

**Relationship of Internet and Gaming Addiction
with Adult Attention Deficit Hyperactivity
Disorder among Male University Students**

Thesis

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By

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List of Abbreviations

Abb.	Full term
<i>ADHD</i>	<i>Attention Deficit Hyperactivity Disorder</i>
<i>ASRS</i>	<i>ADHD Self-Report Rating Scale</i>
<i>CBT</i>	<i>Cognitive Behavioral Therapy</i>
<i>DA</i>	<i>Dopamine</i>
<i>DSM-5</i>	<i>Diagnostic and Statistical Manual of Mental Disorders</i>
<i>HPA</i>	<i>Hypothalamic-Pituitary-Axis</i>
<i>IA</i>	<i>Internet Addiction</i>
<i>IAT</i>	<i>Internet Addiction Test</i>
<i>IGD</i>	<i>Internet Gaming Disorder</i>
<i>OCD</i>	<i>Obsessive-Compulsive Disorder</i>
<i>OR</i>	<i>Odds Ratio</i>
<i>PFC</i>	<i>Prefrontal Cortex</i>
<i>PIU</i>	<i>Pathological Internet Use</i>
<i>SN</i>	<i>Social Networks</i>
<i>SSRIs</i>	<i>Selective Serotonin Reuptake Inhibitors</i>
<i>SUDs</i>	<i>Substance Use Disorders</i>

Abstract

It was found that the frequency of adult ADHD is within the same prevalence found in recent studies.

Meanwhile, the type of faculty is not related to any of Adult ADHD, internet gaming disorder and internet addiction and video gaming addiction. However age as a risk factor couldn't be assessed due to the narrow age range between the students.

It was found that there is positive relationship between internet addictions, internet gaming disorder, video gaming addiction with adult ADHD.

Other symptoms of ADHD, fidgeting, difficulty unwinding and relaxing, finishing the sentences of others, difficulty waiting one's turn, talking too much in social situations, interrupting others while they are busy were significantly related to internet and gaming addiction with no significant difference between theoretical and practical faculties.

Keywords: Cognitive Behavioral Therapy - Selective Serotonin Reuptake Inhibitors

INTRODUCTION

Addiction is a medical condition characterized by compulsive engagement in rewarding stimuli, despite adverse consequences (*Angres & Bettinardi-Angres, 2008*).

It is considered a disorder of the brain's reward system which arises through transcriptional and epigenetic mechanisms and occurs over time from chronically high levels of exposure to an addictive stimulus (*Ruffle, 2014*).

Addictive stimuli can be either a substance or behavioral addiction. The substances that are considered to be addictive are mentioned in DSM-5 as substance use disorders (*APA, 2015*). Behavioral addictions have been proposed as a new class in DSM-5, but the only category included is gambling disorder. Internet gaming disorder is included in the appendix as a condition for further study (*Kuss & Daria, 2013*).

Moreover, several behaviors (besides psychoactive substance ingestion) produce short-term reward that may engender persistent behavior despite knowledge of adverse consequences. Since, diminished control is a core defining concept of psychoactive substance dependence or addiction, this similarity has given rise to the concept of non-substance or “behavioral” addictions but with a behavioral focus other than ingestion of a psychoactive substance (*Potenza, 2006*).

Preclinical evidence has demonstrated that over expression of Δ FosB (a transcription factor that plays an important role in development and maintenance of pathological behavior and neural plasticity) through repetitive and excessive exposure to a natural reward i.e. the addictive behavior induces the same behavioral effects and neuroplasticity as occurs in a drug addiction (*Pitchers et al., 2013*).

In the modern trends life is impractical without computer and internet (*Korkeila, 2012*). The internet has diverse uses from education to entertainment and from chatting to business enhancement (*Young and Abreu, 2011; Mythily et al., 2008*). In some instance technology has negative consequences that cause physical and psychological harm to human beings such as development of ADHD symptoms (*Yoo et al., 2004*).

Internet use is one of the identified behaviors to be addictive. Internet addiction is considered a global phenomenon that has been a topic of increasing interest to clinicians, researchers and stakeholders such as teachers, parents and community groups. It is also called Problematic Internet Use (PIU) (*Moreno et al., 2013*).

There are five general subtypes of Internet addiction that were categorized based upon the most problematic types of online applications, and they include addictions to Cybersex and internet pornography, Cyber-relationships, online stock trading or gambling, information surfing, and computer games,

as for cybersex, it is defined as a virtual sex encounter in which two or more people connected remotely via computer network send each other sexually explicit messages describing a sexual experience, while internet pornography means any pornography that is accessible over the Internet (*Young, 1999*).

As previously stated, Internet Gaming Disorder (IGD) is a “Condition for Further Study” in the DSM-5 (*APA, 2013*). Of all online activities, online gaming has the strongest association with compulsive Internet use (*Van Rooij et al., 2010*). Excessive computer game playing without monetary rewards is considered problematic (*Johansson & Gotestam, 2004*).

Conceptually, the diagnosis is a compulsive-impulsive spectrum disorder that involves online and/or offline computer usage and consists of at least three subtypes: excessive gaming, sexual preoccupations, and e-mail/text messaging. All of the variants share the following four components: 1) excessive use, often associated with a loss of sense of time or a neglect of basic drives, 2) withdrawal, including feelings of anger, tension, and/or depression when the computer is inaccessible, 3) tolerance, including the need for better computer equipment, more software, or more hours of use, and 4) negative repercussions, including arguments, lying, poor achievement, social isolation, and fatigue (*Block, 2008*).

There are also other forms of internet addiction understudy nowadays. Social Networks (SN) for example have been widely disseminated among children, teenagers and adults. The gratification brought by the “likes” is only one of the many forms of pleasures that the Social Networks provide. There are also several other possible ways in which pleasure is conveyed through social networks. This raised the term Social network addiction (*Wang, 2013*).

ADHD is a psychiatric disorder by nature in children and adolescents (*Spencer et al., 2007*). And it depicts great difficulty attending to task or persistent problems in attention, hyperactivity and impulsivity included (*APA, 2013*).

The symptoms of the disorder are categorized as follows: inattention, difficulty sustaining attention and mental effort, forgetfulness, and distractibility; hyperactivity-fidgeting, excessive talking, and restlessness; and impulsivity-difficulty waiting one’s turn and frequent interruption of others (*DSM, 2013*).

A plethora of research investigated excessive use of internet and playing online games causes the release of dopamine neurotransmitter that further leads to ADHD (*Bedard et al., 2007; Han et al., 2007*). Moreover, ADHD causes weak working memory; likewise some studies probed the correlation between ADHD and visual working memory (*Hong et al., 2000; Ventre-Dominey, 2005*).

Rationale of the Study

The current study aims to investigate internet addiction in undergraduate university students of Ain Shams University and its significant association with ADHD symptoms. Literature supported that Internet addiction might have a close association with ADHD symptoms. Therefore, there was a dire need to extend this theory within the context of developing nations such as Egypt.

Hypothesis of the Study

Internet and gaming addiction have a significant association with adult ADHD symptoms of inattention, impulsivity/hyperactivity problems among male university students.

AIM OF THE STUDY

1. To examine the relationship of internet addiction with all possible variations of adult ADHD symptoms (impulsivity/hyperactivity & Inattention problems) among the selected sample.
2. To examine the relationship of internet gaming addiction with all possible variations of adult ADHD symptoms among the selected sample.