The challenge of impulsivity in eating disorders; research and practical management approaches

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Summary

• Introduction about ED
• ED Management in Spain and our Unit
• ED and Impulse related disorders
• Current therapy limitations
• New challenges and goals in the field
• Conclusions
Prevalence of ED

INVITED REVIEW

The Science Behind the Academy for Eating Disorders’ Nine Truths About Eating Disorders

Katherine Schaumberg, Elisabeth Welch, Lauren Breithaupt, Christopher Hübeler, Jessica H. Baker, Melissa A. Munn-Chernoff, Zeynep Yilmaz, Stefan Enrich, Linda Mustelin, Ata Ghaderi, Andrew J. Hardaway, Emily C. Bulik-Sullivan, Anna M. Heiman, Andreas Jangmo, Ida A.K. Nilsson, Camilla Wiklund, Shuyang Yao, Maria Seidel & Cynthia M. Bulik

1 Department of Psychiatry, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
2 Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden
3 Department of Psychology, George Mason University, Fairfax, VA, USA

Prevalence of Eating Disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>AN</th>
<th>BED</th>
<th>BN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>0.5</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Male</td>
<td>0.05</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Female</td>
<td>0.5</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Male</td>
<td>0.05</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Female</td>
<td>0.5</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Male</td>
<td>0.05</td>
<td>3.0</td>
<td>2.5</td>
</tr>
<tr>
<td>Female</td>
<td>0.5</td>
<td>3.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Male</td>
<td>0.05</td>
<td>3.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Map showing the prevalence of eating disorders worldwide.
Eating Disorders Cross-diagnostic

Diagnostic Heterogeneity

- EDNOS
- BN-P
- BED
- AN-R
- AN-B/P
- BN-NP

Weight

Duration of the disorder
EATING DISORDERS
Etiopathological/ Risk Factors involved

General factors

- Living Western Society
- Adolescence/peers influence female
- Eating styles

Individual-specific factors

- Brain
  - Genetic/biological vulnerabilities
  - Neuronal pathways
  - Reward system
  - Emotional regulation

- Family
  - Adverse parenting / Dieting
  - Eating disorder of any type
  - Depression
  - Obesity
  - Substance misuse

- Premorbid experiences/characteristics
  - Traumatic experiences
  - Teasing /stress
  - Perfectionism
  - Impulsivity

Multiple causality
Risk factors Explored in Obesity and related Eating Disorders

Cross-sectionally and longitudinally

- Personality traits
- Life-events and trauma
- Activity/Sleeping
- Cognitive styles
- Neuropsychological vulnerabilities
- Emotional regulation
- Food addiction
- Smell/Taste

Non-shared environmental

- Shared environmental

Therapy

Biological

- Obesity
- Gender/Age
- Biolog. fact
- Genetic

Disorders Studied
- Eating Disorders
- Obesity
- Gambling Disorder
- Beh. Addictions
- ICD

Multiple causality

Family eating patterns

Family styles

Social expectations
Management of Eating Disorder

• Multidisciplinary team

• Five levels of intervention: general practitioner or primary care pediatrician; specialist outpatient therapy; intensive outpatient therapy or day center; hospital intensive rehabilitation.

• Definition of protocols for collaboration with child/adolescent psychiatry and other services,

• Partnership with associations of carers and planning of training programmes for the staff of reference centers.
Eating Disorders Unit

Therapy Settings

Outpatient
Day Hospital
Inpatient
First New Referrals per Year

> 8,000 ED
State of the Art - Diagnosis

**DSM 5 criteria**

- **Anorexia Nervosa (subtypes AN-R, AN-BP):**
  Extreme weight loss-control. Intense fear gaining weight even though significant low weight. Disturbance weight/shape. Diet/ Purging/Binge eating behaviours.

- **Bulimia Nervosa:**
  Binge eating episodes, inappropriate compensatory behaviours (self-induced vomiting, laxatives, diuretics or excessive exercise). Overvalued shape/weight. Once a week for three months

- **Binge Eating Disorders:**
  Binge eating episodes, without compensatory behaviours. Once a week for three months

- **Other Specified Feeding or ED (OSFED)**
  All criteria are met for either AN or BN (except for current weight is in the normal range or binge eating/compensatory behaviours occur less than one a week for less than 3 months); Sub-threshold disorder (At-AN; At-BN-low BED; Purging Dis.; NES).

- **Others:**
  PICA, Rumination Disorder; Avoidant/Restrictive Food Intake Disorder (ARFID), UFED
Measures
Current Research Lines

• **Risk Factors** Associated with Eating Disorders and Obesity (neurocognition, hormones, clinical personality, sensorial aspects, brain activity, DNA-GWAS)

• Common and differential factors in **extreme weight conditions**.

• Eating disorders and behavioral addictions / Disorders related to impulsivity.

• **Food Addiction** and Therapeutic Implications

• Response to **treatment** and new technologies

• Nutrition and Cognition (**Predimed-Plus**)
Emotion Dysregulation a Transdiagnostic Factor

- OCD
- AN-R
- AN-BP
- BN/BED
- Gambling Disorder
- Emotion dysregulation and impulsivity
- BDD
- Kleptomanía
- Compulsive buying
- Other ICDs
- Compulsive
- Impulsive
- ADHD
- SUD
- BPD
- PD-BL
In individuals with IRD and ED, higher impulsivity has been associated with:

- Specific disorder subtypes
- Severity of symptoms
- Greater comorbidity
- Genetic and biochemical factors
- Poorer psychological functioning
- Altered executive functions
- Less effective coping strategies
- Poorer treatment outcome
Comorbidity and Eating Disorders

- Anxiety: 64-71%
- Affective: 20-83%
- Personality: 27-77%
- Substance Use: 7-69%
- ICD: 9-18%
Impulse related disorders and Shared Vulnerabilities

Impulse related disorders and Shared Vulnerabilities

N = 3,214
748 SNPs at 306 genes


Impulse related disorders and Shared Vulnerabilities

Impulse related disorders and Shared Vulnerabilities

BRIEF REPORT

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

Department of Clinical and Health Sciences, University of Barcelona, Spain

Abstract

Evidence points to eating disorder patients displaying shared traits of delay discounting (an one's degree of preference for immediate rewards over delayed rewards). Anorexia nervosa (AN) patients are believed to have an increased resistance to delay, which reflects their ability to override the drive to eat. Conversely, binge eating disorder (BED) patients are associated with a reduced resistance to delay.

Delay Discounting and EDs

Table 2 Comparison of delayed discounting and UPPS-P impulsivity traits between groups: ANOVA

<table>
<thead>
<tr>
<th></th>
<th>Means and standard deviation</th>
<th>Pairwise comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HC n = 80</td>
<td>AN-R n = 57</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>k-small</td>
<td>0.179</td>
<td>0.116</td>
</tr>
<tr>
<td>k-extraversion</td>
<td>0.148</td>
<td>0.095</td>
</tr>
<tr>
<td>k-large</td>
<td>0.107</td>
<td>0.128</td>
</tr>
<tr>
<td>k-overall</td>
<td>0.150</td>
<td>0.100</td>
</tr>
<tr>
<td>Premedit</td>
<td>2.11</td>
<td>4.57</td>
</tr>
<tr>
<td>Persever</td>
<td>18.9</td>
<td>3.67</td>
</tr>
<tr>
<td>Sensation S</td>
<td>7.16</td>
<td>1.76</td>
</tr>
<tr>
<td>Urgency</td>
<td>26.1</td>
<td>6.12</td>
</tr>
</tbody>
</table>

p-values: ANOVA p-values in bold; all p-values < 0.001
Impulse related disorders and Shared Vulnerabilities

591 participants (194 HC, 178 GD, 113 OB, 106 SUD)

Mallorqui-Bague et al., Plos One (2016), 30-09
Impulse related disorders and Shared Vulnerabilities

Impulse Control Disorders and Eating Disorders

![Chart showing frequencies of different impulse control disorders]

Table 1
Lifetime prevalence of ICD not elsewhere classified from 227 patients with BN

<table>
<thead>
<tr>
<th>Disorder</th>
<th>n</th>
<th>Prevalence (%)</th>
<th>95% CI (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IED</td>
<td>30</td>
<td>13.2</td>
<td>8.81-17.6</td>
</tr>
<tr>
<td>Kleptomania</td>
<td>7</td>
<td>3.08</td>
<td>1.25-6.26</td>
</tr>
<tr>
<td>Pyromania</td>
<td>0</td>
<td>0.00</td>
<td>0.00-1.61</td>
</tr>
<tr>
<td>Pathologic gambling</td>
<td>2</td>
<td>0.88</td>
<td>0.10-3.14</td>
</tr>
<tr>
<td>Trichotillomania</td>
<td>2</td>
<td>0.88</td>
<td>0.10-3.14</td>
</tr>
<tr>
<td>Compulsive buying</td>
<td>40</td>
<td>17.6</td>
<td>12.7-22.6</td>
</tr>
</tbody>
</table>

Impulse control disorders in Eating Disorders

Relation of age of onset of compulsive buying disorder and or kleptomania (CB/K) to age of onset of ED

Prevalence for lifetime and current Substance use in European ED

Instead of Eating

Krug et al. Drug and Alcohol Dependence; 2008; 97: 169-179
Eating Disorders and Pathological Gambling

Total ED 1.49% (95% CI 1.2-1.9)

<table>
<thead>
<tr>
<th></th>
<th>AN</th>
<th>BN</th>
<th>BED</th>
<th>EDNOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>1681</td>
<td>354</td>
<td>783</td>
<td>439</td>
</tr>
<tr>
<td></td>
<td>1.49%</td>
<td>0.57%</td>
<td>1.28%</td>
<td>5.71%</td>
</tr>
<tr>
<td>(1.00; 2.19)</td>
<td>(0.15; 2.04)</td>
<td>(0.70; 2.33)</td>
<td>(2.65; 11.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.59%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.77; 3.25)</td>
<td></td>
</tr>
</tbody>
</table>

Table includes prevalences in percentages (in brackets, 95% confidence intervals).

Jimenez-Murcia. Comprehensive Psychiatry; 2013; 1053-1060
Emotion Regulation and ED


Wolz et al., Front. Psychol., 30 June 2015
Emotion Regulation and ED

RESEARCH ARTICLE

Emotion Regulation as a Transdiagnostic Feature Among Eating Disorders: Cross-sectional and Longitudinal Approach

Núria Mallorquí-Bargués1,2, Cristina Vintró-Alcaraz2, Isabel Sánchez1,2, Nadine Riesco1,2, Zaida Agüera1,2, Roser Granero1,3,4, Susana Jiménez-Murcia1,3,4, José M. Menchón1,3,4, Janet Treasure1,3,4, & Fernando Fernández-Arándaro1,3,4.

1. CIBER Fisiopatología de la Enfermedad del Comer (CIBERFEC), Instituto de Salud Carlos III, Spain
2. Department of Psychology, Universidad Autónoma de Madrid, Spain
3. Department of Psychology, School of Medicine, King’s College London, United Kingdom
4. Department of Psychology, School of Medicine, University of Bristol, United Kingdom

![Image of research article](image-url)

**Table 1:**

<table>
<thead>
<tr>
<th>DERS scales</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
<th>Comparison between participants with good outcome versus bad outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Non-acceptance of negative emotions</td>
<td>19.75</td>
<td>7.05</td>
<td>16.93</td>
</tr>
<tr>
<td>Difficulties directing behaviour</td>
<td>17.02</td>
<td>8.15</td>
<td>15.98</td>
</tr>
<tr>
<td>Impulse control difficulties</td>
<td>13.20</td>
<td>4.83</td>
<td>14.03</td>
</tr>
<tr>
<td>Lack of emotional awareness</td>
<td>10.13</td>
<td>7.72</td>
<td>16.87</td>
</tr>
<tr>
<td>Limited access emotional clarity</td>
<td>25.55</td>
<td>5.32</td>
<td>23.80</td>
</tr>
<tr>
<td>Lack of emotional clarity</td>
<td>14.94</td>
<td>5.61</td>
<td>12.77</td>
</tr>
<tr>
<td>Global score</td>
<td>113.00</td>
<td>27.51</td>
<td>93.15</td>
</tr>
<tr>
<td>ED severity, EDI-2</td>
<td>101.88</td>
<td>41.04</td>
<td>75.04</td>
</tr>
<tr>
<td>Psychopath. SCL-90-R</td>
<td>1.72</td>
<td>0.75</td>
<td>1.23</td>
</tr>
<tr>
<td>GH score</td>
<td>3.38</td>
<td>1.29</td>
<td>2.13</td>
</tr>
</tbody>
</table>

**Note:** ANOVA = analysis of variance; DERS = Difficulties in Emotion Regulation Scale; ED = eating disorder; EDI-2 = Eating Disorders Inventory-2; CSI = Global Severity Index; RCI = Reliable Change Index; SCL-90-R = Symptoms Checklist 90 Revised; SD = standard deviation. Good outcome is considered for complete remission and poor outcome for non-remission or partial remission. p-values include Finner’s procedure to account for increase in type I error due to multiple statistical comparisons.

*Significant comparison (0.05 level).
Therapy strategies in ED with comorbid Impulse related disorders

• **Symptom oriented strategies:**
  – Transdiagnostic CBT (self-monitoring, behavioural management of symptoms, coping with irrational beliefs, problem solving strategies, cues exposure..)
  – CBT + pharmacological therapy
  – Dialectical Behavior Therapy
  – Motivational therapy

• **Non-symptom oriented strategies:**
  – Emotional regulation
  – Mindfulness/CFT
  – Neurocognitive training
Techniques used in ED with high Impulsivity

- Emotional regulation:
  - Self-regulation skills (self-soothing, imagery, distracting, meditation, self-awareness).
  - Stress management and self-control strategies (relaxation, biofeedback, breathing techniques).

- Behavioral/cognitive area:
  - Delay of response
  - Planning skills
  - Cognitive remediation strategies
CBT Outpatient GT

16 WEEKLY SESSIONS
90 MIN. DURATION
7-10 PATIENTS

CBT- Group therapy:
• Learning self-monitoring and structured meal patterns.
• Motivational interviewing
• Awareness of the “binging-escaping from problems” vicious circle
• Cognitive restructuing
• Problem solving
• Achievement of behav. goals
• Response prevention strategies
Group Therapy for Bulimia nerviosa/BED

Cognitive behaviour therapy response and dropout rate across purging and nonpurging bulimia nervosa and binge eating disorder: DSM-5 implications

Zaida Agüera1,2, Nacine Riesco3, Susana Jiménez-Murcia1,2, Mohammad Anisul Islam1,2, Roser Granero1,4, Enrique Vicente5, Eva Peñas-Lledó5, Jon Arcelus5, Isabel Sánchez5, Jose Manuel Menchón2,3,7 and Fernando Fernández-Aranda1,2,*

GROUP OUTPATIENT CBT
Weekly Sessions
90 min duration
7-10 duration

BN-P: 327
BN-NP: 40
BED: 87
Results
Response to treatment (completers)

Agüera et al., 2013. BMC Psychiatry.
Results

Dropout from treatment

Figure 1 Survival function (at mean of covariate age) for the time (session) to the dropout of treatment.
Limitations of Therapy in ED with comorbid Impulse related disorders

• Higher relapses and drop-out rates
• Lower motivation and therapy adherence
• Poorer prognosis (basically due to higher severity, dysfunctional personality traits and additional comorbid Axis I and II disorders).
• Lower social support and higher isolation.
• More medical complications and higher mortality rates.
• Impulsive traits seem to be difficult to be modified.
ANTECEDENTES

PlayMancer: A European Serious Gaming 3D Environment

E. Kalapanidas
C. Davarakis
T. Ganchev
O. Kocsis
C. Breiteneder
H. Kaufmann
J. Jacobsen
J. Krabbe
T. Lam
T. Raguin
M. Vollenbroek
R. Huis in ’t Veld
Konstantas, D.
M. Ben Moussa
S. Jimenez-Murcia
K. Gunnard,
J. Santamaría
A. Soto
F. Fernandez-Aranda

ICT - INFORMATION AND COMMUNICATION TECHNOLOGIES- FP7-ICT-2007-1
Enhanced CBT for BN (plus Serious Video Game)

Figure 1. Recording of facial expression and physiological activity during the Islands Video game session.

Fernandez-Aranda y cols, 2012 Mental Health
Fagundo et al., 2014 JMIR, 2014,16(8):e183.21:6
Procedure and Islands demo

Keywords: Bellvitge  Playmancer

YouTube
Enhanced CBT for BN (plus Serious Video Game)

CBT+ SVG: 20
CBT-SVG: 18

<table>
<thead>
<tr>
<th></th>
<th>Baseline (pre-values)</th>
<th></th>
<th>Final (post-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CBT+SVG ( n=20 )</td>
<td>CBT ( n=18 )</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>EDI: total</td>
<td>106.80</td>
<td>41.05</td>
<td>117.67</td>
</tr>
<tr>
<td>STAI: state</td>
<td>28.11</td>
<td>12.48</td>
<td>30.12</td>
</tr>
<tr>
<td>STAI: trait</td>
<td>35.56</td>
<td>9.90</td>
<td>35.69</td>
</tr>
<tr>
<td>STAXI: state</td>
<td>20.11</td>
<td>8.94</td>
<td>19.29</td>
</tr>
<tr>
<td>STAXI: trait</td>
<td>24.17</td>
<td>7.33</td>
<td>25.59</td>
</tr>
<tr>
<td>STAXI: AEI</td>
<td>33.32</td>
<td>9.76</td>
<td>39.00</td>
</tr>
<tr>
<td>SCL-90: GSI</td>
<td>1.84</td>
<td>0.90</td>
<td>1.96</td>
</tr>
<tr>
<td>SCL-90: PST</td>
<td>67.15</td>
<td>18.27</td>
<td>71.94</td>
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<tr>
<td>SCL 90: PSDI</td>
<td>2.33</td>
<td>0.67</td>
<td>2.37</td>
</tr>
</tbody>
</table>

Fernandez-Aranda et al., 2015 Cyberpsychology
Treatment of VGT before CBT and influence on binge/vomiting episodes

Giner-Bartolomé et al., 2015 Frontiers Psychology
Enhanced CBT for TRI (plus Serious Video Game)

A Serious Videogame as an Additional Therapy Tool for Training Emotional Regulation and Impulsivity Control in Severe Gambling Disorder

Salomó-Tirrega1, Luis Castro-Carreras2, Fernando Fernández-Aracena1 3 4, Roser Granero1 3 4, Cristina Oliver-Sarbizmendi5 6 7 8, Neus Aymerich7, Mónica Gómez-Peña7, Juan J. Santamaría2, Laura Fernández2, Trevor Stewart2 4 9, José M. Manchón5 9 10 and Susana Jiménez-Murcia5 9 10

FIGURE 3 | Recording physiological activity during the Playmanor VG session.

FIGURE 4 | Kaplan-Meier curve for the cumulative survival of relapses during treatment (n = 16).
RETOS FUTUROS

**e-ESTESIA: APP PARA REGULACION EMOCIONAL**

2016-2018

PSI2015-68701R

101.035 Euros
Cognitive Impairment in OW/OBE and Role of DM
Predimed-plus Study

Fit statistics (whole sample, n=6,623):
RMSEA=0.047 (95% CI: 0.039 to 0.054)
CFI=0.956; TLI=0.945; SRMR=0.037; CFI=0.506

Fit statistics (12LM sub-sample, n=1,859):
RMSEA=0.042 (95% CI: 0.031 to 0.053)
CFI=0.967; TLI=0.943; SRMR=0.036; CD=0.542
Challenges for the next decade in the management of Eating Disorder

- **Chronicity** and aging in ED
- Impulsivity and how to deal with *emotions and perfectionism*
- **SUD/Comorbidities** and ED: a comprehensive approach?
- Lifetime *obesity* and ED: categorical vs. dimensional
- How to deal with *drop-out*
Thank you!
Go raibh maith agat!