



EUROPEAN ASSOCIATION FOR THE STUDY OF GAMBLING

# Defining Pathological Video-gaming: Conceptual and Measurement Issues

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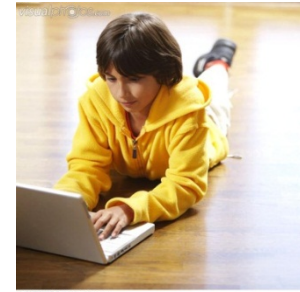
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# Outline of Presentation

- Background
  - Current models and definitions
  - Controversies
  - Treatment implications
- Review outline
  - Design
  - Method
- Main findings
  - General observations
  - Strengths and limitations of tools
- Discussion
  - Research consensus
  - Improving measurement
  - Practical considerations



# Presentation material based on:

King, D. L., Delfabbro, P. H., Griffiths, M. D., & Gradisar, M. (2011). Assessing clinical trials of Internet addiction treatment: A systematic review and CONSORT evaluation. *Clinical Psychology Review, 31*, 1110-1116.

King, D. L., Haagsma, M. C., Delfabbro, P. H., Gradisar, M., & Griffiths, M. D. (2013). Toward a consensus definition of pathological video-gaming: A systematic review of psychometric assessment tools. *Clinical Psychology Review, 33*, 331-342.

# Research questions

- How is “pathological video-gaming” generally defined?
- What are the conventional approaches to measuring pathological video-gaming?
- What are the strengths and limitations of current measures?
- How could measures be improved?
- Which measure(s) should we adopt?

# Video game addiction: A brief history

1986: Suggested term: “Video game addiction”

1989: Comparison to SUD: “Computer dependency”

1994: Arcade video game dependency conceptualised as pathological gambling in the DSM-III

1996: “Internet addiction disorder” described in first issue of *CyberPsychology & Behavior*

2000: First study of online gaming addiction

2004: Release of *World of Warcraft* – 12 million players (peak)

2008: Special issue in IJMHA on video game addiction

2009: Internet addiction critiqued in several psychiatry journals

2010: First randomised controlled trial of IA treatment

2012: Proposed inclusion of Internet Use Disorder in DSM-5

# Defining pathological video-gaming

- Conceptual confusion and terms used interchangeably
  - e.g., 'dependency', 'addictive', 'dysfunctional', 'excessive', 'problematic', 'abuse', 'unhealthy', 'obsessive', 'compulsive', 'pathological', etc.
  - Addiction as a mountain?
  - Life as a series of addictions?
- Public health approaches
  - Research studies are guided by normatively unusual patterns of use
    - e.g., Adolescent populations, >4 hours/day
    - e.g., Australian guidelines >2 hours/day for children

# Conceptual definitions I

## Diagnostic and Statistical Manual-IV (DSM-IV) criteria: **Substance** dependence

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

- (1) **Substance** is often taken in larger amounts or over longer period than intended
- (2) Persistent desire or unsuccessful efforts to cut down or control **substance** use
- (3) A great deal of time is spent in activities necessary to obtain the **substance**, use the **substance**, or recover from its effects
- (4) Important social, occupational or recreational activities given up or reduced because of **substance** use
- (5) Continued **substance** use despite knowledge of having a persistent or recurrent psychological, or physical problem that is caused or exacerbated by use of the **substance**
- (6) Tolerance, as defined as either: need for greater amounts of the **substance** in order to achieve toxification or desired effect; or markedly diminished effect with continued use of the same amount
- (7) Withdrawal, as manifested by either: characteristic withdrawal syndrome for the syndrome; or the same (or closely related) **substance** is taken to relieve or avoid withdrawal symptoms

# Conceptual definitions II

## International Classification of Diseases-10 (ICD-10)

Three or more of the following must have been experienced or exhibited at some time during the previous year:

- (1) Difficulties in controlling **substance-taking** behaviour in terms of its onset, termination, or levels of use
- (2) A strong desire or sense of compulsion to take the **substance**
- (3) Progressive neglect of alternative pleasures or interests because of psychoactive **substance** use, increased amount of time necessary to obtain or take the **substance** or to recover from its effects
- (4) Persisting with **substance** use despite clear evidence of overtly harmful consequences, depressed mood states consequent to heavy use, or drug-related impairment of cognitive functioning
- (5) Evidence of tolerance, such that increased doses of the psychoactive **substance** are required in order to achieve effects originally produced by lower doses
- (6) A physiological withdrawal state when **substance** use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the **substance**; or use of the same (or a closely related) **substance** with the intention of relieving or avoiding withdrawal symptoms



# Conceptual definitions III

## Pathological gambling criteria (DSM-IV)

Persistent and recurrent maladaptive **gambling** behaviour as indicated by five (or more) of the following:

- (1) is preoccupied with **gambling** (e.g. preoccupied with reliving past **gambling** experiences, planning the next venture, or thinking of ways to get money with which to gamble)
- (2) needs to **gamble** with increasing amounts of **money** in order to achieve the desired excitement
- (3) has repeated unsuccessful efforts to control, cut back, or stop **gambling**
- (4) is restless or irritable when attempting to cut down or stop **gambling**
- (5) **gambles** as a way of escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression)
- (6) after losing **money gambling**, often returns another day to get even (“chasing” one’s losses)
- (7) lies to family members, therapist, or others to conceal the extent of involvement with **gambling**
- (8) has committed illegal acts such as forgery, fraud, theft, or embezzlement to **finance gambling**
- (9) has jeopardized or lost a significant relationship, job, or educational or career opportunity because of **gambling**
- (10) relies on others to provide money to relieve a desperate **financial** situation caused by **gambling**

B. The **gambling** behaviour is not better accounted for by a Manic Episode.

# Conceptual definitions IV

Gentile et al. (2012): Pathological Technology Use

- A. Persistent and recurrent maladaptive use of computers, video games, the Internet, or other digital technologies, as indicated by five (or more) of the following:
1. During the past year, have you become more preoccupied with playing video games, studying video game playing, or planning the next opportunity to play?
  2. In the past year, do you need to spend more and more time and/or money on videogames in order to achieve the desired excitement?
  3. In the past year, have you sometimes tried to limit your own playing? (Y/N) If yes, are you successful in limiting yourself?
  4. In the past year, have you become restless or irritable when attempting to cut down or stop playing video games?
  5. In the past year, have you played video games as a way of escaping from problems or bad feelings?
  6. In the past year, have you ever lied to family or friends about how much you play video games?
  7. In the past year, have you ever committed illegal/unsocial acts such as theft from family, friends, or elsewhere in order to get video games?
  8. In the past year, have you ever neglected household chores to spend more time playing video games?
  9. (For students) In the past year, have you ever done poorly on a school assignment or test because you spent too much time playing video games? (For non-students) In the past year, has your work ever suffered (e.g., postponing things, not meeting deadlines, being too tired to function well, etc.) because you spent too much time playing video games?
  10. In the past year, have you ever needed friends or family to help you financially because you spent too much money on video game equipment, software, or game/Internet fees?

# Conceptual definitions V

Brown's (1997) 'components' model of addiction:

- (a) **salience**, meaning the activity is the most important thing in the person's life, which causes preoccupations and cravings at all times of the day,
- (b) **tolerance**, the process whereby the person must spend increasing amounts of time engaged in the activity to achieve former mood-modifying effects,
- (c) **withdrawal**, the unpleasant emotional state or physical effects that occur when the activity is suddenly discontinued or reduced,
- (d) **relapse**, the tendency for repeated reversions to earlier patterns of use, and for even extreme patterns of use to be restored quickly after periods of abstinence or regulation,
- (e) **mood modification**, the subjective experience (e.g., an exciting "buzz" or tranquilising "numbing") associated with engaging in the activity, and
- (f) **harm**, the conflict between the user and those around them, including work, school, social life, or hobbies.

# Do all the addiction criteria matter?

Charlton and Danforth (2007)

- “Addiction” features may encompass some healthy aspects of high levels of use or “high engagement” and “comfort”
- Some features may be more important than others in identifying true harm
- Factor analysis identified “core” and “peripheral” criteria
- Core: conflict, withdrawal symptoms, relapse, and behavioral salience
- Peripheral: cognitive salience, tolerance and euphoria



## Internet Use Disorder

Proposed Revision

Rationale

Severity

DSM-IV

### Internet Use Disorder

*Updated May 1, 2012*

This condition is being recommended for further study in Section III, which is the section of the DSM-5 text in which conditions that require further research will be included.

- A. Preoccupation with Internet gaming
- B. Withdrawal symptoms when internet is taken away
- C. Tolerance: the need to spend increasing amounts of time engaged in Internet gaming
- D. Unsuccessful attempts to control Internet gaming use
- E. Continued excessive Internet use despite knowledge of negative psychosocial problems
- F. Loss of interests, previous hobbies, entertainment as a result of, and with the exception of Internet gaming use
- G. Use of the Internet gaming to escape or relieve a dysphoric mood
- H. Has deceived family members, therapists, or others regarding the amount of Internet gaming
- I. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of Internet gaming use

# A real disorder?

- Wood (2008) has criticised video game addiction:
  - Lack of clinical definition; “addiction” term is based on media hysteria and parental concerns
  - DSM problem gambling criteria are inappropriate due to money element – chasing, increasing amounts of money....
  - Negative consequences are not severe enough to warrant concern
  - Effects (e.g., time loss) whilst gaming is often seen as positive
  - Video gaming may be a way of coping with other, underlying problems
  - Excessive video gaming may simply be poor time management
  - Video games are not inherently addictive
    - what are people actually addicted to in video games?

# International prevalence rates

TABLE 1. SELECTED PREVALENCE STUDIES OF PROBLEMATIC INTERNET AND VIDEO GAME USE 2006–2011

Study	Year	Location	Sample	Age (years)	Assessment	Prevalence (%)	Gender (ratio)	Comorbidity Screen
<b>Internet</b>								
Kim et al.	2006	South Korea	1,573 students	15–16	YDQ	1.6	F = M (1:1)	KDISC-MDD-SQ; SID-JR
Aboujaoude et al.	2006	United States	2,513 adults	>18	DSM-IV-TR criteria <sup>a</sup>	0.7	NR	—
Cao & Su	2007	China	2,620 students	12–18	YDQ	2.4	M > F (5:1)	SDQ
Siomos et al.	2008	Greece	2,200 students	12–18	YDQ	8.2	M > F (3:1)	—
Bakken et al.	2009	Norway	3,399 adults	16–74	YDQ	1.0	M > F (2:1)	Multiple choice item
Thomas & Martin	2010	Australia	1,326 students	15–54	DSM-IV-TR criteria <sup>a</sup>	4.6	M > F (1.5:1)	—
<b>Video games</b>								
Grüsser et al.	2006	Germany	7,069 adults	>15	ICD-10 criteria <sup>b</sup>	11.9	NR	—
Gentile et al.	2009	United States	1,178 students	8–18	DSM-IV-TR criteria <sup>a</sup>	8.5	M > F (4:1)	Physical health screen
Rehbein et al.	2010	Germany	15,168 students	14–16	KFN-CSAS-II	1.7	M > F (10:1)	Physical health screen
Thomas & Martin	2010	Australia	1,326 students	15–54	DSM-IV-TR criteria <sup>a</sup>	5.0	M > F (3:1)	—
Porter et al.	2010	Australia	1,945 adults	14–>40	DSM-IV-TR criteria <sup>a</sup>	8.0	NR	SC-90
Gentile et al.	2011	Singapore	3,034 students	12–18	DSM-IV-TR criteria <sup>a</sup>	9.0	M > F (3:1)	—

Note. BSI = Brief Symptoms Inventory; CIAS = Chen Internet Addiction Scale; NR = Not reported; KDISC-MDD-SQ = Korean Diagnostic Interview Schedule for Children—Major Depressive Disorder—Simple Questionnaire; KFN-CSAS-II = Video Game Dependency Scale; SC-90 = Symptom Checklist 90; SID-JR = Suicidal Ideation Questionnaire; SDQ = Strengths and Difficulties Questionnaire; YDQ = Young Diagnostic Questionnaire.

<sup>a</sup>Specific DSM-IV-TR criteria varied across studies. In Aboujaoude et al.'s study, assorted criteria for impulse control disorders, obsessive-compulsive disorder, and substance abuse were modified and used. Adapted DSM-IV criteria for pathological gambling were used in several studies.

<sup>b</sup>Refers to symptoms of dependence described in the ICD-10.

# Prevalence: Summary

- Meta-analysis: About 3% of the general population meet addiction criteria
- Limited evidence suggests that most addicts (about 80%) stay addicts for at least 2 years in the absence of treatment
- Prevalence rates vary according to:
  - Type of digital technology activity
  - How addiction is assessed (measurement)
  - Demographic factors
  - Cultural context (Far East Asian > Western)
  - Country
  - Recruitment and sampling method
    - psychiatric sample vs. community sample;
    - self-selection vs. random selection
    - Type of video game typically played
    - ↑among online video games, especially MMORPGs



# Treatment of Internet addiction 2000-2012

**Table 1**  
Selected characteristics of treatment studies for Internet addiction.

	Definition of Internet addiction	Excluded morbidity	Conditions	N	Age range (years)	Outcome measures	Follow-up	Country
Du et al. (2010)	Beard's Diagnostic Questionnaire	Pre-existing psychiatric disorder; co-morbid medical disorder; currently taking psychoactive medication	1. CBT (8 sessions) 2. Control	56	12-17	IOSRS, SDQ, SCARED	Post-test + 6 month follow-up	CH
Han et al. (2009)	YIAS-K score of 50 or higher	Prior history of psychiatric treatment; IQ < 70; substance use; mood/anxiety disorders; developmental disorders	1. Methylphenidate (8 weeks)	62	8-12	YIAS-K, K-ARS-PT; VCPT; Internet use	Post-test	SK
Han et al. (2010)	>4 h per day/30 h per week; YIAS score of 50 or higher; DSM-IV criteria for substance abuse	History or current episode of Axis I psychiatric disorder; substance disorder; neurological or medical disorders	1. Bupropion (6 weeks) 2. Control	19	17-29	YIAS; fMRI (brain activity); Internet use	Post-test	SK
Kim (2008)	K-IAS (score not specified)	None reported	1. R/T group counseling (5 weeks) 2. Control	25	NR	K-IAS; CSEI	Post-test	SK
Orzack et al. (2006)	OTIS (score not specified)	None reported	1. RtC; CBT; MI (16 weeks)	35	26-59	OTIS; BASIS-32; BDI	Post-test	US
Shek et al. (2009)	YIAS-10 score of 4; YIAS-8 score of 5; YIAS-7 score of 3; CIAS score of 3	None reported	1. Multi-modal counseling (15 to 19 months)	59	11-18	YIAS-10; YIAS-8; YIAS-7; CIAS; BDI	Post-test	HK
Su et al. (2011)	YDQ score of 5; Internet use of 14 h or more per week	Currently taking psychotropic medicine or receiving other treatment for Internet addiction	1. HOSC-NE (one session) 2. HOSC-LE (one session) 3. HOSC-NI (one session) 4. Control	65	NR	YDQ; Internet use	1-month follow-up only	CH
Young (2007)	IAT (score not specified)	History of psychological trauma, sexual abuse, or Axis II pathology	1. CBT (12 sessions)	114	NR	COQ (self-devised)	Post-test and 6-month follow-up	US

# Assessment and treatment

**Table 2**  
Evaluation of include treatment studies using the 25-item CONSORT checklist.

	Title/abstract	Background	Participants	Interventions	Objectives	Outcomes	Sample size	Randomization	Allocation	Implementation	Blinding	Statistics	Participant flow	Recruitment	Baseline data	Numbers analysis	Outcomes	Ancill. analyses	Adverse events	Interpretation	Generalizability	Overall evidence	Other information
Du et al. (2010)	●	●	●	●	●	●	●	●	◐	◐	●	●	●	○	●	●	◐	●	○	●	●	●	◐
Han et al. (2009)	○	●	●	◐	●	●	○	○	○	○	○	●	○	○	●	◐	◐	●	●	◐	◐	●	◐
Han et al. (2010)	○	●	●	◐	◐	●	○	○	○	○	○	●	○	○	●	●	○	●	●	○	○	◐	◐
Kim (2008)	◐	●	◐	●	●	●	○	○	○	○	○	●	◐	○	●	◐	○	●	○	○	○	◐	○
Orzack et al. (2006)	◐	◐	◐	●	●	●	○	○	○	○	○	◐	●	○	◐	◐	○	◐	○	◐	◐	◐	○
Shek et al. (2009)	○	◐	◐	◐	◐	◐	◐	○	○	○	○	◐	◐	○	◐	◐	○	○	○	○	○	○	◐
Su et al. (2011)	●	●	●	●	●	◐	◐	●	○	○	○	●	●	○	●	●	◐	●	○	◐	●	●	●
Young (2007)	○	●	○	◐	◐	◐	○	○	○	○	○	○	○	○	◐	○	◐	○	○	◐	○	◐	◐

Note: ● present; ◐ present, with some limitations; ○ not present.

- Assessment affects the overall quality of treatment evidence

# Research problem

- Great variability in the video game addiction literature:
  - Theory
  - Conceptualisation
  - Measures
  - Methodology
  - Population
  - Sampling

How, then, can the field achieve a consensus?

Is it possible to agree on key clinical criteria?

# Methodology

- Review of all studies published 2001-2012
- Search logic: *(patholog\* OR problem\* OR addict\* OR compulsive OR dependen\*) AND (video OR computer) gam\**
- Academic Search Premier (967 results), PubMed (235 results), PsychINFO (957 results), Science Direct (1677 results), and Web of Science (284 results)
- Studies were not necessarily excluded on the basis of methodological shortcomings. However, a study was excluded if:
  - (i) instrument name was not identified,
  - (ii) a composite measure was used,
  - (iii) case note material or anecdotal evidence
  - (iv) not published in English or Dutch.
- TOTAL: 18 instruments across 63 studies

# Instrument analysis

- **Review framework:**
  - Cicchetti's (1994) and Groth-Marnat's (2009) criteria
  - JARS criteria
- **Psychometric information:**
  - components (i.e., underlying theoretical construct),
  - dimensionality,
  - validity (convergent, predictive, and criterion),
  - reliability (internal consistency, inter-rater),
  - availability of normative and prevalence data.
- **Practical considerations:**
  - number of items,
  - administration time,
  - reading age level,
  - item sensitivity,
  - time-scale,
  - diagnostic categories,
  - country of origin,
  - language versions.

Instrument	Author	Components (N: Name)	Items	Time (min)	Age level (years)	Item sensitivity	Time-scale	Diagnostic categories	Country of Origin	Language
Adapted DSM-IV-TR criteria for pathological gambling	American Psychiatric Association (2000)	9: Preoccupation; tolerance; loss of control; withdrawal; escape; chasing; lies; illegal acts; negative consequences; bail out	10/11	3–5 min	8+	Yes/No	12 months	Pathological: $\geq 4/5$ criteria	United States	English
Adapted DSM-IV-TR criteria for substance dependence	American Psychiatric Association (2000)	2: Loss of control, negative consequences of use	7	3–5 min	NR	Yes/No	12 months	Addicted: $>3$ criteria	United States	English
Addiction-Engagement Questionnaire (revised)	Charlton and Danforth (2007)	2: Addiction; engagement	24	10–15 min	NR	7-point	NR	Addicted: $\geq 4$ out of 7 'core' addiction criteria; highly engaged: 1 or 2 'peripheral' addiction criteria plus $\leq 3$ core addiction criteria	United Kingdom	English
Compulsive Internet Use Scale (CIUS)	Meerkerk, Van den Eijnden, Franken, and Garretsen (2006)	5: Loss of control; preoccupation; withdrawal; conflict; coping	14	10–15 min	NR	5-point	NR	None	The Netherlands	English; Dutch
Engagement-Addiction Questionnaire	Danforth (2003)	2: Engagement [tolerance; euphoria; cognitive salience]; addiction [behavioral salience; conflict; withdrawal]	19	10–15 min	8+	6-point	NR	NR	United Kingdom	English
Exercise Addiction Inventory (adapted)	Hussain and Griffiths (2009)	NR	6	5–10 min	NR	5-point	NR	At-risk of addiction: $\geq 24$ out of 30	United Kingdom	English
Game Addiction Scale (GAS)	Lemmens et al. (2009)	7: Salience; tolerance; mood modification; withdrawal; relapse; conflict; problem	7/21	10–15 min	12+	5-point	6 months	Addicted: at least "3: Sometimes" on all 7 items	The Netherlands	English; Dutch; Norwegian
Korean Internet Addiction Test (KIAS)	Lee et al. (2007)	7: Disturbance of adaptive functions; disturbance of reality testing; addictive automatic thoughts; withdrawal; virtual interpersonal relationships; deviant behavior; tolerance	40	10–15 min	NR	4-point	NR	High-risk; potential risk; normal (cut-off not reported)	South Korea	Korean
Online Game Addiction Scale for Adolescents in Taiwan (OAST)	Wan and Chiou (2006)	4: Compulsive use; Withdrawal; tolerance; conflict	29	10–15 min	12+	4-point	NR	Addicted: $>3$	Taiwan	Taiwanese
Online Game Addiction Index (OGAI)	Zhou and Li (2009)	3: Control; conflict; injury	12	5–10 min	NR	NR	NR	NR	China	NR
Problem Videogame Playing (PVP) Scale	Salguero and Moran (2002)	7: Preoccupation; tolerance, loss of control; withdrawal; escape, lies & deception; disregard for physical or psychological consequences	9	3–5 min	13+	Yes/No	12 months	Addicted: $\geq 4$ criteria	Spain	English, French; Chinese
Problematic Internet Use Scale (ISS-20) (adapted)	Stetina et al. (2011)	5: Loss of control; problems in social offline relationships; withdrawal symptoms; tolerance; impairments in daily life	20	5–10 min	NR	6-point	NR	Problematic: average ranking larger than 3 according to each item (88th percentile)	Austria	German
Problematic Online Game Use Scale (POGU)	Kim and Kim (2010)	5: Euphoria; health problems; conflict; failure of self-control; preference for virtual relationship	20	5–10 min	11+	NR	NR	NR	South Korea	English; Korean
Problematic Online Gaming Questionnaire (POGQ)	Demetrovics et al. (2012)	6: Preoccupation; overuse; immersion; social isolation; interpersonal conflicts; withdrawal	18	5–10 min	NR	5-point	NR	Problematic: $\geq 65$	Hungarian	English
Video Game Addiction Test (VAT)	Van Rooij et al. (2012)	5: Loss of control; intra- and interpersonal conflict; preoccupation; mood modification; withdrawal	14	5–10 min	13+	NR	NR	NR	The Netherlands	English; Dutch
Video Game Dependency Scale (KFN-CSAS-II)	Rehbein et al. (2010)	5: Preoccupation/salience; conflict; loss of control; withdrawal; tolerance	14	5–10 min	13+	4-point	NR	Dependent: $\geq 42$	Germany	German
Young Internet Addiction Scale (YIAS)	Young (1998)	5: Tolerance; loss of control; conflict; relapse; lack of desire to change online use	8	5–10 min	NR	Yes/No	NR	Addicted: $\geq 3$ symptoms	United States	English; Chinese; French; Italian; Turkish
Young Internet Addiction Test (YIAT)	Young (1996)	6: Salience, excessive use, neglect – work; anticipation; lack of control; neglect – Social	20	5–10 min	NR	5-point	NR	Normal: 0–39; Problematic: 40–100	United States	Arabic; English; French; Chinese

# What do current tools measure?

**Table 2**  
Diagnostic features of psychometric instruments.

Instrument	Cognitive salience	Loss of control	Withdrawal	Tolerance	Escape	Euphoria	Relapse	Dependency on others	Deception	Conflict: Work/School	Conflict: Household	Conflict: Sleep	Conflict: Relationships	Conflict: Financial	Conflict: Illegal acts	Using despite harm
Proposed DSM-V category: Internet Use Disorder <sup>1</sup>	●	●	●	●	○	○	○	○	●	●	○	○	●	○	○	●
Adapted DSM-IV-TR for Pathological Gambling	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	○
Adapted DSM-IV-TR for Substance Dependence	○	●	●	●	○	○	●	○	○	●	○	○	●	○	○	●
Addiction-Engagement Questionnaire	●	○	●	●	○	●	●	○	○	●	○	●	●	○	○	○
Compulsive Internet Use Scale (CIUS)	●	●	●	○	●	○	●	○	○	●	○	●	●	○	○	○
Engagement-Addiction Questionnaire	●	○	●	●	●	●	●	○	○	●	○	●	●	●	○	○
Exercise Addiction Inventory (adapted)	●	○	●	●	○	●	●	○	○	○	○	○	●	○	○	○
Game Addiction Scale (GAS)	●	●	●	●	●	●	●	○	●	●	○	●	●	○	○	○
Korean Internet Addiction Test (KIAS)	●	○	●	●	○	○	○	○	○	○	○	●	●	○	●	○
Online Game Addiction Scale - Adolescents in Taiwan (OAST)	○	●	●	●	○	○	○	○	○	●	○	○	●	●	○	○
Online Game Addiction Index (OGAI)	○	●	●	●	○	○	○	○	○	○	●	●	●	○	○	○
Problem Videogame Playing (PVP) Scale	●	●	●	●	●	○	○	○	●	●	○	○	●	○	○	●
Problematic Internet Use Scale (ISS-20)	○	●	●	●	○	○	○	○	○	○	○	○	●	○	○	○
Problematic Online Game Use Scale (POGU)	●	●	○	●	○	●	●	○	○	●	○	○	●	○	○	○
Problematic Online Gaming Questionnaire (POGQ)	●	●	●	○	●	●	●	○	○	●	●	○	●	○	○	○
Video Game Addiction Test (VAT)	●	●	●	○	●	●	●	○	○	●	○	●	●	○	○	○
Video Game Dependency Scale (KFN-CSAS-II)	●	●	●	●	○	○	○	○	○	●	○	○	●	○	○	○
Young Internet Addiction Scale (YIAS)	●	●	●	●	●	●	○	○	●	●	○	○	●	○	○	○
Young Internet Addiction Test (YIAT)	●	●	●	○	●	●	●	○	●	●	●	●	●	○	○	○

Note: ● assessed; ○ not assessed. <sup>1</sup>Not an instrument, included for comparison only.

# General observations

- (1) No two instruments were alike with respect to their profile of diagnostic features
- (2) Interpersonal conflict was the only addiction indicator that was assessed across all 18 instruments
- (3) Financial conflict not generally assessed
- (4) Few instruments assessed use despite harm (SD criterion)
- (5) Instruments do not ask: “Do you think you have a problem?”
- (6) DSM-IV-TR criteria include the most indicators (13 ind.)
- (7) Game Addiction Scale and Young Internet Addiction Test each assess 11 criteria
- (8) Only the PVP Scale mapped all criteria of DSM-5 Internet Use Disorder – instruments tended to miss: (i) use despite harm and (ii) deception/secretcy



# Strengths and limitations

- + Short length
- + Convergent validity
- + Criterion validity
- + Internal consistency
  
- Inconsistent cut-offs
- Dimensionality
- Inter-rater reliability
- Predictive validity
- Self-selection



# Improving measurement

- Inclusion of items to assess:
  - (i) whether the individual personally believes that their video-gaming behavior is problematic (i.e., a validity check),
  - (ii) an item that asks whether significant others would consider that their video-gaming is problematic (i.e., a reliability check)
- Inclusion of measures to assess co-morbidity
- Guidelines for scoring and interpretation
- Establishment of norms
- Assessing harm/conflict across several domains
- Research - No instrument measures all indicators, therefore:
  - include additional items
  - Use more than one measure

# Further thoughts

1. Criteria for video-gaming disorder may be missing

Example: “Preoccupation” – can this be clarified?

2. Some inherited criteria may be inappropriate

Example: “Deception” – what about defiance?

3. Improvement to treatment outcome assessment

- (i) the level of endorsement of Internet Use Disorder criteria;
- (ii) the actual frequency of video-gaming;
- (iii) changes in participation in other hobbies or interests;
- (iv) the quality of family-based or other social relationships;
- (v) overall functioning and life satisfaction
- (vi) Parent ratings

# Summary

- The community is working toward a consensus, but is at a cross-road
- The concept of addiction is and always has been controversial
  - No accepted framework of clinical indicators
  - History of academic resistance to the disorder
  - Growing acceptance in psychiatry
- Video game addiction not recognised in the DSM-IV-TR but acknowledged in DSM-V as Internet Use Disorder
  - This presents many opportunities for research and clinical practice
- By consensus, the following components appear to be most important and consistently measured:
  - Loss of control (B)
  - Withdrawal (C)
  - Harm (D)

# Questions?

