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Studying Human Relatedness through a Shared Gaming Experience

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The importance of relatedness in collocated multiplayer video games should not be underestimated. Interpersonal relationships which develop from social interactions that occur during gameplay contribute to player motivation and meaningful and memorable experiences for the players. In this study we examined how interpersonal touch within a gameplay experience impacted player motivation and inter-player impressions. Dyads played one of two iPad-based games in three different conditions, one of which required physical contact between the players. Results indicated those in the touch-based conditions scored higher on several measures of intrinsic motivation and impressions of their teammate.

INTRODUCTION

Millions of individuals are spending a growing number of hours per week playing games, whether by themselves, with a friend or online in massive, multiplayer video games (Escobar-Chaves & Anderson, 2008). As discussed by Ryan and Deci (1991), Self-Determination Theory explains a great deal of the motivation behind individuals seeking out and playing video games since many games provide a sense of competence, autonomy, and relatedness within the gaming environment (Hoffman & Nadelson, 2010). The fulfillment of these needs contribute to a sense of intrinsic motivation while engaging in an activity. While it is argued by many researchers that competence or autonomy may be the prime needs which are satisfied by playing video games, relatedness also plays a key role in fulfilling individual needs, although it has not been investigated as thoroughly with respect to gaming motivation (de Kort, & Ijsselsteijn, 2008).

In the past, researchers have often viewed video game players as isolated individuals who have removed themselves from society and reality and are interacting with no one while gaming (Escobar-Chaves & Anderson, 2008). Within many recent studies there is a very different picture of the world of gamers, showing gaming as a digital environment infused with legitimate social motivations and exchanges. Often the motivation for playing video games is as much about relatedness and socialization as it is experiencing the content of the game (Nielsen, 2005). For example, using a 40-item inventory, Yee (2007) found that socialization, along with achievement and immersion, made up over half of the self-reported motivation for the persistence of game playing. Even when only one person is in charge of the controller actually playing the game, a group of friends will become actively involved in the gameplay for the enjoyment of sharing and enhancing the emotion and experience (Carr, Schott, Burn, & Buckingham, 2004). As the primary demographic of gamers has expanded from young males to include nearly everyone, more people are playing video games solely for the socialization aspect of games (Voida & Greenerg, 2009). It is the multidimensional experiences within games which must be considered to understand video games as more than the digital reality and electronic signals which make up the content. Where and how the game is played includes a larger idea of the possible social-contextual interactions, which strongly impact what experiences are had in a game and how the need for relatedness is satisfied.

Humans have an intrinsic interest in socializing with others regardless of whether the environment is physical or virtual (Ryan & Deci, 1991). We need to establish meaningful relationships with other players and people, and we attain satisfaction from being part of a group effort (Granic, Lobel, & Engels, 2014). Any multiplayer games, with interpersonal play, are typically experienced with others who are either connected to the same game but are playing from a remote location or are playing in close, physical proximity to one another, or a combination of these. When engaging in this cooperative play the fulfillment of relatedness has the opportunity to compound with competence, since together players can accomplish more than they could alone, as well as autonomy, as players are given more opportunities to make meaningful choices within the game (Rigby & Ryan, 2011). With an increase in relatedness, competency, and autonomy player motivation may be drastically and positively impacted by the social interactions which are possible within gameplay. As has been shown in other domains (e.g. Frederick-Recascino, 2002), enhancing basic psychological needs through

gameplay should also result in higher levels of interest and enjoyment for the activity.

Video games have developed to allow and encourage a variety of virtual social interactions. The space and mediums used to play video games have changed drastically from the traditional, single-player controllers to include a large variety of input devices. The development of new interfaces for games have allowed players to incorporate their physical body in the digital environment of the game and social exchanges result from players being in close physical proximity in order to determine the actions of their avatars, although fewer games have created the opportunity for physical interaction through touch. These types of games, while not unique in providing opportunities for social interaction, capitalize on the players' bodies to intensify the social opportunities as part of the game's challenges in a way unlike that of most video games. Building on the ability to use movement and interaction in game interfaces, a small number of video games have developed physical interaction (touch) between players to be a part of progressing through the game. These games have a focus on not only what game you're playing, but whom you play with by attempting to foster a stronger feeling of relatedness and striving to replicate the rich social experiences associated with classic board games (Benford, Magerkurth, & Ljungstrand, 2005). This increased emphasis on inter-player interaction has been called "The People Factor" by player experience designers, such as Nicole Lazzaro, and is driving video game designers to consider the implications of social interactions to raise player emotions and create more compelling experiences (Watts, Sharlin, & Woytiuk, 2010a).

For humans, touch is an easily recognized gesture of meaningful social connection, and can even be a subconscious invitation for more social interaction between individuals. Interpersonal touch within gameplay, defined as any act of bodily contact occurring between two people, may also increase feelings of social meaning and relatedness (Watts et al., 2010a). Incorporating the inherently social gesture of touch into gameplay creates a literal connection between the players, which may result in an emotional connection (Burgoon, Walther, & Baesler, 1992). Enhancing the social experience through interpersonal interaction can not only stimulate behavior and emotions that mark the satisfaction of relatedness, but also present a greater challenge for the players, adding new opportunities for feelings of competency (Watts, Sharlin, & Woytiuk, 2010b). As players work together to progress through the game, touching causes them to remain present and attentive in the physical world as well as the digital world, dissimilar to the passive act of playing games with no required physical action.

If relatedness and competency can be enriched through interpersonal touch, there is an opportunity to utilize games which involve touch to promote cooperation and interactivity in a fun, social manner. Support for this premise was shown in a study examining play in the game *Prism Squad: GO!* This game uses touch to draw players closer together, physically and emotionally, with the goal of finding the positive aspects of interpersonal touch. Researchers found that their participants identified the game useful as "…a way of communicating, it's a way of working together…" with strangers or new acquaintances (Watts et al., 2010a, p. 8). Interpersonal relationships are an essential aspect of successful team building and cohesion development. In many instances, specifically within military, medical or aviation contexts, teams must quickly move through the stages of team development and successfully complete tasks. Interpersonal touch, as a potent communicative behavior, could promote positive interpersonal cohesion and task cohesion within a limited amount of time. Watts et al. (2010a) emphasized the need for research identifying how touch affects game players' emotions. Knowing if increased physical contact will actually improve individuals' feelings of relatedness and enjoyment during gameplay can help direct, not only future video game design, but also team development research. Our first hypothesis is that intrinsic motivation, as reflected by self-reported perceived choice, interest/enjoyment, and effort, will be higher for those in the Fingle group. Our second hypothesis is that Fingle players will feel higher levels of pressure and tension due to discomfort with touch. Our third hypothesis is that there will be no performance differences between the groups. The present study sought to understand the deeper meanings and motivational impacts of interpersonal touch within games.

METHOD

Participants

Undergraduate students (N = 48) from a small university volunteered to participate (34 men, 14 woman, mean age of 21.9 years old). After providing informed consent, each student was randomly assigned to a same-gender or mixed-gender dyad. Each dyad was then randomly assigned to play in one of three gaming conditions described below.

Materials and Procedure

We used two different app-based games, designed for the iPad, to create three different experimental conditions. The first game, Fingle, is a two-player, non-verbal, multi-touch game, in which participants interact on the same screen at the same time, using interpersonal touch as a primary gameplay mechanic. This requires players to physically touch each other's hands at various points throughout each level in order to progress.

The second game, also played via the iPad, was a non-verbal puzzle game called Flow Free. In this game, players must work together to solve a series of puzzles by connecting "pipes," which could not cross, in a square matrix, in order to progress in the game. This game was chosen for comparison because, like Fingle it was non-verbal, and it used the same basic movements of moving one's finger around a screen to specific locations to complete a puzzle. The difference between Fingle and Flow Free was that Flow Free did not include physical touch between participants.

Dyads randomly assigned to the first condition played Fingle on a single iPad for 30 min and were tasked with advancing as far as possible in the game. One performance score was generated per dyad. For the second condition, dyads played Flow Free for 30 min and both players controlled the screen and, again, one performance score was generated per dyad. The third condition also utilized Flow Free, with the key difference being only one player controlled the screen at a time, with verbal assistance available from their partner. One player was assigned to solve the first puzzle and, if successful, the second player then controlled the screen to solve the second puzzle and so on, culminating in a single score per dyad. Gameplay lasted for 30 min and, as in the other conditions, dyads were tasked to advance as far as possible in the games. The present study examined the presence or absence of touch during gameplay, so the Flow Free groups were treated as the non-touch condition, and the Fingle group was considered the touch condition.

After playing each game, participants in all conditions completed three surveys. The Intrinsic Motivation Inventory (IMI) is a 45-item, multidimensional measure of participants' subjective experience (McAuley, Duncan, & Tammen, 1989). The 7 subscales assess interest/enjoyment, perceived competence, effort/importance, pressure/tension, perceived choice, value/usefulness, and relatedness. The Subject Impressions Questionnaire (SIQ) is a 29-item measure of participants' impressions of the experience with 5 subscales which assess relatedness, interest/enjoyment, perceived choice, pressure/tension, and effort.

RESULTS

Fingle players were significantly higher in IMI Effort, IMI Pressure Tension, SIQ Interest Enjoyment, SIQ Effort and Conscientiousness. They scored significantly lower on IMI Perceived Choice, and SIQ Perceived Choice.

A one-tailed, independent samples *t*-test revealed that Fingle players (M = 5.57, SD = 1.18) had significantly higher IMI effort scores, t (44) = 1.17, p = 0.04, than Flow Free players (M = 4.80, SD = 1.46). Also, Fingle players (M = 2.86, SD = 1.15) had significantly higher IMI pressure-tension scores, t (44) = 1.80, p = 0.04, than Flow Free players (M = 2.17, SD = 1.27). Those who played Fingle (M = 5.40, SD = 1.04) had significantly lower perceived choice scores, t (44) = -2.18, p = 0.01 than Flow Free players (M = 6.17, SD = 1.19). Similarly, Fingle players (M = 5.21, SD = 1.20) scored significantly higher on the SIQ effort subscale, t (44) = 1.69, p = 0.05, than Flow Free players (M = 4.44, SD = 1.61). Fingle players (M = 5.50, SD = 0.87) scored significantly higher on the IMP interest-enjoyment, t (45) = 1.83, p = 0.03, than Flow Free players (M = 4.88, SD = 1.44). Only on the IMI perceived choice subscale did Fingle players (M = 4.53, SD = 1.41) score significantly lower, t (45) = -1.70, p = 0.04, than Flow Free players (M = 5.27, SD = 1.38). Scores on the remaining IMI and SIQ subscales were not significantly different between the Fingle and Flow Free players. Additionally, there were no performance differences found between the groups.

Further examination of these results revealed several additional findings. The IMI Scale included a set of items on which players could fill-in their subjective responses for items related to the value/usefulness of the task. For those in the Fingle condition, responses to questions related to value/usefulness were categorized into Competency/Challenging, Relatedness/Social, Autonomy/Decision making, and Other by the researchers after reviewing all replies. Responses which fell into the "Competency/Challenging" category included an element of how mental or physical ability was impacted by playing. Any response which included an element of how players felt they had social interaction or were working with others were categorized as "Relatedness/Social." Replies which included an element of players recognizing any decision making regarding gameplay fell into the "Autonomy/Decision making" category. All other responses were placed into the "Other" category. The majority (64%) of the 20 participants in the first condition who played Fingle and responded to the statement, "I think that doing this activity is useful for _____" had responses that fell within the category of Relatedness/Social. Examples of this type of response

included: "Teamwork," "Team building/Building communication skills," "Breaking the ice between strangers," and "Socialization." Most other responses fell into the Competency/Challenging (23%) category and very few (11%) were categorized as Autonomy/Decision making. Three of the Fingle players' responses to this question were categorized as "Other" due to unrelated content or insufficient information to adequately categorize.

When participants who played Fingle were asked to finish the sentence "I think this is important to do because it can _____" most responses (76%) fell into the category of Relatedness/Social. These responses included: "Foster new bonds of friendship," "Teach people to work together," "Improve relationships," and "Improve communication and social skills." The other responses fell equally between the Competency/Challenging (11%) category and Autonomy/Decision making (11%) category. Of the participant responses to this item, two were categorized as Other due to the unrelated content of the responses. Similarly, Fingle players responded to the statement "I think doing this activity could help me to _____" with a majority of replies (66%) that related to the category Relatedness/Social. These responses included: "Coordinate with teammates," "Enhance my interpersonal skills," "Communicate with partner/others," and "Feel more comfortable interacting with strangers." Other responses were categorized as Competency/Challenging (18%) and few of the responses fell into the Autonomy/Decision making (16%) category. Responses seemed to support the significantly higher Enjoyment/Interest and Effort scores of participants who played Fingle due to the social aspect of touch involved in playing. Additionally, the lack of responses reflecting feelings of Autonomy/Decision making supported the Fingle players' significantly lower Perceived Choice scores.

DISCUSSION

The data generally support the first and second hypotheses that Fingle players would have higher perceived choice, interest/enjoyment, effort, and pressure/tension, but with qualifiers. Results were in the expected direction for the interest/enjoyment, effort, and pressure/tension subscale scores, but were opposite the expected direction for perceived choice subscale scores. Fingle players enjoyed playing more and put forth more effort, however, perhaps due to the "touching" elements of the gameplay, they felt uncomfortable to a higher extent, as manifested in their higher Pressure/Tension score and lower Perceived Choice scores. The higher Pressure/Tension scores are also consistent with Watts' et al. (2010b) concept that there is an increased challenge in maintaining attention in both a physical manner, with their partner in the real world, and a digital manner while simultaneously interacting with the iPad game. Furthermore, as noted in the results section, the social benefits of the interpersonal touch involved in playing Fingle were apparent in the participant responses to how the game would be valuable or useful. The third hypothesis that there would be no performance differences between the two groups was supported by the data.

The addition of interpersonal touch to activities where it is essential for players to build interpersonal relationships and develop cohesion can be very beneficial. Although some individuals will never be comfortable with this type of touching, even when the touching is innocently intended, playing games like Fingle could provide an opportunity to utilize informal interaction to create stronger communication, awareness, and social interactions between team members. One of the benefits of this study could include improving the relationships between adolescents and other adolescents or adolescents and therapists. Although further research would need to be done, the potential is that these types of video games could strengthen interpersonal relationships between adolescents and others, or have therapeutic benefits to amending negative behavior between youths.

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