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Abstract

In response to an increasingly interdependent world, educators are demonstrating a growing interest in educating for global citizenship. Many definitions of the “good global citizen” value empathy as an especially important disposition for understanding others across national borders and cultural divides. Yet it may be difficult for people to achieve empathy with others who are perceived as psychologically and geographically distant. Can computerized simulation games help foster global empathy and interest in global civic learning? This quasiexperimental classroom study of 301 Northern California high school students in three schools examined the effects of playing REAL LIVES, a simulation game that allows players to inhabit the lives of individuals around the world. Compared with a control group, students who played the simulation game as part of their curriculum expressed more global empathy and greater interest in learning about other countries. Identification with REAL LIVES characters was also positively related to global empathy. These findings support claims that computerized simulations can cultivate important dispositions for global learning and citizenship.

Keywords

computerized simulation, cultural divides, education, empathy, games, games-based learning, global, global citizenship, global empathy, identification, interactive learning environments, learning, role-playing, simulations, video games

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Globalization is complicating previously settled notions of citizenship and civic education. Preparing people to act solely as citizens of a nation-state seems inadequate in an age of greater economic, political, and social interdependence of nations; huge increases in migration; and the rising power of supranational institutions (Urry, 1999). Civic educators have turned to educating for global citizenship, variously defined as supranational, postnational, intercultural, or multidimensional citizenship (Cogan, 2000). This interest has been justified from many different perspectives, including by appeals to advance the common good of humankind and respect the human rights of all its members (cosmopolitanism), to practice respectful and peaceful relationships between cultures and protect the rights of cultural minorities (multiculturalism), for environmental protection and social justice (sustainability), or even by narrower aims to confer knowledge and skills that allow one to compete in an unfettered global market economy (neoliberalism; Schattle, 2008). Global citizenship need not necessarily replace national ties, but could supplement them with an enlarged sense of solidarity with others around the world.

Among educators, empathy is emerging as an especially significant disposition for global citizenship because it enables us to perceive the world through others' perspectives, experience the emotions of others, and communicate and act in ways that consider others' views and needs (Colby, Ehrlich, Beaumont, & Stephens, 2003; Heafner, 2008; Nussbaum, 1997; Rifkin, 2009). However, it may be harder for us to develop empathy for those whom we perceive as psychologically and physically distant. Research has found that it is often easier to empathize with others who share the same gender, race, ethnicity, or personal experiences (Barnett, 1987; Bryant, 1982). Might simulations help learners to empathize and even to identify with the lives of global others? Can these dispositions increase interest in future learning about other peoples and countries?

We address these questions through a quasiexperimental study conducted in three California high schools. The research examines the impact of REAL LIVES (2010), a game that allows learners to live simulated lives in other countries and to develop global empathy, identification, and interest in learning about other countries. The study contributes to the small, but growing, literature that directly tests the value of games and simulations for specific learning outcomes, which is still dwarfed by theoretical discussions of their educational promises (Wilson et al., 2009). This study also responds to calls to overcome the methodological limitations of much research on learning with games and simulations, including research designs that lack relevant control conditions, that do not address how games-based learning compares with other educational experiences, and that do not integrate the use of simulations within real-world curricula and instructional contexts (Egenfeldt-Nielsen, 2007).

Global Empathy

Empathy is often defined as an emotional state that involves "feeling in oneself the feelings of others" (Strayer & Eisenberg as cited in Wang et al., 2003, p. 221). Affective

empathy is expected to “foster a deeper understanding of the observed persons’ lot and, conditions allowing, inspire supportive actions” (Zillmann, 2006, p. 151). However, we adapt a broader definition of empathy from Wang et al. (2003), one that also includes cognitive and communicative components. Wang et al. conceptualized “ethnocultural empathy,” or empathy directed toward people from racial and ethnic cultural groups different from one’s own. Building on the three aspects of cultural empathy identified by Ridley and Lingle (1996), Wang et al. identified a cognitive dimension, which consists of understanding what a racially or ethnically different person is thinking or feeling; an affective dimension, which involves feeling the emotions of others from the point of view of their cultural background; and a communicative dimension, which refers to the ability to express in words or actions the cognitive and affective understandings of the other. The ethnocultural empathy that Wang et al. describe includes connectedness across ethnic, racial, and linguistic differences. Because of our interest in global citizenship, we adapt the authors’ concept to include empathy with people of other nation-states, who may or may not be ethnically, racially, or linguistically different. Thus, our focus is on a somewhat enlarged notion of “global empathy.”

The experience of global empathy develops over the life cycle, affected by cognitive development and experience (Oxfam, 2006; Wang et al., 2003). Ideally, young children should grow with a healthy “concern for others in [one’s] immediate circle” (parents, siblings, family members, friends), by their midteens they should develop a “sense of common humanity and common needs,” and by their late teens they should manifest a “sense of individual and collective responsibility” for global others (Oxfam, 2006, p. 7). In this view, mature individuals come to see themselves not only as citizens of their local community, nation-state, or ethnocultural group, but also as global citizens willing and able to empathize with other peoples and their situations elsewhere in the world.

Simulations, Games, and Global Learning

Civic educators are among those who recognize the potential of digital simulations and games to deepen understanding of global history and social studies, and foster greater participation in international issues (Lee & Probert, 2010; Raphael, Bachen, Lynn, Baldwin-Philippi, & McKee, 2010; Weir & Baranowski, 2011; Williams & Williams, 2010). They take heart from research suggesting that game-play at home (Lenhart et al., 2008) and at school (Lee & Probert, 2010; Squire, 2005) can have positive associations with some civic attitudes and behaviors. For example, in a nationally representative study of game play and civic engagement among American teens, Lenhart et al. (2008) found a significant relationship between the frequency of adolescents’ civic gaming experiences (such as playing games that simulate government processes or that focus on social or moral issues) and civic engagement (such as expressing interest in politics and raising money for charity). The same study found that more frequent players of all games were not more likely to be socially isolated or civically disconnected.

However, much of the research on simulations and games for *global* learning has not focused on how they can develop dispositions such as empathy, but on how geopolitical strategy games can be used to teach military, political, or economic knowledge and skills (Crookall, 2003), or on how intercultural simulations can teach basic cross-cultural communication skills (Fowler & Pusch, 2010). Two pilot studies of the simulation game used in the present study, REAL LIVES, suggest that it can help students develop intercultural knowledge, but each stopped short of assessing more affective and communicative components of empathy (Struppert, 2009; Tsikalas, 2008).

Meanwhile, some critics of digital culture contend that digital games are not well suited to teach empathy. For example, Gorry (2009) feared that as digital culture “exposes us to the pain and suffering of so many others, it might also numb our emotions, distance us from our fellow humans, and attenuate our empathetic responses to their misfortunes” (p. B11). In this view, *less* interactive media (such as novels or television) are better than games at fostering empathy because these older media present a clearer demarcation between fiction and reality (Gorry, 2009) or self and other (Klimmt, Hefner, & Voderer, 2009).

However, many good reasons underlie the conviction that digital simulations and games are particularly effective media for developing empathy. These media offer unique opportunities for active and experiential learning by role-playing the lives of others (Simkins & Steinkuehler, 2008). Game-based learning reflects many learning principles inspired by constructivist theory, such as providing a situated context for learning, greater learner control, and the ability to develop expertise within communities of practice (Gee, 2003; Squire, 2006; Wideman et al., 2007). Given the pedagogy and popularity of these media, they may be more effective than other teaching methods at boosting interest in learning (Kiili, 2005; Moreno-Ger, Burgos, & Torrente, 2009). Although few comparative studies of simulation games and other educational media exist, the findings are encouraging. For example, an experimental study by Peng (2008) found that the enactive experience afforded by playing a health-promotion, role-playing game was more effective at increasing participants’ sense of self-efficacy than watching a video of the same material; the study also found that empathy contributes to players’ sense of control over game play. An experimental study of advertisements that varied interactivity by using game technology to allow participants to determine the action of the main character found that the more interactive environment fostered greater empathy than the less interactive environment (Hand & Varan, 2009).

Identification

Empathy may be further developed when a player not only takes the perspective of another, but also begins to *identify with* the character represented. Identification with media characters goes a step further than empathy because it involves “temporary alteration of media users’ self-concept through adoption of perceived characteristics of a media person” (Klimmt et al., 2009, p. 356). Klimmt et al. (2009) saw games and simulations as offering particularly rich opportunities for identification because

players can take on the actions or attributes of a character in an interactive environment. These authors also note that the degree of the player's identification with characters can vary within a game, according to events that happen to a character (e.g., death), as a function of the game technology, or due to the player's motivation to relate to a particular dimension of the character. Identification with media characters can lead to a number of outcomes, including greater attention to and retention of messages associated with those characters (Cohen, 2006). Lewis and Weber (2009) have proposed that a version of identification, which they call "character attachment," should especially be considered as a mediating variable for learning in digital role-playing games.

Empirical Research

Reviews of the literature on intercultural simulations (Fowler & Pusch, 2010) and international relations simulations (Crookall, 2003) document the paucity of empirical evidence related to outcomes, including whether such simulations can foster empathy and identification, interest in learning, or learning itself. However, encouraging results can be found in a small body of empirical research relevant to these outcomes.

Some studies provide evidence that empathy can be taught and that empathy and identification may provide good conditions for increasing interest in learning, including immersion, enjoyment, and self-efficacy. In a survey of computer game players, Qin, Rau, and Salvendy (2009) found that empathy is a dimension of immersion in the game narrative. Shieh and Cheng's (2007) survey of elementary through university-level students found that experiencing empathy contributes to greater satisfaction with online games. Peng's (2008) experimental study showed that empathy contributes to sense of control over game play and that empathy is mediated by identification with characters. However, in an experiment gauging children's and adults' responses to a game trailer about bullying, Paiva et al. (2005) found that participants felt greater empathy for proximal characters, whom players perceived as like themselves.

In addition, Yee and Bailenson's (2006) study of a virtual reality simulation found that embodied perspective-taking taught youth to empathize with the elderly. In this study, undergraduate students assumed either the body of an elderly person or a younger person, and then had a brief interaction with a youthful avatar. Afterwards, those who embodied the elderly character offered fewer stereotypic word associations about the elderly than their counterparts who played a young avatar. The authors concluded that, consistent with social-psychological theories of perspective-taking, when an individual takes the point of view of another, a number of judgments about the other are altered, including making more situational than dispositional attributions about the person's actions, experiencing a greater sense of overlap between the self and other, and reduced stereotyping of members of that group.

Thus, while we can point to some encouraging research, more studies are needed to determine whether and how games can help develop empathy, the role of identification in building empathy, and whether empathy and identification are associated with increased interest in global learning.

REAL LIVES

The REAL LIVES simulation game allows students to live the life of a person from a different country that is assigned by the game or chosen by the player. Students can vicariously experience what life could be like for a male or female in another country, including education, employment, marriage, having children, confronting diseases and natural disasters, and so on. When born, the player sees the character's face, as he or she would be at age 15—the target age for players of this game. Unlike many digital games or simulations, REAL LIVES relies mainly on text and static graphics to convey information about the life of one's character. The software uses real-world data to determine the probability of events that are likely to happen in the character's life in their particular birth country. Background information on the country's history, culture, economics, and other factors are presented throughout the character's life, and links to the websites of these information sources are available. Students click a button to age their characters one year at a time, and in most transitions they can learn more about what happened or about the choices they are asked to make (e.g., to propose marriage or apply for a job).

Tabs at the top of the window allow the user to access different types of information (see Figure 1). For example, the "Actions" tab allows players to make life choices for their characters, such as trying to emigrate to another country, deciding to have a child, and so on. The "Self" tab shows information about the character's current status and life history. The "Family" tab presents the character's parents, siblings, spouse(s), and children. The "Country" tab presents summary statistics about the character's country. The "Stats" tab details the evolution of the character's happiness, health, wealth, and other characteristics over his or her lifetime. Players exercise increasing control over their character's life as they age and have more choices of leisure activities. Like many simulations, REAL LIVES does not assign a single goal to players—they may choose to maximize their wealth, love, happiness, or other attributes, or to achieve a balance among them.

Hypotheses

REAL LIVES contains elements that could foster the cognitive, affective, and communicative components of global empathy. The game provides players with considerable information about their character in their particular national and socioeconomic context as they age. Many of the events in a character's life can elicit affective responses, even though they are conveyed in brief, factual terms, without describing the character's emotional reaction (e.g., "Your mother has died at age 62 from a stroke"). The experience of playing REAL LIVES also affords some opportunities for players to express or act on their understanding of the other. Based on what their character has experienced, players may take actions to help their character advance educationally or economically, or to promote human rights in a country where they may not be protected. Thus, we expect that:



Figure 1. Screen shot showing the REAL LIVES main screen with navigation tabs at the top

Hypothesis 1 (H1): Students who play the simulation game will exhibit greater global empathy compared with those in an alternate computer-assisted learning activity.

As noted earlier, one outcome of empathy is to inspire “supportive actions” (Zillmann, 2006, p. 151). Thus, it is expected that students who take part in REAL LIVES will be more interested in further learning about the issues and conditions of their character’s country after playing the simulation.

Hypothesis 2 (H2): Students who play the simulation game will show greater interest in future learning about the countries studied compared with students in the alternate computer-assisted learning activity.

Finally, because interactive environments can lead to greater identification (Klimmt et al., 2009) and to greater empathy (Hand & Varan, 2009), we predict the following:

Hypothesis 3 (H3): Character identification will be positively associated with global empathy for those who play the simulation game.

Method

Participants

A total of 323 students from 12 classrooms taught by four teachers in three Northern California high schools participated in the study (see Table 1 in Appendix A). Classrooms

within each school were randomly assigned to either the treatment or control conditions. Our analyses are based on the 301 students for whom we have responses from all three questionnaires we administered—pretest, posttest, and follow-up. Of these 301 participants, 130 played the REAL LIVES simulation in pairs and 51 students played the game alone. The remaining 120 students were in the control group. All students were engaged for three class periods (55 minutes each) on consecutive days either in playing the game or in doing the control group assignment. Students who did not agree to be part of the study or did not return parental permission slips to participate (6% in all) completed an alternate learning activity during the same period.

Treatment Condition

On the 1st day, the researchers briefly introduced the simulation game by showing how to create a character in the country selected, how to advance play by aging the character one year at a time, and how to create a practice character from the United States. On days 2 and 3, students were told to play a male character and a female character, respectively, from a list of countries selected by the teacher to correspond with their unit of study, varying the country each day. In each case, the list included mainly countries with political systems characterized by greater governmental authority and more limited citizens' rights than the United States. Experiencing life in a country in which conditions varied from the United States across a number of dimensions posed a stronger test of the game's ability to develop global empathy than if students had only inhabited lives more similar to their own. Given the focus of the study on empathy as a civic disposition, we wanted to be sure that the students experienced what the game had to offer in the way of political or civic activities for citizens in each country. Therefore, students were directed to select "Social and Political Activities" any time they had a chance to choose their character's leisure activities, when this option became available at around age 15. To keep students on task, they were given worksheets to record their characters' key indicators (such as health and wisdom) at different ages. The majority of students were able to complete a character's entire life in a single class period. A few students whose character died young were allowed to start another life.

Because the software offers the option to turn off certain types of life events that may be problematic with young students, three possible events were unchecked so students would not experience them: sexual abuse, rape, and sexually transmitted diseases. However, this still left 59 other types of life events, ranging from natural disasters to accidents and diseases, that might occur in the simulation, with the probability of those life events occurring based on recent statistics for each country.

Control Group Condition

Students in the control groups chose a country from the same set of countries as each corresponding treatment group on which to conduct some Internet research and create

a PowerPoint presentation. Working in pairs over the same 3-day period, students were asked to gather information about the country's geographical features, communication systems, literacy level, birthrate, life expectancy, and political system—information that would provide an overview of the country and might help them infer what life would be like for people in that country. In order to address Egenfeldt-Nielsen's (2007) critique that game studies often include control group experiences that are vastly different from the game-play treatment in the type of learning provided, the study aimed to offer the control group a similar assignment that involved working in a self-directed way, making some of their own choices, and using the Internet and computers to complete their work. Some students from each control classroom were able to present their country profiles to their classmates. All students (treatment, control, and nonparticipants) were given class participation credit for their efforts.

Instruments

Students completed three surveys as part of the study. The first survey was administered about a week before the class activities began (pretest); the second was given the day after the activities ended (posttest); and the final survey was given about 3 weeks after the class activity (follow-up). Many questions were repeated from the pretest to the posttest in order to measure whether student attitudes on key concepts changed as a result of the different learning activities. The pretest questionnaire also included demographic and background questions about students' current computer, games, and media use. The majority of items were 6-point Likert-type scales ranging from "agree strongly" to "disagree strongly." Two researchers and the classroom teacher were present when the questionnaires were presented to the students, which took approximately 20 minutes to complete. The follow-up questionnaire took about 10 minutes to complete.

Our measure of global empathy was adapted from the scale of ethnocultural empathy developed and validated by Wang et al. (2003). The adapted scale consisted of 11 items (see Appendix B) measuring students' self-reported awareness of the political and social rights of global others, emotional connectedness to others around the world, and motivation or likelihood to speak or act on behalf for change or equal rights those who experience discrimination or inequality in other parts of the world. Cronbach's alpha for the pretest measure of global empathy was .825, and at the posttest, .872.

Interest in future learning about other countries was measured on the posttest with four items. These questions asked whether students look for opportunities to learn about others' lives, whether they often think about what life is like in other countries or find it interesting to see statistics about what things are like in other countries, and whether they would like to learn more about people's lives in other countries (Cronbach's $\alpha = .863$).

Players' identification with characters was measured using a 5-item scale (Cronbach's $\alpha = .849$). The items asked students to indicate on a 6-point Likert-type scale (ranging

from “agree strongly” to “disagree strongly”) the degree to which they were interested in the lives of the characters they played from the United States, how interested they were in the lives of the characters they played from other countries, how much they cared about what happened to the characters, how happy they felt when things went well for their characters, and how sad they felt when things did not go well for their character.

In the follow-up survey, two sets of measures assessed the extent to which students were still interested in learning about, or committed to speaking or acting to help the countries they had studied. The first set presented students with 14 hypothetical headlines, half that involved the countries with which the students had been engaged or issues of relevance to the country and half that involved domestic or other unrelated international issues. Students were asked to indicate how curious they were about each article on a scale of 1 to 5, and from these items, we computed summative scales for “interest in country-relevant headlines” and “interest in distracter headlines.” The second set assessed student interest on nine possible topics (again, with about half representing countries or issues of relevance) on which they could choose to write a hypothetical two-page paper (computed into a scale of “interest in country-relevant topics” and “interest in distracter topics”). Different versions of the follow-up surveys were tailored to reflect the relevant countries selected by each teacher for inclusion in the simulation and control activities according to the curriculum under study (i.e., World War I, World War II, Central America, the Cold War).

Also measured in the study were factors that could affect students’ reception of the treatment or control experience, including students’ prior news media exposure, their interest in social studies and history, the number of times that students had traveled outside of the United States (on an ordinal scale from “never” to “4 or more times”), and gender. We also controlled for school affiliation because of some differences among the schools in students’ economic and racial or ethnic backgrounds.¹ While we collected data on students’ race/ethnicity, we could not include ethnicity as a control variable because of the small number of students represented in some ethnic groups in two of the sample schools (i.e., two Asian students in one suburban school, two Hispanic students in the magnet school). Instead, we rely on two variables that we would expect to be more directly related to global empathy and interest in future learning about other countries: prior news media exposure and amount of travel to other countries.

Procedures

Students completed the pretest, posttest, and follow-up questionnaires in their classroom. Interaction with the REAL LIVES simulation game and alternate computer-assisted learning activity took place in the classroom with students using laptop computers, except in one of the schools where treatment and control classroom students went to a PC lab where the REAL LIVES software was installed.



Figure 2. Screen shot showing an example of explanatory text and weblink to source of information in the REAL LIVES simulation game.

In each school, students in the experimental condition played a character from at least two countries from the lists provided by their teachers. Although students in the control condition chose only one country on which to focus, they were able to hear classmates' presentations on many other countries. Two researchers and the classroom teacher were on hand to answer student questions throughout each class.

Debriefing

Several different forms of debriefing occurred during the time of the study. Students in the treatment group could follow hyperlinks from the simulation to websites that provided additional information at any time during play. The simulation game explains many of the situations the characters experience as they happen (see Figure 2). Researchers reminded students that they were free to use the Internet to visit the linked websites and asked students to comment at the beginning of the 3rd day about some of the things their characters had experienced, as well as fielding questions among the group as a whole.

On the day after students completed the simulation game or alternate computer-assisted learning activity and before completing the posttest survey, researchers returned to the classroom to lead a brief discussion with the teacher and students about their learning experiences. As Peters and Vissers (2004) recommended, this debriefing session was designed to explore the possible connections between experiences students had while playing the game and real-life experiences. Researchers asked students to

comment on what information or experiences during the treatment or control activity had made an impact on them and why. Students were encouraged to share insights from the different countries they had experienced in game play or through Internet research, and in both cases, the researchers asked the students to draw some conclusions about factors that might affect health, social and economic well-being, and/or other aspects of quality of life for people in different countries. During a final 30-minute debriefing session with the researchers at the end of the study (after the follow-up data had been collected), students were encouraged to ask questions about the study design and to discuss any further insights they had from playing REAL LIVES or working on the alternate learning activity.

Data Analysis

In order to test whether global empathy and interest in future learning differed significantly between students who played the simulation game and those who engaged in the alternate activity, a one-way analysis of covariance was performed. The following variables were normalized beforehand by squaring them to correct for negative skew, thus allowing us to meet the assumptions for analysis of covariance: interest in learning more about other countries, interest in relevant headline topics, interest in the distracter headline topics, interest in relevant paper topics, and interest in distracter paper topics. Prior to the regression analysis using only students who played the simulation game, the identification with characters variable was also normalized through squaring.

In addition, prior to the covariance analysis, *t* tests were conducted to see whether significant differences on the dependent variables were found for students who played REAL LIVES alone versus in pairs. Because no differences were found, the groups of students who played alone were combined with those who played in pairs. Due to differences in the composition of the three schools and the significant differences in the pretest responses on the global empathy measure by school, we included school as a control variable for all analyses.

Results

Impact of Condition on Global Empathy

H1 predicted that students who played the simulation game would show greater global empathy compared with those in the alternate computer-assisted learning activity. An analysis of covariance was used to analyze posttest global empathy by condition, with pretest global empathy as a covariate to control for individual differences, along with students' initial level of interest in social studies material, prior levels of media exposure to international news, and amount of travel outside of the United States. Student gender and school affiliation were included as control variables.

H1 was supported (see Table 2 in Appendix A). After controlling for pretest global empathy scores we found that students who played REAL LIVES scored significantly higher ($M = 50.47$) in posttest global empathy compared with those in the control group ($M = 48.99$). In addition, girls scored higher ($M = 50.85$) than boys ($M = 48.61$). Amount of media exposure, travel to other countries, interest in social studies, and school affiliation were not significant factors.

Impact of Condition on Future Learning About Other Countries

H2 predicted that students who played the simulation game would show greater interest in future learning about the people and their issues in the target countries studied than those in the alternate computer-assisted learning activity. Three different dependent variables were used to test this hypothesis: interest in future learning about the countries students had studied (“country-relevant learning”), interest in country-relevant news headlines, and interest in country-relevant hypothetical paper topics. All variables were analyzed using covariance analysis by experimental condition, with students’ initial level of interest in social studies material, prior levels of media exposure to international news and amount of international travel as covariates, and student gender and school affiliation as control factors in the analysis.

Support was found for this hypothesis in all three dependent variables studied. Students who played REAL LIVES were more likely to want to learn more about the lives of people in other countries ($M = 19.04$) than the control group ($M = 17.16$; see Table 3 in Appendix A). In addition, students in the treatment condition were more likely to express interest in reading about hypothetical news stories that were related to country-relevant topics or issues of international concern ($M = 16.15$) than the control group ($M = 14.89$; see Table 4 in Appendix A). Students who played REAL LIVES also were more likely to express interest in country-relevant hypothetical paper topics ($M = 14.75$) than the control group ($M = 14.02$; see Table 5 in Appendix A).

As a further test of the robustness of two of these findings, we also examined whether treatment and control groups differed in their interest in distracter headlines that were not relevant to the kinds of topics or issues addressed in the simulation and learning activity, and whether they differed in their interest in distracter paper topics. It would not be expected that the two groups would differ in their levels of interest on the distracters, and indeed, they did not for distracter headlines, $F(1, 265) = 2.28, p = .132$, and paper topics, $F(1, 269) = 0.02, p = .883$.

Other factors played a role in future interest in learning about the countries studied, including participants’ greater prior exposure to news media, more positive attitudes toward social studies, and gender, with females expressing more interest (see Table 3 in Appendix A). Two other variables were also significantly related to interest in country-relevant headlines: news media exposure, with more exposure associated with more interest, and school affiliation, with students at the magnet school expressing more interest than students in the other two schools (see Table 4 in Appendix A). Greater

interest in country-relevant paper topics was also significantly related to greater exposure to news media, more positive attitudes toward social studies, and gender, with females more interested (see Table 5 in Appendix A).

Identification and Global Empathy

H3 predicted that character identification would be positively associated with posttest global empathy for those who played the REAL LIVES simulation game. A stepwise regression analysis was performed for posttest global empathy using identification with REAL LIVES characters, pretest global empathy, gender, and school as predictors. Dummy variables were created for the school variable.

The hypothesis was supported (see Table 6 in Appendix A). After accounting for the effects of pretest levels of global empathy, identification with REAL LIVES characters was a significant, positive predictor of global empathy. Identification also explained a significant proportion of the variance in global empathy scores, $R^2 = .08$, $F(1, 160) = 36.88$, $p = .000$. Neither school affiliation nor gender was a significant predictor.

Discussion

This study addressed the question of whether global empathy, an important aspect of global citizenship, could be fostered by a computer simulation game in which student players stepped into the life of someone from another country. Comparing students who played REAL LIVES with those who participated in an alternate computer-assisted learning activity, we found that playing the simulation game was associated with significantly higher levels of global empathy. The effect size was relatively small (partial $\eta^2 = .016$), but so was the exposure of students to the lives of others outside the United States through the simulation—just 2 hours of play. In addition, while global empathy is a learned ability and thus can be modified, it is a fairly complex cognitive-affective state that develops over a lifetime (Wang et al., 2003).

Also significant were the levels of interest in learning more about the lives of people in other countries—as measured in the posttest survey given the day after the treatment ended, and in expressions of interest in reading country-relevant headlines and in hypothetical country-relevant paper topics nearly 3 weeks after the treatment ended. These findings are consistent with other findings that computer games and simulations effectively motivate interest in learning (Wideman et al., 2007), but this study offers stronger evidence for this conclusion than much of the previous literature because the study involves a comparison of a simulation game with another engaging computer-based learning activity. The effect sizes are larger for the three interest variables than for global empathy—especially for the composite measure on how interested students were in learning more about others (partial $\eta^2 = .054$).

The study also examined the relationship between identification with characters and global empathy for the students playing the simulation game. We found that

identification with characters in an interactive environment was associated with greater empathy, something Klimmt et al. (2009) predicted would be more likely to result only with older media, such as novels or film, which create more psychological distance between the self and other. The link between character identification and global empathy in our study was quite robust (accounting for 8% of the variance), even though the interface lacked some features that might lead to even more identification, such as more detailed visual information about the character and life events experienced, or the ability to explore a three-dimensional visual environment from the character's perspective (Klimmt et al., 2009). The verbal and nonverbal expressions of students observed by researchers during game-play were consistent with this finding linking identification and empathy. High-fives between student players when something good happened to their character and shouts of dismay when negative events occurred were common and at times led to brief conversations among other players as they compared notes on the lives of their characters. The effect of the role-playing treatment was evident in the debriefing sessions when some of the students, who played individually or in pairs, talked about their characters' experiences as if they were their own (e.g., "I got arrested at a political protest," "We died of malaria," "We weren't able to go finish high school").

In sum, this study adds to the weight of evidence that simulations can foster civic learning outcomes, including global empathy and interest in learning about global affairs. The evidence it offers is stronger than much prior research for several reasons. While much of the research on the effects of games and simulations involves game creators testing their own creations, this study did not involve this potential threat to objective evaluation (Fowler & Pusch, 2010). While experimental research in the lab offers greater control over potential extraneous variables than most classroom research, the advantage of this study is that it assesses the impacts of a simulation game that was integrated into real-world school curricula. Much classroom research is conducted in a single class, but this study found similar results for the main dependent variables across multiple classes and school sites. Most importantly, the study compared the effects of the simulation with the impacts of another active form of computer-assisted learning. A weaker test would have been to compare the learning experience from the game with no other formal learning activity or with a more traditional form of teaching, such as lecturing.

Limitations

We identify several factors to consider regarding the study and its results. While classrooms were randomly assigned to treatment or control conditions, the schools were not chosen at random, and within them, we were limited to the teachers who volunteered to participate in the study. In addition, due to the small number of classrooms participating in the study, we had to use the individual student as the unit of analysis; a larger study that would also allow analyses at the classroom level would be a useful

check on the validity of the findings. Because students from various ethnic or racial groups were not evenly distributed across schools and classes in our sample, we were unable to examine the possible influence of race or ethnic background. Future studies might wish to include this variable in their design.

When a game or activity involves a specific country or countries, it is also important for future research to clarify the effect on the development of empathy or other learning outcomes of students' familiarity with a given country or their perceptions of how proximal that country is to their home country—geographically, socially, or politically. In this study, the clusters of countries chosen by each teacher differed mostly by school and the researchers tried to ensure that the countries were quite distinct from the United States in their political, economic, and/or social systems. No significant school-level differences appeared when school was used as a control variable, suggesting the differences in country clusters were not associated with meaningful differences in learning outcomes. Nonetheless, future research should investigate students' prior familiarity with their characters' home countries and any effects of this variable on learning and empathy.

It is also important to acknowledge that the nature of the concepts analyzed in the study could generate a "social desirability" response bias, with students possibly over-reporting levels of empathy, positive attitudes toward social studies, and interest in future global learning. However, we have no reason to believe that the treatment group was *more* susceptible to this bias than the control group, which completed the same pretest and posttest.

Finally, it is possible that the study *underestimates* the positive impact of REAL LIVES on students' global empathy given the short exposure time (2 hours of playing characters from other countries) and the difference between the historical time periods students were studying in classes (World War I, World War II, the Cold War) and the contemporary data used in the simulation game. Future research that allows for closer integration with the curriculum and longer periods of play could provide stronger evidence of positive learning outcomes than those observed in this study.

Conclusion

In this study, we found that a simulation game that allows young people to live the lives of people in other countries could induce students' identification with culturally and geographically distal characters, increase students' sense of global empathy, and boost their interest in learning more about the countries in which their characters live.

Future research might build on our findings to explore further the use of simulations and games in global learning. Comparative research with different role-playing games and simulations that involve close contact with distal characters could illuminate the game design elements that are most effective at inspiring global empathy and curiosity. An expanded Global Empathy Scale could allow researchers to examine how games engage the cognitive, affective, and communicative aspects of global empathy in

different ways. Our Global Empathy Scale was derived from Wang et al. (2003), which was found to have high reliability and validity in the ethnocultural realm within the United States, but this scale should also be validated for global empathy.

Testing for the impact of empathy on direct measures of knowledge and skills learned through global civic games by different users would be useful. In particular, one question is whether individual life simulators such as REAL LIVES can teach about the larger social, political, and economic conditions of a country as effectively as more traditional geopolitical strategy games. Given that females were more likely than males to experience greater empathy and interest in future learning about their character's country in this study, we suspect that individual life simulation games might be more effective routes to international understanding for females than military, economic, and diplomatic simulations. The latter kinds of simulations seem to appeal more to masculine play preferences for power, command, and control rather than shared exploration, solidarity, and experience (Brunner & Bennett, 2002). However, if life simulators are better at teaching empathy, can they also foster knowledge and skills related to larger social and political structures as well as simulations in which players are cast in the roles of world leaders? Can learning about the world from the ground up be as effective as learning about it from the top down?

We also suggest turning more attention to the surrounding instructional context in which games are used. We concur with Lee and Probert (2010) and others that games and simulations are best used in conjunction with other classroom work and that debriefing is an important part of the learning experience (Peters & Vissers, 2004). Simulation games such as REAL LIVES could be supplemented with critical essays, discussions, and class activities as well as additional research, to enhance the cognitive and affective learning from the simulation game. In this study, the debriefing discussions in class provided valuable insights as students compared the similarities and differences among their characters' lives, and between their characters' experiences and their own lives, sparking reflection on the underlying social, economic, and political reasons for the experiences of global others and themselves. While we did not record these debriefing sessions, we recommend this in future research as a valuable source of supplementary qualitative data that can help researchers and practitioners understand how to build on the educational impact of games. While we did not find a significant difference between single and paired players' levels of global empathy or interest in future learning about related issues, it is likely that play condition would be associated with other learning outcomes. For example, studies of face-to-face learning consistently find that collaboration and discussion are important pedagogical tools to enhance civic learning (Kahne & Westheimer, 2003). This will be important to assess in future research.

The results of this study affirm the importance of role-playing games as an effective way to promote affective learning outcomes like empathy, even when compared with another learning activity also embodying active, student-centered learning. The research also demonstrates the important role of player identification with the game's character

in amplifying affective learning outcomes. In addition, while many game studies have found that games are able to engage students' learning at the moment, we found that game play also holds promise for providing a deeper, more sustained interest in future learning. Educators can be encouraged by these results, which demonstrate that these learning outcomes can be achieved in only a few hours of classroom time.

Appendix A

Table 1. Summary of Study Conditions at Each Participating School

School and classes	Grades	Subjects	Topics and countries studied
School 1 (suburban)			
Treatment Class 1 (Teacher A)	10th	World History	Teacher A: "World War I." Austria, Hungary, Germany, Serbia.
Treatment Class 2 (Teacher A)	10th	World History	
Treatment Class 3 (Teacher B)	9th	Geography	Teacher B: "Central America." Mexico, Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama.
Control Class 1 (Teacher A)	10th	World History	
Control Class 2 (Teacher B)	9th	Geography	
School 2 (suburban)			
Treatment Class 1 (Teacher A)	10th	World History	"World War II." Armenia, Belarus, Georgia, Kazakhstan, Latvia, Lithuania, Russia, Ukraine.
Treatment Class 2 (Teacher A)	10th	World History	
Control Class 1 (Teacher A)	10th	World History	"The Cold War." Angola, Chile, China, Cuba, Democratic Republic of Congo, Egypt, Russia, South Korea, Vietnam.
Control Class 2 (Teacher A)	10th	World History	
School 3 (urban magnet)			
Treatment Class 1 (Teacher A)	10th	AP World History	"The Cold War." Angola, Chile, China, Cuba, Democratic Republic of Congo, Egypt, Russia, South Korea, Vietnam.
Treatment Class 2 (Teacher A)	10th	AP World History	
Control Class (Teacher A)	10th	AP World History	

Table 2. Analysis of Covariance Results for Posttest Global Empathy

Source	<i>df</i>	<i>F</i>	<i>p</i>	Partial η^2
Pretest global empathy	1	229.35	.000	.471
Play condition	1	4.55	.034	.017
School	2	1.63	.199	.012
Gender	1	10.28	.002	.038
Media exposure	1	0.78	.377	.003
Attitudes to social studies	1	0.628	.429	.003
Travel	1	0.36	.549	.001
Error	258			

Table 3. Analysis of Covariance Results for Interest in Learning

Source	df	F	p	Partial η^2
Play condition	1	15.54	.000	.054
Gender	1	8.90	.003	.032
Media exposure	1	60.82	.000	.182
Attitudes to social studies	1	15.46	.000	.054
Travel	1	0.89	.766	.000
School	2	1.70	.184	.012
Error	273			

Table 4. Analysis of Covariance Results for Relevant Headlines

Source	df	F	p	Partial η^2
Play condition	1	10.48	.001	.041
Gender	1	3.84	.051	.015
Media exposure	1	37.59	.000	.132
Attitudes to social studies	1	2.96	.086	.012
Travel	1	1.03	.310	.004
School	2	3.72	.026	.029
Error	248			

Table 5. Analysis of Covariance Results for Relevant Paper Topics

Source	df	F	p	Partial η^2
Play condition	1	6.31	.013	.024
Gender	1	13.38	.000	.050
Media exposure	1	25.80	.000	.092
Attitude to social studies	1	4.15	.043	.016
Travel	1	0.47	.494	.002
School	2	.44	.644	.024
Error	256			

Table 6. Regression Analysis Results for Posttest Global Empathy

Source	B	SE B	β	R ² change
Pretest global empathy	.665	0.050	.679**	.568**
Identification with character	.013	0.002	.296**	.080**
Gender	-.138	0.895	-.008	.001
School Dummy Variable 1	-.607	1.019	-.035	.001
School Dummy Variable 2	-.271	1.094	-.014	.001

Note: Adjusted R² = .641.
 **p < .001.

Appendix B

Global Empathy Scale

1. I am aware of how the political and social rights (e.g., ethnic, racial, or gender) of people in other countries can be quite different from my own.
 2. I am aware that people in other countries can have their freedoms or rights taken away.
 3. I am aware of political, social, and economic barriers that lead to discrimination of people in other countries.
 4. It is easy for me to understand what it would feel like to be a person living in a different country than my own.
 5. I can relate to the frustration that some people of different countries feel about having fewer opportunities due to the economic, political, or social circumstances of their countries.
 6. I feel motivated to help promote changes that improve people's living conditions in different parts of the world.
 7. I am likely to participate in events that promote equal rights for people in other countries.
 8. I feel supportive of those in other countries who may experience injustice because of their political or social (e.g., ethnic, racial, or gender) background.
 9. I can see myself taking action (e.g., signing a petition or sending money) to help those in another country who are experiencing discrimination because of their political or social background.
 10. I share the anger of those in other countries who face injustice because of their political or social (e.g., ethnic, racial, or gender) background.
 11. I feel that being actively involved in global or international issues is my responsibility.
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Note

1. Data from the California Department of Education (2009) showed some differences in the socioeconomic status of the students attending each school, most notably a difference between the magnet school where few students (8.1%) are on the need-based school lunch program than the other two schools (22% and 18.3%). School-level differences were also evident in the numbers of students in our sample representing different racial or ethnic groups—School 1 (suburban): American Indian or Alaska Native = 0, Black/African American = 3, Asian = 10, Hispanic/Latino = 42, White/Caucasian = 50, Native Hawaiian/Pacific Islander = 0, Other = 5, Multiple race/ethnic affiliations = 15; School 2 (suburban): American Indian or Alaska Native = 2, Black/African American = 2, Asian = 2, Hispanic/Latino = 32, White/Caucasian = 35, Native Hawaiian/Pacific Islander = 2, Other = 1, Multiple race/ethnic affiliations = 13; School 3 (magnet): American Indian or Alaska Native = 0, Black/African American = 1, Asian = 46, Hispanic/Latino = 2, White/Caucasian = 23, Native Hawaiian/Pacific Islander = 0, Other = 8, Multiple race/ethnic affiliations = 5.

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