

Food addiction and impaired executive functions in women with obesity

Fernando Fernandez-Aranda

Department of Psychiatry
University Hospital of Bellvitge-IDIBELL
CIBEROBN Excellence Research Network
University of Barcelona
Barcelona, Spain
ffernandez@bellvitgehospital.cat



LISBON
ADDICTIONS
2019



UNIVERSITAT DE
BARCELONA



Bellvitge
Hospital Universitari

Institut Català
de la Salut

ciberobn

IDIBELL
Institut d'Investigació Biomèdica de Bellvitge



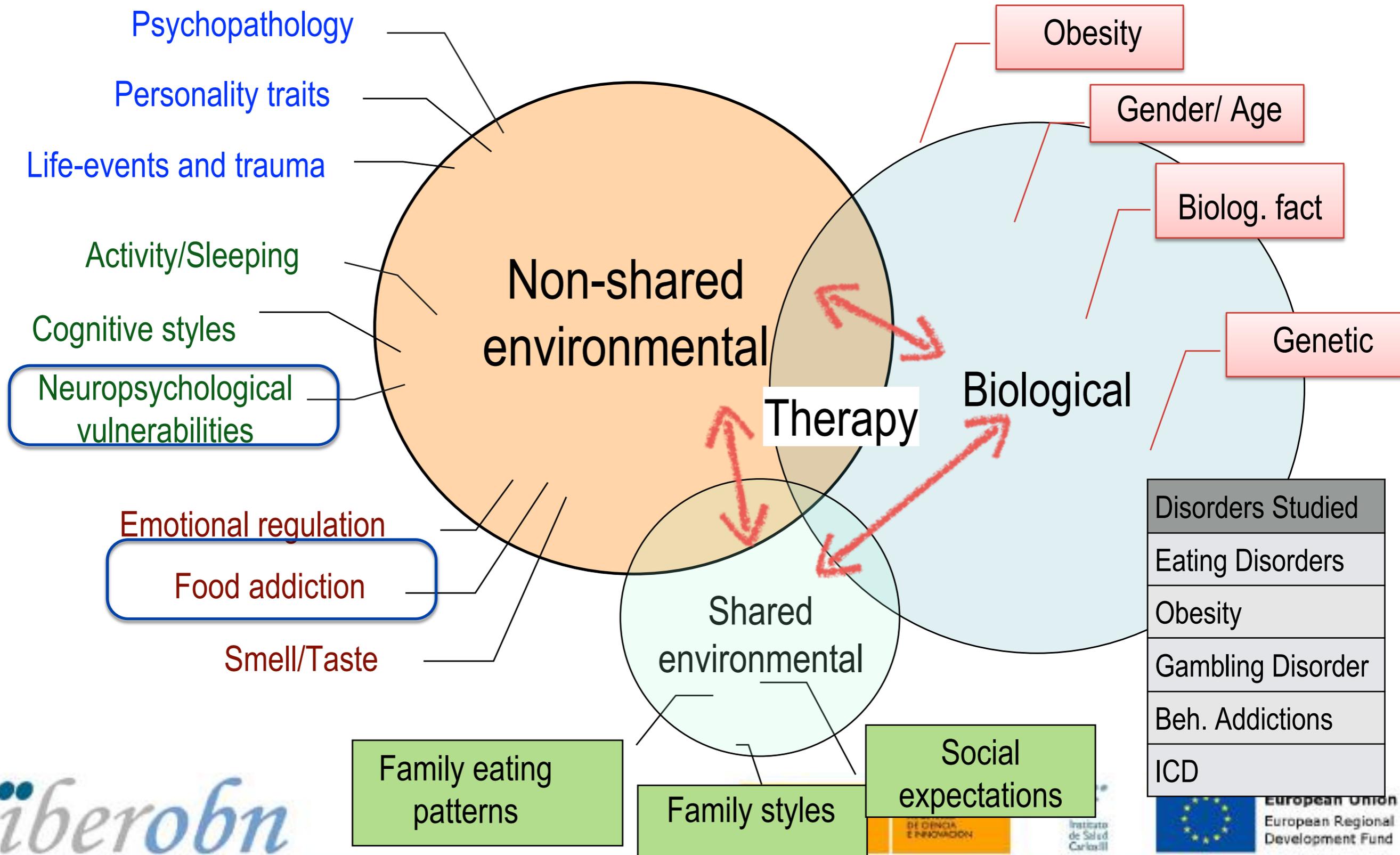
European Union
European Regional
Development Fund

Faculty Disclosures

- **Official grants** which partially supported the research (there were no conflicts of interest that might influence the data presented):
 - Instituto de Salud Carlos III (FIS PI14/00290; FIS PI17/1167; CIBERObn, CIBERsam and Fondos FEDER, Eat2beNICE and PRIME (H2020) and CIBERObn in an initiatives of ISCIII.
- Editorial **honoraries** as Editor-in-Chief (Wiley Publisher)

EATING DISORDERS

Etiopathological/ Risk Factors involved



Background

Food Addiction

- Neuroimaging studies suggest that similar neuronal circuits, modulated by dopamine, are activated in addiction and obesity.
- FA rarely in HC (2-12%) and mainly present in obesity, BN and BED.
- FA associated with higher ED severity and psychopathology.
- FA most likely improves when BN symptoms remit.
- In BED, presence of FA is a predictor of poorer outcome after a CBT outpatient group therapy
- OBE (BS) Patients with high FA presented poorer therapy response in order to LWR before intervention

Background

Cognitive Performance

- Patients with ED and OBE have repeatedly been found to present altered performance on **neuropsychological** tasks examining decision-making, set-shifting, central coherence, and delay discounting
- These cognitive impairments seems to **remit after successful treatment.**

SCIENTIFIC REPORTS

OPEN Modulation of Irisin and Physical Activity on Executive Functions in Obesity and Morbid obesity

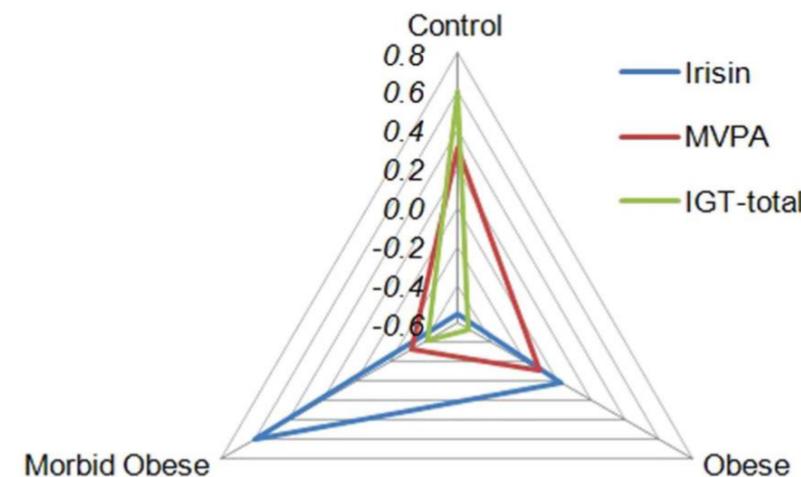
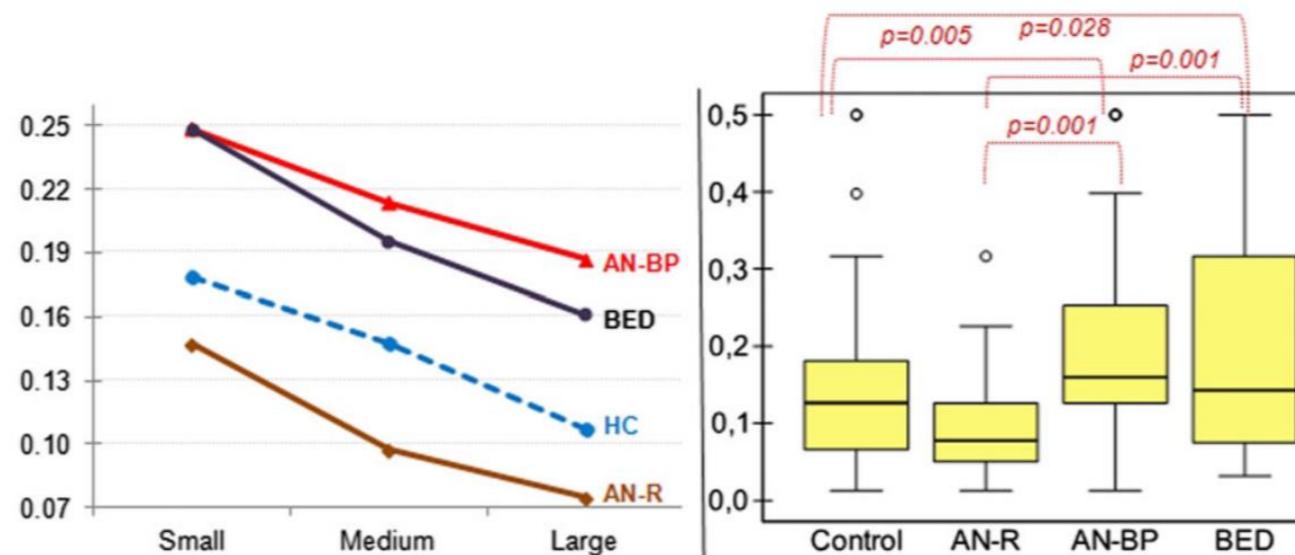
Received: 01 July 2015
Accepted: 06 July 2016
Published: 01 August 2016
A. B. Fagundo^{1,2}, S. Jiménez-Murcia^{1,2,3}, C. Giner-Bartolomé^{1,2}, Z. Agüera^{1,2}, S. Sauchelli^{1,2}, M. Pardo^{4,5}, A. B. Crujeiras^{2,4}, R. Granero^{2,5}, R. Baños^{2,4}, C. Botella^{2,7}, R. de la Torre^{2,4}, J. M. Fernández-Real^{2,8}, J. C. Fernández-García^{2,10}, G. Frühbeck^{2,11}, A. Rodríguez^{2,11}, N. Mallorquí-Bagué^{2,12}, S. Tárrega⁵, F. J. Tinahones^{2,10}, R. Rodríguez², F. Ortega^{3,9}, J. M. Menchón^{1,3,12}, F. F. Casanueva^{2,4} & F. Fernández-Aranda^{1,2,3}

BRIEF REPORT
Delay Discounting of Reward and Impulsivity in Eating Disorders: From Anorexia Nervosa to Binge Eating Disorder

Trevor Steward^{1,2†}, Gemma Mestre-Bach^{1,2†}, Cristina Vintro-Alcaraz², Zaida Agüera^{1,2}, Susana Jiménez-Murcia^{1,2,3}, Roser Granero^{1,4} & Fernando Fernández-Aranda^{1,2,4*}

¹CIBER Fisiopatología Obesidad y Nutrición (CIBERObsn), Instituto de Salud Carlos III, Spain
²Department of Psychiatry, Bellvitge University Hospital (IBELL), Spain
³Department of Clinical Sciences, School of Medicine and Health Sciences, University of Barcelona, Spain
⁴Department de Psicobiologia i Metodologia, Universitat Autònoma de Barcelona, Spain

Abstract
Evidence points to eating disorder patients displaying altered rates of delay discounting (one's degree of preference for immediate re-



Goals and Sample

Goals:

- We aimed to assess the prevalence and **severity level of food addiction** in a sample of women with OB and healthy controls (HC) and to explore the associations between neuropsychological performance, impulsivity traits, and food addiction.
- Specifically, we sought to compare **neuropsychological functioning** in individuals **with and without food addiction** and to examine the associations between food addiction severity, impulsivity, and executive functioning.

Sample

- **33 women with OB** who were recruited from the Bariatric and Metabolic Surgery Unit and the Endocrinology and Nutrition Unit at Bellvitge University Hospital (Barcelona, Spain). These patients were compared with **36 healthy-weight controls** that were recruited from the same University Hospital setting

Measurements

- **Anthropometric measures.** A Tanita BC-420MA was utilized to measure body composition and to calculate BMI.
- **The Conners' Continuous Performance Test, second edition (CPT-II).** The CPT-II provides information about the participants' sustained attention and inhibitory control.
- **The Iowa gambling task (IGT).** The IGT is a commonly used measure of decision-making ability.
- **Yale Food Addiction Scale** Version 2.0 (Gearhardt, Corbin, & Brownell, 2016, Granero et al. 2018).
- **Impulsive Behaviour Scale (UPPS-P;** Whiteside, Lynam, Miller, & Reynolds, 2001)
- **Eating disorder symptomatology.** The Eating Disorder Inventory-2 (EDI-2)

Results

TABLE 1 Prevalence and severity level of food addiction measures and comparison between groups

		Control (N = 36)		Obesity (N = 33)		χ^2	df	p	
		N	%	N	%				
Food addiction	Present	1	2.8	8	24.2	6.99	1	0.008^a	0.66^b
	Absent	35	97.2	25	75.8				
Food addiction	Absent	35	97.2	25	75.8	7.22	2	0.027^a	0.66^b
Severity	Moderate	0	0.0	3	9.1				0.52^b
	Severe	1	2.8	5	15.2				0.44
Food addiction dimensional score		Mean	SD	Mean	SD	F	df	p	
Total DSM-5 food addiction criteria		0.67	1.47	2.64	2.86	13.26	1;67	0.001^a	0.87^b

Note. SD: standard deviation; df: degrees of freedom.

^aBold: significant comparison (0.05 level).

^bEffect size in the moderate ($|d| > 0.50$) to high range ($|d| > 0.80$).

Results

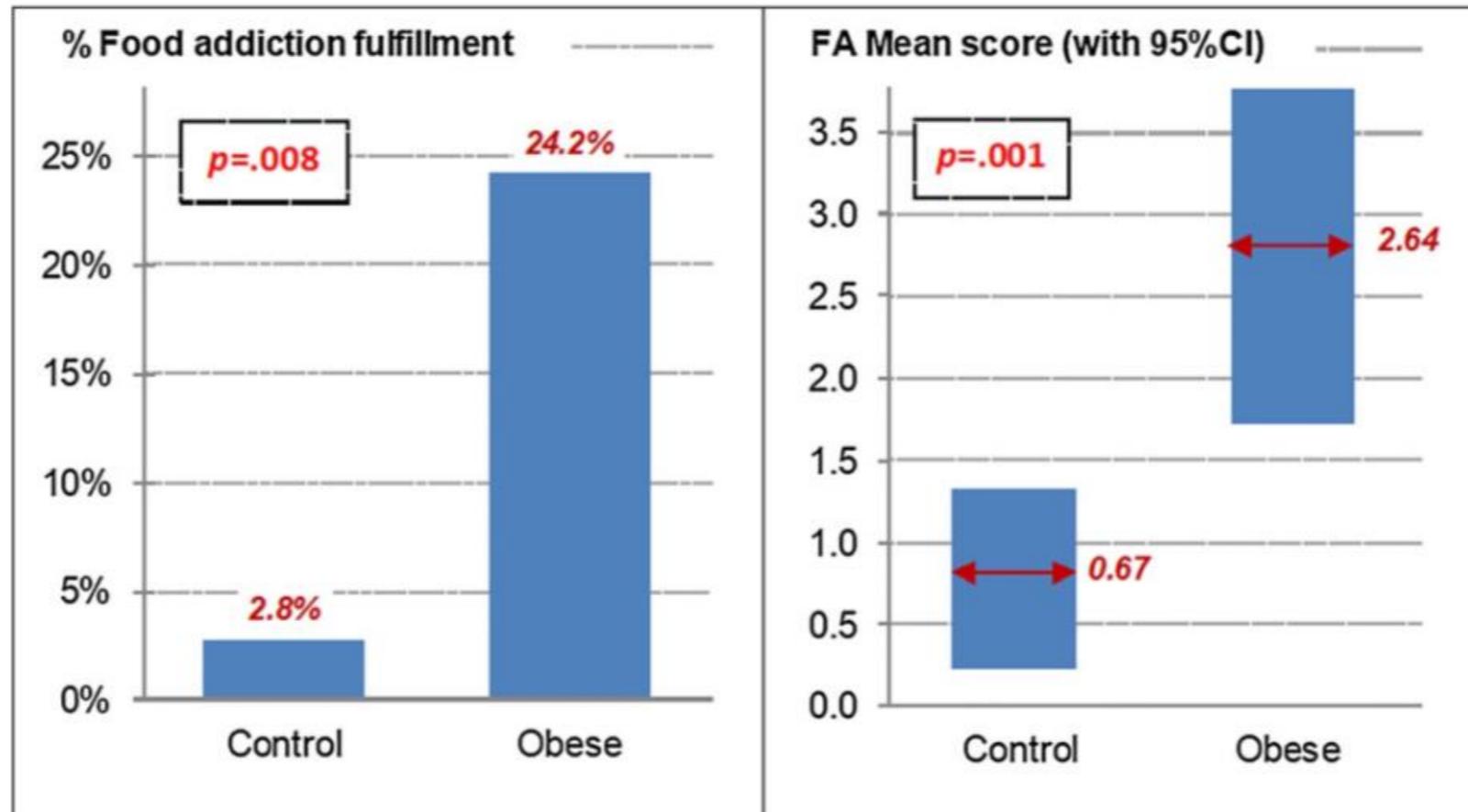


FIGURE 1 Prevalence and severity level of food addiction between groups. FA: food addiction [Colour figure can be viewed at wileyonlinelibrary.com]

Results

TABLE 3 Comparison between food addiction groups: ANOVA

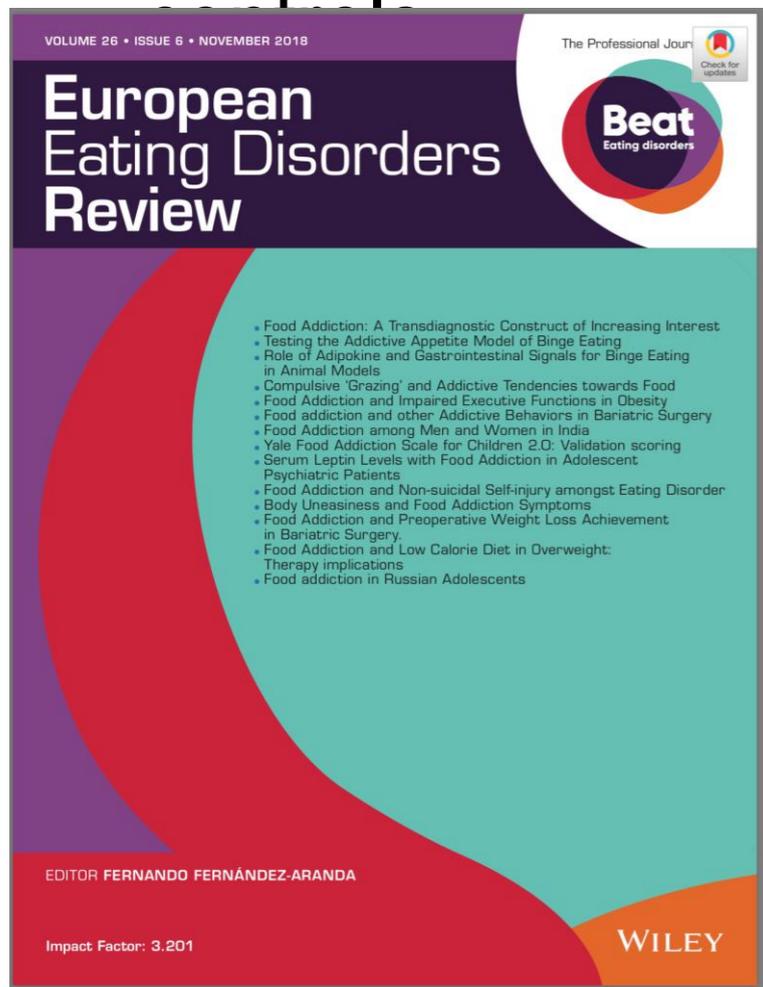
	Obese subsample (N = 33)				p	d
	Food addiction absent (N = 25)		Food addiction present (N = 8)			
	Mean	SD	Mean	SD		
^a Neuropsychological measures						
IGT: Total score	4.09	17.01	-5.96	31.73	0.286	0.39
IGT: Block 1	0.35	4.06	-3.09	5.41	0.044 ^c	0.72 ^d
IGT: Block 2	-0.86	3.24	-1.29	1.69	0.741	0.17
IGT: Block 3	1.05	4.58	-1.28	8.69	0.368	0.33
IGT: Block 4	1.51	5.58	-1.01	10.21	0.410	0.31
IGT: Block 5	2.05	6.88	0.72	9.82	0.678	0.16
CPT: Omissions	4.86	5.04	13.12	18.08	0.043 ^c	0.62 ^d
CPT: Commissions	14.15	6.43	14.80	6.34	0.809	0.10
CPT: Reaction time	394.55	64.54	415.29	80.16	0.464	0.28
CPT: Detectability	0.64	0.33	0.55	0.28	0.462	0.32
CPT: Perseverations	0.92	1.27	3.54	5.50	0.046 ^c	0.66 ^d
^b Impulsivity						
UPPS-P: Lack of premeditation	24.39	4.20	21.69	5.26	0.148	0.57 ^d
UPPS-P: Lack of perseverance	22.00	3.99	19.24	2.93	0.044 ^c	0.79 ^d
UPPS-P: Sensation seeking	24.10	5.61	27.26	7.03	0.193	0.50 ^d
UPPS-P: Positive urgency	20.82	4.11	22.52	6.28	0.387	0.32
UPPS-P: Negative urgency	27.30	4.84	31.97	4.91	0.026 ^c	0.96 ^d
^b ED severity						
EDI-2: Total	59.25	32.14	71.98	18.35	0.305	0.52 ^d

Take Home Message

- Food addiction and neuropsychological functioning were assessed in a sample of women with obesity and healthy weight controls.
- FA was present in **24,2%** of OBE patients (vs. 2,8% in HC).
- **Higher food addiction** severity was positively associated with **poorer decision-making** on the Iowa Gambling Task.
- Women in the obese group with food addiction presented **greater attentional deficits and higher impulsivity** than women without food addiction

Take Home Message

- Food addiction and neuropsychological functioning were assessed in a sample of women with obesity and healthy weight



Received: 25 April 2018 | Revised: 27 June 2018 | Accepted: 31 July 2018

DOI: 10.1002/erv.2636



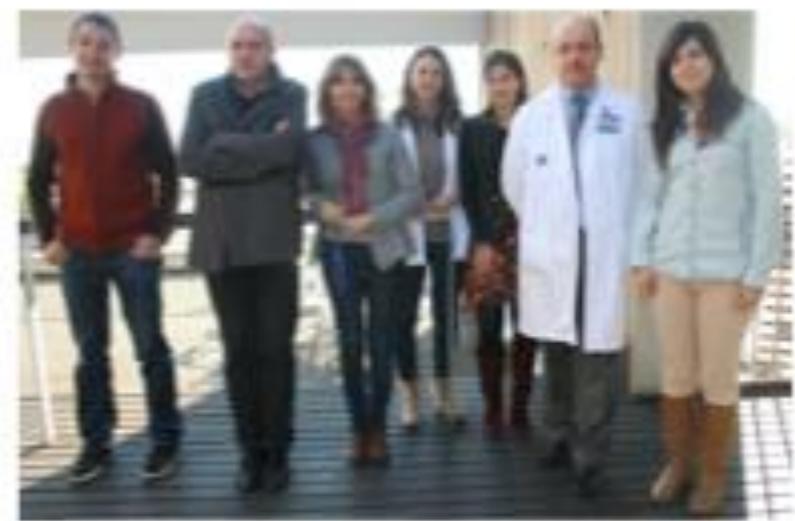
ORIGINAL ARTICLE

WILEY

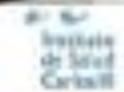
Food addiction and impaired executive functions in women with obesity

Trevor Steward^{1,2*}  | Gemma Mestre-Bach^{1,2*} | Cristina Vintró-Alcaraz^{1,2} |
María Lozano-Madrid^{1,2} | Zaida Agüera^{1,2}  | José A. Fernández-Formoso¹ | Roser Granero^{1,3} |
Susana Jiménez-Murcia^{1,2,4} | Nuria Vilarrasa^{5,6} | Amador García-Ruiz-de-Gordejuela⁷ |
Misericordia Veciana de las Heras⁴ | Nuria Custal² | Nuria Virgili^{4,5} | Rafael López-Urdiales⁵ |
Ashley N. Gearhardt⁸ | José M. Menchón^{2,4,9} | Carles Soriano-Mas^{2,3,9} |
Fernando Fernández-Aranda^{1,2,4} 

ċiberobn isciġ



ċiberobn



European Regional Development Fund

XXVIth Annual Meeting of the Eating Disorders Research Society

Sitges (Barcelona, Spain)



15-17th October 2020