

# ADHD e Dipendenze Comportamentali nell'adulto e in età evolutiva

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Chiara Cecchelli, M.D., Ph.D  
Brain Center Firenze

# Background

- Less investigated in comparison to the correlation with Substance Use Disorder
- Few reports on primary ADHD patients (association between IA and GD)
- Increased ADHD symptoms in subjects with GD or IA respect to the general population
- Few data on shopping, food and sex addictions

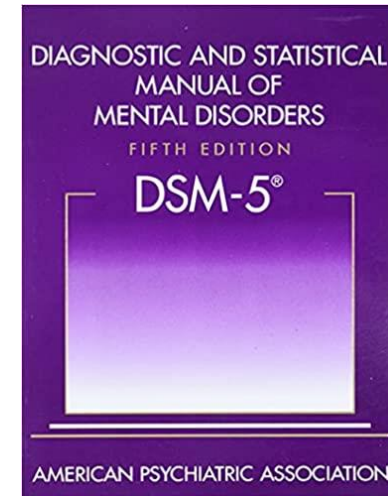
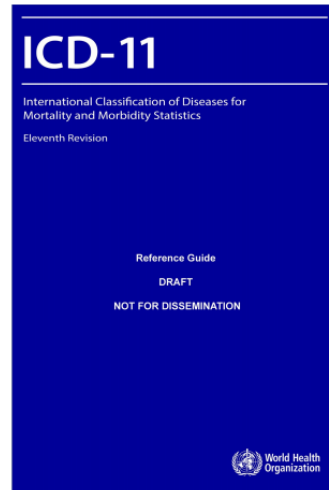
# Behavioral Addictions

- Certain behaviors can produce short-term reward
- When this leads to diminished control over the behavior despite adverse consequences
- The behavior itself can become the source of addiction

# Behavioral and Substance Addictions Similarities

- **Natural history** (age of onset, chronic relapsing patterns, ego-syntonic experience that becomes ego-dystonic over time)
- **Phenomenology** (urge or craving state prior to initiating the behavior, ↓ anxiety and ↑ mood)
- **Tolerance/ withdrawal** (decrease in positive mood effects with repeated behaviors or a need to increase the intensity of behavior to achieve the same mood effect; dysphoric state while abstaining from the behaviors)
- **Comorbidity** (co-occurrence of substances and behavioral addictions; mood, anxiety and ADHD)

# Behavioral Addictions International Nosography



## Disorders due to addictive behavior

- Gambling Disorders
- Gaming Disorder

## Impulse Control Disorders

- Compulsive Sexual Behavior

## Non-Substance- Related Disorders

- Gambling Disorders

## Conditions for further study

- Internet Gaming Disorder

# Other Behavioral Addictions

**DSM-5:** Although some behavioral conditions that do not involve ingestion of substances have similarities to substance-related disorders, only one disorder—gambling disorder— has sufficient data to be included in this section.

## DSM-5 Behavioral Addiction: The Diagnostic Criteria for Recognizing Problematic Behaviors

Preoccupation with the behavior

Need to increase the intensity or frequency of the behavior

Unsuccessful efforts to control or stop the behavior

Withdrawal symptoms when unable to engage in the behavior

The behavior is used as a coping mechanism for stress or other negative emotions

Continued engagement in the behavior despite negative consequences

## Other Behavioral Addictions

- Internet and Technology Addiction
- Food Addiction
- Shopping and Spending Addiction
- Sex and Pornography Addiction

## Internet Addiction: The Emergence of a New Clinical Disorder

KIMBERLY S. YOUNG, Psy.D.

- Exploratory Survey
- Development of 8 items diagnostic questionnaire modifying criteria for Pathological Gambling
- Administred via telephone or via web, submitted by sever popular search engines
- 396 dependent
- 100 nondependent

TABLE 1. INTERNET APPLICATIONS MOST UTILIZED BY DEPENDENTS AND NONDEPENDENTS

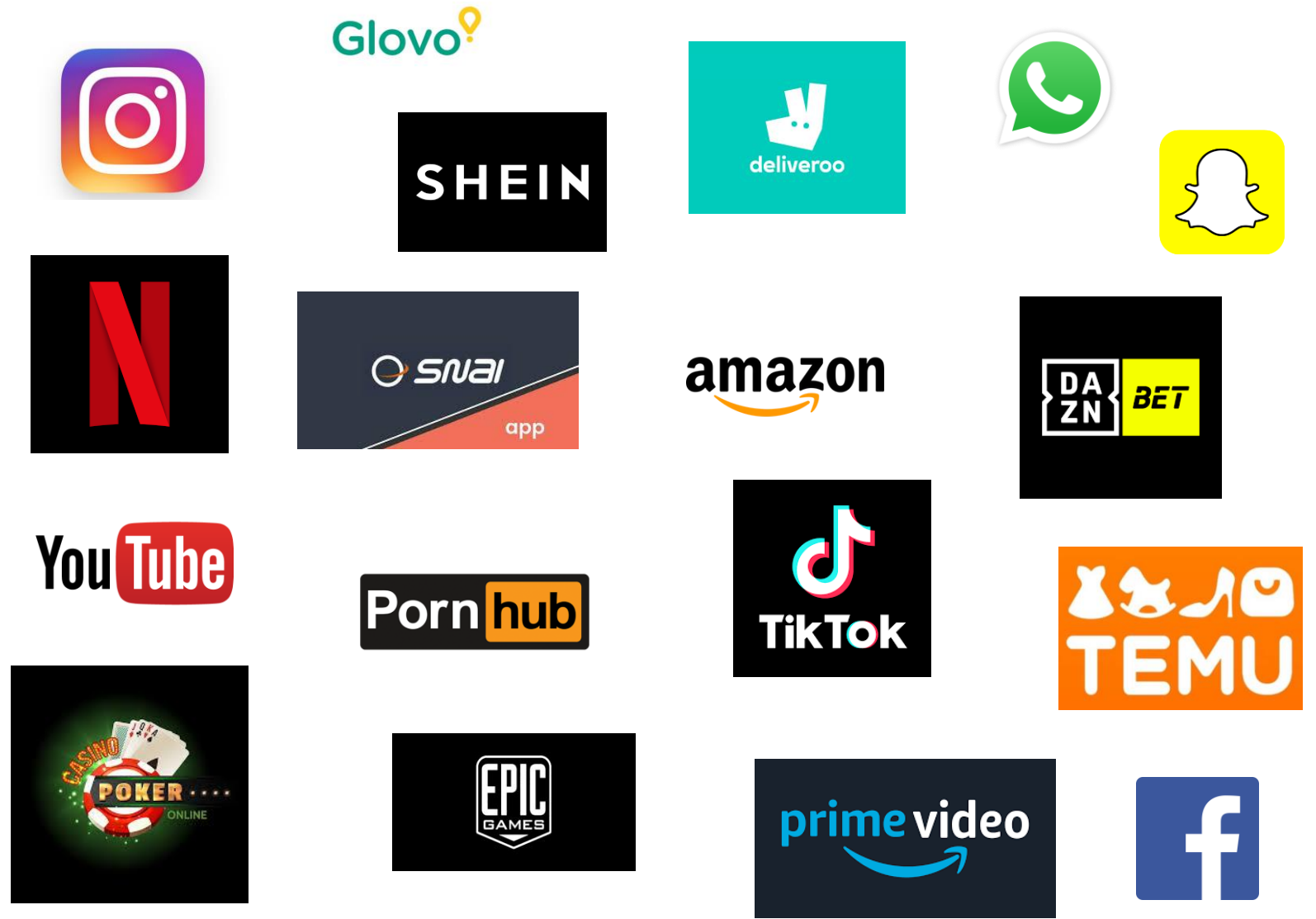
<i>Application</i>	<i>Type of computer user</i>	
	<i>Dependents</i>	<i>Nondependent</i>
Chat rooms	35%	7%
MUDs	28%	5%
Newsgroups	15%	10%
E-mail	13%	30%
WWW	7%	25%
Information Protocols	2%	24%

Dependents enjoyed those aspects of the Internet, which allowed them to meet, socialize, and exchange ideas with new people through these highly interactive mediums.

Internet  
Addiction  
at the  
beginnings



# Evolution of Internet Addiciton



*Wherever you want and whenever you want*

# Internet Addiction Epidemiology

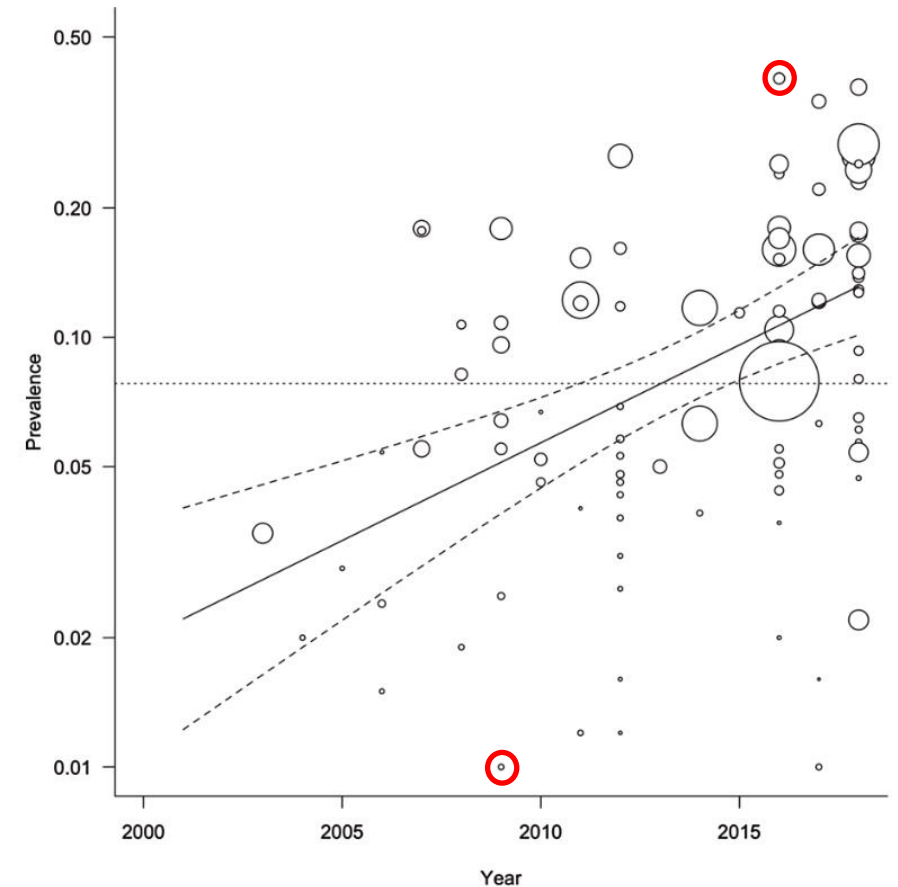
Review article

## Systematic review and meta-analysis of epidemiology of internet addiction

Yuan-Chien Pan<sup>a</sup>, Yu-Chuan Chiu<sup>b</sup>, Yu-Hsuan Lin<sup>c,d,e,f,\*</sup>



- 113 epidemiologic studies
- 31 different countries
- 693,306 subjects
- 2003-2018
- GIA: 7.02 %
- IGD: 2.47 %
- Significant variance (no diagnostic criteria, no standard assessment tools, no clearly defined cu-off scores)

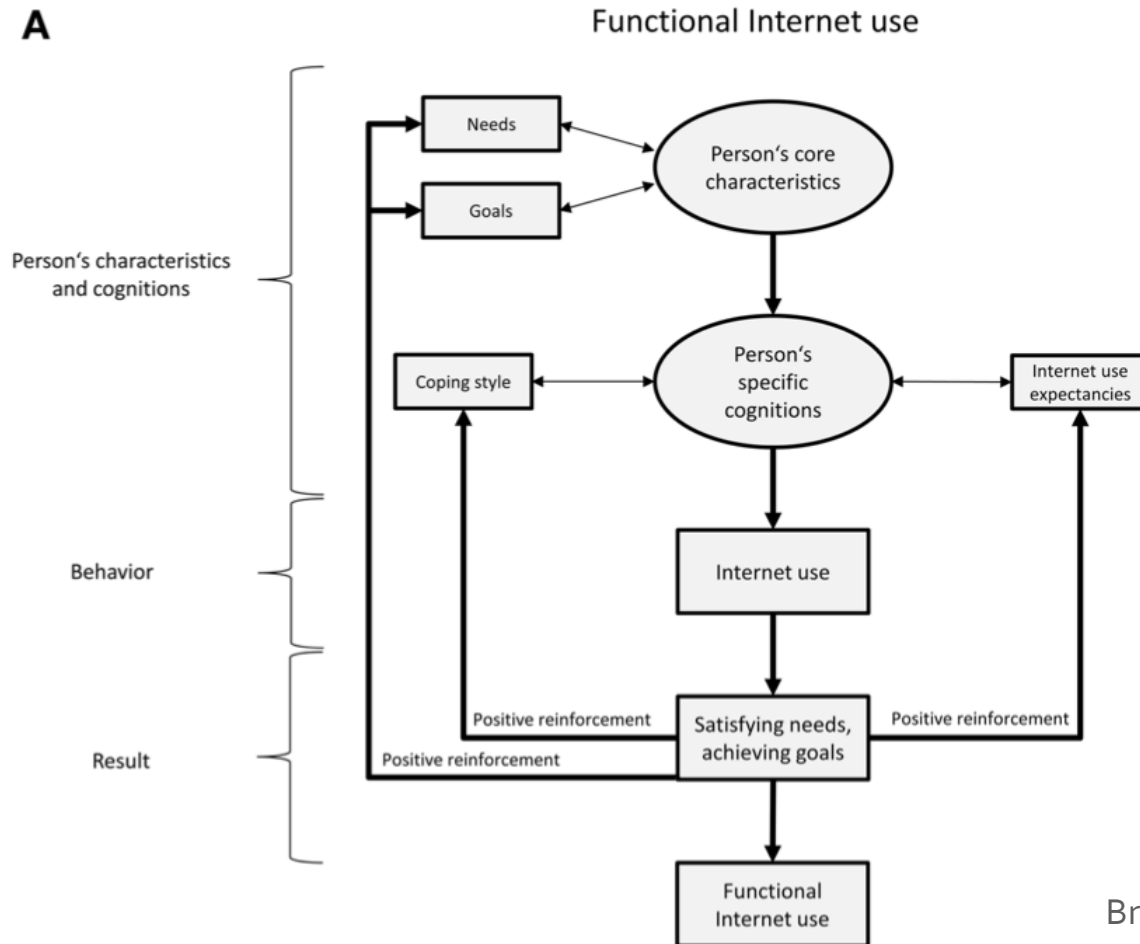


# Functional Internet Use

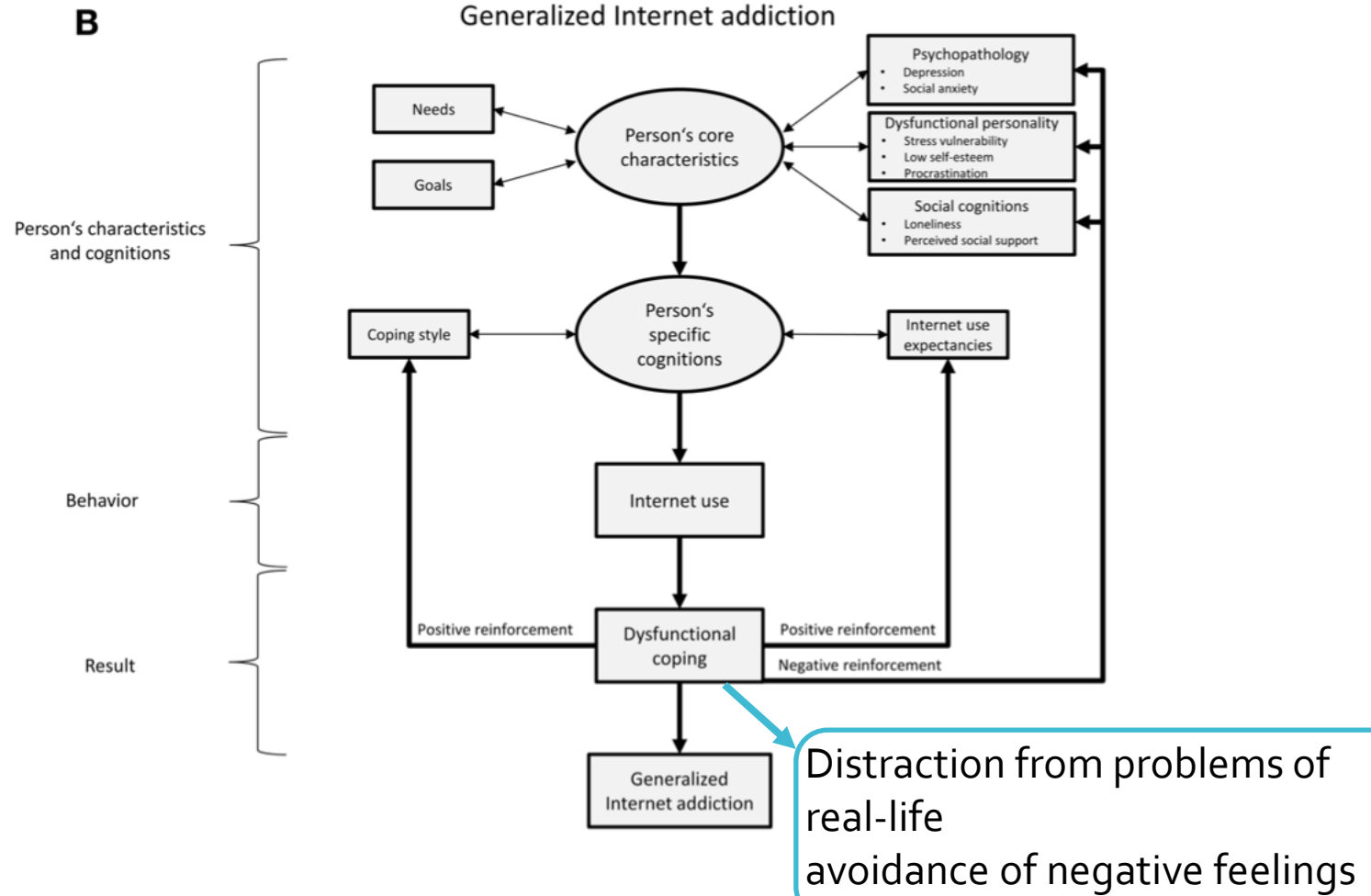
## Prefrontal control and Internet addiction: a theoretical model and review of neuropsychological and neuroimaging findings

*Matthias Brand<sup>1,2\*</sup>, Kimberly S. Young<sup>3</sup> and Christian Laier<sup>1</sup>*

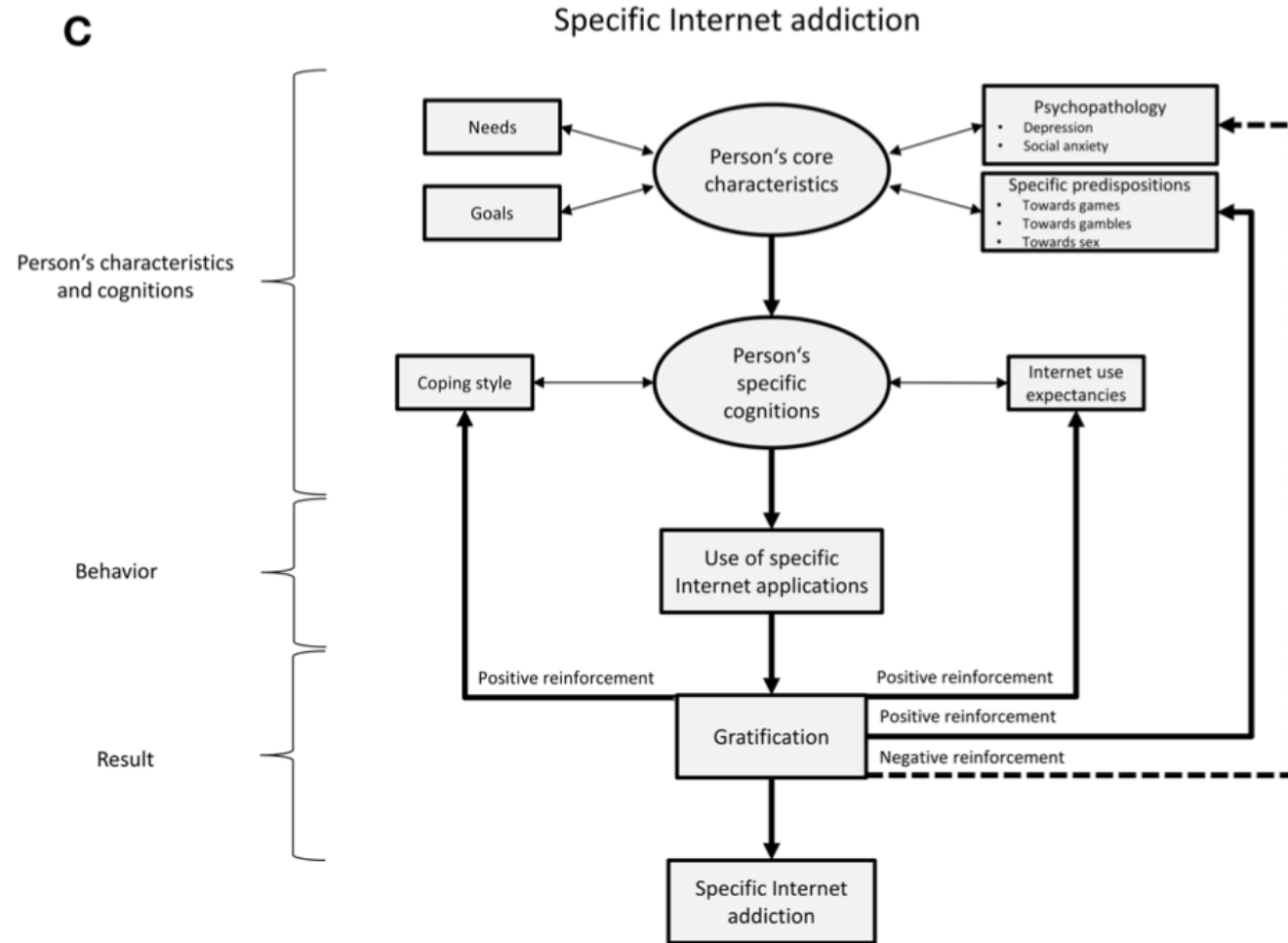
New model summarizing potential mechanisms which contribute to the development to either GIA or SIA



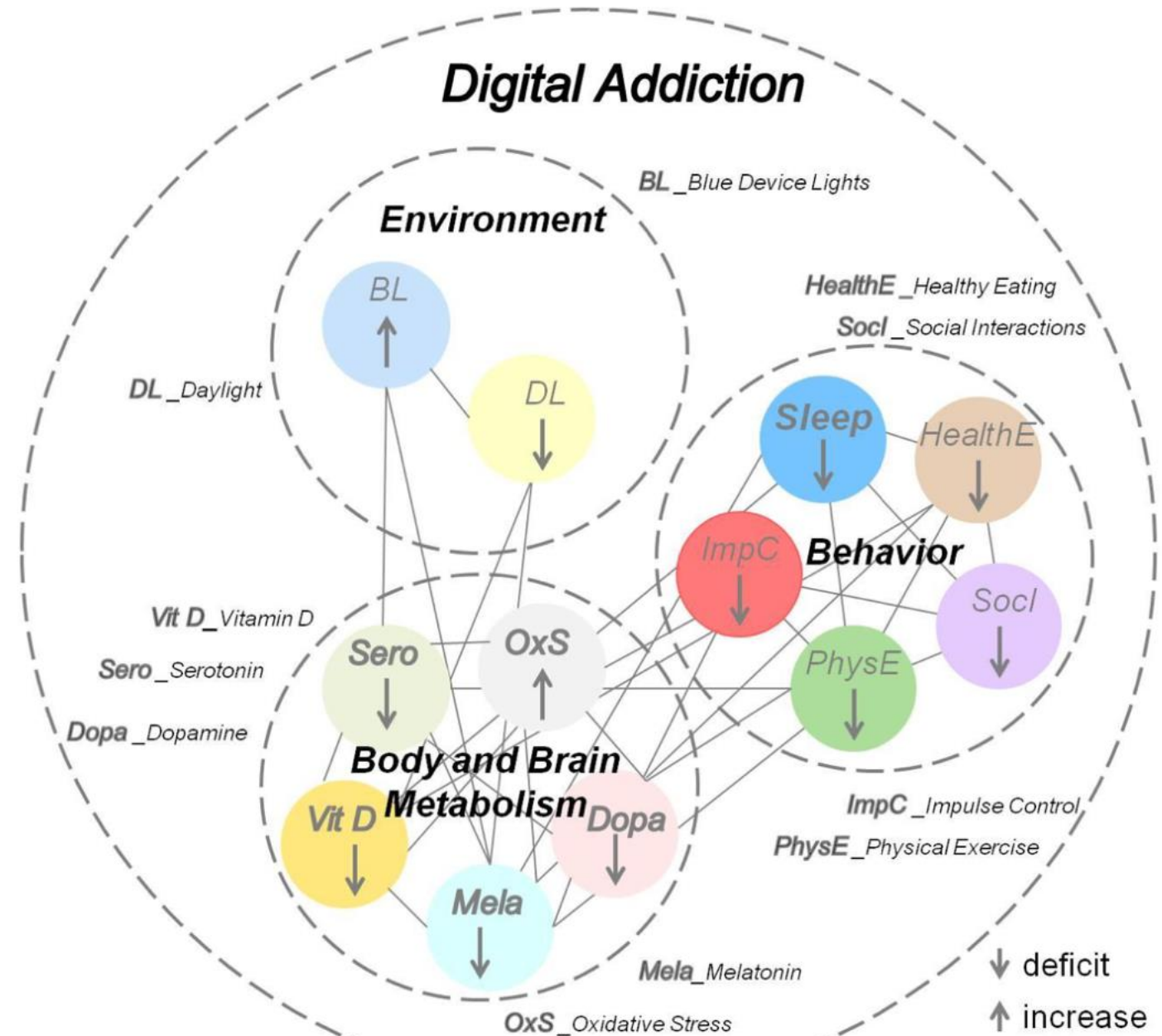
# Generalized Internet Addiction



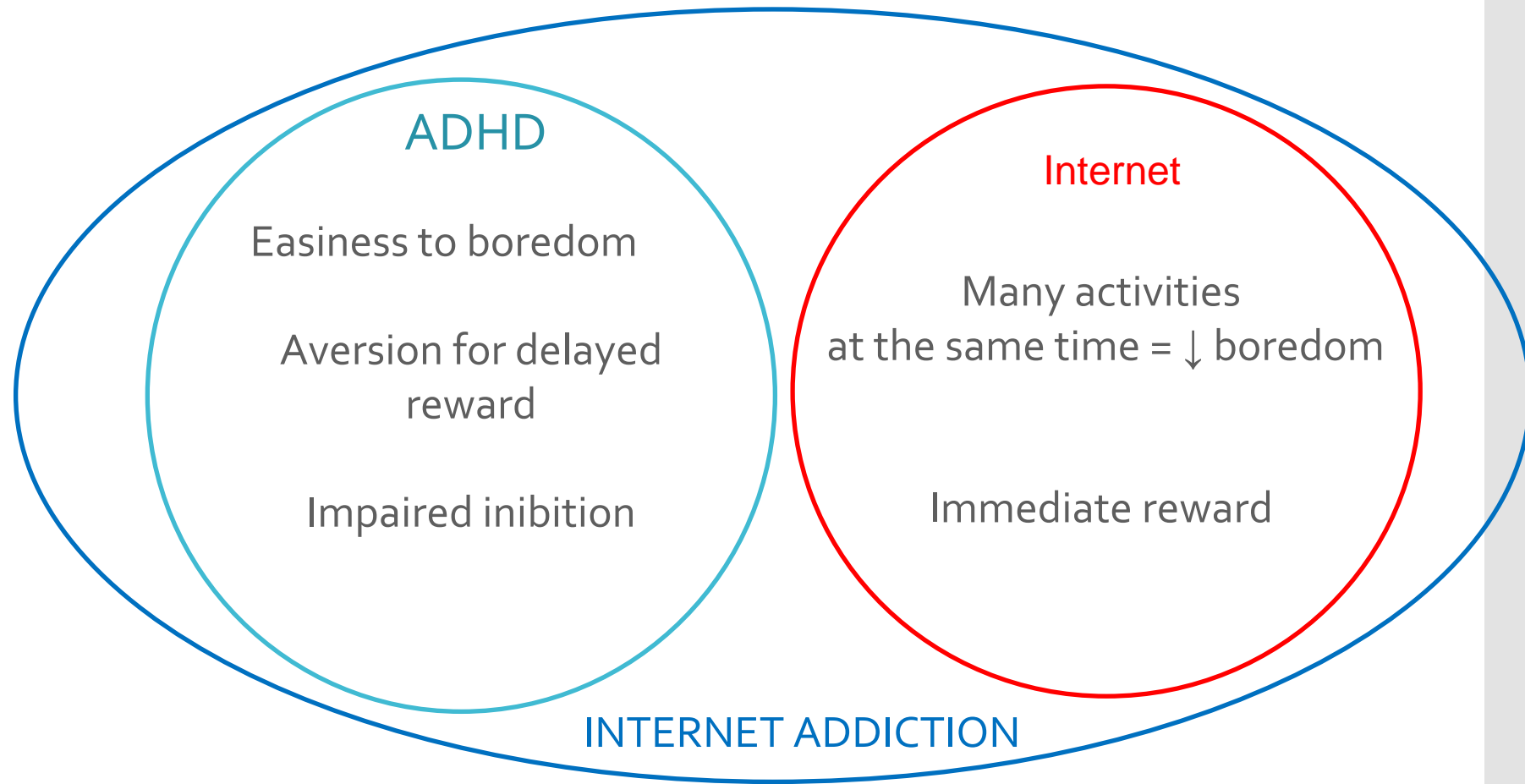
# Specific Internet Addiction



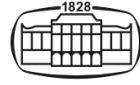
# Effects of Internet Addiction



# ADHD and Internet Addiction



Castellanos et al, 2002;  
Diamond et al, 2005



AKADÉMIAI KIADÓ

# Prevalence and clinical phenotypes of adult patients with attention deficit hyperactivity disorder and comorbid behavioral addictions

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Journal of Behavioral Addictions

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GIACOMO GRASSI\* , CORINNA MORADEI  and CHIARA CECHELLI 

## Method

- Adult ADHD sample (n=248)
- Gender (F): 58,5%
- Mean age (mdn): 28 (23;35)
- Years of Education (mdn): 13 (13;18)
  
- ADHD diagnosis: psychiatric evaluation + DIVA 5.0
  
- BAs: self-report instruments



# Evaluation tools

## **BAs assessment**

- Internet Addiction Test (**IAT**)
- Yale food Addiction Scale (**YFAS 2.0**)
- South Oaks Gambling Screening (**SOGS**)
- Sexual Addiction Screening Test – Revised (**SAST-R**)
- Bergen Shopping Addcition Scale (**BSAS**)

## **ADHD assesement**

- Barkley Adult ADHD Scale – IV (**BAARS-IV**)

## **Impulsivity assessment**

- Barratt Impulsivness Scale (**BIS-11**)

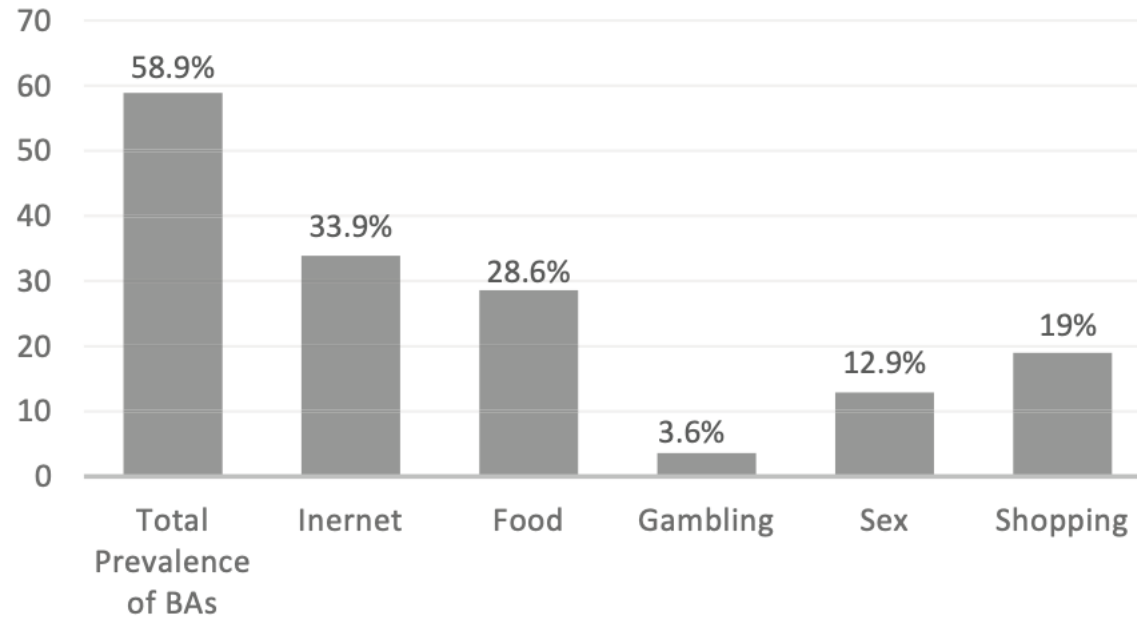
## **Mood assessment**

- Symptom of Depression Quastionnaire (**SDQ**)

## **Functional assessment**

- Barkley Functional Impiarmnt Scale (**BFIS**)

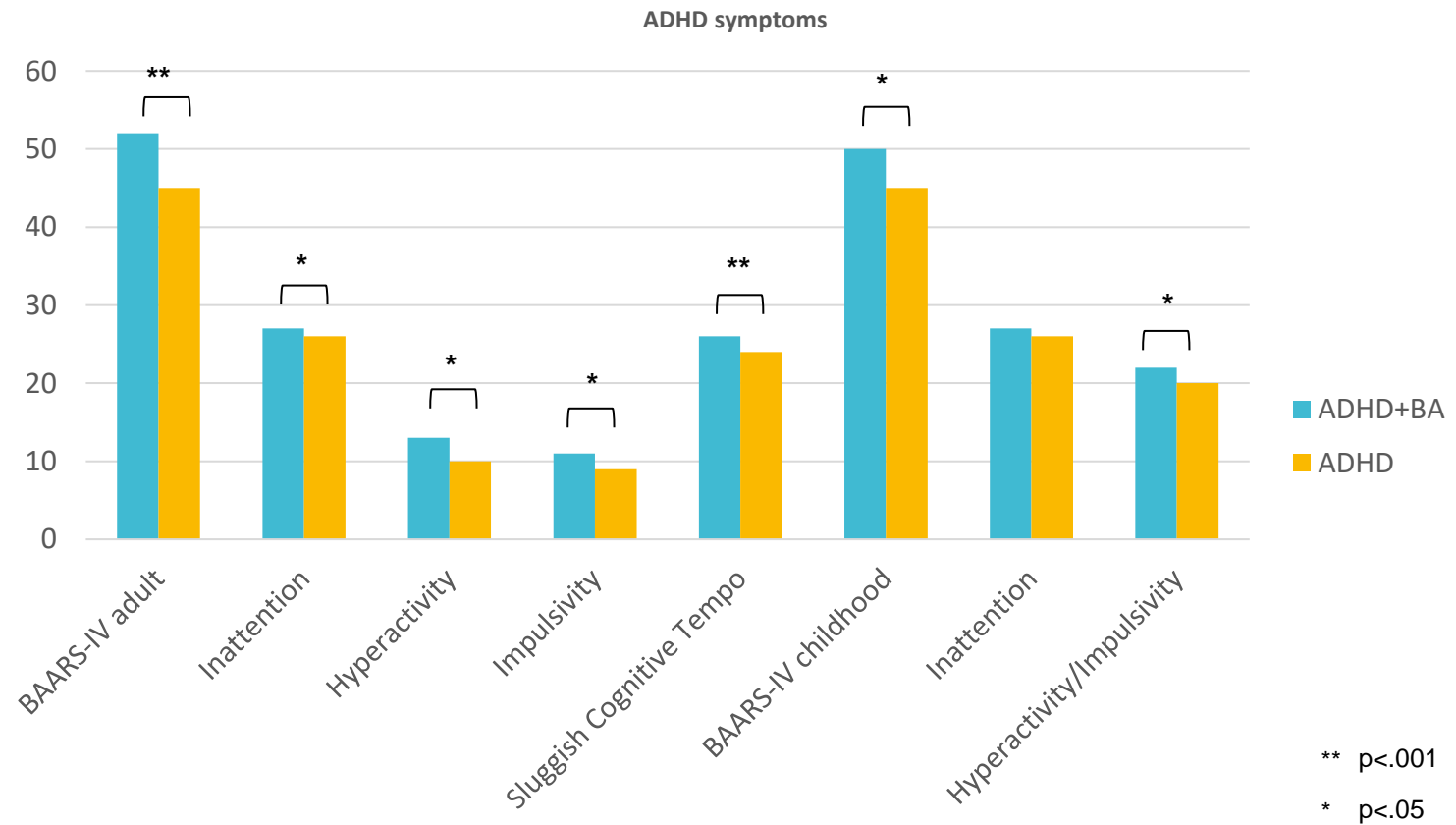
# Prevalence



- 58,9% at least 1 BA
- Internet Addiction is the most common

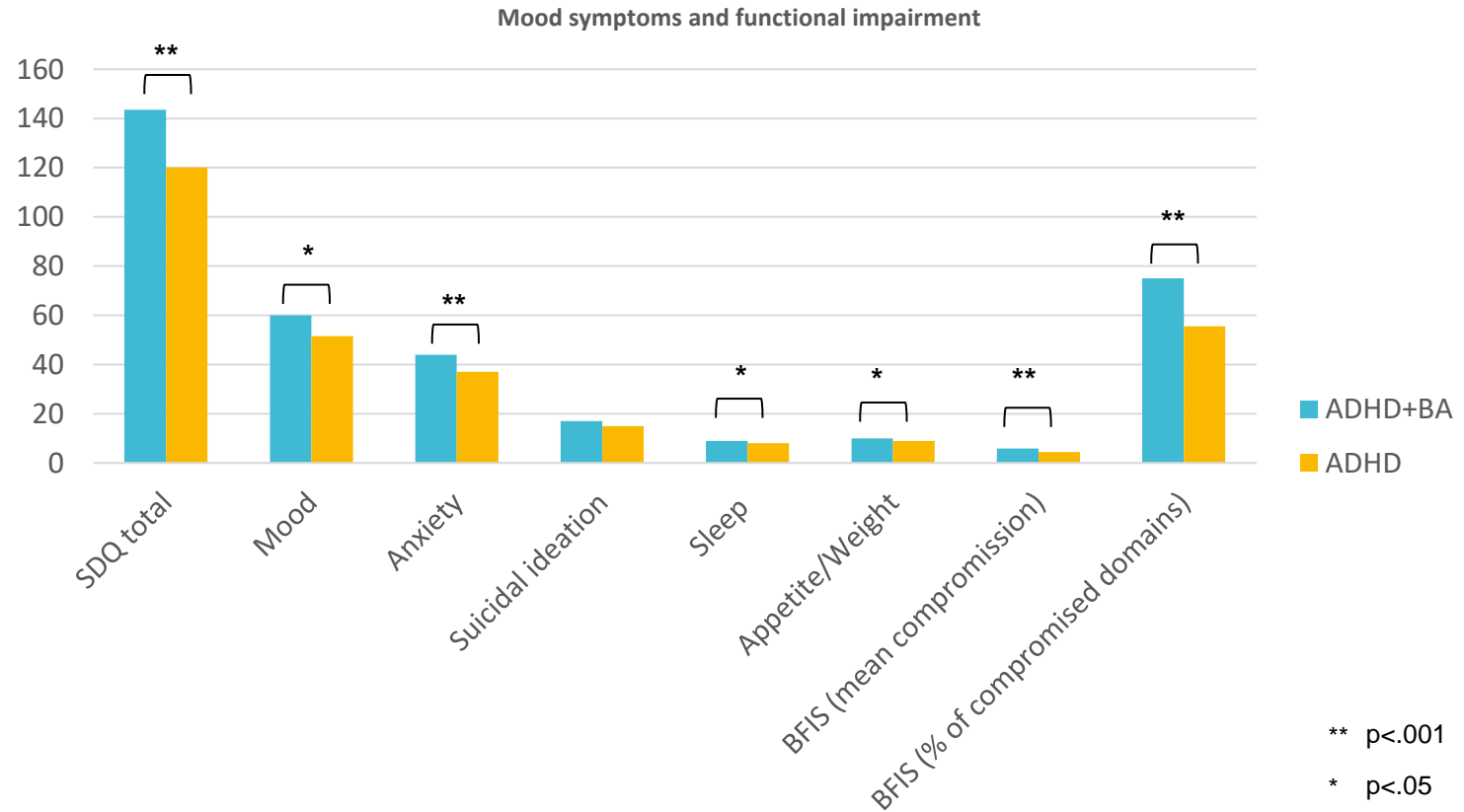
# Clinical Phenotype: ADHD Symptoms

Adult ADHD with BAs (n=146)  
Adult ADHD without BAs (n=102)



# Clinical Phenotype: Depressive Symptoms and Functional Impairment

Adult ADHD with BAs (n=146)  
Adult ADHD without BAs (n=102)



Adult ADHD  
with BA:  
more complex  
clinical  
phenotype

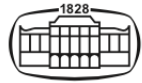
- More severe **ADHD current symptoms and childhood impulsivity/hyperactivity symptoms**
- More severe **mood and anxiety symptoms**
- More severe **impulsivity symptoms**
- More severe **functional impairment**

Thus clinicians should screen  
adult ADHD patients for the presence of BAs  
and patients with BAs for the presence of ADHD symptoms

# BAs Treatment



- No FDA approval for BAs
- GD: moderate effect of opioid antagonist, lithium, topiramate
- IA: sparse reports on children and adolescents



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Journal of Behavioral  
Addictions

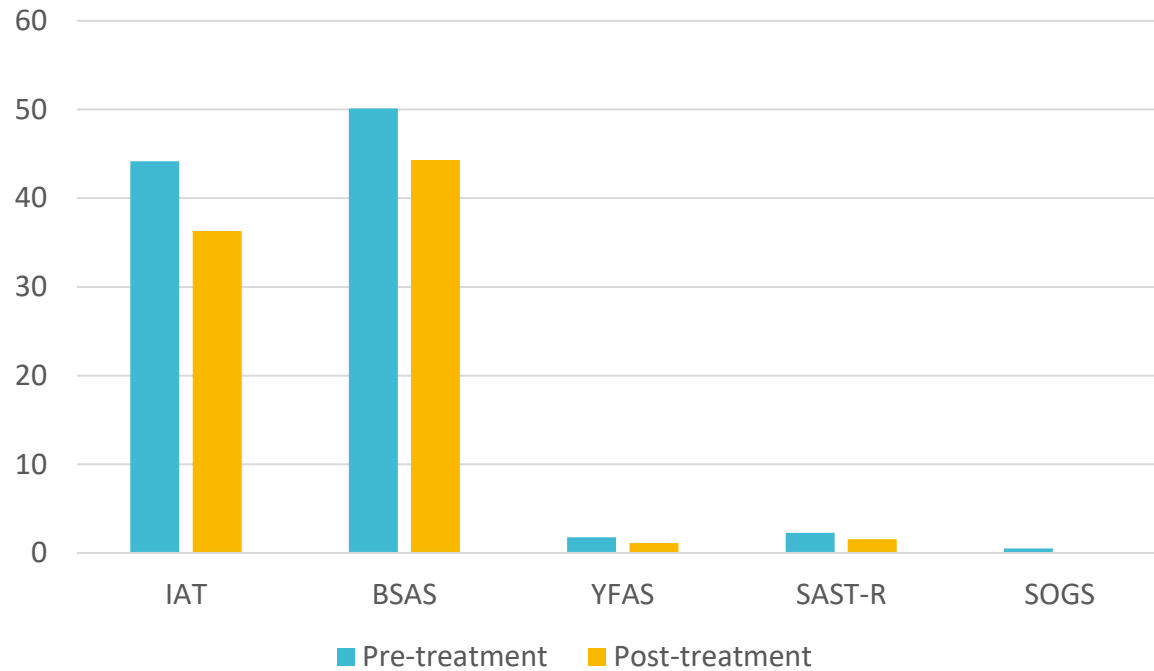
## Long-term changes on behavioral addictions symptoms among adults with attention deficit hyperactivity disorder treated with methylphenidate

GIACOMO GRASSI\* , CORINNA MORADEI  and CHIARA CECHELLI 

Effect of one  
year MPH  
treatment

- 37 ADHD patients completed baseline and 1 year follow-up assessment on ADHD, mood and BAs symptoms
- MPH dose: 10-40 mg/die (mean 32,16 ±8,2)
- They could receive also other medication for psychiatric comorbidity or Psychotherapy or coaching for ADHD

# Effect of one year MPH treatment on BAs



Reduction on symptoms of:

- Internet Addiction
- Food Addiction
- Shopping Addiction
- Sex Addiction



# Compulsive Internet Use Scale

## The Compulsive Internet Use Scale (CIUS): Some Psychometric Properties

CYBERPSYCHOLOGY & BEHAVIOR  
Volume 12, Number 1, 2009

G.-J. Meerkerk, Ph.D.,<sup>1</sup> R. J. J. M. Van Den Eijnden, Ph.D.,<sup>1,2</sup>  
A. A. Vermulst, Ph.D.,<sup>3</sup> and H. F. L. Garretsen, Ph.D.<sup>4</sup>

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*How often . . .*

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1. do you find it difficult to stop using the Internet when you are online? Loss of control
2. do you continue to use the Internet despite your intention to stop?
3. do others (e.g., partner, children, parents) say you should use the Internet less?
4. do you prefer to use the Internet instead of spending time with others (e.g., partner children, parents)?
5. are you short of sleep because of the Internet?
6. do you think about the Internet, even when not online? Preoccupation
7. do you look forward to your next Internet session?
8. do you think you should use the Internet less often?
9. have you unsuccessfully tried to spend less time on the Internet?
10. do you rush through your (home) work in order to go on the Internet?
11. do you neglect your daily obligations (work, school, or family life) because you prefer to go on the Internet? Conflicts
12. do you go on the Internet when you are feeling down?
13. do you use the Internet to escape from your sorrows or get relief from negative feelings? Coping
14. do you feel restless, frustrated, or irritated when you cannot use the Internet?

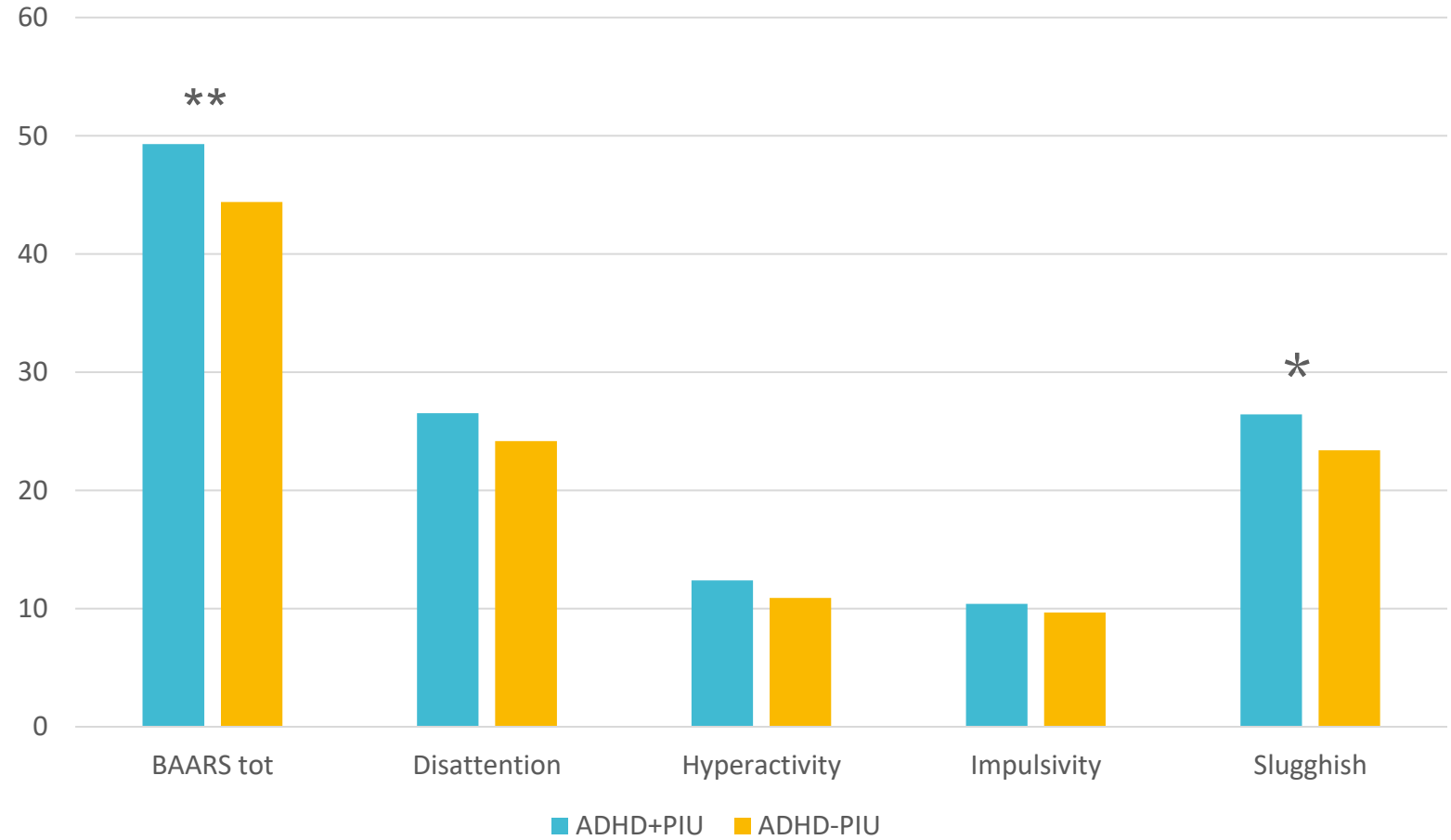
Withdrawal

# Problematic Internet Use among Adults with ADHD

- Sample: 119 adults with ADHD
- 36 (30,3%) with Problematic Internet Use
- Tool: Compulsive Internet Use Scale (CIUS). 14 items ratable on a 5-point Likert scale. Short, easily administered instrument to assess the severity of compulsive Internet use.
- Comparison of ADHD subjects, with and without Problematic Internet use (ADHD+PIU vs ADHD-PIU)

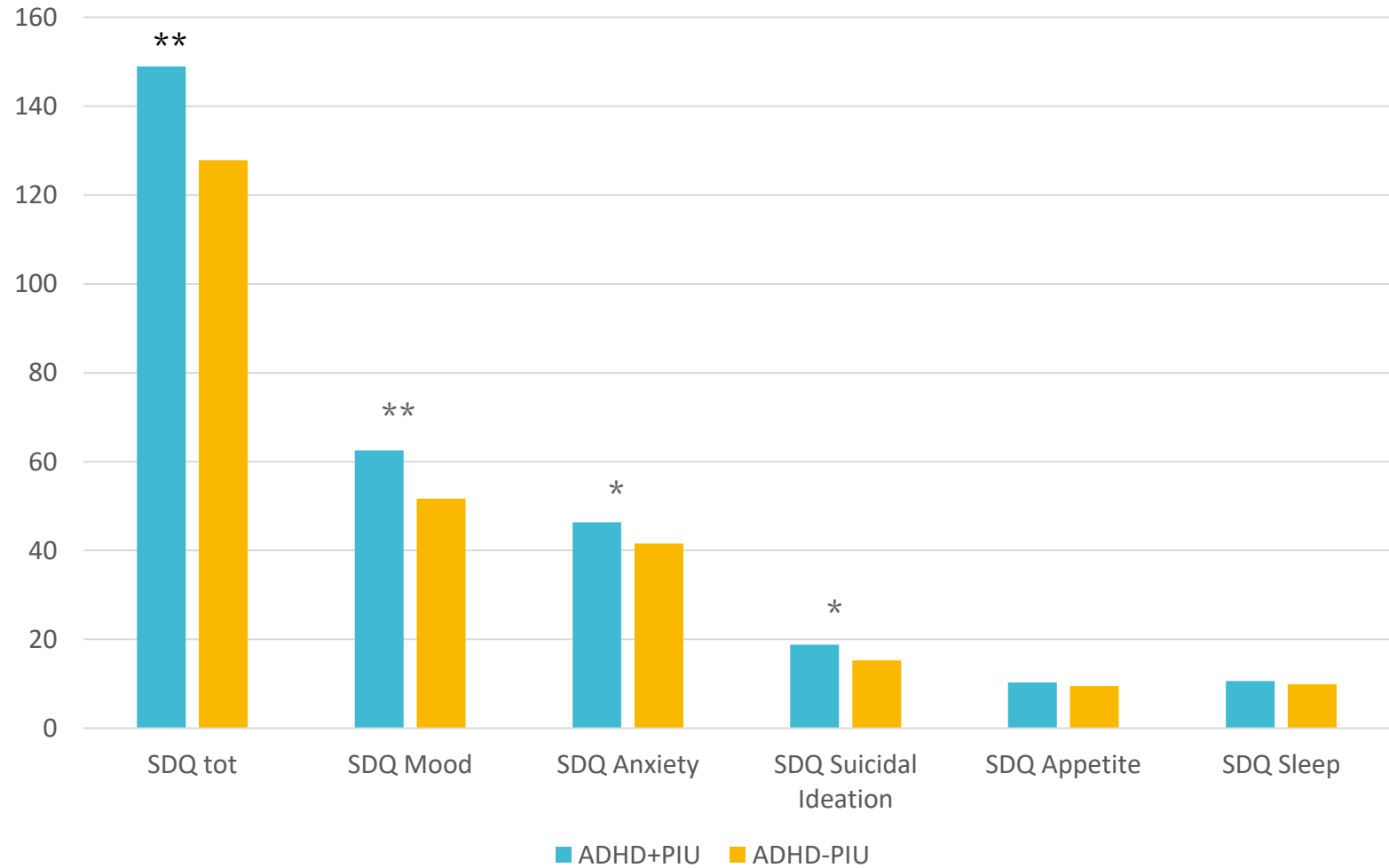
# Problematic Internet Use and ADHD symptoms

Barkley Adult ADHD Scale – IV (BAARS-IV)

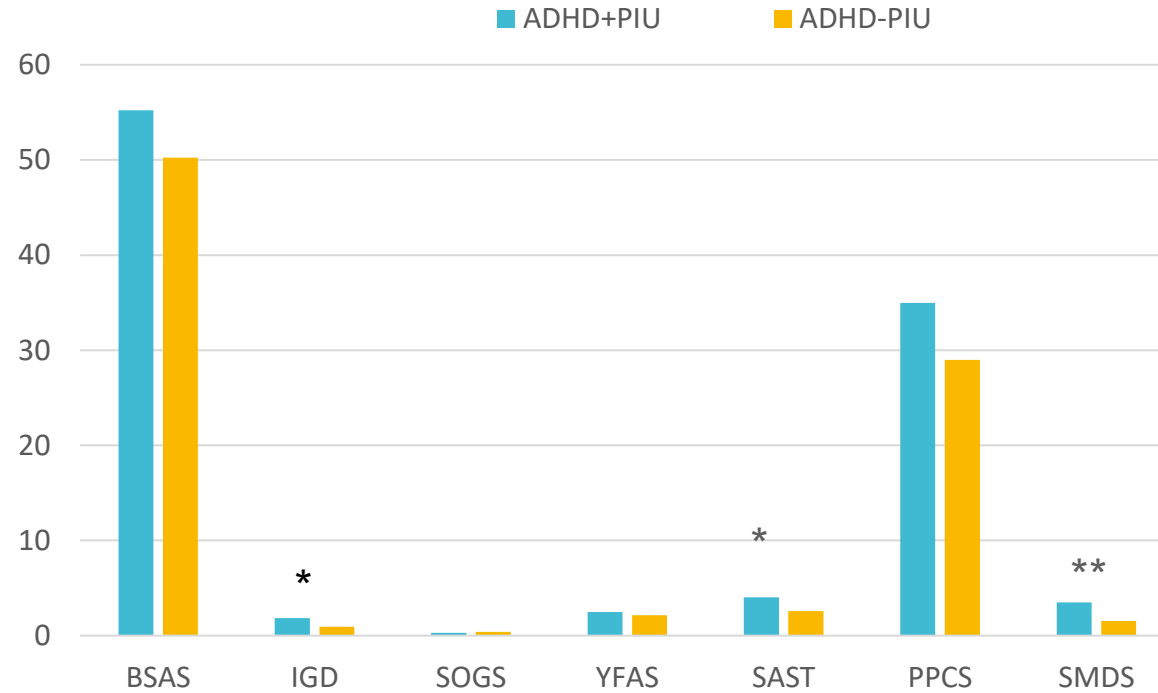


# Problematic Internet Use and Depressive Symptoms

Symptoms of Depression Questionnaire (SDQ)



# Problematic Internet Use and other Behavioral Addictions



Subjects with Problematic Internet Use have more:

- Internet Gaming Disorder
- Sexual Addiction
- Social Media Use Addciction

## Conclusions

- Subjects with ADHD are vulnerable to Behavioral Addictions (particularly to IA or PIU)
- Subjects with Bas have frequently ADHD symptoms
- PIU increases ADHD symptoms
- PIU is associated with Depression, Anxiety, Sleep Disturbance, Overweight/Obesity

# Internet Addiction: Call for Action

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## Global action on problematic usage of the internet: announcing a *Lancet Psychiatry* Commission



- Protect individuals, particularly children and youth, from online harm
- Particular concerns are the ready access of minors to the internet, the use of addictive design and manipulative algorithms by technology companies to encourage and direct online attention, and the ever-increasing power of artificial intelligence (AI) to strengthen such designs and algorithms
- The Commission will assemble a multidisciplinary and international group of authors as well as an advisory group including people with lived experience of being negatively affected by PUI.
- Research to detect risk and prevent PUI in teenagers at an international level and ongoing legislative attempts to address online safety and to regulate AI in the USA, Europe, and Asia make this effort timely.
- Commission aims to provide a framework to limit potential harms while simultaneously affording civil liberties and harnessing positive aspects of digital technologies.

Fineberg et al, 2024

*Lancet Psychiatry* 2024

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**Thank you for your attention**

[chiara.cecchelli@braincenterfirenze.it](mailto:chiara.cecchelli@braincenterfirenze.it)