



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



CeBAR
Center for Behavioral
Addiction Research



General
Psychology:
Cognition

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Open-Minded

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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.

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.

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



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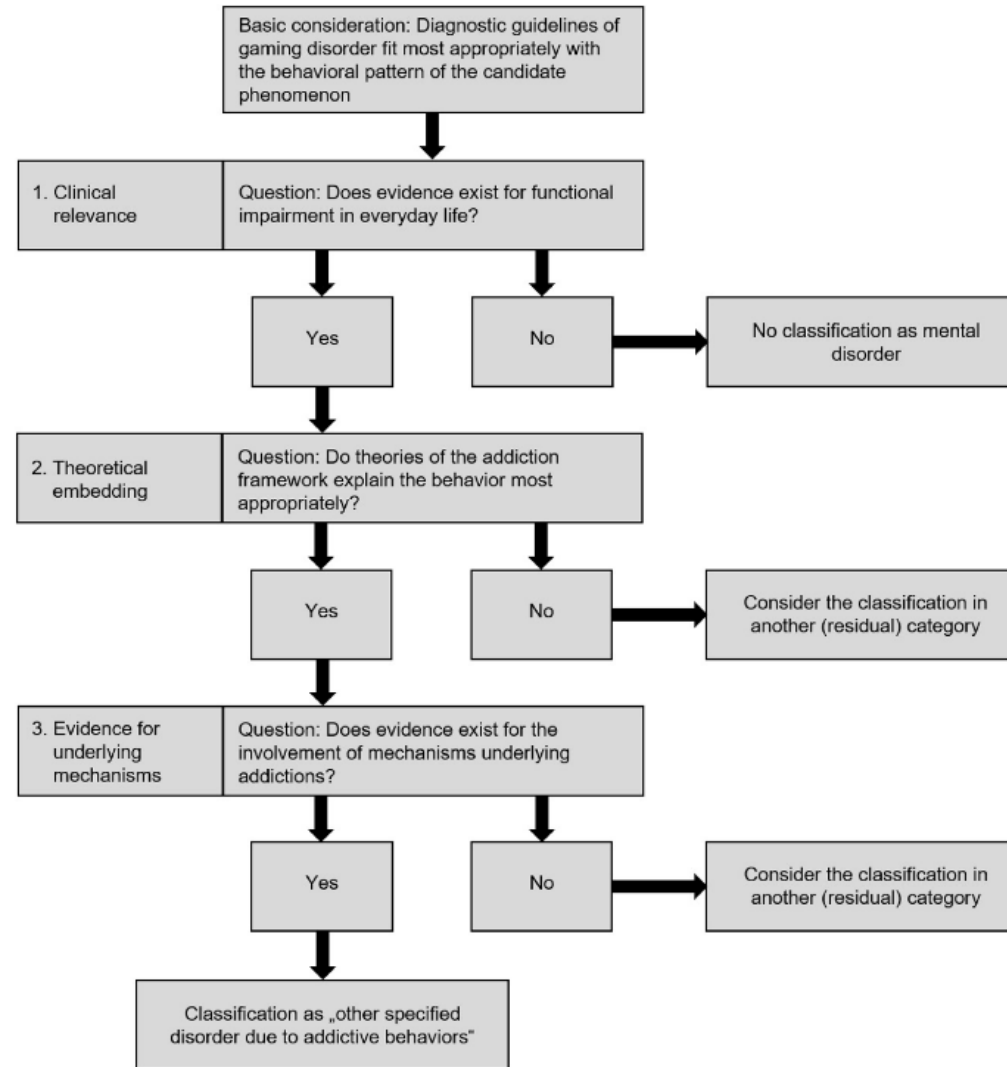
Debate: Behavioral
addictions in the
ICD-11

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

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E. GOUDRIAAN^{9,10,11}, KARL MANN¹², PATRICK TROTZKE^{1,2},
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and MARC N. POTENZA^{21,22,23}

Meta-level-criteria



Online Activities

1. Gaming Disorder
2. Shopping Disorder
3. Pornography Use Disorder
4. Social Network Use Disorder
5. Gambling Disorder



Neuroscience & Biobehavioral Reviews

Volume 104, September 2019, Pages 1-10



Review article

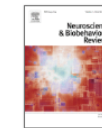
The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors

Matthias Brand ^{a, b, c, d, e, f, g, h, i, j}, Elisa Wegmann ^a, Rudolf Stark ^{c, d, e}, Astrid Müller ^e, Klaus Wölfling ^{f, g}, Trevor W. Robbins ^g, Marc N. Potenza ^{h, i, j}



Neuroscience & Biobehavioral Reviews

Volume 71, December 2016, Pages 252-266



Review article

Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect-Cognition-Execution (I-PACE) model

Matthias Brand ^{a, b, c, d, e, f, g, h, i, j}, Kimberly S. Young ^c, Christian Laier ^a, Klaus Wölfling ^{d, e}, Marc N. Potenza ^{e, f, g, h, i, j}

Positionspapier

Vereinheitlichung der Bezeichnungen für Verhaltenssuchte

Hans-Jürgen Rumpf¹, Anil Batra², Anja Bischof¹, Eva Hoch³, Katajun Lindenberg⁴, Karl Mann⁵, Christian Montag⁶, Astrid Müller⁷, Kai W. Müller⁸, Florian Rehbein⁹, Rudolf Stark¹⁰, Bert te Wildt¹¹, Rainer Thomasius¹², Klaus Wölfling⁸ und Matthias Brand^{13,14}

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<https://doi.org/10.1024/0939-5911/a000720>



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, 4/7 criteria
2. Shopping Disorder
 - Bergen Shopping Addiction Scale (Vandierck et al., 2015)
 - Uses: Griffiths' addiction criteria, 4/7 criteria
3. Pornography Use Disorder
 - Problematic Pornography Use Scale (Ponopsky et al., 2018)
 - Uses: Griffiths' addiction criteria, sumscore > 75
4. Social Network Use Disorder
 - Bergen Social Media Addiction Scale (Andreassen et al., 2012, 2016; Monacis et al., 2017)
 - Uses: Griffiths' addiction criteria, 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

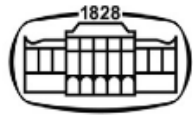
Difficult to
compare

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)

		How often?				How intense?			
		never	rarely	some times	often	not at all intense	rather not intense	rather intense	intense
IC1	In the past 12 months, have you had trouble keeping track of when you started the activity, for how long, how intensely, or in what situation you did it, or when you stopped?								
	Gaming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Online shopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use of online pornography	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use of social networks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Online gambling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Study 1



AKADÉMIAI KIADÓ








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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

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KLAUS WÖLFLING⁸, HANS-JÜRGEN RUMPF⁹  and
MATTHIAS BRAND^{1,2*} 

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**

Results

Distribution (N=985)

Online gaming:

- Age: M=43.59; SD=14.66

Online shopping:

- Age: M=47.58, SD=14.49

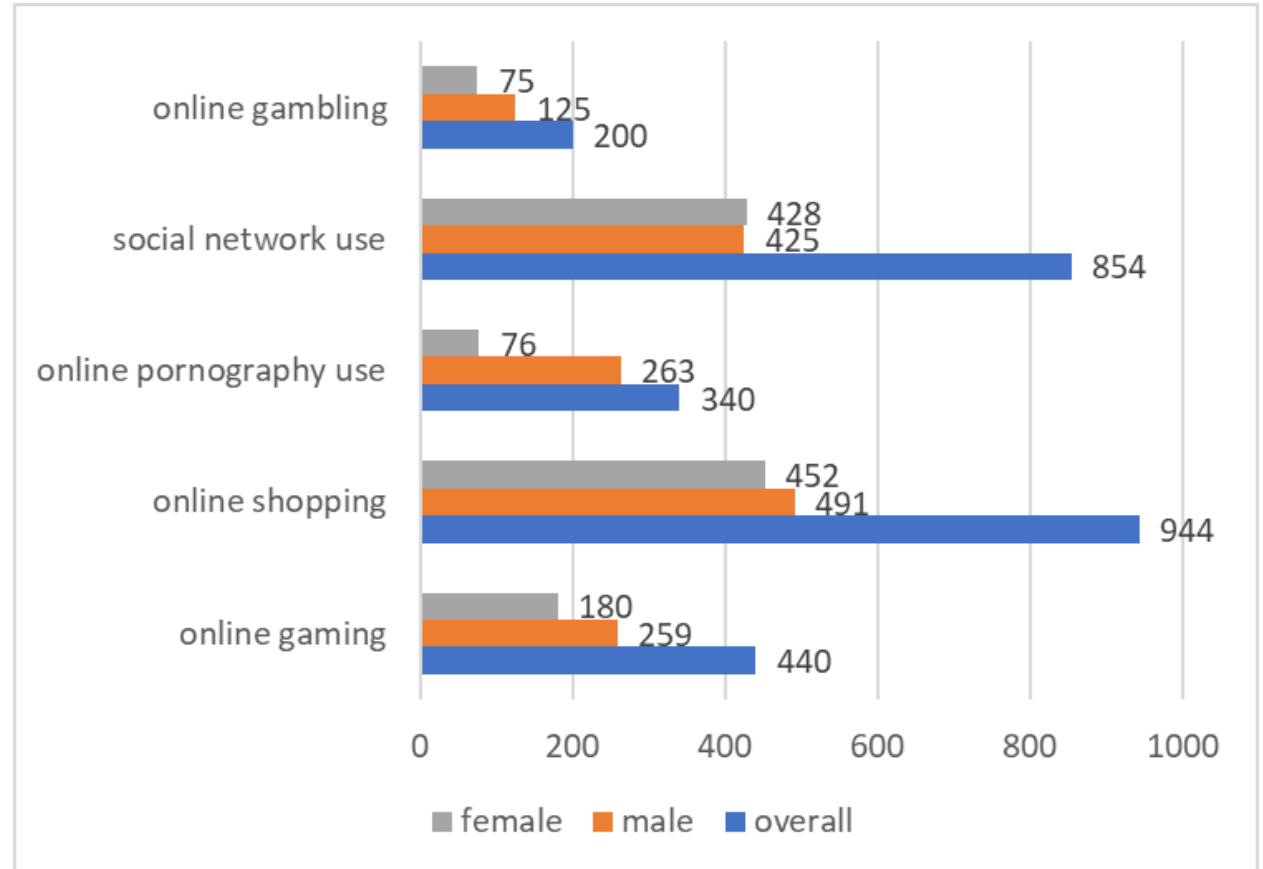
Social Network use:

- Age: M=44.80, SD=14.96

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.



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 $\alpha \geq 0.9$
 - 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

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

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)

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.

		How often?				How intense?			
		never	rarely	some times	often	not at all intense	rather not intense	rather intense	intense
IC1	In the past 12 months, have you had trouble keeping track of when you started the activity , for how long, how intensely, or in what situation you did it, or when you stopped?								
	Online shopping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Use of social networks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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:

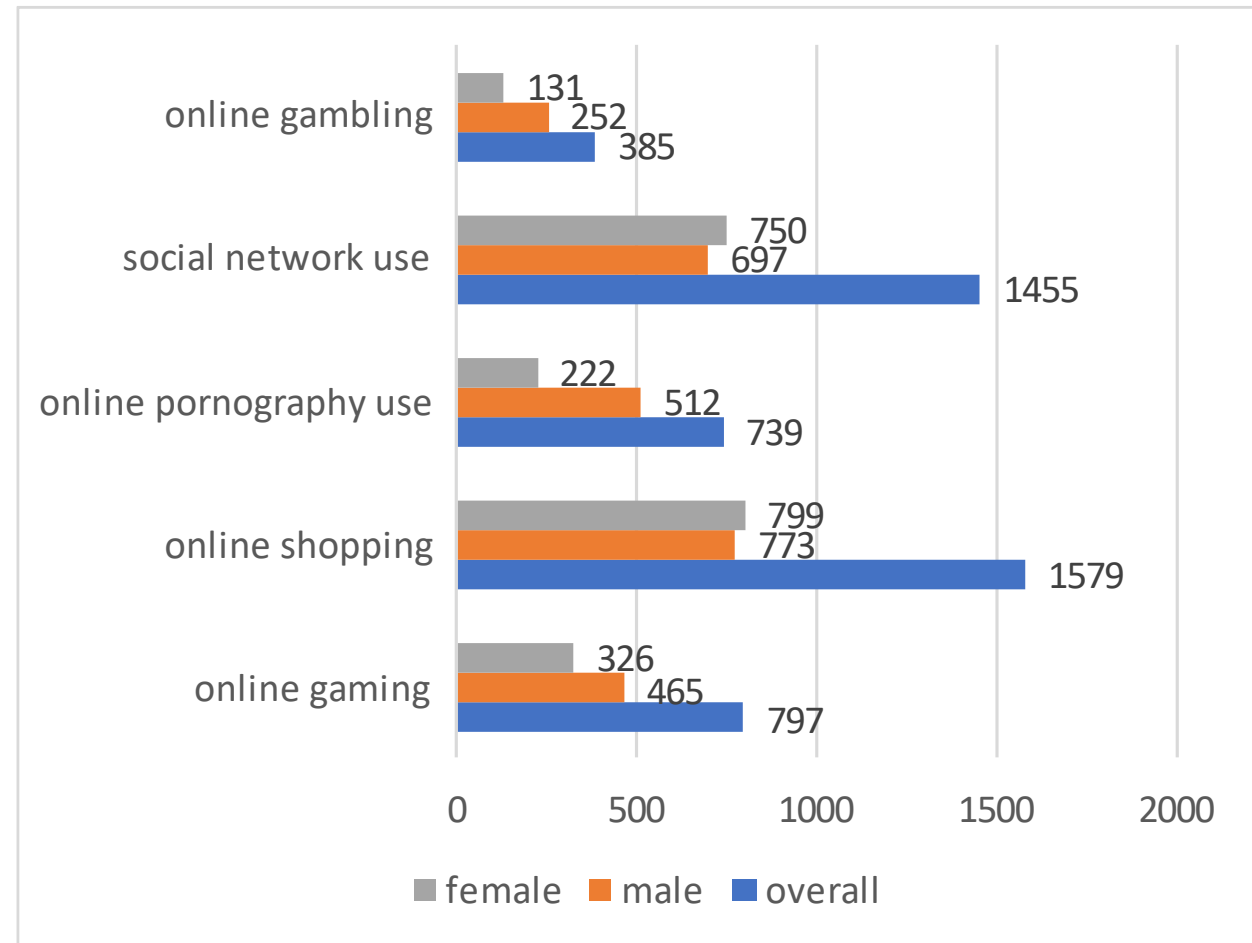
- Age: M=38.80, SD=12.80

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.

Type of disorder	ACSID-11		DSM/Griffiths	
	α	λ_2	α	λ_2
Gaming	0.932	0.933	0.861	0.863
Online buying-shopping	0.921	0.923	0.908	0.911
Online pornography use	0.923	0.925	0.951	0.952
Social-networks use	0.919	0.922	0.896	0.898
Online gambling	0.951	0.952	0.898	0.900

Note. α = Cronbach's alpha; λ_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

Validity

Psychopathological correlations with the ACSID-11 scales.

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

Note. **significant on a <.01 level.

Validity/Convergence

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

Type of disorder		1)		2)		3)		4)		5)	
	Measure	a)	b)	a)	b)	a)	b)	a)	b)	a)	b)
1) Online Gaming	N	797									
	a) ACSID-11_gam*	1									
	b) IGDT-10*	0,609	1								
2) Online buying-shopping	N	789		1579							
	a) ACSID-11_shop*	0,532	0,317	1							
	b) BSAS*	0,306	0,381	0,462	1						
3) Online pornography use	N	454		731		739					
	a) ACSID-11_porn*	0,445	0,389	0,455	0,31	1					
	b) PPCS	0,34	0,37	0,255	0,326	0,591	1				
4) Social-networks use	N	751		1439		693		1455			
	a) ACSID-11_sns*	0,52	0,364	0,522	0,317	0,368	0,237	1			
	b) BSMAS	0,358	0,357	0,367	0,426	0,307	0,345	0,593	1		
5) Online gambling	N	269		382		227		361		385	
	a) ACSID-11_gamb*	0,674	0,534	0,667	0,386	0,547	0,422	0,578	0,419	1	
	b) BIG-S*	0,436	0,482	0,453	0,43	0,525	0,537	0,419	0,502	0,602	1

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

*A Pearson correlation was calculated for the dichotomous score.

Validity/Convergence

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

Type of disorder		1)		2)		3)		4)		5)	
	Measure	a)	b)	a)	b)	a)	b)	a)	b)	a)	b)
1) Online Gaming	N	797									
	a) ACSID-11_gam*	1									
	b) IGD-10*	0,609	1								
2) Online buying-shopping	N	789		1579							
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	b) BSMAS	0,358	0,357	0,367	0,426	0,307	0,345	0,593	1		
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	a) ACSID-11_gamb*	0,674	0,534	0,667	0,386	0,547	0,422	0,578	0,419	1	
	b) BIG-S*	0,436	0,482	0,453	0,43	0,525	0,537	0,419	0,502	0,602	1

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.

		IGDT-10		
		not problematic	problematic	overall
ACSID-11	not problematic	773	7	780
	problematic	15	2	17
	overall	788	9	797

Convergence/Divergence: shopping disorder

- prevalence_{ACSID-11}=0.95%
- prevalence_{BSAS}=11.02%
- accuracy=89.30%
- precision=5.75%
- sensitivity=66.67%
- bookmarker informedness=0.562
- markedness=0.054
- Matthews correlation coefficient=|0.174|

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

		BSAS		
		not problematic	problematic	overall
ACSID-11	not problematic	1400	164	1564
	problematic	5	10	15
	overall	1405	174	1579

Convergence/Divergence: pornography use disorder

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

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

		PPCS		
		not problematic	problematic	overall
ACSID-11	not problematic	708	19	727
	problematic	3	9	12
	overall	711	28	738

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.

		BSMAS		
		not problematic	problematic	overall
ACSID-11	not problematic	1414	4	1418
	problematic	34	3	37
	overall	1448	7	1455

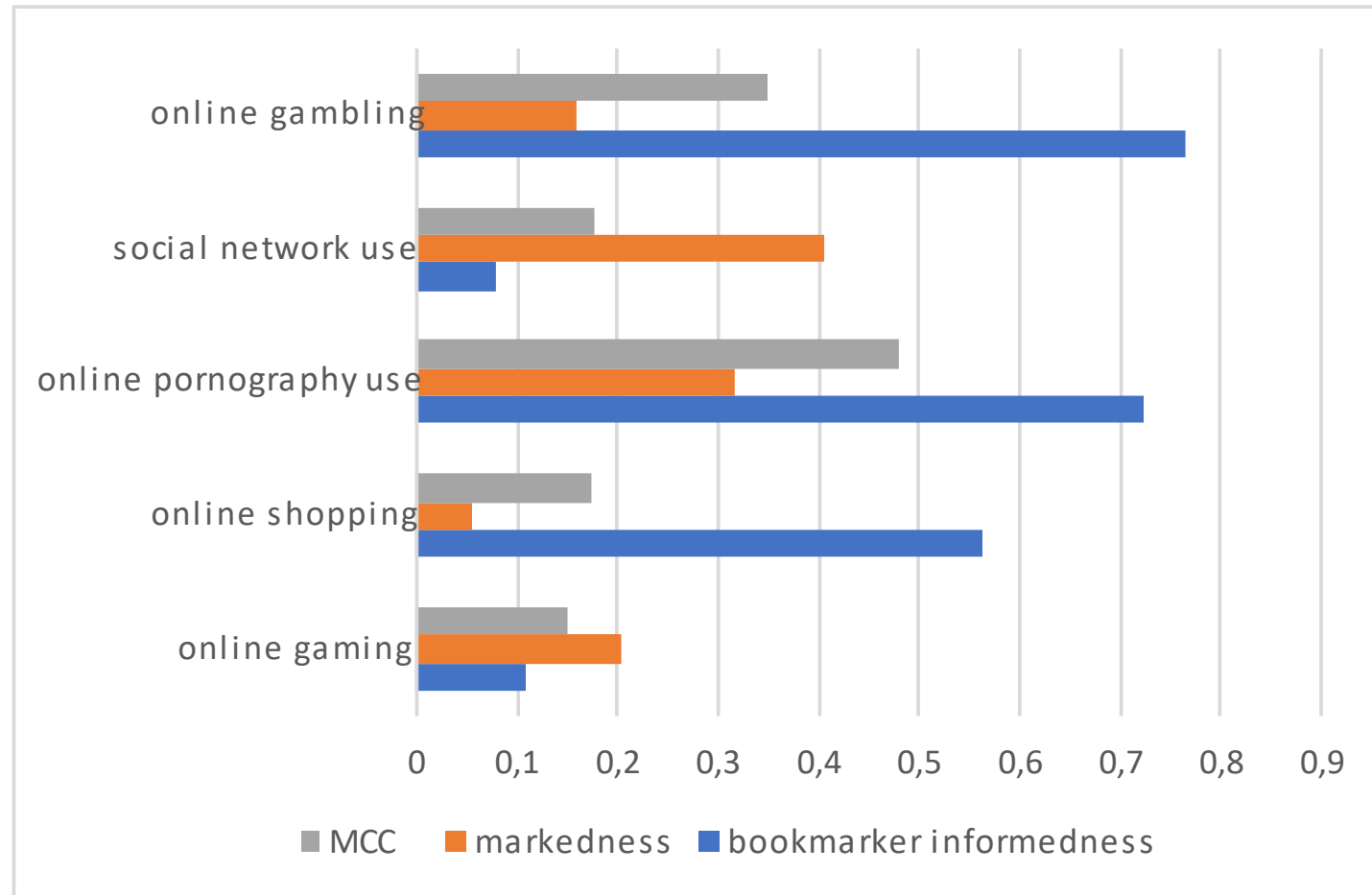
Convergence/Divergence: online gambling

- prevalence_{ACSID-11}=3.12%
- prevalence_{BIG-S}=17.66%
- accuracy=84.94%
- precision=16.18%
- sensitivity=91.67%
- 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.

		BIG-S		
		not problematic	problematic	overall
ACSID-11	not problematic	316	57	373
	problematic	1	11	12
	overall	317	68	385

Convergence/Divergence



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.

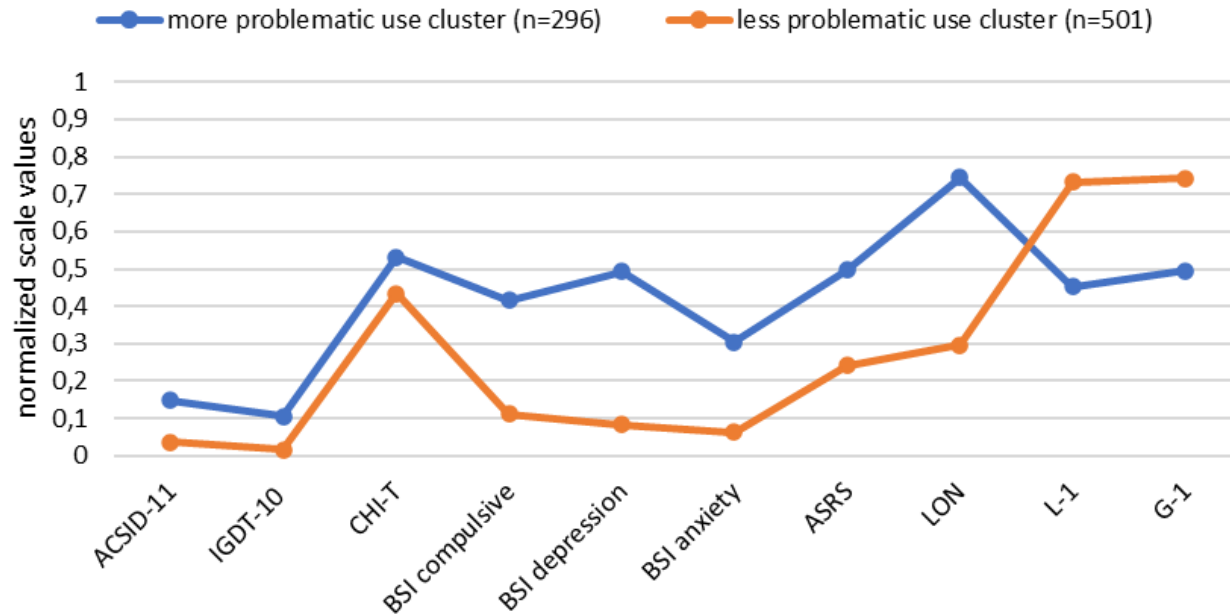
Needs further **clinical** validation. Theoretically proposed cut-off=4.

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

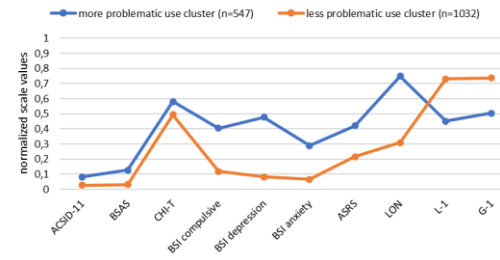
Importance

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.

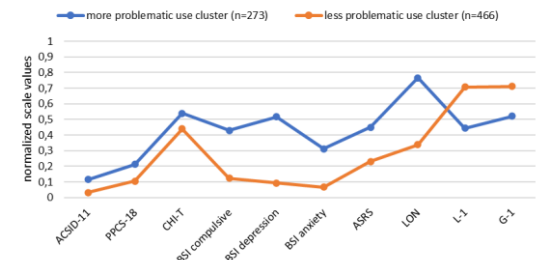
Online gaming centroids



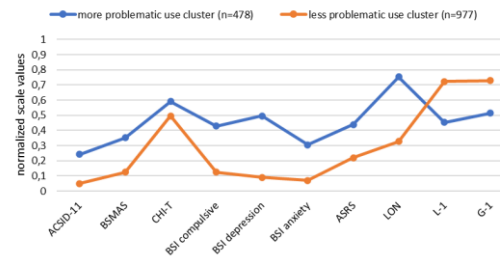
Online buying-shopping centroids



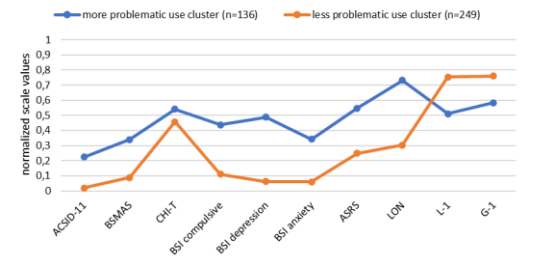
Online pornography use centroids



Social networks use centroids



Online gambling centroids



Affective and cognitive mechanisms of specific Internet-use disorders (ACSID)



More info:

<https://www.uni-due.de/for2974>



@for2974



General
Psychology:
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General
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Cognition

Thank you for your attention!

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Open-Minded

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.

Performance measures for classification

Measure	Formula
Accuracy	$\frac{TP + TN}{TP + TN + FP + FN} = \frac{TP + TN}{PP + PN} = \frac{TP + TN}{AP + AN}$
Precision (PPV)	$\frac{TP}{TP + FP} = \frac{TP}{PP}$
Negative Predictive Value	$\frac{TN}{TN + FN} = \frac{TN}{PN}$
Recall	$\frac{TP}{TP + FN} = \frac{TP}{AP}$
Specificity	$\frac{TN}{TN + FP} = \frac{TN}{AN}$
F-score	$\frac{TP}{TP + \frac{1}{2}(FP + FN)} = \frac{2 * Precision * Recall}{Precision + Recall}$
Informedness	$\frac{TP}{TP + FN} - \frac{FP}{FP + TN} = \frac{TP}{AP} - \frac{FP}{AN}$ $= Recall + Specificity - 1$
Markedness	$\frac{TP}{TP + FP} - \frac{FN}{FN + TN} = \frac{TP}{PP} - \frac{FN}{PN}$ $= PPV + NPV - 1$
Mattews correlation coefficient	$\frac{TP * TN - FP * FN}{\sqrt{(TP + FP)(TP + FN)(TN + FP)(TN + FN)}}$ $= \pm \sqrt{Informedness * Markedness}$

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