Computers in Human Behavior 48 (2015) 481–491

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Extending the theory of Bounded Generalized Reciprocity: An explanation of the social benefits of cooperative video game play

John A. Velez *

Texas Tech University, College of Media & Communication, Box 43082, Lubbock, TX 79409, USA

ARTICLE INFO

Article history:

Keywords:
Video games
Cooperative video game play
Bounded Generalized Reciprocity
Pro-social behaviors

ABSTRACT

The theory of Bounded Generalized Reciprocity was examined to help explain why cooperative video game play can increase players' subsequent pro-social behaviors. Participants played a basketball video game with a helpful or unhelpful teammate against an ostensible opposing team. Participants in the control condition did not play a video game with their teammate. Participants then engaged in a one-shot simultaneous or sequential prisoner's dilemma game with their teammate and an opposing team member. In line with Bounded Generalized Reciprocity, donations to teammates were influenced by expectations of others to reciprocate pro-social behaviors. Specifically, playing with a helpful teammate confirmed expectations of in-group members to reciprocate pro-social behaviors and led to increases in pro-social behaviors between teammates. Playing with an unhelpful teammate disconfirmed expectations of in-group members to reciprocate pro-social behaviors and led to decreases in pro-social behaviors between teammates. Interestingly, playing with a helpful teammate increased participants' donation to out-group members even though participants did not expect them to reciprocate. The current study emphasizes the importance of pro-social reciprocity expectations in predicting people's pro-social behaviors and the impact cooperative video game play can have on such expectations.

1. Introduction

Previous research examining the effects of video games has mainly focused on the ways violent video game content may negatively influence players' subsequent pro-social and aggressive behaviors. Additionally, the extant research has relied heavily on the preconception of video games as a solitary hobby (Anderson et al., 2010). This, however, does not reflect how the majority of people experience contemporary video games (Entertainment Software Association, 2013). A growing number of studies have begun to emphasize the social contexts in which video games are being played (Cole & Griffiths, 2007; Lim & Lee, 2009; Peña & Hancock, 2006; Yee, 2006). The shifting of players' focus to real social interactions while playing violent video games seems to drastically change the relationship between violent video game exposure and players' subsequent behaviors. For example, researchers have found that playing a violent video game cooperatively with others can reduce players' aggressive feeling (Eastin, 2007), cognitions (Schmierbach, 2010; Velez, Mahood, Ewoldsen, & Moyer-Guse, 2014), and behaviors (Velez, Greitemeyer, Whitaker, Ewoldsen, & Bushman, in press) while increasing pro-social behaviors (Ewoldsen et al., 2012; Greitemeyer & Cox, 2013; Greitemeyer, Traut-Mattausch, & Osswald, 2012; Velez et al., 2014) and empathy (Greitemeyer, 2013).

Although previous video game research examining individual players has utilized several theories (i.e., General Learning Model; Buckley & Anderson, 2006), *social* video game research is lacking an overarching theoretical framework suitable to predict the effects of complex social interactions during video game play. Research suggests the theory of Bounded Generalized Reciprocity (Yamagishi, Jin, & Kiyonari, 1999) may provide a potential explanation of players' behaviors when playing with others (Velez & Ewoldsen, 2013; Velez et al., in press). However, the theory of Bounded Generalized Reciprocity has not been extensively tested within virtual environments (i.e., video games) and it is unknown if the theory's basic tenets are applicable to social video game play. The current study will provide the first examination of this theory within the context of social video game play. In an effort to provide a clear test of the theory, the current study will utilize a non-violent video game to remove any confounding explanations of players' subsequent social interactions that could be explained by exposure to violent content.

* Tel.: +1 (806)742 6500.
E-mail address: john.velez@ttu.edu

http://dx.doi.org/10.1016/j.chb.2015.02.015
0747-5632/

1.1. Bounded Generalized Reciprocity

Previous research within the Minimal Group Paradigm (MGP) was originally interested in the critical factors that lead to in-group and out-group biases. Tajfel, Bilig, Bundy, and Flament (1971) created "minimal" groups that were devoid of any factors that may contribute to the emergence of such biases (i.e., communication, prior history, similarities, conflicts of interests, and shared fate). Researchers found that, even in minimal groups, people donated more money to in-group members than out-group members (i.e., in-group favoritism). These results were interpreted to suggest social categorization was sufficient to foster in-group biases and favoritism.

Social Identity Theory (Billig & Tajfel, 1973) was proposed to explain why minimal groups will engage in in-group favoritism. Social Identity Theory suggests that positively evaluating our group identity compared to relevant out-groups can have beneficial effects on our self-esteem. In an effort to evaluate our groups positively, Social Identity Theory proposes that we engage in behaviors that make our groups favorably distinct from out-groups (i.e., donate more money to in-group members than out-group members; Billig & Tajfel, 1973; Tajfel et al., 1971).

Researchers (i.e., Rabbie, Schot, & Visser, 1989) not convinced by Social Identity Theory revisited the experiments that led to its creation – research on the MGP. Critics argue that minimal groups are "not as minimal" as Tajfel et al. (1971). During the original MGP studies, in-group and out-group members were asked to allocate money to each other in simultaneous prisoner's dilemma games (i.e., donations of partners were revealed to each other at the same time). However, participants were fully aware that the money allocated to them was determined by other in-group or out-group members thereby, introducing an element of interdependency between all participants. Researchers have suggested that interdependency between participants may account for differential treatment of in-group and out-group members in the MGP experiments. For example, Karp, Jin, Yamagishi, and Shinotsuka (1993) examined whether in-group favoritism occurred in minimal groups that did not have an element of interdependency between them. Interdependency was completely removed for some group members by guaranteeing to pay half the participants a fixed amount of money at the end of the experiment. Thus, these participants' outcomes were not dependent on other in-group and out-group members. The results indicated that group members who were not dependent on other participants did not demonstrate in-group favoritism while those who were dependent on others demonstrated the in-group favoritism.

These results suggest that social categorization is not sufficient to evoke in-group favoritism. At least in the original MGP experiments, it seems that being dependent on in-group and out-group members' monetary donations drives in-group favoritism. However, this is incongruent with Social Identity Theory. If participants were only interested in creating a positive social identity then the promise of a set payoff at the end of the experiment should not have influenced their behaviors. If Social Identity Theory processes cannot explain in-group favoritism in the original MGP experiments then why do in-group members allocate more money to other in-group members compared to out-group members?

A series of studies supporting another theory of inter-group behavior named Bounded Generalized Reciprocity (Yamagishi et al., 1999) suggest that people's behaviors in the MGP experiments are determined by self-interest and not their social identity as predicted by Social Identity Theory. That is, people will behave in a manner that maximizes their own outcome as compared to the overall outcome of their group. Bounded Generalized Reciprocity proposes that during inter-group situations people will behave positively toward those who are expected to reciprocate such behaviors which effectively protects and furthers one's self-interests. Furthermore, Bounded Generalized Reciprocity suggests that people naturally expect in-group members to reciprocate positive behaviors while out-group members will not (i.e., the Group Heuristic; Yamagishi et al., 1999). Therefore, in-group favoritism in the original MGP experiments is proposed to be a function of people's innate expectation of in-group members to reciprocate positive behaviors compared to out-group members.

Corroborating research has demonstrated that in-group favoritism does not occur when participants equally expect in-group and out-group members to reciprocate monetary donations. Yamagishi and Kiyonari (2000) increased people's low expectations of out-group members to reciprocate positive behaviors by changing the format of the simultaneous prisoner's dilemma game (i.e., commonly found in MGP experiments) to a sequential game. In the sequential prisoner's dilemma game people are told they will donate to their partner first and their partner will receive this donation before making a donation decision. In other words, people believe their partner will know how much money was donated to them before their partner decides how much they want to donate in return. Research has shown that people believe their partner in the sequential prisoner's dilemma game will reciprocate a positive behavior (i.e., a high donation) regardless of group membership. This is because people believe they can induce their partner to behave positively by directly giving them a favor first which should elicit a favorable response from any group member (i.e., in-group or out-group; Hayashi, Ostrom, Walker, & Yamagishi, 1999; Watabe, Terai, Hayashi, & Yamagishi, 1996). In line with predictions of Bounded Generalized Reciprocity, Yamagishi and Kiyonari (2000) demonstrated that in-group favoritism does not occur when minimal groups play a sequential prisoner's dilemma game compared to when they play a simultaneous prisoner's dilemma game. The current study aims to replicate the work done by Yamagishi and Kiyonari (2000).

H1. Participants in minimal groups will demonstrate in-group favoritism in a simultaneous prisoner's dilemma game but not in a sequential prisoner's dilemma game.

2. Present research

Early studies supporting the theory of Bounded Generalized Reciprocity demonstrated that minimal groups commonly found in the MGP contained elements of interdependency (e.g., Karp et al., 1993) and therefore, were not minimal as Tajfel et al. (1971). The current study extends the theory of Bounded Generalized Reciprocity to encompass interactions between groups that have an extra layer of complexity beyond interdependency. Specifically, the current study is interested in examining the pro-social behaviors of interdependent in-group and out-group members that also have a history of previous interactions (e.g., playing a video game against each other in teams). Additionally, the current study aims to determine if teammates' pro-social behaviors toward each other after cooperative video game play can be explained by Bounded Generalized Reciprocity predictions.

Previous research suggests the theory of Bounded Generalized Reciprocity may provide valuable insights into the effects of cooperative and competitive video game play. For instance, video game players report engaging in the most helpful behaviors during social video game play when interdependency between teammates is the highest (Velez & Ewoldsen, 2013). This is congruent with previous research supporting the theory of Bounded Generalized Reciprocity that suggests pro-social behaviors within and between groups is