01D325I

Project Number: CAB-1204 43

### Video Game Dependency

An Interactive Qualifying Project Report
Submitted to the Faculty
of the

Worcester Polytechnic Institute
In partial fulfillment of the requirements for the
Degree of Bachelor of Science

by

Sean Dyer

Doan

Date: May 8, 2007

Professor Christopher Brown, Project Advisor

Churtopher A. Bown

- 1. Video Games
- 2. Addiction and Dependency
- 3. Treatment

This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review.

#### **Abstract**

The goal of this project is to analyze obsession and its characteristics applied to the realm of electronic gaming, possibly to the extent of dependency and addiction. The possibility exists, given the addictive personalities of some people. Much research in the field of addiction medicine was done to examine criteria for addiction, obsession, and dependency. In conclusion, video game dependency could exist in individuals in the population, and personal responsibility is one of the best suited methods of treatment.

### **Table of Contents**

F	OREWO	PRD: INTROSPECTION AS A CASE STUDY	4
		EHAVIOR	
	Curren	T BEHAVIOR	4
1	INTROI	DUCTION	6
2	METHO	DDS	9
3	GOALS	OF REHAB	11
	3.1 3.2	IDENTIFICATION	
	3.2.1		
	3.2.2		
	3.2.3		
	3.2.4		
	3.2.5	Daily Control	13
	3.2.6	Cognitive Behavior Therapy	14
4	DEFINI	NG DEPENDENCY, OBSESSION, AND ADDICTION	15
	4.1	Dependence	15
	4.2	OBSESSION/FIXATION	
	4.3	ADDICTION	
	4.4	CONFOUNDING FACTORS	
	4.5	A Theory	19
5	DECOM	IPOSITION OF ESTABLISHED METHODS BY POSITIVE AND NEGATIVE	
			21
	5.1	Treatment of Obsession	21
	5.2	12 Steps	21
	5.3	PHARMACEUTICALS	22
	5.4	THERAPY	22
6	MY ANA	ALYSIS	23
	6.1	THE EVIDENCE FOR ADDICTION	24
	6.2	What to do	24
7	RISK CO	OMPARISON	25
	7.1	Running/Exercise	25
	7.2	GAMBLING	
	7.3	SMOKING	
	7.4	ALCOHOL	26
	7.5	DRUGS	
	7.6	VIDEO GAMES	
	7.7	BOOKS	
	7.8	Television	28
8	SUBJEC	TS FOR FURTHER STUDY	29
		THE NATURE OF DIVINE HELP	
	8.2	MALLEABILITY OF CHILDREN'S MINDS	
	8.3	Addiction Replacement	30
R	EFEREN	ICE	31
A	PPENDI	X	33
-			

# Foreword: Introspection as a Case Study

As a player of video games from a very young age, and as somebody who has forgotten to sleep once or twice because of game-playing, and in the idea of objectivity, I feel it is my responsibility to analyze myself.

#### Past Behavior

One of my most prevalent behaviors in regards to video games is skipping meals. If I'm at an important point in the game, or even if it's just an enjoyable game, and I have a bit of hunger pangs, I usually ignore it until it subsides. I rationalize this with the logic that I could either just eat later, and that I could stand to lose a couple pounds anyway.

Alternately, I would grab a soda and resume playing. My meals when playing games are usually fast and rushed, as my mother points out. If I would normally have seconds, I'd limit myself to one serving.

My sleep is very different from what it used to be as well. I routinely go to sleep at around two in the morning, although that time isn't always spent playing games. I think however, I may have started on that trend by playing games into those hours when I would do nothing but sleep anyway. Again, I rationalized that if I could wake up when I need to it wouldn't be a problem. The average person in my age range (18-25) should ideally get between 8 and 10 hours of sleep per night (Appendix C).

#### **Current Behavior**

I still play video games, but I'm more aware of my surroundings and what my body tells me. I've seen how some people get when they play games like World of Warcraft (as an example), and they appear to be in a sort of trance.

As to whether I was addicted? No, I don't believe I was. I am able to not play games for extended periods of time, or indefinitely I suppose, but I think I would get bored with that. Sometimes I just can't get into the feel for a game, which I don't think would happen if addiction were the case. To me, games are at the same level as movies or television: entertainment, and not much else.

### 1 Introduction

The goal of this project is to analyze obsession and its characteristics applied to the realm of electronic gaming, possibly to the extent of dependency and addiction. I also analyzed what makes video games as attractive as they are. If video games are a cause of dependency or obsession, and I can find potential root causes, then should be a way of using this data to mitigate the results of obsession.

Because of the wide-spread popularity of video games and because of the scrutiny video games have been under from politicians (Sinclair 2005, Sawicki 2005), the subject is becoming increasingly relevant. It is also relevant to those who play video games, around fifty percent of all Americans, according to the Entertainment Software Association (ESA 2006). If addiction is possible in some small percentage of those that play, this still represents a large number of citizens. If these citizens adversely affect themselves or others and it is preventable, then it is a mistake not to attempt to implement some form of solution.

As for others' work in the field, at a glance, it seems that little of it has been done objectively in the media, and even less done by those with real experience in video gaming. For example, a quote from News24.com, a South African news agency: "A neglected baby cries alone. Crazed by lack of sleep, a young boy threatens suicide. A marriage crumbles over a lone obsession." (Author not stated, News24 2005) This is from just one of their sensationalist articles entitled "Addicted to video games...", another one is titled, "Sniper: Video Games to Blame?" Other sources, covering the aftermath of the Columbine school shooting, place emphasis on the fact that the students involved in

the shooting played "Doom" and other games. The families of the victims even sued the companies that manufactured these games, but these lawsuits were eventually dismissed (Wadhums 2002). Again, these articles only make it appear as if video games are a serious issue, but this is only the media's take on the subject.

The more scholarly articles take a slower, more cautious approach. Most of them analyze effects without going so far as to say causation or addiction. There are, however, addiction clinics set up in Amsterdam, Netherlands (Smith & Jones Centre) and a center for computer addiction treatment in Belmont, Massachusetts (McLean Hospital). These centers have kept an open mind as to an issue which may face society.

One study, however, released through the Minnesota School on Professional Psychology, Argosy University neglected to include the questions asked to determine if an arbitrary top percentage of children surveyed displayed aggression (Hauge 2003). The state of the art as I see it is in a state of balance between the more level-headed honestly trying to work through the subject matter and the sensationalist media trying to do their best to sell their stories. Through this project, I seek to undo any bias that labels otherwise healthy individuals as addicts or aggressive due to any so-called addiction.

What I did differently was adding my own perspective to my studies into video game obsession, as I see myself in an "insider" perspective. My gaming background begins in the Nintendo Entertainment System era, and to date, I have owned most of the main consoles (N64, Playstation, Genesis, SNES, etc.) and have played many of the rest, including some more obscure systems like the TurboGrafx-16 and the Atari Jaguar, once owned a Pole Position arcade machine, and my freshman year residence hall bought an Atari Badlands arcade machine for public use. If I find a game entertaining enough, I can

invest hours at a time from each day, for example, one time I forgot to go to sleep one night while playing "God of War" for the Playstation2.

I do not take the position that all addictions, even harmful ones (as most can become) are equal. This notion occurred to me while I was thinking about serious drug addiction and that something as seemingly innocuous as video games could do the same type of damage to an individual, their relationships, family life, etc. seemed ridiculous.

I believe starting from my position as a player of video games, and as a university student allowed me to be more open minded and study more freely, something I feel is lacking from most media sources. Most of the media articles denouncing video games cite anecdotal evidence, or use time estimates as milestones, as in: a person is addicted if they play more than 25 hours a week. I seek to critically examine the idea of what video game obsession and dependency means in favor of a more complete view. This view included the range of possibility that video games are completely harmless and any obsession is a manufacture of the subject's mind, but also the possibility that video games could potentially lead to an uncontrollable obsession or dependency to the degree of interference with daily life.

### 2 Methods

To begin, I gathered as much literature on the subject of video games in the public culture as I can find; both on the internet and in print. I read these articles to try to divine what it is about games may cause addictive behavior, and what about people that lets them become addicted in the first place. I then used the information to think of ways to determine if video game addiction is even possible, and if so, what should be done.

My definition of relevancy relies heavily on the source's definitions for what addiction/obsession is, and how it is determined. Time spent playing video games, to me, is not a relevant indicator, as games have longer playing times than they originally did. Playing Super Mario Bros doesn't take nearly as long as Mario 64, because developers are trying to build larger and more interactive environments to provide more entertainment. So because the industry aims to provide fun, time spent having fun isn't as relevant a factor as other behaviors might be. Something along the lines of skipping meals, work, sleep, or classes, in my judgment, merits further examination. I think that the line between entertainment and dependence or obsession is when it begins to interfere with the ability to function normally in society.

My analysis of these sources stems largely from critical thinking skills that an engineering background has cultivated, and also using what I personally know of video games, both from my own experience and from what I see of those around me.

The way I used to try to find a solution is by using what I believe to be root causes, and figuring a way to get around, mitigate, or even undo them. Because of the

state of medicine in treatment of addiction in the fields of drugs, gambling, and other addictions has existed for some time now, I analyzed the methods used to treat other addicts, and study how they can be applied to one dependent on video games. I also used these sources as a model to follow for a later basis of success, if implemented.

### 3 Goals of Rehab

The goal of any rehabilitation project is to enable patients to take control of their own lives, and that hopefully excludes the addiction, dependency, or obsession for which they sought treatment, otherwise it could easily exert control again. If determined that problem gaming does exist, then the goal is to seek a viable solution to enable the extraction from daily life. This solution must adhere to ethical standards and, hopefully, simple to administer.

These ethical standards must mean that the patient must be willing to try the treatment, and it cannot willfully bring harm, or worsen any dependent effects. This decision cannot be forced upon anybody. Simplicity should also play a part in the goals of this project. The simpler the solution appears the more willing people may be to try it in order to mitigate the impact of video games in their lives.

The issue of problem gaming is that it interferes with daily life. In order to be a successful rehabilitation program, that must no longer be true of the patient. The patient must be able to lead a daily life without the interference of video games. Once the issue of video games is either brought to a manageable level, or cut out of their life altogether, then this is to be considered success.

#### 3.1 Identification

The first step in solving a problem of any sort is to realize the problem exists.

The most common simple test encountered in my research is a multiple criteria approach.

Narcotics Anonymous (1983) even uses one in one of their brochures entitled "Am I an Addict?" (Appendix A and B)

This approach uses several behaviors common to addicts to get the subject to analyze their own habits for behaviors that may need adjustment. Typically these self-assessments suggest you may need help if you exhibit a certain number of the listed criteria, usually around one third of the total questions. Narcotics Anonymous, however, stresses the importance of the approach to the question than the actual answer. That is to say, if a person has no addiction, they have no need to feel guilty when answering questions about their pastime.

#### 3.2 Current Methods for Addiction Treatment:

#### 3.2.1 12 Steps

Alcoholics Anonymous, Gambler's Anonymous, and Narcotics Anonymous, and all associated programs, use the 12 step approach toward addiction recovery. The program encourages fellowships among the group as an aid in recovery. In the program, the addict seeking treatment uses faith in a higher power to aid them in beating their addiction. (Alcoholics Anonymous 2003)

#### 3.2.2 Pharmaceuticals

Pharmaceuticals have been prescribed for certain types of addictions for decades.

Drugs such as naloxone, cyclazocine, and naltrexone have been used to treat heroine addicts, as these agents block the effects of heroine. These "agonists" as they are called "make it impossible for heroine to give the euphoric effects the addict seeks." But by far,

the most popular medication for heroine has been methadone, as it performs all the physiological functions of heroine except for the euphoric feeling. This enables the addicts to function normally while their dependency is curtailed. (Hyde 1978)

#### 3.2.3 Counseling

Counseling is a preferred method currently for addicts and the chemically dependent, as it doesn't require pills or other pharmaceuticals which may induce yet another addiction, as is the case with methadone. Counseling can be done one-on-none with a professional, or in a group, as is the case with Alcoholics Anonymous, Narcotics Anonymous, and other similar groups.

#### 3.2.4 Smith & Jones Treatment Center

There is a comprehensive facility in Amsterdam which treats addictions and compulsive behaviors in many forms. They even have a treatment facility for those they consider gaming addicts.

"Once we have dealt with the withdrawal from the gaming (the "detox"), we begin with the treatment. We use group therapy, psychologists, psychiatrists, and therapists, specialized in the treatment of gaming addiction. Our goal is to equip these addicted individuals with a new set of life tools to help them live life in the 'real world'." (Smith & Jones 2006)

#### 3.2.5 Daily Control

Problem gamblers know that that they can't trust themselves with more money in pocket than they need to avoid temptation. "Those who beat their addiction often do so by discarding credit or ATM cards and carrying only as much cash as they need for the day. That way they won't be tempted when they pass by a machine." (Horwitz 1997)

#### 3.2.6 Cognitive Behavior Therapy

Cognitive Behavior Therapy "teaches the patient to identify the problem, to solve the problem and to learn coping skills to prevent relapse. Often the treatment is helped by medication." The treatment entails replacing negative emotions driving the addict to their vice with thought processes that are more positive in nature.

# 4 Defining Dependency, Obsession, and Addiction

Dependency, obsession, and addiction are three parts of one of society's largest problems in the world to the individual. The manifestation of these can develop in a multitude of ways. The most common manifestations of addiction and dependency are drug and alcohol abuse, most likely due to the wide availability of alcohol, or the difficulty in assessing other forms of addiction. Then there are countless other disorders classified under the designation of addiction, such as eating disorders, gambling, each with their own destructive qualities to the individual. The question this project seeks to find is if video games could belong in these categories, and if so, what can be done?

To determine if video game playing belongs as part of the categories of dependency, addiction, or obsession, it is important to understand what these terms mean.

In the Alcoholics Anonymous handbook, it states that it is important to understand that once an addiction or dependency has occurred, it is always there, whether it is acted upon or not (Alcoholics Anonymous 2003). For this reason, awareness is a necessary step toward recovery, but is still only the first one. And unfortunately for those affected, addiction is a never-ending struggle.

#### 4.1 Dependence

Dependency is one of the body's potential reactions to the prolonged presence of foreign substances. It accommodates and adapts to these substances, and can come to need them for normal functioning. Just as people adjust to their new heights while

growing, the brain adjusts neurotransmitter levels so it can continue normally. (See Appendix E for Information from the DSM-IV on which Substances can result in withdrawal, as well as other health issues)

Neurotransmitters in the brain are responsible for numerous actions, from relaying pain signals, to comparing temperatures, to telling us that something feels soft or rough. They can also alter levels in the brain to accommodate prolonged drug abuse, which is why frequent users develop a tolerance and require more of a substance to achieve the same effect. "When a person continually uses drugs or engages in activities that slow down or speed up the flow of nerve messages, the brain compensates by changing the level of key enzymes" (Silverstein 1991).

One such enzyme type is endorphins, and more specifically, dopamine. Dopamine acts as a pleasure inducing, or pain reducing agent in the body. Pleasurable activities, such as playing around, eating, drinking, sexual activity, all cause the release of dopamine as does things like cuts and broken bones, which is why they begin with a dull pain and gradually become more painful as the dopamine wears off.

The enzyme naloxone is used as a last resort in cases of heroine addiction as a way to block the dopamine receptors so that the pleasurable experience derived from drug use is severely mitigated. One recovering addict I talked to had heard of it, but he also said that patients on naloxone would switch to cocaine if they wanted a high again, as naloxone is ineffective in blocking the effects of cocaine.

#### 4.2 Obsession/Fixation

Sometimes the mind can focus on something and stick. Once the mind is unable to focus on anything else, for a time at least, this is known as obsession. Thought is one thing that video games are more active at triggering than television, due to television's passive nature. It's this very nature which leads some to believe makes children more likely to perform violent actions (a subject for further study).

The DSM (Diagnostic and Statistical Manual of Mental Disorders) IV lists Obsessive-Compulsive Disorder (DSM-IV 300.3) among its entries, and describes obsession as "Recurring, persisting thoughts, impulses or images inappropriately intrude into awareness and cause marked distress or anxiety" and specifies that "These ideas are not just excessive worries about ordinary problems."

How this applies is that if a video game does get stuck in a player's head to the point of obsession, it could be mistaken for an addiction. If there is no physiological reason for addiction, then the problem might be psychological. "Experts are divided as to whether obsession with [certain games] should be labeled as 'addictive'...since unlike drugs, no physical dependency is involved" (Christian Science Monitor 2005). However, the subjects do apparently "have withdrawal symptoms" in regard to their time spent away from their games.

#### 4.3 Addiction

Addiction is a combination of sorts of the definitions of dependency and obsession. It is essentially surrender in body and mind over to whatever the addiction is. It represents the ultimate in a lack of control.

There is no absolute definition for addiction. It's not even listed in the DSM-IV as a category. I think this is because of the overlapping nature of dependence and obsession where it's simply to unclear which one is which.

#### 4.4 Confounding Factors

In statistics, "confounding occurs in an experiment when the experimenter is not able to distinguish between the effects of different factors" (Triola 2005). Some common confounding factors are gender, age, location, and economic background. However in this case, I think more common factors likely to interfere are: addiction history, i.e. how likely the person is to become entwined with something, gaming history, i.e. whether their gaming is habitual or a true addiction, and perhaps gender, as males make up the larger portion of the gaming community.

Another interesting factor could be religion. Would those who hold fast to religious beliefs be more or less likely to become addicted to some things and not others? Would religion aid them in recovery if they do become addicted? Again, this is a subject that must be explored at a different time by a different person.

For reasons of obtaining less biased results, factors such as these must be identified so as to lessen their effect. Confounding factors may each have their own effects on the results, making it difficult to interpret whether addiction may be due to a predisposition to addiction, or whether they just enjoy video games to pass the time.

Fifty-two percent of "internet addicts" are former alcoholics or other ex-addicts (Young, 1998), so it seems entirely likely that the problem of addiction stems deeper than

a single substance that the user has a predisposition towards, and may be largely psychological.

#### 4.5 A Theory

If a video game addiction is to occur, I expect it to be more of a dependency issue than an obsession based one. From the basics of what I understand of the brain, is that fun activities, such as video games, cause the release of neurotransmitters which are pleasing to the subject; and naturally they want this to continue. I suppose it's possible that a prolonged gaming session could cause the brain to think that the higher level of pleasurable chemicals was normal and adapt. From there, any removal of the video game removes the higher level of these neurotransmitters and can cause a relative depression.

I use the example of cocaine, which increases dopamine levels in the brain, as a precedent for similar behavior. The neurotransmitter Dopamine acts to trigger pleasure in the brain. However, "the axons of the presynaptic neurons have a shortage of dopamine, and it takes time to produce some more. As a result, the cocaine high is soon followed by a 'crash.'" (Silverstein 1991)

Positron Emission Tomography (PET) has shown that video game play "can increase the activity of the neurotransmitter dopamine in the brain" (Ingram 1998). However, many activities are designed to be enjoyable, and thereby release dopamine. Unfortunately comparable levels of dopamine for everyday activities are hard to figure into this, as they were not included in that specific study.

If obsession alone could cause withdrawal, then perhaps it could be an addiction, or if an addiction could be classified as one because withdrawal symptoms occurred, then this too is a push toward a definition as addictive.

# 5 Decomposition of Established Methods by Positive and Negative Effects

The reason addiction programs even exist is because people living with addictions both want and need help. These programs do work for some people, but there are those who these programs don't work for. It's conceivable there could be a way to disassemble these programs for analysis to see what parts could act as a preventative measure to some, or to simply to make it easier to prevent a relapse into addiction.

#### 5.1 Treatment of Obsession

It's possible that for some people, their addiction to video games is an obsession that lacks the physiological component which marks an addiction. In such cases, it's likely that more psychologically targeted methods work best.

#### 5.2 12 Steps

#### (Taken from "For the Newcomer" pamphlet for Narcotics Anonymous)

The 12 step programs have a long history in addiction treatment, and it's important to understand why.

The 12 steps method has been made famous throughout the years because it separates what is needed of an addict to take into account the entirety of their addiction at a reasonable pace with simple, quantifiable steps. In total, these steps require the addict to take full responsibility of their addiction and at the same time give a feeling of hope and support, both divine and mundane in nature.

The 12 steps, when considered as a whole, seem to be a well-knit net. Unfortunately, taking the entire program at one time can be overwhelming for most. And one step at a time allows holes in the net to manifest. It is through the journey of these steps that the lessons learned are strongest, and most likely to be retained when needed.

#### 5.3 Pharmaceuticals

Pharmaceuticals have the benefit of being easy. They are a simple solution to a complicated problem. In the case of methadone, they allow the addicted brain chemistry to endure while at the same time allowing the addict to control his or her behavior. The methadone is used as a replacement addiction, and then the person needs to continue with it, in essence being addicted to the medicine itself.

#### 5.4 Therapy

Therapy has many methods of application. To get the addict to search inside themselves, with the therapist's help to know what to look for, may enable some addicts to find their problem and eliminate it.

# 6 My Analysis

Video games are many things, but are they a potential addiction? Do they cause a person to lose a hold on reality? Is it conceivable that there are people who won't be able to stop playing?

Is it possible that video games are a potential addiction? Yes, it is conceivable. With the complexity of the human mind and its tendency to grasp onto various activities, the potential for a person to get hooked on video games, which cause a release of dopamine in the brain, is entirely conceivable.

Can they cause a person to lose a hold on reality? This I can't personally see happening very often, if at all. Games don't cause a person to feel less hungry (although this might be ignored) or to lose track of the fact they're holding a controller or using a keyboard. And if they begin to believe themselves as a character inside the game, then I can't imagine them having had a strong grasp of reality to begin with.

Are there those who cannot stop themselves from playing? Since the entire point of a game is to be sold as entertainment, if a game is unable to entertain for a large length of time, it is unsuccessful. With that said, there may be games that accomplish holding attention very well. So I believe it is entirely possible that some people may find themselves unable to pull themselves from the game, at least for a while.

But is it as bad as some may think? No, I don't believe so. From the materials I have researched and looked through, video game addiction is about as harmful on a day to day basis as smoking, even less so because of the lack of carcinogens, smoke inhalation and all those other health concerns associated with smoking.

#### 6.1 The Evidence for Addiction

Video games do many things. Much like books, they allow us to enter worlds we normally could not see. They also allow a large element of control in the virtual playing field, a form of escape. In doing all this, they alter brain chemistry (Ingram 1998) and offer sanctuary away from real life. But what they don't do is kill. Nobody has died from playing a simple game; prolonged game play can cause seizures, as many game introductions warn, but that's unrelated to the game and closer to the television anyway.

So in the end we have a potentially addictive item that isn't lethal unless done exclusively while neglecting basic living necessities. It can fit conveniently in a person's life if done responsibly. This is my recommendation for those concerned with their video game playing habits: watch yourself. It's probably been said by parents around the world countless times, but spending all day in front of the TV playing video games is a bad idea. Pa attention to your behavior and hopefully you can control yourself.

#### 6.2 What to do

I don't think there are many applicable treatments for those addicted to video games. I feel that the closest comparison is smoking in that it isn't an immediately dangerous vice. Awareness may help to some degree, as it did to curb me when I was headed down a path toward a needlessly high level of play. And awareness may be the only thing available to help, that and knowing that there are always people to help should they be needed. Additionally if a gamer in question really feels compelled to play, following of most of the 12 steps program just to keep them mindful of their situation may be an advisable step.

## 7 Risk Comparison

During the course of this project, a relative of mine had a problem with cocaine and heroine use, and as a result, I found myself unable to find myself thinking of video games as a potential addiction as seriously as I used to. While discussing my dilemma with my advisor, we came up with the idea of a potential ranking system to represent relative levels of seriousness of various addictions. This makes much more sense to me than a simple litmus test of either addicted or not.

Perhaps also, a classification of primary or secondary addiction could be made, that is, a primary addiction being a result of only itself, and a secondary addiction being the result of other factors, including: attempting to stave off other addictions. Smoking for example, may be an example of this, as people seem to use smoking to calm their nerves in moments of stress. It gives them something to do to pass time when they're unsure what else to do.

#### 7.1 Running/Exercise

Running and other forms of exercise that cause the body to move and create a general healthier lifestyle can be considered "positive addictions", a notion first popularized by Dr. William Glasser in 1976 (Benyo 1996). Other things, like being a "workaholic" also push their subject to do better and further themselves in certain ways. Like other forms of addiction, these can begin to interfere with daily life to the point where the runner may lose touch with others in favor of running. I expect stress fractures would occur before that point, which should be a cue to the runner.

#### 7.2 Gambling

Arguably, gambling addiction is the closest in nature to video game addiction. However, because of the nature of the gambler to pursue just one more win at the cost of their money and possessions, it can be very dangerous to a person's family life, friendships, and their ability to support themselves. This is different from the pursuit of video games to merely continue further, or finish. In gambling, there is no finishing point, no checkpoint, benchmarks or anything similar, which is why that next round of gambling is always risky.

#### 7.3 Smoking

Smoking is addictive in nature due to the nicotine content. Over time, smoking can cause health problems, which are well known to include various forms of cancer, including lung cancer, destruction of the lung lining including fine hair-like fibers, and a buildup of a tar-like substance.

#### 7.4 Alcohol

Alcoholism is very widespread, and it seems that it's taken less seriously as it once was. Alcoholism takes a toll on the liver, finances, as well as family life and patience. The cost of getting drunk as often as the alcoholic "needs" gets expensive fast, and the liver takes a toll as it tries to function. But it's the family that appears to take the largest portion of the effect. The worry of when the alcoholic will die of liver failure becomes part of the normal life. And the constant relapses of so many alcoholics can cause the family to lose patience after so many times.

#### 7.5 Drugs

Drugs, as an addiction, are an obvious target, as they obviously change body chemistry and interfere heavily with a person's daily life. Altering body chemistry is why they are defined as drugs, and an essential reason to why they are used. It's also why they are an addictive substance. The alterations they make to the body result in "crashes" when the effects wear off, thus a perceived need to take more drugs to either get back to normal or back to the original high.

#### 7.6 Video Games

Compared to gambling addiction, alcoholism, and drug addiction, Video Game dependency doesn't seem nearly as bad. In fact, it seems almost insulting to list video games among them. And it is for that reason that the comparison must be made; as food for future thought, and also as a scale. For cocaine/heroine, etc. addiction to seem as bad as they should, there either needs to be first hand experience, which I personally hope can be avoided, or there needs to be something people can use as a mental comparison to build up to.

#### 7.7 Books

It may seem ridiculous to list books among addictions, but I do this simply to get the reader to think. What is it about books that make them immune from being accused of being addictive, or actually being purely non-addictive? They are a compelling storytelling narrative, much like videogames, television, movies, and a grandparent in a rocking chair. They do not, however, continue when the reader is away, require power, or have any blinking lights. But they are more internalized than video games. While

reading a particularly exciting book, the imagination fills in the blanks and makes the narrative much more vivid, as compared to a video game which is almost entirely external.

#### 7.8 Television

Television is very similar to books and video games because of its story telling aspect, and similar to drugs in the instant gratification aspect. It has also become a larger part of the American and worldwide culture as a whole. People can be expected to sit and watch half hour programs, hour long programs, even TV show series or movie marathons. With all the time spent in front of a television set, something sets it distinctly apart from video games, even though they both use the same medium.

# 8 Subjects for Further Study

It's difficult to accomplish everything with limited resources and time scopes, and so there are questions that should be left to others who have the resources, time, and the desire to accomplish them.

#### 8.1 The Nature of Divine Help

Alcoholics Anonymous and affiliated addiction services programs use the help of "God as [they] understand Him". The question I pose is whether the belief that a divine creator is helping with their addiction is actually more or less effective at beating addiction than the same treatment, but with the subject having little or no faith in a higher power.

As addiction is a serious problem, it is unethical to get people addicted to test this question, and it is also be difficult to suspend belief in a higher power, or to begin, and this is necessary to have an observational study. The study would involve members all receiving the same treatment, and then recorded whether a person believes in a higher power or not. This study would be time intensive, requiring years to be devoted in order to track things such as relapses.

If there is a statistically relevant difference in effectiveness between the two stratifications, then it could mean a reinvention of addiction treatment programs worldwide.

This subject is being looked more and more in depth, especially as of late with the prevalence of religion in American society and government, as noted in the May 8<sup>th</sup>

article "Religion's Role in Treating Addiction" on the religionlink.org website (religionlink.org 2006).

#### 8.2 Malleability of Children's minds

Children are more susceptible to new ideas than fully cognitively developed adults, especially from parents or other trusted sources. If the child learns to trust video games, is it possible for the child to become dependent on them in the same manner as for a parent?

As with the potential studies about religion, a statistical study must be observational in nature, as a deliberate attempt to cause addiction is extremely unethical.

It would also require heavy cooperation with the parents to obtain as accurate information as could be possible.

#### 8.3 Addiction Replacement

It might be conceivable to replace a harmful addiction with one of the less dangerous ones. Smoking, for example, could be used to occupy drug addicts, and video games of some sort for gambling addicts.

### Reference

- Alcoholics Anonymous, 2003, <u>Alcoholics Anonymous</u>, Alcoholics Anonymous World Services Inc., New York, New York
- Author not stated, May 26, 2005, "Addicted to Video Games", http://www.news24.com/News24/Technology/News/0,,2-13-1443 1710984,00.html
- Author not stated, May 8, 2006, "Religion's Role in Treating Addiction", http://www.religionlink.org/tip 060508.php
- Benyo, Richard, 1996, <u>Exercise Addiction</u>, <u>When Less is More</u>, Road Runners Club of America, Footnotes, <a href="http://www.rrca.org/publicat/addict.html">http://www.rrca.org/publicat/addict.html</a>
- Christian Science Monitor, Oct. 13, 2005, pg 13, Boston, MA
- Entertainment Software Association, "Game Player Data" © 2006 ESA, <a href="http://www.theesa.com/facts/gamer data.php">http://www.theesa.com/facts/gamer data.php</a>
- Hauge, Marny R., Douglas A. Gentile, "Video Game Addiction Among Adolescents: Associations with Academic Performance and Aggression", Minnesota School on Professional Psychology, Argosy University, National Institute of Media and the Family, April 2003,
  - http://www.psychology.iastate.edu/FACULTY/dgentile/SRCD%20Video%20Ga me%20Addiction.pdf
- Horwitz, Tony, Dec. 2, 1997, <u>Dire Straights: In a Bible Belt State, Video Poker</u>

  <u>Mutates Into an Unholy Mess</u>, Wall Street Journal (Eastern Edition), New York,
  New York, pg. A1
- Hyde, Margaret O., 1978, <u>Addictions: Gambling, Smoking, Cocaine Use, and Others,</u>
  McGraw-Hill Book Company

- Ingram, Jay, 1998, <u>Positron Emission Tomography</u>, Bell Globemedia Inc., Scarborough, Ontario
- Narcotics Anonymous, 1983, <u>For the Newcomer</u>, Narcotics Anonymous World Services, Inc., Van Nuys, California
- Sawicki, Rob, "Senators Clinton, Lieberman and Bayh Introduce Federal Legislation to Protect Children from Inappropriate Video Games", 12/16/2005, http://lieberman.senate.gov/newsroom/release.cfm?id=249933
- Silverstein, (Alvin, Virginia, and Robert), 1991, <u>The Addictions Handbook</u>, Enslow Publishers, Inc.
- Sinclair, Brendan, "Game restriction Bill Submitted to Congress", Yahoo, 12/16/2005, <a href="http://videogames.yahoo.com/newsarticle?eid=428416&page=0">http://videogames.yahoo.com/newsarticle?eid=428416&page=0</a>

Smith & Jones, 2006,

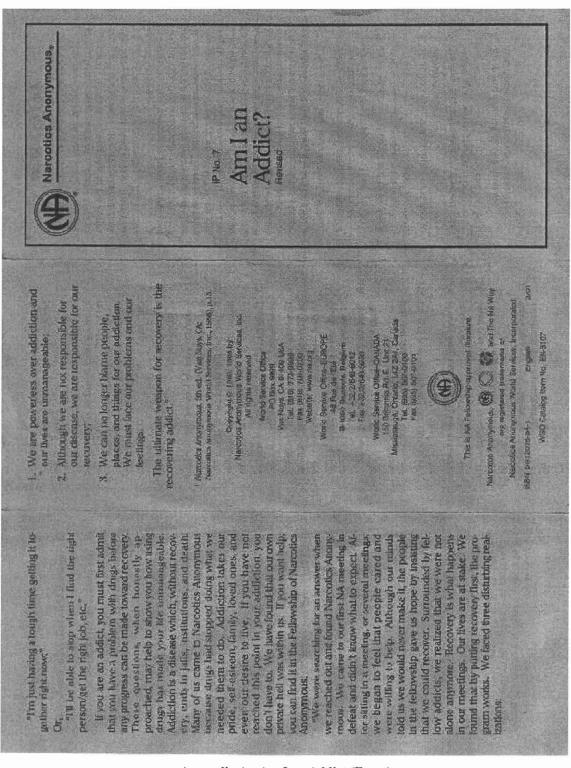
Triola, Mario F., 2005, Elementary Statistics ninth edition, Pearson Education, Inc.

Wadhums, Nick, "Columbine Lawsuit Over Games Dismissed", Associated Press, 3/5/2002, <a href="http://www.thedailycamera.com/shooting/2002/05lcolu.html">http://www.thedailycamera.com/shooting/2002/05lcolu.html</a>

Young, Dr. Kimberly S., 1998, Caught in the Net, John Wiley & Sons Inc.

# **Appendix**

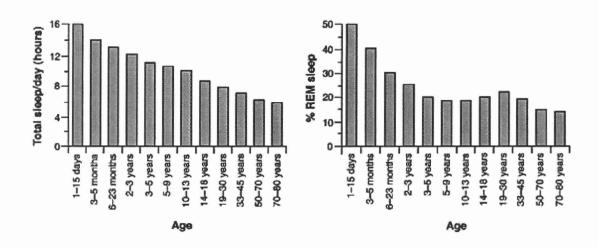
- Appendix A, B Narcotics Anonymous, 1983, For the Newcomer, Narcotics Anonymous World Services, Inc., Van Nuys, California
- Appendix C Roffwarg, H.P., Muzic, J.N., Dement, W.C., 1966, *Ontogenetic development of the human dream cycle*, Science, 152, pp 604-619
- Appendix D Original material along with the Alcoholics Anonymous 12 steps
- Appendix E, F DSM-IV, pp181, 177 (respectively)



Appendix A - Am I an Addict (Front)

22. Do you think a lot about drugs?  23. Have you had irrational or indefinable fears?  24. Has using affected your sexual relationships?  25. Have you ever taken drugs you didn't prefer?  26. Have you ever used drugs because of emotional pain or stress?  27. Have you ever overdosed on any drugs?	continue to use despite ne in the sequences?  In think you might have a drawled that have a drawl to use the sequence of these questions were. We found that we send numbers of these questions as how we felt insign these questions don't even these questions don't even these questions don't even these questions don't even this is because addiction sease that affects all areas those areas which seem, as to do with drugs. The different and wheat and wheat the different and wheat and wheat and wheat and wheat and wheat and wheat the different and wheat and whea	When we first read these questions, it was frightening for us to think we might be addicts. Some of us tried to dismiss these thoughts by saying:  "Oh, those questions don't make sense;" Or,  "I'm different. I know I take drugs, but I'm not an addict. I have real emotional/family/ job problems;" Or,
2. Do you avoid people or places that do not approve of you using drugs?  8. Have you ever used a drug without knowing what it was or what it would do to you?  9. Has your job or school performance ever suffered from the effects of your drug use?  10. Have you ever been arrested as a result of using drugs?  11. Have you ever lied about what or how much your use?  12. Have you ever lied about what or how much you uses?  13. Have you ever lied about what or how much you uses?  14. Have you ever lied about what or how much you uses?  15. An average of the control of the c	Doyou put the purchase of drugs ahead of your financial responsibly Yes []  Have you ever tried to stop or conyour using?  Haye you ever been in a jail, hosp or drug rehabilitation center beca of your using?  Does using interfere with your stee or eating?  Does the thought of running out of drugs tentify you?  Yes []  Do you feel it is impossible for you live without drugs?  Yes []	18. Do you ever question your own sanity?  Yes □ No □  19. Is your drug use making life at home unhappy?  20. Have you ever thought you couldn't the in or have a good time without drugs?  Yes □ No □  21. Have you ever felt defensive, guilty, or ashamed about your using?  Yes □ No □
Am I an Addict?  Only you can answer this question.  This may not be an easy thing to do. All through our usage, we told ourselves, "I can handle it." Even if this was true in the beginning, it is not so now. The drugs handled us. We lived to use and used to live. Very simply, an addict is a person whose life is confolled by drugs.  Perhaps you admit you have a problem with drugs, but you don't consider yourself an addict. All of us have preconceived ideas about what an addict is. There is nothing		4. Have you ever stolen drugs or stolen to obtain drugs?  5. Do you regularly use a drug when you wake up or when you go to bed?  Yes □ No □  6. Have you ever taken one drug to overcome the effects of another?  Yes □ No □

Appendix B - Am I an Addict (Back)



Data from Roffwarg, H.P., J.N. Muzic, and W.C. Dement. 1966. Ontogenetic development of the human sleep-dream cycle. Science, 152: 604–619.

Appendix C - Sleep need for various age groups

36

#### Appendix D - 12 Steps Decomposition

<u>Step 1</u> – "We admitted that we were powerless over our addiction, that our lives had become unmanageable."

This is an important step because the addict must realize that they have an addiction and they need assistance with it. They also must recognize the personal cost of their addiction. This is a step away from avoiding problems and toward facing, confronting, and possibly solving them.

<u>Step 2</u> – "We came to believe that a Power greater than ourselves could restore us to sanity."

This section has the connotation that the addict is insane, which is incorrect.

Addiction is not only a problem of the mind, but also one of the body. While the behaviors of an addict may seem insane, and the person can't strictly be considered to be in their right mind, insanity is not caused by decisions. Proper responsibility for the actions leading up to the point of addiction must be acknowledged.

<u>Step 3</u> – "We made a decision to turn our will and our lives over to the care of God *as we understood*Him."

This could be a difficult step for atheists, agnostics, and those with a poor grasp of religion to pass by. However, it must be recognized that help is needed from one source or another, AA just chooses to acknowledge God. Support from other people and belief that a higher being support you are very different in nature. Maybe it is this "divine" nature of aid that allows some to kick their habits.

Step 4 — "We made a searching and fearless moral inventory of ourselves."

It is important for an addict to be honest with themselves about why they fell into addiction and what it's done to their lives. It's often said that rock bottom must be hit before some addicts can recover. I think this step is a way for the addict to consider that the present is rock bottom, so that they won't need to sink any lower.

Step 5 - "We admitted to God, to ourselves, and to another human being the exact nature of our wrongs."

Having a friend or family member to help you out can be an immense help, somebody to aid when the addict feels pressure to fall back into old habits.

Step 6 – "We were entirely ready to have God remove all these defects of character."

There's no helping somebody who won't help themselves or is unwilling to be helped. This step allows the addict time to breathe before going through the rest of the way with a large change in lifestyle.

Step 7 – "We humbly asked Him to remove our shortcomings."

This step seems to be a placebo more than any of the others. It's a simple entreaty that they become instantly better. It may be more of a hopeful step though, that it could be as easy as that, that a guiding hand is with them on the path to recovery.

Step 8 — "We made a list of all persons we had harmed, and became willing to make amends to them all."

This step seems to be part of taking responsibility, not only for the actions done under the influence, but being under the influence in the first place.

<u>Step 9</u> – "We made direct amends to such people wherever possible, except when to do so would injure them or others."

Another part of moving past addiction is to relieve oneself of guilt. If those whom the addict feels he or she has wronged are able to forgive them, it would be a weight lifted from the shoulders.

Step 10 - "We continued to take personal inventory and when we were wrong promptly admitted it."

This seems to be a step to encourage the addict to avoid falling back into old habits.

Step 11 — "We sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out."

An ever-present helping hand, the hand of hope, helps the addict to feel less need for their addiction if their actions were ultimately a need for attention, happiness, or companionship. And if it was some other problem, having a friend always makes it easier to deal with problems.

Step 12 — "Having had a spiritual awakening as a result of these steps, we tried to carry this message to addicts, and to practice these principals in all our affairs."

The lessons one teaches oneself during the 12 steps can't be let go once they're completed, or a regression may not be far off. Once taken through completion, they should give the addict the set of tools he or she may need to continue with a normal daily lifestyle from that point onward.

#### Criteria for Substance Dependence

A maladaptive pattern of substance use, leading to clinically significant impairment or distress, as manifested by three (or more) of the following, occurring at any time in the same 12-month period:

- (1) tolerance, as defined by either of the following:
  - (a) a need for markedly increased amounts of the substance to achieve intoxication or desired effect
  - (b) markedly diminished effect with continued use of the same amount of the substance
- (2) withdrawal, as manifested by either of the following:
  - (a) the characteristic withdrawal syndrome for the substance (refer to Criteria A and B of the criteria sets for Withdrawal from the specific substances)
  - (b) the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
- (3) the substance is often taken in larger amounts or over a longer period than was intended
- (4) there is a persistent desire or unsuccessful efforts to cut down or control substance use
- (5) a great deal of time is spent in activities necessary to obtain the substance (e.g., visiting multiple doctors or driving long distances), use the substance (e.g., chain-smoking), or recover from its effects
- (6) important social, occupational, or recreational activities are given up or reduced because of substance use
- (7) the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g., current cocaine use despite recognition of cocaine-induced depression, or continued drinking despite recognition that an ulcer was made worse by alcohol consumption)

#### Specify if:

**With Physiological Dependence:** evidence of tolerance or withdrawal (i.e., either Item 1 or 2 is present)

**Without Physiological Dependence:** no evidence of tolerance or withdrawal (i.e., neither Item 1 nor 2 is present)

Course specifiers (see text for definitions):

Early Full Remission
Early Partial Remission
Sustained Full Remission
Sustained Partial Remission
On Agonist Therapy
In a Controlled Environment

Table 1. Diagnoses associated with class of substances

	Depen- dence	Abuse	Intoxi- cation	With- drawal	Intoxi- cation Delirium	With- drawal Delirium	Dementia		Psychotic Disorders I				
Alcohol	X	X	Х	X	1	W	P	1,	1/W	I/W	I/W	l	1/W
Amphetamines	Х	X	X	X	1				I	1/W	1	1	I/W
Caffeine			X								ı		ı
Cannabis	X	X	Х		1				1		1		
Cocaine	Х	X	Х	X	1				L	I/W	I/W	1	I/W
Hallucinogens	X	X	X		1				1.	ı	1		
Inhalants	x	X	X		1		1,		1	1	1		
Nicotine	X			X									
Opioids	X	X	Х	X	I				I	ι		1.	1/W
Phencyclidine	Х	X	х		· I				1	1	1		
Sedatives, hypnotics, or anxiolytics	Х	X	Х	Х	I	W	P	P	I/W	L/W	W	1	I/W
Polysubstance	X												
Other	X	X	Х	X	1	W	P	, P	I/W	1/W	1/W	1	I/W

<sup>\*</sup>Also Hallucinogen Persisting Perception Disorder (Flashbacks).

Note: X, I, W, I/W, or P indicates that the category is recognized in DSM-IV. In addition, I indicates that the specifier With Onset During Intoxication may be noted for the category (except for Intoxication Delirium); W indicates that the specifier With Onset During Withdrawal may be noted for the category (except for Withdrawal Delirium); and FW indicates that either With Onset During Intoxication or With Onset During Withdrawal may be noted for the category. P indicates that the disorder is Persisting.