ACSID-11: Further development and validation of a new screening instrument capturing ICD-11 criteria for gaming disorder and other potential Internet-use disorders

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Introduction

Basis

ICD-11 for Mortality and Morbidity Statistics (Version : 02/2022)

6C51 Gaming Disorder (in disorders due to addictive behaviors)

Diagnostic Requirements, Essential (Required) Features:

- A persistent pattern of gaming behavior (‘digital gaming’ or ‘video-gaming’), which may be predominantly online (i.e., over the internet or similar electronic networks) or offline, manifested by all of the following:
  - Impaired control over gaming behavior (e.g., onset, frequency, intensity, duration, termination, context);
  - Increasing priority given to gaming behavior to the extent that gaming takes precedence over other life interests and daily activities; and
  - Continuation or escalation of gaming behavior despite negative consequences (e.g., family conflict due to gaming behavior, poor scholastic performance, negative impact on health).
- The pattern of gaming behavior may be continuous or episodic and recurrent but is manifested over an extended period of time (e.g., 12 months).
- The gaming behavior is not better accounted for by another mental disorder (e.g., Manic Episode) and is not due to the effects of a substance or medication.
- The pattern of gaming behavior results in significant distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.

WHO, 2022
Introduction

Basis

ICD-11 for Mortality and Morbidity Statistics (Version : 02/2022)
6C50 Gambling disorder (in disorders due to addictive behaviors)

Diagnostic Requirements, Essential (Required) Features:

- A persistent pattern of gambling behavior, which may be predominantly online (i.e., over the internet or similar electronic networks) or offline, manifested by all of the following:
  - Impaired control over gambling behavior (e.g., onset, frequency, intensity, duration, termination, context);
  - Increasing priority given to gambling behavior to the extent that gambling takes precedence over other life interests and daily activities; and
  - Continuation or escalation of gambling behavior despite negative consequences (e.g., marital conflict due to gambling behavior, repeated and substantial financial losses, negative impact on health).
- The pattern of gambling behavior may be continuous or episodic and recurrent but is manifested over an extended period of time (e.g., 12 months).
- The gambling behavior is not better accounted for by another mental disorder (e.g., Manic Episode) and is not due to the effects of a substance or medication.
- The pattern of gambling behavior results in significant distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.

WHO, 2022
Introduction

Basis

ICD-11 for Mortality and Morbidity Statistics (Version : 02/2022)
6C5Y Other specified disorders due to addictive behaviors (in disorders due to addictive behaviors)
Classification of behavioral addictions

Which conditions should be considered as disorders in the *International Classification of Diseases* (ICD-11) designation of “other specified disorders due to addictive behaviors”?

MATTHIAS BRAND¹,²,³, HANS-JÜRGEN RUMPF⁴, ZSOLT DEMETROVICS⁵, ASTRID MÜLLER⁵, RUDOLF STARK⁶,⁷, DANIEL L. KING⁸, ANNA E. GOUDRIAAN⁹,¹⁰,¹¹, KARL MANN¹², PATRICK TROTZKE¹,², NAOMI A. FINEBERG¹³,¹⁴,¹⁵, SAMUEL R. CHAMBERLAIN¹⁶,¹⁷, SHANE W. KRAUS¹⁸, ELISA WEGMANN¹, JOËL BILLIEUX¹⁹,²⁰ and MARC N. POTENZA²¹,²²,²³

Brand et al., 2022
Overview of the meta-level-criteria proposed for considering the classification of a candidate phenomenon as an “other specified disorder due to addictive behaviors” (Brand et al., 2022).
Online Activities

1. Gaming Disorder
2. Shopping Disorder
3. Pornography Use Disorder
4. Social Network Use Disorder
5. Gambling Disorder
Assessment of behavioral addictions

1. Gaming Disorder
   - Ten-item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017)
   - Uses: DSM-V criteria; 10 dichotomous items, 5/9 criteria

2. Shopping Disorder
   - Bergen Shopping Addiction Scale (BSAS) (Andreassen et al., 2015)
   - Uses: Griffiths’ addiction components; 7 dichotomous items, 4/7 criteria

3. Pornography Use Disorder
   - Problematic Pornography Consumption Scale (PPCS-18) (Bőthe et al., 2018)
   - Uses: Griffiths’ addiction components; 18 7-scale items, sumscore > 75

4. Social Network Use Disorder
   - Bergen Social Media Addiction Scale (BSMAS) (Andreassen et al., 2012, 2016; Monacis et al., 2017)
   - Uses: Griffiths’ addiction components; 6 5-scale items, sumscore > 23

5. Gambling Disorder
   - The Berlin Inventory of Gambling behavior – Screening (BIG-S) (Wejbera et al., 2017)
   - Uses: DSM-IV criteria; 13 dichotomous items, 4/9 criteria
**Assessment of Criteria for Specific Internet-use Disorders (ACSID-11)**

- Based on **ICD-11 gaming/gambling disorder criteria** with 3 items covering IC, IP, C/E and 2 items covering FI/MD within the **last 12 months**
- Follows the response format of the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (WHO ASSIST Working Group, 2002)

<table>
<thead>
<tr>
<th>Activity</th>
<th>IC1 Never</th>
<th>IC1 Rarely</th>
<th>IC1 Some times</th>
<th>IC1 Often</th>
<th>How intense?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Not at all</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Intense</td>
</tr>
<tr>
<td>Gaming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online shopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of online pornography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of social networks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online gambling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Introduction**
Study 1
Assessment of Criteria for Specific Internet-use Disorders (ACSID-11): Introduction of a new screening instrument capturing ICD-11 criteria for gaming disorder and other potential Internet-use disorders

SILKE M. MÜLLER¹,², ELISA WEGMANN¹, ANDREAS OELKER¹, RUDOLF STARK³,⁴,⁵, ASTRID MÜLLER⁶, CHRISTIAN MONTAG⁷, KLAUS WÖFLING⁸, HANS-JÜRGEN RUMPF⁹ and MATTHIAS BRAND¹,²

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Müller et al., 2022
ACSID-11 Study 1

Method

- online panel survey
- **N=985** individuals, which are active online
  - 499 male, 458 female, 1 non-binary
  - 16-69 years old (M=47.60; SD=14.50)
  - 46.3% full-time employed, 20.1% retired, 14.3% part-time employed, else students, apprentices, unemployed
  - 33.6% with vocational training, 19% with a university degree, 14.1% with a vocational school degree, 11.8% with a master craftsman's degree, 10.1% with a degree from a university of applied sciences, else in training/studying or without a qualification
- **Questionnaires:** ACSID-11, IGDT-10 adapted for all 5 behaviors, health and well-being (Patient Health Questionnaire-4: PHQ-4, Life Satisfaction Short Scale: L-1 and health: H-1)
- **Reliability, CFA, Correlations**

Müller et al., 2022
ACSID-11 Study 1

Results

Distribution (N=985)

Online gaming:
• Age: M=43.59; SD=14.66

Online shopping:
• Age: M=47.58, SD=14.49

Online pornography use:
• Age: M=44.80, SD=14.96

Social Network use:
• Age: M=46.52, SD=14.66

Online Gambling
• Age: M=46.91, SD=13.67

• 61 (6.3%) use only one application.
• Mostly 841 (87.8%) online shopping und social network use.
• 409 (42.7%) additional online gaming.
• 68 (7.1%) use all applications.

Müller et al., 2022
ACSID-11 Study 1

Results

- **CFA:** good fit indices for **four factors** in a second order model (1) Impaired Control, (2) Increased Priority, (3) Continuation/Escalation and (4) Functional Impairment for all 5 behaviors
- **Reliability:** high with Cronbachs $\alpha$$\geq0.9$
- Significant positive **correlations** ACSID-11 mean score
  - **Strong effect** with IGDT-10 (in adapted form) for each behavior
  - **Medium to strong effects** with well-being

- Needs further validation and comparison with other screening instruments.
Study 2
ACSID-11 Study 2

Sample

- online panel survey
  - N=1597, which are active online
  - 786 males, 803 females, 8 non-binary
  - 18-69 years old (M=39.33; SD=12.52)
  - 54.2% full-time employed, 13.7% part-time employed, 11.4% students, else retired, apprentices, unemployed
  - 27.2% with vocational training, 27.2% with a university degree, 11.7% with a vocational school degree, 10.3% with a master craftsman’s degree, 9.7% with a degree from a university of applied sciences, else in training/studying or without a qualification
ACSID-11 Study 2

Questionnaires

Behavioral Addictions

• Assessment of Criteria for Specific Internet-use Disorders (ACSID-11) (Müller et al., 2022)
• Ten-item Internet Gaming Disorder Test (IGDT-10) (Király et al., 2017)
• Bergen Shopping Addiction Scale (BSAS) (Andreassen et al., 2015)
• Problematic Pornography Consumption Scale (PPCS-18) (Böthe et al., 2018)
• Bergen Social Media Addiction Scale (BSMAS) (Andreassen et al., 2012, 2016; Monacis et al., 2017)
• The Berlin Inventory of Gambling behavior – Screening (BIG-S) (Wejbera et al., 2017)

Psychopathology and Wellbeing

• Cambridge-Chicago Compulsivity Trait Scale (CHI-T) (Chamberlain & Grant, 2018)
• Brief Symptom Inventory (BSI) – Subskalen Kompulsivität, Depression, Ängstlichkeit (Derogatis & Melisaratos, 1983)
• Adult ADHD Self-Report Scale (ASRS) (Kessler et al., 2005)
• Short Loneliness Scale (LON) (Gierveld & Tilburg, 2006)
• General Life Satisfaction Short Scale (L-1) and general wellbeing (G-1) (Nießen et al., 2020)
ACSID-11 Study 2

Analysis

• Calculation of new scoring for ACSID-11
• Reliability
• Validity
  • Correlations of ACSID-11 with other non ICD-11 screening instruments, psychopathology and wellbeing
• Convergence/Divergence with other non ICD-11 screening instruments
• Proposal of a relevant cut-off score to identify pathological use.
Results

Distribution (N=1597)

Online gaming:
• Age: M=37.71; SD=12.20

Online shopping:
• Age: M=39.28, SD=12.46

Online pornography use:
• Age: M=38.80, SD=12.80

Social Network use:
• Age: M=38.48, SD=12.30

Online Gambling
• Age: M=39.02, SD=11.59
## Reliability

Reliability measures for ACSID-11 and other screener for internet use disorders.

<table>
<thead>
<tr>
<th>Type of disorder</th>
<th>ACSID-11</th>
<th>DSM/Griffiths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\alpha$</td>
<td>$\lambda_2$</td>
</tr>
<tr>
<td>Gaming</td>
<td>0.932</td>
<td>0.933</td>
</tr>
<tr>
<td>Online buying-shopping</td>
<td>0.921</td>
<td>0.923</td>
</tr>
<tr>
<td>Online pornography use</td>
<td>0.923</td>
<td>0.925</td>
</tr>
<tr>
<td>Social-networks use</td>
<td>0.919</td>
<td>0.922</td>
</tr>
<tr>
<td>Online gambling</td>
<td>0.951</td>
<td>0.952</td>
</tr>
</tbody>
</table>

Note. $\alpha$ = Cronbach’s alpha; $\lambda_2$ = Guttman’s lambda-2; DSM/Griffiths Gaming = IGDT-10; DSM/Griffiths Online buying-shopping = BSAS; DSM/Griffiths Online pornography use = PPCS-18; DSM/Griffiths Social-networks use = BSMAS; DSM/Griffiths Online gambling = BIG-S
# ACSID-11 Study 2

## Validity

**Psychopathological correlations with the ACSID-11 scales.**

<table>
<thead>
<tr>
<th></th>
<th>ACSID-11 dichotomous sum score</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gaming</td>
<td>Online buying-shopping</td>
<td>Online pornography use</td>
<td>Social-networks use</td>
<td>Online gambling</td>
</tr>
<tr>
<td>CHI-T</td>
<td>.170**</td>
<td>.192**</td>
<td>.204**</td>
<td>.241**</td>
<td>.198**</td>
</tr>
<tr>
<td>BSI compulsive</td>
<td>.346**</td>
<td>.267**</td>
<td>.248**</td>
<td>.434**</td>
<td>.373**</td>
</tr>
<tr>
<td>BSI depression</td>
<td>.301**</td>
<td>.230**</td>
<td>.236**</td>
<td>.349**</td>
<td>.376**</td>
</tr>
<tr>
<td>BSI anxiety</td>
<td>.337**</td>
<td>.273**</td>
<td>.269**</td>
<td>.367**</td>
<td>.432**</td>
</tr>
<tr>
<td>ASRS</td>
<td>.323**</td>
<td>.272**</td>
<td>.222**</td>
<td>.405**</td>
<td>.407**</td>
</tr>
<tr>
<td>LON</td>
<td>.179**</td>
<td>.133**</td>
<td>.122**</td>
<td>.207**</td>
<td>.251**</td>
</tr>
<tr>
<td>L1</td>
<td>-.024</td>
<td>-.012</td>
<td>-.060</td>
<td>-.137**</td>
<td>.055</td>
</tr>
<tr>
<td>G1</td>
<td>.018</td>
<td>.014</td>
<td>.025</td>
<td>-.078**</td>
<td>.049</td>
</tr>
</tbody>
</table>

Note. **significant on a <.01 level.
## ACSID-11 Study 2

### Validity/Convergence

**Multitrait-Multimethod-Matrix for all internet use disorders and their screening measures.**

<table>
<thead>
<tr>
<th>Type of disorder</th>
<th>Measure</th>
<th>1)</th>
<th>2)</th>
<th>3)</th>
<th>4)</th>
<th>5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a)</td>
<td>b)</td>
<td>a)</td>
<td>b)</td>
<td>a)</td>
</tr>
<tr>
<td>1) Online Gaming</td>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_gam*</td>
<td>797</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) IGDT-10*</td>
<td>0.609</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Online buying-shopping</td>
<td>N</td>
<td>789</td>
<td></td>
<td>1579</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_shop*</td>
<td>0.532</td>
<td>0.317</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) BSAS*</td>
<td>0.306</td>
<td>0.381</td>
<td>0.462</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3) Online pornography use</td>
<td>N</td>
<td>454</td>
<td></td>
<td>731</td>
<td></td>
<td>739</td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_porn*</td>
<td>0.445</td>
<td>0.389</td>
<td>0.455</td>
<td>0.31</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>b) PPCS</td>
<td>0.34</td>
<td>0.37</td>
<td>0.255</td>
<td>0.326</td>
<td>0.591</td>
</tr>
<tr>
<td>4) Social-networks use</td>
<td>N</td>
<td>751</td>
<td></td>
<td>1439</td>
<td></td>
<td>693</td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_sns*</td>
<td>0.52</td>
<td>0.364</td>
<td>0.522</td>
<td>0.317</td>
<td>0.368</td>
</tr>
<tr>
<td></td>
<td>b) BSMAS</td>
<td>0.358</td>
<td>0.357</td>
<td>0.367</td>
<td>0.426</td>
<td>0.307</td>
</tr>
<tr>
<td>5) Online gambling</td>
<td>N</td>
<td>269</td>
<td></td>
<td>382</td>
<td></td>
<td>227</td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_gamb*</td>
<td>0.674</td>
<td>0.534</td>
<td>0.667</td>
<td>0.386</td>
<td>0.547</td>
</tr>
<tr>
<td></td>
<td>b) BIG-S*</td>
<td>0.436</td>
<td>0.482</td>
<td>0.453</td>
<td>0.43</td>
<td>0.525</td>
</tr>
</tbody>
</table>

Note. $r = \text{Pearson's } r$; all correlations are significant on a $p < .001$ level. Grey = montrait block, orange = heterotrait block, blue = montrait-heteromethod, yellow = heterotrait-heteromethod, green = heterotrait-monomethod.

*A Pearson correlation was calculated for the dichotomous score.*
# ACSID-11 Study 2

## Validity/Convergence

*Multitrait-Multimethod-Matrix for all internet use disorders and their screening measures.*

<table>
<thead>
<tr>
<th>Type of disorder</th>
<th>Measure</th>
<th>1)</th>
<th>2)</th>
<th>3)</th>
<th>4)</th>
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</tr>
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<tbody>
<tr>
<td>1) Online Gaming</td>
<td>N</td>
<td>797</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_gam*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) IGDT-10*</td>
<td>0.609</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Online buying-shopping</td>
<td>N</td>
<td>789</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_shop*</td>
<td>0.532</td>
<td>0.317</td>
<td>1579</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) BSAS*</td>
<td>0.306</td>
<td>0.381</td>
<td>0.462</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3) Online pornography use</td>
<td>N</td>
<td>454</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>b) PPCS</td>
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<td>0.37</td>
<td>0.255</td>
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<td>N</td>
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<td></td>
<td></td>
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<td></td>
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<td>0.317</td>
<td>0.368</td>
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<tr>
<td></td>
<td>b) BSMAS</td>
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<td>0.357</td>
<td>0.367</td>
<td>0.426</td>
<td>0.307</td>
</tr>
<tr>
<td>5) Online gambling</td>
<td>N</td>
<td>269</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) ACSID-11_gamb*</td>
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<td>0.667</td>
<td>0.386</td>
<td>0.547</td>
</tr>
<tr>
<td></td>
<td>b) BIG-S*</td>
<td>0.436</td>
<td>0.482</td>
<td>0.453</td>
<td>0.43</td>
<td>0.525</td>
</tr>
</tbody>
</table>

Note. \( r = \) Pearson’s \( r \); all correlations are significant on a \( p < .001 \) level. Grey = monotrait block, orange = heterotrait block, white to green = weaker to stronger correlation.

* A Pearson correlation was calculated for the dichotomous score.
Convergence/Divergence: gaming disorder

- prevalence$_{ACSID-11}$=2.13%
- prevalence$_{IGDT-10}$=1.13%
- accuracy=97.24%
- precision=22.22%
- sensitivity=11.76%

- bookmarker informedness=0.109
- markedness=0.203
- Matthews correlation coefficient=0.149

Contingency table of cut-off values from IGDT-10 and ACSID-11 Gaming.

<table>
<thead>
<tr>
<th></th>
<th>IGDT-10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not problematic</td>
</tr>
<tr>
<td>ACSID-11</td>
<td>not problematic</td>
</tr>
<tr>
<td></td>
<td>problematic</td>
</tr>
<tr>
<td></td>
<td>overall</td>
</tr>
</tbody>
</table>
Convergence/Divergence: shopping disorder

- \( \text{prevalence}_{\text{ACSID-11}} = 0.95\% \)
- \( \text{prevalence}_{\text{BSAS}} = 11.02\% \)
- accuracy = 89.30\%
- precision = 5.75\%
- sensitivity = 66.67\%

- \( \text{bookmarker informedness} = 0.562 \)
- \( \text{markedness} = 0.054 \)
- Matthews correlation coefficient = \( |0.174| \)

Contingency table of cut-off values from BSAS and ACSID-11 online buying-shopping.

<table>
<thead>
<tr>
<th>ACSID-11</th>
<th>BSAS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not problematic</td>
</tr>
<tr>
<td>not problematic</td>
<td>1400</td>
</tr>
<tr>
<td>problematic</td>
<td>5</td>
</tr>
<tr>
<td>overall</td>
<td>1405</td>
</tr>
</tbody>
</table>
Convergence/Divergence: pornography use disorder

- $\text{prevalence}_{\text{ACSID-11}} = 1.63\%$
- $\text{prevalence}_{\text{PPCS}} = 3.79\%$
- $\text{accuracy} = 97.15\%$
- $\text{precision} = 32.14\%$
- $\text{sensitivity} = 75.00\%$
- $\text{bookmarker informedness} = 0.724$
- $\text{markedness} = 0.317$
- Matthews correlation coefficient = $|0.479|$

*Contingency table of cut-off values from PPCS and ACSID-11 online pornography use.*

<table>
<thead>
<tr>
<th></th>
<th>PPCS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not problematic</td>
<td>problematic</td>
<td>overall</td>
</tr>
<tr>
<td>ACSID-11</td>
<td>not problematic</td>
<td>708</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>problematic</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>overall</td>
<td>not problematic</td>
<td>711</td>
<td>28</td>
</tr>
</tbody>
</table>
Convergence/Divergence: social network use disorder

- prevalence$_{ACSID-11}$=2.54%
- prevalence$_{BSMAS}$=0.84%
- accuracy=97.39%
- precision=42.86%
- sensitivity=8.11%

- bookmarker informedness=0.078
- markedness=0.405
- Matthews correlation coefficient=|0.178|

Contingency table of cut-off values from BSMAS and ACSID-11 social-networks use.

<table>
<thead>
<tr>
<th></th>
<th>BSMAS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not problematic</td>
</tr>
<tr>
<td>ACSID-11</td>
<td></td>
</tr>
<tr>
<td>not problematic</td>
<td>1414</td>
</tr>
<tr>
<td>problematic</td>
<td>34</td>
</tr>
<tr>
<td>overall</td>
<td>1448</td>
</tr>
</tbody>
</table>
Convergence/Divergence: online gambling

- $\text{prevalence}_{\text{ACSID-11}} = 3.12\%$
- $\text{prevalence}_{\text{BIG-S}} = 17.66\%$
- accuracy = 84.94\%
- precision = 16.18\%
- sensitivity = 91.67\%
- $\text{bookmarker informedness} = 0.764$
- markedness = 0.159
- Matthews correlation coefficient = $|0.348|$

Contingency table of cut-off values from BIG-S and ACSID-11 online gambling.

<table>
<thead>
<tr>
<th></th>
<th>BIG-S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not problematic</td>
</tr>
<tr>
<td>ACSID-11</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>overall</td>
<td>317</td>
</tr>
</tbody>
</table>
Convergence/Divergence

- Online gambling
- Social network use
- Online pornography use
- Online shopping
- Online gaming

MCC  markedness  bookmaker informedness
Conclusion

The ACSID-11 is a reliable und valid instrument for capturing the ICD-11 criteria for:

• online gaming disorder
• online shopping disorder
• online pornography use disorder
• social network use disorder
• online gambling disorder

Should not yet be used for diagnostics!

Choose your screening instruments very carefully and take a look into the items.
Outlook

The ACSID-11 makes online behavioral addictions comparable and facilitates the needed concurrent survey, but specific elements of the different behavioral addictions should be co-surveyed.

Needs further *clinical* validation. Theoretically proposed cut-off=4.

The categorization into (non-)problematic use differs strongly according to the screening instruments used. Which criteria should be given special attention?
ACSID-11 Study 2

**Importance**

A high level of problems with the five behaviors is associated with an overall poorer quality of life. Therefore, this field of SIUD must be further investigated holistically.
Affective and cognitive mechanisms of specific Internet-use disorders (ACSID)

More info:

https://www.uni-due.de/for2974
Thank you for your attention!

Kontakt: Andreas Oelker (andreas.oelker@uni-due.de)
Introduction

Basis

ICD-11 for Mortality and Morbidity Statistics (Version : 02/2022)
Compulsive sexual behaviour disorder (in impulse control disorders)

Diagnostic Requirements, Essential (Required) Features:
• A persistent pattern of failure to control intense, repetitive sexual impulses or urges resulting in repetitive sexual behaviour, manifested in one or more of the following:
  • Engaging in repetitive sexual behaviour has become a central focus of the individual's life to the point of neglecting health and personal care or other interests, activities and responsibilities.
  • The individual has made numerous unsuccessful efforts to control or significantly reduce repetitive sexual behaviour.
  • The individual continues to engage in repetitive sexual behaviour despite adverse consequences (e.g., marital conflict due to sexual behaviour, financial or legal consequences, negative impact on health).
  • The person continues to engage in repetitive sexual behaviour even when the individual derives little or no satisfaction from it.
• The pattern of failure to control intense, repetitive sexual impulses or urges and resulting repetitive sexual behaviour is manifested over an extended period of time (e.g., 6 months or more).
• The pattern of failure to control intense, repetitive sexual impulses or urges and resulting repetitive sexual behaviour is not better accounted for by another mental disorder (e.g., Manic Episode) or other medical condition and is not due to the effects of a substance or medication.
• The pattern of repetitive sexual behaviour results in marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges, or behaviours is not sufficient to meet this requirement.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>( \frac{TP + TN}{TP + TN + FP + FN} = \frac{TP + TN}{PP + FN} = \frac{TP + TN}{AP + AN} )</td>
</tr>
<tr>
<td>Precision (PPV)</td>
<td>( \frac{TP}{TP + FP} )</td>
</tr>
<tr>
<td>Negative Predictive Value</td>
<td>( \frac{TN}{TN + FN} )</td>
</tr>
<tr>
<td>Recall</td>
<td>( \frac{TP}{TP + FN} )</td>
</tr>
<tr>
<td>Specificity</td>
<td>( \frac{TN}{TN + FP} )</td>
</tr>
<tr>
<td>F-score</td>
<td>( \frac{TP}{TP + \frac{1}{2}(FP + FN)} = \frac{2 \times \text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}} )</td>
</tr>
</tbody>
</table>
| Informedness            | \( \frac{TP}{TP + FN} \) \quad \frac{FP}{FP + TN} \quad \frac{TP}{AP} \quad \frac{FP}{AN} \)  
  \( = \text{Recall} + \text{Specificity} - 1 \) |
| Markedness              | \( \frac{TP}{TP + FN} \) \quad \frac{FN}{FN + TN} \quad \frac{TP}{FP} \quad \frac{FN}{PN} \)  
  \( = \text{PPV} + \text{NPV} - 1 \) |
| Matthews correlation coefficient | \( \frac{TP + TN - FP + FN}{\sqrt{(TP + FP)(TP + FN)(TN + FP)(TN + FN)}} \)  
  \( = \sqrt[4]{\text{Informedness} \times \text{Markedness}} \) |
Literature


