DSM-5
Intermittent Explosive Disorder and Personality Disorders

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Disclosure Information for Emil Coccaro, MD

- **Consultant**
  - Azevan (Current), Abbott Labs, Lilly (Past)

- **Research Grants**
  - Abbott Labs, Lilly (Past)
DSM-5 Disruptive, Impulse-Control and Conduct Disorders

OPPOSITION DEFIANT DISORDER

INTERMITTENT EXPLOSIVE DISORDER

(DISRUPTIVE MOOD DYSREGULATION DISORDER)

CONDUCT DISORDER

PYROMANIA

KLEPTOMANIA

UNSPECIFIED
DSM-5 Disruptive, Impulse-Control and Conduct Disorders

INTERMITTENT EXPLOSIVE DISORDER

DISRUPTIVE MOOD DYSREGULATION DISORDER
DSM-5 Disruptive, Impulse-Control and Conduct Disorders

INTERMITTENT EXPLOSIVE DISORDER
Diagnosis Before the DSM-III Era

- DSM-I (1956) “Passive-Aggressive Personality” (Aggressive Type)
- Persistent reaction to frustration with irritability/temper
- DSM-II (1968) “Explosive Personality”
- “Gross outbursts of rage... strikingly different from usual behavior”
- “Patients are excitable, aggressive, and over-responsive to environmental pressures”
DSM-III IED Criteria

A. Several discrete episodes of loss of control of aggressive impulses resulting in serious assault or destruction of property

B. Behavior that is grossly out of proportion to any precipitating psychosocial stressor

C. *Absence of signs of generalized impulsivity or aggressiveness between episodes*

D. Not due to Schizophrenia, Antisocial Personality Disorder, or Conduct Disorder (not during the course of psychotic disorder, Organic Personality Syndrome, Antisocial/Borderline Personality Disorder, Conduct Disorder, or intoxication with a psychoactive substance: Revision of “D” in DSM-IIIR).
DSM-IV IED Criteria

• Several discrete episodes of failure to resist aggressive impulses that result in serious assaultive acts or destruction of property.
• The degree of aggressiveness expressed is grossly out of proportion to any precipitating psychosocial stressors.
• The aggressive behavior is not better accounted for by another mental disorder and are not due to the direct physiological effects of a substance or a general medical condition.
A. Recurrent behavioral outbursts represents a failure to control aggressive impulses as manifest by either:

A1. Three behavioral outbursts involving damage or destruction of property and/or physical assault with physical injury against animals or other individuals occurring within a 12-month period.

or

A2. Verbal aggression (e.g., temper tantrums, tirades, verbal arguments or fights) or physical aggression towards property, animals, or other individuals, occurring, on average, twice weekly for a period of three months. The physical aggression does not result in damage or destruction of property and does not result in physical injury to animals or other individuals.
DSM-5 Criteria for Intermittent Explosive Disorder (IED)

A. Recurrent behavioral outbursts represents a failure to control aggressive impulses as manifest by either:

A1. Three behavioral outbursts involving damage or destruction of property and/or physical assault with physical injury against animals or other individuals occurring within a 12-month period.
DSM-5 IED A1 Criterion:

\[ \geq 3x \text{ / Year} \text{ vs. } \geq 3x \text{ / Lifetime} \]

Coccaro 2012 (From Kessler et al., 2006)
DSM-5 Criteria for Intermittent Explosive Disorder (IED)

A. Recurrent behavioral outbursts represents a failure to control aggressive impulses as manifest by either:

   A2. Verbal aggression (e.g., temper tantrums, tirades, verbal arguments or fights) or physical aggression towards property, animals, or other individuals, occurring, on average, twice weekly for a period of three months. The physical aggression does not result in damage or destruction of property and does not result in physical injury to animals or other individuals.
DSM-5 IED: 
A1 Only vs. A2 Only vs. All A2

Coccaro et al., 2013
DSM-5 IED: A1 vs. A2 Criteria on Family Study / Biomarkers / Rx Response

Coccaro et al., 2013
**DSM-5 Criteria for Intermittent Explosive Disorder (IED)**

B. The magnitude of aggressiveness expressed during the recurrent aggressive outbursts is grossly out of proportion to the provocation or any precipitating psychosocial stressors.

C. The recurrent aggressive outbursts are not premeditated (i.e. are impulsive and/or anger-based) and are not committed to achieve some tangible objective (e.g., money, power, intimidation).

D. The recurrent aggressive outbursts cause either marked distress in the individual, or impairment in occupational or interpersonal functioning, or are associated with financial or legal consequences.

E. Chronological age is at least 6 years (or equivalent developmental level).
DSM-5 Criteria for Intermittent Explosive Disorder (IED)

F. The recurrent aggressive outbursts are not better explained by another mental disorder (e.g., MDD, BP, Psychosis, DMDD, AsPD, BPD) and are not due to a general medical condition (e.g., head trauma, dementia) or due to the direct physiological effect of a substance (e.g., a drug of abuse, a medication). For children age 6-18, aggressive behavior that occurs as a part of an adjustment disorder should not be considered for this diagnosis.

Note: This diagnosis can be made in addition to the diagnosis of ADHD, CD, ODD, ASD when recurrent impulsive, and/or anger-based, aggressive outbursts are in excess of those usually seen in these disorders and warrant independent clinical attention.
Differential Dx:
Should Not Be Diagnosed as IED

Aggression Due to a General Medical Condition

Substance Intoxication / Withdrawal
Differential Dx: 
Not IED if Outbursts Are Confined to:

- Major Depressive Episode
- Manic / Hypomanic Episode
- Psychotic Episode
- Disruptive Mood Dysregulation Disorder
- Adjustment Disorder
Differential Dx:
*Can Be Diagnosed as IED*

Antisocial Personality Disorder (AsPD)

Borderline Personality Disorder (BPD)
Aggression in AsPD and/or BPD Can Be Better Explained by IED

Coccaro 2012
Differential Dx: Can Be Diagnosed as IED

Disruptive Behavior Disorders (DBD):

Attention Deficit Hyperactivity Disorder
Conduct Disorder
Oppositional Defiant Disorder

Autism Spectrum Disorder
Aggression in DBD
Can Be Better Explained by IED

Coccaro 2012
DBD (ADHD / ODD) Sx
Track with DBD Not IED

Coccaro 2012
DSM-5 Disruptive, Impulse-Control and Conduct Disorders

DISRUPTIVE MOOD DYSREGULATION DISORDER (DMDD)
DSM-5 Criteria for Disruptive Mood Dysregulation Disorder (DMDD)

A. Severe recurrent temper outbursts manifested verbally and/or behaviorally, that are grossly out of proportion in intensity or duration to the situation or provocation.

B. The temper outbursts are inconsistent with developmental level.

C. The temper outbursts occur, on average, three or more times per week.

D. The mood between temper outbursts is persistently irritable or angry most of the day, nearly every day and observable by others (e.g., parents, teachers, peers).

E. Criteria A-D have been present for 12 or more months. Throughout that time, the individual has not had a period lasting 3 or more consecutive months without all of the symptoms in Criteria A-D.

F. Criteria A and D are present in at least two of three settings (at home, at school, with peers) and must be severe in at least one of these.
DSM-5 Criteria for Disruptive Mood Dysregulation Disorder (DMDD)

G. The diagnosis should not be made for the first before age 6 or after age 18 years.

H. By history or observation, the onset of Criteria A-E is before 10 years.

I. There has never been a distinct period lasting more than 1 day during which the full symptom criteria, except symptom duration, for a manic or hypomanic have been met (developmentally appropriate mood elevation, such as occurs in the context of a highly positive event or its anticipation should not be considered a symptom of mania or hypomania).

J. The behaviors do not occur exclusively during an episode of major depressive disorder and are not better accounted for by another mental disorder (e.g., dysthymia, autism spectrum disorder, separation anxiety disorder, PTSD).

K. The symptoms are not attributable to the direct physiological effects of a substance or to another medical or neurological condition.
DSM-5 Criteria

Personality Disorders
The essential features of a personality disorder are impairments in personality (self and interpersonal) functioning and the presence of pathological personality traits. To diagnose a trait specified personality disorder, the following criteria must be met:

A. Significant impairments in self (identity or self-direction) and interpersonal (empathy or intimacy) functioning.

B. One or more pathological personality trait domains OR specific trait facets within domains, considering ALL of the following domains:

   1. Negative Affectivity
   2. Detachment
   3. Antagonism
   4. Disinhibition (vs. Compulsivity)
   5. Psychoticism
SELF AND INTERPERSONAL FUNCTIONING

Self:

Identity: Experience of oneself as unique, with clear boundaries between self and others; stability of self-esteem and accuracy of self-appraisal; capacity for, and ability to regulate, a range of emotional experience

Self-direction: Pursuit of coherent and meaningful short-term and life goals; utilization of constructive and prosocial internal standards of behavior; ability to self-reflect productively

Interpersonal:

Empathy: Comprehension and appreciation of others’ experiences and motivations; tolerance of differing perspectives; understanding of the effects of own behavior on others

Intimacy: Depth and duration of positive connections with others; desire and capacity for closeness; mutuality of regard reflected in interpersonal behavior.
C. The impairments in personality functioning and the individual’s personality trait expression are relatively stable across time and consistent across situations.

D. The impairments in personality functioning and the individual’s personality trait expression are not better understood as normative for the individual’s developmental stage or socio-cultural environment.

E. The impairments in personality functioning and the individual’s personality trait expression are not solely due to the direct physiological effects of a substance (e.g., a drug of abuse, medication) or a general medical condition (e.g., severe head trauma).
PERSONALITY TRAIT DOMAINS AND FACETS: NEGATIVE AFFECTIVITY

0 = Very Little
Not Descriptive
1 = Mildly
Descriptive
2 = Moderately
Descriptive
3 = Extremely
Descriptive

Negative Affectivity: Experiences negative emotions frequently and intensely.

**Trait Facets:**

- Emotional Lability
- Anxiousness
- Separation Insecurity
- Perseveration
- Submissiveness
- Hostility
- Depressivity
- Suspiciousness
- Restricted Affectivity
PERSONALITY TRAIT DOMAINS AND FACETS: NEGATIVE AFFECTIVITY

0 = Very Little 1 = Mildly 2 = Moderately 3 = Extremely
Not Descriptive Descriptive Descriptive Descriptive

Emotional Lability:
Unstable emotional experiences and frequent mood changes; emotions that are easily aroused, intense, and/or out of proportion to events and circumstances.

Anxiousness:
Intense feelings of nervousness, tenseness, or panic in reaction to diverse situations; worry about the negative effects of past unpleasant experiences and future negative possibilities; feeling fearful, apprehensive, or threatened by uncertainty; fears of falling apart, losing control, or embarrassment.

Separation Insecurity:
Fears of rejection by – and/or separation from – significant others, associated with fears of excessive dependency and complete loss of autonomy.

Perseveration:
Persistence at tasks long after the behavior has ceased to be functional or effective; continuance of the same behavior despite repeated failures.
PERSONALITY TRAIT DOMAINS AND FACETS: NEGATIVE AFFECTIVITY

Submissiveness:
Adaptation of one’s behavior to the interests and desires of others.

Hostility
Persistent or frequent angry feelings; anger or irritability in response to minor slights and insults; mean, nasty, or vengeful behavior.

Depressivity
Frequent feelings of being down, miserable, and/or hopeless; difficulty recovering from such moods; pessimism about the future; pervasive shame; feelings of inferior self worth; thoughts of suicide and suicidal behavior.

Suspiciousness
Expectations of -- and heightened sensitivity to -- signs of interpersonal ill-intent or harm; doubts about loyalty and fidelity of others; feelings of persecution.
PERSONALITY TRAIT DOMAINS AND FACETS: DETACHMENT

0 = Very Little 1 = Mildly 2 = Moderately 3 = Extremely
Not Descriptive Descriptive Descriptive Descriptive

Detachment: Withdrawal from other people and from social interactions.

**Trait Facets:**

Restricted Affectivity
  Depressivity
  Suspiciousness
  Withdrawal
  Anhedonia
  Intimacy Avoidance
## PERSONALITY TRAIT DOMAINS AND FACETS: DETACHMENT

<table>
<thead>
<tr>
<th>Score</th>
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**Restricted Affectivity:**
Little reaction to emotionally arousing situations; constricted emotional experience and expression; indifference or coldness.

**Withdrawal:**
Preference for being alone to being with others; reticence in social situations; avoidance of social contacts and activity; lack of initiation of social contact.

**Anhedonia:**
Lack of enjoyment from, engagement in, or energy for life's experiences; deficits in the capacity to feel pleasure or take interest in things.

**Intimacy Avoidance:**
Avoidance of close or romantic relationships, interpersonal attachments, and intimate sexual relationships.
PERSONALITY TRAIT DOMAINS AND FACETS: ANTAGONISM

0 = Very Little Not Descriptive
1 = Mildly Descriptive
2 = Moderately Descriptive
3 = Extremely Descriptive

Antagonism: Engaging in behaviors that puts the person at odds with others.

Trait Facets:

- Manipulativeness
- Deceitfulness
- Grandiosity
- Attention Seeking
- Callousness
- Hostility
PERSONALITY TRAIT DOMAINS AND FACETS: ANTAGONISM

0 = Very Little Not Descriptive 1 = Mildly Descriptive 2 = Moderately Descriptive 3 = Extremely Descriptive

Manipulativeness:
Frequent use of subterfuge to influence or control others; use of seduction, charm, glibness, or ingratiation to achieve one’s ends.

Deceitfulness:
Dishonesty and fraudulence; misrepresentation of self; embellishment or fabrication when relating events.

Grandiosity:
Feelings of entitlement, either overt or covert; self-centeredness; firmly holding to the belief that one is better than others; condescending toward others.
PERSONALITY TRAIT DOMAINS AND FACETS: ANTAGONISM

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Not Descriptive | Descriptive | Descriptive | Descriptive

**Attention Seeking:**
Excessive attempts to attract and be the focus of the attention of others; admiration seeking.

**Callousness:**
Lack of concern for feelings or problems of others; lack of guilt or remorse about the negative or harmful effects of one’s actions on others; aggression; sadism.
PERSONALITY TRAIT DOMAINS AND FACETS: DISINHIBITION

Disinhibition: Engaging in behaviors on impulse, without reflecting on potential future consequences.

Trait Facets:

- Impulsivity
- Irresponsibility
- Distractability
- Risk Taking
- (Lack of) Rigid Perfectionism
PERSONALITY TRAIT DOMAINS AND FACETS: DISINHIBITION

0 = Very Little  1 = Mildly  2 = Moderately  3 = Extremely
Not Descriptive  Descriptive  Descriptive  Descriptive

Irresponsibility:
Disregard for – and failure to honor – financial and other obligations or commitments; lack of respect for – and lack of follow through on – agreements and promises.

Impulsivity:
Acting on the spur of the moment in response to immediate stimuli; acting on a momentary basis without a plan or consideration of outcomes; difficulty establishing and following plans; a sense of urgency and self-harming behavior under emotional distress.

Distractibility:
Difficulty concentrating and focusing on tasks; attention is easily diverted by extraneous stimuli; difficulty maintaining goal-focused behavior.
PERSONALITY TRAIT DOMAINS AND FACETS: DISINHIBITION

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Not Descriptive Descriptive Descriptive Descriptive

Risk Taking:
Engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; boredom proneness and thoughtless initiation of activities to counter boredom; lack of concern for one’s limitations and denial of the reality of personal danger.

(lack of) Rigid Perfectionism:
Rigid insistence on everything being flawless, perfect, without errors or faults, including one’s own and others’ performance; sacrificing of timeliness to ensure correctness in every detail; believing that there is only one right way to do things; difficulty changing ideas and/or viewpoint; preoccupation with details, organization, and order.
PERSONALITY TRAIT DOMAINS AND FACETS: PSYCHOTICISM

0 = Very Little Not Descriptive 1 = Mildly Descriptive 2 = Moderately Descriptive 3 = Extremely Descriptive

Psychoticism: Unusual and bizarre experiences.

Trait Facets:

Unusual Beliefs & Experiences
Eccentricity
Cognitive & Perceptual Dysregulation
PERSONALITY TRAIT DOMAINS AND FACETS: PSYCHOTICISM

0 = Very Little 1 = Mildly 2 = Moderately 3 = Extremely
Not Descriptive Descriptive Descriptive Descriptive

Unusual and Bizarre Experiences:
Thought content and experiences that are viewed by others as bizarre or idiosyncratic, unusual experiences of reality.

Eccentricity:
Odd, unusual, or bizarre behavior or appearance; saying unusual or inappropriate things.

Cognitive and Perceptual Dysregulation:
Odd or unusual thought processes; vague, circumstantial, metaphorical, over-elaborate, or stereotyped thought or speech; odd experiences in various sensory modalities.
**BORDERLINE PERSONALITY DISORDER**

A. Significant impairments in **personality functioning** manifest by:

1. Impairments in **Self-Functioning** (a or b):
   
   a. **Identity**: Markedly impoverished, poorly developed, or unstable self-image, often associated with excessive self-criticism; chronic feelings of emptiness; dissociative states under stress.
   
   b. **Self-direction**: Instability in goals, aspirations, values, or career plans.

   **AND**

2. Impairments in **Interpersonal-Functioning** (a or b):

   a. **Empathy**: Compromised ability to recognize the feelings and needs of others associated with interpersonal hypersensitivity (i.e., prone to feel slighted or insulted); perceptions of others selectively biased toward negative attributes or vulnerabilities.

   b. **Intimacy**: Intense, unstable, and conflicted close relationships, marked by mistrust, neediness, and anxious preoccupation with real or imagined abandonment; close relationships often viewed in extremes of idealization and devaluation and alternating between over involvement and withdrawal.
B. Pathological Personality Traits:

1. Negative Affectivity Domain
   a. Emotional Lability
   b. Anxiousness
   c. Separation Insecurity
   d. Depressivity

2. Disinhibition Domain
   a. Impulsivity
   b. Risk Taking

3. Antagonism Domain
   a. Hostility
A. Significant impairments in personality functioning manifest by:

1. Impairments in **self functioning** (a or b):
   
   a. **Identity**: Sense of self derived predominantly from work or productivity; constricted experience and expression of strong emotions.
   
   b. **Self-direction**: Difficulty completing tasks and realizing goals associated with rigid and unreasonably high and inflexible internal standards of behavior; overly conscientious and moralistic attitudes.

   AND

2. Impairments in Interpersonal Functioning (a or b):

   a. **Empathy**: Difficulty understanding and appreciating the ideas, feelings, or behaviors of others.

   b. **Intimacy**: Relationships seen as secondary to work and productivity; rigidity and stubbornness negatively affect relationships with others.
B. Pathological Personality Traits:

1. Compulsivity Domain
   a. Rigid Perfectionism

2. Negative Affectivity Domain
   a. Perseveration
AVOIDANT PERSONALITY DISORDER

A. Significant impairments in personality functioning manifest by:

1. Impairments in self functioning:
   a. **Identity**: Low self-esteem associated with self-appraisal as socially inept, personally unappealing, or inferior; excessive feelings of shame or inadequacy.
   
   b. **Self-direction**: Unrealistic standards for behavior associated with reluctance to pursue goals, take personal risks, or engage in new activities involving interpersonal contact.

2. Impairments in interpersonal functioning:
   a. **Empathy**: Preoccupation with, and sensitivity to, criticism or rejection, associated with distorted inference of others’ perspectives as negative.
   
   b. **Intimacy**: Reluctance to get involved with people unless being certain of being liked; diminished mutuality within intimate relationships because of fear of being shamed or ridiculed.
AVOIDANT PERSONALITY DISORDER (Cont. 2)

B. Pathological Personality Traits:

1. Detachment Domain
   a. Withdrawal
   b. Intimacy Avoidance
   c. Anhedonia

2. Negative Affectivity Domain
   a. Anxiousness
SCHIZOTYPAL PERSONALITY DISORDER

A. Significant impairments in personality functioning manifest by:

1. Impairments in self functioning (a or b):
   
   a. **Identity**: Confused boundaries between self and others; distorted self-concept; emotional expression often not congruent with context or internal experience.

   b. **Self-direction**: Unrealistic or incoherent goals; no clear set of internal standards.

   **AND**

2. Impairments in interpersonal functioning (a or b):

   a. **Empathy**: Pronounced difficulty understanding impact of own behaviors on others; frequent misinterpretations of others’ motivations and behaviors.

   b. **Intimacy**: Marked impairments in developing close relationships, associated with mistrust and anxiety.
SCHIZOTYPAL PERSONALITY DISORDER (Cont. 2)

B. Pathological Personality Traits:

1. Psychoticism Domain
   a. Eccentricity
   b. Cognitive & Perceptual Dysregulation
   c. Unusual Beliefs & Experiences

2. Detachment Domain
   a. Restricted Affectivity
   b. Withdrawal

3. Negative Affectivity Domain
   a. Suspiciousness
DYSSOCIAL PERSONALITY DISORDER

A. Significant impairments in personality functioning manifest by:

1. Impairments in self functioning (a or b):
   a. **Identity**: Ego-centrism; self-esteem derived from personal gain, power, or pleasure.
   b. **Self-direction**: Goal-setting based on personal gratification; absence of prosocial internal standards associated with failure to conform to lawful or culturally normative ethical behavior.

   **AND**

2. Impairments in interpersonal functioning (a or b):
   a. **Empathy**: Lack of concern for feelings, needs, or suffering of others; lack of remorse after hurting or mistreating another.
   b. **Intimacy**: Incapacity for mutually intimate relationships, as exploitation is a primary means of relating to others, including by deceit and coercion; use of dominance or intimidation to control others.
B. Pathological Personality Traits:

1. Antagonism Domain
   a. Manipulativeness
   b. Deceitfulness
   c. Callousness
   d. Hostility

2. Disinhibition Domain
   a. Irresponsibility
   b. Impulsivity
   c. Risk Taking
NARCISISTIC PERSONALITY DISORDER

A. Significant impairments in personality functioning manifest by:

1. Impairments in self functioning (a or b):
   
   a. **Identity**: Excessive reference to others for self-definition and self-esteem regulation; exaggerated self-appraisal may be inflated or deflated, or vacillate between extremes; emotional regulation mirrors fluctuations in self-esteem.
   
   b. **Self-direction**: Goal-setting is based on gaining approval from others; personal standards are unreasonably high in order to see oneself as exceptional, or too low based on a sense of entitlement; often unaware of own motivations.

2. Impairments in interpersonal functioning (a or b):
   
   a. **Empathy**: Impaired ability to recognize or identify with the feelings and needs of others; excessively attuned to reactions of others, but only if perceived as relevant to self; over- or underestimate of own effect on others.
   
   b. **Intimacy**: Relationships largely superficial and exist to serve self-esteem regulation; mutuality constrained by little genuine interest in others’ experiences and predominance of a need for personal gain.
B. Pathological Personality Traits:

1. Antagonism Domain
   a. Grandiosity
   b. Attention Seeking
BORDERLINE PERSONALITY DISORDER (Cont. 3)

B. Pathological personality traits in the following domains:

1. **Negative Affectivity**, characterized by:
   
a. **Emotional lability**: Unstable emotional experiences and frequent mood changes; emotions that are easily aroused, intense, and/or out of proportion to events and circumstances.

   b. **Anxiousness**: Intense feelings of nervousness, tenseness, or panic, often in reaction to interpersonal stresses; worry about the negative effects of past unpleasant experiences and future negative possibilities; feeling fearful, apprehensive, or threatened by uncertainty; fears of falling apart or losing control.

   c. **Separation insecurity**: Fears of rejection by and/or separation from significant others, associated with fears of excessive dependency and complete loss of autonomy.

   d. **Depressivity**: Frequent feelings of being down, miserable, and/or hopeless; difficulty recovering from such moods; pessimism about the future; pervasive shame; feeling of inferior self-worth; thoughts of suicide and suicidal behavior.
2. **Disinhibition**, characterized by:
   
a. **Impulsivity**: Acting on the spur of the moment in response to immediate stimuli; acting on a momentary basis without a plan or consideration of outcomes; difficulty establishing or following plans; a sense of urgency and self-harming behavior under emotional distress.

   b. **Risk taking**: Engagement in dangerous, risky, and potentially self-damaging activities, unnecessarily and without regard to consequences; lack of concern for one’s limitations and denial of the reality of personal danger.

3. **Antagonism**, characterized by:
   
a. **Hostility**: Persistent or frequent angry feelings; anger or irritability in response to minor slights and insults.
How Much IED is there in the General Community?

% of Sample

<table>
<thead>
<tr>
<th>Study</th>
<th>Lifetime</th>
<th>Current</th>
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<tr>
<td>DSM-IED (2004)</td>
<td>4.0%</td>
<td>1.6%</td>
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<td>DSM-IED (2006)</td>
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<td>3.5%</td>
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<tr>
<td>IED-IR (2004)</td>
<td>5.1%</td>
<td>2.0%</td>
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</tbody>
</table>

Coccaro et al., 2004

Kessler al., 2006
Age of Onset of DSM-IV IED by Age Category

Coccaro et al., 2005
DSM-5 IED Criteria Better Explain Aggression, Impulsivity, FHx, and Biomarkers than DSM-IV IED Criteria

Coccaro 2012
Treatment Studies
Fluoxetine vs. Placebo in Aggression: OAS-M Aggression Scores


+ p < .10; * p < .05, **, p < .01
Fluoxetine vs. Placebo in Aggression: CGI Responder Analysis

** Placebo (n = 35)**

***, * p < .01, ***, p < .001

All Fluoxetine Treated Subjects:
IED Diagnostic Status at End of Trial

PRL[d-FEN] and Anti-Aggressive Response to Fluoxetine

Improvement (%) in Aggression & Irritability vs. Peak Delta PRL[d-FEN] (ng/ml)

- Pearson's correlation coefficient \( r = 0.71 \)
- Sample size \( n = 10 \)
- p-value \( p = 0.02 \)

Coccaro & Kavoussi, 1997
**Cortico-Limbic Responses to Harsh Faces in IED Subjects**

**Subjects:** 10 patients with IED, 10 healthy controls.

**Imaging:** BOLD-sensitive whole-brain fMRI at 3T (reverse spiral, 2s TR, 25ms TE)

**Paradigm:**
- Block design using the Ekman and Friesen Pictures of Facial Affect.
- Blocks each contained one expression type (Anger, Fear, Disgust, Happy, Sad, Surprise, Neutral), a crosshair was used as baseline.
- Subjects were asked to identify gender only.

- 5 minute runs
- 6 runs per scan
- order counter-balanced across runs
Behavior ➔ Aggression

Behavior by one individual directed at another person or object in which either verbal force or physical force is used to injure, coerce, or to express anger.
fMRI of SEIP in IED

- IED subjects show increased amygdala activation and decreased orbitofrontal activation to angry faces (compared to controls)

Coccaro et al., 2007
OFC/DLPFC Activation to Harsh (Anger, Disgust, Fear) vs. Rest: Greater in Healthy Volunteers than IED
Effect of Pharma Rx on Amygdala BOLD Responses To Anger Faces in IED

Coccaro et al., In Prep.
Voxel-Based Morphometry (VBM) in IED

HC (n=53) vs. IED (n=57), Reduced medial OFC grey matter concentration (max foci at [7, 46, -2], cluster = 189 voxels, $t = 4.63$, $Z = 4.34$). No significant differences in amygdala grey matter concentration.

Coccaro et al., In Prep
# Psychopathy’s Two Main Factors

**Callous/Unemotional**

- Grandiose
- Superficial Affect
- Lacks Empathy
- Lacks Remorse
- Deceitful
- Doesn’t Accept Responsibility

**Socially Deviant**

- Impulsivity
- Poor Behavioral Controls
- Irresponsible
- Lacks Goals
- CD in Childhood
- Adult Antisocial Behavior

*Hare 2003*
Diminished VMPFC Grey Matter: Psychopaths < Non-Psychopaths

Mueller et al., 2008
Inverse Correlation: Psychopathy and fMRI BOLD Response to Fear Faces in Amygdala

$x, y, z = 25, 0, -14; Z = 3.99; r = -.71$, corrected probability $p < .001$

Dolan & Fullam 2009
Diminished fMRI BOLD Cortical Response: Moral vs. Non-Moral Violations in Psychopaths

Harinski et al., 2010

Anterior Temporal Cortex

VMPFC
Diminished fMRI BOLD AMYG Response: Moral vs. Non-Moral Violations in Psychopaths

Harinski et al., 2010
Effect of Environmental Mediated by Deficits in Social Information Processing

Aggression in Childhood Associated with Deficits in SIP:

a. Reduced Encoding of Relevant Social Information
b. Increased Tendency for Hostile Attributions

Risk Factor \[\rightarrow\] SIP \[\rightarrow\] Aggressive Behavior

Aggression in Childhood, etc.
My classmate wanted to physically hurt me.

(Hostile-External)

My classmate wanted to make me look “bad”.
(Hostile-Internal)
Emotional Responses

How likely is it that you would be angry if this happened to you?

How likely is it that you would be embarrassed or upset if this happened to you?
SIP Attributions / Emotional Response to Vignettes: IED vs. NC

![Graph showing attribution and emotional response units for NC and IED categories.]

- Hostile Attrib.: NC (***), IED (***
- Instrumental Attrib.: NC (*), IED
- Benign Attrib.: NC (***
- Emotional Response: NC (***)
SIP-HA and NER in IED

$r = .51$
$n = 48$
$p < .001$
Efficacy of CRCST in Reducing Aggression

* *

McCloskey et al., 2008

* p < .05
Efficacy in Reducing Hostile Thoughts

McCloskey et al., 2008

* p < .05
Conclusions: IED

- Categorical Expression of Impulsive Aggression

- Far More Prevalent than Previously Thought (4-6% Lifetime; 1-2% Current)

- Runs In Families & has a Substantial Genetic Component

- Neurochemical Correlates (5-HT, etc.)

- Neuroscience Correlates (Cortical/Subcortical “Lesions”)

- Responds to SSRIs / Mood Stabilizers / CRCST (treatment suppresses, but does not “cure”, IED)
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Diminished fMRI BOLD PFC Response: Emotional Integration Task in NC > Psychopaths

Mueller et al., 2008
fMRI BOLD Responses in Amygdala to Anger Faces (Z Scores) over Three Studies of DSM-5 IED (n = 47) and NC (n = 48)
PRL[d-FEN]-R & “Composite Aggression” in HV and PD Subjects

Coccaro et al., 2009
SIP-HA with IA and BA in IED

\[ r = .16 \]
\[ n = 48 \]
\[ p = .164 \]

\[ r = -.44 \]
\[ n = 48 \]
\[ p = .002 \]
### PRL\([d-FEN]\)-R & IED Status in PD Subjects

<table>
<thead>
<tr>
<th>Type of IED Criterium</th>
<th>Mean ± SEM PRL([d-FEN])-R (ng/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSM-IV IED</td>
<td>0.0 ± 0.4</td>
</tr>
<tr>
<td>IED-R</td>
<td>0.1 ± 0.2</td>
</tr>
<tr>
<td>IED-IR</td>
<td>0.3 ± 0.2</td>
</tr>
</tbody>
</table>

*p < .05*  
*p = .128*  
*p = .654*  

Coccaro et al., 2009
Platelet 5-HT Transporter Binding & IED Status in PD Subjects

Means (±SEM) for Bmax: Paroxetine Binding (fmol/mg protein)

Coccaro et al., 2009
Differential Dx:
*Can Be Diagnosed as IED*

Antisocial Personality Disorder
(Not Psychopathy)

Borderline Personality Disorder