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The effect of a persuasive social impact game on affective learning and attitude

Dana Ruggiero *,1

Purdue University, Curriculum and Instruction, 100 University Street, West Lafayette, IN 47905, United States

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ABSTRACT

To investigate whether a persuasive social impact game may serve as a way to increase affective learning and attitude towards the homeless, this study examined the effects of persuasive mechanics in a video game designed to put the player in the shoes of an almost-homeless person. Data were collected from 5139 students in 200 middle/high school classes across four states. Classes were assigned to treatment groups based on matching. Two treatment conditions and a control group were employed in the study. All three groups affective learning and attitude scores decreased from the immediate posttest but the game group was significantly different from the control group in a positive direction. Students who played the persuasive social impact game sustained a significantly higher score on the Affective Learning Scale (ALS) and the Attitude Towards Homelessness Inventory (ATHI) after three weeks. Overall, findings suggest that when students play a video game that is designed using persuasive mechanics an affective and attitude change can be measured empirically.

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1. Introduction

In the games research community the power of games to change an emotive process such as attitude and affect is subject to continuous debate. Researchers invested in games as a significant medium of learning are often faced with the difficulty of arguing both sides of an argument. One on side, games are being attacked as the cause of youth violence (Engelhardt, Bartholow, Kerr, & Bushman, 2011) leading games scholars to be on the defensive. On the other side, games are held up as creative solutions for learning from early education to corporate training (Gee, 2007; Ruggiero, 2014). While researchers advocating for either of these positions have to be prepared to accept the ethical implications of the other, a horse of a new color has appeared on the games horizon-persuasive games.

Video games are a vibrant and integral part of society that is growing, and it is important to study their possible effects on affective behavior. Using theoretical models and case studies, academics have shown that different elements of persuasion can be used to define elements in video games that make them persuasive (Bogost, 2007; Evans, 2011; Ruggiero, 2013). However there is a gap in empirical knowledge about how persuasive games actively affect the affective learning process and attitude.

A relatively new field in games research, persuasive games, or games meant to change the attitude or behavior of the player through game play (Bogost, 2007; Ruggiero, 2012) have the potential to act as powerful vehicles for learning through persuasive mechanics. To explore the idea of a persuasive game as a game changer for attitude and affective learning, the current research investigated the effect of one game, *Spent* developed by the Durham Homeless Coalition, across 5139 students in 200 classrooms spanning four states.

Before discussing the methods and results of this study it is necessary to understand the background of persuasive games and those specifically designed as vehicles of social impact. Persuasive games have been studied in various contexts with differing definitions over the past forty years. Predating the invention of the computer, humans have used play and games for teaching necessary skills and socialization for millennia (Abt, 1970; Huizinga, 1955). Games explicitly created to change attitudes and behavior date back to 1790, when British publishers of the *New Game of Human Life* advised parents to play the board game with their children and "request their attention to a few moral and judicious observations explanatory of each character as they proceed & contrast the happiness of a virtuous and well spent life with the fatal consequences arriving from vicious & immoral pursuits" (Lepore, 2007 para. 3).

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* Tel.: +1 765 414 9475.
E-mail addresses: druggier@purdue.edu, d.ruggiero@bathspa.ac.uk
[1] Permanent Address: Bath Spa University, School of Education, Newton St. Loe, Bath BA29BN, UK. Tel.: +44 07447 790738.

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In 1843 a board game released in the US called *Mansion of Happiness* gave instructions that instructed players to make good and moral decisions to gain the seat of happiness. The 1960s and 1970s witnessed a surge of multiplayer simulations. Given credibility by the Rand Foundation, which developed a number of persuasive games for use in the Cold and Vietnam wars, most of these were intended for education, training, and exploring alternative courses of action (Abt, 1970) with some persuasive purposes. Persuasive games today are a growing part of video game landscapes. They have attracted the attention of the media (Ochalla, 2007), academics (Bogost, 2003, 2007, 2008; Frasca, 2001; Gee, 2003, 2007), and funding agencies such as the MacArthur Foundation (MacArthur Foundation, 2012).

1.1. How persuasive games persuade

Attempts at analyzing persuasion date back to ancient Greece; according to Aristotle persuasion is achieved through rhetoric, and three parts that include ethos, pathos, and logos (Cooper, 1932). Ethos uses claims about the persuader's moral character and his or her trustworthiness, an important aspect of the persuasion process if it is to be effective (Evans, 2011). Pathos is an emotional appeal to secure the goodwill of the listener while logos is the reasoned argument that appeals to the listener's rational mind. Aristotle's categorization has been elaborated over time but is still useful for analysis of persuasion (Bogost, 2007). Factors such as the interest of receivers of the message, their level of education, their knowledge of the issue, their cultural background, their feelings about the originator of the message, the medium used for the persuasive message, and competing factors all influence the success or failure of an attempt at persuasion.

Persuasive games use several mechanisms of persuasion stemming from advertising and marketing that have been posited by game researchers, including: immersion, flow, engagement, persuasive rhetoric, and persuasive ethos.

1.1.1. Immersion

Immersion is the experience of being transported to an elaborately simulated place that takes over all attention and becomes enveloping (Murray, 1997). Technology has increased the power of immersion through video games, "it seems that games as persuasive technology hold much promise for changing people's attitudes: games are by nature interactive, and people tend to retain more impressions" (Khaled, 2007, p. 17).

1.1.2. Flow

Flow has been a theory posited by some game theorists (Amory, 2006) that games are compelling because players are in a highly energized state of concentration and focus (Csikszentmihalyi, 1990). Flow is achieved when the level of the challenge and the level of the player's skill in dynamic tension, creating a highly focused state of mind. Amory (2006) posits that the player can assimilate tacit knowledge through the process that is then assimilated and constructed after emerging from the state of flow.

1.1.3. Engagement

Engagement is closely related to flow where the player finds the game so engrossing that they assimilate facts and values without realizing they are doing so (Quinn, 2005). Research (Padgett, Strickland, & Coles, 2006; Thomas & Cahill, 1997; Tuzun, 2007) supports the claims that games increase engagement through flow, immersion, and agency. Accordingly when players are more engaged with the game, they are more likely to see the situation from the perspective presented in the game.

1.1.4. Procedural rhetoric and ethos

Both procedural rhetoric and ethos are Aristotelian theories of persuasion updated by Bogost (2007) and Evans (2011). While Bogost defines procedural rhetoric as "the practice of using processes persuasively" (2007, p. 2), Evans argues that rhetoric is not enough and includes ethos or "persuasion by empathy, fact, and integrity" (2011, p. 71). By demonstrating that every action in a game has consequences, which are built into the game structure by the designers, the rhetoric and ethos of these procedures not only allow the player to learn through game play but also are a more effective and longer-lasting way of assimilating information (Bogost, 2007). Evans (2011) argues that rhetoric alone is not enough and examines not only the message being sent but also the messenger and the final outcome for integrity, empathy, and fact. Procedural rhetoric and ethos both play a part in the overall impact of persuasive games.

1.2. Measuring impact of persuasive games

Measuring the impact of a persuasive social impact game remains a gap in the current research. How many students who play *Food Force,* a game that puts them in the shoes of a World Health Organization food worker and that has been downloaded 4 million times, retain an interest in the politics of food distribution after game play concludes? *America's Army,* a game developed by the U.S. Army, has had players dedicate more than 160 million hours of game time (Clarren, 2006) but how many of those players actually enlist in the Army? Games that are intended to lead to actions are easier to evaluate because you can measure the effect. For example, the effectiveness of a game that is aimed at persuading people to visit a website can be calculated by the number of players who clicked through from the game to the website.

When measuring a game without such concrete goals, such as the intention to influence the players' change in affective learning and attitude towards the homeless by experiencing what it's like to be almost homeless, this influence is more difficult to measure. In order to measure a change in affective learning and attitude towards the homeless by playing a persuasive social impact game the first step is to establish whether or not there is a significant change when playing a game designed to be extremely persuasive through the use of both mechanics and topic. Thus, the following research questions were proposed:

> *R1: To what extent does affective learning differ immediately* ***and three weeks*** *after playing the persuasive social impact game Spent for the game treatment group, controlling for gender and hours playing video games, as measured by the Affective Learning Scale (ALS) compared to the control and comparison groups?*
>
> *R2: To what extent does attitude towards the homeless differ immediately* ***and three weeks*** *after playing the persuasive social impact game Spent for the game treatment group, controlling for gender and hours playing video games, as measured by the Attitude Towards the Homeless Inventory (ATHI) compared to the control and comparison groups?*

2. Methodology

2.1. Participants

This study used a quasi-experimental design with control and two treatment groups to compare the effects of playing a persuasive social impact game on affective learning and attitude towards homelessness. The population of this study consisted of adolescents in grades 7 through 12 (ages 12–18) in formal education settings in the Midwestern U.S. The sample consisted

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