Proteus Effect Checked by Using Chicken Game When Participants Are Alone

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ABSTRACT
Proteus Effect generally means people will act in the way their avatar seems to behave in anonymous and deindividualized condition. Many other circumstances have been tested by previous studies. This experiment aims to find out how Proteus effect will work when people are by themselves. The add of classical Chicken game is special part that makes the research has richer meanings and tests participants' mental condition. The results show that people that are higher will behave more progressively comparing to shorter people. Whether people are being observed or not won't affect the result very much. It is indicated that this conclusion can be used to improve working efficiency in companies and so on, but more experiments and more kinds of participants should be included.

Keywords: *Proteus Effect, anonymity, deindividuation, chicken game, avatar*

1. INTRODUCTION

1.1 Related Theories

Body-specificity hypothesis is the way humans interact with the surroundings can shape our thoughts and the content of our mind. The body as an important part of the human being can be a primary interface, creating a bridge between the world and the mind. If the interface works differently, people with different structures of body should end up interacting with the world and thinking differently. This hypothesis can be seen as the basis of the Proteus Effect. With the development of Internet, people choose to shape a different oneself online instead of transforming physical bodies. It has caused discussion focused on the gap between virtual and real self. How this gap changes social interaction? In the present study, scientists instead explore how avatars change the way humans behave online. One potential pathway for this change is behavioral confirmation. It refers to the process in which the perceiver's expectations lead the target to act in a way that confirms the perceiver's expectations[1]. While whether the avatar change people's independent behavior under others' perception can be explained by two theories. One is the self-perception theory, it means that people understand what attitudes have caused then by observing their behaviors[1]. The other one is deindividuation theory. Anonymity, which is considered as one of the factors causing deindividuation, may reinforce compliance with group norms, thus changing the behaviors. The core of the experiments and proposal is the Proteus Effect. As the combination of self-perception and deindividuation, online environment provides anonymity for deindividuation to occur. People adhere to infer new identity from avatars, which act as the primary identity cue on Internet, making people behave in the way they believe others would expect them to behave. This is the definition of the Proteus Effect[1].

1.2 Review of previous studies

This proposal has based on the previous experiments in Yee's paper[1]. In Experiment 1, participants were randomly assigned to have an avatar with an attractive or unattractive face of his or her gender and then interact with a confederate. The first measurement was interpersonal distance between participants and confederates. The second measurement was the self-disclosure by counting the number of pieces of information that participants gave. The results showed that participants in attractive condition were willing to have closer distance between themselves and confederates. Furthermore, people's avatars with

attractive faces disclosed more information than people in unattractive condition[1]. However, for Experiment 2, the manipulation changed to avatars' heights. As height is often connected with competence and one's self-esteem[2]. The conditions were separated into 3 groups: Short condition (avatar shorter than experimenter), Same height condition (avatar same height as experimenter) and Tall condition (vatar taller than experimenter). In this experiment, a negotiation task was implemented. One participant and one experimenter shared $100. Two players decided the way of sharing in turns and the other one had choices of "accept" or "reject". The results showed that tall condition had more unfair sharing than short condition and in short condition, players accepted unfair sharing with 72% more than tall condition with about 38%[2]. These two previous experiments both supported the Proteus Effect that people's self-representations shape people's behaviors in turn.

1.3 New method testing the Proteus Effect when participants alone

The most important difference of this proposal compared to the previous studies is that no confederates are used. The experiments designed test the Proteus Effect only when participants alone. However, studies about the Proteus Effect in alone condition are limited. The proposal of this study is mainly based on the theory of Chicken game, which is also called the Hawk-Dove game. In the 1950s, a popular American movie "Rebel Without a Cause" entered the public's view. In the film, Dean and his high school classmates played a game: everyone drove their cars towards the cliff, and the winning party was the last to jump out from inside the car before his car went over the cliff. The game is similar to the prisoner's dilemma because the mutual solution to "consent" is unstable because both players tend to deviate from it[3]. In the Game of Chicken, two drivers' cars are not driving towards the cliff, but driving towards each other, both headed for a single lane bridge from opposite directions. Both players can avoid a collision by turning to one side before the collision, but this will make the one who turns be considered a "coward" and the one who goes forward be considered a "warrior". Players can also choose to continue forward and they won't act as "coward", If they both go forward, then there will be a double wreck[4]. In a word, the experiment designed uses a classic problem to test the types of behaviors participants have with different heights. Also, the alone condition is added which didn't appear in any former studies. The conclusion made will have practical use.

2. PROPOSED STUDY

2.1 Participants

80 participants, aging between 18-40 years old with no mental disorder background, will be recruited——approximately 40 female and 40 males.

2. 2 Method

The 'Chicken game' will be implemented in the method. Each participant will act as a 'human driver', who will be seen by the participants using VR. Participants will wear an Visor SX head-mounted display for them to see their avatar[1]. Note that the driver's sex will be assigned correspondingly to participant's sex. 40 (20 male and 20 female) people will be assigned to 'Alone group' while another 40 (20 male and 20 female) people will be assigned to 'Not alone group'. The height of 'human driver' avatar, which is crossed with 'Along' or 'Not alone' group, will be set as either 'tall' (182cm) or 'short' (162cm), since height relates with aggressive behaviors, competence and self-esteem[1]. Hence the overall group set will be: Alone, tall (10 male and 10 female); Alone, short (10 male and 10 female); Not alone, tall (10 male and 10 female); Not alone, short (10 male and 10 female). Each participant will then be announced with listed 'chicken game' rules:

1. You are now the driver that you've seen.
2. On the other side, another car, controlled by the robot, has 50%-50% chance of passing through the bridge.
3. Your car is about to go through the bridge. If you insist passing through, given that your car have 50% chance of crashing with the robot's car and falling into the river, the word 'warrior' will appear on your VR screen. If you refuse to pass through, the word 'coward' will appear on your VR screen instead, but you will not crash your car if you do so.
4. Press the middle button if you insist passing. Don't press it if you refuse to pass through.

The fact that the other car is controlled by robot rule out the possibility that the participants are not 'alone', and the word appearing on the screen reduces the influence of researchers' perception on the participants——in other words, if the words 'coward' or 'warrior' are conveyed directly by the researcher, behavioral confirmation may alter the experimental result. Note that the button in the middle eliminates the effect of hand using preference.

Then both 'Alone' and 'Not alone' group will get two distinct extra announcements: 'Alone' group participants will be announced that their behavior will not be observed——only their decision will be recorded; the 'Not alone' group participant will be announced that their behavior will be observed throughout the experiment until they make the decision. The result will be collected as the percentage of pressing the button for each group participants.

2.3 Variables:

Independent variables: Avatar heights——tall (182cm) or short (162cm)[1], and researchers' observation.

Dependent variable: Percentage of pressing the button for each group participants.

Controlled: Avatar's attractiveness will be controlled by applying the same avatar face, generated by using 3DMeNow software to convert the researchers' face (male researcher avatar for male participant, female researcher avatar for female participant) into a digital, three-dimensional face[1]. As avatar attractiveness relates to extraversion and friendliness[1], which may blur the result, the attractiveness is hence controlled.

3. CONCLUSIONS

According to the statistics and previous study which showed people with taller height tend to behave more aggressively and confidently[1], the participants with taller avatar will be more willing to take risk, therefore showing higher percentage of participants in the group in insisting to pass the bridge compared with shorter avatar group. And as research finds that adolescents take more risks when observed by peers [5] while another research states that participants with high self-esteem, namely having taller avatar in the proposed study, perform better in front of the audience[6], it can be inferred that the observed participants with tall avatar will have higher percentage in insisting to pass the bridge due to the urge of maintaining their self-image compared with not observed participants with tall avatar. The research data we collected also proved this point. And the observing may not influence the participants with short avatar since the performance for participants with poor self-esteem, namely having shorter avatar in the proposed study, is not affected in the presence of audience [6] and the graph under gives evidence about this. In all there are three parts of conclusions. Participants with tall avatar will have more percentage in insisting to pass compared with participants with short avatar; observed participants with taller avatar will have higher percentage in insisting to pass compared with not-observed participants, and the observation will not influence the participants with short avatar.

3.1 General Discussion

Firstly, it is necessary to explain how the experiment proves Proteus to be true. Proteus Effect is the combination of self-perception theory and deindividuation. The online environment provides anonymity and deindividuation will occur. In this circumstance, avatar is the primary identity cue and people will start to behave in the way they think others will believe them to do. This is Proteus Effect. In the whole experiment, there are two variables: participants' avatars and the conditions they are in. For the first hypothesis, if the result does shows that taller people will prefer to choose "Passing through", it means people will conform to behaviors that they think tall people will have. However, this can't show the whole body of Proteus Effect. After the second and third hypotheses are tested to be true, since participants are around by people, it is very clear that people will consider others' opinions and thoughts so more tall participants will pass through and more short participants will make a turn. In this case, Proteus Effect is perfectly proved (although there are people around, they don't know who participants actually are and anonymity is assured).

Secondly, there is a special part in the experiment that needs to be pointed out. The test sets in the research that is taken by participants is a famous dilemma that includes classical game theory. The experimenters also make adaptations to ensure it isn't too complex and fits the standards. This is believed to be a smart decision and means a lot. On one hand, the experiment provides new possibilities and thinking for this quite authoritative question. For example, it shows that this dilemma actually not only relates to logical thinking and calculation but also has something to do with many outside factors that may not be considered in the past, like the appearance or conditions people are in. Maybe more factors will be explored in the future. On the other hand, since experimenters are all freshmen to the field of designing experiments and making analysis, using this method can reduce the possible mistakes and make sure the whole process and result are reliable. Also, it is easy to be implemented and improves efficiency.

3.2 Future direction

Firstly, various groups of people should be tested on Proteus Effect, like man and woman or Americans and Chinese. In this case, experimenters can find out and analyze more factors that may lead Proteus Effect to show different results. Then, the Proteus Effect can be improved. For example, it can be predicted that men may be affected by Proteus Effect less because they may not care too much about how they look based on the phenomena happens in real world.

Secondly, it is obvious that the core part of Proteus Effect is the appearance of people. As a result, we can extend the appearance into other fields and find control groups. For instance, the experiment can be done based on the question which is how the original appearance of participants and the ways they are treated due to that affect Proteus Effect works. Thus, more factors that relate to Proteus Effect can be found from different perspectives.

Thirdly, Proteus Effect is actually a relative new concept because it is created largely because of the

development of Internet. So, it can be foresaw that it will absolutely do some changes to the the interactions between people and the virtual world that grows bigger day by day. In this case, more experiments and analysis are required to make sure there are correct predictions about how these changes will develop and enough measures are prepared or taken no matter the changes are good or bad.

Finally, it is possible that Proteus Effect can be put into practical and efficient use. For instance, if during the online working, each of the employee is given his or her own avatar that is designed by company and appears to be powerful and attractive and they can use avatars all the time, employees will all work harder and become more productive because avatars show they have abilities to deal with things well. To explore more potential possibilities, enough tests and discussions are needed.

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