

TU/e Human Technology Interaction

Intro to HTI Domain | Project Proposal

Apply Social Control to Decrease Aggressive Behaviors Among Players in Online Social Game Play

0981487

Ruixin J. Zhang

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Abstract

As online social gaming becomes very popular, the effect of those games on aggressive behaviors becomes a relevant issue. Research has shown that violent video games can increase aggression. Other game characteristics, such as competition, difficulty, pace or action and players' participation, such as the performance, attitudes and relatedness of other players, also have effects on aggression. Especially in social gaming, players' participation is crucial as it influences other characteristics. Therefore, the research focuses on hypothesis that applying proper social controls may influence players' participation and result in more engaging game experience and less aggressive behaviors among players.

1. Introduction

Most of today's online games are about violence (Koster, 2005). Research has shown that exposure to violent video games is associated with higher levels of aggressive behavior, aggressive cognition, aggressive affect, and physiological arousal (Anderson & Bushman, 2001; Anderson et al., 2004). However, why violent games can cause more potential aggressive behavior is still unclear. Besides, aggressive behaviors may not be caused by violence or violence elements alone (Adachi & Willoughby, 2011). Adachi and Willoughby (2011) mentioned that competitiveness, difficulty, and pace of action are also related to aggressive behaviors. Video games that are too fast paced or too difficult for the player are likely to increase frustration, anger and other negative emotions, which might activate aggressive thoughts.

Social gaming is becoming popular, as socializing is the number one motivation for playing digital games (Nielsen Interactive Entertainment, 2005). Besides playing with real and present friends, online social gaming also offers possibilities for playing against or with other human players. Under this game mechanism, other players' participation may influence the difficulty and pace of action of the game, which will in turn affect aggression. For instance, some players often criticize, humiliates each other verbally or nonverbally online. Those behaviors may also have negative effects on aggression. For instance, in a competitive play, one may meet players that are too strong and acting aggressive behaviors. In a collaborative play, there might be cooperation issues that typically **also** happen in online groups. Matzat (2009) proposed three typical problems existing in online groups: opportunity problems, such as free-rider problem and the volunteers' dilemma; problems of trust; and problems of loyalty. Those problems may also exist among online social gaming players. The problem of competitors can be related to player matching system design according to individual skills' level. For the other three typical issues among co-players, applying proper social controls in online social gaming might help to influence players' participation according to Matzat (2009).

2. Related Research Extension

2.1 Aggression Models for Social Gaming

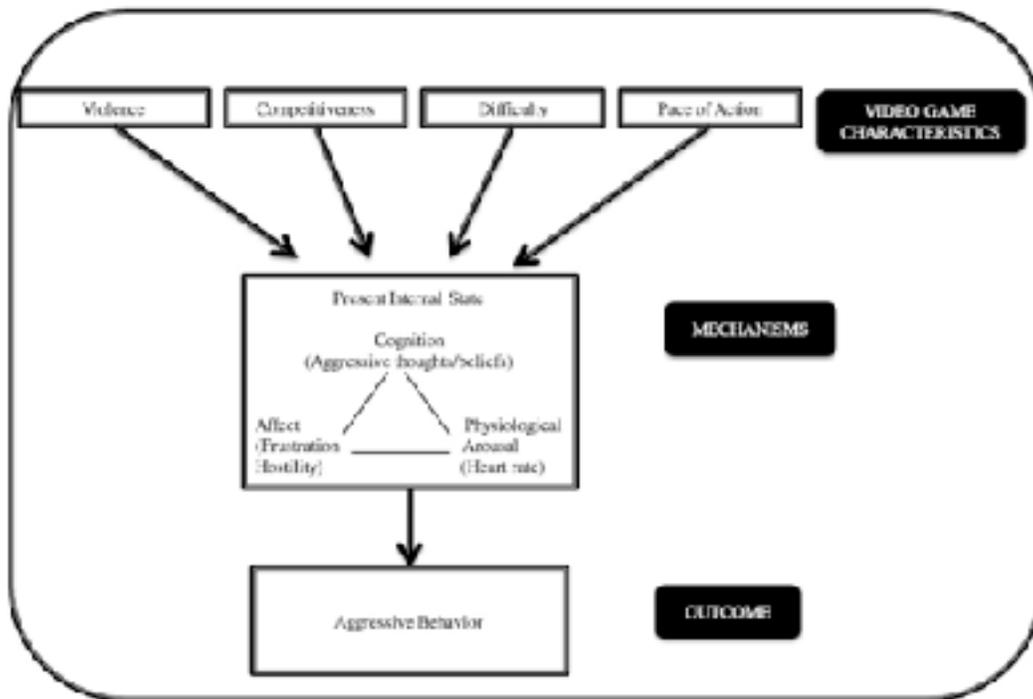


Fig. 1. How video game characteristics might influence aggressive behavior

Currently, most of the popular games have violence elements (Koster, 2005). Although researches established that violent video games increase aggression with the aggression defined as behavior that is intended to harm another individual (Coie & Dodge, 1998); there might be publication bias (Ferguson, 2007a) and experiment limitations (Adachi & Willoughby, 2011). From the previous investigations, there are two major limitations. First, most of those experimental studies that comparing the effects of violent versus non-violent video games on aggression didn't considerate other game characteristics such as competitiveness, difficulty, and pace of action. Second, previous experimental studies have tended to use a measure of aggression that may also measure competitiveness, which leads to questions about whether violent video games are related to aggression or competitiveness. With these suspicions, Adachi and Willoughby (2011) proposed the model of *how video game characteristics might influence aggressive behavior* based on the General Aggression Model (GAM) created by Anderson and Bushman (2002). In their model, they mentioned four main video game characteristics, namely violence, competitiveness, difficulty and pace of action, which may influence aggressive behavior through the mechanisms of internal state variables such as physiological arousal, aggressive cognition, and aggressive affect. Competitiveness may influence aggressive cognitions by activating associative links between aggression and competition developed

through a variety of past experiences with competitive situations that have resulted in aggressive outcomes. Competitiveness may also influence physiological arousal and aggressive affect, such as frustration or hostility. Difficulty may influence physiological arousal, frustration, and hostility. For example, games that are more difficult tend to produce more frustration. In addition, pace of action may be linked to physiological arousal, with faster games leading to elevated levels of physiological arousal.

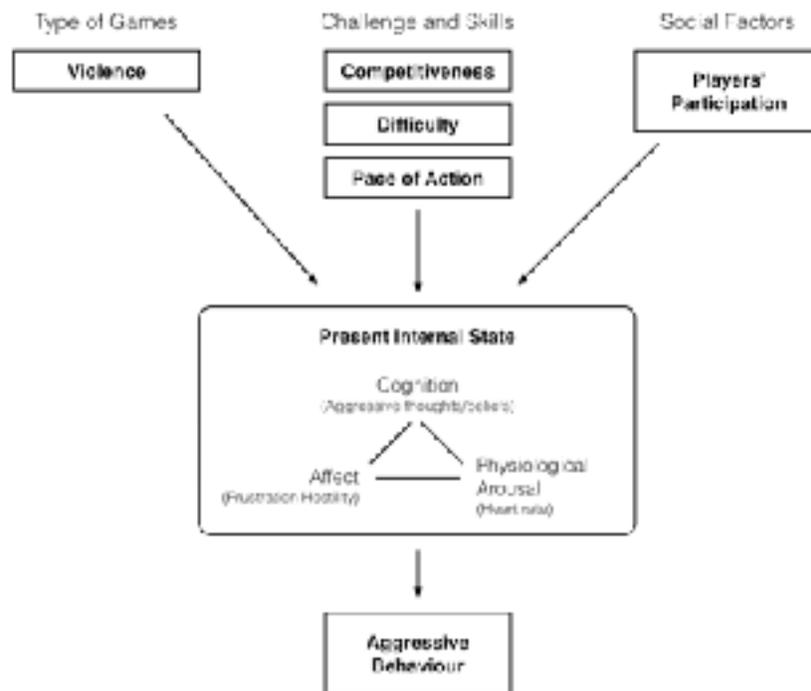


Fig. 2. How video game characteristics might influence aggressive behavior in online social gaming

Based on that previous research and consideration of the social context in online social gaming, I proposed the model of *how video game characteristics might influence aggressive behavior in online social gaming*. Under a social context, other players' participation works as another important game characteristic that will affect general performance, competition, difficulty, and pace of action, which may result in effects on aggression (see Fig. 2). Those social game characteristics affects on players' internal state variables to influence aggressive behavior. The characteristics of the online social gaming can be divided into 3 categories: type of the game (violent or non-violent); challenge and skills (competitiveness, difficulty and pace of action); and social factors (other players' participation in competitive and collaborative play).

2.2 Research Focus and Limitations

Violence nature of lots of popular online gaming is well stabilized, so as in other media for entertainment. However, why violence is related to aggression is still unclear. Reasons why violent games can increase potential aggressive behavior and how to manage violence affects to decrease aggressive behavior are out of the research scope of this research. From other perspectives of game design, the flow theory (Csikszentmihalyi, 1990) is widely used to create balance between high environmental opportunities for action (challenges) and adequate personal resources in facing them (skills) for better performance of game players. Performance demonstrated effects on player enjoyment, in particular on positive affect, competence, frustration and hostility (Gajadhar, De Kort, & Ijsselstein, 2008), which may affect on aggression. Logically, winners experienced more enjoyment in playing than losers did, thus less cognition and thoughts of aggression. The effects of flow theory should be used in online social game design to decrease aggressive behaviors. During online social gaming, other players' participation, which will also influence the competition, difficulty and pace of action, works as a reflection of a good or bad game design.

Therefore, this research focuses on the social factor characteristics of online social gaming that other players' participation may have important effects on aggression.

Gajadhar et al. (2008) conducted related experiments indicating that a co-located co-player significantly adds to the fun, challenge, and perceived competence in the game. The level of social presence influenced aggression. These findings illustrate that social context is an important determinant of player enjoyment and should be incorporated in models of player experience. They also found that familiarity also proved a relevant determinant of player enjoyment. Interestingly, more aggression (verbal aggression and hostility) was reported among friends than among strangers. However, research haven't explore whether these feelings were sincerely negative, or rather should be interpreted as friendly banter.

For player as competitors, those players' participation that may influence aggressive behaviors is more related to competition. One may lose the game because of strong competitors. The frustration, anger, and hostility caused by losing may induce aggressive behaviors. However, in a collaborative play, not only winning or losing the game but also relationship between the co-players may have effects on aggression. Cooperation problems exist because of lack of trust, free-riding and lack of group loyalty (Matzat, 2009). For example, one player may not help other players while they are dying for individual interest, although this behavior may cause lose of the game, which may cause

aggressive behaviors among co-players. However, little research has focused on these problems in online social gaming so far. For the purpose of decreasing aggressive behaviors caused by other player's participation in a collaborative play against others (human, or non-human mediated competitors), I narrowed down the research focus to applying social controls on the three typical problems existing during the co-play: opportunity problems; problems of trust; problems of loyalty.

2.3 Indirect Social Control Theory

During a collaborative play against other human, or non-human competitors in online social gaming, the players have some common goals, namely win the game cooperatively. At the same time, they have individual goals and interests. The fulfillment of individual goals can sometimes contribute to the fulfillment of common goals, but not always. In specific situation of social gaming, the fulfillment of individual goals is in conflict with the fulfillment of common goals. For instance, one of the major individual goals is to survive, but one may need to sacrifice one's own life for common goals. This is also a typical insight from group sociology theory (Homans, 1951): namely we all have some common goals. This explains why social interactions among players are problematic. An individual's goal fulfillment is not only dependent on one's own behavior, but also other player's behavior within the group (and vice versa). This theory may also be applied in online social gaming. Some research has shown that bad behaviors exist in online social gaming (Shim, Kim, & Kim, 2014). However, few researchers have paid attention to this kind of problems in social gaming.

According to the interdependences between the two types of goals and interest, Matzat (2009) defined those goals that need social interaction to achieve as relational goals. He also proposed three social control policies to influence group members' participation according to their relational interests levels. Those control policies, if used in social gaming, may have positive effects on players' participation. That is, game designer, as social gaming group administrator, can make use of three different 'policies' from indirect to direct social controls according to the degree of relational interests. The research will focus on one of the policies, which is called indirect monitoring, being applied in online social gaming. According to the indirect control tools introduced by Matzat (2009), two ways can be used as indirect social controls to build up and maintain a satisfying relationship among game players, which will in turn decrease potential aggressive behaviors caused by players' participation problems. In social gaming, frame-stabilizing tools work by increasing the salience of game and the winning goal. Indirect monitoring tools work through relational signals that indicate the individual's interest in conformity to the rules and thereby indirectly also his/her conformity to the group frame. For example, the player sends signals to his/her co-player, and to the whole collaborative

group. Indirect monitoring tools provide opportunities and incentives for players to send relational signals that indicate accordance to the group common goal, which is win the game. These tools have the effect that the player may restrict fulfillment of his/her individual short-term goals because (s)he takes into account the relational signal of his/her online behavior. As the salience of the game design is a complicated mechanism that needs more investigation, this research focuses only on applying indirect monitoring tools, namely sending relational signals to other game players.

2.4 Research Question and Hypothesis

According to related research, the research question is revised as: *Can applying indirect monitoring (allowing and encouraging sending relational signals) in online social gaming help in decreasing aggressive behaviors among game players?*

The research focuses on the effectiveness of indirect monitoring on decreasing aggressive behaviors and compare effectiveness of different kinds of relational signals. Possible relational signals are texts messages, audio channel, and other non-verbal signals. From the theory, the hypothesis is during online social gaming, applying proper indirect monitoring (namely sending relational signals) tools during the play can lead better results on reducing aggressive behaviors and improving engaging experience. Besides, for different relational signals, signals via audio channel is expected to be more effective than non-verbal signals during and after the play.

The independent variables are *to allow indirect monitoring tools such as* sending verbal signals, sending texts signals, sending graphic signals *which are compared to* sending *no* signals *at all* during online social gaming. Participants will be invited to play 50-100 minutes on an online social game for two times, one with indirect monitoring and the other without indirect monitoring. Quantitative data on aggressive behaviors will be collected during and after the play. Dependent variables include a comprehensive self-report measure of player experience (the GEQ) (IJsselsteijn, de Kort, & Poels, 2008) and the aggression questionnaire (Buss & Perry, 1992), which includes self-reports, peer reports, teacher reports, or parent reports.

3. Research Method

3.1 Experiment Design

To answer the research question, three related experiments are employed. According to two different independent variables in the hypothesis, the first experiment (E1) is set as control group, in which players are not allowed to send relational signals to each other.

The second experiment (E2) is set as texts-signal group, in which players are allowed and encouraged to send texts messages to each other. The third experiment (E3) is set as verbal-signal group, in which players are allowed and encouraged to send audio messages to each other during the play.

Participants are randomly separated into three groups to play against an online group matched by the system to avoid possible system bias. This ensures that the two teams have equal skill level in general. Before each game starts, players are gathered together to meet with each other (only online) and be informed about the rules about sending signals during the game. Player experience and the aggression level are measured with a combination of self-report measures after the gaming.

3.2 Participants

Fifteen male video game players, 18 to 34 years of age, participate in the experiment. Lots of female people do not play Dota 2 video game; so female players are also excluded from the experiments. Game players who are older than 35 year old should not be invited to the experiment because their reaction time is longer than those who are young. Those participants should have at least 1 to 2 years of Dota 2 video game playing experience. Since Dota 2 is a relatively difficult game, which needs sophisticated skills to play, it's hard for new players to participate the test. The players who join need to have good skills and knowledge of the game. There are no nationality limitations for those players. However, they should all speak English or speak the same language in the same group due to communication requirements during the game. The participants are required to have basic Dota 2 game playing devices: laptop that runs steam and Dota 2 game software, a steam account and headphones. Participants are not allowed to quit the game in the middle of the game.

3.3 Apparatus

The game Dota 2 by Valve Corporation (2013) **will be** used in the experiments. Dota 2 is played in matches involving two teams of five players, each of which occupies a building called the “Ancient”. In the game, one team must destroy the “Ancient” of the opposite team in order to win the game. Each player controls a character called a “Hero”. The “hero” mainly works on leveling up, collecting gold, acquiring items, and fighting against the other team to achieve victory. The game has complicated controls, audio and message chat embedded, and a coach and visit mode which can get an overview of the whole game. The game is a good fit for this research experiment because it has audio channels and tests messages channels in the game. Players can simply hit one button on the keyboard to activate the channel. Furthermore, the game is accompanied with large sets of

music under different situations during the play. To win the game, game players need to have sufficient skills and good teamwork. Different strategies could be used under different playing situation. The 5 competitors in the opposite team are matched based on the overall skills the team have. Normally, each game cost 50 to 60 minutes to play.

3.4 Procedure

All the players need to sign the consent form via emails before the experiment. The experiment is held online. The participants are separated into 3 groups (5 in each). 5 players are invited to the same group for collaborative play in each experiment randomly. During the game play, they are allowed to choose the heroes according to their own playing styles or strategies. No limitation is set for the game play except the way of sending signals to each other.

During the three experiments, players' game playing screen will be recorded. In the first non-signal experiment E1, individuals' verbal and nonverbal behaviors are recorded using via Skype. In the second non-verbal signal experiment E2, players' individuals' verbal and nonverbal behaviors and the texts communication are recorded. The texts communication is embedded in the game system in Dota 2. The texts are popped up on the screen. In the third verbal signal experiment E3, players' individuals' verbal and nonverbal behaviors and the oral communication are recorded. After each experiment, the players in the related experiment are required to fill in a survey individually, which is used to test their game experience and aggression levels. Lastly, the participants are debriefed, paid and thanked for participation.

For each group, the experiment lasts around 80 minutes (50 to 60 minutes for game play and 20 minutes for the survey). The game is held online during weekends, since it's a relatively long time period. Each participant receives a standard compensation of 20 euros for their participation.

3.5 Measures

A questionnaire is used to test on two scales of the game paly: player experience and aggression. Player experience is measured with the Game Experience Questionnaire (GEQ) by IJsselsteijn, de Kort, & Poels, which consists of seven subscales: Positive affect, Negative Affect, Flow, Sensory Immersion, Tension, Challenge and Competence. For the aggression scale, the Trait Aggression questionnaire by Buss & Perry is used. Those subscales include Physical Aggression, Verbal Aggression, Anger, and Hostility. Then the questionnaires are combined to one including about 60 items. Participants could respond on 5-point Likert scales, ranging from 1 (not at all) to 5 (extremely).

ANALYSIS? I Don't see how you can conclude anything from just three groups: you need multiple groups in each condition to see if communication helps.

4. Social Impact and Ethical Considerations

Playing digital game as one of major popular entertainment, which works as eudaimonic level to increase happiness and fun and improve well-being. The ethical question surrounding games as murder simulators, games as misogyny, games as understanding traditional values, and so on are not aimed at games themselves. They are aimed at appearance of the game. Most games are about violence, power and control currently. One may think that digital games may harm people's mental mode and cause bad behaviors. However, playing digital games, even those with violence elements, shouldn't be a serious problem. Comparing to other popular media in modern countries, TV shows and films, digital gaming play a similar role to entertain people. Besides, practically any form of entertainment includes violence. The real reason that causes bad effects on people might be the shallow violence instead of violence itself. Koster (2013) mentions that 'A game is like a trellis, a trellis can shape how a plant grows.' All artistic media have influence on what people say and do. Game should be designed leading people how and what to behave, instead of having bad effects on them.

Therefore, for the intention of decreasing bad behaviors caused by violence in the game, the game should be designed with more meaningful values. The game's victory condition must not be about being on top or being at the bottom. Let user enjoy and win the game are not the only goals we pursue in a long run. Instead, the goal must be something else, perhaps ensuring the overall survival of the tribe or valuable relationship with others. Furthermore, game should teach faith, love and hope, help people to learn wisdom, justice, courage and temperance. The industry needs more meaningful game that pursues values in human life.

In a collaborative play of online social gaming, communications are allowed via different kinds of relational signals. According to the theory, those relational signals could be used to maintain a satisfying relationship between players. Research has shown that strength, multiplexity, symmetry, and status equality if a relationship increases frequency of interaction and trust provide increased opportunities and payoffs for ethical behavior, whereas empathy, psychological proximity, and the cost of losing a strong, multiplex relationship constrain unethical behavior (Brass, Butterfield, & Skaggs, 1998). The relationship is valuable even in social gaming in an online virtual world. More relational cues for both cooperation and competition play should be included in future gaming for creating a harmonious online social gaming group, which in turns, may have positive effects of decreasing aggressive behaviors caused by playing video games.

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Dear Ruixin,

Well written paper. It reads easily and combines gaming with group behavior. I have many questions on the design, but in general the core of the idea is presented quite well.

Martijn

Grade: 8