PROBLEMATIC VIDEO GAME USE

An overview of research from the Bergen Addiction Group
Rune A. Mentzoni, UiB

@tapeten
VIDEO GAMES AS ADDICTION

Is it possible?

Conclusion:

YES!
WHAT IS ADDICTION?

«Life is a series of addictions and without them we die»

- Isaac Marks, 1990 (i Addiction)
WHAT IS ADDICTION: CRITERIA FOR ALCOHOL

Control:
1. More intake or more time used than planned
2. Desire to cut down
3. Time spent obtaining alcohol
4. Craving

Risky use:
8. Use in situations that are physically hazardous
9. Continued use despite physical or psychological health problems caused or exacerbated by alcohol

Social Harm:
5. Failure to fulfill obligations at school / work / home
6. Continued use despite social or interpersonal problems
7. Important activities (work or leisure) given up or reduced

Pharmacological:
10. Tolerance
11. Withdrawal

Mild: 2-3 symptoms
Moderate: 4-5 symptoms
Serious: 6+ symptoms
Can gambling be an addiction?

1. Tolerance
2. Abstinence
3. Loss of control
4. Dominance
5. Mood regulation
6. Chasing
7. Lies
8. Other activities/relationships jeopardized or lost
9. Economy

With the exception of the economy criterion, all these are at least partly included in the criteria for alcohol addiction:

- **Mild**: 4-5 symptoms
- **Moderate**: 6-7 symptoms
- **Serious**: 8-9 symptoms
SO.. WHAT ABOUT VIDEO GAMES

DSM-5 section III (possible future diagnoses): Internet Gaming Disorder

1. Dominance
2. Abstinence
3. Tolerance
4. Control
5. Loss of interest in other areas
6. Continued use despite problems
7. Lies
8. Mood modification
9. Other important relationship, educational or occupational opportunities jeopardized / lost
ENGAGED OR ADDICTED

- Time spent gaming not a criterion for addiction
- Mark Griffiths: Engagement adds something to life, addiction takes something away
- Addiction: Not being able to control or limit a behaviour despite clear negative consequences
Overlap in DSM-5 criteria for:

* Addictive disorders
  
  Substance-related
  
  Gambling

* Internet gaming disorder (DSM 5 - Section III)
SOME INDICATIONS THAT DIFFERENT ADDICTIONS ARE COMPARABLE

…other than the similar criteria used in clinical settings and research

■ Theoretical: Syndrome model of addiction
■ Empirical finding 1: Brain imaging studies
■ Empirical finding 2: Attentional bias
SYNDROME MODEL
Predisposing factors

SYNDROME MODEL

Unique expressions of addiction

Shared expressions of addiction

Biological
(e.g. tolerance)

Psychological
(e.g. mental health problems / comorbidity)

Social
(e.g. deviant / criminal behaviour)

Development
(e.g. consumption, relapse)

Similar treatment
(e.g. CBT)

Object substitution
(e.g. snus for cigarettes)
BRAIN IMAGING

- Gamers’ brains compared to others
- Are addicted gamers’ brains similar to those with substance use disorders
1. Dopamine released in the brain when playing video games

2. Video game addicts have problems with the brain’s reward system

Our ability to pay attention to more than one thing at a time is very limited
ATTENTION

- Stroop-task: What colour is the following word written in (answer as quickly as possible):

  RED

Very hard to ignore the meaning of word.
Two conflicting types of information is hard for the attentional system to handle.
ATTENTION

PUB
ATTENTION

PENCIL
ATTENTION

ALCOHOLIC
ATTENTION

BOOKSHELF
ATTENTION

RAID
Alcoholics show attentional bias towards alcohol related words

Pathological gamblers towards gambling words

Video game addicts towards gaming words


Metcalf & Pammer, 2009. Attentional bias in excessive massively multiplayer online roleplaying gamers using a modified stroop task. Computers in Human Behaviour. DOI: 10.1016/j.chb.2011.05.001
SUMMARY

- Criteria for different types of addiction are similar
- Theoretically plausible that different forms of addictions have a lot in common
- Empirical findings indicate that different forms of addiction have similar effects
VIDEO GAMES AS ADDICTION

Is it possible?

**Conclusion:**

YES!
AN OVERVIEW OF OUR RESEARCH

1. What is the prevalence of video game addiction in Norway?
2. What are relevant health correlates of video game addiction?
3. Video games and sleep
4. Video game addiction vs video game engagement
5. Development of a treatment manual for video game addiction
6. Work in progress
## 1. Prevalence

- 3 surveys, all using GASA (Lemmens, 2009)

<table>
<thead>
<tr>
<th>Survey Description</th>
<th>Sample Size</th>
<th>Response Rate</th>
<th>Age Range</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representative nationwide sample</td>
<td>816 respondents</td>
<td>34%</td>
<td>16-40</td>
<td>Addicted: 0.6%, Problem gamers: 4.1%</td>
</tr>
<tr>
<td>Representative sample of 8th graders</td>
<td>1320 respondents</td>
<td>Classroom administered</td>
<td>around 13-14</td>
<td>Addicted: 3.9%, Problem gamers: 16.1%</td>
</tr>
<tr>
<td>Representative nationwide sample</td>
<td>9859 respondents</td>
<td>41.1%</td>
<td>16-74</td>
<td>Addicted: 0.3%, Problem gamers: 3.3%</td>
</tr>
</tbody>
</table>


I. Prevalence

- Problem gamer or addicted by age group

2. Correlates


* p < .01
Dataspillere sliter med depresjoner

Dataspillavhengige sliter med angst og depresjon. For Alexander Johansson (28) ble det virtuelle livet viktigere enn virkeligheten.

ARNSFINN MAUREN
Datoakst: 04 aug. 2012 12:00
2. Correlates

Anxiety
Depression
Life satisfaction
Self reported health
Exercise


*p < .01
2. Correlates

Subjective health complaints - 3 days or more p/w

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Problem gamers (%)</th>
<th>No problems with gaming (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neck/back pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stomach/Bowel problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sadness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nervous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tired at day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palpitations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All symptoms: $p < 0.01$ (Mann-Whitney U)

The relationship between media use in the bedroom, sleep habits and symptoms of insomnia

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3. Sleep

- Investigated the relationship between use of different types of electronic media in the bedroom, and quality of sleep
  - Computer
  - TV
  - DVD
  - Game consoles
  - Mobile phone
  - Music/Radio
3. Sleep

• Only use of computers and mobile phones were related to worse sleep quality (i.e. not game consoles)

• Unknown if the computers/mobile phones were used for gaming purposes

• BUT: Other studies are quite consistent - playing video games might negatively affect sleep


3. Sleep

All symptoms: $p < .01$ (Mann-Whitney U)

4. Addiction vs Engagement

• Is «heavy use» a good indicator of problems?

• Aim: investigate if possible to single out highly «engaged» gamers who do not meet addiction criteria, and see if these have comparable health correlates to problem gamers / addicted gamers
## 4. Addiction vs Engagement

<table>
<thead>
<tr>
<th>Item text</th>
<th>Salience</th>
<th>Tolerance</th>
<th>Mood modification</th>
<th>Relapse</th>
<th>Withdrawal</th>
<th>Conflict</th>
<th>Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you think about playing a game all day long?</td>
<td>Did you spend increasing amounts of time on games?</td>
<td>Did you play games to forget about real life?</td>
<td>Have others unsuccessfully tried to reduce your game use?</td>
<td>Have you felt bad when unable to play?</td>
<td>Did you have fights with others (e.g. family, friends) over your time spent on games?</td>
<td>Have you neglected other activities (e.g. school, work, sports) in order to play games?</td>
<td></td>
</tr>
</tbody>
</table>
4. Addiction vs Engagement

- Addicted gamers: Endorsed all four addiction criteria
- Problem gamers: Endorsed two or more of the addiction criteria
- Engaged gamers: Endorsed all three engagement criteria, and no more than one addiction criterion
- Contrast group: All others
### 4. Addiction vs Engagement

<table>
<thead>
<tr>
<th></th>
<th>Mean gaming time p/w</th>
<th>Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Addicted</td>
<td>24.0</td>
<td>19.1 - 28.5</td>
</tr>
<tr>
<td>Problem</td>
<td>18.1</td>
<td>16.0 - 20.2</td>
</tr>
<tr>
<td>Engaged</td>
<td>19.3</td>
<td>16.3 - 22.3</td>
</tr>
<tr>
<td>Contrast</td>
<td>7.2</td>
<td>6.4 - 7.5</td>
</tr>
</tbody>
</table>

- Addicted played significantly more than problem gamers, but not significantly more than engaged.
## 4. Addiction vs Engagement

<table>
<thead>
<tr>
<th>Risk ratios</th>
<th>Feeling low</th>
<th>Irritability or bad mood</th>
<th>Nervous</th>
<th>Trouble sleeping</th>
<th>Tired and exhausted</th>
<th>Afraid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contrast</strong></td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Engaged</strong></td>
<td>1.25</td>
<td>1.56</td>
<td>1.40</td>
<td>0.93</td>
<td>1.47</td>
<td>1.11</td>
</tr>
<tr>
<td><strong>Problem</strong></td>
<td>1.69*</td>
<td>1.56*</td>
<td>1.91*</td>
<td>1.95*</td>
<td>1.89*</td>
<td>4.29*</td>
</tr>
<tr>
<td><strong>Addicted</strong></td>
<td>2.13*</td>
<td>2.93*</td>
<td>4.59*</td>
<td>1.90*</td>
<td>2.95*</td>
<td>8.93*</td>
</tr>
</tbody>
</table>

* $p < .01$ or lower. Analysis adjusted for gender and exercise
4. Addiction vs Engagement

• Is «heavy use» a good indicator of problems?

• No. Heavy use might simply indicate a healthy enthusiasm, with little or no negative consequences.
5. Treatment manual

- CBT-based
- 13 sessions covering different topics
- Some individual sessions, some with parents/caretakers
- Treatment study submitted for review
6. Work in progress

- Longitudinal study
  - Nationally representative sample of 3000 17.5 year olds
  - Three waves, one year apart
  - Two first waves collected
- Aim: Identify antecedents and consequences of problematic video game use
6. Work in progress

- Prevention study
  - Develop short parental guide containing advice for the regulation of video game behaviour in children
  - 4000 parents with children aged 8-12 randomly drawn from Norwegian population registry
    - 2000 receive guide
    - 2000 are control group
  - After six months all 4000 receive questionnaire. Groups to be compared on various aspects of regulation of video game, and children's game playing behaviour
6. Work in progress

- Experimental studies
  - Will hire game developers to create a simple racing game for experimental purposes
  - Aim: Investigate effects of variations in structural characteristics on game evaluations and various gaming cognitions, as well as physiological measures
    - Study 1: Continuous reward vs delayed reward
    - Study 2: Effects of near miss in a video game
Thank you for listening!

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