

Conflict Resolution with a Serious Game for Peace

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Abstract

The current study examines the effects of playing *PeaceMaker* (an Israeli/Palestinian computer simulation game) and its relationship to *contact theory*. Thirty participants were assigned to spend one-hour in-lab either playing the game or reading/viewing media accounts of events similar in nature to those portrayed in the game. Measures of empathy and attitude were employed before and after each condition. Game-play increased hope for peace and reduced preexisting biases significantly more than media exposure. Furthermore, game-play encouraged a more constructive outlook on the major actors and actions involved in the Israeli/Palestinian conflict. Seventeen of the 32 actors and actions measured were rated significantly more positive after game play. In contrast, only 4 of the 32 actors and actions were rated more positive after media exposure. Future research will include isolation and exploration of participants' interaction with serious games as the variable responsible for the significant changes found in this study.

Introduction

In a world full of perpetual inter-group conflict rooted in history and culture, the prospect of peaceful coexistence feels incomprehensible. Moving toward solutions to these overwhelming cultural and national clashes may be the largest social issue of our time. Where do we begin? Social psychologists have long examined the relationship among segregation, social contact and inter-group relations (Crisp & Turner, 2009), illustrating conditions under which prejudice can be reduced between conflicting groups. Building upon this research, the present study examines the potential of *PeaceMaker*, a simulation-based serious computer game as a tool for conflict resolution.

The term serious games came into wide use in 2002 to describe videogames that engage the player, but also aim to achieve a defined purpose other than pure entertainment (Susi, Johannesson, & Backlund, 2007). Serious games represent a rapidly growing market in the videogame industry (Breuer & Bente, 2010) largely due to a number of researchers (Gee, 2007; Prensky, 2001; Schank, 2002) emphasizing the importance digital games may have for learning (Ritterfeld, Shen, Wang, Nocera, & Ling Wong, 2007). However, the effects of serious gaming on the player's cognition and emotion are far from understood. There is a need for guidance regarding how (when, with whom, and under what conditions) to integrate serious games to maximize their learning potential (Susi et al., 2007).

The current study examines *PeaceMaker*, an interactive Israeli/Palestinian conflict resolution simulation game developed by ImpactGames (now Hybrid Learning). *PeaceMaker* was created as a tool to promote peace, change attitudes and erode prejudice on issues surrounding the Middle East (ImpactGames, 2006). The intimate imagery, role-play, and

interactivity of *PeaceMaker* provide a unique space, bringing players into contact with the complexity of the situation and relevant actors.

Research in conflict resolution shows that contact with out-group members is essential to positive outcomes. *Contact theory* postulates that, under the right conditions, direct contact with an out-group decreases inter-group hostility and leads to more positive inter-group attitudes (Allport, 1954). A meta-analysis of 515 *contact hypothesis* studies revealed a highly significant, negative relationship between contact and prejudice (Pettigrew, & Tropp, 2006). While this research is promising, it is still unclear how it translates to broader societal change (Dixon, Gurrheim, & Tredoux, 2005). In many real-world situations there are high levels of hostility, substantial distance in social and physical segregation, and little motivation to engage with out-group members (Crisp & Turner, 2009). Positive direct contact in such a situation seems unrealistic. Some transition needs to take place prior to direct interaction. Since Allport's time, researchers have demonstrated that some of the same effects of direct contact can be observed through more indirect channels. Wright and colleagues (1997) found that observing or hearing about positive interactions between members of different groups can reduce prejudice. Furthermore, Crisp and Turner (2009) have shown that simply imagining a positive inter-group interaction also decreases prejudice. This research is promising in that it illustrates a method for change, but there is need for an engaging and motivating mode through which this transition can flourish. Serious games have the potential to fill such a role: serving as a captivating mechanism by which we can create indirect contact between groups and consequently shift inter-group attitudes in a transition toward closer contact.

The role of empathy in conflict resolution has also been studied in Political Science. Stover (2005) suggests that empathy development is important in international relations because it catalyzes attitude change toward opposing groups. Studies conducted by Stover (2005, 2006) found that the role participants' played within an Israeli/Palestinian conflict simulation predicted positive changes on a questionnaire focused around political values, feelings and perceptions towards Israelis and Palestinians: "participants changed their views toward the countries or ethnonational groups they represented." In this way, real-world simulation games may act as a device for empathy attainment. Stover interprets these results as evidence for a change in empathy. We suggest that Stover's results reflect a change in attitude (reduction in prejudice). Empathy can be generally defined as the ability to accurately feel or perceive the emotional or cognitive state of another (Spreng, McKinnon, Mar, & Levine, 2009). The role playing (or perspective taking) participants undertook may mediate attitude change. We will utilize Stover's questionnaire for the purpose of measuring attitude and empathy.

The current research builds on a study by Nilsen (2008) and examines the effects of playing *PeaceMaker* in comparison to viewing media coverage on the Israeli/Palestinian conflict. The study implements measures of attitude and empathy in order to better understand *PeaceMaker* through the lens of *contact theory*. We hypothesize that participants who play *PeaceMaker* (in contrast to those who view media coverage of similar information) will show a convergence of attitude (a reduction in prejudice) toward the two parties. Furthermore, we hypothesize that playing *PeaceMaker* will lead to a more hopeful attitude for conflict resolution and a more constructive view of various actors and actions relevant to the situation.

Method

Participants

The study consisted of 30 college-age students (13 women and 17 men) from the Lewis and Clark College community during the summer of 2010. Participants were acquired through Lewis and Clark e-mail list serves.

Materials

Conflict resolution is a profound process that is deeply intertwined with political perceptions, social influences, and individual experiences. *PeaceMaker* has approached this issue by creating a computer-based scenario that encompasses the historical and dynamic political situations in the Israel/Palestine region. Furthermore, the serious game sets the stage by incorporating factions from all sides of the situation in order to dissect any obdurate perspectives. The dichotomous political positions ‘pro-Israel’ or ‘pro-Palestine’ are broken down to converge into less biased and more nuanced opinions and attitudes.

We designed before and after online surveys in order to measure the changes in feelings and attitudes concerning the Israel/Palestine situation. Below we report on the measures that we used to explore the nuanced effects of *PeaceMaker*.

Dependent Variables

Hopefulness Measure. Participants are asked to choose a response on a 6-point Likert scale (1=strongly disagree, 6=strongly agree) that most closely corresponds to their opinion on a question assessing hopefulness: “In the near future there will be peace between Israel and the Palestinians”.

Political Attitude. A well-established scale developed by the political scientist William Stover (2005, 2006) was used to assess changes in the perception of political behavior of Israel and Palestine. Furthermore, Stover goes on to explain the importance of these measures in understanding the effectiveness of simulating political dynamics. The scale informs participants to “consider your perceptions about the political activities of Israel/Palestine in relationship to the Palestinian-Israeli conflict. As you think about the political activities of Israel/Palestine in relationship to the Palestinian-Israeli conflict, check the response that most closely corresponds to your perception of their political behavior in international relations.” Participants are then instructed to rate each country on five different 5-point Likert scales with each question anchored by negative and positive adjective pairs. The adjective pairs used are 1) Friendly/Hostile, 2) Defensive/Aggressive, 3) Peace Loving/Warlike, 4) Satisfied/Expansionist, and 5) Trustworthy/Deceitful.

Perception of “Actors” and “Actions”. This 6-point Likert scale was created by Nilsen (2008) and consists of 19 “Actors” (e.g., Israeli Prime Minister, UN, Jordan) and 13 “Actions” (e.g., Economic Development, Cultural Initiatives, Speaking to World Media) relevant to the Israeli-Palestinian conflict. Participants rate each actor or action in terms of the constructive or destructive impact that each has towards achieving a peaceful two state solution (1=Very Destructive, 6=Very Constructive).

Independent Variable

Game Condition. We used *PeaceMaker*, a serious game developed by ImpactGames (now Hybrid Learning), as our experimental condition. In *PeaceMaker*, participants play the part

of the Israeli Prime Minister or the Palestinian President and make diplomatic, security and economic decisions based on the progression of events. During play, the interface shows a map of Israeli and the Palestinian territories. Windows appear periodically, presenting a picture or video of a scenario (e.g., a Hamas suicide bombing or an Israeli air strike) that is likely to trigger a response from the important parties (e.g., Hamas, U.N., USA). The player must respond with an action selected from the Security, Political or Construction menus. Within each menu is a list of more specific options (e.g., give a speech to your people, to the world, to your government, etc.) After selecting an option, the player is presented with a list of more precise courses of action from which to choose (e.g., speak about security, the peace process, anti-militancy, etc.) As in reality, each move results in a reaction by one or more parties within the international community.

The primary feedback that players receive from their actions is a polling response from the various stakeholders displayed at the bottom of the screen. The player wins the game by increasing the polling score of the two main constituencies to +100. When playing as the Palestinian President, the main constituencies are National Approval and the World Approval. When playing as the Israeli Prime Minister, the main constituencies are Israeli Approval and Palestinian Approval. Each leadership role also receives ratings from the major stakeholders (e.g., Yesha (Israeli Settlers' Council), UN, USA, etc.) that influence the direction of the game and the overall polling scores of the player's constituencies.

The Player's overall goal in *PeaceMaker* is to incorporate the information provided in order to reach compromises and eventually a peace agreement leading to the establishment of a two state solution. As players advance towards peace, they reach four checkpoints that congratulate the player and give updates on the region's progress culminating in a peaceful two-state solution and presenting the player with the *PeaceMaker* award.

Media Condition

The control condition was a series of PowerPoint presentations comprised of articles and video clips from CNN, The New York Times and CBS about the Israeli-Palestinian situation between 2001 and 2007 (the period in which the game takes place). The media sources were chosen based on a survey of students to identify their major sources of world news.

In order to examine the effect of playing *PeaceMaker*, we kept the information presented in both conditions (game and media) relatively equivalent. To accomplish this, we documented all of the information in the *PeaceMaker* game that was relevant to strategy. Then we categorized the relevant information into ten basic groups (e.g., pertaining to settlements, police force). Finally, we determined the percentage of the game that each group represented and collected articles within the media sources that matched each group and its percentage. In this way we isolated the *interaction* with the content as the variable being tested.

Procedure

Each participant was randomly assigned to spend one hour of lab time in one of the two conditions of the primary independent variable (game or media). Fifteen participants were assigned to the game condition and 15 were assigned to the media condition. All participants took an online survey including questionnaires concerning hopefulness, political attitude, empathy and perception of actors and actions the day before their first in-lab session.

During the in-lab session, participants in the control group (media) read and viewed 45 minutes of Israeli/Palestinian media coverage (articles and video) and played IsoBall2 for 15 minutes. We used IsoBall2 (a relatively simple game involving building ramps to guide a ball to a target) in order to replicate a game-like experience of PeaceMaker, without interacting with relevant information. Participants then completed the second survey immediately after the media exposure.

Participants in the experimental group viewed a brief tutorial and played *PeaceMaker* for 30 minutes as the Israeli Prime Minister or the Palestinian President (order counterbalanced.) After 20 minutes of game play, participants began from a checkpoint three-quarters of the way through the game in order to get a more comprehensive experience of the game. The role was switched and the process was repeated for the final 30 minutes. Participants completed the second survey immediately following game play. Finally, after the completion of the in-lab session, all participants were debriefed and paid \$20.

Results

All of the analyses presented below compare the change in scores between two online surveys. The first survey was taken at one to two days before the laboratory session and the second survey immediately after exposure to the game/media PowerPoint presentations. We report on the questions that pertain directly to our hypotheses. The primary independent variables are the condition to which the participants were assigned (Game or Media) and the time of the survey (Before and After). The dependent variables examined include 1) Perceptions of the likelihood of peace between Israel and Palestine in the near future, 2) Perceptions of political behavior in international relations of Israel and Palestine, 3) Perceptions of the constructive/destructive influence of a variety of actors and actions on moving towards a two state solution in the region.

In order to assess participants hope for peace, they were asked to respond to the following question on a 6 point Likert scale ranging from 1=Strongly Disagree to 6= Strongly agree: *In the near future there will be peace between Israel and the Palestinians*. A 2 x 2 mixed model ANOVA reveals a marginally significant main effect of survey time on participants hope for peace $F(1,28) = 2.97, p = .096$. In both the game and media conditions, participants were more hopeful on the survey taken after ($M= 2.10, SD= 1.13$) than they were on the survey taken before ($M= 1.8, SD= .96$). Post hoc t-tests show that this difference was stronger in the game condition, increasing 1.73 to 2.20, $t(14) = 2.43, p = .029$, than it was in the media condition, which had a modest increase from 1.87 to 2.0, $t(14) = .46, p = .65, n.s$. The main effect of condition and the interaction effects were not significant.

We used an established scale developed by Stover (2005) to assess changes in the perception of political behavior of Israel and Palestine. This scale asks participants to rate each country on five different 5-point Likert scales with each question anchored by negative and positive adjective pairs. Figure 1 shows the average ratings for Israel and Palestine on the before and after surveys for the game condition. On this figure, higher scores represent a more positive view. It can readily be seen that on the before survey, our participants had a more positive view of Palestine than they did of Israel.

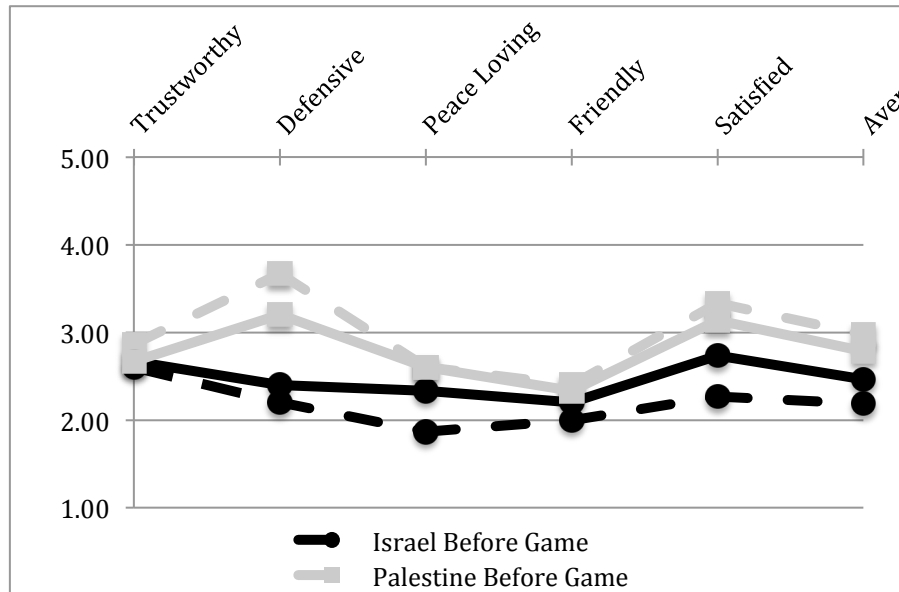


Figure 1. Stover political perception ratings for *PeaceMaker* playing participants showing initial Pro-Palestinian bias and the significant convergence of perceptions following game play.

The rightmost set of data points in the figure shows the mean score for the 5 questions in that particular country/survey combination. To simplify the analysis of this data in determining how perceptions changed in the study, we will only be analyzing these average scores rather than each adjective pair separately.

First, we will examine the changes in perception of each country separately by condition. A 2 x 2 mixed model ANOVA on the average political perception of Israel reveals a highly significant effect of survey time $F(1,28) = 10.07, p = .004$. In both the game and media conditions, participants held a more positive view of Israel on the survey taken after ($M = 2.67, SD = .75$) than they were on the survey taken before ($M = 2.33, SD = .95$). Post hoc t-tests show that this difference was significant in both the game condition, increasing 2.19 to 2.47, $t(14) = 2.63, p = .02$, and the media condition, which had an increase from 2.47 to 2.88, $t(14) = 2.17, p = .048$. The main effect of condition and the interaction effects were not significant. An identical analysis for changes in perceptions of Palestine revealed a small, non-significant decrease average attitude towards Palestine (from 2.83 to 2.73) but no significant main effects, interaction effects, or post-hoc t-tests were found.

We also explored whether the *gap* in attitudes between Israel and Palestine changed after game play or media exposure. Converging attitudes indicated a more balanced view of the countries, while diverging attitudes would indicate a strengthening of pre-existing biases. To look for evidence of convergence or divergence of attitudes we transformed the average perception data into difference scores between Palestine and Israel at each survey time and separately for the game and media conditions. This score was derived by taking the nationality with the highest mean at a given survey time/condition combination and subtracting the lower scoring nationality from it. The resulting number represents the difference between the perception of the two nationalities with lower numbers meaning greater convergence and thus reduction in pre-existing bias. For three combinations (Game/Before, Game/After, and

Media/Before) we subtracted the lower Israel score from the higher Palestine score. For Media/After, we subtracted the lower Palestine score from the higher Israeli score.

Evidence for convergence of political perceptions with this new transformed variable, called the Stover Difference Score, is a significant reduction in difference scores from the before survey to the after survey. T-tests show that this difference was significant in the game condition, decreasing from 0.79 to 0.05, $t(14) = 2.98, p = .01$, but not for the media condition, which had a small decrease from 0.227 to 0.213, $t(14) = .032, p = .98, n.s.$

In order to look more deeply into what particular attitudes changed, we also asked participants to rate the impact of 19 actors (e.g. United Nations, Israeli Prime Minister, Palestinian Police) and 13 actions (e.g. Economic Development, Cultural Initiatives, Speaking to World Media) in terms of the constructive or destructive impact that each has towards achieving a peaceful two state solution. Participants were asked to rate each of the 32 questions before and after the lab session on a 6-point Likert scale. Figures 2-3 display the ratings for the game condition. The figures are split into actors and actions. The individual actors and actions are sorted left to right by how much change the condition produced. Significant changes between pre and post surveys are marked with an asterisk. The patterns of significant t-tests indicate a stronger change in attitude in the game condition with 17 of 32 comparisons yielding a significant positive change compared to only 4 of 32 resulting in a significant change in the media condition. Of particular note in the game condition, the three actors showing the greatest positive shift are all Israeli (Israeli Prime Minister, Israeli Government, and Israeli Army, all $p < .001$). The only actor in the media condition to show even a marginally significant change was the Palestinian Police, $p = .09$.

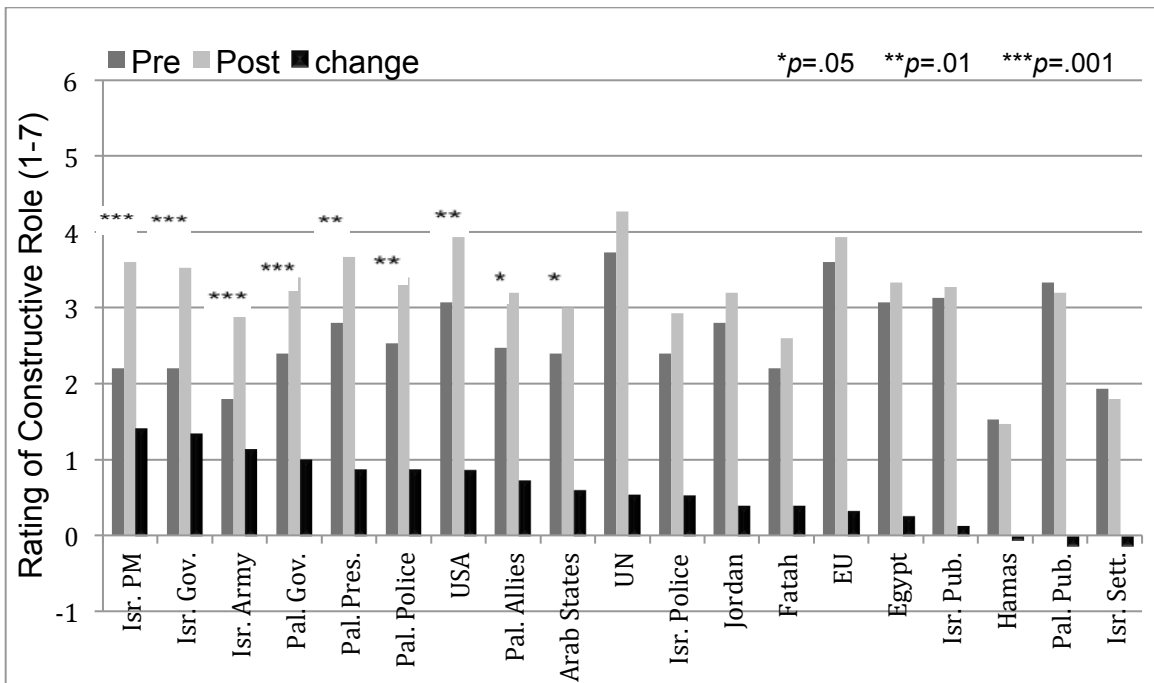


Figure 2. Perception of constructive role of various actors in *PeaceMaker* game playing condition ordered from greatest positive change to greatest negative change. No actors showed a significant change in the media condition.

For both the game and media conditions the general trend was for participants to rate most actors and actions as more constructive at the end of the study. In order to isolate which actors and actions were impacted differentially more by the game we ran independent mean t-tests for each actor and action using the change in rating for the game and media conditions as the independent variables. Of the 19 actors, the following 4 showed a significantly greater positive change for the game compared to the media condition: Israeli Prime Minister ($p = .01$), Israeli Government ($p = .02$), Palestinian Government ($p = .03$), Israeli Army ($p = .04$). Of the 13 actions, only the action of Cross-cultural Initiatives ($p = .04$), showed a significantly greater change in rating for the game condition compared to the media condition.

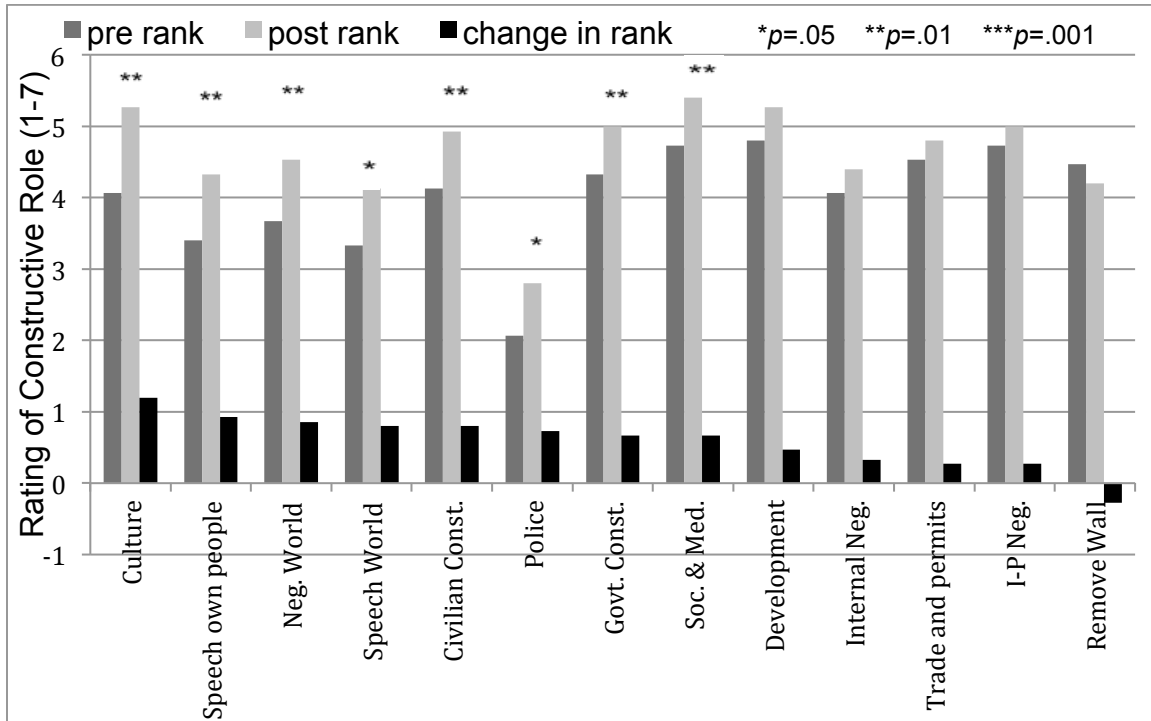


Figure 3. Perception of constructive role of various actions in *PeaceMaker* game playing condition. Eight significant changes marked with asterisk.

Discussion

Our results provide converging evidence that playing one hour of the *PeaceMaker* game results in positive changes in attitudes concerning the Israeli-Palestinian conflict that equivalent exposure to popular media sources does not. *PeaceMaker* players are more hopeful about a near-term solution to the conflict than people who read and view mainstream media accounts of events in the region. Playing the game from both perspectives reduces pre-existing biases about the political behavior of the Israelis and Palestinians. Finally, game play results in an expanded view of actors and actions that have a constructive role in achieving a two state solution, while exposure to media has a minimal effect.

There is one alternative hypothesis to our results that needs to be addressed. The changes in political perceptions reflected in the Stover scale might reflect a pro-Israeli bias in the game itself. This would explain the convergence in the Stover scale seen in figure 1 and the tendency towards a greater positive shift in the constructive role of actors associated with the Israeli state as seen in figures 2 and 3. Fortunately, we have some data that speaks to this alternative

explanation. An earlier study conducted by Nilsen (2008), had 24 students in a human-computer interaction class play the *PeaceMaker* game for a total of 6 hours, 3 hours in each role. While this class-based lab did not have a control group to compare with, participants did fill out the Stover scale before and after game play. These college students displayed a clear pro-Israeli bias prior to game play, the mirror image of the participants in the current study. After playing the *PeaceMaker* game for 6 hours, this bias disappeared and, as in the current study, the political perceptions of Israelis and Palestinians converged. This demonstrates that playing *PeaceMaker* leads to a more balanced perception of Palestinians and Israelis political behavior regardless of the direction of the initial bias. This pattern is not seen in the media exposure condition which produced very little change in perception.

Our findings support the predictions of contact theory (Allport, 1954; Crisp & Turner, 2009). Our results indicate that playing a computer game that involves adopting the role of the two leaders (perspective taking) can move people toward a shift in inter-group attitudes and a reduction in biased political perception. Meta analyses of the contact theory literature suggest that perspective taking and empathy play a critical role in prejudice reduction (Pettigrew, & Tropp, 2006). More work is needed to look at how role-playing may be linked to perspective taking.

The next step in this line of research is to explore the mechanisms underlying the observed changes in attitude. Specifically, we suggest that future research conduct a more detailed investigation of the effects of participants' *interaction* with the information. Possible candidates for mediating factors include the use of realistic situations, the mechanisms for scoring and feedback, the strategic level of decision-making. Furthermore, research should explore the extent to which variations in role-play (status, similarity, control, etc) have an effect on participants' emotion, attitude and empathy.

The current study serves as a demonstration that *PeaceMaker*, taken as a whole, increases hopefulness, decreases prejudice and promotes an appreciation for constructive actors and actions in resolving the Israeli/Palestinian conflict. As such, *PeaceMaker* serves as an effective medium through which opposing groups may move toward closer contact. More generally, our research serves to display the beneficial effects of serious games. We hope our findings regarding the positive aspects of digital simulations will serve to provide new resources for the study of conflict resolution.

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