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ESSEN

Open-Minded

Convergences in the psychology of behavioral addictions

Matthias Brand



General
Psychology:
Cognition



CeBAR
Center for Behavioral
Addiction Research



ERWIN L. HAHN
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Introduction

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

Search

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Coding Tool

Special Views

Info

ICD-11 for Mortality and Morbidity Statistics

- ▶ 01 Certain infectious or parasitic diseases
- ▶ 02 Neoplasms
- ▶ 03 Diseases of the blood or blood-forming organs
- ▶ 04 Diseases of the immune system
- ▶ 05 Endocrine, nutritional or metabolic diseases
- ▼ 06 Mental, behavioural or neurodevelopmental disorders
 - ▶ Neurodevelopmental disorders
 - ▶ Schizophrenia or other primary psychotic disorders
 - ▶ Catatonia
 - ▶ Mood disorders
 - ▶ Anxiety or fear-related disorders
 - ▶ Obsessive-compulsive or related disorders
 - ▶ Disorders specifically associated with stress
 - ▶ Dissociative disorders
 - ▶ Feeding or eating disorders
 - ▶ Elimination disorders
 - ▶ Disorders of bodily distress or bodily experience
 - ▼ Disorders due to substance use or addictive behaviours
 - ▶ Disorders due to substance use
 - ▼ Disorders due to addictive behaviours
 - ▶ 6C50 Gambling disorder
 - ▶ 6C51 Gaming disorder
 - 6C5Y Other specified disorders due to addictive behaviours
 - 6C5Z Disorders due to addictive behaviours, unspecified
 - ▶ Impulse control disorders
 - ▶ Disruptive behaviour or dissocial disorders
 - ▶ Personality disorders and related traits
 - ▶ Paraphilic disorders
 - ▶ Factitious disorders
 - ▶ Neurocognitive disorders
 - ▶ Mental or behavioural disorders associated with pregnancy, childbirth or the puerperium
 - ▶ 6E40 Psychological or behavioural factors affecting disorders or diseases classified elsewhere
 - ▶ Secondary mental or behavioural syndromes associated with disorders or diseases classified

Foundation URI : <http://id.who.int/icd/entity/1448597234>

6C51 Gaming disorder

Parent

[Disorders due to addictive behaviours](#)

Show all ancestors

Description

Gaming disorder is characterised by a pattern of persistent or recurrent gaming behaviour ('digital gaming' or 'video-gaming'), which may be online (i.e., over the internet) or offline, manifested by: 1. impaired control over gaming (e.g., onset, frequency, intensity, duration, termination, context); 2. increasing priority given to gaming to the extent that gaming takes precedence over other life interests and daily activities; and 3. continuation or escalation of gaming despite the occurrence of negative consequences. The pattern of gaming behaviour may be continuous or episodic and recurrent. The pattern of gaming behaviour results in marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. The gaming behaviour and other features are normally evident over a period of at least 12 months in order for a diagnosis to be assigned, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe.

Exclusions

- Hazardous gaming (QE22)
- Bipolar type I disorder (6A60)
- Bipolar type II disorder (6A61)

Diagnostic Requirements

Essential (Required) Features:

- A persistent pattern of gaming behaviour ('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 behaviour (e.g., onset, frequency, intensity, duration, termination, context);
 - Increasing priority given to gaming behaviour to the extent that gaming takes precedence over other life interests and daily activities; and
 - Continuation or escalation of gaming behaviour despite negative consequences (e.g., family conflict due to gaming behaviour, poor scholastic performance, negative impact on health).
- The pattern of gaming behaviour may be continuous or episodic and recurrent but is manifested over an extended period of time (e.g., 12 months).
- The gaming behaviour 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 behaviour results in significant distress or impairment in personal, family, social, educational, occupational, or other important areas of functioning.

Specifiers for online or offline behaviour:

6C51.0 Gaming Disorder, predominantly online

- This refers to Gaming Disorder that predominantly involves gaming behaviour that is conducted over the internet or similar electronic networks (i.e., online).

6C51.1 Gaming Disorder, predominantly offline

- This refers to Gaming Disorder that predominantly involves gaming behaviour that is not conducted over the internet or similar electronic networks (i.e., offline).

6C51.Z Gaming Disorder, unspecified

Additional Clinical Features:

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

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ICD-11 for Mortality and Morbidity Statistics
Foundation URI : <http://id.who.int/icd/entity/1448597234>

6C51 Gaming disorder

- 1) Diminished control
- 2) Increasing priority
- 3) Continuation despite negative consequences

+ functional impairment and/or marked distress

„Additional clinical features“ (selection):

- Unsuccessful efforts to reduce gaming behavior
- Craving and urges
- Dysphoria, when gaming is reduced (often by others)
- Tolerance and mood modification

6C50 Gambling disorder
6C51.Z Gaming Disorder, unspecified
Additional Clinical Features:



- ▼ Disorders due to substance use or addictive behaviours
 - ▶ Disorders due to substance use
 - ▼ Disorders due to addictive behaviours
 - ▶ 6C50 Gambling disorder
 - ▼ 6C51 Gaming disorder
 - 6C51.0 Gaming disorder, predominantly online
 - 6C51.1 Gaming disorder, predominantly offline
 - 6C51.Z Gaming disorder, unspecified
- 6C5Y Other specified disorders due to addictive behaviours
- 6C5Z Disorders due to addictive behaviours, unspecified



AKADÉMIAI KIADÓ

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© 2020 The Author(s)

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 BRAND^{1,2*}, HANS-JÜRGEN RUMPF³, ZSOLT DEMETROVICS⁴, ASTRID MÜLLER⁵, RUDOLF STARK^{6,7}, DANIEL L. KING⁸, ANNA E. GOUDRIAAN^{9,10,11}, KARL MANN¹², PATRICK TROTZKE^{1,2}, NAOMI A. FINEBERG^{13,14,15}, SAMUEL R. CHAMBERLAIN^{16,17}, SHANE W. KRAUS¹⁸, ELISA WEGMANN¹, JOËL BILLIEUX^{19,20} and MARC N. POTENZA^{21,22,23}

- Buying-shopping disorder
- Pornography-use disorder
- Social-networks-use disorder



Theory and evidence

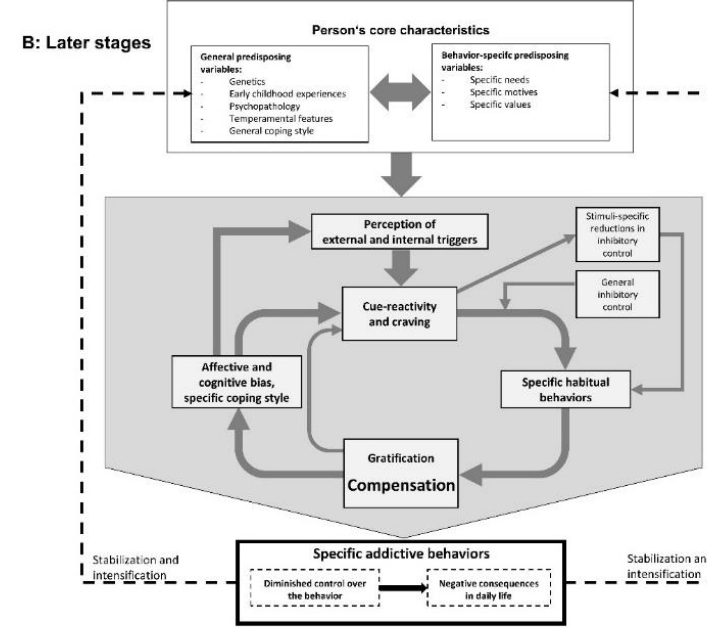
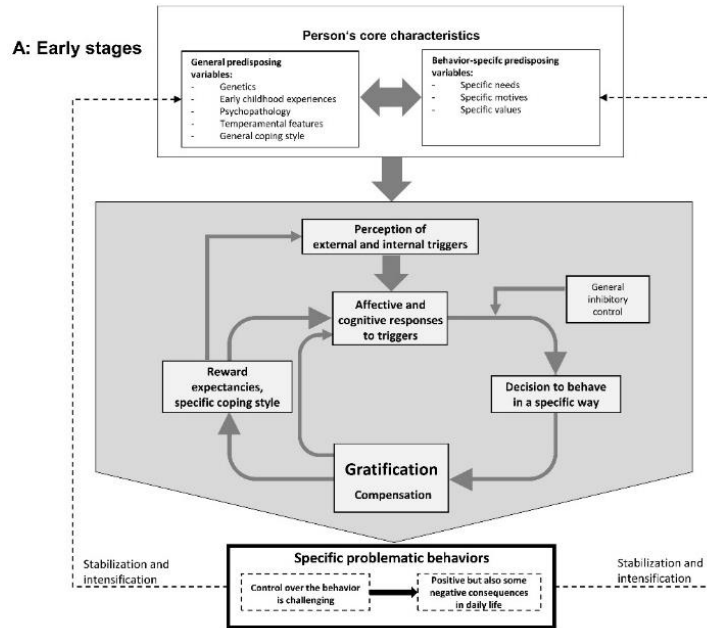


Review article

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



Review article

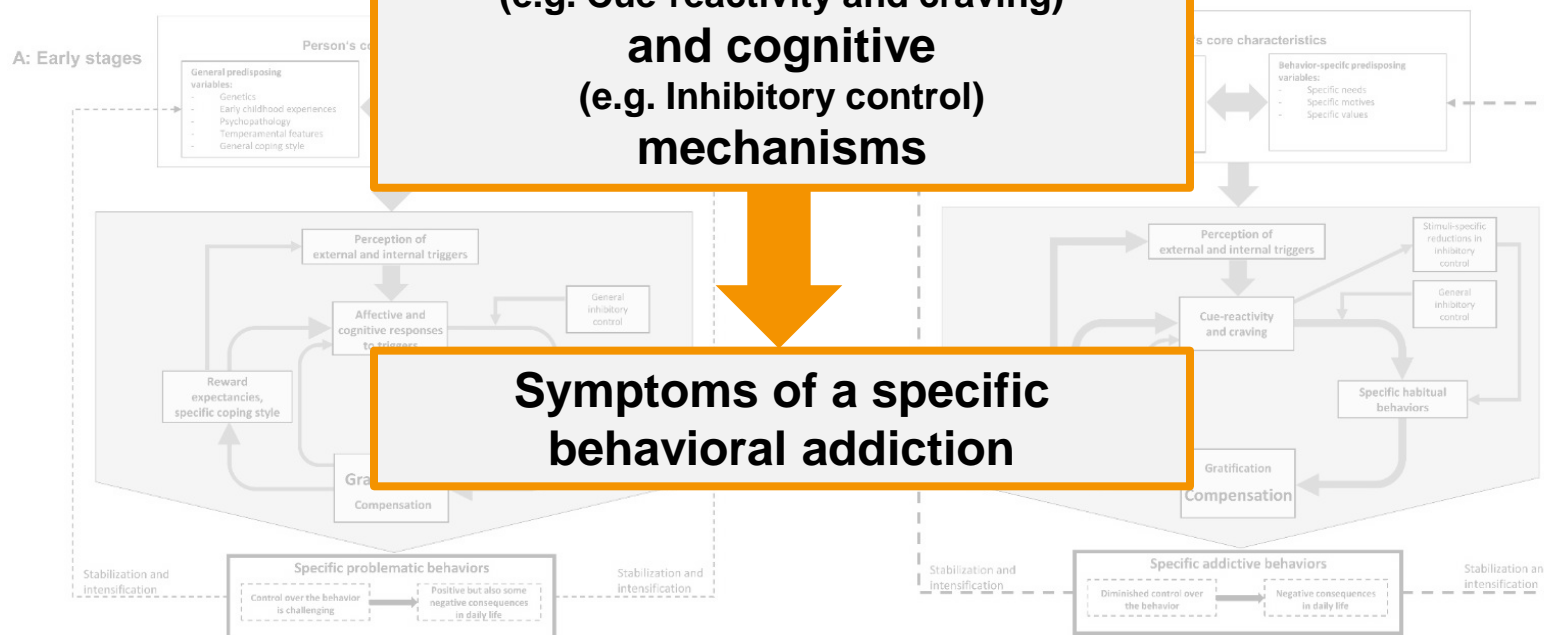
The Interaction of Vulnerability Factors, General and Specific, in the Development of Internet-Use Disorders, and Specification of the Process Character of Addictive Behaviors

Matthias Brand^{a,b,*}, Elisa Wegmann^a, Rudolf Stark^c, Astrid Müller^c, Klaus Wölfling^f, Trevor W. Robbins^g

**Vulnerability factors
(general and specific)**

**Affective
(e.g. Cue-reactivity and craving)
and cognitive
(e.g. Inhibitory control)
mechanisms**

**Symptoms of a specific
behavioral addiction**





Review article

Vulnerability factors (general and specific)

The Interaction of... addictive behav... internet-use disorders, and specification of the process character of addictive behaviors

Australian & New Zealand Journal of Psychiatry

Stark^{c,d}, Astrid Müller^e, Klaus Wölfling^f,

Risk and protective factors of Internet gaming disorder among Chinese people: A meta-analysis

Yinan Ji^{id}, Margaret Xi Can Yin, Anna Yan Zhang, more...

Show all authors

First Published July 10, 2021 | Review Article | Find in PubMed | Check for updates

<https://doi.org/10.1177/00048674211025703>

High effect sizes: Psychopathological characteristics
Personality traits
Emotion regulation style

Protective factor: Self-control

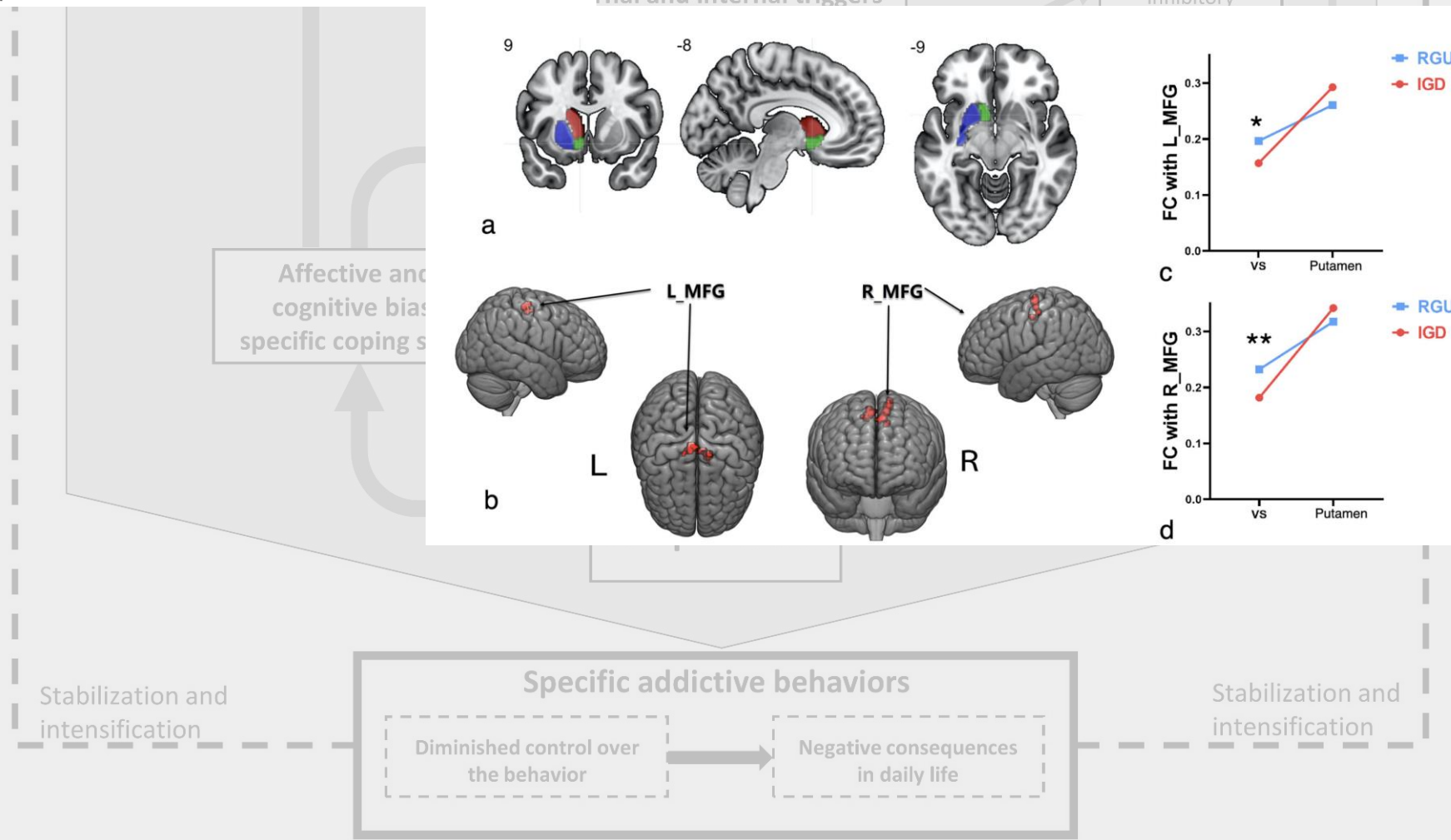


Dorsal and ventral striatal functional connectivity shifts play a potential role in internet gaming disorder

Guang-Heng Dong^{1,2,3✉}, Haohao Dong⁴, Min Wang^{1,2}, Jialin Zhang⁵, Weiran Zhou², Xiaoxia Du⁶ & Marc N. Potenza^{7,8,9}

Activation of the ventral and dorsal striatum during cue reactivity in Internet gaming disorder*

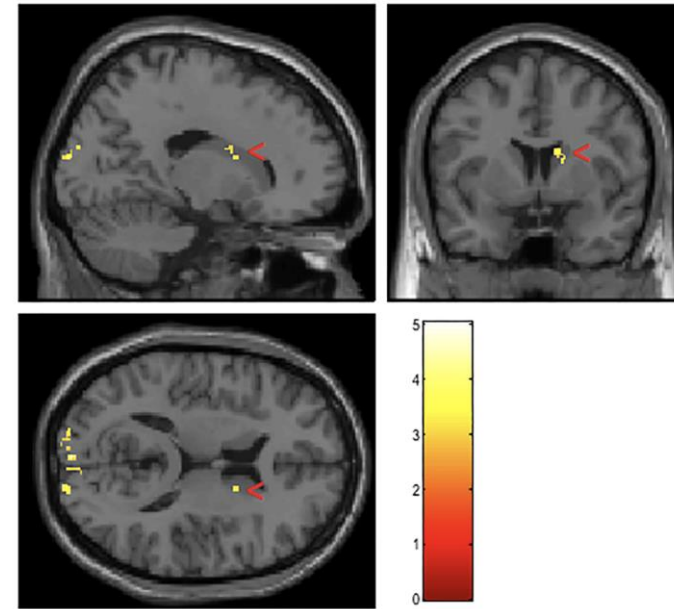
Lu Liu, Sarah W. Yip, Jin-Tao Zhang✉, Ling-jiao Wang, Zi-jiao Shen, Ben Liu, Shan-Shan Ma, Yuan-Wei Yao, Xiao-Yi Fang✉



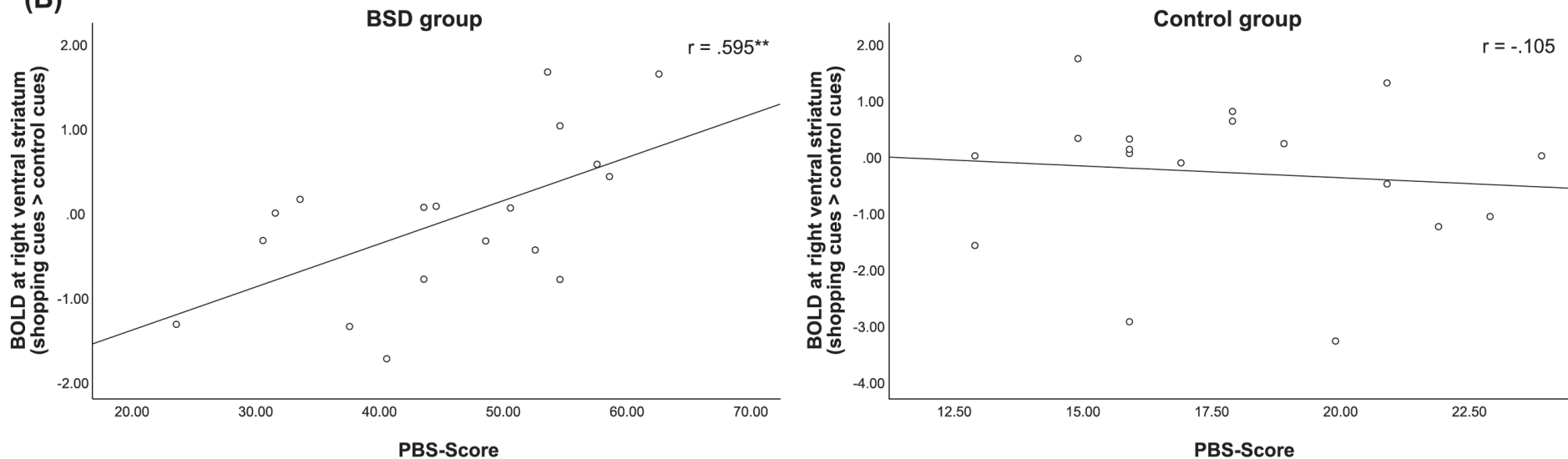
Dorsal and ventral striatum activity in individuals with buying-shopping disorder during cue-exposure: A functional magnetic resonance imaging study

Patrick Trotzke^{1,2,3} | Katrin Starcke⁴ | Anya Pedersen⁵ | Matthias Brand^{1,2}

Activity in dorsal striatum patients > control group



(B) Correlation symptom severity – activity in ventral striatum





Response Inhibition and Internet Gaming Disorder: A Meta-analysis

Evangelia Argyriou^a, Christopher B. Davison^b, Tayla T.C. Lee^a

Cognitive deficits in problematic internet use: meta-analysis of 40 studies

The British Journal of Psychiatry (2019)

Konstantinos Ioannidis, Roxanne Hook, Anna E. Goudriaan, Simon Vlies, Naomi A. Fineberg, Jon E. Grant and Samuel R. Chamberlain

Molecular Psychiatry

www.nature.com/mp

ARTICLE OPEN

Check for updates

Structural gray matter differences in Problematic Usage of the Internet: a systematic review and meta-analysis

Jeremy E. Solly^{1,2}, Roxanne W. Hook², Jon E. Grant³, Samuele Cortese^{4,5,6,7,8} and Samuel R. Chamberlain^{2,5,9,10}

Role of decision making, inhibitory control, and other executive functions

=> Self-control



Conclusion

NEUROSCIENCE

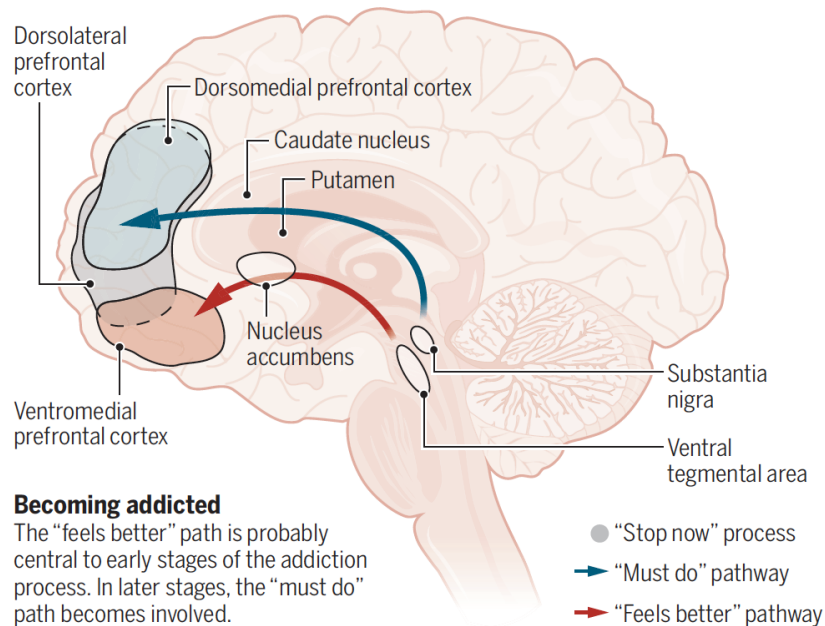
Can internet use become addictive?

Problematic internet use parallels drug addiction, but the mechanisms are not yet clear

By Matthias Brand^{1,2}

Neural pathways in addiction

The hypothesized main neural circuits in human addictive behaviors are shown. The “feels better” path includes positive and negative reinforcement experiences and involves the ventral striatum (nucleus accumbens), and the dorsal striatum in later stages. The “must do” path includes primarily compulsive behaviors, involving the dorsal striatum (putamen and caudate nucleus). The “stop now” self-control process mainly involves the dorsolateral prefrontal cortex.



Vulnerability

Risk factors (genetics, attachment style, impulsivity)
and protective factors (self-control)

⇒ Not specific to online addictive behaviors
(also involved in depression, anxiety, ADHD and other mental disorders)

Causality

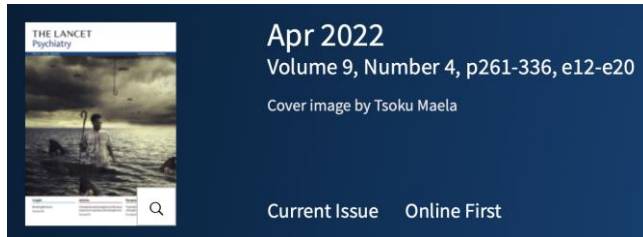
Reductions of self-control:
Cause or consequence of online addictive behaviors (or both)?

Specificity

Are there any specific features of online applications (e.g., algorithm-based personalization) that directly influence problematic online behaviors?

(cf. Brand, 2022, *Science*)

Transdiagnostic processes



Gambling disorder in the UK: key research priorities and the urgent need for independent research funding

Henrietta Bowden-Jones, Roxanne W Hook, Jon E Grant, Konstantinos Ioannidis, Ornella Corazza, Naomi A Fineberg, Bryan F Singer, Amanda Roberts, Richard Bethlehem, Simon Dymond, Rafa Romero-Garcia, Trevor W Robbins, Samuele Cortese, Shane A Thomas, Barbara J Sahakian, Nicki A Dowling, Samuel R Chamberlain

Gambling in the modern era is pervasive owing to the variety of gambling opportunities available, including those that use technology (eg, online applications on smartphones). Although many people gamble recreationally without undue negative effects, a sizeable subset of individuals develop disordered gambling, which is associated with marked

behaviours. The concepts of impulsivity and compulsivity are likely to be important in the search for biomarkers for gambling disorder, both in terms of vulnerability and chronicity.⁸⁰ Validated self-report tools to quantify

suicidality, and shed to promote der, which is the of research and ould be conducted urobiology, long- uct independent t-risk gambling), ie most suitable rdered gambling uct randomised controlled trials on psychological interventions and pharmacotherapy for gambling disorder; (5) improve understanding of the neurobiological basis of gambling disorder, including impulsivity and compulsivity, genetics, and biomarkers; and (6) develop clinical guidelines based on the best contemporary research evidence to guide effective clinical interventions. We also highlight the need to consider what can be learnt from approaches towards mitigating gambling-related harm in other countries.

Gambling elements in games: Lootboxes

- Stronger reinforcement experiences?
- May trigger additional motives
- May increase the engagement with the game



[Wikipedia.org/lootbox](https://en.wikipedia.org/wiki/Lootbox)

Current Addiction Reports (2021) 8:494–499
<https://doi.org/10.1007/s40429-021-00395-3>

INTERNET USE DISORDERS (HJ RUMPF AND J BILLIEUX, SECTION EDITORS)

Problematic Online Buying-Shopping: Is it Time to Considering the Concept of an Online Subtype of Compulsive Buying-Shopping Disorder or a Specific Internet-Use Disorder?


Astrid Müller¹ · Nora M. Laskowski^{1,2} · Elisa Wegmann³ · Sabine Steins-Loeber⁴ · Matthias Brand^{3,5}

Social-networks use for multiple reasons:

- Communication/connectedness
- Entertainment
- Getting information about new products

The New York Times 2018

Are You Ready for the Nanoinfluencers?

 Give this article



Images of #sponsored content from the Instagram accounts of Alexis Baker, top row, and Haley Stutzman. Ms. Baker has about 2,600 followers and Ms. Stutzman about 5,500. Top row, Alexis Baker; bottom row, Haley Stutzman

Thank you!

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General
Psychology:
Cognition



Psychological and neurobiological processes
in the development and perpetuation
of addictive behaviour on the internet

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German Research Foundation

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