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# Effects of stereotypic video game portrayals on implicit and explicit attitudes

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**Effects of stereotypic video game portrayals on implicit and explicit attitudes**

by

**Muniba Saleem**

A thesis submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
MASTER OF SCIENCE

Major: Psychology

Program of Study Committee:  
Craig A. Anderson, Major Professor  
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Iowa State University

Ames, Iowa

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## **ABSTRACT**

Past research has demonstrated the negative effects of media stereotypes on implicit and explicit attitudes across various forms of media. Because video games are a relatively new form of media, there is almost no research on the influence of video game stereotypes on people's attitudes. The main goal of this study was to test the effects of negative video game stereotypes on implicit and explicit attitudes. The results indicated that negative video game stereotypes are associated with negative implicit attitudes but not negative explicit attitudes. Other results revealed influences of overall media stereotypes, sources of information about groups, direct contact with the stereotyped group, peers' negative attitudes towards the stereotyped group, patriotism, and past negative explicit attitudes on current implicit and explicit attitudes. Implications of media stereotypes, especially in video game are discussed, along with suggestions for future research.



## INTRODUCTION

“Oh I come from a land,  
From a faraway place,  
Where the caravan camels roam.  
Where they cut off your ears  
If they don't like your face,  
It's barbaric, but hey, it's home”

These were the original lyrics to Disney's Aladdin's opening song, “Arabian Nights”. In June, 1993, in response to public pressure, Disney executives deleted two lines from these opening lyrics but retained, “It's barbaric, but hey it's home” (Shaheen, 2001). For decades Arabs and other groups have been portrayed in stereotypic ways across various forms of media (Harris, 2004; Lester & Ross, 2003; Kamalipour & Carilli, 1998). The frequent use of media stereotypes have been discussed and observed through several content analyses (Children Now, 2001; Dill, Gentile, Richter & Dill, 2005; Dixon & Linz, 2000; Glaube, Miller, Parker & Espejo, 2001; Greenberg, Mastro, & Brand, 2002; Mastro & Greenberg, 2000). However, empirical scientific research addressing the effects of media stereotypes on attitudes has been scarce (Greenberg, Mastro, & Brand, 2002).

The stereotype literature describes the influence of consistently negative portrayals on people's attitudes. Overall, media's role as an important socializing agent has been demonstrated through research (Hamilton, Stroessner, & Driscoll, 1994; Ryan & Wentworth, 1999). Through media we are introduced to a broad range of people. More importantly, sometimes media are our only source of information regarding some groups.

Other research shows that video games, despite being a relatively new form of media, influence people's cognitions in various ways (Anderson et al., 2003). The active involvement of players in the game makes video games a powerful learning source (Swing,

Gentile, & Anderson, in press). Video games, like other forms of media, have often relied on the use of stereotypes. The influence of these stereotypes on people's attitudes warrants attention, especially considering the lack of positive images of certain groups (e.g., Arabs) in media.

The present study examined the effects of video game stereotypes on implicit and explicit attitudes. Another goal of the study was to examine the influence of multiple socializing agents on attitudes. There is a plethora of research on the negative impact of video game violence on people's aggressive affect, cognitions, and behaviors (Anderson et al., 2003; Anderson & Bushman, 2001; Anderson & Dill, 2000). However, research on the effects of video game stereotypes is almost nonexistent. Given the current controversial video game ratings system (Gentile, Humphrey, & Walsh, 2005), the potentially negative influence of video game stereotypes on attitudes should support the need for a vital change in video game access and restriction policies, especially for children who have few alternative information sources.

## LITERATURE REVIEW

### Stereotypes

The social cognition approach explains stereotypes as belief systems that characterize various social groups (e.g., Hamilton et al., 1994). In this perspective, stereotypes are thought of as cognitive structures or categories that affect encoding and processing of information, particularly information pertaining to groups to which the perceiver does not belong (i.e., out-groups) (Hamilton & Troler, 1986). These structures or schemas direct attention toward some stimuli and away from others, influence categorization of information, help us “fill-in” missing information, and influence memory (Fiske & Taylor, 1991; Oliver, 1999).

Stereotypes arise from shared cultural norms rather than individual experiences with members of the stereotyped group (Jones, 1972). Several socio-cultural forces such as family, friends, political leaders, and the mass media facilitate the formation, activation, and maintenance of cultural stereotypes (Hamilton et al., 1994). Media are especially important in creating and reinforcing cultural stereotypes about people with whom we have very little direct contact. Exposure to even a single or a few media exemplars can often be powerful enough to create beliefs about issues, people, and places, especially when little or no direct exposure is available (Armstrong, Neuendorf, & Brentar, 1992; Fujioka, 1999; Zillman, 2002; Zillmann & Brosius, 2000). Repeated exposure to stereotypic content potentially reinforces and maintains stereotypes that could lead to discriminatory and prejudicial attitudes. Thus, it may be appropriate to think of media as a source of social learning that essentially teaches and reinforces certain ideas about infrequently encountered groups. This learning function may be similar to the way that the media reinforces notions of violence (Hamilton & Troler, 1986).

## **Stereotypes in the Media**

Mass media have a tendency to construe social reality such that viewers see most groups in unrealistic and often unfavorable ways (Kamalipour & Carilli, 1998; Entman, 1992; Gerbner, Gross, Signorielli, & Morgan, 1980). Several reviews of minorities in the media demonstrate that minorities continue to be stereotyped in and eliminated from major roles (Burgess, Stermer, Burgess, Brown, Dill, Collins, 2004; Children Now, 2003; Lester & Ross, 2003; Children Now, 2001; Mastro & Greenberg, 2000; “NAACP blasts TV networks”, 1999; Greenberg & Brand, 1993; Greenberg, 1986). The trend for media to use stereotypes can be observed in regard to various groups (Lester & Ross, 2003). Women are one of the most common groups to be stereotyped in the media. Content analysis studies have consistently demonstrated that the media present distorted and stereotypic images related to women (Signorielli, 1990). Some common patterns that can be observed are: men outnumber women three to one, women are likely to be younger than men and cast in traditional and stereotypic roles, women are limited in their employment possibilities, and women are more likely to be married than men (Signorielli, 1990).

The most widely studied ethnic group portrayal in U.S. media has been African Americans (Harris, 2004). Several studies conclude that the mainstream media displays bias and prejudice in images of African Americans (Campbell, 1995; Gist, 1990; Martindale, 1996). In regard to news media, there is a dominant juxtaposition of black representations with social problems, welfare, crime, poverty, drugs, and violence (Abraham, 2003). Beyond African Americans, there is almost no representation in the media of other ethnic groups (Greenberg, Mastro, & Brand, 2002). Despite Latinos being a growing population in the U.S. (13% of the total population; U.S. Bureau of the Census, 2003), only 2-3% of characters on

prime-time TV are Latinos (Espinoza, 1997; Children Now, 2004; Mastro & Stern, 2003). In today's media, Latino images are largely invisible and tend to be portrayed in negative or narrow roles when they do occur (Harris, 2004).

Recently Arabs have become an increasing target of media stereotypes. Of course not all Arab portrayals are negative, but the occurrence of negative images is much more prominent than the positive ones (Shaheen, 2001; Said, 1981). The negative Arab stereotype has been observed across various media outlets: newspapers and news magazines (Lewis, 1990; Barranco & Shyles, 1988; Whitehead, 1987), news coverage (Adam & Heyl, 1981; Suleiman, 1988), editorials (Piety, 1983), political cartoons (Lendenmann, 1983), children's cartoons (Shaheen, 2001; Little, 1998), web animations (Van Buren, 2006), entertainment (Shaheen, 1984, 1997, 2001), popular fiction (Sabbagh, 1990; van Teefeelen, 1994), and textbooks (Jarrar, 1983). The general consensus seems to be that Arabs are – with some exceptions – fairly consistently portrayed in a negative stereotypical fashion.

Recently the web has become a popular medium to exhibit and view countless forbidden narratives and other forms of expression (Wolf, 2000; Van Buren, 2006). Since September 11, 2001 there have been an increase in racist web animations and flash-based games portraying Arabs and Muslims as evil, deviant, and barbaric (Van Buren, 2006). These animations tend to represent Arabs in stereotypic elements including turbans, facial hair, weapons, desert settings, dark skin, and incoherent speech. The violence and stereotypes that Arab characters in these web animations exhibit far exceeds the degree of animated violence and negative stereotypes that has been historically permissible or would be permissible today in mainstream media (Van Buren, 2006).

### **Video Games: A New Way to Stereotype**

Many recent video games undermine the role of minority groups by first, excluding them from donning main character roles, and second, portraying them through stereotypic images (Huntemann, 2000; Children Now, 2001). Research analyzing the portrayal of minority groups in video games is sparse (e.g., Dill et al., 2005; Children Now, 2001; Glaube, Miller, Parker & Espejo, 2001; Marashi, 2001; Everret, 2005; Chan, 2005; Leonard, 2006). A content analysis revealed that 70% of the main characters in games are male, and only 10% are female. The other 20% could be either male or female. In regard to racial identity, over 68% of main characters are White, with 11% Black and 11% Latino (Dill et al., 2005).

Another review examining the top selling video games highlighted several important findings (Children Now, 2001). Females are severely under-represented and are usually cast in insignificant or stereotyped roles. Eighty-seven percent of the protagonists examined in the study were White. There were no Arab protagonists in any of the games examined in this study. African American, Latino, Asian/Pacific Islander, and Native American characters were almost nonexistent. The majority of the African American representation was found in sports games in which 83% were cast as competitors. The only representation of Latino characters was also in sports games. Asian/Pacific Islander characters were often portrayed as antagonists and wrestlers, or fighters.

One group has been the consistent target of stereotypes in video games – Middle Easterners. A content analysis revealed that Middle Easterners are overrepresented as targets of violence in video games (Dill et al., 2005). Even though most of the games analyzed in this study were created before September 11, 2001, Middle Easterners were the most likely minority group to be characterized as enemy targets. The Middle East seems to be a favorite virtual battleground. Action-genre games like *War in the Gulf* (Empire, 1993); *Delta Force*

(NovaLogic, 1998); Half Life: Counter Strike (Valve Software, 1999); Delta Force: Land Warrior (Novalogic, 2000); Conflict Desert Storm (SCi Games, 2002); America's Army (U.S. Army, 2002); Conflict Desert Storm II: Back to Baghdad (SCi games, 2003); Command & Conquer: Generals (Electronic Arts, 2003); Delta Force: Black Hawk Down (NovaLogic, 2003); Counter Strike Condition Zero (Valve Software, 2004); Full Spectrum Warrior (THQ, 2004); Kuma/War (Kuma Reality Games, 2004) take place in Middle Eastern settings or in anonymous Middle East-like settings.

Recently, there has been an increase in collaborations between the games industry and the U.S. military (Li, 2004; Leonard, 2004; Barron, 2004). The U. S. Army has released a multiplayer first-person shooter game (America's Army, U.S. Army, 2002) as an initiative to help with recruitment (Li, 2004). In this game, the player controls American or coalition forces against terrorists, while insurgents or terrorist units are controlled by the computer. Many of the above mentioned games are based on actual Special Forces operations and created with particular attention to 'authentic' detail (Machin & Suleiman, 2006).

In most of these games, the enemy is depicted by a set of schematized stereotypic attributes (e.g., turbans, long, loose clothes, dark skin color, and facial hair) which often refer to Arabs. All enemies look visually identical in terms of facial features and clothing (Machin & Suleiman, 2006). In most cases, the in-game narrative and objectives involve international terrorism or Islamic extremism. The backgrounds and settings of these games 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, on the other hand, are referred as: "terrorists with car bombs and truck

bombs”; “suicide bombers with explosives strapped to their bodies”, and “angry mobs of Arabs wielding AK-47s” (Sisler, 2006).

### **Why Do Stereotypes in Video Games Matter?**

Video games have become increasingly popular, earning over 18 billion dollars in the U.S. in 2007 (ESA, 2007). Technological advancements over the past couple years have made it possible for people to indulge in an increasingly realistic gaming experience (Beasley & Standley, 2002; Carnagey & Anderson, 2004; Dill et al., 2005). The interactive nature of video games provides them with the ability to convey powerful messages that negative stereotypes embody. Previous research has conclusively demonstrated that violent content in video games increases aggressive feelings, thoughts, and behaviors (Anderson, Carnagey, Flanagan, Benjamin, Eubanks, & Valentine, 2004). The same socialization and learning processes that underlie these general violent content effects are likely to produce similar effects of stereotypic content on a host of attitudes and beliefs.

Video game stereotypes are of special concern because their effects on learning may be bigger than other forms of media (Gentile & Gentile, in press; Dill & Dill, 1998). There are several reasons why this may be: identification with the main character, active participation, rehearsal of scenes, and repetition. Research on video game violence suggests that these factors may enhance the aggression effects on players (Gentile & Anderson, 2003). These factors enhance the learning process (relative to TV stereotypic portrayals) because players become active participants, rather than passive observers (Anderson et al., 2003).

Another reason why video game stereotypes warrant attention is because in today’s generation, children play video games an average of 13 hours per week (Martin & Oppenheim, 2007). Even high school students are devoting more time to video games (CIRP,



1998; 2005). In fact, the fastest-growing segment of the video game market is adults, with 32% of adults now playing, increasing the average age of gamers to 33 (Entertainment Software Association, 2007). These findings are important considering most people do not think that playing video games has a negative effect on the player's attitudes (Brenick, Henning, Killen, O'Connor, & Collins, 2007). This may be why high frequency players are less critical of negative images in video games and would not like the game content to be changed (Brenick et al., 2007).

Considering the overall negative effects of media stereotypes on attitudes, it seems highly probable that video game stereotypes would produce similar effects. Similar to other forms of media, video game stereotypes of certain groups could affect people's overall attitudes for those groups and eventually may influence direct or indirect behaviors towards members of the stereotyped group. For example, research shows that simple awareness of society's stereotypes, not acceptance of them, is enough to change a person's criterion in a shooting videogame; participants with a higher awareness of the African-American and violence stereotypic link had a higher false positive rate for shooting unarmed Black targets than unarmed White targets (Correll, Park, Judd, Wittenbrink, 2002). Another study illustrated that participants were faster in classifying violent stimuli after watching clips of games with negative African-American portrayals and were comparably faster at classifying nonviolent stimuli following clips of games with White characters (Burgess, Dill, & Stermer, 2008). Given the lack of diversity in video games and considering certain groups are often portrayed negatively (Dill et al., 2005), the influence of video game stereotypes becomes an important concern.

### **Theory: How Stereotypes Influence Attitudes**

Al tikrar biallem il hmar. By repetition even the donkey learns.

This Arab proverb summarizes how effective repetition can be when it comes to learning. Repeated exposure to stereotypic information makes stereotypes frequently and readily accessible (Banaji, Hardin, & Rothman, 1993; Bargh, 1994; Devine, 1989; Wittenbrink, Judd, & Park, 1997). In this respect, exposure to stereotypic information regarding certain groups may influence future automatic attitudes towards members of that group. For example, research shows that repeated exposure to information associating Arab-Muslims with negative incidents plays a significant role in creating and reinforcing Arab prejudice (Park, Felix, & Lee, 2007).

Park, Felix, & Lee (2007) demonstrated the effect of negative social information on implicit attitudes towards Arab-Muslims. Participants exposed to information describing the terrorist attacks on September 11, 2001 (negative information condition), showed a greater implicit anti-Arab bias than those in the neutral information condition. Participants' implicit anti-Arab bias in the positive information condition (i.e., information about Arab-Muslim culture) was substantially reduced compared with those in the negative and neutral conditions. The results of this study suggested that current implicit prejudice against Arab-Muslims is moderated at least, in part, by the valence of social information.

### **Effects of Media Stereotypes**

Research suggests that media have an important role in creating and reinforcing stereotypes toward members of minority groups (Dates, 1980; Gilbert, 1951; Klineberg, 1951; Scherer, 1971). Even overtly fictional media representations can affect judgments of reality (Hansen & Hansen, 1988). Socialization effects of media are especially strong on frequent viewers who have few information alternatives (e.g., children). Often, children's

sole experience with groups different from their family is through the media (Ball-Rokeach & DeFleur, 1976). For example, children who experienced a high degree of exposure to African Americans on television were particularly likely to believe that media portrayals of African Americans were “true to life” (Greenberg, 1972, p.13). Children are well aware of stereotypic depictions of racial-ethnic groups. A survey of 1,200 children aged 10 to 17, found that children associate White characters on television with “having lots of money,” “being well-educated”, “being leaders,” “doing well in school”, and “being intelligent”. Minority characters are described as “breaking the law”, “having a hard time financially”, being “lazy”, and “acting goofy” (Children Now, 1998). Another study found that people who listed television as their primary source of information about Arabs, were more likely to hold unfavorable attitudes toward Arabs than those who had direct exposure (Aljeaid, 1986). In this study, over 80% of participants indicated that media was their primary source of information about Arabs.

Previous research has demonstrated that being exposed to stereotypic portrayals in the media can influence judgments of unrelated individuals and events concerning members of the stereotyped group. This effect has been observed across various media forms: music videos (Gan, Zillmann, & Mitrook, 1997; Hansen & Hansen, 1988), movies (Givens & Monahan, 2005), news articles (Murphy, 1998; Power, Murphy, & Coover, 1996), news stories (Dixon & Azocar, 2007; Dixon, 2006), television (Ford, 1997; Peffley, Shields, & Williams, 1996; Oliver & Fonash, 2002), radio commercials (Hurtz & Durkin, 2004), and humorous context (Ford, 1997). It is also possible for media influenced attitudes to translate into public policy decisions (e.g., affirmative action, racial profiling, war) (see McLeod, Kosicki, McLeod, 2002). For example, one study found that participants’ attitudes towards

war became more positive immediately after the September 11, 2001 attacks, and became even more positive two months later (Carnagey & Anderson, 2007).

Research also suggests that stereotypic media portrayals of ethnic groups do not simply activate a single trait in construct memory; rather, they activate a broader, abstract mental representation or schema of those groups (Ford, 1997; Hansen, 1995; Hansen and Krygowski, 1994). Such schematic representations consist of general knowledge and expectations that provide an organizational framework for processing social information (Fiske & Taylor, 1991; Taylor & Crocker, 1981). For example, when violent regions or violence in general is shown continually accompanying a certain race or ethnic group in the media, the public may begin to cognitively associate the idea of violence with this group (Downings and Husband 2005, Mousa 1987). Furthermore, racial-ethnic stereotypes may lead to fear and limit social interaction among different groups (i.e., out-groups) (Perse, 2001).

### **How Stereotypes Influence Judgments**

There are several cognitive mechanisms that can explain how media stereotypes influence people's attitudes, judgments, and potentially the basis for behaviors.

**Priming:** Priming refers to a temporary influence of recently activated cognitive schemata on social perception (Berkowitz & Rogers, 1986; Srull & Wyer, 1979). Berkowitz's cognitive neo-association model notes that the requirement for media priming to occur is an existing associative network of related concepts in the cognitive structure (e.g., Jo & Berkowitz, 1994). With such a network in place, a presentation stimulus can trigger a chain of related thoughts and feelings through the process of spreading activation. With such schemata in place, stereotypic media exemplars can activate racist thoughts that become

highly accessible when audiences make judgments about racial groups (Ford, 1997; Hansen & Hansen, 1988; Hansen & Krygowski, 1994). In this way, media stereotypes can serve as cognitive shortcuts, that is, easily activated knowledge structures that guide subsequent judgments, decisions, and behaviors.

**Availability:** The availability heuristic is a related construct that is less time-dependent. Instead of focusing on the recency of cognitive activation, it focuses on the accessibility of relevant cognitions in memory (Kahneman, Slovic, & Tversky, 1982; Tversky & Kahneman, 1973). Thus, concepts that readily avail themselves in memory because of frequent activation (e.g., Arabs-terrorists) come to exert a disproportional influence on future judgments.

**Chronic accessibility:** Chronic accessibility, unlike short-lived contextual priming, is defined as enduring accessibility that results from the potentially non-recent, frequent, and consistent activation of particular constructs. This mechanism thus addresses the formation of persisting associations (e.g., Arabs and Islam) capable of influencing judgment for extended periods of time in an automatic fashion (Bargh, 1984; Bargh, Chaiken, Gendler, & Pratto, 1992; Spielman, Pratto, & Bargh, 1988). Research shows that prejudicial feelings and beliefs become chronically accessible and automatically activated, especially when social categories such as race are highly salient (Wyer & Srull, 1989).

The level of chronic accessibility of a construct stored in memory determines how readily people use that construct to encode person information (Bruner, 1957; Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979). People interpret a target person's behavior in terms of applicable trait constructs made temporarily accessible through priming (Higgins et al., 1977) or through chronic accessibility (Higgins, Bargh, & Lombardi, 1985; Higgins,

King, & Marvin, 1982; Srull & Wyer, 1979; 1980). Thus, when media portrayals of a group are predominantly negative, these negative constructs are most readily accessible to an individual when forming a social judgment (Persson & Musher-Eizenman, 2005).

**Automaticity:** Automaticity refers to a process that occurs without conscious awareness or control and is the result of repeated consistent associations (Bargh, 1994). Culturally shared social stereotypes are so common and deep-seated that they are automatically activated (Devine, 1989). Most often, specific stereotypic attributes need to be primed to have an effect on judgments, but sometimes the mere activation of a social category, such as an ethnic group, can increase the accessibility of stereotypic characteristics associated with that category (Banaji et al., 1993; Lepore & Brown, 1997). The more times that an association (e.g., Arabs-terrorist) is experienced (in real life and in media portrayals), the easier it will be to retrieve it. With consistent, repeated exposure, the retrieval will become automatic (Logan, 1988).

According to priming research, the automatic activation of a stereotype through priming increases the likelihood that the knowledge contained in the stereotype will be used in subsequent judgments (Power et al., 1996). The automatic utilization of the construct in judgment will influence judgments unless the viewer is motivated and able to inhibit its use (Bargh, 1999). Those low in cognitive resources will make judgments based on the unconscious activation of the stereotype because they will not be able to inhibit its use in social judgment (Devine, 1989).

### **Media Images and Pre-existing Stereotypes**

The cognitive mechanisms discussed above apply directly to the potential influence of frequent and consistent media stereotypes of certain groups. By automatically priming

racial stereotypes, and by doing so repeatedly and consistently, media stereotypes can maintain inaccurate and dominating representations of certain groups. Such automatic priming can occur whether or not the individual involved endorses the depicted stereotypes (Gorham, 1997). In the context of gender stereotypes, a recent meta analysis demonstrates a consistent, positive correlation: as exposure to gender stereotyping increases, sex-typed behavior and sex-role stereotyped attitudes increase (Oppliger, 2007).

### **Key Questions**

Past research has illustrated the negative effects of television, movies, music videos, newspapers, and radio stereotypes on people's attitudes (Gan, Zillmann, & Mitrook, 1997; Givens & Monahan, 2005; Armstrong, Neuendorf, & Brentar, 1992; Botta, 2000; Faber, O'Guinn, & Meyer, 1987; Ford, 1997; Ruble & Martin, 1998; Murphy, 1998; Hurtz & Durkin, 2004). However, it remains unknown whether video game stereotypic portrayals affect people's attitudes in the same manner. Although some researchers have shown the effects of *observing* stereotypic video game portrayals (Burgess, Dill, & Stermer, 2008), no research to our knowledge has examined the effects of *playing* stereotypic video games on attitudes. The main goal of the present study was to examine the effects of playing stereotypic video games on implicit and explicit attitudes.

The sociocultural model of stereotype formation suggests that stereotypes are learned through socializing agents (e.g., parents, peers, media) and maintained by social reinforcement (Hamilton & Sherman, 1994). Past research has examined the effects of these agents on attitudes separately (parents: Rohan & Zanna, 1996; peers: Tan et al., 2001; Eagly & Chaiken, 1993; media: see Greenberg, Mastro, & Brand, 2003). Some research also suggests that direct contact can reduce stereotypes under some circumstances (Pettigrew, &

Tropp, in press). However, it remains unclear what influence these socializing agents have on attitudes collectively. The present study incorporated several socialization agents in order to examine their unique and collective influence on implicit and explicit attitudes.

### **Using Arabs to Study Video Game Stereotypes**

Although media stereotypes exist for many groups, this study focused on video game stereotypes of Arabs for several reasons. First, research on negative Arab images in the media has practical implications. The Arab-American community has faced a serious problem with racial discrimination after September 11, 2001. Most of these instances are in the form of security-related discrimination, such as the illegal denial of services on airplanes after boarding. The American Arab Anti-Discrimination Committee (ADC) has confirmed over 70 cases involving more than 250 people in which persons perceived to be Arabs have been expelled from aircraft after or during boarding on the grounds that passengers or crew do not like the way they look (ADC Fact Sheet: The Conditions of Arab Americans Post 9/11, 2002).

At the same time, there is a lack of positive Arab images in the current media (Said, 1981; Shaheen, 1984, 1997, 2001). The consequences of ignoring a group of people are not trivial because the void left by a lack of familiarity and recognition can easily be filled with negative stereotypes. Thus, the concern becomes not that there are negative portrayals of Arabs in the media, but rather, that such negative images are not balanced by positive representations. This is significant because ethnic stereotypes are especially harmful in the absence of positive ethnic information and images (Wingfield & Karaman, 2002). That harm is not limited to the specific group, of course, but extends to the broader societies within which members of the target group are embedded, and to societies that must make decisions about how



to interact with members of the stereotyped group. Currently there are few video games that portray a positive Arab image. International games like *Special Forces* (Solution, 2003), *Under Siege* (Afkar Media, 2005), and *Under Ash* (Dar al-Fikr, 2002) portray Arab characters as protagonists defending their country, families, and way of life, rather than as terrorists attacking innocent civilians. One goal of those who created these games is to diminish the recurring stereotype of Arabs as villains and provide players with an Arab protagonist for a change (Ghattas, 2002). However, in the western media these games get assigned the term, “Islamogaming” (Halter, 2006) and are often thought of as propaganda to create future terrorists.

### **The link between Arabs, Muslims, and terrorism**

Research shows that even before September 11, 2001 media frequently linked Arabs with violence and terrorism (Ross, 2003; Shaheen, 2001), and that this association was exacerbated after September 11 (Corman & Dooley, 2001). In an analysis examining the links among influential words in the media following September 11, Corman and Dooley (2001) found words such as “Palestinian” and “Islamic” to be frequently linked to “terrorist” and “attack”. Other research shows that Islam, the Middle East and Arabs have become interchangeable with each other as well as with the ideas of violence and terrorism (Bizri, 2007; Naber, 2000). Terrorism has become synonymous with Arabs and Muslims often justifying subtle forms of discrimination and stereotyping against members of these groups (Ottosen, 1995). These findings can be understood through the chronic accessibility phenomenon which suggests that persisting associations are capable of influencing judgment in an automatic fashion (Bargh, 1994; 1984). Although research suggests that Arabs and Muslims have become closely associated with terrorism, it is unclear whether the word ‘terrorism’ by itself

can affect anti-Arab bias. One of the aims of the present study was to examine the association between terrorism and anti-Arab bias in the absence of a direct Arab reference.

A final reason for focusing on Arab stereotypes is that the existence of so many anti-Arab video games enabled selection of stimulus materials that are suitable for testing the main theoretical propositions concerning video game effects on stereotypes. The next section outlines these propositions.

### **Overview**

Guided by previous research and theory, several predictions were made for the present study.

### **Main Hypotheses**

Participants who play a video game with stereotypic Arab-terrorists will display greater implicit and explicit anti-Arab bias than participants who play a nonviolent video game. We also included a Russian-terrorists game to examine the association between terrorism and anti-Arab bias in the absence of a direct Arab reference. It was unclear whether participants in the Russian-terrorists game would respond more like the participants in the Arab-terrorists game or the nonviolent no-target game when assessing their anti-Arab bias. If terrorist-violence-Arab is a well-learned stereotype in the participant pool, then the Russian game should yield means similar to the Arab game. If it is not, then one might expect the Russian condition to look more like the neutral condition on measures involving anti-Arab bias.

### **Ancillary Hypotheses**

We predicted that media exposure to conflict perpetrated by Arabs will be positively correlated with negative implicit and explicit stereotypes about Arabs. Furthermore, we

hypothesized that participants whose knowledge about Arabs is primarily based on media sources will display greater anti-Arab bias than participants whose knowledge about Arabs is not based on media sources. We further predicted that peers' negative stereotypes of Arabs will be correlated with participants' negative stereotypes about Arabs. We hypothesized that in a U.S. participant population, higher levels of patriotism might be correlated with negative stereotypes about Arabs. Finally, we hypothesized that participants' prior explicit Muslim attitudes will be positively correlated with their present implicit and explicit Arab attitudes.

## **METHOD**

### **Participants**

Participants in the present study were recruited from the research participant pool in introductory psychology courses at a large Midwestern university. Participants received two course credits for their participation, which typically lasted 60-90 minutes. Data of seven participants were thrown out of all analyses because of the following reasons. Two females were using a cellular phone during their entire study session. Five participants (three males and two females) were rated as highly suspicious during the suspicious questionnaire administered at the end of the study. Of the discarded participants, two were in the Arab condition, two in the Russian condition, and three in the nonviolent condition. Of the remaining 173 participants, 82 were male, 91 female; 140 self-identified as White or Caucasian. The mean age of participants was 19.59, ( $SD = 1.57$ ).

### **Procedure**

Participants were recruited for the study through an online sign-up system. After arriving at the laboratory, they read and signed an informed consent document. Participants were told that the objective of the study is to observe video game effects on visual attention. They were told that the study also looks at measuring people's overall impression of others. Next they were taken to a cubicle, where they answered questionnaires on the computer assessing their patriotism, media exposure to violence perpetrated by Arabs, peers' negative stereotypes, information sources about groups, and past video game exposure. Then, they were given standardized instructions on how to play their randomly assigned single player video game. Participants practiced the game as the Experimenter observed. Once participants felt comfortable with the main controls, experimenters requested participants to put on

headphones and closed the cubicle door. Participants were randomly assigned to play either a video game with Arab terrorists, a video game with Russian terrorists, or nonviolent mini golf game for 30 minutes. After playing the game, participants completed the Implicit Association Test (IAT) assessing their implicit attitudes towards Arabs. After completing the IAT, participants answered a series of questionnaires assessing their familiarity with Arab and European names used in the IAT, attitudes about Arabs, African Americans, Latinos, video game evaluations, and demographic information. Finally, participants were probed for suspicion of the hypotheses, fully 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 game.

**Counter Strike: Arab Terrorists.** In this game the main character is part of a U.S. counterterrorist squad that is on a mission in a stereotypic 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 stereotypic Arab traits (e.g., tan or dark skin, facial hair, face masks, and AK47s) (see Figure 1). The enemies also have stereotypic Arab names (e.g., Akbar, Yousef, Karim) that are displayed when the main character targets, kills, or is killed by on an enemy character. Note that none of the names used in the game were used in the IAT. If the main character completes the mission in time they move on to another slightly harder level with the same target enemy and in the same setting. If the main character fails the mission, the words “Terrorists Win” appear in the middle of the screen and then the mission starts over.



Figure 1. Stereotypic Arab terrorists in the game

**Counter Strike: Russian Terrorists.** This was the same as the Arab condition except the mission was in a Russian setting (e.g., snow, abandoned factory) with Russian terrorists (e.g., light skin color, no facial hair, military uniforms) (see Figure 2). The enemies also had stereotypic European names (e.g., Benoit, Matthais). Again, none of these names were used in the IAT.



Figure 2. Russian terrorists in the game

**3D Ultra Mini Golf Adventures.** In this game the main character tries to putt the golf ball into a clearly marked hole. As the player advances, golf courses become more and more complicated.

## Measures

### Implicit Attitudes

We used the Implicit Association Test (IAT) as the main dependent measure of implicit attitudes. The IAT measures the relative strength of associations between pairs of concepts labeled as category and attribute. When completing an IAT, participants rapidly classify individual stimuli that represent category and attribute into one of four distinct categories with only two responses. The underlying assumption is that the responses will be

facilitated – and thus will be faster and more accurate – when categories that are closely associated in memory share a response, as compared to when they do not (Lane, Banaji, Nosek, & Greenwald, 2006). Ten Arab and 10 European male first names were selected from Park, Felix & Lee, (2007). In addition, 10 pleasant and 10 unpleasant words were selected from Park, Felix & Lee, (2007) and Greenwald and colleagues, (1998) (see Table 1).

Participants were asked to categorize a series of randomly generated stimuli into two groups by pressing the appropriate response keys with left and right index fingers. The IAT was composed of five blocks. Participants first completed two practice blocks in which they categorized Arab or European names and pleasant or unpleasant words using left or right response keys. Then, names of the two racial groups were combined with pleasant or unpleasant words to be classified by sharing the same response keys (e.g., Arab and pleasant, European and unpleasant). The response latency was measured for each trial and was used as the major dependent variable. After another block of practice, these associations were reversed (e.g., Arab and unpleasant and European and pleasant). Each of the two critical blocks was composed of 80 trials by repeating each name and word twice in a random order. The order in which these blocks were administered was counterbalanced between participants.

Table 1. Names and words used in the IAT

<b>Arab Names</b>	<b>European Names</b>	<b>Pleasant Words</b>	<b>Unpleasant Words</b>
Rashid	Chip	Joy	Evil
Jaafar	Adam	Love	Abuse
Zahir	Justin	Peace	Poverty
Ammar	Jonathan	Wonderful	Pollute
Muhammad	Andrew	Rainbow	Vomit
Saad	Matthew	Glorious	Cancer
Hassan	Harry	Laughter	Sickness
Haashim	Roger	Happy	Rotten



Umar	Stephen	Diamond	Filth
Nadeem	Frank	Lucky	Stink

### Name Familiarity

Participants rated their familiarity with each stimulus name used in the IAT on a 5-point scale ranging from 1 (*not at all familiar*) to 5 (*very familiar*) (see Appendix D). There is some research attributing IAT effects to participant's familiarity with names used in the IAT (e.g., Dasgupta, Greenwald, & Banaji, 2003). Measuring participant's familiarity with each name was helpful when analyzing for this alternate explanation for the IAT effects. A mean familiarity score was calculated for all Arab names used in the current IAT. The mean for this scale was  $M=2.41$ ,  $\alpha = 0.92$ . Similarly, a mean familiarity score was computed for all European names in the current IAT. The mean for this scale was  $M=4.36$ ,  $\alpha = 0.90$ . As expected, participants were much more familiar with European names,  $t(171) = 23.58$ ,  $p < .0001$ .

### Explicit Attitudes

**Semantic Differential Items.** This was one of the three explicit measures used to assess participants' explicit Arab attitudes. Ten semantic differential items for Arabs were provided. Statements asked how beautiful-ugly, good-bad, pleasant-unpleasant, honest-dishonest, nice-awful, friendly-unfriendly, peaceful-violent, helpful-unhelpful, mean-nice, and tolerant-intolerant the typical Arab members are on a 7-point bipolar scale ranging from -3 (*negative*) to 3 (*positive*) (see Appendix E). The mean for this scale was  $M = -0.89$ ,  $\alpha = 0.95$ .

**Attitudes Toward Other Groups Scale.** The second explicit attitudes measure was a questionnaire adopted from Pratto, Sindanius, Stallworth, and Malle (1994) containing five

statements about Arabs (e.g., “Most of the terrorists in the world today are Arabs”).

Participants were asked to rate degree of positive or negative feeling towards each statement (1=*very negative*; 7 = *very positive*) (see Appendix F). Other groups such as homosexuals (Kite & Deaux, 1986) and African Americans (Czopp & Monteith, 2006) were added to the measure using similar statements to reduce suspicion. The mean for this scale was  $M = 3.41$ ,  $\alpha = 0.76$ .

**Blatant Prejudice Scale.** Blatant prejudice was the third explicit attitudes measure. We used a nine item scale originally designed to measure prejudice among British people of individuals from the West Indies. This scale was adapted directly from Pettigrew and Meeters (1995) by substituting British with American and West Indian or people from the West Indies with people of Arab decent. Participants were asked to rate each item from 1 (*strongly agree*) to 6 (*strongly disagree*) (see Appendix G). Other ethnic groups were added using similar statements to reduce suspicion. The mean for this scale was  $M = 2.72$ ,  $\alpha = .84$ .

### **Additional Covariate/predictor Measures**

**Attitudes toward Muslims Scale (Altareb, 1997).** This questionnaire contains 25 items that tap five principal components: positive feelings about Muslims,  $\alpha = 0.87$ , Muslims as separate or other,  $\alpha = 0.82$ , restriction of personal choice/freedom,  $\alpha = 0.66$ , fear of Muslims,  $\alpha = 0.78$ , and dissimilarity of Muslims,  $\alpha = 0.66$ . Participants were asked to rate each item from 1 (*strongly disagree*) to 6 (*strongly agree*) (see Appendix H). Higher scores on this measure were interpreted as higher levels of anti-Muslim bias. This measure was administered in a mass testing session before the actual study. The responses of

participants who took part in this mass testing were combined with the rest of their data. The mean for this scale was  $M = 2.95$ , overall alpha = 0.92.

**Patriotism Scale (Kosterman & Feshbach, 1989).** This questionnaire contains 12 items and was used to measure levels of patriotism (e.g., “The fact that I am American is an important part of my identity”). Emphasis was added to negatively scored items by putting the word ‘not’ in bold face to stress their importance in responding to the statement. Participants were asked to rate each item from 1 (*strongly agree*) to 6 (*strongly disagree*) (see Appendix I). A mean of 12 items was computed to assess participant’s patriotism. Higher scores on this measure meant higher levels of patriotism. The mean for this scale was  $M = 4.71$ , alpha = 0.89.

**Exposure to media coverage of terrorists acts perpetrated by Arabs.** This is a six-item measure asking participants to rate their level of exposure to media coverage of terrorist acts perpetrated by Arabs (e.g., “How of often have you seen media footage about terrorists acts perpetrated by Arabs?”, “How often have you seen media footage of buildings, buses, or other property destroyed by Arabs?”). Other ethnic groups were added using similar statements to avoid suspicion. Participants were asked to rate each statement from 1 (*not at all*) to 7 (*all the time*) (see Appendix J). The mean of six items was calculated to assess participant’s exposure to media coverage of terrorists acts perpetrated by Arabs. Higher scores on this measure meant higher levels of exposure to such news. The mean for this scale was  $M = 4.21$ , alpha = 0.93.

**Information about Arabs.** This is a four-item measure assessing one’s source of knowledge about certain groups (e.g., “My information about Arabs comes from . . . “)(see Appendix K). A mean score of three items (movies, newspapers, and television) was

calculated to assess information learned about Arabs through media sources. Higher scores on this measure meant that the participant rated media as their primary source of information about Arabs. In this study, the Cronbach's alpha for this media source scale was 0.62 and the mean score was  $M=6.61$ . The item "My primary source of information about Arabs is direct contact" was used to assess participant's direct contact with Arabs.

**Peers' negative stereotypes about Arabs.** This a seven-item measure assessing one's peer attitudes toward ethnic groups (e.g., "People in my group of friends usually think that Arabs are not good people") (see Appendix L). Participants were asked to rate each statement from 1 (*strongly disagree*) to 7 (*strongly agree*). Other ethnic groups were added using similar statements to avoid suspicion. A mean score of seven items was calculated to assess participants' peer attitudes towards Arabs. Higher scores on this measure meant higher levels of peers' negative Arab stereotypes. The mean for this scale in this sample was  $M=3.65$ , alpha = 0.80.

**Prior Video Game Exposure.** This measure was used to assess the extent to which participants have played video games that involve Arab terrorists. A list of recent, popular video games that include Arab terrorists was included (see Appendix M). Participants were asked to rate each game on a 1 (*never*) to 7 (*more than 25 times*) scale, alpha = 0.76. A mean score of fifteen items was calculated to assess participants' exposure to video games with Arab terrorists. Higher scores on this scale meant higher prior exposure to video games with Arab terrorists. This scale did not have a normal distribution and was negatively skewed (skewness= 3.55, kurtosis = 16.30). Therefore, a logarithmic transformation was conducted on this item and it was called LOGAVGE. Even after the logarithmic transformation the scale

did not have a normal distribution (skewness= 2.52, kurtosis = 7.66). The mean for this scale was  $M=0.08$ .

**Video Game Evaluations.** This 16-item video game evaluations questionnaire was used to assess participant's evaluations of the game they had been randomly assigned to play (e.g., "The game was difficult to play", "The game was exciting", "The game was boring", "The game was frustrating"). Participants were asked to rate each game on several relevant dimensions on a 1 (*strongly agree*) to 10 (*strongly disagree*) scale (see Appendix N). This scale was analyzed to see if there were any game differences on relevant dimensions. The overall alpha for this scale was 0.75. Exploratory factor analyses were done on these items to see if there is an underlying similarity between these items. These analyses are presented in the preliminary analyses section.

**Video Game Character Identification.** A mean of four items was computed to assess the participant's identification with the main character in the game they played (e.g., "I am similar to the main character", "I became the main character during the game") (see Appendix O). Higher scores on this measure meant higher identification with the main character. The mean for this scale was  $M = 3.23$ ,  $\alpha = 0.85$ . This scale did not have a normal distribution and was negatively skewed (skewness= 0.98, kurtosis = 0.55). Therefore, a logarithmic transformation was conducted on this item and it was called LOGchar. The skewness and kurtosis for this scale (0.28 and -0.95 respectively) indicated a normal distribution after the transformation.

**Demographics.** Participant gender, age, race, political identity, religious affiliation, and socio-economic status (based on parental income and education) were also assessed (see Appendix P). We did not have any specific predictions in regard to demographic information.

## RESULTS

This chapter describes and summarizes the statistical analyses used to evaluate the research questions and hypotheses established in the previous chapters. The preliminary analyses section first describes how each of the three dependent variables was computed and their correlations with each other. The covariates section includes the relationship between all the covariates. The preliminary section also provides a table summary of the game type, sex, and each of the covariate main effects and interactions for each of the three dependent variables. The main analyses section provides the hypotheses and results relevant to each of the dependent variables. Given the number of highly correlated covariates in this study, each covariate was analyzed separately with the experimental manipulation for each of the three dependent variables.

### Preliminary Analyses

#### Dependent Variables

**Implicit Association Test (IAT).** Data from the IAT were analyzed based on the scoring algorithm provided by Greenwald, Nosek, and Banaji (2003). The response latencies from the two critical blocks (i.e., blocks three and five) were analyzed and the data in practice blocks discarded. A *D score* was computed as the difference in average response latency between the IAT's two combined tasks (i.e., (Arab + pleasant) – (Arab + unpleasant)), divided by the pooled standard deviation of subject response latencies in the two combined tasks. The original *D* scores were multiplied by -1 to match the direction of other explicit measures. Thus, a positive *D* score indicates a faster response to an Arab + unpleasant association compared to an Arab + pleasant association. Greenwald et al. (2003), suggest that response latencies greater than 10,000ms be deleted. They also suggest that

participants for whom more than 10% of trials had latency less than 300 ms were deleted. None of the participants in this study had such data patterns. The mean *D* score for all participants in this sample was  $M = 0.49$ , indicating an anti-Arab implicit bias in general.

### Explicit Questionnaire

Several explicit measures relating to Arab stereotypes were used in the present study; Semantic Differential Items, Attitudes Towards Other Groups Scale, and Blatant Prejudice Scale. Higher scores on these scales meant higher anti-Arab bias. The means for the Semantic Differential Scale, Attitudes Towards Other Groups Scale, and Blatant Prejudice Scale were  $M = -0.93$ ,  $M = 3.40$ ,  $M = 2.72$ , respectively. Correlation coefficients were calculated between these measures in order to examine the relatedness of these measures. The correlations between these measures and the implicit Arab bias measure are reported in Table 2. The correlations between these measures range from moderate to large (individual correlation coefficients vary between  $|r| = 0.14$  and  $|r| = 0.66$ ) and in all cases in the theoretically predicted direction (all positively related).

Table 2. Correlation coefficients and alphas (on the diagonal) of semantic differential, attitude towards other groups, and blatant prejudice measures.

	1	2	3	4
<b>1. Semantic Dif.</b>	0.95			
<b>2. Attit. Others</b>	0.660 ***	0.76		
<b>3. Blatant.</b>	0.556 ***	0.603 ***	0.84	
<b>4. <i>D</i> score</b>	0.203 **	0.148	0.162 *	-

Note. The low correlations between the implicit and explicit attitudes measure are partly due to the significant experimental effect on implicit attitudes and lack of a significant game effect on explicit attitudes.

1. Semantic Differential Items, 2. Attitude Towards Other Groups, 3. Blatant Prejudice Scale. 4. Implicit Arab bias as measured by the IAT.

Ns range from 161 to 173.

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

Given the consistently significant relations between these measures, there may be an underlying pattern of behavior for all of these measures. It is clear that the three explicit measures correlated quite well with other, and that their associations with the implicit measure ( $D$  score) were considerably weaker. However, it is not clear from the correlations that all three explicit measures should be combined to form one overall explicit Arab bias scale, so exploratory factor analyses were conducted on the individual items in these scales.<sup>1</sup>

Varimax (orthogonal) and Harris-Kaiser (oblique) exploratory factor analyses were conducted based on all ten Semantic Differential items, five Attitude Towards Other Group items, and nine Blatant Prejudice items. Both factor analyses generated the same two factor

<sup>1</sup> Analyzing results using the three separate explicit measures yielded the same results as using the factors suggested by the factor analysis. In other words, the Semantic Differential items and the Attitudes Towards Other Group items had similar results to the Subtly explicit Arab bias factor, whereas the Blatant attitudes measure yielded results similar to the blatantly explicit Arab bias factor.

pattern (see Table 3 for the Varimax rotated factor pattern). Based on Eigenvalues of the correlation matrix, a two factor solution was chosen. The rotated factor pattern generated in these analyses suggested one factor based on all Semantic Differential items plus four Attitude Towards Other Groups items. A second factor was generated including the other Attitude Towards Other Groups item and all of the Blatant Prejudice items. Factor 1 appears to be a subtle measure of explicit Arab bias; from here on it will be called Subtly Explicit. Factor 2 seems to be a more blatant measure of explicit Arab bias; from here on it will be



called Blatantly Explicit. The means for Subtly Explicit and Blatantly Explicit were  $M = 0.31, 2.82$ , respectively.

Table 3. Varimax rotated factor pattern for Semantic Differential, Attitude Towards Other Groups, and Blatant Prejudice items.

	<b>Factor 1</b>	<b>Factor 2</b>
<b>1. SD10</b>	<b>0.88658</b>	0.25667
<b>2. SD2</b>	<b>0.87739</b>	0.17142
<b>3. SD7</b>	<b>0.86694</b>	0.24819
<b>4. SD6</b>	<b>0.84439</b>	0.19316
<b>5. SD3</b>	<b>0.82915</b>	0.19608
<b>6. SD1</b>	<b>0.79266</b>	0.20759
<b>7. SD8</b>	<b>0.77163</b>	0.36682
<b>8. SD9</b>	<b>0.63218</b>	0.11715
<b>9. SD5</b>	<b>0.58659</b>	0.16463
<b>10. ATOG5</b>	<b>0.57254</b>	0.33798
<b>11. SD4</b>	<b>0.57254</b>	0.15252
<b>12. ATOG2</b>	<b>0.43912</b>	0.39856
<b>13. ATOG1</b>	<b>0.41290</b>	0.25717
<b>14. ATOG3</b>	<b>0.38995</b>	0.36963
<b>15. BS3</b>	0.19945	<b>0.75561</b>
<b>16. BS5</b>	0.21317	<b>0.67689</b>
<b>17. BS9</b>	0.16916	<b>0.66754</b>
<b>18. BS7</b>	0.31837	<b>0.66136</b>
<b>19. BS8</b>	0.35373	<b>0.64797</b>
<b>20. BS1</b>	0.14484	<b>0.62769</b>
<b>21. BS2</b>	0.19081	<b>0.57902</b>
<b>22. BS4</b>	-0.03935	<b>0.53374</b>
<b>23. ATOG4</b>	0.34429	<b>0.51732</b>
<b>24. BS6</b>	0.16742	<b>0.50295</b>

Note. Eliminating the cross-loaded items (SD8, ATOG2, ATOG3, ATOG5, BS7, BS8) did not change the overall results and thus, they were retained in future analyses.

### **Name Familiarity**

A mean familiarity score was calculated for all the Arab names used in the IAT. The distribution for this scale was positively skewed (skewness= 0.80, kurtosis = -0.09). Therefore, a logarithmic transformation was conducted on this scale and it was called LANAME. The skewness and kurtosis for this scale (0.27 and -0.86 respectively) indicated a normal distribution after the transformation. Similarly, a mean familiarity score was calculated for all the European names used in the IAT. The distribution for this scale was negatively skewed (skewness= -1.59, kurtosis = 2.86). Therefore, a square transformation was conducted on this scale and it was called SWNAME. However, the scale did not have a normal distribution even after the transformation (skewness= -1.19, kurtosis = 0.94). A 2 (sex) X 3 (game type) ANOVA was conducted separately on the Arab and European name familiarity scores. None of the effects were significant,  $F_s < 2.00$ ,  $p_s > .10$ . As noted earlier, however, participants were more familiar with European than Arab names.

### **Video Game Evaluations**

To test whether there were any game or sex differences in evaluations of the three games played in this study, a 2 (sex) X 3 (game type) ANOVA was conducted separately on each of the 16 dimensions. The adjusted means for game type and sex are presented in Table 4. Game type was significant only for amount of action,  $F(2, 165) = 26.97$ ,  $p < .001$ , and amount of violence,  $F(2, 163) = 168.76$ ,  $p < .001$ . The nonviolent game was rated as less action packed and less violent than the other two games. This is not a surprising finding considering the Arab and Russian terrorist games are first-person shooter games and the

nonviolent game was a mini-golf game. Sex yielded a significant main effect for the following video game dimensions: boring,  $F(1, 164) = 8.14, p < .001$ , enjoyable,  $F(1, 165) = 12.73, p < .001$ , entertaining,  $F(1, 165) = 12.02, p < .001$ , fun,  $F(1, 165) = 8.60, p < .01$ , and ability,  $F(1, 164) = 6.74, p < .05$ . Overall males rated games to be more boring, more enjoyable, more entertaining, and more fun than females. Females rated their abilities in the games higher than males,  $F(1, 167) = 7.68, p < .05$ . None of the interaction terms were significant,  $F_s < 2.00, p_s > .10$ .

Table 4. The adjusted means (adjusted for sex) for all video game evaluation dimensions for each game type and sex.

<b><u>VG Evals</u></b>	<b><u>Arab</u></b>	<b><u>Russian</u></b>	<b><u>Nonviolent</u></b>	<b><u>Males</u></b>	<b><u>Females</u></b>
<b>Difficult</b>	7.64*	7.78	6.54	7.33	7.31
<b>Absorbing</b>	5.99	6.29	5.82	6.09	5.98
<b>Action-packed</b>	5.95***	6.40***	3.27***	5.21	5.20
<b>Arousing</b>	4.86	4.80	4.26	4.84	4.45
<b>Boring +</b>	5.21	5.18	5.74	6.03**	4.72**
<b>Enjoyable</b>	4.63	4.74	5.34	5.63***	4.18***
<b>Entertaining</b>	5.14	5.09	5.68	6.01***	4.59***
<b>Exciting</b>	4.89	4.69	4.63	4.99	4.48
<b>Frustrating</b>	7.18	7.96	7.46	7.73	7.34
<b>Fun</b>	4.90	4.83	5.32	5.60***	4.43***
<b>Involving</b>	5.49	5.57	5.51	5.84	5.21
<b>Stimulating</b>	5.25	5.01	5.06	4.72	5.52
<b>Violent</b>	7.60***	7.73***	1.35***	5.42	5.71
<b>Addicting</b>	4.26	4.61	3.47	4.48	3.74
<b>Ability +</b>	5.33	5.12	5.14	4.84*	5.50*
<b>Ability improved +</b>	3.92	3.78	3.93	4.08	3.67

+ reverse coded, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Exploratory factor analyses were conducted on 15 video game evaluation dimensions (excluding violence) to observe if there is an underlying pattern for all of these video game dimensions. Varimax (orthogonal) and Harris-Kaiser (oblique) exploratory factor analyses were conducted based on the 15 items. Both factor analyses generated the same two factor pattern (see Table 5 for the Varimax rotated factor pattern). The rotated factor pattern generated in these analyses suggested one factor based on 11 items and another factor based on four items. Factor 1 appears to relate to how fun, exciting, involving, and enjoyable the game was. Factor 2 appears to relate to how difficult or frustrating the game was. The 15 items were combined into two factors as suggested by the factor analysis. Factor 1 was called ‘fun ratings’ and Factor 2 was called ‘difficulty ratings’. The mean for fun ratings was  $M=4.93$ , and the mean for difficulty ratings was  $M=6.00$ .

Table 5. Varimax rotated factor pattern for video game evaluation items.

	<b>Factor 1</b>	<b>Factor 2</b>
<b>1. exciting</b>	<b>0.83232</b>	-0.33527
<b>2. involving</b>	<b>0.81692</b>	-0.16529
<b>3. absorbing</b>	<b>0.81125</b>	0.01852
<b>4. stimulating</b>	<b>0.78181</b>	-0.34902
<b>5. action-packed</b>	<b>0.72646</b>	0.20098
<b>6. boring *</b>	<b>0.72268</b>	-0.27198
<b>7. arousing</b>	<b>0.70455</b>	-0.07008
<b>8. fun</b>	<b>0.68541</b>	-0.53168
<b>9. entertaining</b>	<b>0.68430</b>	-0.44495
<b>10. addicting</b>	<b>0.67715</b>	-0.13608
<b>11. enjoy</b>	<b>0.62714</b>	-0.55239
<b>12. difficult</b>	-0.00647	<b>0.80822</b>
<b>13. frustrating</b>	-0.07467	<b>0.66213</b>
<b>14. ability*</b>	-0.04959	<b>0.63895</b>

<b>15. ability improved*</b>	-0.24470	<b>0.43715</b>
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\* reverse coded

A 2 (sex) X 3 (game type) ANOVA was conducted on each of these two factors (i.e., fun ratings and difficulty ratings). There were no significant effects on game difficulty  $F_s < 2.00, p_s > .10$ . For fun ratings, both the sex main effect,  $F(1, 166) = 6.58, p < .05$  (adjusted means for males and females were  $M = 5.45, 4.67$ , respectively) and the game type by sex interaction were significant,  $F(2, 166) = 5.09, p < .05$ , (see Figure 3). This figure suggests that males rated the two violent games as more fun than the nonviolent game,  $F(2, 79) = 10.22, p < .01$ , whereas females rated the nonviolent game as slightly (but not significantly) more fun than the violent games,  $F(2, 89) = 2.26, p > .10$ .

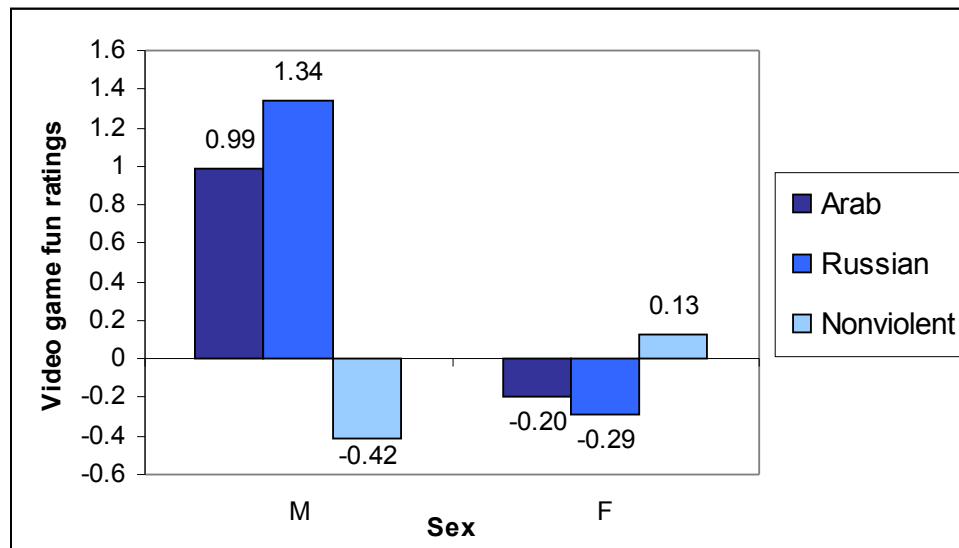


Figure 3. Video game fun ratings as a function of sex and game type

### Covariates

The adjusted means for all the covariates for each of the game types and sex are presented in Table 6. The correlations and alphas (on the diagonal) between all the covariates are presented in Table 7.

Table 6. The adjusted means for all covariates for each game type (adjusted for sex) and sex (adjusted for game type).

<b>Covariates</b>	<b>Arab</b>	<b>Russian</b>	<b>Nonviolent</b>	<b>Males</b>	<b>Females</b>
1. Patriotism	4.83	4.79	4.58	4.71	4.75
2. News exp.	4.20	4.41	4.10	4.24	4.23
3. Peer att.	3.56	3.79	3.68	3.80	3.55
4. Arab VG	1.20	1.13	1.20	1.29***	1.07***
5. Char. Ident.	2.99	3.18	3.54	3.34	3.13
6. Media	6.50	6.86	6.37	6.50	6.65
7. fun ratings	5.16	5.17	4.86	5.44*	4.69*
8. diff. ratings	6.75	6.92	6.38	6.65	6.72
9. Arab names	2.49	2.42	2.35	2.39	2.45
10. Eur. names	4.39	4.41	4.29	4.28	4.45
11. Muslim att.	2.96	3.05	2.77	3.04	2.81

1. Patriotism scale (reverse coded), 2. Media exposure to violence perpetrated by Arabs, 3. Peers' negative attitudes towards Arabs (reverse coded), 4. Prior Arab-terrorists video game exposure, 5. Identification with main character, 6. Media as the primary source of information about Arabs (reverse coded), 7. Video game fun ratings, 8. Video game difficulty ratings, 9. Familiarity with Arab names, 10. Familiarity with European names, 11. Explicit attitudes towards Muslims (reverse coded). \* $p < .05$ , \*\* $p < .01$ , \*\*\*  $p < .001$

## Main Analyses

### Implicit Arab bias as measured by the IAT *D* score.

Initially, all possible interactions with game type, sex, and each of the covariates were analyzed separately (see Table 8). No sex main effects or interactions were significant and therefore, sex was dropped in subsequent analyses of implicit Arab bias (see Table 9).

As predicted, a one-way ANOVA revealed that the game played by participants significantly influenced implicit Arab bias,  $F(2, 170) = 5.12, p < .01, d = 0.35$ . The means for the Arab terrorists, Russian-terrorists and nonviolent game conditions were  $M = 0.59$ ,

0.49, 0.42, respectively. A specific contrast demonstrated that those who had just played the Arab-terrorists game had significantly higher implicit Arab bias than those who had played the nonviolent game,  $F(1, 170) = 10.14, p < .001, d = 0.49$ . The contrast between the Arab terrorists condition and the Russian terrorists condition was marginally significant,  $F(1, 170) = 3.59, p = .059, d = 0.29$ . Together, the Arab-terrorists and Russian-terrorists games were significantly different than the nonviolent game,  $F(1, 170) = 6.84, p < .01, d = 0.40$ . These results provide support for the hypothesis that playing a violent video game involving a stereotypic Arab-terrorist enemy would increase negative implicit attitudes towards Arabs, at least temporarily.

To address the possibility that these IAT effects may be due to familiarity with names, Arab names familiarity and European names familiarity were added as covariates to the model. Game type remained significant in this model,  $F(2, 157) = 3.99, p < .05, d = 0.32$ . None of the other main effects or interaction terms approached significance,  $F_s < 1.00, p_s > .10$ , indicating that these effects are not due to name familiarity. To test whether video game fun ratings or difficulty ratings were associated with implicit Arab bias, a 2 (sex) X 3 (game type) ANCOVA was conducted, with fun ratings and difficulty ratings as covariates. Game type remained significant,  $F(2, 158) = 4.58, p < .05, d = 0.34$ . None of the other effects were significant,  $F_s < 2.00, p_s > .10$

Table 7. Correlation coefficients and alphas (on the diagonal) of all covariates

<b>Covariates</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<b>1. Patriotism</b>	0.89											
<b>2. News exp.</b>	.194**	0.93										
<b>3. Peer att.</b>	.088	.080	0.80									
<b>4. Media</b>	.079	.074	.076	0.62								
<b>5. Direct Contact</b>	-.06	-.011	-.103	-.623***	-							
<b>6. Arab VG</b>	-.120	.098	.125	.070	.094	0.76						
<b>7. Char. Id.</b>	-.022	.012	.220**	.034	.032	.041	0.75					
<b>8. Muslim attitudes</b>	.275**	.029	.518***	.123	-.133	-.126	.240*	0.92				
<b>9. Fun ratings</b>	-.040	.121	.042	-.030	.055	.230**	.360***	-.053	0.72			
<b>10. Diff. ratings</b>	.235**	.036	.114	-.066	.057	-.191*	-.209**	.063	-.306***	0.63		
<b>11. Arab name</b>	-.069	.018	-.272***	-.097	.009	.034	-.045	-.247*	.004	.038	0.92	
<b>12. E. Name</b>	.196*	.164*	.103	.110	-.181*	-.061	.118	-.093	-.090	.105	.200**	0.90

Ns range from 96 to 173.

1. Patriotism scale (reverse coded), 2. Exposure to news of violence perpetrated by Arab, 3. Peers' negative attitudes towards Arabs (reverse coded), 4. Media as the primary source of information about Arabs (reverse coded), 5. Direct contact as the primary source of information about Arabs (reverse coded), 6. Prior exposure to Arab-terrorists video games, 7. Identification with the main character of the video game, 8. Attitudes towards Muslims (reverse coded), 9. Ratings of how fun the game was, 10., Ratings of how difficult the game was, 11. Familiarity with Arab names used in the IAT, 12. Familiarity with European names used in the IAT.

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



Table 8. F-values, standardized covariate slopes, and adjusted means (adjusted for sex) analyses of implicit attitudes towards Arabs

Covariates	Implicit Arab Bias Adjusted Means			F values							Std. Cov. Slopes
	A	R	N	Game type	Sex	Covariate	Game type x sex	Game type x covariate	Sex x covariate	Game type x sex x covariate	
<b>1. News exp.</b>	0.58	0.48	0.42	3.83*	0.19	6.41*	0.20	0.65	0.00	0.80	0.17*
<b>2. Media +</b>	0.58	0.48	0.42	3.87*	0.07	0.12	0.21	2.85	0.85	0.09	0.38
<b>3. D. Contact +</b>	0.55	0.47	0.44	2.07	0.16	6.49*	1.19	2.76	0.91	0.29	-0.37*
<b>4. Peer att. +</b>	0.58	0.49	0.41	3.64*	0.26	0.11	0.09	0.34	0.75	0.65	-0.03
<b>5. Arab VG.</b>	0.58	0.49	0.40	2.78	0.44	0.47	0.31	0.61	0.18	0.37	0.24
<b>6. Char Id.</b>	0.60	0.49	0.42	4.87**	0.90	3.63	0.06	5.83**	0.29	0.07	-0.26
<b>7. Muslim at. +</b>	0.68	0.48	0.50	4.95**	0.15	1.19	0.06	0.02	0.00	1.07	0.20
<b>8. Patriotism +</b>	0.60	0.48	0.44	3.38*	0.05	2.87	0.01	3.18*	0.87	0.19	0.41
<b>9. Fun rating</b>	0.59	0.48	0.41	3.09*	1.12	4.27*	0.06	0.58	1.43	0.07	0.22*
<b>10.Dif.rating</b>	0.59	0.48	0.41	3.89*	0.15	2.21	0.04	1.47	0.24	0.45	-.07
<b>11.E. name</b>	0.58	0.48	0.42	3.67*	0.11	0.21	0.00	0.10	1.88	0.58	0.24
<b>12.A. name</b>	0.58	0.48	0.42	3.36*	0.33	0.60	0.02	0.58	0.07	0.40	0.12

1. Media exposure to violence perpetrated by Arabs, 2. Media as the primary source of information about Arabs, 3. Direct contact as the primary source of information about Arabs, 4. Peers' negative attitudes towards Arabs, 5. Past exposure to stereotypic Arab-terrorists video games, 6. Identification with main character, 7. Explicit attitudes towards Muslims, 8. Patriotism Scale, 9. Video game fun ratings, 10. Video game difficulty ratings, 11. Familiarity with European names, 12. Familiarity with Arab names.

+ reverse coded, \*  $p < .05$ , \*\*  $p < .01$ ,

Table 9. F-values, standardized covariate slopes, and means for implicit attitudes towards Arabs after dropping non-significant sex terms from ANCOVA.

Covariates	Implicit Arab Bias Means			F values			Standardized covariate slopes
	Arab	Russian	Nonviolent	Game type	Covariate	Game type x covariate	
<b>1. News exp.</b>	0.58	0.48	0.42	4.21*	5.36*	0.58	0.26*
<b>2. Media +</b>	0.59	0.48	0.43	3.85*	0.10	3.52*	0.29
<b>3. D. Contact+</b>	0.55	0.47	0.44	1.71	8.18**	3.13*	-0.44**
<b>4. Peer att. +</b>	0.58	0.48	0.41	4.11*	0.62	0.23	0.13*
<b>5. Arab VG.</b>	0.58	0.48	0.40	4.53*	2.13	0.59	0.22*
<b>6. Char Id.</b>	0.60	0.49	0.42	4.89**	4.28*	6.29**	-0.21**
<b>7. Muslim at.+</b>	0.68	0.48	0.50	4.77*	1.58	0.04	0.155*
<b>8. Patriotism+</b>	0.60	0.48	0.44	4.00*	2.65	3.73*	0.37*
<b>9. Fun rating</b>	0.59	0.48	0.42	4.21*	4.92*	0.36	0.11*
<b>10.Dif.rating</b>	0.59	0.49	0.41	4.41*	2.14	1.12	-0.06
<b>11.E. name</b>	0.58	0.48	0.42	3.64*	0.28	0.23	0.10*
<b>12.A. name</b>	0.58	0.48	0.42	3.75*	0.87	0.49	0.03*

1. Media exposure to violence perpetrated by Arabs, 2. Media as the primary source of information about Arabs, 3. Direct contact as the primary source of information about Arabs, 4. Peers' negative attitudes towards Arabs, 5. Past exposure to stereotypic Arab-terrorists video games, 6. Identification with main character, 7. Explicit attitudes towards Muslims, 8. Patriotism Scale, 9. Video game fun ratings, 10. Video game difficulty ratings, 11. Familiarity with European names, 12. Familiarity with Arab names.

+ reverse coded, \*  $p < .05$ , \*\*  $p < .01$ .

### Ancillary Hypothesis Relating To Implicit Arab Bias

#### Character Identification

To examine the influence of character identification on implicit Arab bias, a one-way ANCOVA was conducted, with character identification as a covariate. Game type remained significant in this model,  $F(2, 161) = 5.66, p < .01, d = 0.38$ . The main effect of character identification was marginally significant,  $\beta = -.22, F(1, 161) = 3.81, p = .053$ . More importantly, the game type by character identification interaction was significant,  $F(2, 161) = 6.10, p < .01$  (see Figure 4). In the Arab and Russian terrorists conditions, participants who identified with their main character had significantly higher implicit Arab bias than participants who did not identify with their main character,  $\beta = .36, t(53) = 2.75, p < .01, \beta = .29, t(54) = 2.66, p < .05$ , respectively. In contrast, the slope for the nonviolent game was negative, but non-significant,  $\beta = -0.22, t(53) = -1.55, p > .10$ . These analyses suggest that identifying with the main character in a stereotypic video game may potentially heighten the negative effects of stereotypic video game portrayals. Alternatively, this interaction also illustrates that the experimental manipulation had little effect on the implicit attitudes of participants who did not identify with the main character, but had a substantial influence on those who did. This supports other research in the media effects domain.

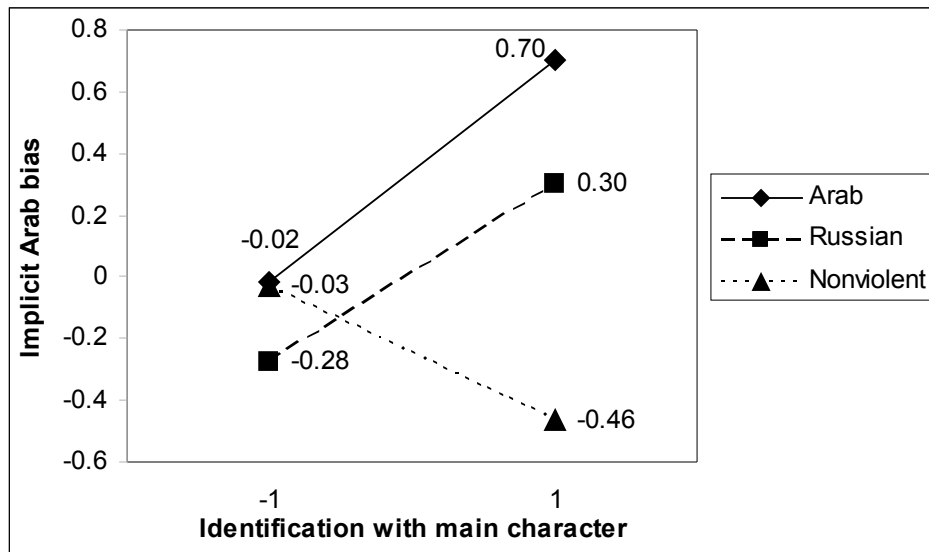


Figure 4. Implicit Arab bias as a function of identification with main character and game type.

### Violent Arab news exposure and sources of information

A similar ANCOVA was conducted with violent Arab news exposure as a covariate. The effect of game type remained significant,  $F(2, 163) = 4.57, p < .05, d = 0.34$ . The main effect of news exposure was also significant,  $\beta = .26, F(1, 163) = 5.44, p < .05$ . The positive slope suggests that those who reported high news exposure to conflicts perpetrated by Arabs had significantly higher implicit Arab bias than those who reported less news exposure to such news. The game type by news exposure interaction was not significant,  $F(2, 163) = 0.55, p > .10$  indicating that the influence of news exposure on implicit Arab bias occurred across all three conditions, and that the effect of the experimental manipulation of game played was about the same regardless of news exposure.

It was hypothesized that one's source of information about Arabs would influence their implicit Arab bias. To test this prediction, a one way ANCOVA was conducted, with

media as a primary source of information about Arabs as a covariate. The main effect of media source was not significant,  $F(1, 157) = 0.11, p > .10$ . The Game type main effect and the game type by media source interaction were significant,  $F(2, 157) = 4.24, p < .05, d = 0.33, F(2, 157) = 3.49, p < .05$ , (see Figure 5) respectively. Participants in the nonviolent condition who indicated media as their primary sources of information about Arabs had significantly higher implicit Arab bias than those who did not indicate media as their primary sources of information about Arabs,  $\beta = .29, t(52) = 2.23, p < .05$ . The slopes for the Arab and Russian terrorists games were non-significant,  $ts < 2.00, p > .10$ . Interestingly, this figure illustrates that for those who already depend on the media for information about Arabs, a single stereotypic episode of video game play had almost no effect on their existing Arab attitudes. However, for participants who are not dependent on media for their information regarding Arabs, even a single stereotypic episode can increase anti-Arab attitudes.

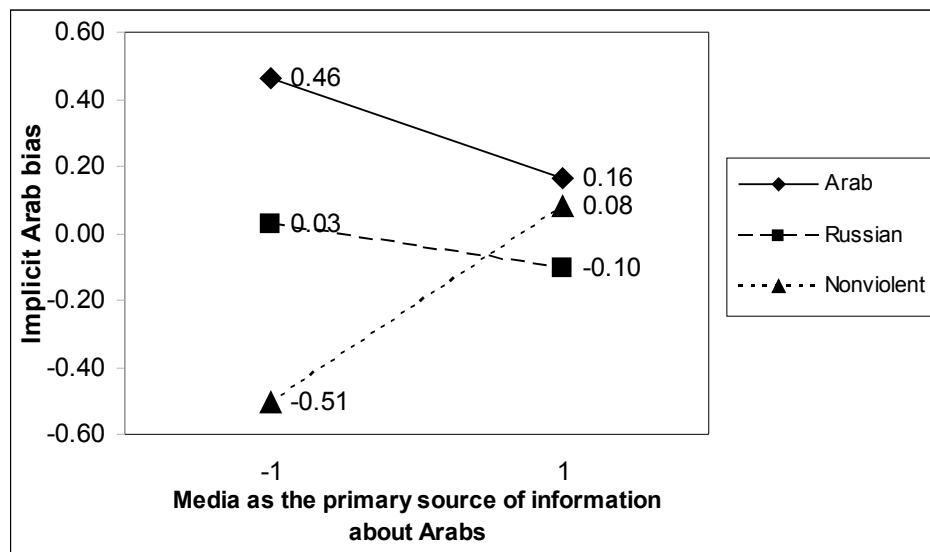


Figure 5. Implicit Arab bias as a function of media as the primary source of information about Arabs and game type

To test the relationship between direct contact and implicit Arab bias, a one way ANCOVA was analyzed, with direct contact as a covariate. Direct contact had a significant main effect,  $\beta = -.45$ ,  $F(1, 140) = 8.35$ ,  $p < .01$ , suggesting that participants who indicated direct contact as the primary source of information about Arabs had significantly lower implicit Arab bias. More interestingly, the game type by direct contact interaction was also significant,  $F(2, 140) = 3.17$ ,  $p < .05$ , (see Figure 6). Participants in the nonviolent game condition who indicated direct contact as their primary source of information about Arabs had significantly lower implicit Arab bias than those who did not indicate direct contact as their primary source of information about Arabs,  $\beta = -.45$ ,  $t(44) = -3.08$ ,  $p < .01$ . The slopes for the Arab and Russian terrorists games were non-significant,  $ts < 2.00$ ,  $p > .10$ . The game type main effect became non-significant in this model,  $F(2, 140) = 1.89$ ,  $p > .10$ .

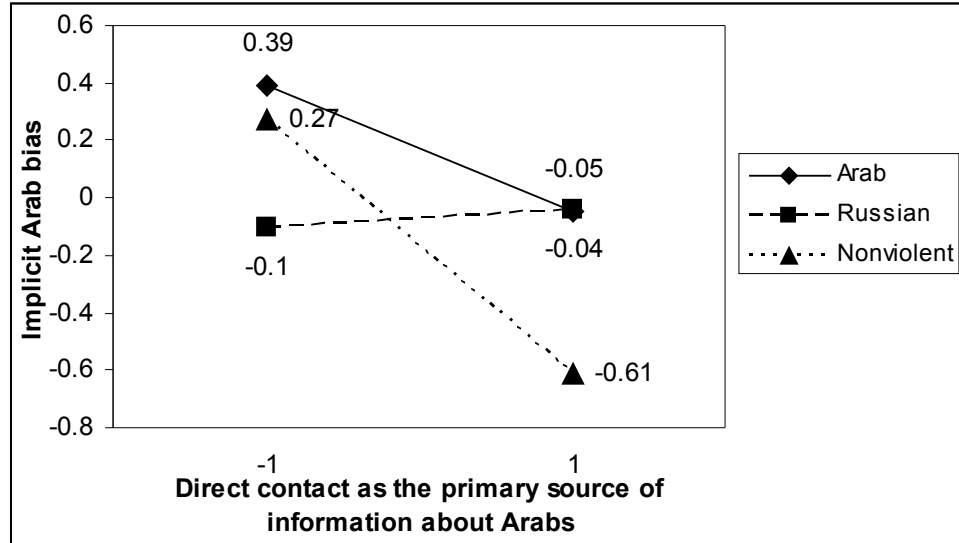


Figure 6. Implicit Arab bias as a function of direct contact as the primary source of information about Arabs and game type

### Patriotism

To examine the relationship between patriotism and implicit Arab bias, a one way ANCOVA was analyzed, with patriotism as a covariate. The main effect of patriotism was not significantly different from zero,  $F(1, 164) = 2.67, p > .05$ . Game type remained significant,  $F(2, 164) = 4.20, p < .01, d = 0.32$ . The game type by patriotism interaction was significant,  $F(2, 164) = 3.82, p < .05$ , (see Figure 7). Participants in the nonviolent game condition with higher levels of patriotism had significantly higher implicit Arab bias than those with lower levels of patriotism,  $\beta = .39, t(55) = 3.04, p < .01$ . The slopes for the Arab and Russian terrorists games were not significantly different from zero,  $ts < 2.00, p > .10$ . Figure seven illustrates that there is essentially no effect of game type on participants with high levels of patriotism, but a large effect on participants with low levels of patriotism.

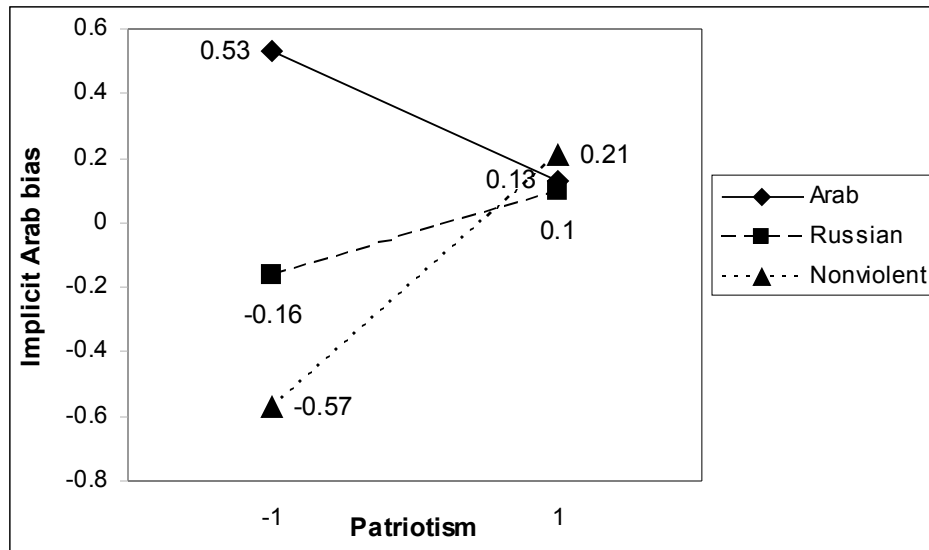


Figure 7. Implicit Arab bias as a function of patriotism and game type

There were no significant effects of past Arab-terrorists video game exposure, past explicit Muslim attitudes, or peer attitudes,  $F_s < 2.00, p_s > .10$

### Subtly Explicit Arab Attitudes

All possible interactions between game type, sex, and each of the covariates were analyzed separately (see Table 10).

A 2 (sex) X 3 (game type) ANOVA was conducted on subtly explicit Arab bias. Neither the game type main effect,  $F(2, 155) = 0.58, p > .10$ , nor the sex main effect were significant,  $F(1, 155) = 0.21, p > .10$ . The adjusted means for the Arab terrorists, Russian terrorists and nonviolent game conditions were  $M = 0.28, 0.48, 0.29$ , respectively. The game type by sex interaction was significant,  $F(2, 155) = 4.12, p < .05$ , (see Figure 8). Compared to females, males had significantly higher explicit bias in the Russian terrorists condition,  $\beta = .58, t(52) = 2.04, p < .05$ . The sex effects for the Arab terrorists and nonviolent games were not significant,  $ts < 2.00, p > .05$ . The effect of game type on subtly explicit Arab bias remained non-significant even after analyzing males and females separately,  $F_s < 2.00, p_s > .10$ .

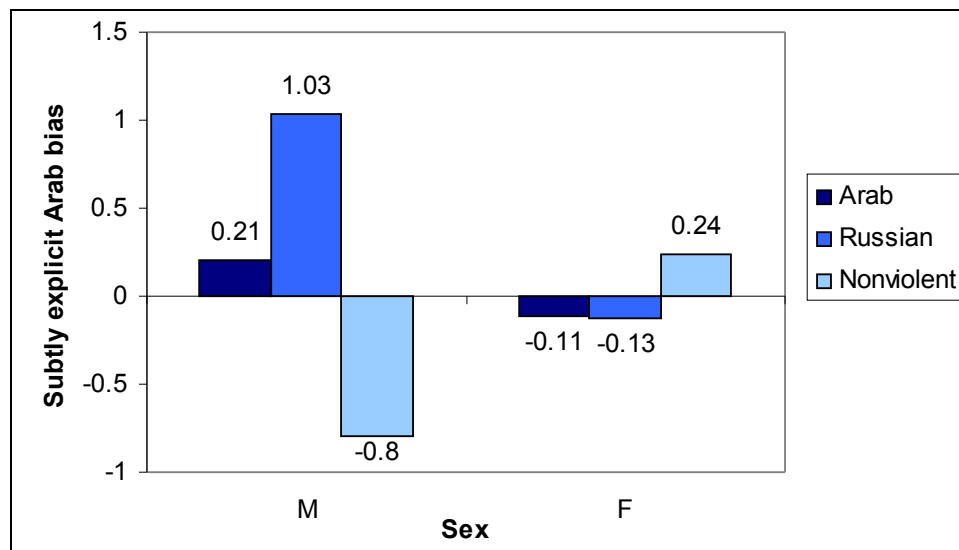


Figure 8. Subtly explicit Arab bias scale as a function of sex and game type



To test whether video game fun ratings or difficulty ratings were associated with responses on subtly explicit Arab bias, a 2 (sex) X 3 (game type) ANCOVA was analyzed, with fun ratings and difficulty ratings as covariates. The game type by sex interaction remained significant,  $F(2, 149) = 4.70, p < .05$ . None of the other effects were significant,  $F_s < 2.00, p_s > .10$ , suggesting that fun ratings and difficulty ratings were not associated with subtly explicit Arab bias.

Table 10. F-values, standardized covariate slopes, and adjusted means (adjusted for sex) analyses of subtly explicit Arab attitudes

Covariates	Subtly Explicit Arab Attitudes Adjusted Means			F values							Std. Cov. Slopes
	A	R	N	Game type	Sex	Covariate	Game type x sex	Game type x covariate	Sex x covariate	Game type x sex x covariate	
1. News exp.	0.27	0.46	0.31	0.44	0.09	1.69	4.05*	2.21	0.37	0.26	0.05
2. Media +	0.32	0.51	0.29	0.64	0.07	0.77	3.92*	1.64	0.71	0.48	0.68
3. D. Contact+	0.30	0.56	0.15	1.63	0.86	1.53	4.14*	1.03	3.23	0.28	-0.08
4. Peer att. +	0.35	0.40	0.34	0.08	1.33	86.81***	4.99**	1.02	0.08	4.11*	0.23***
5. Arab VG.	0.31	0.56	0.46	0.41	0.15	2.15	3.82*	1.62	2.49	1.42	0.04
6. Char Id.	0.30	0.48	0.29	0.053	0.00	5.41*	4.15*	0.37	4.73*	1.65	-.10*
7. Muslim at.+	0.32	0.64	0.39	1.09	0.05	45.87***	4.89*	0.27	0.40	2.20	0.31***
8. Patriotism+	0.28	0.43	0.35	0.26	0.77	5.91*	3.92*	4.29*	0.98	0.88	0.32*
9. Fun rating	0.27	0.52	0.29	0.79	0.25	0.44	4.05*	1.32	0.08	0.02	.096
10. Dif. rating	0.28	0.49	0.33	0.54	0.15	2.18	4.38*	0.62	0.37	0.93	0.06

1. Media exposure to violence perpetrated by Arabs, 2. Media as the primary source of information about Arabs, 3. Direct contact as the primary source of information about Arabs, 4. Peers' negative attitudes towards Arabs, 5. Past exposure to stereotypic Arab-terrorists video games, 6. Identification with main character, 7. Explicit attitudes towards Muslims, 8. Patriotism Scale, 9. Video game fun ratings, 10. Video game difficulty ratings.

+ reverse coded, \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

### Ancillary Hypothesis Relating To Subtly Explicit Arab Bias

#### Main character identification

To examine the influence of character identification on subtly explicit Arab bias, a 2 (sex) X 3 (game type) ANCOVA was conducted, with character identification as a covariate. There was a main effect of character identification,  $\beta = -.10$ ,  $F(1, 148) = 5.41$ ,  $p < .05$ . The negative slope suggests that higher levels of character identification were associated with lower levels of explicit Arab bias. The sex by character identification interaction was also significant,  $F(1, 148) = 4.73$ ,  $p < .05$  (see Figure 9). Males who identified with their main characters yielded higher levels of subtle explicit Arab bias than males who did not identify with their main character,  $\beta = .34$ ,  $t(83) = 3.17$ ,  $p < .01$ . This figure also suggests that at higher levels of character identification, males reported higher levels of subtle explicit Arab bias than females. The game type by sex interaction remained significant,  $F(2, 148) = 4.15$ ,  $p < .05$ . None of the other effects were significant,  $F_s < 1.00$ ,  $p_s > .10$ .

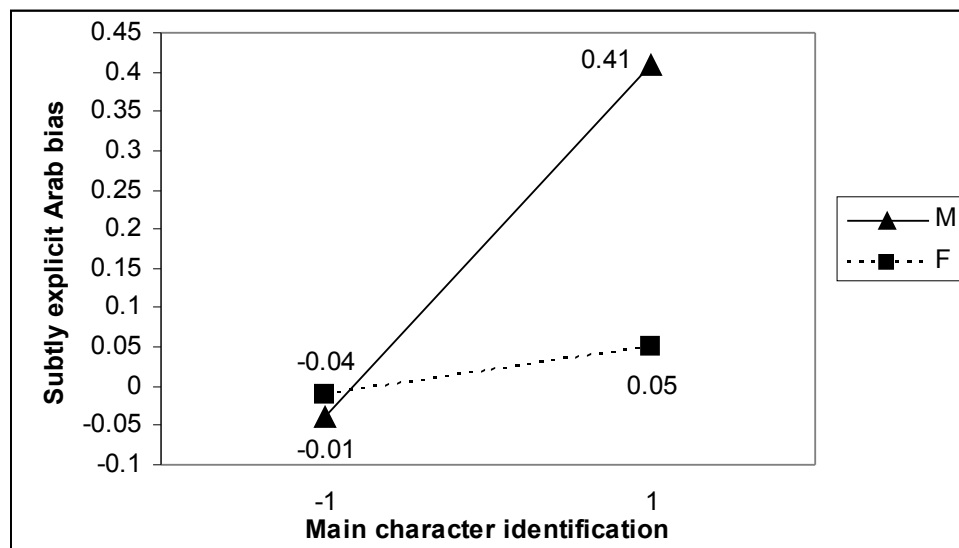


Figure 9. Subtly explicit Arab bias scale as a function of sex and main character identification

#### Prior explicit Muslim attitudes

We hypothesized that prior explicit Muslim attitudes would predict present subtly explicit Arab attitudes. To test this prediction, a 2 (sex) X 3 (game type) ANCOVA was tested, with explicit Muslim attitudes as a covariate. There was a significant main effect of explicit Muslim bias,  $\beta = 0.30$ ,  $F(1, 74) = 45.87$ ,  $p < .0001$ , suggesting that those with high explicit Muslim bias had significantly higher explicit Arab bias than those with low explicit Muslim bias. The game type by sex interaction remained significant  $F(2, 74) = 4.89$ ,  $p < .05$ . None of the other effects were significant,  $F_s < 2.00$ ,  $p_s > .10$ . The lack of a significant game type by explicit Muslim attitudes interaction suggests that the influence of explicit Muslim attitudes on explicit anti-Arab bias occurred across all three conditions.

### **Patriotism**

To examine the influence of patriotism on subtly explicit Arab attitudes, a 2 (sex) X 3 (game type) ANCOVA was conducted, with patriotism as a covariate. The main effect of patriotism was significant,  $\beta = .31$ ,  $F(1, 149) = 5.91$ ,  $p < .05$ . The positive slope suggests that higher levels of patriotism were associated with higher explicit Arab bias. More importantly, the game type by patriotism interaction was also significant,  $F(2, 149) = 4.29$ ,  $p < .05$ , (see Figure 10). Participants in the Russian terrorists condition with higher levels of patriotism had significantly higher explicit Arab bias than those with lower levels of patriotism,  $\beta = .48$ ,  $t(52) = 3.73$ ,  $p < .001$ . As opposed to the results of implicit Arab bias, these results suggest that for participants with low levels of patriotism, game manipulation had minimal effect on their explicit Arab bias. The game manipulation, did however, have a substantial influence on explicit Arab attitudes for participants with high levels of patriotism. The slopes for the Arab-terrorists and nonviolent games were not significantly different from zero,  $t_s < 1.00$ ,  $p > .10$ .

The game type by sex interaction remained significant,  $F(2, 149) = 3.92, p < .05$ . None of the other effects were significant,  $F_s < 2.00, p_s > .10$ .

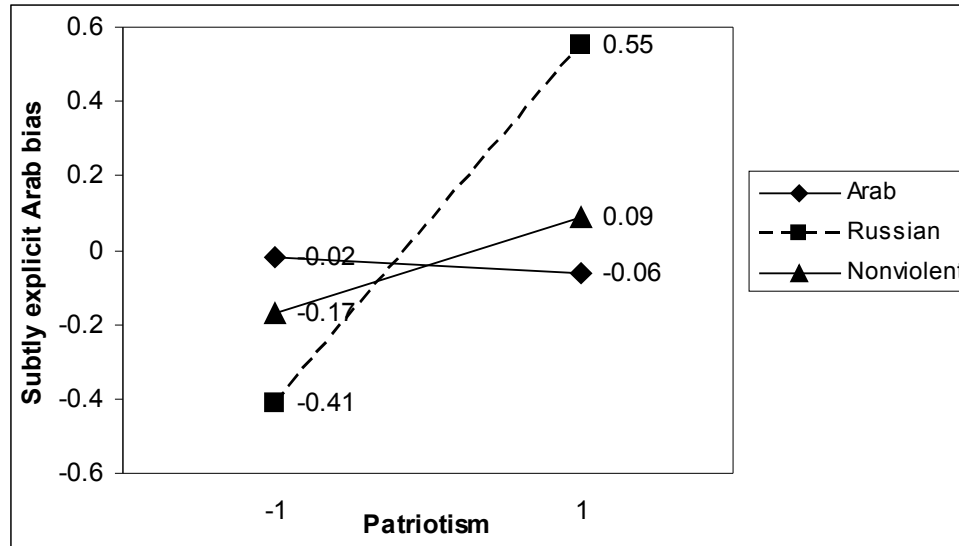


Figure 10. Explicit Arab bias as a function of patriotism and game type

### Peers' negative Arab attitudes

The influence of peer attitudes on one's explicit attitudes was examined through a 2 (sex) X 3 (game type) ANCOVA, with peer Arab attitudes as a covariate. The main effect of peers' negative Arab attitudes was significant,  $\beta = 0.23, F(1, 149) = 86.81, p < .0001$ . The positive slope suggests that higher levels of peers' negative Arab attitudes were associated with higher explicit Arab bias. The 3 way interaction between game type, sex, and peers' attitudes was also significant  $F(2, 149) = 4.11, p < .05$  (see Figures 11 and 12). These figures suggest that peers' negative Arab attitudes were associated with subtly explicit bias for females, but not males. Also, game type had a minimal effect on males who reported their peers to have low negative Arab attitudes. However, game type had a substantial influence on males who reported their peers to have high negative Arab attitudes. The game type by sex

interaction remained significant,  $F(2, 149) = 4.99, p < .01$ . None of the other effects were significant,  $F_s < 2.00, p_s > .10$ .

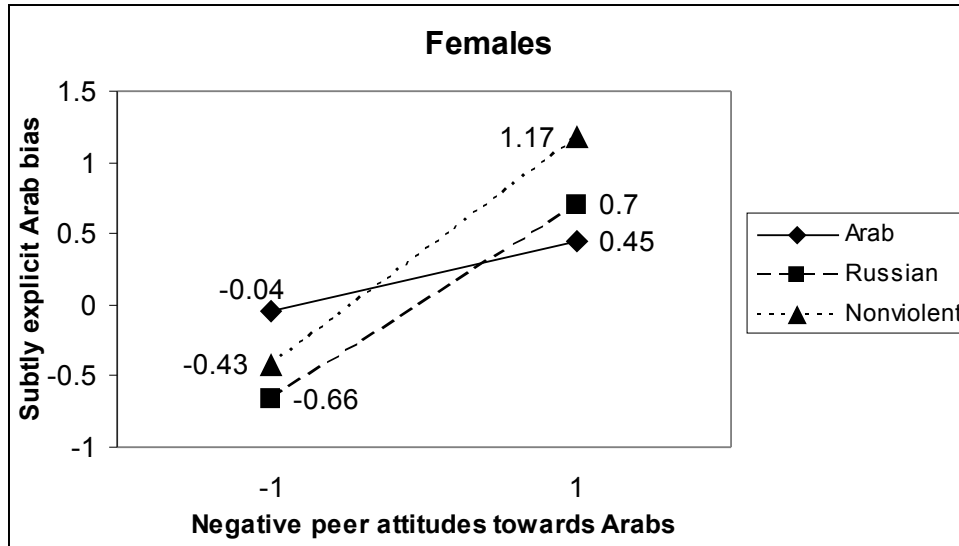


Figure 11. Subtly explicit Arab bias as a function of game type and peers' negative Arab attitudes for females

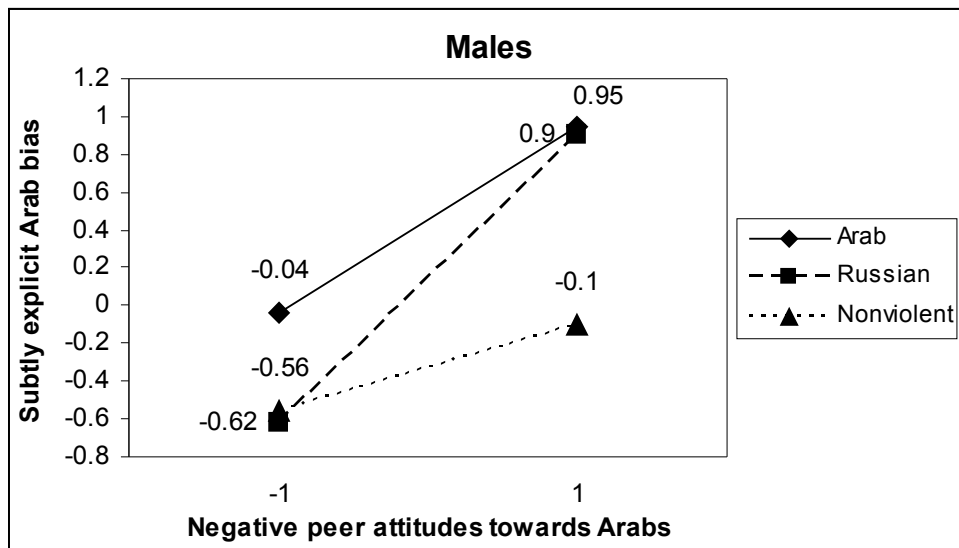


Figure 12. Subtly explicit Arab bias as a function of game type and peers' negative Arab attitudes for males

There were no significant effects of news exposure, media or direct contact as sources of information about Arabs, or of past exposure to stereotypic Arab terrorists video games,  $F_s < 2.00, p_s > .10$

### **Blatantly explicit Arab attitudes**

All possible interactions between game type, sex, and each of the covariates were analyzed separately (see Table 11). No sex main effects or interactions were significant and therefore, sex was ignored in subsequent analyses of blatantly explicit Arab attitudes (see Table 12).

A one way ANOVA was conducted on blatantly explicit Arab bias. The game type effect was not significant,  $F(2, 144) = 1.78, p > .10$ . To test whether video game fun ratings or difficulty ratings were associated with blatantly explicit Arab bias, fun ratings and difficulty ratings were added to the previous model as covariates. The game type by fun ratings interaction was significant,  $F(2, 138) = 4.41, p < .05$ , (see Figure 13). Participants in the Arab terrorists condition who rated the game as fun, involving, and exciting had significantly higher explicit Arab bias than those who did not rate the game as fun, exciting, and involving,  $\beta = .35 t(45) = 2.57, p < .05$ . The slope for the Russian terrorists condition was also significant but in the opposite direction,  $\beta = -.29 t(50) = -2.04, p < .05$ . The negative slope suggests that participants in the Russian terrorists condition who rated the game as more fun, exciting, and involving had significantly lower explicit Arab bias than those who did not rate the game as fun, exciting, and involving. The slope for the nonviolent game was not significantly different from zero,  $t < 1.00, p > .10$ . None of the other effects were significant,  $F_s < 2.00, p_s > .10$ .

Table 11. F-values, standardized covariate slopes, and adjusted means (adjusted for sex) for blatantly explicit Arab attitudes

Covariates	Blatantly Explicit Arab Attitudes Adjusted Means			F values							Std. Cov. Slopes
	A	R	N	Game type	Sex	Covariate	Game type x sex	Game type x covariate	Sex x covariate	Game type x sex x covariate	
<b>1. News exp.</b>	2.69	2.99	2.80	1.44	0.63	0.23	0.72	2.65	2.22	0.06	-0.01
<b>2. Media +</b>	2.76	3.02	2.80	1.13	0.14	0.00	0.56	3.28*	0.33	0.05	0.35
<b>3. D. Contact +</b>	2.71	3.04	2.69	2.12	0.00	0.52	1.08	0.51	0.45	0.37	-0.09
<b>4. Peer att. +</b>	2.76	2.96	2.81	0.78	3.19	32.47***	1.08	0.66	0.74	0.62	0.16***
<b>5. Arab VG.</b>	2.64	2.89	2.74	0.47	0.18	1.52	0.55	0.30	0.82	0.06	-0.06
<b>6. Char Id.</b>	2.73	3.01	2.75	1.01	0.39	0.35	0.76	2.86	3.85	0.84	-0.06
<b>7. Muslim at. +</b>	2.83	3.09	3.07	1.12	5.64*	34.58***	1.30	1.38	2.01	1.65	0.69***
<b>8. Patriotism +</b>	2.74	2.99	2.83	0.97	0.03	1.12	0.42	3.79*	0.60	0.35	0.40
<b>9. Fun rating</b>	2.79	3.04	2.85	0.94	1.06	0.97	1.79	5.61**	0.00	1.30	-0.11
<b>10. Dif.rating</b>	2.72	3.01	2.80	1.26	0.34	0.42	0.65	1.22	0.32	0.73	0.04

1. Media exposure to violence perpetrated by Arabs, 2. Media as the primary source of information about Arabs, 3. Direct contact as the primary source of information about Arabs, 4. Peers' negative attitudes towards Arabs, 5. Past exposure to stereotypic Arab-terrorists video games, 6. Identification with main character, 7. Explicit attitudes towards Muslims, 8. Patriotism Scale, 9. Video game fun ratings, 10. Video game difficulty ratings.

+ reverse coded, \*  $p < .05$ , \*\*  $p < .01$ ,  $p < .001$ .



Table 12. F-values, standardized covariate slopes, and means for blatantly explicit attitudes towards Arabs after dropping non-significant sex terms from the ANCOVA.

Covariates	Blatantly Explicit Arab Attitudes Means			F values			Standardized covariate slopes
	Arab	Russian	Nonviolent	Game type	Covariate	Game type x covariate	
<b>1. News exp.</b>	2.70	2.97	2.74	1.48	0.27	3.21*	0.06
<b>2. Media +</b>	2.73	3.02	2.76	1.54	0.00	4.11*	0.32
<b>3. D. Contact+</b>	2.70	3.03	2.65	2.42	0.55	0.89	-0.19
<b>4. Peer att. +</b>	2.74	2.96	2.73	1.45	39.40***	0.82	0.34***
<b>5. Arab VG.</b>	2.71	2.97	2.75	1.25	0.67	0.94	-0.13
<b>6. Char Id.</b>	2.72	2.98	2.69	1.11	0.79	2.62	0.28
<b>7. Muslim at.+</b>	2.81	3.07	2.96	0.89	36.25***	0.33	0.76***
<b>8. Patriotism+</b>	2.73	2.98	2.78	1.12	1.59	4.06*	0.28
<b>9. Fun rating</b>	2.74	3.00	2.75	1.37	0.06	5.52**	-0.19
<b>10.Dif.rating</b>	2.71	2.97	2.73	1.23	0.18	1.21	-0.00

1. Media exposure to violence perpetrated by Arabs, 2. Media as the primary source of information about Arabs, 3. Direct contact as the primary source of information about Arabs, 4. Peers' negative attitudes towards Arabs, 5. Past exposure to stereotypic Arab-terrorists video games, 6. Identification with main character, 7. Explicit attitudes towards Muslims, 8. Patriotism Scale, 9. Video game fun ratings, 10. Video game difficulty ratings.  
 + reverse coded, \*  $p < .05$ , \*\*  $p < .01$ ,  $p < .001$ .

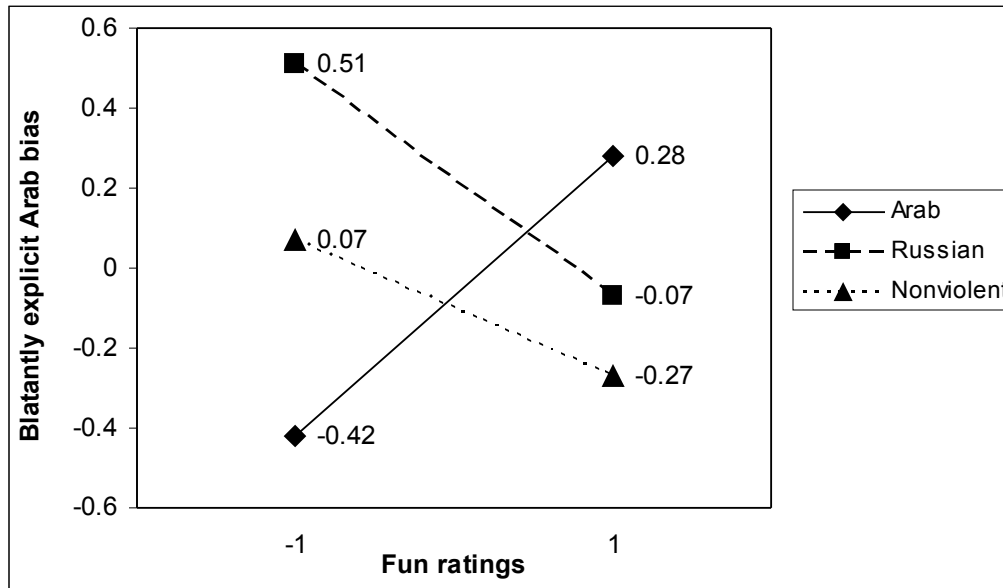


Figure 13. Blatantly explicit Arab bias as a function of video game fun ratings and game type

### News exposure and information sources

To examine the influence of news exposure to violence perpetrated by Arabs on blatantly explicit Arab attitudes, a one way ANCOVA was tested, with news exposure as a covariate. The game type by news exposure interaction was significant,  $F(2, 141) = 3.12, p < .05$ , (see Figure 14). Participants in the Russian terrorists condition who had high news exposure to violence perpetrated by Arabs had significantly higher explicit Arab bias than participants who had low news exposure to violence perpetrated by Arabs,  $\beta = .29, t(50) = 2.14, p < .05$ . Alternatively, this figure also suggests that the game manipulation had almost no effect when news exposure to Arab terrorism was low. However, game manipulation had a substantial influence when news exposure to such events was high. The slopes of the Arab-terrorists and nonviolent conditions were not significantly different from zero,  $ts < 2.00, ps > .10$ . None of the other effects were significant,  $Fs < 2.00, ps > .10$ .

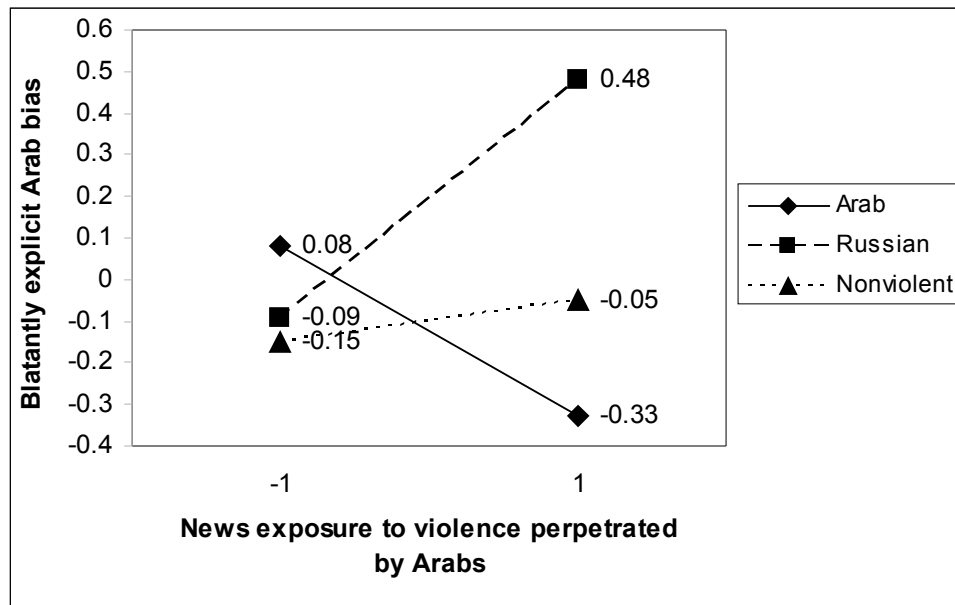


Figure 14. Blatantly explicit Arab bias as a function of game type and news exposure of violence perpetrated by Arabs

Next, a one way ANCOVA was analyzed, with media as primary source of information as a covariate. The game type by media source interaction was significant,  $F(2, 137) = 4.13, p < .05$ , (see Figure 15). Participants in the nonviolent condition who indicated media as their primary sources of information about Arabs had significantly higher explicit Arab bias than participants who did not indicate media as their primary sources of information about Arabs,  $\beta = .33, t(46) = 2.24, p < .05$ . Similar to the results of implicit Arab bias, these results suggest that for participants who are dependent on media for information regarding Arabs, game type had little effect. However, for participants who are not dependent on media for information regarding Arabs, even a single stereotypic episode influenced anti-Arab bias. The slopes of the Arab-terrorists and Russian-terrorists conditions were not significantly different from zero,  $t_s < 2.00, p_s > .10$ .

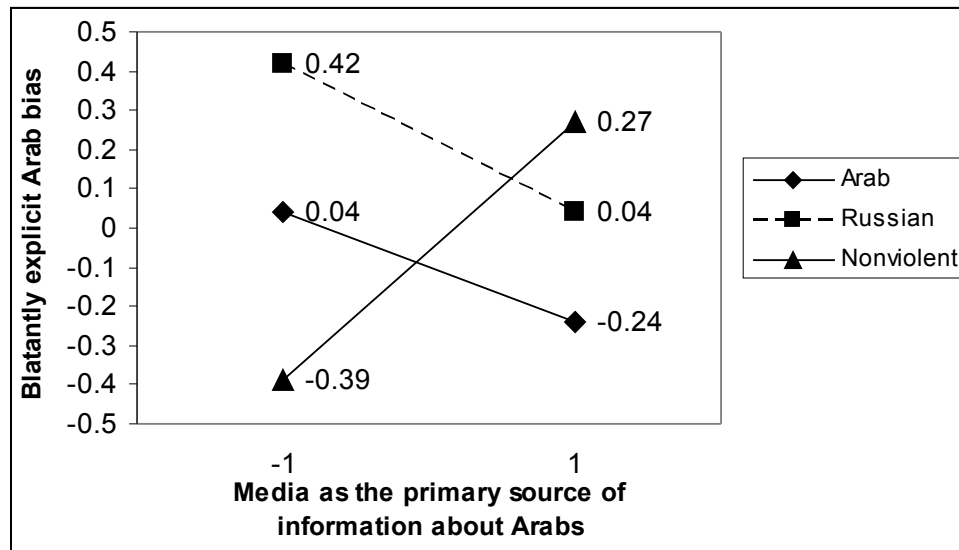


Figure 15. Blatantly explicit Arab bias as a function of media as the primary source of information about Arabs and game type

### Past explicit Muslim attitudes

To test the influence of past explicit Muslim attitudes on present blatantly explicit Arab attitudes, a one way ANCOVA was conducted, with past explicit Muslim attitudes as a covariate. There was a significant main effect of explicit Muslim attitudes,  $\beta = .74$ ,  $F(1, 72) = 32.29$ ,  $p < .0001$ . The positive slope suggests that those with high explicit Muslim bias had significantly higher explicit Arab bias than those with low explicit Muslim bias. None of the other effects were significant,  $F_s < 2.00$ ,  $p_s > .10$ . Similar to the results of subtly explicit Arab bias, the lack of a significant interaction suggests that the influence of explicit Muslim attitudes on blatantly explicit anti-Arab bias occurred across all three conditions.

### Patriotism and peers' negative Arab attitudes

To examine the effect of patriotism on blatantly explicit Arab attitudes, a one way ANCOVA was conducted, with patriotism as a covariate. The game type by patriotism interaction was significant,  $F(2, 141) = 4.16$ ,  $p < .05$ , (see Figure 16). Participants in the

Russian terrorists condition with higher levels of patriotism had significantly higher explicit Arab bias than those with lower levels of patriotism,  $\beta = .28$   $t(50) = 2.29$ ,  $p < .001$ . As opposed to implicit Arab bias but similar to the subtly explicit Arab bias results, this figure illustrates that game manipulation had minimal effect on participants with low levels of patriotism. Game manipulation does have an effect on participants with higher levels of patriotism. The slope for the nonviolent condition was marginally significant,  $\beta = .28$ ,  $t(46) = 1.78$ ,  $p = .08$ . The slope for the Arab terrorists condition was not significantly different from zero,  $t < 2.00$ ,  $p > .05$ .

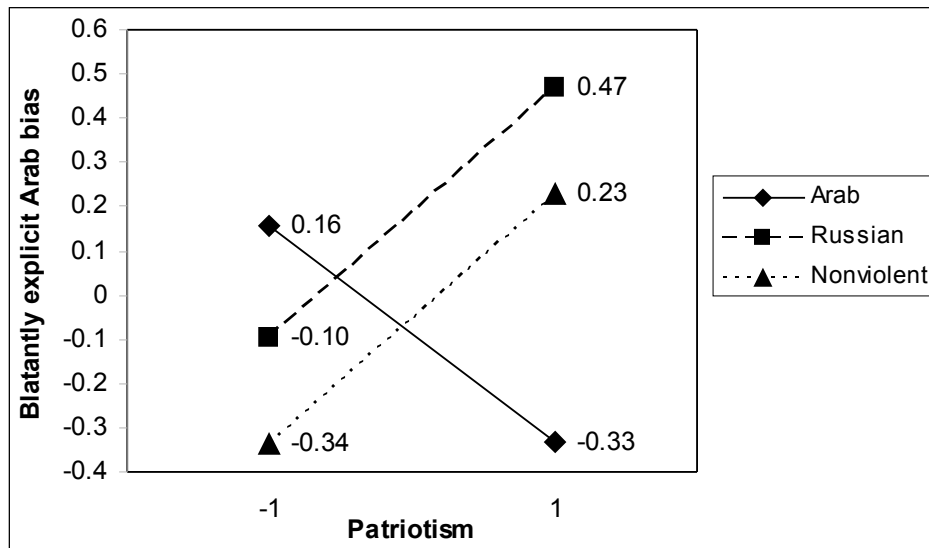


Figure 16. Blatantly explicit Arab bias as a function of patriotism and game type

Finally, to test the effect of peer Arab attitudes on blatantly explicit Arab attitudes, a one way ANCOVA was analyzed, with peer attitudes as a covariate. The main effect of peers' negative Arab attitudes was significant,  $\beta = .32$ ,  $F(1, 141) = 36.25$ ,  $p < .0001$ . The positive slope indicates that higher levels of peers' negative Arab attitudes were associated with higher explicit Arab bias. None of the other effects were significant,  $F_s < 2.00$ ,  $p_s > .10$ .

There were no significant effects of character identification, direct contact as primary source of information about Arabs, or of past exposure to stereotypic Arab-terrorists video games,  $F_s < 2.00$ ,  $p_s > .10$ .

## DISCUSSION

This chapter discusses the implications of the results presented in Chapter 4. First, the findings of the main and supplemental analyses will be discussed in reference to possible explanations of the findings, and their convergence or divergence with previous literature. Next, theoretical and research implications for the study will be discussed. Finally, limitations and suggestions for future research will be presented.

### **Stereotypic video games and implicit Arab bias**

One of the main hypotheses of this study was that video games with Arab terrorists would yield significantly higher negative implicit Arab attitudes than video games with non-Arab terrorists or no targets. Results from the Implicit Association Test (IAT) demonstrated that participants in the Arab terrorists condition had significantly higher implicit Arab bias than participants in the nonviolent condition. Although the means were in the right direction (i.e., from high to low: Arab terrorists, Russian terrorists, nonviolent, the difference between the Arab terrorists and Russian terrorists conditions was not statistically significant. Interestingly, the Arab terrorists and Russian terrorists conditions combined resulted in significantly higher implicit Arab bias than the nonviolent condition. These findings suggest that even though the Russian terrorists condition did not have any direct reference to Arabs, implicit unpleasant associations with Arabs were activated after playing that game. It is possible that the mere reference of terrorists in the Russian terrorists game was enough to activate implicit unpleasant associations with Arabs and the direct inclusion of Arab references (e.g., stereotypic Arab terrorists and Middle Eastern settings) in the Arab-terrorists condition strengthened these associations further. This idea will be further discussed in the implications section.

Although there is some research attributing IAT effects to participant's familiarity with names used in the IAT (e.g., Dasgupta, Greenwald, & Banaji, 2003), the results of this study did not find any evidence for this claim. The main analyses with implicit Arab bias indicate that the game type effect on implicit Arab bias remained significant even after controlling for familiarity with Arab and European names.

Identification with the main character in the Arab and Russian terrorists conditions was associated with higher implicit Arab bias. This finding also supports the idea that some aspect of the Russian terrorists game was influencing implicit unpleasant Arab associations and this aspect was strengthened further when participants identified with the main character. Social learning theories emphasize the importance of observing and modeling the behaviors, attitudes, and emotional reactions of others (Bandura, 1973; 2001). Past research has demonstrated that identification with main characters in violent video games is strongly associated with aggression (Konijn, Bijvank, & Bushman, 2007). The findings of this study illustrate effects of video game character identification beyond aggression effects. Identification with a main character of a stereotypic video game could potentially teach or reinforce existing stereotypes, at least in the short term. This idea will be further discussed in the implications section.

### **Stereotypic video games and explicit Arab bias**

In this study two scales were created based on factor analyses to assess explicit Arab bias. Factor 1 was a relatively subtle measure of Arab bias (e.g., "Is a typical Arab mean/nice"), whereas Factor 2 appeared to be a relatively blatant measure of Arab bias (e.g., "Arabs come from less able races and this explains why they are not as well off as most American people"). The game manipulation by itself was not a significant predictor for either



subtly or blatantly explicit Arab bias. There are several possible reasons that explain why this effect was not significant. Explicit measures of attitudes usually suffer from social desirability (DeMaio, 1984) and contextual effects (Schwarz, Groves, & Schuman, 1998; Tourangeau, Rips, & Rasinski, 2000). Based on this study's methodology it is difficult to conclude why the game manipulation effect was not significant for explicit measures. It is possible that the game manipulation effect did not last long enough for it to have an influence when participants were answering the explicit questionnaire. It is also possible that the Arab terrorists game activated negative Arab associations but participants were motivated to inhibit those thoughts or hide those attitudes, possibly because of social desirability issues. Future research should examine this relationship by minimizing contextual and social desirability effects.

There were some interesting associations between participants' video game fun ratings and explicit Arab bias. The game type by video game fun interaction was significant for blatantly explicit attitudes. Specifically, participants in the Arab-terrorists game who rated the game as fun, involving, and exciting had significantly *higher* blatantly explicit Arab bias than participants who had lower fun ratings. In the Russian-terrorists game, participants who rated the game high on the fun factor had *lower* levels of blatantly explicit bias than participants who did not rate the game high on the fun factor. Neither effect was observed in the nonviolent condition. This is a noteworthy finding given that in the rest of the analyses of this study, the differences between the Arab-terrorists and Russian-terrorists games were only marginally significant. It is possible that participants who rated the Arab terrorists game condition as more fun ended up being more involved in and attached to the game, its characters, and its specific story line. These factors may have strengthened and maintained

participant's cognitively activated negative Arab associations long enough to be assessed by the relatively blatant measure of explicit Arab bias. Similarly, participants in the Russian-terrorists condition who had more fun and were more involved in the game may have focused on the specific Russian-terrorists targets. It is possible that in the Russian terrorists game, participants who were involved and attentive to enemy targets had an increased availability of the Russian-terrorists link instead of the Arab-terrorists link when they were answering blatant questions (e.g., "Most of the terrorists in the world today are Arabs?").

Related to these findings there was a positive association between identification with the main character and subtly explicit Arab bias. The fact that identification with the main character was associated with higher implicit and explicit bias suggests that it may be a mediating component of how video games teach or reinforce stereotypes about certain groups. This finding has important theoretical implications that will be discussed in the implications section.

### **The relationship between implicit-explicit stereotypes in this study**

The results of this study generally indicate distinct patterns for implicit and explicit measures. Although responses on the IAT consistently reflected relative preference for Europeans over Arabs (the overall IAT mean was  $M=.49$ ) with medium to large effect sizes, explicit measures often did not indicate such effects. These findings are consistent with the argument that implicit and explicit attitudes are distinct and separate constructs though they are still related to each other (Cunningham, Nezlek, & Banaji, 2004). The fact that we were able to find significant explicit anti-Arab attitudes in this sample could speak to the strength of these attitudes. Often the relationship between implicit-explicit stereotypes is moderated

by the strength of the attitude, self-presentational concerns, attitude dimensionality, and attitude distinctiveness (Nosek & Banaji, 2002).

### **The influence of media and peer attitudes on implicit Arab bias**

Past research has demonstrated the role of media as an important socializing agent especially in cases when direct contact is lacking (Armstrong, Neundorfm Brentar, 1992; Aljeaid, 1986; Fujioka, 1999; Greenber, 1972; Zillman, 2002; Zillmann & Brosious, 2000). The results of this study provide further support to these findings. Participants in the nonviolent condition who indicated media as their primary sources of information about Arabs had significantly higher implicit Arab bias than those who did not indicate media as their primary sources of information about Arabs. More importantly, these results suggest that even for participants who do not base their Arab knowledge on media sources, a single stereotypic episode can increase their anti-Arab bias, at least in the short term. As predicted, participants who indicated direct contact as the primary source of information about Arabs had significantly lower implicit Arab bias than participants who did not indicate direct contact as the primary source of information about Arabs. An interaction between game type and direct contact found that participants in the nonviolent condition who indicated direct contact as their primary source of information about Arabs had significantly lower implicit Arab bias than participants who did not indicate direct contact as their primary source of information about Arabs. These findings have important intervention implications that are further discussed in the implications section.

The accessibility principle suggests that the more frequently a construct is activated, the more accessible it becomes (i.e., chronic accessibility). Related to this principle, past studies have found that higher amounts of media exposure to terrorists acts perpetrated by

Arabs is associated with increase in prejudice towards Arabs (Persson & Musher-Eizenman, 2006). The results of the present study add to these findings. Specifically, participants with high media exposure to conflicts perpetrated by Arabs had significantly higher implicit Arab bias than participants with low media exposure to conflicts perpetrated by Arabs. More importantly, the negative influence of news exposure to Arab terrorism on implicit anti-Arab bias occurred in all three conditions. These results can be generalized beyond the Arab group, providing support to findings that suggest negative news exposure towards any group usually translates into negative attitudes towards that group and into over-generalizations that could potentially cause discrimination towards all members of that group (Zillman & Brosious, 2002).

#### **The influence of media and peer attitudes on explicit Arab bias**

Sources of information about Arabs were not uniquely associated with explicit Arab bias. An interaction between game type and media as source of information found that participants in the nonviolent game who indicated media as their primary sources of information about Arabs yielded higher blatantly explicit Arab bias than participants who did not indicate media as their primary sources of information about Arabs. This effect was not significant for the Arab and Russian terrorists games.

Media exposure to violence perpetrated by Arabs was not uniquely associated with explicit Arab bias. An interaction with game type suggested that participants in the Russian terrorists condition with higher levels of media exposure to violence perpetrated by Arabs yielded higher levels of blatantly explicit Arab bias. This effect was not found in the Arab terrorists and nonviolent game conditions. Again, it is difficult to interpret why a theoretical

effect may not have taken place when explicit measures are concerned because of social desirability and contextual issues.

Past studies have demonstrated the influence of peer attitudes by showing that people adjust their own stereotypic beliefs to conform to the beliefs of their peer groups (Tan et al., 2001). The results of this study demonstrate that peers' negative Arab attitudes are very strongly associated with explicit Arab bias measures. These results converge with past studies that have demonstrated the influence of peer attitudes on personal explicit attitudes (Tan et al., 2001; Eagly & Chaiken, 1993). It is interesting that peers' attitudes were not associated with implicit bias but were so strongly associated with explicit measures. Although implicit measures are interpreted to tap into not only one's existing cognitive network, but also what associations are currently activated (Smith, Conrey, 2007). Thus, it is quite possible that even if one has high levels of negative peer attitudes towards a certain group in their existing cognitive network, unless activated at the moment of testing this existing network may be overshadowed by what is currently primed. A possible explanation for why peer attitudes have an affect on explicit attitudes may be because if one's peers openly discuss their explicit attitudes towards a certain group than social desirability becomes less of a concern for that individual. In fact, they might think it is appropriate and justified to have such attitudes and be more willing to express or report their personal explicit attitudes towards that particular group.

#### **The influence of patriotism and Muslim attitudes on implicit Arab bias**

Although not all information about Arabs in the media following September 11 was negative, the net effect of media coverage demonized the enemy and presented Arabs in an adverse fashion (Hutchenson, Domke, Billeaudeau, & Garland, 2003). Furthermore,

references to Arab Americans as in-group members declined after September 11, 2001 (Clay, 2002; Oh, 2003). Given these findings, we hypothesized that higher levels of patriotism might be associated with out-group hostility towards Arabs. Patriotism was not uniquely associated with implicit Arab bias. However, there was an interaction with game type illustrating that participants in the nonviolent condition with higher levels of patriotism had higher implicit Arab bias than those with low levels of patriotism. This effect was not found in the Arab and Russian terrorists games. These results suggest that a single stereotypic episode may not influence existing implicit Arab attitudes for those with high levels of patriotism. However, for those with low levels of patriotism even a single stereotypic episode can influence anti-Arab attitudes.

#### **The influence of patriotism and Muslim attitudes on explicit Arab bias**

Higher levels of patriotism were uniquely associated with higher levels of subtly explicit Arab bias, but not blatantly explicit bias. Converging with past studies, these results seem to suggest that in the current times Arabs are not considered part of the American in-group (Oh, 2003). Given the past and current political tensions between the U.S. and most of Arab nations, it is possible that all Arabs (even Arab-Americans) are seen as the out-group and enemy by association (Brown, 2003). This trend can of course be assumed to intensify at times of war when patriotism is high (Lester, 2003). The interaction with game type was significant for both subtly and blatantly explicit measures. For both measures, participants in the Russian terrorists game with higher levels of patriotism had significantly higher levels of explicit Arab bias. This effect was not significant for the Arab terrorists and nonviolent conditions. It is unclear why this effect was only found in the Russian terrorists condition.

Past explicit Muslim bias uniquely predicted explicit Arab bias. For both measures, higher levels of explicit Muslim bias were associated with higher levels of explicit Arab. These results add to findings that suggest currently Muslims and Arabs are often thought of as synonymous. Considering the prevalence of negative Arab stereotypes in the media, these results suggest that people may generalize Arab stereotypes to all Muslims and vice versa. The possibility of negative attitudes generalizing beyond a specific group to an entire religion is noteworthy. Given the lack of positive Muslim images in the media, this overgeneralization can be extremely harmful in creating stereotypes, prejudice, and acts of discrimination, especially among those with little or no direct contact with Muslims (Shaheen, 2003).

### **Implications**

Media stereotypes can serve very implicit and subtle functions of stereotyping that call little attention to the artifice of construction (Browne et al., 1994). Consistent with social cognitive theories, this study demonstrates how negative media stereotypes can translate into negative attitudes. Although there have been several studies on stereotypes and media, this study makes a novel contribution by studying these effects in a relatively new form of media, video games. Just as violent video games can teach aggression, stereotypic video games can teach, reinforce, and maintain stereotypes. The results of this study are important in demonstrating that direct or indirect references in video games of certain groups can influence one's attitudes towards these groups. This is a significant finding considering how much children play video games in today's age (13 hrs/week: Marting & Oppenheim, 2007) and how few alternatives children have of learning about other groups (Ball-Rokeach & DeFleur, 1976). In fact the interactive nature of stereotypic video games could potentially be more harmful than other passive forms of media stereotypes. Even though Arab stereotypes

were tested in this study, video game stereotypes of any other group would theoretically produce the same results. It is possible that the effects of video game stereotypes on anti-Arab bias were especially robust given the overall lack of direct contact and dependence on media sources for information about Arabs.

An interesting finding of this study is that identification with the main character in a stereotypic game can significantly increase negative attitudes towards the stereotyped group. This is significant considering children and adolescents are likely to look for role models to identify with because they are in the process of developing their own identities (Konijn, Bijvank, & Bushman, 2007). The possibility of children identifying with violent and stereotypic video game characters could potentially lead to formations and reinforcements of hostile attitudes towards certain groups. Future research should examine the effects of violent stereotypic (e.g., target shooter games) and nonviolent stereotypic games (e.g., sports games) on hostile out-group attitudes. Identification with model is one of the several factors that facilitate the learning process from media outlets. Other factors include frequency of stereotypic exposure, characteristics of the content/message, realism of the portrayal, similarity to the model, and level of individual cognitive ability (Bandura, 1986; Potter, 1986). Future research should examine the role of these factors in video game stereotypic portrayals.

This study is also significant in testing the effects of several socializing factors on attitudes. This study shows the associations between news media, video games, peer attitudes, past explicit attitudes, information sources about groups, patriotism, implicit, and explicit attitudes. These results are important in signifying the different aspects involved in stereotype formation, reinforcement, and maintenance. This study suggests that media (e.g.,



news exposure, stereotypic video games) overall have a strong influence on people's attitudes. The results of this study could be useful in identifying possible interventions that seem to be negatively associated with implicit and explicit stereotypes (e.g., direct contact). Repeated media exposure associating any group with negative incidents plays a significant role in creating and reinforcing such prejudice. It is possible that exposing people to positive informational cues about certain groups could help in unlearning or replacing negative associations. It is unclear whether video games with positive stereotypes could reverse the effects of video games with negative stereotypes. For example, it might be the case that after playing a positive stereotypic video game with African American characters (e.g., sports games) people have less African American bias than playing a negative stereotypic video game with African American characters (e.g., grand theft auto). Future research should explore these possibilities. It is also possible that the effects of stereotypic video game portrayals go beyond negative attitudes for certain groups and actually influence opinions on racially charged and politically relevant topics (e.g., the Iraq war; terrorism; affirmative action, immigration, the death penalty). Future research should examine the association between video game stereotypes and racially charged topics.

Although all group stereotypes can be harmful, media Arab stereotypes may be especially harmful considering the lack of positive Arab images in the current media (Shaheen, 2001; Wingfield & Karaman, 2002). Specifically with Arabs it seems that no direct reference is needed to activate people's unpleasant Arab attitudes. The word "terrorism" in today's age has become coincident with Arabs. Even though the Arab terrorists and the Russian terrorists games had obvious visual differences (e.g., target appearance, settings), both games immersed the main character in the role of foiling a terrorist plot. This may be an

explanation for why the Arab and Russian terrorists game conditions combined were associated with higher levels of implicit bias than the nonviolent game condition. Even though the Russian terrorists game did not have any direct reference to Arabs, it was associated with higher levels of implicit and explicit anti-Arab bias. These results converge to real world examples of how terrorism is usually associated with Arabs. 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 (Brown, 2003). These negative representations are especially significant because they can be used in the future to interpret information about any person who fits the Arab schema. Even the most well intentioned person can form automatic negative attitudes which may indirectly affect his or her behavior(s).

### **Limitations of the Current Study**

There are several limitations of this study. Perhaps the most important limitation is that it remains unclear whether “terrorism” or “violence” or both were associated with implicit anti-Arab bias in the Arab and Russian terrorists conditions. Both of these conditions included violence and a story line in relation to terrorism. Future studies should tease apart these two concepts by testing attitudes across two conditions; one that has violence but no terrorism and another condition that has terrorism but no violence.

The self-report nature of the explicit measures is another limitation because researchers cannot know how truthfully the participants answered these questionnaires. Social desirability, contextual effects, and demand characteristics may potentially influence respondent’s answers on these questionnaires. Future studies could include measures of social desirability and perceived demand as possible controls for such issues.

Finally, the overall sample was not representative of the population (over 80% self-identified as White or Caucasians). In addition, as this study was conducted in the Midwest it is unclear if other regions would yield similar results. It is possible that these results might be different in regions where people have directly witnessed a terrorist act perpetrated by Arabs (e.g., New York, NY). Similarly, it is unclear whether regions that have had more direct contact with Arabs (e.g., Dearborn, MI) would produce similar results.

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## APPENDICES

### Appendix A:

#### SONA POSTING FORM

The SONA IRB administrator MUST have a copy of this form before you send an activation request.

**PRINCIPAL INVESTIGATOR (Faculty Supervisor): Muniba Saleem, B.A. (Craig Anderson, Ph.D.)**

**RESEARCHERS: Muniba Saleem, Craig Anderson**

**STUDY NAME & NUMBER: Media Images and Visual Performance**

**BRIEF ABSTRACT:** This study examines how media images relate to visual attention. We are also interested in studying various attitudes.

**DETAILED DESCRIPTION (Must be exactly as approved by IRB):**

This study is concerned with how media images relate to visual attention. You will be asked to play either a violent or a non-violent video game, complete a computer task, and answer various questionnaires.

**ELIGIBILITY REQUIREMENTS: This study can only be completed once. You must be 18 years old or older to participate.**

**DURATION (Minimum 50min.): 90 minutes**

**CREDITS: 2**

**PREPARATION:**

**IRB APPROVAL CODE:**

**IRB APPROVAL EXPIRATION:**

**IS THIS AN ONLINE STUDY? No**

## **Appendix B: Informed Consent Document**

**Title of the Study:** Media Images and Visual Performance

**Investigators:** Muniba Saleem, B.A., Craig Anderson, Ph.D.

This is a research study. You must be at least 18 years of age to participate. You are invited to be in a research study examining media images and attitudes. As indicated on your course syllabus, participation in research studies is one of the options for obtaining experimental credit in your course. We ask that you take your time in reading this document and ask questions at any time.

### **Introduction**

This study is concerned with how different types of media images relate to visual attention. We are also interested in assessing your attitudes. We are not concerned with the performance of a particular person, but rather this study is concerned with assessing the performance of *groups* of people. You are being invited to participate in this study because you are a student in Psychology 101, 230, or 280.

### **Procedure**

Participation in this study is voluntary. If you agree to be in this study, it will take approximately 60-90 minutes. You will receive two credit points participating. To complete this study, we will ask you to do the following things:

You will first complete a set of questionnaire on the computer. Then, you will be asked to play either a violent or a non-violent video game for 30 minutes. After that you will be asked to complete a computer task. Finally, you will be instructed to complete various questionnaire assessing attitudes, media exposure, your peers' beliefs, and patriotism. You may skip any questions which you are not comfortable answering.

### **Risks**

You may be asked to play a violent video game for 30 minutes. However, this is a relatively older game and is not nearly as violent as newer games on the market. Although there are some short-term effects of brief violent video game exposure, there have never been any long-term negative effects to participants in any of the other violent media studies conducted in the Anderson Lab. Any mild discomfort experienced during game play will be temporary. Moreover, you may discontinue participation at any time without penalty if you feel uncomfortable playing the game.

You will be asked to answer several questionnaires. Some of these questions may be sensitive in nature. If you feel uncomfortable with the questionnaires or any other tasks, you can stop immediately with no penalty and you will receive credit for your time. Also, you may skip any questions which you are not comfortable answering.

### **Benefits**

If you participate in this study, you will receive two extra credit points. Also, you will receive first hand knowledge on how psychological research is conducted, which will complement information from your psychology class. It is hoped that the information gained in this study will benefit society by improving the understanding of the relationship between media images and visual performance.

### **Costs and Compensation**

There will not be any costs to you for participating in this study, except for your time spent in the laboratory. This study will take 60-90 minutes of your time, for which you will electronically receive two credit points even if you choose to discontinue participation in the study.

**Participant Rights**

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

**Confidentiality**

Records identifying participants will be kept confidential and will not be made publicly available. Federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis.

These records may contain private information.

Your data will be identified by an arbitrary identification number. Only the research team will have access to the data which will be stored in a locked office. The data will be retained for approximately two years. If the results are published, your identity will remain confidential.

**Questions or Problems**

You are encouraged to ask questions at any time during this study. For further information about the study contact Muniba Saleem at 294-2335 or msaleem@iastate.edu or Craig Anderson at 294-0283 or caa@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, Janice Canny, (515) 294-4566, [IRB@iastate.edu](mailto:IRB@iastate.edu), or Director, Diane Ament, (515) 294-3115, Office of Research Assurances, Iowa State University, Ames, Iowa 50011.

\*\*\*\*\*

You may or may not choose to participate in this study. If you choose to participate, please read the following statement and acknowledge your voluntary consent by providing your name, your signature, and today's date.

***I hereby consent to my participation in this experiment (Experiment #?). I have been informed and understand the purposes and procedures of this study. I understand that my participation is completely voluntary and that I am free to withdraw consent and discontinue participation at anytime without losing credit. I agree to participate in this experiment as described above.***

---

Signature of Participant

Date

Check here if you would like to receive a written copy of this consent form at the conclusion of the study.

\*\*\*\*\*

**FOR EXPERIMENTER TO COMPLETE:**

I certify that the participant has been given adequate time to read and learn about the study and all his/her questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

---

Signature of Investigator or Person Obtaining Consent

Date

### **Appendix C: Violent Video Game Description**

Counter Strike is a first-person shooter video game. The player is part of a counter-terrorist team and the team mission is to defeat the terrorists team before their mission is completed. Each round is won by either completing the mission objective or eliminating the opposing force. The other team players and the counter-terrorists teams are controlled by the computer. The game player only has control over the main character. The player keeps playing the same mission until they complete their objective or eliminate the other team. If they win one round, they proceed to another round. The rounds' objectives are all the same. The only change is in the settings of the round (i.e. game maps).

In this experiment, the participant will play a mission of Counter Strike for 30 minutes. Participants will play the same game across all conditions. The only difference between conditions will be the appearance of target characters and team characters (i.e., stereotypic Arab characters, Russian characters). Another difference will be in the change of settings. Some participants will play in a stereotypic Arab setting (i.e., desert), whereas others will play in a snowy setting.

A demo of the game is available at:

<http://www.gamespot.com/video/533806/6092074/counter-strike-condition-zero-environments-1>

### **Non-Violent Video Game Description**

3D Ultra Mini-Golf Adventure is a single-player mini-golf game. The player can compete in a tournament with other computer-controlled characters. The goal of the tournament is to reach all 36 holes with the fewest possible strokes. The game involves putting a golf ball through various holes and settings.

In this experiment, the participant will play a 36-hole tournament for 30 minutes. If they complete the tournament before 30 minutes, they will be asked to play in another 36-hole tournament.

A demo of the game is available at:

<http://www.gamespot.com/video/935371/6169391/3d-ultra-mini-golf-adventures-gameplay-movie-3>

**Appendix D**  
**Familiarity with Names**

Please rate your degree of familiarity for every name listed below on the given scale.

1. Ammar	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
2. Adam	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
3. Jaafar	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
4. Andrew	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
5. Haashim	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
6. Chip	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
7. Hassan	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
8. Frank	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
9. Muhammad	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
10. Jonathan	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
11. Nadeem	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
12. Justin	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
13. Rashid	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
14. Harry	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
15. Saad	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
16. Matthew	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
17. Umar	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
18. Roger	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
19. Zahir	1	2	3	4	5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>
20. Stephen		1	2	3	4 5
	<i>(not at all familiar)</i>				<i>(very familiar)</i>

Participant ID: \_\_\_\_\_

**Appendix E**  
**Semantic Differential Items**

**On each line below there are two adjectives that can be used to describe a typical Arab person. Please look at each line separately and think about which adjective on that line best describes a typical Arab person by circling a number between 3 and -3.**

- |                        |           |   |   |   |    |    |    |            |
|------------------------|-----------|---|---|---|----|----|----|------------|
| 1. Is a typical Arab:  | Friendly  |   |   |   |    |    |    | Unfriendly |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 2. Is a typical Arab:  | Peaceful  |   |   |   |    |    |    | Violent    |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 3. Is a typical Arab:  | Helpful   |   |   |   |    |    |    | Unhelpful  |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 4. Is a typical Arab*: | Mean      |   |   |   |    |    |    | Nice       |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 5. Is a typical Arab:  | Beautiful |   |   |   |    |    |    | Ugly       |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 6. Is a typical Arab:  | Good      |   |   |   |    |    |    | Bad        |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 7. Is a typical Arab:  | Pleasant  |   |   |   |    |    |    | Unpleasant |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 8. Is a typical Arab:  | Honest    |   |   |   |    |    |    | Dishonest  |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 9. Is a typical Arab:  | Tolerant  |   |   |   |    |    |    | Intolerant |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |
| 10. Is a typical Arab: | Nice      |   |   |   |    |    |    | Awful      |
|                        | 3         | 2 | 1 | 0 | -1 | -2 | -3 |            |





Participant ID: \_\_\_\_\_

**Appendix G**  
**Blatant Prejudice Scale**

Please rate the following statements given the scale below.

1	2	3	4	5	6
(strongly agree)					(strongly disagree)

1. Arabs have jobs that Americans should have.
2. Most Arabs living in the United States who receive support from welfare could get along without it if they tried.
3. American people and Arabs can never be really comfortable with each other, even if they are close friends.
4. Most politicians in America care too much about Arabs and not enough about the average American person.
5. Arabs come from less able races and this explains why they are not as well off as most American people.
6. I would be willing to have sexual relations with an Arab\*.
7. I would NOT mind if a suitably qualified Arab was appointed as my boss\*.
8. I would NOT mind if an Arab who had a similar economic background as mine joined my close family by marriage\*.
9. African Americans have jobs that Whites should have.
10. Most African Americans living in the United States who receive support from welfare could get along without it if they tried.
11. Whites and African Americans can never be really comfortable with each other, even if they are close friends.
12. Most politicians in America care too much about African Americans and not enough about the average American person.
13. African Americans come from less able races and this explains why they are not as well off as most American people.
14. Latinos have jobs that Americans should have.
15. Most Latinos living in the United States who receive support from welfare could get along without it if they tried.
16. American people and Latinos can never be really comfortable with each other, even if they are close friends.
17. Most politicians in America care too much about Latinos and not enough about the average American person.
18. Latinos come from less able races and this explains why they are not as well off as most American people.

**Please rate the following statements given the scale below.**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>(very different)</b>					<b>(very similar)</b>

19. How different or similar do you think Arabs living in the United States are to other American people like yourself- in how honest they are?
20. How different or similar do you think Latinos living in the United States are to other American people like yourself- in how honest they are?
21. How different or similar do you think African Americans living in the United States are to other American people like yourself- in how honest they are?

Participant ID: \_\_\_\_\_

**Appendix H**  
**Attitudes towards Groups**

**Using the scale below as a guide, indicate the extent to which you agree or disagree with the following statements.**

**Strongly Disagree    1       2       3       4       5       6       Strongly Agree**

1. Muslims are friendly people.
2. Muslims should be feared. \*
3. Muslims are peaceful.
4. Muslim women are submissive. \*
5. Muslims have a lot of personal freedom.
6. Muslims are too culturally different to be able to live successfully in America. \*
7. Muslim men are dominant. \*
8. I feel favorably toward Muslims.
9. I worry that Muslims want to take over America. \*
10. I fear Muslims are radicals. \*
11. Muslim immigration should be halted. \*
12. Muslim women have many rights.
13. I believe Muslims are responsible for many of America's problems. \*
14. I could interact comfortably with Muslims.
15. The Muslim religion is too strange for me to understand. \*
16. Americans could learn important ideas from Muslims.
17. I would support a measure deporting Muslims from America. \*
18. I am strongly accepting of Muslims.
19. Muslims are strict. \*
20. Muslims should be excluded from some occupations. \*
21. I would enjoy having Muslims as friends.
22. Muslims are good people.
23. Muslims are scary. \*
24. I have nothing in common with Muslims.\*
25. I don't worry about the Muslim presence in America.

\* = reverse-keyed item

Participant ID: \_\_\_\_\_

**Appendix I  
Patriotism Scale**

**Please rate the following statements given the scale below.**

1	2	3	4	5	6
(strongly agree)					(strongly disagree)

1. I love my country.
2. I am proud to be an American.
3. In a sense, I am emotionally attached to my country and affected by its actions.
4. Although at times I may not agree with the government, my commitment to the U. S. always remains strong.
5. I feel great pride in that land that is our America.
6. It is NOT that important for me serve my country\*.
7. When I see the American flag flying I feel great.
8. The fact that I am American is an important part of my identity.
9. It is NOT constructive for one to develop an emotional attachment to his/her country\*.
10. In general, I have very little respect for the American people\*.
11. It bothers me to see children made to pledge allegiance to the flag or sing the national anthem or otherwise induced to adopt such strong patriotic attitudes\*.
12. The U. S. is really just an institution, big and powerful yes, but just an institution\*.

Participant ID: \_\_\_\_\_

**Appendix J**  
**Violence in the News**

Please answer the following questions using the scale provided.

1            2            3            4            5            6            7

*(not at all)*

*(all the time)*

1. How often have you seen news stories or reports about the conflict between Israel and Palestinians?
2. How often have you seen news stories or reports about terrorism perpetrated by Arabs?
3. How often have you seen news stories or reports of buildings, buses, or other property destroyed by Arabs?
4. How often have you seen news stories or reports of people getting injured or dying because of Arabs?
5. How often have you seen news stories or reports of people upset or crying because someone they knew or loved had been killed by Arabs?
6. How often have you seen news stories or reports of hostages being held, tortured, or abused by Arabs?
7. How often have you seen news stories or reports about terrorism perpetrated by Latinos?
8. How often have you seen news stories or reports of buildings, buses, or other property destroyed by Latinos?
9. How often have you seen news stories or reports of people getting injured or dying because of Latinos?
10. How often have you seen news stories or reports of people upset or crying because someone they knew or loved had been killed by Latinos?
11. How often have you seen news stories or reports of hostages being held, tortured, or abused by Latinos?
12. How often have you seen news stories or reports about terrorism perpetrated by African Americans?
13. How often have you seen news stories or reports of buildings, buses, or other property destroyed by African Americans?
14. How often have you seen news stories or reports of people getting injured or dying because of African Americans?
15. How often have you seen news stories or reports of people upset or crying because someone they knew or loved had been killed by African Americans?
16. How often have you seen news stories or reports of hostages being held, tortured, or abused by African Americans?



**Appendix L**  
**Peers' Beliefs**

**Please rate the following statements by using the scale provided.**

1            2            3            4            5            6            7

**(strongly agree)**

**(strongly disagree)**

1. People in my group of friends usually think that Arabs are not good people.
2. People in my group of friends like Arabs\*.
3. People in my group of friends usually think that Arabs are terrorists.
4. People in my group of friends usually think that Arabs are peaceful\*.
5. People in my group of friends usually think that Arabs are fundamentalists.
6. People in my group of friends usually think that Arabs are tolerant\*.
7. People in my group of friends usually think that Arabs are aggressive.
8. People in my group of friends usually think that African Americans are not good people.
9. People in my group of friends like African Americans.
10. People in my group of friends usually think that African Americans are criminals.
11. People in my group of friends usually think that African Americans are peaceful.
12. People in my group of friends usually think that African Americans are aggressive.
13. People in my group of friends usually think that Latinos are tolerant.
14. People in my group of friends usually think that Latinos are not good people.
15. People in my group of friends like Latinos.
16. People in my group of friends usually think that Latinos are criminals.
17. People in my group of friends usually think that Latinos are peaceful.
18. People in my group of friends usually think that Latinos are aggressive.
19. People in my group of friends usually think that Latinos are tolerant.

**Appendix M**  
**Prior Video Game Exposure**

**For each game listed below, please rate how frequently you have played it in the past year using the scale below.**

**Never 1-5 times 6-10 times 11-15 times 16-20 times 21-25 times More than 25 times**

1. War in the gulf
2. Counter Strike
3. Prince of Persia series
4. Delta Force
5. Conflict Desert Storm series
6. America's Army
7. Command and Conquer: Generals
8. Tom Clancy's Ghost Recon 2: Summit
9. Full Spectrum Warrior
10. Kuma War
11. Tom Clancy's Rainbow Six: Lockdown
12. Beach Head: Desert War
13. First to Fight
14. Battlefield



**Appendix N**  
**Video Game Evaluations**

Please answer the following questions about the single player video game you played earlier in this session.

Please rate the video game you played on the following dimensions. Use the following scale:

- |  |                      |   |   |   |   |   |   |   |   |                   |
|--|----------------------|---|---|---|---|---|---|---|---|-------------------|
|  | 1                    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                |
|  | strongly<br>disagree |   |   |   |   |   |   |   |   | strongly<br>agree |
- \_\_\_\_\_ a. The game was difficult to play.
  - \_\_\_\_\_ b. The game was absorbing.
  - \_\_\_\_\_ c. The game was action-packed.
  - \_\_\_\_\_ d. The game was arousing.
  - \_\_\_\_\_ e. The game was boring.
  - \_\_\_\_\_ f. The game was enjoyable.
  - \_\_\_\_\_ g. The game was entertaining.
  - \_\_\_\_\_ h. The game was exciting.
  - \_\_\_\_\_ i. The game was frustrating.
  - \_\_\_\_\_ j. The game was fun
  - \_\_\_\_\_ k. The game was involving.
  - \_\_\_\_\_ l. The game was stimulating.
  - \_\_\_\_\_ m. The game was violent.
  - \_\_\_\_\_ n. The game was “addicting.”
- o. My abilities on the video game task were:

- |         |   |   |         |   |   |         |
|---------|---|---|---------|---|---|---------|
| 1       | 2 | 3 | 4       | 5 | 6 | 7       |
| Well    |   |   | Average |   |   | Well    |
| Below   |   |   |         |   |   | Above   |
| Average |   |   |         |   |   | Average |

p. How much did your abilities improve from the first five minutes to the last five minutes:

- |                   |   |   |   |   |   |                        |
|-------------------|---|---|---|---|---|------------------------|
| 1                 | 2 | 3 | 4 | 5 | 6 | 7                      |
| No<br>Improvement |   |   |   |   |   | Extreme<br>Improvement |



**Appendix P**  
**Demographics**

*Please answer the following questions as accurately as possible. If you a question does not apply to you, write "NA" in the blank.*

- \_\_\_\_\_ 1. What is your gender?
- A. Female
  - B. Male
- \_\_\_\_\_ 2. What is your **current age** in years?
- \_\_\_\_\_ 3. What is your race?
- A. American Indian/Alaska Native
  - B. East Asian
  - C. South Asian
  - D. Native Hawaiian or other Pacific Islander
  - E. Black or African American
  - F. White or Caucasian
  - G. Hispanic
  - H. More than one race
- \_\_\_\_\_ 4. What is your political identity?
- A. Strongly conservative
  - B. Moderately conservative
  - C. Slightly conservative
  - D. Neutral
  - E. Slightly liberal
  - F. Moderately liberal
  - G. Strongly liberal
- \_\_\_\_\_ 5. What is your religious affiliation?
- \_\_\_\_\_ 6. What was your **GPA** (on a four point scale) in the **previous semester**?
- \_\_\_\_\_ 7. How many years of **education** has your **mother** received (e.g., "12" for a high school graduate)?
- \_\_\_\_\_ 8. How many years of **education** has your **father** received (e.g., "12" for a high school graduate)?
- \_\_\_\_\_ 9. What is your **parents'** approximate household **income** each year (in dollars)?
- \_\_\_\_\_ 10. How many times have you taken the Implicit Association Task (IAT) in the past?

**Appendix Q:  
Suspicion Questionnaire**

**PARTICIPANT ID#** \_\_\_\_\_ **DATE** \_\_\_\_\_ **TIME** \_\_\_\_\_

Say to participant: *“We are now finished with the study. I would now like to ask you a few questions before you leave. Is that OK with you?”*

1. *What did you think of the study?*

2. *Were you confused by any of the tasks or instructions?* (circle one)      **YES**      **NO**  
**If Answered Yes, Please Ask Participant to Elaborate:**

3. *Did you think that the way the lab was set up gave away any information on what the experiment was about?* (circle one)      **YES**      **NO**

**If Answered Yes, Please Ask Participant to Elaborate:**

4. *Do you think that there might have been more to this study than you were told?* (circle one)      **YES**      **NO**  
**If Answered Yes, Please Ask Participant to Elaborate:**

5. *Did you think that the video game, computer task, and/or questionnaires were related?* (circle one)      **YES**      **NO**  
**If Answered Yes, Please Ask Participant to Elaborate:**

6. *Do you think this study was about any one specific group?* (circle one)      **YES**      **NO**  
**If Answered Yes, Please Ask Participant to Elaborate**

### **Appendix R: Debriefing statement**

Thank you very much for your participation. The information we provided you about the study in the beginning of the study was true, although not complete. If participants knew exactly what we were measuring and what we expected to find, some of them might respond in ways that they think would help us. Others might deliberately try to do the opposite of what we expect. We were interested in natural behavior, so the specifics of what we were measuring was left deliberately vague.

The first computer task you completed is a measure of stereotypes towards Arabs. Several other questionnaires measure attitudes towards certain groups. The media exposure questionnaire assesses media exposure to conflict with certain groups. The peer attitudes questionnaire measures peers' attitudes towards certain groups. The patriotism scale measures patriotism level.

The purpose of including all of these measures is to discover whether stereotypic images in some video games influence people's attitudes about certain groups. We hypothesize that violent games with stereotypic Arab targets can temporarily increase negative attitudes and thoughts about Arabs, relative to games that do not involve killing stereotypic Arab targets.

We want to remind you that there are no correct answers or behaviors in this study. In addition, we are not interested in the responses of particular individuals; rather, analyses will focus on groups of individuals. Because of the way the data are coded, there is no way for us to know how you personally answered the questions. Your responses will be analyzed as part of a large group. We want to assure you that your answers are completely confidential.

Furthermore, some of the questionnaires used asked questions of a very personal nature. It is possible that these questions could have brought up past memories and caused emotional discomfort. This is a very natural reaction. If you experienced any feelings similar to those just described, you may want to consider visiting the Student Counseling Center. It is located on the 3rd floor in Student Services Building & the phone number is 294-5056.

Finally, I would appreciate it if you didn't tell any potential participants about this study, so that our future participants will behave as naturally as you did. Do you have any questions or comments? If any further questions come up, feel free to contact the principal investigators Muniba Saleem (294-2335; [msaleem@iastate.edu](mailto:msaleem@iastate.edu)) or Dr. Craig Anderson (294-3118; [caa@iastate.edu](mailto:caa@iastate.edu)). If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, Janice Canny, (515) 294-4566, [IRB@iastate.edu](mailto:IRB@iastate.edu), or Director, Diane Ament, (515) 294-3115, Office of Research Assurances, Iowa State University, Ames, Iowa 50011.