, 246) = 3.95, p < .05, b = .12$. Thus, greater reliance on media and less reliance on direct contact with Arabs was associated with negative feelings toward Arabs.

The 2 (terrorism theme) \times 2 (Arab characters) ANCOVA revealed that both main effects were significant, $F_s(1, 246) = 18.86$ and 5.94 ; $p_s < .001$ and $.02$; $d_s = 0.55$; 0.31 , respectively. Participants who had played a terrorist theme video game reported more negative affect toward Arabs than those who had played one of the nonviolent games, $M_s = 2.59$ and 2.14 , respectively. Those who had played an Arab character game reported more negative affect toward Arabs than those who had played a game without Arabs, $M_s = 2.49$ and 2.24 , respectively. The Arab character by terrorism theme interaction was nonsignificant, $F < 1$.

Planned contrasts revealed that the terrorist games yielded significantly greater negative affect than *Unreal Tournament* ($M = 2.29, SD = 0.72$), $F(1, 246) = 6.01, p < .05, d = 0.31$, whereas the nonviolent games did not significantly differ from *Unreal Tournament*, $F < 2, p > .20$. Similar to the explicit attitude results, the Arab terrorist game ($M = 2.76, SD = 0.85$) yielded significantly more negative affect than the nonviolent Arab game ($M = 2.22, SD = 0.78$), $F(1, 246) = 12.73, p < .001, d = 0.46$. However, the nonviolent Arab game did not differ from the golf game ($M = 2.05, SD = 0.63$), $F(1, 246) = 1.46, p > .20$. In other words, although the presence of Arab characters did increase negative Arab affect (as shown by the Arab character main effect), it was the portrayal of Arabs as terrorists that had the largest impact.

Experiment 2: Discussion

Playing a terrorism-themed video game produced significantly greater anti-Arab attitudes (implicit and explicit), and more negative affect toward Arabs relative to participants who played nonviolent games or even a violent game without elements of terrorism. As with Experiment 1, the results imply that in our participant population the terrorism-Arab association is so strong that a reference to terrorism is sufficient

to prime a negative Arab attitude even in the absence of a direct Arab reference.⁹ It also suggests that violent content, by itself, appears insufficient to prime anti-Arab attitude or affect. The mere presence of Arab characters in a video game also increased explicit anti-Arab attitudes and negative affect toward Arabs. Significant video game effects on the negative Arab affect measure showed that video game stereotypes influence not only one's cognitions but also one's affect toward members of the stereotyped group. This is important given the strong influence of affect in prejudice and discriminatory behaviors such as intergroup aggression (e.g., Brewer, 2001; Mackie et al., 2000; Mummeny & Otten, 2004). Furthermore, the lack of significant social desirability effects suggests that the findings on the explicit measures (attitudes and affect) were not the product of social desirability concerns.⁶ Of course, the implicit measure is designed to be immune to such effects.

Beyond these short-term game effects, we found that participants who reported that they relied less on media and more on direct contact as sources of information about Arabs were less likely to have explicit anti-Arab attitudes than those who reported relying relatively more on media sources. Whether this effect is the result of observational learning of negative stereotypes from media or of positive contacts with Arabs is unclear from the present study.

General Discussion

There were three main goals for the present studies: (1) Test the hypothesis that brief play of an Arab-terrorist, or even a non-Arab terrorist game, can increase anti-Arab attitudes; (2) Further examine which aspects of Arab-terrorist games contribute to anti-Arab attitude (stereotypic portrayal of Arabs, terrorism, violence, some combination); and (3) Assess self-

⁹ Although not significant in either experiment, it is interesting to note that in both experiments, the Arab-terrorist game yielded somewhat greater implicit anti-Arab attitude scores than the Russian-terrorist game. Combining the two studies for the three games that were used in both experiments yielded the following means for the Arab-terrorist, Russian-terrorist, and nonviolent golf game, $M = 0.66, 0.57, \text{ and } 0.49$, respectively. The contrast between the Arab-terrorists condition and the Russian-terrorists condition was significant, $F(1, 304) = 3.91, p < .05, d = .23$.

reported exposure to information about Arabs in the mass media and in person, to see whether such exposure was related to implicit and explicit anti-Arab attitude. All three goals were met. Pairing terrorism with Arab antagonists in widely played commercial violent video games increased the players' negative implicit and explicit attitudes, stereotypic perceptions, and negative affect toward Arabs in general. Furthermore, the drawing results from Experiment 1 reveal that games which target Arabs or include elements of terrorism increase the perception of Arabs as aggressive and mean. In Experiment 2, the significant difference found between the Arab-terrorist and Arab-nonviolent games on negative Arab affect, implicit and explicit anti-Arab attitudes confirms the hypothesis that presenting stereotyped groups as aggressive targets is especially influential on beliefs about that group.

Results from the present studies add to prior work on the effects of media stereotypes on consumers in at least three ways: (1) They reveal that video game stereotypes can prime negative and aggressive perceptions, attitudes, and affect; (2) They reveal the presence of an associative link between terrorism and Arabs in the sampled population; and (3) They test previously untested propositions of GAM that the stereotypic presentation of an outgroup in a violent context is more harmful than in a non-violent context.

Limitations

Some limitations in the present studies should be addressed in future work. First, both studies tested the short-term effects of video game stereotypes. Of course, the potential for short-term processes to produce long-term changes is important and needs further work. Second, the use of actual video games as experimental stimuli has methodological strengths and weaknesses. Using stimuli that exist in the "real world" support the ecological validity of the findings. However, using existing games restricts researchers in manipulating and controlling some theoretically interesting aspects. For example, the limited availability of games that include both a nonviolent context and Arab characters restricted our selection of games for manipulations. Third, in both experiments, participants who played the terrorist games were

assigned to play in the role of the "counterterrorist" squad. It is possible that playing as a counterterrorist, as opposed to a terrorist, further amplifies the negative effects observed in implicit and explicit responses. Future research could experimentally manipulate the role participants are assigned to play. Finally, though the use of the new drawing method (new to this domain) to assess perceptions of groups has important strengths, it also has potential weaknesses. For example, it is unclear what the behavioral implications and correlates of such image-based perceptions might be.

Research Implications

There are several important research implications of these studies relevant to the special subject: Technology and Violence. First, these findings represent the first tests of GAM-based predictions that the presentation of a group as violent and appropriate targets of justified violence may be especially damaging to beliefs about that group. Second, GAM suggests that repeated exposure to stimuli that increase aggressive thoughts, feelings, and behaviors in the immediate situation may well lead to long-term changes that parallel the short-term ones. Such correspondence between short- and long-term effects has been repeatedly confirmed in research on violent gaming effects on aggressive cognition, affect, and behavior (Anderson et al., 2010). Interestingly, both Experiments 1 and 2 yielded effects of media as a primary source of information about Arabs on explicit anti-Arab attitudes and affect, suggesting such long-term transfer processes. Third, the Human Figure Drawings task provided additional useful information beyond that obtained by traditional implicit and explicit attitude measures, going beyond assessing positive/negative attributes and revealing how people physically perceive others. In this sense, drawings can be more informational than standard measures, yielding both qualitative (e.g., inclusion of weapons) and quantitative information that represent the most accessible stereotypic features people imagine about these groups, perceptions that are especially likely to influence judgments and decisions within intergroup interactions (e.g., Inman & Baron, 1996). Finally, these results support the tripartite perspective on prejudiced attitudes: cognitions, affect, and behavior. The act

of engaging in virtual aggressive actions against Arabs (behavior) activated negative implicit and explicit attitudes, perceptions (cognitions), and negative affect toward Arabs.

Clinical and Policy Implications

At a practical level, the present findings seem especially significant when one considers how briefly our experimental procedures exposed participants to the video games; how much time children, adolescents, and adults play video games; how many of those games portray various groups in stereotypic ways; and how few alternatives most children and adolescents have for learning about other social groups (Ball-Rokeach & DeFleur, 1976). Even though Arab stereotypes were tested in these studies, video game stereotypes of any other group would theoretically produce similar results. The formation and reinforcement of these negative media portrayals have significant implications for intergroup relations (e.g., Soliya, 2010).

It is possible that the effects of video game stereotypes on anti-Arab attitudes are especially robust because of the overall lack of direct contact with Arabs and the consequent dependence on media sources for information about Arabs in our sampled population. Similarly, although all group stereotypes can be harmful, media-based Arab stereotypes may be especially harmful considering the lack of positive Arab images in the current media (e.g., Shaheen, 2009). Specifically, with Arabs it seems that no direct reference is needed to activate people's negative Arab attitudes. For many within the United States, the word "terrorism" has become coincident with Arabs, Muslims, and Islam (Park et al., 2007; Study 1). In this context, even video games that have only one of the elements (terrorism but not Arabs, Arabs but not terrorism) can prime anti-Arab cognitions, attitudes, and feelings. These results are reminiscent of several real-world examples of how terrorism usually is associated with Arabs, even prior to the 9/11/2001 attacks. Immediately after the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City, the media speculated that we should look to the Middle East for the person or persons responsible (e.g., Naureckas, 1995); of course, we ultimately learned that this was a case of home-grown violence.

Importantly, both experiments revealed an overall implicit anti-Arab attitude within our population. This finding is consistent with opinions expressed in various national opinion surveys (e.g., Altman, 2010). For example, a recent Gallup poll found that more than four in 10 (43%) Americans admit that they have at least some feelings of prejudice against Muslims (Gallup, 2010). These statistics suggest that negative attitudes toward Arabs and Muslims are more prevalent than negative attitudes toward other minorities. Indeed, studies find that implicit prejudice against Arabs and Muslims is greater than against African Americans (Park et al., 2007; Studies 2 and 3), a group that has historically been a target of prejudice within the United States.

Clearly, additional work is needed on how video games might influence stereotypes and attitudes toward any outgroups that are depicted within these games; especially needed are studies of potential long-term effects. Until such studies are available, though, our results suggest that parents, educators, game-rating entities, and child advocacy groups consider the potential harmful effects of stereotype-laden games on the beliefs of the game players and on the groups who are stereotyped in these games. The implications of negative attitudes and potential discriminatory behaviors against outgroup members are serious and obvious. Less obvious, perhaps, is the possibility that when the outgroup under consideration includes all or most members of some other nation, the increase in negative beliefs about the people in that nation may facilitate political attitudes that favor the ultimate form of interpersonal violence, that is, war. Although we are loath to believe that entertainment media can influence such drastic decisions as going to war, we also know that political leaders, governments, and others have manipulated media and staged propaganda events for exactly that purpose, throughout history. By improving our understanding of the processes underlying such media-based stereotype effects and of the extent (and limits) of such effects, psychologists and society at large may ultimately be in a better position to reduce such harmful effects at multiple levels of violence, not only within a particular society, but between nations.

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