A Study of Relationship between Level of Internet Addiction and Physiological Effects when Surfing the Web

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Abstract

The purpose of this study was to examine the physiological effects of computer worker when surfing the web. Twenty subjects are measured with physiological indices four times in the morning and afternoon. The results showed that higher level of Internet addiction is not as expected different with the lower level of Internet addiction. After surfing the web, there are significant differences in subjects' HR in the morning and afternoon. LF is significantly higher, as this time people are more spiritual and concentration in the morning. HF is higher in the afternoon, so people feel more relax or fatigue.

Keyword: Internet addiction, Physiological parameters, Web surfing

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I. INTRODUCTION

As information technology continues to progress, development, computer and Internet is no longer simply a tool for supporting human work, which has become indispensable to people's daily lives technology products. The rapid growth of the Internet has been accompanied by questions about its impact, both positive and negative, on society and users. Most individuals use the Internet without negative consequences and benefit from use. Misuse often is accompanied by guilt, craving, and attempts to hide or reduce time online. Due to the increased awareness that on-line game addiction is a legitimate concern, efforts to explain why and how people are deeply involved in these games have become important research issues. Some previous studies have suggested that individual psychological characteristics (including personality traits) may predispose certain individuals to overuse the Internet, and past research has chiefly examined the effects of shyness, anxiety, loneliness, depression, and self-consciousness on the level of Internet use so far [1-4]. The aim of this study was to examine the level of Internet addiction and physiological effects when surfing the web and when is the suitable time for surfing the web.

II. MATERIALS AND METHOD

In order to ensure the participants are keeping online during experiment process, we used on-line game to do this experiment. All the participants need to complete the questionnaire which rewrite from Young's Internet Addiction Test (IAT) [5]. The participants should have a 6 to 8 hours sleep before doing this experiment. We would measure the physical parameters 4 times for each participant in the morning and afternoon. We asked participants to take a 10-minute rest, measure the physical parameters, then start to surfing on the Internet for 50 minutes and measured second times. Then take a 7.5-minute rest and do the measure the third times, at last take another 7.5-minute rest, the do the last measurement. The experiment timing diagram is shown in Figure 1. We use ANSWatch® to measure physiological parameters and outputs eight physiological parameters index on the LCD screen include HR, SYS, DIA, HRV, HF%, LF%, LF/HF and accompanied ANSWatch® manager pro software to view the physiological parameter data, analysis and evaluation.

III. RESULTS AND DISCUSSION

In this study, we want to know the change of physiological parameters in the morning, afternoon and before and after surfing the web. After the end of the experiment, statistical results are integrated into figures for analyzing. In Figure 2, the physiological parameters of

high level Internet addicts between after surfing the Internet and rest for 7.5 minutes in the afternoon have significant difference in HF% and LF%. According to M.D. Su, the autonomic nervous system maintains a balance between the sympathetic and parasympathetic nervous system, it regulates the internal organs of our body, and there is a certain rhythm. Sympathetic nerve activity during the daytime, breathing and heart function are very active, high temperature and blood pressure, solely for the purpose of the activity during the daytime to make the necessary preparations action. In the evening, parasympathetic nerves activity, the heart beating and respiratory rate were reduced, temperature and blood pressure also decreased slightly, ready for rest or sleep.

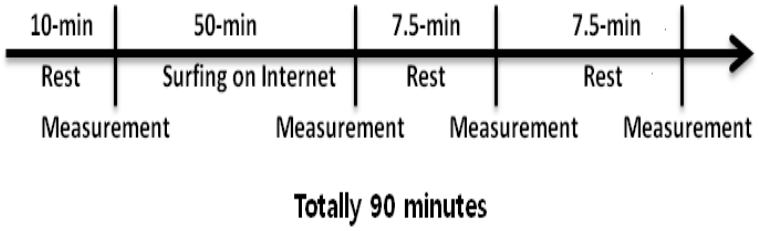

Figure 1 Timing diagram of experiment

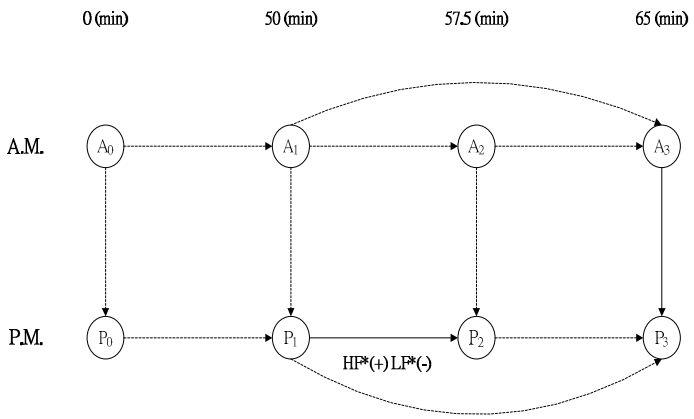

Figure 2 High score in the morning and afternoon

In Figure 3, from morning to afternoon the HR is increased. As in the morning the heart rate is lower than afternoon, so after surfing on the Internet in the afternoon the heart rate would higher than morning. In evening heart rate would gradually slow down, therefore, after take a break for 7.5 minutes in the afternoon, there is no significant difference, but a significant difference in HR between after surfing the Internet and take a break for 15 minutes. Parasympathetic is stronger than sympathetic in the afternoon, thus sympathetic and parasympathetic balance indicators have significant decreased.

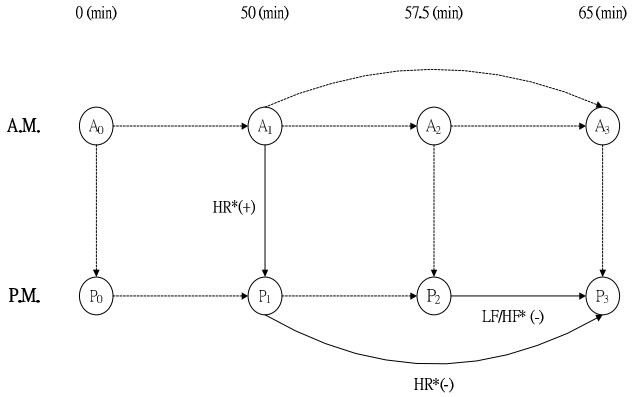

Figure 3 Low score in the morning and afternoon

In Figure 4, the sympathetic of normal people would active and parasympathetic would inactive in the morning, when people concentration the parasympathetic would be motivated, therefore, in the morning the HF% has significant decreased and LF% has significant increased for the participants of low score.

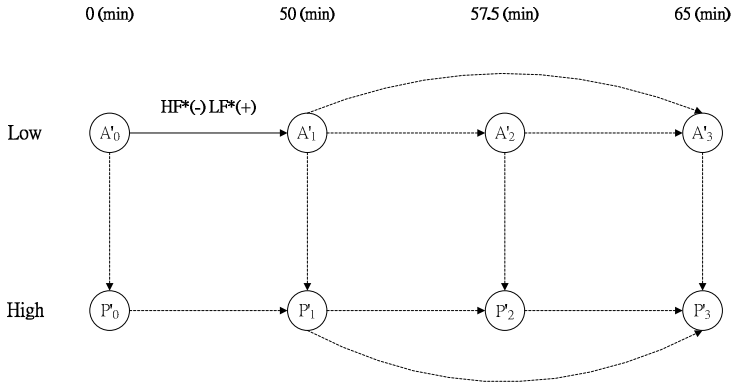

Figure 4 High score and low score in the morning

In Figure 5, In the afternoon, for the participants of low score, the HR between after surfing the internet and rest for 15 minutes has significant increased, it's possible that people still feel exciting, so the HR is still increased. For normal people, parasympathetic is stronger than sympathetic in the afternoon, thus sympathetic and parasympathetic balance indicators have significant decreased between rest for 7.5 minutes and 15 minutes. The DIA of high score participant is significantly higher than low score participants. Currently, there is not much study about whether surfing on the Internet cause the increased of DIA, but the studies point out that DIA continue at high status, would cause high blood pressure, and it's dangerous than SYS high blood pressure.

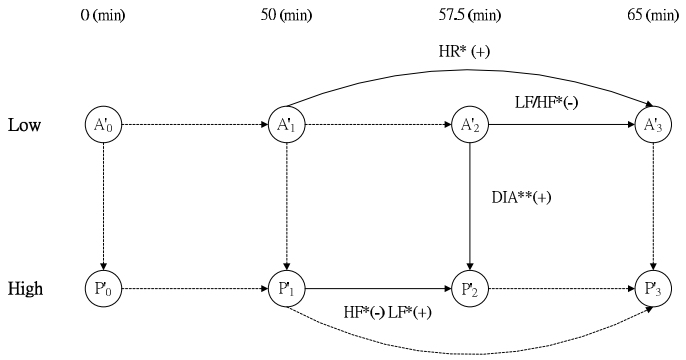

Figure 5 High score and low score in the afternoon

IV. CONCLUSION

With the increasing population of Internet use, more and more people surfing the web, play online games or to find information through the Internet, however surfing the web for a long time will produce many negative physical and psychological effects. This aim of study was to examine the Level of Internet Addiction and Physiological Effects when Surfing the Web. When blood pressure increased the heartbeat will getting faster, and as Sheldon G. Sheps, M.D. said, your blood pressure continues to rise during the day, usually peaking in the middle of the afternoon. Then in the late afternoon and evening, your blood pressure begins dropping again. So the heart rate in the afternoon is higher than afternoon. In the morning sympathetic nervous system is working, there is little significant change in physiological parameters, and in the afternoon parasympathetic nervous system is working, but at this time participants still surfing the web, so there are significant change in physiological parameters. We believe no matter surfing the web or working, the efficiency in the morning would better than in afternoon.

ACKNOWLEDGEMENTS

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