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# The Effect of Game Tutorial: A comparison between casual and hardcore gamers

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**Abstract**

Today's freemium mobile gaming market faces two major issues: conversion and retention. To this end, tutorials are used to help players quickly adopt a new game mechanic, but does it have the same effect on purchase and continuous use intentions for all players? We suggest that tutorials have different effects on casual players (*i.e., a gamer who is playing sporadically up to a few games a year, with a low gaming session average length*) vs. *hardcore gamers (i.e., a more dedicated gamer who is playing the various games downloaded for free or purchased more frequently)*. Preliminary results of this experimental research involving 43 participants already propose that casual players' intentions toward a game differ from those of hardcore players when exposed to the game tutorial. To better understand this difference, further analyses are underway to explore the players' psychophysiological state during the tutorial using eye tracking and physiological data.

**Author Keywords**

Mobile gaming; freemium; tutorial; flow; purchase intention; continuous use intention.

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## ACM Classification Keywords

H.5.0 Information Interface and presentation: General

## INTRODUCTION

The mobile gaming market is growing at an impressive rate with an estimated rise of 23 % in 2015, representing a \$20,6 billion industry worldwide [2]. Since 2011, most mobile games use a freemium business model [3]. Freemium mobile gaming is defined as a free and fully functional source of entertainment, well integrated to the user's schedule and lifestyle where players can purchase virtual goods to enhance their performance [4]. Based on the idea that offering a free core product limits the risks perceived by a user and encourages spontaneous downloads, the freemium model however leads to onerous operating costs, a very low conversion rate of 1 to 8 % [5, 6] and to a complex revenue power-law curve [2, 7]. Moreover, a recent industry report suggests that the 1-Day abandon rate is around 77 % [8]. As a consequence, it is of the utmost importance to identify practices that could raise the retention rate during a player's first interaction and learning phase. To this end, tutorials play an important role in the adoption process by guiding players through the game's mechanics.

Previous research suggests that game complexity should drive a developer's decision to incorporate a tutorial or not [9]. However, game complexity depends on the gamer's perception, and it is likely to vary according to the type of player. A *casual gamer* [10] (*i.e., a gamer who is playing sporadically up to a few games a year, with a low gaming session average length*) may find the learnability of a given game more difficult than a *hardcore gamer* (*i.e., a more dedicated*

*gamer who is playing the various games downloaded for free or purchased more frequently*), because the latter transfer their experience to the new game.

Thus, this research examines the interplay of a tutorial's presence or absence and the type of player (casual vs hardcore) on purchase and continuous use intentions in the very unique freemium gaming context. Overall, our study suggests giving the option to skip the tutorial, or at least integrate an adaptive component to it, may be an effective way to preserve the alignment between the type of player and appropriate guidance.

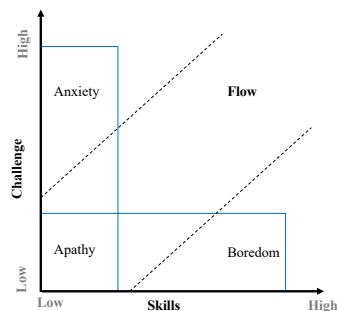
## Previous literature and hypothesis

### *Behavioral consequences of Flow*

Since learning how to play a game will generally constitute the first experience a user will have with your game, the tutorial is a key element in the retention practice. Therefore, learnability has been broadly accepted as an integral component of new technology adoption [11, 12]. For tutorials, the main goal is to provide the knowledge and skills to new users so that they reach an optimal experience, also referred to as a 'state of flow', faster and more easily. Consequently, a lengthy tutorial may postpone players' gratification, causing frustration or boredom. On the contrary, a tutorial which is too short may reduce the players' perceived skills with respect to the task and result in confusion or anxiety.

Defined as a holistic sensation that people feel when they act with total involvement [13], flow is a multidimensional construct which involves many positive outcomes for oneself [14]. There have been many studies on flow's behavioral consequences. By

Figure 1. Four-channel model of Flow [1].



When the perceived challenge differs from optimal, an individual can enter three different states of mind: apathy, boredom, or anxiety.

adding a flow construct to the TAM (Technology Acceptance model)[15], it has been proposed [16] that flow state is positively influencing **continuous use intentions**, which has also been concurred by other studies [17, 18]. Moreover, [19] posited that purchase intentions in freemium gaming context are dependent on how long a player perceives they will interact with the game. Hence, a relation between flow state and **higher perceived enjoyment** has been observed on numerous occasions in the literature [17, 20-22]. Finally, studies on online consumer's values and flow consistently led to a link between flow components, whether they are hedonic (e.g. telepresence, time distortion or arousal) or utilitarian (e.g. user skills, feel of control, response time to an action) and **purchase intentions** [23, 24].

This Four-channel flow model [1] (see Figure 1) suggests that the optimal experience is dependent on one's personal skills and is best defined as a "zone" rather than a strict linear relation [13]. Based on cognitive science, information system, and gaming literature, the next section addresses the capacity of a player to transfer their skills to another context.

#### *Game Aptitude transferability*

A vast literature covers the differences among novices and experts users with regards to problem solving [25, 26], information search strategies [27], and cognitive processing [28]. Because of their past experience, experts feel more in control and able to use the information from a new video game to build their decision [29]. On the contrary, without experience, a high degree of novelty to a given stimulus is observed and consequently implies a great amount of uncertainty, thereupon, may cause stress or arousal;

which, in turn, leads to increase attention and to a more controlled processing of the stimulus. Next time, the individual faces this same stimulus, a more automatic processing will occur because he has gained experience from their first encounter. This automation demands less cognitive effort and may result in an increased performance as the player filters more information cues [30, 31].

More specifically, training studies in cognitive psychology [32, 33] propose a causal effect of videogame playing with an enhanced basic visual attention. Building on [32], evidence of enhanced performance differences between experienced gamers and non-gamers for both types of multi-task paradigm (i.e. dual or task-switching task) provides evidence gamers can improve their executive control ability after 15 hours of action video game practice [34]. As noted in this study, the underlying cognitive process of successful skill transfers is still a matter of debate, since many studies trying to establish transferability of other cognitive aptitude; spatial ability [35] working memory function [36] skills were unsuccessful. Based upon our theoretical development, we theorize that players have predisposed aptitudes that might impact their first interaction with a game. Therefore, we propose there is an optimal fit between user type and the guidance needed during the first interaction of a new game. Figure 2 presents our research model and the preliminary hypothesis of this research.

The relationship between independent variables is a matter of fit, more specifically a *matching as fit* [37], since the adequation is developed independently from any individual anchor. According to flow theory, if one lacks the skills to overcome a challenge, gaming

Table 1. Sample distribution between the four condition

	Casual	Hardcore
Tutorial (T)	9	13
No-Tutorial (NT)	10	11

Figure 3. In-game screenshot of Saber's Edge combat system

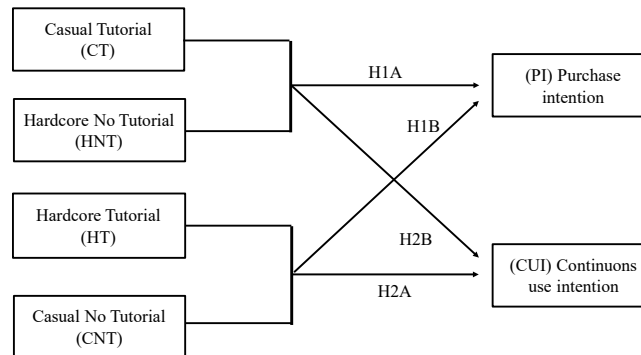


Figure 4. In-game screenshot of Saber's Edge in-game store



experience will suffer, but if one receives guidance from a tutorial one should reach an optimal gaming experience more easily and faster. If, in the other hand, one's skills are too high compare to the provided challenge, gaming experience will also suffer. *De facto*, as one reaches a flow state, because of an optimal balance between skills and the task demand, one should observe a positive relationship with a continuous use intention (CUI) [16-18] and purchase intention (PI) [23, 24].

Figure 2. Conceptual model and hypothesis



**H1A:** A casual player, exposed to a tutorial, will demonstrate higher PI than a casual player without tutorial guidance.

**H1B:** A casual player, exposed to a tutorial, will demonstrate higher CUI than a casual player without tutorial guidance.

**H2A:** A hardcore player, not exposed to a tutorial, will demonstrate a higher PI than a hardcore player with tutorial.

**H2B:** A hardcore player, not exposed to a tutorial, will demonstrate a higher CUI than a hardcore player with tutorial.

## Methodology

### Participants

To test our hypothesis, we conducted a laboratory experiment. Forty-three (43) casual and hardcore gamers had to play a new mobile game for the first time before it was publically released. Players were randomly assigned to one of two experimental conditions: with a didactic style tutorial,  $n = 22$  (T) or without a formal tutorial phase,  $n = 21$  (NT). The participants were recruited via our institution's research panel. The mean age was  $M=23$  ( $SD = 3.98$ ) with a range from 18 to 40; 28 were males. Based on [10, 38] criteria, we were able to classify participants in two categories: Casual (C) or Hardcore (H). Specifically, players were discriminated on reported self-categorization, average session played a week, average session length and previous gaming experience with video game. The average time played daily 2 h 09 ( $SD: 1$  h 54) for hardcores and 30 minutes ( $SD: 39$  mins). The hardcore players group was composed at 89% of men, in comparison to 42 % in the casual group. Distribution between the four conditions is presented in Table 1. Before the experiment began, all participants freely reconfirmed their desire to take part in this 60 minutes' experiment for which they were compensated CA\$20 (US\$ 15.50) gift certificate.

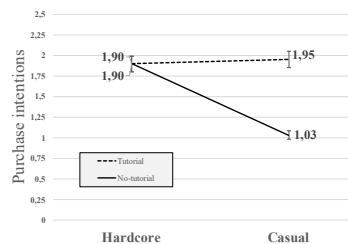
### Procedure

The experiment was composed as follows. A tutorial of 15 minutes was given to players in condition T. Players in condition NT played the game without any assistance (i.e. discovering freely the game) during this first phase. For the second part of the experiment, players in both conditions were asked to play freely for 12 minutes. The last part of the experiment began with an

Table 2. Global mean rank for purchase intentions

Global Mean Rank	Casual	Hardcore
Tutorial (T)	24.78	22.27
No-Tutorial (NT)	14.20	26.50

Figure 5. Reported Purchase Intentions between level of expertise and tutorial



in-app purchasing task (paid with in-game currencies) followed by a 5 minutes gaming period. Dependent variables were measured between each game sequence of the experiment and averaged for analysis. Finally, subjects were debriefed and thanked for their participation.

#### Experimental stimuli and apparatus

Saber's Edge [47] by Hibernum is a Match3-RPG game. As the application had not yet been launched at the time of the experiment, all players were new to the game mechanics. Players were asked to connect series of the same item in order to attack the enemy team (See Figure 3). Players' moves were restrained as they had a limited number of consecutive actions equal to the number of their heroes in the field. Participants started with a certain amount of in-game currencies and received more after each victory. In-game currencies could be used to enhance their character's performance (see Figure 4). The experimental game was played on an iPad Air 2 tablet.

#### Questionnaires

Participants were invited to report their experience on the 10-item Flow *Short Likert Scale* [39] ( $\alpha=0.85$ ). They reported their continuous use intentions (CUI) using an adapted 4-item 7-point Likert scale ( $\alpha= 0.78$ )[40] and their in-game purchase intentions, using real world money, (PI) were measured with a 3-item 7-point Likert scale ( $\alpha= 0.94$ ) [41]. Cronbach alpha ( $\alpha$ ) is the most recommended measure for asserting internal consistency of a given instrument. A large alpha indicates the items of a given scale adequately capture the construct [42]. An alpha superior to 0.70 is recommended, but complexity of the construct must be accounted for when judging of this measure [43].

## Results

#### Manipulation Check

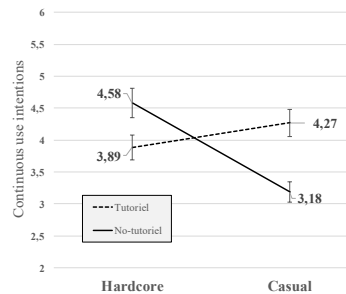
As proposed by our theoretical premises and assuming unequal variance for the testing, a significantly higher reported optimal experience (flow fit) was observed for casual players exposed to a tutorial (CT = 5.14) than those not exposed (CNT = 4.47,  $t(15.87) = -1.67$ ,  $p = 0.06$  (one-tailed)). No differences toward the optimal experience were observed among hardcores (HT = 5.09; HNT 5.15). Neither of the two conditions concerning the tutorial affected hardcores' journey to an optimal experience, either positively or negatively ( $t(19.34) = 0.170$ ,  $p=0.43$ ). These results provide more evidence of the fit between expertise and the presence of a tutorial.

#### Purchase Intentions (PI)

The reported purchase intention mean was 1.70 (SD: 1.09). The median was 1 and scores ranged from 1 to 5.88. With only 1 to 8 percent of players converting, in the freemium gaming context, [5, 6], low scores on purchase intentions were expected. However, the variations among conditions is noticeable as explained in the following paragraphs.

Global purchase intentions test failed kruskal-walliss non-parametric test to achieve 0.05 significance threshold with ( $\chi^2 = 6.605$ ,  $p = 0.09$ ). Therefore, we could not confirm statistical difference between the four conditions. However, we identified a trend in our post-hoc analysis that needs to be explored in more detail. We explored these variations using Mann-Witney non-parametric tests to compare means among independent groups of interest (see Figure 5).

Figure 6. Reported Continuous Use Intentions between level of expertise and tutorial



**H1A (CT > CNT on PI) was supported.** The distribution difference in the two casual groups was almost significant (Mann-Whitney  $U=25.50$ ,  $p=0.057$  one-tailed). Casual with tutorial (CT) group's mean (12.17) was barely higher statistically than casual without a tutorial (CNT) group's mean (8.05). **H2A: (HT < HNT on PI) was not supported.** The hardcore groups' distributions were not significantly different, HT group's mean (11.35) was not statistically different from hardcore without a tutorial group's mean (13.86)

#### *Continuous use intention (CUI)*

The continuous use intention mean ( $M=3.98$  (SD: 1.42)) was considerably higher than the purchase intention mean. The median was 4.17 and scores ranged from 1 to 6.5, with 7 being the maximum. A two-way ANOVA was conducted to test the influence of the two independent variables on the purchase intention. The interaction effect was significant ( $F: 21.39 = 4.41$ ,  $p = 0.042$ ). We therefore proceeded to independent-sample t-test to explore the relations (see Figure 6).

**H1B: (CT > CNT on CUI) was supported.** Assuming unequal variance, casual with tutorial (CT= 4.27) group mean was higher than the casual without tutorial one (CNT= 3.18). For CUI, results suggested a significant difference among the two groups ( $t(15.6) = 1.96$ ,  $p = 0.032$ , one-tailed). **H2B: (HT < HNT on CUI) was not supported.** For CUI, the empirical results were in accordance with our research hypothesis but this difference was not significant with our actual sample size ( $t(20.2) = 1.13$ ,  $p = 0.136$ , one-tailed). Assuming unequal variance, hardcore without tutorial (HNT= 4.58) group mean was not statistically higher than hardcore with a tutorial (HT = 3.89) group mean.

## **Discussion and concluding comments**

The first results of our study suggest that when a fit prevails between the type of user and the presence of a tutorial, positive consequences on purchase and continuous use intentions are observable. Most importantly, H1A and H1B were confirmed and suggest that casual players indeed need tutorials and this guidance leads to desirable outcomes both in terms of purchase and continuous use intentions. However, H2A and H2B, related to hardcore gamers, were not confirmed, since no differences in CUI and PI were observed between the two tutorial conditions for this type of player. One explanation for not supporting our hypothesis may relate to the state of boredom [44] and its tolerance. Our preliminary results offer guidance to developers, who in doubt of their 1<sup>st</sup> user level of expertise, should always provide a tutorial. In this study, challenge fit refers mainly to the flow construct, which has been empirically measured with self-reported questionnaires.

We are currently analysing neurophysiological data collected during this project, (i.e. eyetracking and physiological data). The objective is to have a better understanding of the psychophysiological state of the different types of player. For example, this data will allow a better understanding of the emotional intensity of players without tutorial and how this emotion evolves over time during the tutorial. We believe that by integrating some of these psychophysiological constructs, but also individual traits such as: personality, learning preferences and demographic, we will be able to discern key characteristics of tutorial needs. Therefore, this study will provide actionable results by identifying cues to flag a situation in which it is preferable to offer guidance to a player, as well as by

determining central player characteristics in order to develop more adapted tutorials.

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