

# Counselling Agent in Online Game Design for Excessive and Addictive Gaming Control

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**Abstract**— The issue of online game effects such as excessive play and addiction has attracted the attention of researchers, Government authorities and even stakeholders. For example, Chinese government has adopted daily shutting down of internet cafe at specified hours, and Australian authority enforced censoring certain portion of certain games before they are released. As an effort to tackle this issue, researchers have proposed adopting design changes on time limit as well as providing referral services as ways of limiting harm. The impart of the above are yet to make any remarkable impact on players. In this paper, we proposed a Counseling Agent model integrating informative and self-appraisal messages in online game design as a control measure. Counseling being a major source of addressing most human disorder has become a focus of attraction in addressing the issue of online game overuse in the society. In addition, the informative and self-appraisal messaging in games have proven optimistic through making positive impact on player's thoughts and behavior towards gaming. These messages are expected to remind players about the negative impact of excessive and addictive gaming habits, as well as suggesting possible reductive solutions through message streaming.

**Index Terms**— Addiction; Counselling agent; Excessive play; Online game; The 6-11.

## I. INTRODUCTION

The Massively Multiplayer Online Role Playing Game (MMORPG) category is known mostly to be rapidly on the increase and highly accepted in the online videogame industry. MMORPGs are played basically on the internet, self-motivated and extremely inter-relative gaming experience equipped with completely developed multi-player world by sophisticated and comprehensive visual and auditory world [1]. Although legacy videogames have termination point, or may turn out to be tiresome and cyclical, MMORPGs features have endless structure of objectives and achievements where the character turns to be physically powerful and wealthier by ascending to advanced height while amassing resources, authority and weapons [2].

Online video game companies have gradually started facing criticism due to excessive and addictive nature implication with some videogames as connected with violent content [3]. Studies have recommended that accountable videogame companies can ensure to restrain impaired character control over behaviour, which might lead to addiction, through a three follow up approach of integrating excellent game development amid efficient player's care policies, as well as referral services [4].

As a starting point, game designers and developers should require to reconsider the essential makeup of their designed games, for instance, development of character,

speedy assimilation rate, and multiple player makeup, which turns them excessive and/or addictive for certain gamers [5][6][7]. For instance, long quests should be condensed by reducing the time duration in obtaining definite cherished item in the game. Blizzard Entertainment, the World of Warcraft maker, earlier introduced some reducing mechanisms of immersive game play that optimised extreme and addictive gaming [2]. In a dialogue at 2010 BBC Panorama documentary, Blizzard expressed in a statement: 'World of Warcraft contains practical tools that assist players and parents in monitoring playing time'[8]. A way of reducing harm on gamers is for designers to address changes in time limit as most players program and schedule their time based on game duration [2]. For instance, long quests could be reduced, the required accumulated points desired to attain the subsequent level can be minimised, spawns can be programmed to emerge more regularly, offering players faster likelihood of getting particularly required items and through hastening up the procedures of complicated task, players can finish the game faster after finishing their tasks. Introducing such modification to MMORPGs can demonstrate that game designers and publishers are serious about the consequence of their products and that they are not only interested in just revenue [2].

In this paper, we have proposed Counselling Agent as a control measure in reducing excessive and addictive gaming habit. Counselling Agent's objective is to detect excessiveness after 30 minutes of continuous gaming as an attempt to protect the player's wellbeing. Comprehending the Social Psychologically designed messages are expected to change the player's thoughts and behaviour towards excessive and addictive gaming habits.

This paper is organised into five sections, introducing the problem of excessive and addictive gaming is discussed in this section. Related work referring to excessive game overuse, addiction, online games previously adopted solutions and related game design model are discussed in section two. Section three highlighted the proposed counselling agent model, while section four and five elaborated the discussion and conclusion.

## II. BACKGROUND AND RELATED WORK

### A. Excessive Game Overuse

Exposed adolescent to excessive amount of online game violent are likely to be more hostile, getting frequently into unnecessary argument with teachers and are most likely associated in physical clashes, and performed very badly in academics [9]. Online game challenges could be described as excessive game overuse or addictive activity. Excessive

gaming and addictive activities are different phenomena. Healthy extreme passion improves life, while addiction takes away from it"[10]. Excessive time spent in online video gaming can seriously affect academic, work and "real life" social contacts [11]. Excessive play can result to addiction as online game is now well known as among the most easily addictive behaviour on the internet [12]. Previous research have shown that spending too much time in online gaming may lead to various adverse effects including bad influence on gamers school work, amplified nervousness, worsening of interpersonal affiliation, escape from reality, adolescence violent behaviour and crimes, etc. [13][14][15][16]. Although, it is rather hard to differentiate between a good and bad use of videogames but certainly are satisfactory proves describing too much gaming as problematic or additive when other aspects of life is truncated by gaming [17], this issue calls for extensive investigation [18].

Excessive online gaming has further be found to be connected with drastically diminished quantities of slow-wave sleep and reduction in oral recall performance and a long-lasting sleep-onset latency[19]. Excessive play was testified that a gamer exceptionally moved his tongue and jaw during the progress of an online game until he contacted muscle hypertrophy and related health issues [20]. These stated issues have made excessive play a major concern. Being that excessive play and addiction are interconnected, the developed model in this study is to assist in minimizing excessive and addictive gaming habit.

### B. Game Addiction

Research have deemed it necessary to differentiate between obsessive gaming (excessive engagement) and addiction due to psychological status [21] [22][23][24]. Roughly 8–12% of adolescents were found to be in excessive (problematic) engagement, while about 2-5% of brood, young people and students were found to be addicted [22][23][24]. Further study suggested 12% of online video gamers meets probably three of the seven addiction criteria [25][26], as either described by monothetic or polythetic layout for addiction diagnosis [27].

Further studies from various backgrounds have provided confirmation that about 7–11% of gamers seems having serious troubles to the extent of being called or labelled pathological gamers. For example, 8.5% in Singapore [28], 10.3% in China [29], 8% in Australia [30], 11.9% in Germany [31] and 7.5% in Taiwan [32]. Couple of players are known to have spent about 40, 60, and probably around 90 hours per gaming session [33].

Greenfield discovered that online game addicts always feel a sense of disturbance when online, leading to inability of managing the essential parts of their lives owing to their increase concentration on online games. This resulting to inability to meet vital deadlines at places of work, less time spent with members of their family, and gradually neglecting their family usual routines [34]. They begin to avoid social connections with their colleagues, co-workers, and even with their neighbourhoods, and eventually, their lives become uncontrollable. As the addiction gets more serious, they get more glued to their online activities, preferring online games, chatting online with friends, or internet gambling, slowly neglecting friends and family in substitution for privacy time on the computer [34]. Clinicians all over the world like Kim Hyun Soo, chairman and psychiatrist at

South Korea's Net Addiction Treatment Center in Busan, established that online gamers "don't have normal social relationships anymore" and resulted to covering feelings of anger, depression and low self-esteem by playing online games [35][36][37].

### C. Previously Adopted Solutions

1) *Government Intervention:* Government of various countries have tried to adopt different measures in dealing with excessive and problematic gaming habits. To restrain addictive and excessive video gaming, Chinese government frequently close down Internet cafes and has established regulations to reduce gaming hours [38]. Thailand's authorities prohibited Grand Theft Auto 4 while a student murdered a cab driver as he try to experiment if such action as in the game can be reproduced in real life as in the game' [39]. Similarly, the Australian classification board as a result of extreme and unrealistic drug use denied the original version release of Fallout 3 consequently directing its publishers Bethesda Softworks to publish a censored edition [40]. Take-Two Interactive was originally declined rating of Manhunt 2 in Ireland, Italy and in the UK, but accepted as Adult Only (AO) rating in the USA [41]. However, after censoring the game via distorting that segment through the execution of the game and taking away the rewarding system scoring gamers for mostly atrocious slaughtering, the censored version was changed to Matured (M) rating in the USA by the Entertainment Software Rating Board (ESRB) [42]. In the United States of America, purchase of 'Adults Only' (AO) or 'Mature' (M) rated games to kids turned a serious concern to government officials, and resulted to the introduction of Video Games Ratings Enforcement Act by the United States House of Representatives requiring an identification verification for M and AO rated before games are purchased [43].

2) *Researchers Advice:* As a starting point, online videogame developers and publishers should critically consider the compositional contents of their products, for instance, multi-player features, rapid absorption rate, and character development, making online games problematic and/or addictive for a number of players [6][7] [8]. For instance, long quests should be condensed to reduce the amount of time spent in attaining the particular reward point. Blizzard Entertainment, the publisher of World of Warcraft, commenced some reducing effect of addictive gaming systems that influenced extreme game-play [2]. One way of limiting harm on game players is for game designers to encourage design alteration on time confines as players program and their time accordance to game episode durations [2]. For instance, long quests should be cut short, the required experience points desired to attain the subsequent rank should be reduced, spawns can be timed to be frequently appearing, giving gamers better possibility of getting particularly required stuff and by hastening up the processes of complicated task, gamers can end the game much faster following finishing their tasks . Apply such modification to MMORPGs will demonstrate that game publishers are taking social responsibility very seriously and that they are not solely interested in the revenue [2].

3) *Game Designer/Developers Intervention:* Most game publishers have resulted getting their divisive games rated via intentional evaluation systems [2]. Acknowledging this fact, similar to the warning ads on alcohol and tobacco

wrapping, cautionary messages regarding dangers of game excessiveness suddenly have started appearing on booting screens of famous Massively Multiplayer Online Role Playing Game (MMORPGs). Contesting examples include: *World of Warcraft*– ‘Take everything in moderation (even *World of Warcraft*)’ and ‘Bring your friends to Azeroth, but don’t forget to go outside of Azeroth with them as well (*Blizzard Entertainment 2008*) ’; *Final Fantasy XI*– ‘we have no desire to see your real life suffer as a consequence. Don’t forget your family, your friends, your school, or your work’. (*Pet Food Alpha 2008*). Despite these warning messages by game developers, cases of game overuse still remain highly uncontrollable in the society [45][46][47][48][49]. In the recent times, a Malaysian game addict died of heart attack due to excessive online videogame for 15 straight hours [50].

**D. Referenced Game Design Model**

Mechanics, Dynamics and Aesthetics popularly known as MDA [44] is related to the 6-11 model, but the 6-11 model by Dillon [51] [57] provides a new taxonomy for game aesthetics by making it easier to relate to game dynamics. Dillon's model specifically focuses on the six emotions and eleven instincts [51] [57] for game design. The six emotions include Fear, Joy/Happiness, Anger, Pride, Sadness and Excitement, while the eleven instincts comprises of Survival (Fight or Flight), Self Identification, Collecting, Greed,

Protection/Care/Nurture, Aggressiveness, Revenge, Competition, Communication, Exploration/Curiosity and Colour appreciation [51] [57].

**III. THE COUNSELLING AGENT**

We proposed a Counselling Agent that is developed based on Dillon's 6-11 game design model [51][57] by integrating the relevant emotions and instincts in its Aesthetics design. Each emotion or instinct is assigned specific functions in the game. Essentially, the focus is to classify which emotions and instincts are pertinent in a particular game during the design stage. In this contest, the counselling agent is developed and integrated into the game as shown in Figure 1, to take care of the player's wellbeing. Player's wellbeing in this contest includes reducing excessive play and addiction habits.

Before proceeding, it is pertinent to discuss the essential features of the 6-11 as it relates to Counselling Agent. The 6-11 comprises of Mechanics which contains the rules, codes and the design nature of the game. Dynamics expresses the output of the game, while the Aesthetics expresses the expected emotions deposited on the player during the game process. Major focus of Counselling agent is directed to Aesthetics for producing the stimulating effect.

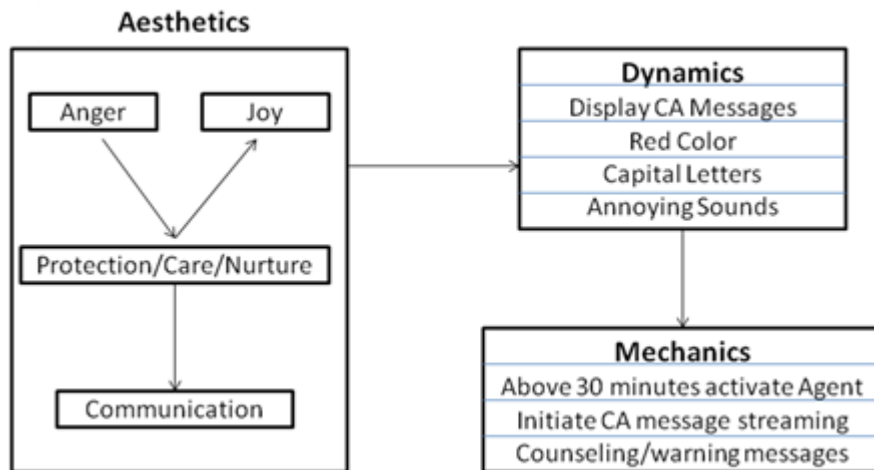


Figure 1: Counselling Agent

**A. Counselling Messages Design and Development**

Counselling messages design and development is also necessary to be discussed in this context in order to understand the operating principles behind the messages integrated in the counselling agent. Campaign messages include informative messages design to pass information about risk of game overuse to the player. Examples of such messages are "Game overuse is as dangerous as drug abuse", "Excessive gaming can make you drop out of school", "Games can wait but study time cannot wait" etc. While, appraisal messages includes self-appraisal messages design to encourage participant to reflect on their current gaming behaviour and to consider taking a break. Examples are; "Consider how long you have played", "Consider taking a brake", "attend to other waiting tasks instead of gaming".

Similar to alcohol and tobacco, research have shown that gambling warning ads attracts awareness and increases familiarity but are usually unsuccessful in changing gamer’s thoughts and behaviours[52]. It has also be finalised that, in contrary to ads exhibiting likelihood or enlightening players of the dangers related with gambling, messages developed to persuade gamers to mirror on, appraise, assess and self-regulate their conduct have better theoretical and empirical support [52]. Monaghan and Blaszczyński have also suggested that cautionary messages should persuade the purpose of self-appraisal and self-regulation ability instead of effortless provision of messages on odds and possibilities to optimise their efficiency as a civic healthiness instrument. For warning messages to be effective, they must be designed to engage players' cognitive, emotions, and inspirational abilities which can amplify their possibility of appraising their period and strength of play [53].

There are two basic social psychological principles for designing warning messages which are content principle and process principle. Both groups of principles could be utilised in enlightening the development of counselling/warning messages. Content principles describe the characteristics of the warning message substance in itself that constitute the effectiveness of the message. Process principles describe the design features (for example, stylistic features) that constitute the effectiveness of the message [54]. Social psychological investigation on thoughts and persuasion proposed a number of universal content principles that can lead to the development of more effective warning messages [55].

### B. Counselling Agent

Counselling agent model consist of Mechanics, Dynamics and Aesthetic. The duty of the counselling agent is to protect the gamer by detecting excessive gaming and responding through sending more frequent counselling/warning messages to the Dynamics. Counselling agent is triggered into action by detecting excessiveness after 30 minutes of continuous play. Figure 1 shows the Counselling Agent model consisting of Mechanics, Dynamics, and Aesthetic. Detailed elaboration of each component of Counselling Agent is discussed below.

1) *Aesthetics*: consists of two instincts (Anger and Joy) and two emotions (Protection/Care/Nurture and Communication). Aesthetics describes the emotional feeling exhibited on the player during the game process [57]. Counselling Agent game is designed to take care of the player's wellbeing through aesthetics. After 30 minutes of continuous gaming, Aesthetics experiences excessiveness as a sign of taking care of the player's wellbeing. This excessiveness triggers "Anger" emotion into action to protect the player through "Protection/Care/Nurture" instinct. By this action, "Communication" instinct is triggered to communicate counselling/warning messages streamed at the bottom centre of the gaming environment to the player. The game experiences "Joy" emotion when the player decides to stop gaming.

2) *Dynamics*: it is described as the complex actions that unfold as a result of applying the mechanics [57]. When the game play (mechanics) exceeds 30 minutes, dynamics stream counselling/warning messages either from left to right or from right to left of the bottom centre of the gaming screen. Messages are expected to stream in red colour, capital letter with annoying sounds. Streamed messages shall remain on the screen for 2 minutes until the next message. Streaming time and speed should be specified. Messages shall be stream with consistency in order to create expectation on the player.

3) *Mechanics*: refers to the action performed by the player in order to manipulate the rules of the game. To manipulate Counselling Agent, the player must initiate the game play to last for more than 30 minutes. After which the "Communication" instinct from the aesthetics stimulate the mechanics repository to release the messages for streaming by the dynamics. This mechanics, dynamics and aesthetics circle continues until the player stop gaming, while the game experiences "Joy" emotion.

## IV. DISCUSSION

Instead of shutting down internet cafes or forcing game developers to censor certain parts of their games before they are released as adopted by certain government, or limiting game time by making design changes as suggested by researchers. It is of paramount importance to critically review the game developer's approach of adding warning messages at the loading screen of games. This study is to improve on game developer's idea of adding warning messages in the game. Instead of adding warning messages at the loading screen of the game, our approach is to stream counselling/warning messages at the bottom centre of the screen after 30 minutes of the game process.

Constraints such as how to make the players to pay attention to the messages was address during the message design by adding annoying sounds, with messages in red colour and block letters. Further limitations and challenges of inability of none educated gamers to read and comprehend the messages posed a great threat to the success of Counselling Agent model. Furthermore, the 6-11 model and Mechanics, Dynamics and Aesthetics (MDA) model [44] are greatly related in achieving the Counselling Agent model. Although, both models constitute Mechanics, Dynamics and Aesthetics but the 6-11 further constituted the emotions and instincts which are very significant in the Counselling Agent model. We concentrated on using the two emotions (Anger and Joy) and two instinct (Protection/Care/Nurture and Communication) from the 6-11 as the main factor in adjusting thoughts and behaviour. Major improvement is the combination of the emotions and instincts in achieving adjusted thoughts and behaviour which is the unique nature of the Counselling Agent.

The proposed Counselling Agent is of the opinion that, it is not the game that changes the player's behaviour, but the thoughts pattern of the player leads to behavioural change. The problematic and addictiveness of online games by adopting streaming counselling/warning messages in game design has been addressed in our previous work [58] [59]. Additionally, our approach is to develop counselling/warning messages that will correct distorted thoughts that can lead to positive behaviour. During message streaming, excessive or addictive gamers can experience cognitive restructuring from the messages, which will lead to improve behaviour pattern and finally leading to game reduction.

## V. CONCLUSION

Game developers despite adding warning messages at the loading screen of certain games seems not to make any contributing impact to the expected social responsibility of controversial industries. The effects of online games excessive play and addiction are enormous. Although, authorities of various countries have tried to adopt diverse measures against online game overuse, while game developers have adopted warning messages regarding danger of game excessiveness which seems not to be making the desired impact. Researchers have also advised for developers to make design changes. Despite different approaches to deal with these challenges, cases of game overuse still remain highly uncontrollable in the society. Hence the proposed solution of integrating Counselling Agent model in game

design could be viewed as an alternative solution to curb the menace of excessive play and addiction.

Currently, this research is expected to evaluate the change effect of counselling agent game on player's thoughts and behaviour towards excessive and addictive gaming habit. Two groups, experimental and control groups will be evaluated by comparing thoughts and behaviour change of both groups. The control group plays the game without counselling/warning message, while the experimental group play the game with counselling/warning messages. Results will be compared with Gainsbury [56] and Monaghan and Blaszczynski [52] of the impact of game message streaming on players.

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