PeaceMaker: Changing Students' Attitudes Toward Palestinians and Israelis Through Video Game Play

Abstract

An experiment investigated the effects of video game role-play on change of students' explicit and implicit attitudes toward Palestinians and Israelis. Sixty-nine participants played Peacemaker, a video game in which people play the role of the Palestinian President or the Israeli Prime Minister and respond to various scenarios through diplomatic, economic, and military decision-making. Results showed that participants playing as the Palestinian President reported positive change in explicit attitudes toward Palestinians and negative change toward Israelis. Participants playing as the Israeli Prime Minister reported no meaningful attitude changes toward both national groups over time. Implicit attitudes were more positive toward Palestinians, and did not change significantly over time. Results are discussed in relation to self-persuasion, persuasive games, and attitude change.

Keywords: PeaceMaker, Palestinians, Israelis, video games, persuasive games, self-persuasion, attitude change, explicit attitudes, implicit attitudes

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Through Video Game Play

Over the past few decades, the Palestinian-Israeli conflict has vacillated between escalation of violence and attempts at peaceful resolution (Baylis, Wirtz, Cohen, & Gray, 2007; Mansour, 2002; Moaz, Ward, Katz, & Ross, 2002). Amidst these political changes, American foreign policy has been central to the peace process. Regarding the United States as a necessary mediator, both sides of the conflict have been relentless in trying to affect American public opinion in hopes of changes in foreign policy (Carter, 2006; 2009; Christison, 1997; Gilboa, 1987; 2002; Gilboa & Inbar, 2009; Mearsheimer & Walt, 2007; Moughrabi, 1986; Quandt, 2005). While outsiders may seem ambivalent towards the groups involved in this conflict, attitudes toward Israelis and Palestinians have fluctuated over the past few decades. Generally, however, public opinion trends suggest greater favorability and sympathy toward the Israeli side compared to Palestinians (Bard, 1994; Krosnick & Telhami, 1995; Mayer, 2004; Phillips, Lengyel, & Saxe, 2002; Suleiman, 1984).

Rather than analyze these trends, the current study explored how new media use may cause attitude change in American college students toward the conflict's two sides. More specifically, this study investigated the effects of playing PeaceMaker, a video game simulation of the Palestinian-Israeli conflict, on the change of American college students' attitudes toward Palestinians and Israelis. By conceptualizing PeaceMaker as a persuasive game (Bogost, 2006, 2007; Smith & Just, 2009), the study explores the effects of role-play (Elms, 1966; Greenwald & Albert, 1968; Janis & King, 1954; Watts, 1967) on attitude change through the process of self-persuasion (Aronson, 1999; Maio & Thomas, 2007).

The paper starts with a review and conceptualization of persuasive video games and their effects on individuals, along with a background on the emergence of PeaceMaker. The paper then reviews existing literature on attitudes, attitude change, role-play and self-persuasion in the second section. The third section is dedicated to distinguishing between explicit and implicit approaches to measuring attitudes. The fourth and fifth sections, respectively, describe the conduct and results of an experiment in which participants were randomly assigned to play the role of a national political leader (Israeli Prime Minister vs. Palestinian President), where their attitudes toward both sides were measured before and after playing the video game using explicit and implicit attitude tests. The final section discusses the theoretical and practical implications of these results.

Defining Video Games

Currently more popular than Hollywood movies, video games have become influential tools of entertainment (Souri, 2007; Squire, 2003). The video, computer and online game industry is thought to be one of the last industries standing in the face of the ongoing recession in the United States and worldwide. Despite the eight percent drop in sales between 2008 and 2009, U.S. video games sales totaled $19.66 billion last year (NDP Group, 2010a), while the use of and time spent on playing video games has increased by 10% in the first quarter of 2010 compared to the previous year (NDP Group, 2010b). Research conducted by the Pew Internet & American Life Project showed that almost 97% of teenagers (12 – 17 years old), the majority of

college students (76%) and more than half of American adults (53%) reported playing video, computer or online games (Lenhart, Jones & Macgill, 2008; Pew, 2008).

When a medium becomes popular, researchers start asking questions about the effects it has on its users. Roig and colleagues (Roig, Corneilo, Adevol, Alsin & Pages, 2009) explain that the effects and impact of video games are to be understood through the overall framework of media practices. As video games bring new forms of pleasure due to their distinct structural features and playability functions, Roig and colleagues explain that video games' effects cannot be understood without considering the cultural aspects in which they evolve. The trend in studying video games' effects on individuals and society focuses on violent feelings and aggressive behavior (e.g., Anders & Bushman, 2001; Anderson & Dill, 2000; Barlett, Rodeheffer, Baldassaro, Kinkin, & Harris, 2008; Eyal, Metzger, Lingweiler, Mahood, & Yao, 2006; Funk, Baldacci, Pasold & Baumgardner, 2004; Smith, Lanchlan & Tamborini, 2003; Peng, Klein & Lee, 2006; Weber, Behr, Tamborini, Ritterfeld, & Mathiak, 2009; Williams, 2006). Conversely, the current study sets out to investigate another genre of video games, thus, testing a possibly different type of effect. The focus here is on games that have been described as serious games (Michael & Chen, 2006; Wong et al., 2007), civic games (Kahn, Middaugh, & Evans, 2008), and persuasive games (Bogost, 2006; 2007; 2008; O'Luanaigh, 2006; Smith & Just, 2009). While these terms are often used interchangeably throughout the literature, we will refer to them here as persuasive games based on the assumption that their goal is to facilitate change in attitude and/or behavior.

Video Games: From Learning to Persuasion

In addition to their popularity, video games' structural and content features may make the learning process more appealing and goal-oriented (Mitchell, 2004; Souri, 2007; Squire, 2003; Wong et al., 2007). These qualities have also led to the use of video games for social and political reasons. The U.S. Army has been using video games to boost their recruitment numbers (Reiss, 2009), and advertisers and marketers have been integrating products and advertising messages in various gaming environments (Bailey, Wise, & Bolls, 2009; Smith & Just, 2009; Wise, Bolls, Kim, Venkataraman, & Meyer, 2008). While this terminology puts vastly different games into one group, the commonality among these different types of video and computer games is their focus on persuading players.

Bogost (2006; 2007) explicates persuasive games through the lens of what he calls *procedural rhetoric*. The author argues that video games do not present direct persuasive messages to the players, but rather, provide players with an environment (a set of rules and procedures) where they become part of the persuasion process by developing the arguments in order to fulfill the game's goal(s). Peng, Klein and Lee (2006) found support for this in a study where those who played the role of a police officer in a video game were generally more flexible in evaluating crimes committed by police officers compared to those committed by generic criminals.

Smith and Just (2009) agree with Bogost's claims that some sort of persuasion takes place when playing certain types of video games, yet call for a more analytical and rhetorical look at this medium. They argue that video games vary in the level of self-persuasion due to three factors: message autonomy, integration, and goal. Furthermore, the level of self-persuasion

depends on the extent to which a video game contains these three factors. In the next section we describe PeaceMaker, the video game used in the current study, in terms of these three factors.

Autonomy. In PeaceMaker, players choose the nationality they wish to represent (Palestinian President or Israeli Prime Minister) and the violence intensity level they wish to experience during the game. Players must then make decisions in order to respond to real-life events. According to Smith and Just (2009), autonomy deals with the level of explicit arguments presented within the game. While a low-autonomy game presents players with more arguments than a high-autonomy game, high-autonomy games are thought to elicit more self-deliberation, leading to greater self-persuasion. We argue that PeaceMaker is high on autonomy because it is based on reacting "strategically to in-game events," (Burak, Keylor, & Sweeney, 2005, p. 308) rather than evaluating or responding to persuasive arguments.

Integration. Smith and Just's (2009) second factor, integration, is the extent to which an object of persuasion (i.e. a product or brand) is embedded in the game design and content. From a traditional marketing perspective, PeaceMaker does not have an object of persuasion per se. However, the object of the game—peaceful conflict resolution—is thoroughly embedded in all gameplay aspects, which we argue makes this game an example of high integration.

Overlap. Finally, Smith and Just (2009) argue that the level of overlap between the game's goal and its learning goal influences the level of self-persuasion. Games with high overlap force players to elaborate on the game's learning objectives in order to win the game. We argue that there is a high level of overlap between the game and learning goals in PeaceMaker. Players in PeaceMaker are scored according to public approval ratings from both their and the opposing side. In order to get to the winning stage, *Nobel Prize Winner,* the player needs to learn which strategies to employ in order to peacefully resolve the conflict. For example, if a player in the role of Israeli PM were employing strategies that only enhance the Israeli side and fiercely deal with Palestinians, then the resulting score would be low, as opposed to employing strategies based on an understanding of both sides' objectives.

Having established PeaceMaker as a persuasive video game based on Smith and Just's discussion of autonomy, integration, and goals' overlap, we next discuss relevant literature on attitudes, attitude change, role-play and self-persuasion to derive hypotheses about how playing PeaceMaker may lead to a change in players' attitudes toward Israelis and Palestinians.

Attitude Change, Role-Play and Self-Persuasion

While attitude change research dates back to the first few decades of the 20th century, the general concept has been historically attributed to Ancient Greece and the writings of Aristotle (for a complete review see Petty & Wegener, 1998; Petty, Wegener, & Fabrigar, 1997). The concept of attitudes is clearly defined by Petty and colleagues (1997, 1998) as a set of evaluations that an individual has about him- or herself, other people, objects and issues. Unfortunately, the clarity of this conceptual definition is not matched in operational definitions of attitude formation and change. The current study focuses on role-play as a means of persuasion and attitude change. Before describing this approach to persuasion, we will provide an overview of the structure and function of an attitude.

Petty and colleagues (1997, 1998) and Maio and Haddock (2007), view that, structurally, attitudes are positive and/or negative evaluations of people, objects and issues. Maio and Haddock parallel this structure to the understanding of human emotion and the affect system. From a one-dimensional approach perspective, attitudes are viewed as being either positive or negative, with varying degrees of strength. On the other hand, the two-dimensional approach argues that since there are two distinct systems of processing positive and negative stimuli, attitudes cannot just be regarded as either positive or negative (Cacioppo, Gardner, and Bernston, 1997; Thomspon, Zanna and Griffin 1995). This approach suggests that negative and positive affect are processed in different parts of the central nervous system such that when an individual develops an attitude, what really matters is the number of positive elements and the number of negative elements, where each ranges from few to many (Maio and Haddock, 2007). This is also reflected in the understanding that attitudes form and change through automatic or controlled activation of "evaluative processing" (Cunningham & Zelazo, 2007).

These arguments help in explicating both attitude functions and the way attitudes change. Maio and Haddock (2007) argue that individuals utilize attitudes as a mean of object appraisal and a way of experiencing emotion and affect. Object appraisal refers to the function through which attitudes "simplify reasoning and behavior by providing guides for how to interact with (e.g., approach or avoid) an attitude object" (p. 568). Need for affect motivations refer to the means by which individuals seek emotional activation, be it pleasant, unpleasant or both. The authors argue that it is through the activation of attitudes that people experience such emotions, thus affect becomes an expression of attitudes. In this case there are four different types of attitudes: high negative and low positive (negative); high positive and low negative (positive); high negative and high positive (ambivalent); and low negative and low positive (indifferent; Cacioppo, Gardner & Bernston, 1999; Maio and Haddock, 2007).

The question that the current study tries to answer is whether and in which direction would attitudes toward members of the two conflicting nations would change as a function of playing a certain role in the PeaceMaker video game. To situate this research question theoretically, the following section focuses on role-play and the recent explications of self-persuasion.

Self-Persuasion and Attitude Change

Petty and Wegener (1998) reviewed several role-playing studies, where individuals were asked to formulate and verbalize arguments. Most of these studies concluded that attitude change was not only stronger than other types of direct persuasion but also lasted for longer periods of time. Research on the interplay of role-play and attitude change started in the 1950s. Janis and King (1954) showed how college students, when given the task of improvising arguments with opinions different from their own in the form of a debate, observed greater change in their attitudes and were more confident about these attitudes than those hearing the arguments. Similarly, Elms (1966) showed that smokers playing the role of nonsmokers with the task of persuading other smokers to quit witnessed greater and longer changes in their evaluations of smoking compared to the passive receivers of the arguments (control). Watts (1967) puts this in the framework of active versus passive participation. Active participation requires people to think about and improvise the arguments, whereas passive participation is

limited to the regurgitation of arguments, if not passively receiving them from another person (Greenwald & Albert, 1968; Watts, 1967).

The effect of role-play on persuasion and attitude change is expanded to self-persuasion. Aronson (1999) illustrated that attitude change resulting from self-persuasion processes compared to direct persuasion (by another person) had far "more powerful and more long-lasting effects" (p. 875). Maio and Thomas (2007) explicated a model of self-persuasion relying on differences in epistemic and teleologic tactics employed during the process of self-induced information processing. Most recent studies on self-persuasion similar to that of Maio and Thomas contrast this concept with Festinger's (1957) cognitive dissonance theory that deals with mechanisms employed by individuals in cases where they hold ambivalent attitudes.

Maio and Thomas (2007) also suggest that in self-deliberative persuasion, one's ability and motivation to elaborate on self-formulated arguments is higher than situations where persuasion is direct (or passive). The difference between epistemic and teleological processes of self-persuasion, they argue, is the need for validity. This need for validity is high in epistemic deliberation through which individuals employ "tactics available for downplaying undesired attitude elements and enhancing desired attitude elements" (p. 54). In teleological deliberation, the need for validity is low due to tactics employed by individuals to move "from an ambivalent attitude to a more desirable net attitude" (p. 57).

The current study specifically deals with attitudes toward other national groups and how a video game simulation of the Palestinian-Israeli conflict would elicit self-persuasion and result in changing attitudes toward the two sides of the conflict. Aside from claims that attitudes and perceptions of other nations have faded away, several authors argued that it is not a matter of diminishing, but an issue of measurement and the environment that makes it essential to suppress such expressions (Devine & Elliot, 1995; Madon et al., 2001). The current study capitalizes on the assumption that Americans, as well as people from different nationalities, have certain attitudes toward Palestinians and Israelis. The following section discusses the characteristics of these attitudes.

American Attitudes toward Palestinians and Israelis

With this study's emphasis on attitudes of Palestinians and Israelis, it becomes important to report earlier findings about American public opinion and attitudes in this regard. Survey results from the United States, as well as European countries, showed differences in sympathies, opinions and attitudes toward the conflict and its two sides. American public opinion is generally described as more favorable of Israelis than Palestinians (Bard, 1994; Krosnick & Telhami, 1995; Mayer, 2004; Suleiman, 1984). On the other hand, an Anti-Defamation league survey in 10 European countries revealed that respondents held negative opinions of actions perpetuated by both sides, such as suicide bombings carried out by Palestinians targeting Israeli civilians, and Israel's construction of the separation wall (ADL, 2004).

Discussion of the reasons behind such poll results or a debate on their actual depiction of reality within the American society is beyond the scope of the current paper. While we take this assumption into consideration—having a discrepancy in evaluation of both sides; the crux of the hypotheses rely on attitude change, rather than surveying current attitudes toward both peoples.

However, such a gap in favorability toward Palestinians and Israelis suggests different patterns of change as a function of playing PeaceMaker, especially that those playing the role of Palestinian President would be a role counter to their initial attitudes.

The minimal group paradigm (Tajfel, Billig, Bundy, & Flament, 1971; Tajfel, 1982) and more recent neuroscience experiments (Van Bavel & Cunningham, 2009) dealing with self-categorization and bias reduction might be helpful in deriving the current study's hypotheses. The minimal group paradigm deals with means of reducing bias by changing the salience of the categorization attribute. Generally, in minimal group paradigm studies, participants are exposed to pictures of both Black and White Americans, and instructed to memorize not their racial categorization, but rather an irrelevant type of group membership (i.e., Lions vs. Tigers). Participants are also assigned to be members of either group, and therefore, they end up evaluating the pictures on the basis of a new form of ingroup-outgroup (i.e., Lions vs. Tigers) rather than racial categorization (i.e., Black vs. White). Tajfel and colleagues consistently found that participants' evaluated outgroup members more negatively than ingroup pictures regardless of their racial/ethnic background. Van Bavel and Cunningham (2009) even found support for this hypothesis using functional Magnetic Resonance Imaging (fMRI), where lesions of the brain traditionally activated for the evaluation of ingroup faces were activated based on the novel categorization (i.e., Lions vs. Tigers) and not on the basis of ethnicity (i.e., Black vs. White).

Since we have established that PeaceMaker is a form of persuasive video gaming (Bogost, 2006; 2007; Smith & Just, 2009) that leads to change of attitudes through self-persuasion (Aronson, 1999; Maio & Thomas, 2007) as a function of role-play, we predict that the nationality of the role played would influence evaluations of the two people in distinct ways. We hypothesize that playing the role of Israeli Prime Minister would not constitute any considerable change in categorization, especially that the baseline is expected to be more in favor of Israelis, while, on the other hand, playing as Palestinian President would lead to more apparent changes in participants' evaluations of both sides of the conflict, where favorability of Palestinians would increase, while favorability toward Israelis would decrease. Thus, we hypothesize:

> *H1: Participants who play the role of Palestinian President will exhibit unfavorable attitude change toward Israelis, compared to those playing the role of Israeli Prime Minister, who will not exhibit any considerable attitude change toward Israelis.*
>
> *H2: Participants who play the role of Palestinian President will exhibit favorable attitude change toward Palestinians compared to those playing the role of Israeli Prime Minister who will not exhibit any considerable attitude change toward Palestinians.*

Implicit Attitudes

To this point we have focused on the role of video game play in causing changes in explicit attitudes towards Israelis and Palestinians. We also attempted to look at the role of video games with respect to implicit attitude change. In the past few years, there has been a plethora of studies addressing the *how* of measuring implicit attitudes (i.e., Cunningham, Preacher & Banaji, 2001; Greenwald & Farnham, 2000; Greenwald, McGhee, & Schwartz, 1998; Greenwald,

Nosek, & Banaji, 2003). Previous attitude models and means of measuring their implicit existence and/or activation, such as the implicit association test (IAT), have been criticized for their lack of consistent empirical support and validity in capturing actual attitudes (Payne, Cheng, Govorun & Stewart, 2005).

In a nutshell, such models distinguish between what individuals express and what they think or how their brain functions (executive control function; Macrae & Bodenhausen, 2001; Macrae, Bodenhausen, Schloerscheidt, & Milne, 1999). This discrepancy between what is verbalized and what is thought is an interesting and relevant addition to this research. While this paradigm is commonly employed in categorical person perception (in-group vs. out-group) and racial stereotypes research, its application to the relationship between communication technology and the study of attitudes about people from other nations and cultures is somewhat novel. In this study, we employ Payne and colleagues' (2005) Affective Misattribution Procedure (AMP), which is a more recent paradigm for assessing implicit attitudes. AMP was reported in a series of recent experiments (Payne, Cheng, Govorun, & Stewart, 2005) in which participants were primed with pictures of members form certain racial or political groups and were then asked to rate unrelated Chinese pictographs in attempt to trace a misattribution effect as an expression of affective evaluation of those pictographs.

Based on the linkage between role-play, self-persuasion, and attitude change, we are reformulating the previous hypotheses to research questions related to the change of implicit attitudes as a function of playing PeaceMaker in the different treatment conditions. The following research question is exploratory, where we aspire to highlight differences in attitude change between explicit and implicit measures:

> *RQ1: How do participants' implicit attitudes toward Palestinians and Israelis change over time as a function of their nationality assignment (Palestinian President vs. Israeli PM)?*

Method

Participants

Participants (N=68; 74% female; mean age=20) were recruited from an introductory undergraduate advertising course at a large Midwestern university, and received course credit in exchange for their participation. Participants were not screened for specific ethnicities or religious beliefs. Responses from 10 participants to the explicit attitude measures were evaluated as outliers and discarded, thus leaving a total of 58 responses for relevant statistical analyses. Responses of seven participants to the implicit attitude measure (AMP) were discarded from analyses of implicit attitudes (AMP) due to computer malfunction and two additional participants' responses were evaluated as outliers and discarded, thus resulting in a sample size of 60 for those analyses.

Design

The study utilizes a 2 (nationality assignment: Palestinian President vs. Israeli Prime Minister) x 2 (time: pre-play vs. post-play) mixed factorial design, with repeated measures on the second factor.

Independent variables

Nationality Assignment. Participants were randomly assigned to play the role of either the Palestinian President (N=35) or the Israeli Prime Minister (N=33). Playing a certain role does not entail any structural or content-related differences in the game, as the game follows the same procedures regardless of nationality assignment.

Time. Time was a within-subject factor, where all participants responded to both the pretest and posttest questionnaires; before and after playing the video game.

Dependent Measures

National Attitudes. The measure for national attitudes about Palestinians and Israelis was borrowed from two studies (ADL, 2004; Mayer, 2004), where respondents were asked to rate seven statements about each national group regarding the following: (1) favorability; (2) sympathy; (3) belief about the national group's intention for peace; (4) intentionally targeting civilians from the other side (reverse-coded); (5) being democratic; (6) being responsible for the past eight years of violence (reverse-coded); and, (7) having the right to sole control over the city of Jerusalem. These items were repeated for each national group in both the pretest and posttest, thus resulting in four different scales: pretest and posttest attitudes toward Israelis, and pretest and posttest attitudes toward Palestinians in pretest. Each of these four scales was submitted to an exploratory factor analysis, where all items loaded well. All four scales were shown to be reliable despite the small sample size ($M_{\text{Cronbach's } \alpha} = .71$).

Implicit attitudes. Borrowing Payne and colleagues' (2005) procedure, participants completed an affective misattribution procedure task (AMPs) twice; once in the pretest and another time in the posttest. The two tasks were exactly the same, where participants were exposed to portrait pictures of Israelis (12 pictures) and Palestinians (12 pictures). These photographs were chosen from a pool of 70 photographs. The original photograph pool was pretested with another group of participants (N=42), where they were asked to identify whether the portrait owner is Palestinian or Israeli, as well as rating each picture's valence and arousal using SAM scales (Bradley & Lang, 1994; see "Procedure" section for more details on the AMP task). The 24 pictures selected for the AMP were chosen because pretest participants were most accurate at recognizing the nationality of each picture's subject and the chosen pictures received comparable moderate ratings of valence and arousal.

Procedure

Upon entering the laboratory, participants gave written informed consent and were seated in front of a personal computer equipped with a 17-inch screen. The experiment was described in detail to participants, and then they were instructed to complete the pretest. The pretest included two major sections. The first section included the explicit attitude measure and was administered through MediaLab (Jarvis, 2008a) software. The second section, the AMP, was administered through DirectRT (Jarvis, 2008b). A similar procedure to that of Payne and colleagues (2005) was followed. Participants were informed that they would be seeing pictures of Israelis and Palestinians, followed by Chinese pictographs. They were instructed to rate the Chinese pictographs as either pleasant or unpleasant using clearly marked keys on the computer

keyboard. Participants were warned that seeing the pictures of Palestinians and Israelis might influence their rating of the pictographs, and were told to try and respond as quickly as possible. For each trial, participants were exposed to a white mask (1,000 ms), the picture prime of either a Palestinian or Israeli (75 ms), another white mask (125 ms), a random Chinese pictograph (100 ms), and a noise mask where response time was recorded using the DirectRT software. Each of the two AMP tasks included 24 pictures; 12 for Palestinians and 12 for Israelis, which were presented to participants in random order.

After completing the pretest, participants played PeaceMaker for 20 minutes. Before playing the game, participants were randomly assigned to play as either the Israeli Prime Minister or the Palestinian President. The experimenter described basic game features to participants and instructed them that if the game ends before time was up, that they could start a new game with the same treatment condition. Each participant's game play was recorded through CamStudio screen capture software for future analyses. After 20 minutes of game play, participants were advanced to the posttest questionnaire and AMP. Upon completion of the experiment, participants were debriefed, thanked, and dismissed.

Results

Before reporting the results of hypotheses testing and answering the research questions, it is important to highlight a few descriptive results regarding the data from the explicit attitude questionnaires. Table 1 shows a breakdown of national attitudes toward Palestinians and Israelis over time (pretest and posttest) as a function of nationality assignment. Results show that at the baseline in the pretest, for all treatment conditions, participants had more positive attitudes toward Israelis than Palestinians. This gap is bridged in the posttest, where attitudes toward Palestinians positively change and those toward Israelis negatively change. Paired-samples t-test results, illustrated in Figure 1, show that in the pretest, attitudes toward Israelis were significantly higher than attitudes toward Palestinians ($t(57) = 3.08$, $p < .01$), while in the posttest, the difference between attitudes toward the two national groups was not significant ($t(57) = -1.38$, *ns*). These results give a general outlook with regards to confirming our assumption that American students' evaluation of Israelis was more positive than Palestinians, as well as confirm our overarching hypothesis that playing PeaceMaker results in attitudinal change toward Palestinians and Israelis. To test the different hypotheses and answer the research questions, repeated measures ANOVAs were carried out to map out the main effects of the independent factors and the interactions among them in affecting attitudinal change.

Table 1.

Means scores and standard deviations for explicit attitudes toward Palestinians and Israelis over time as a function of nationality assignment and violence intensity level.

	Attitudes toward Palestinians[a]			Attitudes toward Israelis[a]		
Treatment Conditions	Pretest	Posttest	p[b]	Pretest	Posttest	p[b]
Palestinian President	3.77 (.47)	4.03 (.49)	*	3.92 (.50)	3.42 (.68)	**
Israeli Prime Minister	3.54 (.69)	3.69 (.44)	*ns*	4.08 (.52)	4.05 (.61)	*ns*
Total	3.67 (.59)	3.88 (.66)	*	4.15 (.78)	3.82 (.91)	**

Notes. [a] Means for seven scale items measured on a 7-point rating scale (1=Strongly Disagree, 7=Strongly Agree), standard deviations in parentheses. [b] *p*-values based on pair-wise comparisons.

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

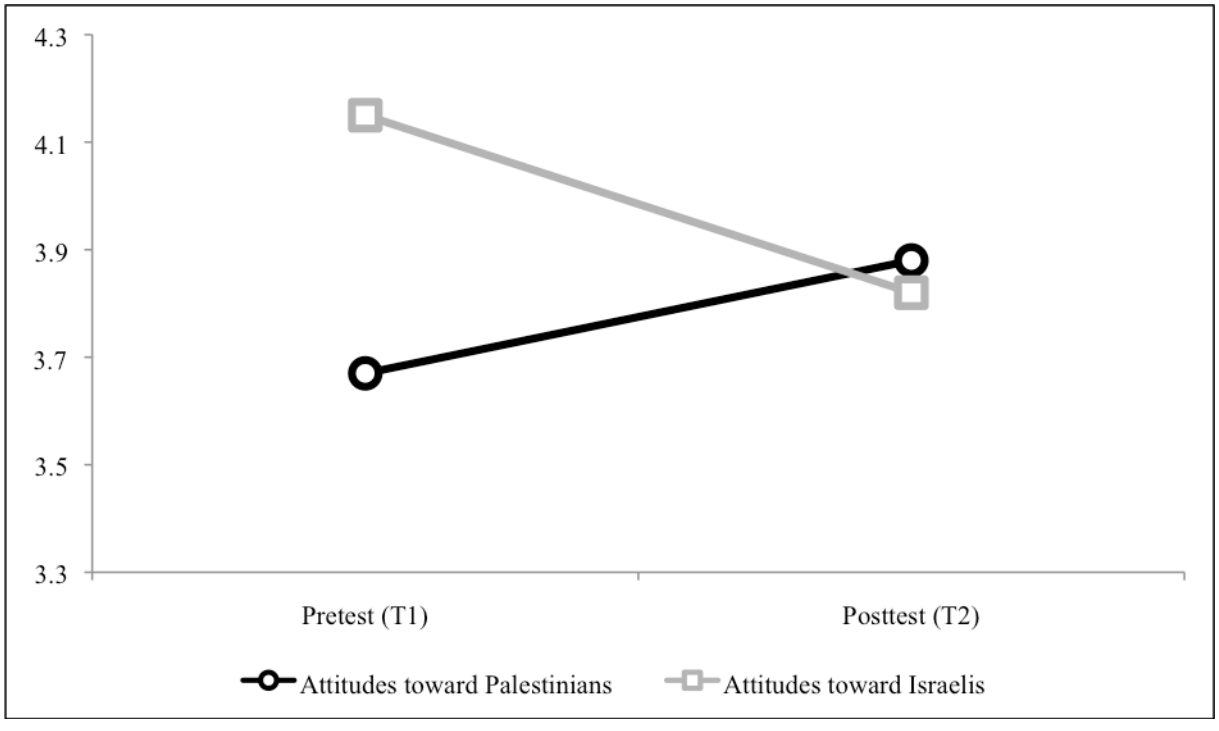

Figure 1. Explicit attitudes toward Israelis and Palestinians over time.

Explicit Attitudes

The study's two hypotheses predicted a change in participants' explicit attitudes toward Palestinians and Israelis as a function of playing the role of either the Palestinian President or the Israeli Prime Minister. The first hypothesis predicted a negative change in attitudes toward Israelis of those playing as Palestinian President and no altitudinal change toward Israelis for those playing Israeli Minister toward Israelis. Conversely, the second hypothesis predicted a positive change in the attitudes toward Palestinians of those playing the role of Palestinian President with no considerable change in attitudes toward Palestinians of those playing the Israeli Prime Minister role.

To test hypothesis 1, data for the attitudes toward Israelis were submitted to a 2 (nationality assignment) x 2 (time) repeated measures ANOVA. The results showed a significant main effect for nationality assignment ($F(1, 56) = 10.97$, $p < .01$, *partial-*$\eta^2 = .16$), and a significant main effect of time ($F(1 ,56) = 6.98$, $p < .05$, *partial-*$\eta^2 = .11$). As illustrated in Figure 2, these main effects were qualified by a significant nationality assignment by time interaction ($F(1, 56) = 5.85$, $p < .05$, *partial-*$\eta^2 = .10$). Participants assigned to play the role of Palestinian President observed a negative change in their attitudes toward Israelis when comparing responses to the pretest ($M = 3.92$, $SD = .51$) and the posttest ($M = 3.42$, $SD = .68$). Pair-wise comparisons showed that this negative change in attitudes was significant ($t(31) = .59$, $p = .001$). On the other hand, participants assigned to play the role of Israeli Prime Minister did not observe a significant change in their attitudes toward Israelis ($t(25) = .162$, *ns*) when comparing responses to the pretest ($M = 4.08$, $SD = .52$) and the posttest ($M = 4.05$, $SD = .61$). Hypothesis 1 was supported (See Figure 2A).

Hypothesis 2 dealt with the change of attitudes toward Palestinians as a function of playing PeaceMaker in the two nationality assignment conditions. Data for the explicit attitudes toward Palestinians were submitted to a 2 (nationality assignment) x 2 (time) repeated measures ANOVA. Results showed that there was a significant main effect for nationality assignment ($F(1, 56) = 6.36$, $p < .05$, *partial-*$\eta^2 = .10$), and a significant main effect of time ($F(1, 56) = 5.94$, $p < .05$, *partial-*$\eta^2 = .10$). However, these main effects were not qualified by a significant nationality assignment by time interaction ($F(1, 66) = .44$, *ns*). Pair-wise comparisons showed that those playing the role of Israeli Prime Minister had no considerable change in their evaluations of Palestinians ($t(32) = -1.11$, *ns*) between the pretest ($M = 3.54$, $SD = .69$) and the posttest ($M = 3.69$, $SD = .44$). On the other hand, those playing the role of Palestinian President had a significant increase in their favorability toward Palestinians ($t(34) = -2.47$, $p < .05$) between the pretest ($M = 3.77$, $SD = .49$) and the posttest ($M = 4.03$, $SD = .49$). Hypothesis 2 was supported.

To look at the data in a more comprehensive way, a 2 (nationality assignment: Palestinian President vs. Israeli Prime Minister) x 2 (national attitudes: toward Israelis vs. Palestinians) x 2 (time: pretest vs. posttest) repeated measures ANOVA was computed. Results showed a significant interaction between nationality assignment and national attitudes ($F(1, 56) = 17.10$, $p < .001$, *partial-*$\eta^2 = .23$), a significant interaction between national attitudes and time ($F(1, 56) = 11.61$, $p < .01$, *partial-*$\eta^2 = .17$), and a significant three-way interaction between nationality assignment, national attitudes and time ($F(1, 56) = 4.63$, $p < .05$, *partial-*$\eta^2 = .08$). Participants who played the role of Israeli Prime Minister, did not observe any considerable change in their

favorability toward Israelis ($t(25) = .162$, *ns*) and Palestinians ($t(25) = -1.11$, *ns*; See Figure 2A). On the other hand, those playing the role of Palestinian President observed a significant decrease in their favorability of Israelis ($t(31) = 3.59$, $p = .001$) and a significant increase in their favorability of Palestinians ($t(31) = -2.47$, $p < .05$) over time (See Figure 2B).

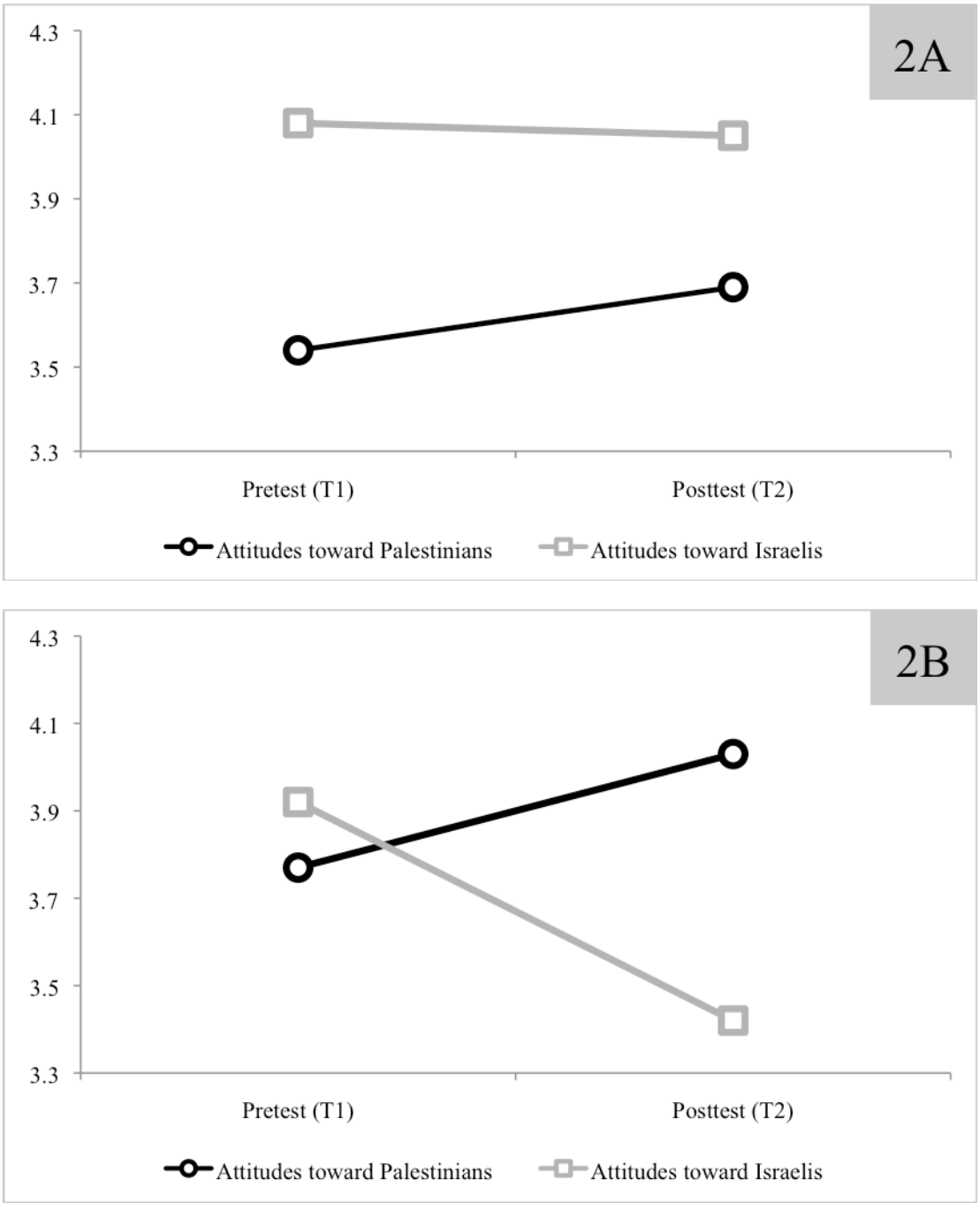

Figure 2. Results of attitudes toward Palestinians and Israeli over time, as a function of national assignment: Israeli Prime Minister (2A) and Palestinian President (2B).

Implicit Attitude Measures

The study also investigated whether playing PeaceMaker would affect participants' implicit attitudes toward Palestinians and Israelis as a function of nationality assignment (RQ1)). Before answering this research questions, we should note that in the pretest, participants evaluated pictures of Palestinians (M = .65, SD = .22) as more pleasant than those of Israelis (M = .60, SD = .20), where the difference was marginally significant ($t(59) = 1.83$, $p = .07$), and this trend was maintained and became statistically significant in the posttest ($t(61) = 2.60$, $p < .05$), where participants evaluated pictures of Palestinians (M = .65, SD = .21) as more pleasant than those of Israelis (M = .59, SD = .23).

To answer RQ1, implicit attitudes toward Israelis were submitted to a 2 (nationality assignment) x 2 (time) repeated measures ANOVA. Results showed that the main effects of nationality assignment ($F(1, 58) = 1.56$, *ns*) and time ($F(1, 58) = .41$, *ns*) were not statistically significant, as well as the nationality assignment by time interaction ($F(1, 58) = 1.06$, *ns*). Similarly, the same pattern was observed with implicit attitudes toward Palestinians, where neither the main effect of nationality assignment ($F(1, 58) = 2.31$, *ns*), main effect of time ($F(1, 58) < .001$, *ns*), nor the interaction between these two variables ($F(1, 58) = 1.52$, *ns)* were statistically significant.

Discussion

The current study utilized a controlled experiment to investigate the effect of PeaceMaker, a video game simulation of the Palestinian-Israeli conflict, on the change of American students' attitudes toward Palestinians and Israelis as a function of nationality assignment. Confirming results of previous public opinion polls, the current study showed that prior to playing PeaceMaker, participants have a general tendency to express more favorable views of Israelis than Palestinians. However, after playing PeaceMaker for 20 minutes, participants' self-reported attitudes changed significantly. Not only did the overall evaluations of Palestinians positively change over time and those of Israelis negatively changed, but also, greater significant change was observed for participants who played the role of Palestinian President compared to those who played as Israeli Prime Minister, where change over time was not significant. These results are in line with previous research dealing with the effects of role play on attitude change (Elms, 1966; Greenwald & Albert, 1968; Janis & King, 1954; Watts, 1967), especially that playing a role contradictory to one's previous attitudes, in this case the role of a Palestinian President as opposed to Israeli PM, showed greater attitudinal change.

More specifically, the effects of role-play on attitudinal change are further explained by the minimal group paradigm (Tajfel, Billig, Bundy, & Flament, 1971; Tajfel, 1982; Van Bavel & Cunningham, 2009). Our results showed that at the baseline, participants were generally more in favor of the Israeli side than the Palestinian side. It is possible that playing as Israeli Prime Minister did not offer an opportunity for an alternative means of categorization for both peoples, but rather confirming previous attitudes, thus explaining the lack of attitudinal change toward both sides. However, playing as Palestinian President lead participants to reevaluate their attitudes toward both sides, with Palestinians perceived as an ingroup and Israelis as an outgroup. This finding offers an interesting theoretical contribution to the study of cross-cultural role-play and simulation video games, as the possibility that playing a role counter to one's original

attitudes and perceptions might yield with bias reduction and a change of the categorization salience, at least on an explicit, verbalized level.

The second interesting finding from this study deals with the discrepancy between explicit (self-reported) and implicit attitude responses. As shown in the results, the affective misattribution procedure (AMP; Payne et al., 2005) as a measure of implicit attitudes reflected a contrasting view from explicit measures at the baseline before playing the game. Pictures of Palestinians were rated as more pleasant than pictures of Israelis and did not observe any considerable change over time.

Again, there are several plausible explanations for this trend. If taken at face value, one could conclude that participants explicitly expressed more favorable attitudes of Israelis than Palestinians, while implicitly, they actually favored Palestinians over Israelis. However, there is more to this argument, based on a few limitations that we think might have yielded such results. First, AMP relies on pictorial representations of ethnic and social groups. For example, several experiments that Payne and colleagues reported had pictures of Blacks and Whites. In the case of pictorial representations of Palestinians and Israelis, it might have been hard to associate and categorize these pictures implicitly. Future research should refine the selection of pictures included in the AMP. Also, it might be beneficial to subject participants to accuracy recognition trials, where they practice identifying the nationality of the portrait owner, and after a certain degree of correctness (e.g., 80%) they can move to the main AMP.

Second, in this study, we took the most conservative approach recommended by Payne and colleagues, where we limited exposure to the pictorial prime to 75 milliseconds and warned participants that the prime pictures of Israelis and Palestinians may influence their evaluation of the Chinese pictographs. Had we taken a more liberal approach, for example to set the prime at 800 or 1,000 milliseconds and refrain from warning participants about the possibility that their evaluations of the pictographs might be influenced by the prime, the results might have been different. It would be interesting to compare, in future research, the response window of implicit attitude activation between ethnic groups and groups representing other nationalities, as well as differences between AMP tasks where participants are warned of prime effects and other tasks where there is no pre-task warning.

Finally, it is also plausible that in the case of national attitudes, explicit measures are more meaningful than implicit ones. Researchers have affirmed the importance of attitudes toward other national groups and the fact that such attitudes are not fading away but rather, they are constantly changing in terms of attributes and associations, as well as changing in terms of socio-cultural means of expressing them and controlling their explicit expression (Devine & Elliot, 1995; Madon et al., 2001). Having said that, future research in this area should capitalize on a more integrative approach to measuring national attitudes and how they change. As a follow-up to this study, a more updated and rigorous list of attitudes and evaluations of Palestinians and Israelis need to be formulated, validated and tested. Also, the measure of implicit attitudes should be modified to suit the specific context of the study, as well as more developed measures of information processing, such as psychophysiology, can be employed.

In conclusion, the current study lends the theoretical findings to their practical applicability. These findings suggest an important implication for several fields related to

politics, diplomacy, negotiations and conflict resolution. The study shows that new media, specifically persuasive video games, are capable of inducing change to attitudes about other nations, as well as promoting and educating the younger generations about peace. This is why an important future step for this research is to test the video game with groups of Palestinian and Israeli young adults, as a way of investigating how the video game would change their attitudes about the *other*, as well as their attitudes toward the peace process in general. Also, additional delayed measurement of both explicit and implicit attitudes might be useful in illustrating long-term behavioral changes, and not only immediate attitudinal changes.

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