The Meditational Role of Identification in the Relationship between Experience Mode and Self-Efficacy: Enactive Role-Playing versus Passive Observation

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Abstract

Based on Social Cognitive Theory, this study proposes a new concept—mediated enactive experience to understand game playing effects on self-efficacy in the context of a health promotion role-playing game. An experiment demonstrated that a mediated enactive experience afforded by game playing was more effective than a mediated observational experience provided by game watching in influencing self-efficacy. It was found that identification with the game character partially mediated the relationship between experience mode and self-efficacy.

Introduction

SERIOUS GAMES ARE DIGITAL GAMES designed with the purpose beyond entertainment, including but not limited to games for learning, games for health, and games for advocacy and social change.1 A number of serious games have been developed and demonstrated to be effective in increasing self-efficacy and influencing other psychosocial variables related to health promotion behaviors.2–6 However, the underlying mechanism of how these games achieve the effects is seldom investigated. One distinctive characteristic of digital games is their affordance for interaction and enactive participation. The first goal of the current study is to investigate whether enactive participation afforded by a role-playing game (termed as mediated enactive experience) is more effective than other modes of experience (e.g., passive observation) in influencing people's self-efficacy. The second goal is to examine how experience mode influences self-efficacy. In other words, what the mediator is for the relationship between experience mode and self-efficacy. Social Cognitive Theory7,8 is used as the theoretical framework to understand the mediated enactive experience afforded by game playing and the mediated observational experience provided by watching game play.

Literature Review

Self-efficacy, enactive experience, observational experience

Self-efficacy is a key variable in Social Cognitive Theory (SCT).7 Self-efficacy is “beliefs in one’s efficacy to exercise control over one’s functioning and events that affect one’s life.”8(p78) According to SCT, self-efficacy is the foundation of human motivation and accomplishments because it affects each of the basic processes of personal change. Unless people believe that they can produce desired effects by their actions, they have little incentive to act for behavior change. Self-efficacy also affects whether people mobilize the perseverance needed to succeed, their abilities to recover from failures, and how well they maintain the habit changes they have achieved.

According to SCT, two most common sources of self-efficacy are enactive experience and observational experience. An enactive experience is a direct learning experience in which one actually acts out and participates in an activity within a real physical environment. An observational experience is a vicarious learning experience in which one is only an observer. Not like an enactive experience that has to be a direct experience in real life, an observational experience can be mediated or nonmediated. Through enactive experience, people develop self-efficacy by examining the pattern of outcomes they have directly experienced and then generate conceptions and rules of behavior. Through observational experience, people develop self-efficacy vicariously through other people’s behaviors and the consequential effects. According to Bandura,7 enactive experience is a more powerful mechanism than observational experience in increasing self-efficacy. However, due to various constraints in the physical world, people cannot always learn directly from enactive experience.

Mediated enactive experience in gaming

Thanks to digital games, especially role-playing games (RPGs) that involve taking the role of a game character and

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experiencing through this game character in the mediated environment, enactive experience is no longer restricted to the non-mediated physical environment. RPGs provide a mediated enactive experience by offering a mediated environment to simulate behaviors and their consequential effects in a safe way. Through trial and error, players can directly yet virtually experience the outcomes of their own behaviors and generate rules of behavior. It is an enactive experience because when playing such RPGs, players are taking active control and experiencing the game world through their game character (usually termed as avatar). Players make decisions on behalf of their game characters. How the game characters move, act, behave, and interact with other social actors or nonplayer characters in the mediated game world is determined by the players. Yet the experience is mediated because rewards and punishments resulted from the actions, behaviors, and interactions are simulated and projected to the game characters. This role-playing experience is a simulated direct experience in the mediated environment and it can therefore be considered as a mediated enactive experience. Through such an experience, people can experience in a safe way what they expect to experience in real life without confronting any real danger. As enactive experience is more effective than observational experience in increasing self-efficacy, it is hypothesized that people who have a mediated enactive experience afforded by game playing will have greater self-efficacy than people who have an observational experience of watching game playing (H1).

Identification as mediator

To fully understand how self-efficacy is influenced by different experience modes, we need to investigate the relationship between people (either as enactive players or passive observers) and the model of behaviors (either as characters controlled by the players or characters observed). Identification is a classical concept to examine such relationship.

Identification is a complex concept with multiple meanings associated with it. There are at least four different approaches to conceptualize identification. This study adopts Cohen’s conceptualization, which defines identification as “an imaginary process invoked as a response to characters represented within mediated text.” When viewers identify with characters in media programs, they become absorbed in the narrative, imagine themselves as the characters, and temporarily replace their real-life identities and roles. The concept of identification includes cognitive, emotional, motivational, and perceptual dimensions. Cognitively, the individual shares the feelings of the character. Emotionally, the individual share the perspective of the character. Motivationally, the individual internalizes the goals of the character. Perceptually, the individual is absorbed into the environment where the character exists.

This definition of identification was originally used for the noninteractive viewing experience (mediated observational experience), but it can be extended to the mediated enactive experience of playing interactive games in which the players imagine being the game characters controlled by themselves. Cognitively, the players need to take the perspective of the game characters so as to successfully interact in the game environment. Emotionally, the players empathize with their game characters. Games usually set goals for the players to achieve. These goals are also the goals of the game characters in the game environment. Thus, motivationally, the players share the goals of the game characters. Perceptually, the line between the players and the game characters blurs and the identities converge. The merging of identities of an enactive player and his or her game character is more natural and intuitive and takes less effort than the merging of the identities of a passive observer and a media character. In other words, people are more likely to identify with characters in the game playing context (mediated enactive experience) than in the passive observing context (mediated observational experience). The more people identify with the media characters, the more likely that the behavioral outcomes to the characters are applicable to them. The more people identify with the media characters, the more likely they are to increase their self-efficacy of performing the behaviors that the media characters have performed in the mediated environment, and the more likely they are to learn enactively from the media characters. Based on the above discussion, it is hypothesized that people who have a mediated enactive experience afforded by game playing will identify with the game character more than people who have an observational experience of watching game playing (H2) and identification is the mediator for the relationship between experience mode and self-efficacy (H3).

Method

Participants and research design

This was a one factor between-subjects experimental study. Sixty-two female and eighteen male college students volunteered to participate in this study in exchange for extra credit. Participants were randomly assigned to one of the two conditions: playing a game (mediated enactive experience), or watching the on-screen capture of someone else’s game playing (mediate observational experience). Informationally comparable content was presented in these two conditions.

Stimuli and procedure

A newly developed healthy diet promotion game was used in the current study. This game has been found to be effective in influencing people’s self-efficacy of adopting a healthy diet. At the beginning of the game, the player chose a game character and made dietary decisions on behalf of the character, including choosing breakfast, lunch, dinner, snack, and physical activities. This game simulated a 3-week period in a similar fashion as the popular game, the SIMS. Based on calories consumed from food, calories burned from physical activities, individual physical attributes, and personal food pyramid, the game simulated positive and negative consequences resulted from their choices of food and physical activities in the game. For the game-watching group, the on-screen video stream capture software SnagIt was used to make the video clip for the participants to watch and observe the process of choosing breakfast, lunch, dinner, snack, and physical activities of a game character, as well as the consequential positive and negative effects. The average length of both the game playing and video clip of game playback was 40 minutes. The participants filled out a
questionnaire online immediately after the game or the game playback video clip was over.

**Measures**

A 14-item self-efficacy of healthy eating scale was created by modifying a previous instrument (α = 0.82). The 11-item identification scale was based on Cohen’s 10-item identification scale by breaking the last item into two items: a) When the main character in the program succeeded, I felt joy; and b) When the main character in the program failed, I was sad (α = 87).

**Results**

Conventionally, ANOVA could be used to test H1 and H2. Since part of the regression analyses used to test the mediational hypothesis (H3) were equivalent to ANOVA, in the current study, we used the regression analyses to test all the hypotheses. In fact, H1 and H2 were actually the prerequisites of H3. Three regression analyses were conducted. The first regression equation was needed to establish that there was a significant relationship between the predictor (experience mode) and the outcome (self-efficacy), path c (H1). The second regression equation was needed to establish that there was a significant relationship between the predictor and the potential mediator (identification), path a (H2). In the third multiple regression equation, the outcome variable was regressed on both the predictor (path c’) and the mediator (path b). A partial mediation would be established if the effect of the predictor on the outcome (c’) controlling for the potential mediator (b) was smaller than the effect when the outcome was only regressed on the predictor (c). In addition, the Sobel’s test was used to calculate the z score to test the significance of the mediational relation.

Table 1 contains the analyses necessary to test the three hypotheses. Experience mode was a categorical variable with mediated enactive experience coded as 1 and mediated observational experience coded as 0. Conditions in all three regression equations were met. Experience mode positively predicted both identification and self-efficacy, suggesting that mediated enactive experience resulted in greater self-efficacy and greater character identification than observational experience. H1 and H2 were supported. When self-efficacy was regressed on both identification and experience mode, the effect of experience mode decreased. The significance test showed that the z score was 1.98, greater than the critical value of 1.96. This indicated that the mediational relation was statistically significant at the 0.05 level. Therefore, the hypothesis (H3) that identification mediated the relationship between experience mode and self-efficacy was supported.

**Discussion and Conclusion**

The results demonstrated that mediated enactive experience was more effective in influencing self-efficacy of adopting a healthy diet than passive observational experience. The game-playing group and the game-observation group were exposed to similar content about healthy diet but experienced the content through different modes. While the game-playing group experienced through actively making food choices for the game character and learning the corresponding outcomes, the game-observation group experienced through passively observing food choices for the game character by other people and the corresponding outcomes. The result suggests that experience mode matters. However, a cautionary note needs to be emphasized here. This finding does not imply that a medium that can afford enactive participation (e.g., a digital game) is necessarily superior to a medium that can only afford passive observation (e.g., a television program). This study only demonstrates that experience mode is one important media form variable that can make a difference given that the media content is comparable.

By proposing the concept of mediated enactive experience based on the theoretical framework of Social Cognitive Theory, this study extends enactive experience into the mediated environment. With the advancement of technology, mediated experience has become more and more common in people’s everyday life. In the age of television, mediated experience is limited to the scope of observational experience. With computer and video games, mediated experience can be extended to the scope of enactive experience. The current study contributes to the literature by offering an empirical example to show that mediated enactive experience is more effective than observational experience in increasing self-efficacy in the context of healthy diet promotion. As game playing is one of the most popular means of entertainment, more research is needed to understand this unique experience so as to take advantage of it for prosocial purposes.

Another contribution of this study is finding identification as a partial mediator for the relationship between experience mode and self-efficacy. A practical implication of this finding is that serious game designers for health promotion and researchers should pay closer attention to game character de-

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*p < 0.05; **p < 0.01.
velopment to increase the likelihood of identification. In order to achieve this goal, it is important to identify the antecedents of identification. In the media viewing context, identification can be increased through many mechanisms, including narrative, similarity, duration of exposure, and social realism. Research on identification in the game playing context is limited, but one study found that narrative could increase identification with the avatar. In future studies, we need to empirically test the antecedents of identification and find out how to design a serious game to increase players’ identification with the game character so as to achieve the desired effects.

There are also a number of limitations in this study. First, the general game playing experience was manipulated to be the mediated enactive experience. However, there were many variables associated with game playing (e.g., being able to make the choice, getting feedbacks for the choice made, etc.). We cannot tell how each variable associated with game playing contributes to the effect. This is a common constraint with all studies related to digital games as there are many variables associated with game playing. In the future, a series of studies need to be conducted to dissect the different variables associated with enactive participation during game playing to provide a more detailed explanation for the underlying mechanism. Second, our participants were predominantly female. Even though the topic of the game is of more interest to females than to males, a gender balanced design is needed to examine any gender difference in the future. Third, the game used in the current study is a simple role-playing game to examine any gender difference in the future. Third, the general game playing experience was manipulated to be the mediated enactive experience. However, there were many variables associated with game playing (e.g., being able to make the choice, getting feedbacks for the choice made, etc.). We cannot tell how each variable associated with game playing contributes to the effect. This is a common constraint with all studies related to digital games as there are many variables associated with game playing. In the future, a series of studies need to be conducted to dissect the different variables associated with enactive participation during game playing to provide a more detailed explanation for the underlying mechanism. Second, our participants were predominantly female. Even though the topic of the game is of more interest to females than to males, a gender balanced design is needed to examine any gender difference in the future. Third, the game used in the current study is a simple role-playing game designed to increase self-efficacy of adopting a healthy diet. Additional research is needed when applying the findings to other types of games in other context.

**Disclosure Statement**

The author has no conflict of interest.

**References**


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