Research on the Effects of Cooperation in Multiplayer Games on Players' Behavior

Ziyi He[1,a,*]

[1] *School of Psychology, University of Birmingham, Birmingham, B15 2TT, the UK*
a. zxh175@student.bham.ac.uk
*corresponding author

Abstract: Cooperation in multiplayer games is crucial to competitive multiplayer games. Mechanisms in the settings of multiplayer games are influencing players in a way that leads them either to be extremely positive towards the success of the result or completely disappointed by their experience. It is questionable whether designs for cooperation in games trigger coordination between players' cooperative behavior and reliance and can possibly lead to cooperation between players, with the following consequences if the design fails to achieve its original goal. A literature review and a number of case studies will be used for analysis of player behavior, such as Tobias and Christopher's experiment of video game play on Mario Kart: Double Dash. This paper reveals multiplayer games are producing certain levels of cooperative behavior, and trustable relationships are formed since the cooperation helped build the connection in the game.

Keywords: cooperative games, cooperative behavior, video games, experience in games, trust

1.   Introduction

Most multiplayer video games are designed for players to fulfil the purpose of challenging each other by combining several players' goals into one and making people work cooperatively even when they only know each other online. As a matter of fact, certain studies found that when players are given opportunities to help their partners, they will return the favor when they are aware that they were helped by their partner before [1]. This behavior is so common that the player would not notice or be aware of this phenomenon [2]. Tobias and Christopher suggest that reciprocity is the power that triggers people to help each other when they just know each other for several minutes online [3]. It is a huge component of player cooperation in games, especially when they face the difficulty of limited resources. The only way to deal with the problem is to fulfil each other's needs or benefits in order to achieve one's goal. This dissertation means to discover the influence that settings of multiplayer games can have on players' behavior, which is how they affect players' performance on cooperation. The research method will be covered by literature analysis, and example game analysis and discuss the comparison between analysis in an example game and experimentation in literature. The result of the cooperative behavior of players is likely to be helpful for the game designer and an analysis of players' ratings of the game. Later studies can also be investigated based on the research on how players perform when game settings are affecting their behaviors.

2.   Theoretical Cooperative Behavior

It has been questioned why individuals would choose to help others at the cost of their own time and strength [4]. It has been suggested that reciprocity could be a cause related to helping actions; thus, plenty of variables still appear and affect the progress. There is an expectation on other teammates in multiplayer games that appears before any behaviors. Commonly, cooperative behavior is expected as a foundation based on prior players' experiences [5]. Players are likely to behave according to how they have behaved in the past, and this is normally how cooperation in games develops. On the other hand, expectations for each player could be various. It depends on how easily a person could have a reliable relationship with another partner. This relationship refers to an individual and personalized trust [6, 7]. As an example, it could refer to the impression a stranger makes on the street or the feeling a player has when they encounter their new teammates. The behaviors can vary as people confront different attitudes. People who are cooperative are more likely to work with their teammates, and cooperation is formed. People who are more selfish are essentially destroying trust in relationships and leading to failure. When a player receives high levels of trust for feedback, the base of trust for his teammates is built on it, which helps him cooperate with his future teammates and encourages cooperation between him and his teammates [7-8]. One theory that was suggested by Liu is the intervention in games made by prosocial behavior that is similar to the action of reciprocity in gaming; they both emphasize on helping other people once the gamer receives benefits or just fulfill the will on helping. The difference that Liu investigated was the factor of gender; compared to other components such as the relationship between partners or the will to help in games, different gender also makes an essential influence in gaming when it comes to cooperation [9]. This factor is easily overlooked and ignored since the gender difference is usually considered less significant in research related to games. Considering the stereotype that girls are less fond of games but more willing to help their same-gender partners in prosocial behavior [10]. Some researchers have also come to the conclusion that prosocial behavior can be encouraged by playing cooperative video games [11]. Trust is especially important in gaming, where it is needed for players to cooperate[3]. Though its production might not be reliable, the process somehow promotes the development of and attitude towards another partner [12-13].

3.   Literature Review of Cooperative Behavior

To investigate the effects on cooperative behavior in games, literature analysis is done on Tobias and Christopher's experiments [3]. By taking their experiment as an example for analysis, we can see that their purpose is basically to use participants 'experiences to compare single-player and cooperative players and a social dilemma to test the level of relationship between participants who had cooperative experiences. It is testing if participants would expect the coins that are given to other paired participants (who face the same condition but have their identities hidden). That is the assessment for both sides and a confrontation for trust and cooperative behavior. As a result, Tobias and Christopher concluded that playing cooperative games enhanced the effect on cooperative behavior in the experiment comparing single-player and multiplayer games [3]. Since there are positive and unexpected consequences. That is, cohesive results are received. Participants who experienced the cooperative part of the experiment showed cooperative behavior and were willing to give up personal interests, even though they were not aware of the identity of the other partner. Thus, it is suggested that participants displayed more coherence and trust in the team-player video game condition compared to the single-player video game condition. Another finding has shown that participants who attend cooperative video games in teamwork present higher levels of cooperative behavior than participants who had experiences only with single players, thus having fewer active wills for cooperation with themselves [14]. This parallel research suggests that cooperative behavior is a type

of catalyst that encourages players to cooperate, especially when they have personal experiences with cooperation. However, studies also investigated how those several types of videos could result in negative outcomes for cooperative behaviors, as video games that include violent or neutral content might lead to decreases in helping behaviors and empathy generation in players' thoughts [15].

3.1. Effects of Cooperative Behavior

From earlier research, it can be concluded that results on cooperative behavior are triggered by individual trust and prior cooperative experience [3]. These are factors that affect teamwork in the formation of relationships between players.

A study published by Manser, states that factors such as cohesion, interactions, trustworthiness, and cooperation influence teamwork [16]. Among these factors, the researcher especially points out that trust is the most essential and crucial to successful teamwork [17]. Trust means whether players can achieve the same common goal and strive to achieve this goal, and trust is the key to cooperation. Because it controls what the player decides to do, either believes that his partner is willing to work together at the expense of personal interests as a larger goal, or decide to sacrifice his partner and hard work just to obtain personal interests [18]. It enables players to combine forces to work cooperatively, but it still varies and is uncontrolled by plenty of variables. As trust would be expected and observed at a certain level first, it would be assessed by players toward other partners while cooperation is happening. Though the collaboration progresses, the level of trust is influenced by the players' cooperative extent based on the players' cooperative experience and trust expectations of other people, which means faith in the next partner that he is likely to cooperate.

3.2. Trust Promoting Cooperative Behavior

Trust is important for the establishment and maintenance of social relationships between people [19]. As Bosma suggests, the positive influence of collaboration instead of punishment [20]. Trust is the connection between people in cooperation; though players cooperate in game, prosocial behaviors and cooperative experience are in effect influencing how players decide to make decisions that either benefit themselves only or contribute their efforts so the team can be stronger. Trust is then subtly producing effects on the process and helping players make decisions. Since trust depends on the involvement of expectations of players motivations on whether they decide to engage in prosocial behavior involving conflicts between one's interests and the team's interests [21]. Once players decide to make all the decision that contribute to the team, which in different ways to help the team, then the expectation of trust is formed in their minds, and they are all expected to make contributions to the group. Thus, trust encourages players to collaborate as a strong bond in a team, and possibly the stronger this bond, the more united and longer this team holds.

4. Conclusion

On the basis of the research, a comparison of single-player and multiplayer games reveals that the fostering of cooperation advances the formation of the most important relationship between players, which is trust. Though the conditions still matter and are controlling factors in the specific environment of playing, As the types of the game and content could affect the cooperative behavior, possible decreases and increases are predicted by Tobias and Christopher based on the results of the participants' behaviors in earlier studies. What matters to individuals also controls part of the process of the game since each person has different expectations on how they believe others will cooperate in the game. Though these factors could be discussed as variables for designing an experiment to find out how important they are in affecting players' behavior, future research could also concentrate on the formation of teamwork relationships between players. Thus, analysis of cooperative behaviors,

both in the literature review and in experiments, can be improved. Furthermore, a comparison of teamwork factors could be investigated.

References

[1]   Gallucci, M., & Perugini, M. (2000). An experimental test of a game-theoretical model of reciprocity. Journal of Behavioral Decision Making, 13, 367–389.

[2]   Burger, J. M., Sanchez, J., Imberi, J. E., & Grande, L. R. (2009). The norm of reciprocity as an internalized social norm: returning favors even when no one finds out. Social Influence, 4, 11–17.

[3]   Greitemeyer, T. and Cox, C. (2013), There's no "I" in team: Effects of cooperative video games on cooperative behavior. Eur. J. Soc. Psychol., 43: 224-228. https://doi.org/10.1002/ejsp.1940.

[4]   Henrich, J., & Muthukrishna, M. (2021, January 4). The Origins and Psychology of Human Cooperation. Annual Review of Psychology, 72(1), 207–240. https://doi.org/10.1146/annurev-psych-081920-042106.

[5]   Bell, R., Sasse, J., Möller, M., Czernochowski, D., Mayr, S., & Buchner, A. (2016). Event-related potentials in response to cheating and cooperation in a social dilemma game. Psychophysiology, 53(2), 216–228. https://doi.org/10.1111/psyp.12561.

[6]   Acedo-Carmona, C., & Gomila, A. (2014). Personal trust increases cooperation beyond general trust. PLoS One, 9(8), e105559. https://doi.org/10.1371/journal.pone.

[7]   Yamagishi, T., & Yamagishi, M. (1994). Trust and commitment in the United States and Japan. Motivation and Emotion, 18(2), 129–166. https://doi.org/10.1007/BF02249397.

[8]   Yamagishi, T., Cook, K. S., & Watabe, M. (1998). Uncertainty, trust, and commitment formation in the United States and Japan. American Journal of Sociology, 104(1), 165–194. https://doi.org/10.1086/210005.

[9]   Liu, X., Huang, H., Yu, K., & Dou, D. (2020). Can video game training improve the two-dimensional mental rotation ability of young children? Lecture Notes in Computer Science, 305-317.

[10] Tisak, M. S., Holub, S. C., & Tisak, J. (2007). What nice things do boys and girls do? Preschoolers' perspectives of peers' behaviors at school and at home. Early Education and Development, 18(2), 183-199.

[11] Dolgov, I., Graves, W. J., Nearents, M. R., Schwark, J. D., & Brooks Volkman, C. (2014). Effects of cooperative gaming and avatar customization on subsequent spontaneous helping behavior. Computers in Human Behavior, 33, 49–55. https://doi.org/10.1016/j.chb.2013.12.028.

[12] Adachi, P. J. C., Hodson, G., Willoughby, T., & Zanette, S. (2015). Brothers and sisters in arms: Intergroup cooperation in a violent shooter game can reduce intergroup bias. Psychology of Violence, 5(4), 455–462. https://doi.org/10.1037/a0037407.

[13] Stiff, C., & Bowen, T. (2016). Two-player game: Playing casual video games with outgroup members reduces levels of prejudice toward that outgroup. International Journal of Human-Computer Interaction, 32(12), 912–920. https://doi.org/10.1080/10447318.2016.1212484.

[14] Greitemeyer, T., Traut-Mattausch, E., & Osswald, S. (2012). How to ameliorate negative effects of violent video games on cooperation: Play it cooperatively in a team. Computers in Human Behavior, 28, 1465–1470.

[15] Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A. et al. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries. Psychological Bulletin, 136, 151–173.

[16] Manser T. Teamwork and patient safety in dynamic domains of healthcare: a review of the literature. Acta Anaesthesiologica Scandinavica 2009; 53:143–151.

[17] Barrett J, Gifford C, Morey J, et al. Enhancing patient safety through teamwork training. Journal of Healthcare Risk Management 2001; 21:61–69.

[18] DeRosa D, Hantula D, Kock N, D'Arcy J. Trust and leadership in virtual teamwork: a media naturalness perspective. Human Resource Management 2004; 43:219–232.

[19] Zheng, W., Cao, S., Wang, Y., Yang, K., Chen, Y., & Song, G. (2021). The Impact of Social Value Orientation, Game Context and Trust on Cooperative Behavior After Cooperative Video Game Play. Psychological Reports, 124(3), 1353–1369. https://doi-org.bham-ezproxy.idm.oclc.org/10.1177/0033294120934705.

[20] Bosma E. (2019). Individual differences in social dilemmas: The effect of trust on costly punishment in a public goods game (Bachelor's thesis). Faculty of Social and Behavioural Sciences Theses, Utrecht University Repository.

[21] Balliet D., Van Lange P. A. (2013). Trust, conflict, and cooperation: A meta-analysis. Psychological Bulletin, 139(5), 1090–1112. Crossref. PubMed. ISI.