The Effects of Customization on Game Experiences of a Massively Multiplayer Online Game's Players

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Abstract: This study investigated the role of customization as function of user control in a Massively Multiplayer Online game (MMO), *Lord of the Rings Online*. It extends and adds to the studies examining the effects of choice as a vehicle to understanding users' dynamic relationships with new media. Sixty-six participants data were collected over ten hours of gameplay in four sessions to measure the effects of customization on players' reported experiences. Participants' game play experience was assessed with Likert Scale questionnaires and semi structured interviews. Results indicate that players who were able to customize various aspect of the game were more engaged in gameplay than those who did not get to customize. Additionally, the customizers' engagement increased as amount of gameplay time increased . The theoretical and practical implications of these findings are discussed within the context of game design and research.

Introduction

The educational merits of games are being increasingly recognized by the public and the government. However, as teachers and the general public are introduced to the unique value of videogames, game developers and game researchers must provide answers to questions related to the effects and values of various games' characteristics so that teachers and parents can select games that will engage children with the content they want children to learn.

An initial step is to identify characteristics of videogames that make them engaging. With the idea of considering videogames as "designed experiences" (Squire, 2006, p. 24) where every design decision shapes learning and engagement through the various "structures and contexts in which play takes place" (Salen & Zimmerman, 2004, p. 67), studying player experiences helps researchers understand which design aspects influence the processes involved in creating different game experiences.

Poels, de Kort and IJsselsteijn (2012) argue that game experience has to be studied as a multidimensional concept. Positive videogame experience is related to intrinsic motivation (Przybylski, Rigby, & Ryan, 2010), immersion (Jennett et al., 2008), flow (Csikszentmihalyi, 1990), as well as presence and enjoyment (Klimmt, Hartmann, & Frey, 2007). One of the common requirements among these concepts, all related to positive game experiences, is their emphasis on user control.

This reported study herein investigates the impact of user control in the form of customization on players' game experiences by using subjective responses from players of a Massively Multiplayer Online Role Playing Game (MMORPG), *Lord of the Rings Online (LotRO)* (Warner Bros. Entertaintment Inc., 2013). We wanted know whether customization can have empirically assessable impacts on player experience. Therefore, we asked following research question: How does being able to customize in an MMO affect player experiences such as challenge, positive affect and flow over ten hours of gameplay?

Background

Several studies of videogames have determined a number of attributes that foster engagement, such as feedback, intrinsic motivation, fun, and players' sense of social presence, challenge, social contexts, and achievement (Hoffman & Nadelson, 2010). A recent mixed methods study (Hoffman & Nadelson, 2010) suggests, "when the degree of control is accompanied by positive results, participants experience enhanced engagement due to increased self- efficacy" (p.262). Poels *et al*. (2012) found nine specific game experience dimensions in their focus-group study: enjoyment, flow, sensory immersion, imaginative immersion, suspense, competence, control and social experiences. Jennett *et al*. (2008) identified five factors of immersion: cognitive involvement, emotional involvement, real world disassociation, challenge and control. Sweetser & Wyeth's (2005) GameFlow model provides a set of general criteria for designing and evaluating games by mapping flow to GameFlow elements. One of the essential elements listed in the model is players' sense of control. Control in games mostly related to players' felt effectance of their actions, and is therefore connected to emotional evaluation of the players' ability to exercise control.

Leotti, Iyengar, and Ochsner (2010) have argued that opportunities to exercise control may be necessary to fos-

ter self-efficacy beliefs. They further assert that "each choice–no matter how small–reinforces the perception of control and self-efficacy, and removing choice likely undermines this adaptive belief" (p. 4). Providing choices, in fact, may be central to game play, reinforcing Salen and Zimmerman's (2004) argument that games can be seen as "systems whose meaning emerges from the experience of players as they make choices in a game" (p. 316). Yee (2007) found that choices concerning appearance, accessories, and color scheme in games were important subcomponents of massively multiplayer online game players' motivation while Turkay and Adinolf's (2010) study showed that sense of control and customization are correlated and valued as aspects of player engagement. Psychologically, customization can imbue a strong sense of agency (Sundar, 2008) by letting players specify their preferences and modify the game to make it more relevant to them.

The above-noted research centers around customization and choices provided to players within an MMO. However, customization is not a new phenomenon in human activities. People customize their environments every day (e.g., rooms, desks), belongings (e.g., clothes, jewelry), and technologies (e.g., mobile phones, software). As a consequence, customization has been studied widely in several fields, but there are different interpretations of what customization means, what motivates people to customize and what the effects of customization on user behaviors are, and there is very little research on the process of customization and its effects over time. Theories that might be relevant to customization are those that attempt to explain the motivational appeal of choices.

Emerging technologies such as mobile phones, web portals, and games introduce additional, broad possibilities of customization of appearance and function. Decades of psychological research suggests that giving individuals choices leads not only to better performance and more intrinsic motivation when performing tasks but also to more overall satisfaction (Lewin, 1952). Many theories in social psychology relate self-efficacy and a sense of control to intrinsic motivation, persistent efforts to succeed, enjoyment (Csikzentmihalyi, 1990). These in turn lead to better performance in the task at hand (Cordova & Lepper, 1996). The motivational aspect of choice has been part of many motivational frameworks, such as Eccles and Wigfield's (1995) expectancy-value model of achievement motivation, Bandura's (1997) social cognitive theory, and Deci and Ryan's (1985) Self Determination Theory (SDT).

This study will discuss the findings through the lens of a sub-theory of SDT, cognitive evaluation theory (CET). CET states that activities that foster intrinsic motivation are those which satisfy three basic needs: The need for competence (sense of efficacy), autonomy (volition and personal agency) and relatedness (social connectedness; Ryan & Deci, 2000).

Methods

Participants and Design

Participants were recruited through fliers on public billboards at a medium-sized East Coast University and were remunerated $50 ($5 per hour) for their time. Participants were selected based on their experience in MMOs, based on a survey provided to people who responded to the flier. Those who were not expert MMO players, who were not current MMO players and who had not played *LotRO* were invited to participate in the study. 160 people responded to the flier and 75 were invited to participate. Of those 75, 66 participants (32 males, 34 female) completed the study. Participants were adults between 18 and 35 years old with a mean age of 25.63. This is very close to the average age of MMO players (M=26.6) as reported in a previous, large scale study (Yee, 2007).

This study used a between-subjects design and participants were randomly assigned to one of two groups, Customization (CG) (n=33; f=17, m=16) and No Customization (NCG) (n=33; f=17, m=16). In the CG, participants were given various choices in the game, such as the opportunity to choose their game characters' specialties, skills, gender, and appearance as well as in-game rewards after they completed quests (see Figure 1 for examples). In the NCG, the participants were assigned to well-constructed pre-designed avatars with efficient character skills and quest rewards were chosen for them. In the NCG, avatar's gender and participant's gender were matched.

Stimuli. The game that was used in this study was *Lord of the Rings Online* (*LotRO*), a fantasy MMO based on the books by J.R.R. Tolkien.

Three different game accounts were generated for the study. *LotRO* has 19 different servers. Players can play in one of these *LotRO* worlds, and some servers are more populated than others. Using multiple accounts made it possible for participants to play in populated servers to maximize the possibility of social interaction, which may affect player experience (Yee, 2007).

A gaming-optimized PC was used for the study, and participants wore a headset during the gameplay.

Duration of the study: MMOs are long term games and a reliable study of player behavior in these games should take place over more than one experimental session. According to Yee (2007) who collected data from 3,000 users of online games, the usage per week is, on average, 22 hours. The average time of play per character in one a week is 10.2 hours (Ducheneaut, Yee, Nickell, & Moore, 2006). A more recent study with *Everquest* players' gameplay data revealed that a regular player plays about 100-150 minutes at a game session (Mahmassani, Chen, Huang, Williams & Contractor, 2010). Based on the above studies, to be consistent with normal periods of gameplay this study's procedure involved about 10 hours of game play, which was divided into 4 sessions (2 to 2.5 hours per session) over two weeks.

Game Experience Questionnaire: To assess players' gaming experience, qualitative and quantitative data were collected. A Forty-two item, 5-point Likert scale *Game Experience Questionnaire* (GEQ) was conducted after each of the four game sessions to assess players' gaming experience (IJsselsteijn et al., 2008). The GEQ consists of seven subscales, each with six items: sensory and imaginative immersion (e.g., "I felt that I could explore things"), flow (e.g., "I lost track of time"), negative affect (e.g., "I felt bored"), tension (e.g., "I felt frustrated"), positive affect (e.g., "I felt happy"), challenge (e.g., "I thought the game was hard") and competence (e.g., "I felt skillful").

Semi-structured Interview: After the first and last game session, a 10-question semi-structured interview was conducted with all participants. With a subset of participants, interviews were conducted after second and third sessions as well. Some of the questions were: Tell me about your experience, what were the things that you thought were fun and frustrating, how did your experience change from the first session until now (asked only after the last session).

Data Analysis: A repeated measures multivariate analysis of variance (RM MANOVA) was employed to reveal differences on outcome variables over time (sessions) and to examine between CG versus NCG in terms of the subsections of game experience (e.g., challenge, competence, flow). These seven dependent variables were included simultaneously as dependent variables in this MANOVA to provide further protection against inflation of type I error when analyzing related dependent variables for which comparable independent variable effects are predicted (Stevens, 2002). Assumptions are met for the test. Statistical analysis software SPSS 20 was used to facilitate statistical data analysis and Nvivo 9 was used to facilitate inductive analysis of interview data (the results for one question is reported herein).

Procedure

Participants were provided with an informed consent document upon entering the laboratory for the experiment. After each participant read and signed the informed consent document, they moved to the gaming computer and the play procedure was explained. The gaming computer was connected to another computer to allow the researcher to control such things as starting and pausing screen captures, facilitating the procedure for NCG, and to capture real-time observations of participants' gameplay.

In the first session, the CG created their game characters and customized their appearance. NCG participants were assigned well-established, pre-generated characters that matched each participant's gender. Participants continued to play with that character throughout the study. For both groups, the first session ended upon completion of the *LotRO* tutorial (which takes about 2 to 2, 5 hours). At the end of each game session, participants completed the GEQ on the computer. After the first and the last session, a semi-structured interview was conducted to gain further insight about their experiences. CG participants were introduced to various ways they could customize the game (if they had not already found out in the tutorial) whereas NCG participants' choices were controlled. For example, the NCG did not choose their mission rewards, the researcher chose for them, binding the keyboard shortcuts for that purpose. NCG participants were told that the computer would make the reward choices for them until they learn the game. During the study, the researcher sat in a cubicle which had the mirrored monitor and keyboard to the participants' computer. Participants had no line of sight to the researcher's area. This allowed smooth control of NCG's choices. NCG's characters' appearance were set with the cosmetic outfit option in *LotRO* so that participants would see the same outfit no matter how their characters were equipped throughout the sessions. These differences controlled the CG's and NCG's autonomy and control by controlling their customization options.

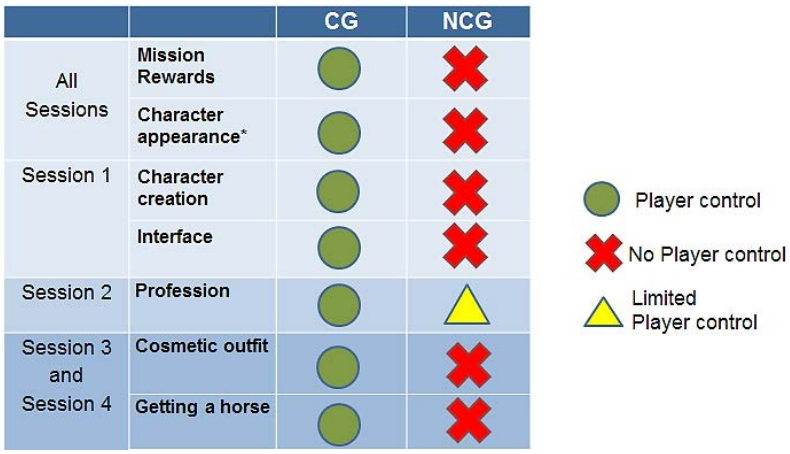


***Figure 1*. Examples of user customization in different sessions**

Results

Preliminary Analysis

Participants' demographic information was analyzed to examine consistency between groups. No statistically significant difference was found between groups in their mean age (CG = 25.89, NCG=25.53) and their experience with MMOs (*t* = 1.32, *n.s.*). A *LotR* familiarity score was generated based on participants' reports of how familiar they were with Lord of the Rings in various media forms, with no statistically significant difference being found (*t* = 0.944, *n.s.*). There was no statistically significant difference in favorite game genre or how they play games (e.g., playing games alone, with other people in the same room, with people online).

Change over four sesyou sions: Quantitative

Statistically significant multivariate effects were found for the main effects of group (*F* (7, 58)=4.597*, p* < 0.001*,* partial η^2 = *0.357* and time (sessions) (*F*(21, 44) = 2.434, *p* < 0.05, partial η^2 = *0.537*. The interaction between groups and time was not statistically significant. That is, the upward trend over time for all subjects is statistically the same for the customization group and non-customization group. The reason might be that two groups differed significantly at the end of the first session and there was a ceiling effect. Table 10.3 presents the means and standard deviations of the variables. Prior to conducting a series of follow-up ANOVAs, the homogeneity of variance assumption was tested for all nine intelligence subscales. Based on a series of Levene's *F* tests, the homogeneity of variance assumption was satisfied.

In order to test sphericity we applied Mauchly's Test which tests for the equivalence of the hypothesized and the observed variance/covariance patterns. The test was significant for all dependent variables except Negative Affect (*W*=.85, χ^2 (5)=9.89, *n.s.)* suggesting that the observed matrix has approximately equal variances and covariances. So, we used Greenhouse-Geisser test.

Follow-up RM ANOVAs revealed that the statistically significant change over four sessions was statistically significant only for sensory and imaginative immersion, (*F* (2.40, 153.34) = 6.66*, p* = 0.001*,* partial η^2 = .09)*,* for flow (*F* (2.40, 153.34) = 5.04*, p* = 0.005*,* partial η^2 = .07)*,* for competence (*F* (2.52, 161.43) = 8.18*, p* < 0.001*,* partial η^2 = .11). It was not statistically significant for Positive Affect (*F* (2.63, 168.29) = 2.68*, n.s.*) for challenge (*F* (2.67, 170.55) = *2.70, n.s.*)*,* Tension (*F (1, 64) = 1.86, n.s.*) and Negative Affect *(F* (2.70, 172.54) = *2.63, n.s.*) Time was a statistically significant predictor of Immersion, Flow and Competence. Time and groups did not interact to predict the changes in dependent variables.

Tests of Between-Subjects effects showed that group (CG and NCG) was indicative of changes in Immersion (*F*(1,64) = 16.39*, p* < 0.001)*,* in Flow, (*F*(1,64) = 18.27*, p* < 0.001)*,* in Competence, (*F*(1,64) = 8.82*, p* < 0.005)*,* in Challenge, (*F*(1,64) = 7.21*, p* < 0.01)*,* in Positive Affect (*F*(1,64) = 25.33, *p* < 0.001)*,* and in Negative Affect *(F*(1,64) = 7.63*, p* < 0.01)*.* (Statistically significant main effect of group is found) Table 1 shows the results of independent samples *t*- tests for each dependent variable for each session.

Test of Within-Subjects of Polynomial Contrasts shows that there is a statistically significant linear relationship between sessions and immersion ($F(1,64)=12.50$, $p < 0.001$), sessions and flow ($F(1,64) = 7.93$, $p < 0.01$), sessions and competence ($F(1,64) =14.91$, $p < 0.001$), sessions and challenge ($F(1,64) = 5.82$, $p < 0.05$), and sessions and positive affect ($F(1,64)=4.44$, $p < 0.05$). There is a statistically significantly cubic relationship between sessions and negative affect ($F(1,64) = 4.80$, $p < 0.05$). There is a quadratic relationship between challenge and the interaction between sessions and groups ($F(1,64) = 6.32$, $p < 0.05$). These trends can be seen in the Figure 1 and Figure 2.

	Levene's		Independent Samples t-test			CG		NCG	
	F	*p*	*t*	*p*	η^2	*M*	*SD*	*M*	*SD*
Sensory Immersion 1	1.149	.288	2.85	.006	.12	3.37	.75	2.81	.82
Sensory Immersion 2	.856	.358	-4.51	.000	.50	3.51	.66	2.71	.73
Sensory Immersion 3	.221	.640	-3.58	.001	.50	3.60	.71	2.93	.81
Sensory Immersion 4	3.924	.052	-3.24	.002	.38	3.70	.72	3.04	.94
Flow 1	.841	.362	2.39	.020	.08	3.29	.77	2.80	.89
Flow 2	2.880	.095	-3.62	.001	.42	3.31	.77	2.73	.97
Flow 3	9.127	.004	-4.25	.000	.47	3.65	.67	2.74	1.03
Flow 4	5.158	.027	-3.79	.000	.43	3.76	.75	2.92	1.03
Competence 1	1.333	.253	-1.38	.171	.05	3.06	.82	2.71	.70
Competence 2	.347	.558	-2.03	.047	.29	3.12	.77	2.68	.73
Competence 3	.603	.440	-2.30	.025	.28	3.30	.76	2.88	.71
Competence 4	.005	.945	-2.62	.011	.31	3.58	.79	3.06	.82
Tension 1	1.268	.264	.07	.947	.00	2.51	.60	2.46	.67
Tension 2	1.063	.306	.39	.695	.07	2.57	.80	2.67	.68
Tension 3	.196	.660	1.29	.200	.16	2.35	.73	2.57	.67
Tension 4	.608	.438	3.03	.004	.35	2.14	.69	2.66	.70
Challenge 1	.829	.366	-1.99	.051	.23	2.93	.64	2.69	.67
Challenge 2	.037	.848	-2.83	.006	.33	3.17	.62	2.74	.65
Challenge 3	.283	.597	-2.99	.004	.35	3.25	.63	2.74	.65
Challenge 4	.045	.833	-1.21	.229	.15	3.16	.69	2.96	.64
Positive Affect 1	.719	.400	-2.28	.029	.28	3.49	.74	3.16	.65
Positive Affect 2	.317	.575	-3.69	.000	.43	3.66	.74	2.93	.80
Positive Affect 3	1.083	.302	-4.44	.000	.49	3.87	.65	3.08	.79
Positive Affect 4	.005	.944	-3.90	.000	.44	3.89	.70	3.21	.71
Negative Affect 1	.329	.568	.80	.427	.12	2.41	.74	2.53	.72
Negative Affect 2	.718	.400	2.60	.011	.33	2.33	.65	2.82	.75
Negative Affect 3	.616	.435	2.59	.012	.31	2.13	.62	2.59	.81
Negative Affect 4	.225	.637	2.22	.030	.27	2.16	.72	2.56	.73

Table 1. Statistics for subdivisions of GEQ for four game sessions.

Change over four sessions: Qualitative

Several patterns emerged related to change in participants' gameplay experience over ten hours. The most prominent patterns related to increased enjoyment (CG=16, NCG=5), increased confidence (CG=20, NCG=13), and increased autonomy (CG=12, NCG=2). Although these are somewhat connected to each other, many participants talked about them independently. For example, when participants reported their increased enjoyment, they talked about various reasons for this change. Below are some of these reasons, together with a representative quote and the number of participants who mentioned that reason in their answer per condition.

1) Increased confidence and competence (CG=13, NCG=4). *"..I think it became a lot more fun because you learn*

how to do things and it gets less confusing and you get more comfortable with all the things going on at once. So it was more fun."-ID27

2) Autonomy satisfaction (CG=5). "*It was great. I think it has become more interesting from first session to the fourth session. I can do more choice. Especially today I got a mount and that is pretty cool.*"-ID33

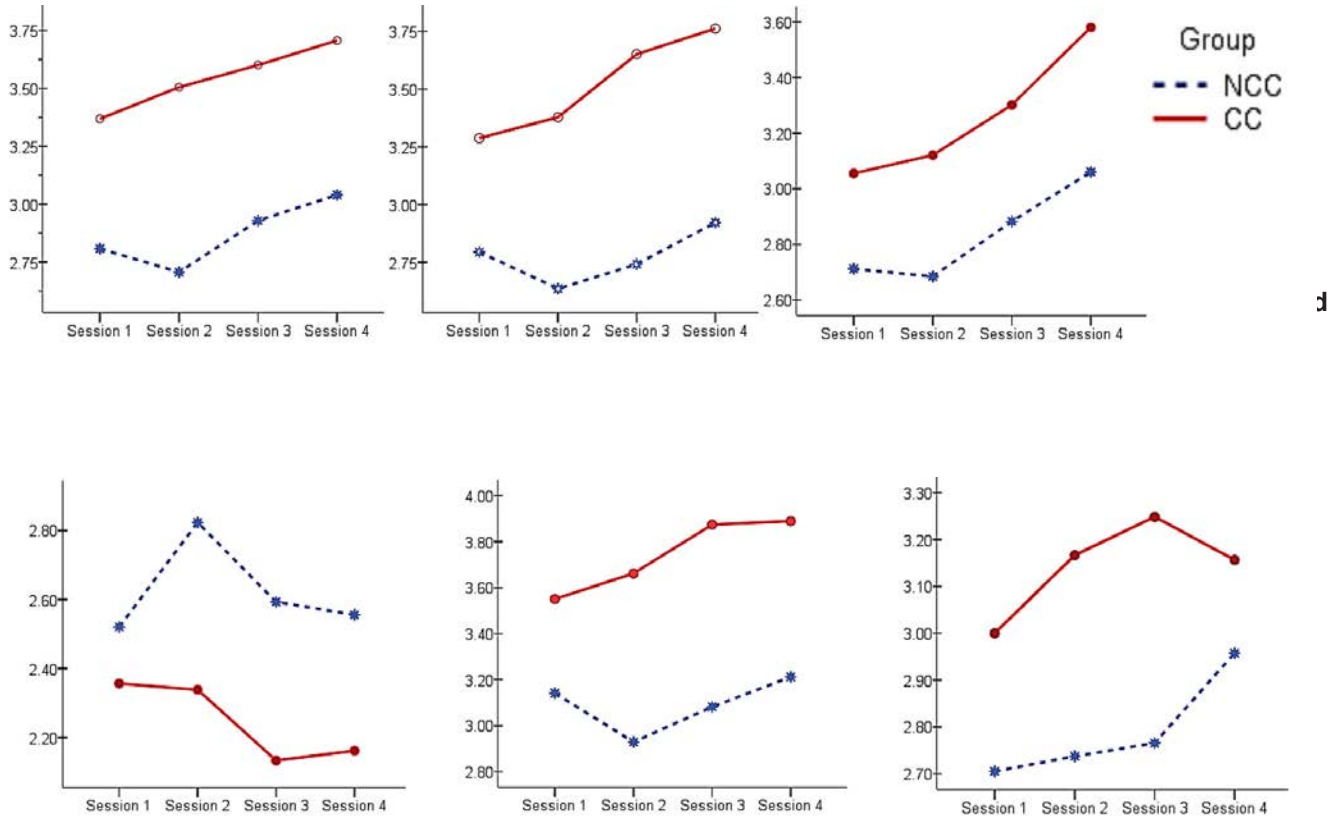
3) Awareness of social aspect (CG=4). "*I tried a lot of new things like talking to somebody which is very interesting or using other people as allies I think overall as I did more hours I started to enjoy the game more than try more new things*."-ID47;

4) Increased motivation for exploration (CG=4). "… *I was more drawn into it as I played more. Also definitely I started looking at different maps and seeing that the world included all different places in the middle Earth was very exciting*." –ID19

5) Increased sense of flow (CG=2): *"The time passed so fast I didn't even realize. Because it was three hours and I was like "Wow" I really got into it but compared to the first day I remember looking at the clock and waiting for time to pass… but at the end I got really drawn into it…"* –ID57

6) Increased narrative involvement (CG=2): *"After started reading the quests I started getting more interested in what was going on the world more so than I realized in the beginning for me that was really different. "* –ID31

Players reported that once they got familiar with the physical controls and mechanics of the game, it became more enjoyable. Also, increased number of choices is related to players feeling challenged. Although it was enjoyable for the following participant: "*I think it is more challenging because I have more tasks and I think I have more freedom to choose what I want to do, to take the task or not."* –ID59, this was not the case for others. Four participants, for example, reported that increased complexity and challenge due to exponentially increasing choices overwhelmed them.



Discussion and Conclusion

The purpose of this study was to contribute empirical data to inform educational game design decisions relating to user control. Results indicate that being able to customize affects players' experiences. Starting from the first game session, CG was more engaged in game play than NCG. Participants' reported sensory and imaginative immersion, flow, and competence changed statistically significantly over four sessions. Although this change did not show different behavior for CG than NCG, customization heavily influenced players' sensory and imaginative immersion, flow, competence, negative affect, positive affect and challenge over four sessions (see Table 1).

In MMOs, players are introduced to more choices in form of customization as they level up. In CG, being able to customize various aspects of the game increased players' autonomy satisfaction, which increased their game enjoyment. This supports previous studies that indicate perceived autonomy results in higher levels of intrinsic motivation and enjoyment of games (Przybylski, Rigby and Ryan, 2010). From the qualitative data, it was clear that players' autonomy (having more choices and being able to explore) was also related to their sense of competence which may be facilitated by the leveling mechanics and progression in the game. As players progress, they are provided with more choices, and gameplay also gets more challenging, satisfying players' sense of competence. Players also gained confidence as they mastered game controls over time. This can explain the linear relationship between sessions and players' sense of competence. MMO interfaces are rather complex, which makes the learning curve steep. Once players were able to pass that barrier, they started to enjoy the gameplay. Being able to customize interface features facilitated that passage.

This study suggests that long-term game play elicits a significant increase in players' positive game experiences when they can customize game features, especially avatar based ones. Thus, customization is an important design feature for player engagement in MMOs and educators are advised to build-in strategic customization possibilities to maximize the potential for learning.

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