Episode 115: Borderline Personality Disorder: History, Symptoms, Environment, Genetics & Brain Science

Brice Thomas, B.A., Ben Robinson, M.D., Julieanne Ong, Melissa Pereau, M.D., Michael Cummings, M.D., David Puder, M.D.

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PSYCHIATRY & PSYCHOTHERAPY

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There are no conflicts of interest for this episode.

In this episode of the podcast, we introduce borderline personality disorder (BPD). We discuss its history, nomenclature, epidemiology, etiology, and diagnosis while providing perspectives from clinicians regarding the treatment of individuals with BPD.

Definition of Borderline Personality Disorder

- A pervasive pattern of instability of interpersonal relationships, self-image and affects, and marked impulsivity, beginning by early adulthood and presenting in a variety of contexts, as indicated by five (or more) of the following (DSM 5):
    - Frantic efforts to avoid real or imagined abandonment. (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)
    - A pattern of unstable and intense interpersonal relationships characterized by alternations between extremes of idealization and devaluation.
    - Identity disturbance: markedly and persistently unstable self-image or sense-of-self.
    - Impulsivity in at least two areas that are potentially self-damaging (e.g., spending, sex, substance abuse, reckless driving, binge eating). (Note: Do not include suicidal or self-mutilating behavior covered in Criterion 5.)
    - Recurrent suicidal behaviors, gestures, threats, or self-mutilating behaviors.
    - Affective instability due to a marked reactivity of mood (e.g., intense episodic dysphoria, irritability, or anxiety, usually lasting a few hours and only rarely more than a few days).
    - Chronic feelings of emptiness.
    - Inappropriate, intense anger or difficulty controlling anger (e.g., frequent displays of temper, constant anger, recurrent physical fights).
    - Transient, stress-related, paranoid ideation or severe dissociative symptoms.

Hysteria and Borderline Personality Disorder

- The diagnosis of "hysteria" dates back to Ancient Egypt and Greece (Tasca et al, 2012).

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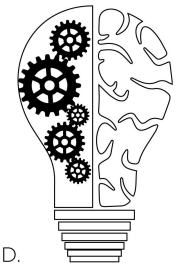


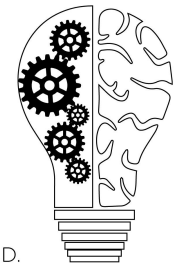
- Women with undesirable traits such as depression, tonic clonic seizures, anxiety of suffocation and impending death were often diagnosed with hysteria (Tasca et al, 2012).
- Hysteria was thought to be due to malposition of the uterus (Tasca et al, 2012).
- Hysteria was treated through fumigation of the vagina (Tasca et al, 2012).
- Some of these "hysterical" women may have had BPD, because both conditions share intense affective states like anxiety and dysphoria.

Nomenclature of Borderline Personality Disorder

- Per Dr. Cummings, the concept of BPD dates back to when psychiatry was more psychoanalytically oriented.
    - The definition of "borderline" used by people in the psychoanalytic tradition was different from its modern-day meaning.
    - They characterized people according to three levels of functioning: neurotic, borderline and psychotic (with psychotic being the lowest level of functioning).
- Because patients with BPD have micropsychotic events, it was originally theorized that they were on the "border" of schizophrenia (Stern 1938).
    - However, as we know, patients with BPD do not universally go on to develop schizophrenia spectrum disorders. Nevertheless, the name remains.
- Per Dr. Cummings terms BPD "affective dyscontrol disorder," found in the ICD-10 as Disruptive mood dysregulation disorder, (F34.81) which is more accurate (since these patients experience intense negative affective states causing interpersonal conflict, feelings of emptiness, fears of abandonment, impulsivity, and suicidality).
    - Calling BPD a "personality disorder" is incorrect, because it is a disorder of affective dysregulation that can be improved with treatment (i.e., it is not a permanent personality state).

Epidemiology of Borderline Personality Disorder

- Prevalence
    - Point: 1.4% (Lenzenweger et al., 2007)
    - Lifetime: 5.9% (Grant et al., 2008)
- Female-to-Male Ratio
    - DSM-IV reports 3:1



- Two epidemiological surveys of the U.S. population found no significant difference in lifetime prevalence in males and females (Lenzenweger et al., 2007, Grant et al., 2008).

Is Temperament Predetermined or Malleable?

- Aristotle's *Tabula rasa* (blank slate)
  - In his treatise, *De Anima*, Aristotle theorized that our minds are *tabula rasa* (blank slates), which are completely shaped by our experiences and environment (Duschinsky 2014).
  - This school of thought continued well into Sigmund Freud's psychoanalysis as he depicted personality being dictated by family dynamics (Duschinsky 2014).
- Temperament From Birth
  - In the New York Longitudinal Study from 1956-1988, researchers evaluated 138 infants and categorized them into the following categories:
    - Easy: (40%) generally cheerful, quickly establish regular sleeping patterns, not much affective arousal to novel stimuli, quickly adapt to new routines
    - Slow to warm ups (15%): low activity level, withdraw on their first exposure to new stimuli
    - Difficult (10%): "Often irregular in feeding and sleeping, are slow to accept new foods, take a long time to adjust to new routines or activities and tend to cry a great deal."
  - Of the 141 children they followed, 42 had behavioral problems. The "difficult" children accounted for the largest proportion of these cases (i.e., 70% of the "difficult" children developed behavioral problems) (Chess, Thomas, Rutter & Birth, 1963).

Environmental Influence on Borderline Personality Disorder

- In a prospective longitudinal study of 162 infants who became 28-year-old adults, borderline personality symptoms were significantly related to the following relational experiences (Carlson, 2009):
  - Attachment Disorganization (12-18m): beta = 0.20
  - Maltreatment (12-18m): beta = 0.20
  - Maternal hostility (42 months): beta = 0.42
  - Boundary dissolution: beta = 0.17

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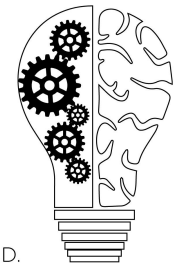
    - Family disruption (12-64 months): beta = 0.12
    - Emotional regulation (12 years): beta = 1.39
    - Issues with self-representation (12 years): beta = 0.79
- In a meta-analysis of 42 studies, 71.1% of BPD participants reported at least one adverse childhood experience (Porter 2019).
- A meta-analysis of case-control studies indicated that individuals with BPD are 13.91 (95% CI 11.11–17.43) times more likely to report childhood adversity than nonclinical controls (Porter 2019).

Clinician Perspectives		
Dr. Cummings	Dr. Pereau	Dr. Puder
• Childhood adversity is associated with loss of confidence and connectedness that leads to maladaptive behaviors. • This is reflected in relationships with others (i.e., splitting).	• In the past, clinicians thought that people with BPD who had experienced trauma had to wait for it "burn out" or for the illness to end in suicide. • Personal experience treating physicians with BPD revealed that some individuals with BPD do not have a history of trauma but do have a family history of BPD.	• There is not usually one single trauma that is responsible for BPD, so resolving a single trauma does not treat BPD. • Treatment comes through attachment, which is difficult and takes time.

Heritability of Borderline Personality Disorder

- A large scale total population family study in Sweden of **11,665 individuals clinically diagnosed with BPD out of 1.8 million individuals** found the following (Skoglund 2021):
    - Concordance rates:



        - **7.4% of MZ twins**
        - 4.2% of DZ twins
        - 2.5% of full siblings
        - 2.7% of maternal half siblings
        - 2.0% of paternal half siblings
    - **Heritability was estimated at 46%** (95% CI = 39–53) and the remaining variance was explained by environmental factors.
- **Other traits and conditions:**
    - Height
        - Heritability: 89-93% (Siventoinen, 2003)
    - ADHD
        - Heritability: 71-73% (Nikolas, 2010)
    - Schizophrenia
        - Heritability: 73%
        - Concordance rates: 33% MZ twins and 7% in DZ twins (Hilker, 2018)
    - Bipolar
        - Heritability: 60% (Johansson, 2019)

Epigenetics of Borderline Personality Disorder

- One study found that epigenetic alterations associated with BPD are more frequent in genes controlling estrogen regulation, neurogenesis and cell differentiation (Arranz, 2021).
- Childhood trauma may modulate the magnitude of epigenetic alterations in these genes (Arranz, 2021).

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Neurobiology of Borderline Personality Disorder

Clinician Perspectives		
Dr. Cummings	Dr. Pereau	Dr. Puder
• Therapy leads to structural and functional changes in the brain that can be seen on functional MRI (fMRI). • Dialectical behavioral therapy (DBT) was found to attenuate amygdala hyperactivity at baseline, which correlated with changes in a measure of emotion regulation and increased use of emotion regulation strategies (Goodman 2014). • An excessive amygdala response in the dominant temporal lobe translates into intense fear and anger (Cullen, 2011). • Overactivation of the hippocampal complex is related to dissociative states (Krause-Utz, 2017). • Hippocampal structures are smaller in these patients (likely	• Dr. Pereau emphasizes the neurobiology of BPD with patients in order to stress that there is not something wrong with their personhood or personality, but rather the condition is heritable and has a biologic basis.	• A meta-analysis of functional MRI (fMRI) findings in persons with BPD revealed heightened activation during processing of negative emotional stimuli in the left amygdala, left hippocampus, and posterior cingulate cortex as well as diminished activation in prefrontal regions (including the dorsolateral prefrontal cortex) (Schulze 2016).

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due to chronic exposure to stress hormones) (Krause-Utz, 2017). ● The prefrontal cortex is hypoactive, which translates into the inability to modulate affective responses (Schulze 2016). ● Therapies for BPD cause adaptation of these neural circuits. With consistent therapy, these circuits can return to homeostasis (Goodman 2014). ● Psychotherapy, just like medication, acts to slowly change neurobiology in positive ways (Goodman 2014).		react more than the frontal lobe (Schulze 2016).

Gunderson's Approach to Symptoms (P-I-S-I-A)

P: Psychotic/quasi-psychotic episodes (Gunderson, 2014)

- These are transient, fleeting, brief episodes of psychosis that persist over the patient's lifetime.
- They include depersonalization, derealization, dissociation, rage reactions, paranoia, fleeting or isolated hallucinations/delusions, and unusual reactions to drugs.
- **How do we distinguish psychosis and dissociation?**
    - Problem: Patients with BPD often get labeled "psychotic", but BPD is characterized by dissociative states.
    - **What is dissociation?**
        - Dissociation is the state of being *detached* from reality.
        - We all experience dissociation in our daily lives.
            - Example: When driving to work, we do not remember every single car we drove past.
        - Per Dr. Pereau, dissociative states become pathologic when a person loses connection to their personhood and becomes fully entranced, which can happen in people with BPD.

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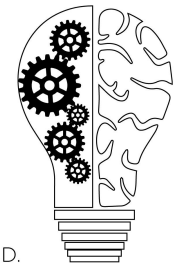

        - While people with BPD function normally most of the time, stressors can cause them to lose their hold on reality.
            - Reality testing quickly returns to normal once the episode ceases.
    - **What is psychosis?**
        - Psychosis is a state of *loss* of reality.
        - Psychosis can occur due to intense distress (i.e., brief psychotic disorder), substances (e.g., amphetamines, PCP).
        - Most psychotic illnesses are characterized by ongoing disturbance in reality testing associated with positive (delusions, hallucinations, etc.) and negative (blunting of affect) psychotic symptoms.
            - In contrast to dissociation, reality testing does not quickly return to normal in psychosis.
    - **How do we treat dissociation?**
        - Per Dr. Cummings, we reduce the underlying anxiety state.
        - In the inpatient or acute setting, we must quickly reduce anxiety and may use medications that enhance GABA transmission (gabapentin, oxcarbazepine), for example.
        - Some patients respond to pure empathetic support (because they often feel invalidated during their everyday interactions with others).
        - Takeaway: While SSRIs and antipsychotics have been used as adjunctive therapy in the past, the best treatment is psychotherapy.
        - Big longitudinal studies of mentalization-based therapy, for example, have shown that most people are able to stop taking medications who get partial and/or long-term treatment (Bateman 2008).

I: Impulsivity (Gunderson, 2014)

- This includes long-standing behaviors that may undergo symptom substitution and are categorized as follows:
    - Self-regulation difficulties: overeating, drug use, excessive spending, gambling, promiscuity, mood regulation, chronic pain syndromes, somatic preoccupation
    - Self-destructive behaviors: self-mutilation, suicidal ideation, sadomasochistic relationships, high-risk hobbies and behaviors, inattentiveness to self-care, sabotaging relationship and academic success

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Clinician Perspectives		
Dr. Cummings	Dr. Pereau	Dr. Puder
• DBT coaches how to avoid these "loophole" impulsive behaviors (Linehan, 1993). • Given BPD patients' risk of impulsivity, benzodiazepines are not recommended.	• These patients are seeking a secure and connected space with others. • When they feel insecure, unconnected and invalidated, they become desperate and engage in impulsive behaviors in order to feel secure and connected. • Impulsive behaviors are "loopholes" to gain connection and security in the moment, but the downstream effects include further disconnection. • Patients repeat impulsive behaviors because they are generally rewarding in the short term.	• Most of the therapies that work in patients with BPD (including DBT) involve a lot of connection with therapists over time. This includes being able to call the therapist directly when a tough situation comes up.

S: Social adaptation (Gunderson, 2014)

- Characterized by a superficially intact social veneer.

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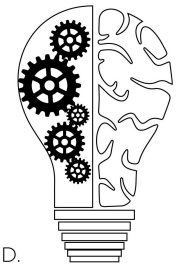

- High social performance may be erratic or inconsistent.
- Social adaptation erodes with stress, comorbid Axis 1, and illicit drug use, for example.
- Social adaptation is not as intact in lower-functioning patients.
- Higher-functioning patients may selectively adapt in the presence of an authority figure.

Clinician Perspectives	
Dr. Pereau	Dr. Puder
• Many physicians with BPD are highly adaptable sometimes and experience intense distress at other times. • Highly socially-adaptive people with BPD can likely be dropped in an unfamiliar place and quickly find a place to stay, connect with people to meet their needs (i.e., they can read others well). • Part of the treatment approach includes highlighting the positive aspects of functioning (ability to adapt, read others, and connect quickly with others) while subtracting less desirable behaviors. • Many high functioning patients can control the negative aspects of the disorder most of the time.	• Identifying social adaptation can be helpful in the diagnosis of BPD since people who are psychotic or manic are unable to maintain a social veneer.

I: Interpersonal relationships (Gunderson, 2014)

- Patients with BPD often have chaotic and unsatisfying relationships with others.
- They can be socially superficial, aloof, and detached.
- Close relationships are extremely intense, manipulative, dependent.
- They have intense fears of being alone and exhibit rage with their primary caretaker.

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Clinician Perspectives		
Dr. Cummings	Dr. Pereau	Dr. Puder
• Patients with BPD have poor sense-of-self. So if other people pull away, they are faced with intense feelings of emptiness. • Rule of interaction: The more chaotic the patient becomes, the calmer the therapist needs to be.	• Triggers for these patients include the feeling that people are either too close or are pulling away from them; changes in connection. • Many maladaptive behaviors are the product of attempting to regain connection.	• Relationships are often the cure and can help positively impact the neurobiology of BPD.

A: Affect (Gunderson, 2014)

- These patients are chronically dysphoric and/or labile.
- “Since adolescence, what percent of the time have you experienced a normal mood? By that I mean no anger, emptiness, anxiety, or depression?”
    - The answer is usually less than 20%.
- Patients with BPD also often have chronic, passive suicidality dating back to adolescence.

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Clinician Perspectives		
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• An excessive amygdala response in the dominant temporal lobe translates into intense fear and anger (Cullen, 2011). • Overactivation of the hippocampal complex is related to dissociative states (Krause-Utz, 2017). • Hippocampal structures are smaller in these patients (likely due to chronic exposure to stress hormones) (Krause-Utz, 2017). • The prefrontal cortex is hypoactive, which translates into the inability to modulate affective responses (Schulze 2016). • Therapies for BPD cause adaptation of these neural circuits. With consistent therapy, these circuits can return to homeostasis.	• While these patients do have some degree of agency, their underlying neurobiology leads to affective dysregulation when confronted with distressing situations. • Especially early on in their course, affective dysregulation occurs in response to minor events (someone not responding to a text, for example) and this dysregulation (feelings of distress) is out of their control.	• A meta-analysis of functional MRI (fMRI) findings in persons with BPD revealed heightened activation during processing of negative emotional stimuli in the left amygdala, left hippocampus, and posterior cingulate cortex as well as diminished activation in prefrontal regions (including the dorsolateral prefrontal cortex) (Schulze 2016). • When patients with BPD are stimulated, their emotional centers react more than their frontal lobes (Schulze 2016).

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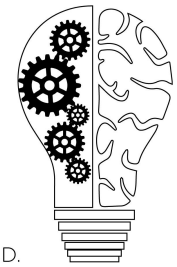

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• Psychotherapy, just like medication, acts to slowly change neurobiology in positive ways (Goodman 2014).		

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Approaches to Treatment

Clinician Perspectives		
Dr. Cummings	Dr. Pereau	Dr. Puder

• Rule of interaction: The more chaotic the patient becomes, the calmer the therapist needs to be.
• Therapists themselves should have support when working with these patients to prevent burnout (Linehan, 1993).
	• There remains much stigmatization of these individuals (Aviram, 2006).
	• Empathy between treatment provider and patient is so valuable because these patients have an intense desire to feel connected and safe.
	• Important to helping these patients gain insight is highlighting something positive about them in order to bond with and help empower these patients.
		• Relationships are often the cure and can help positively impact the neurobiology of BPD.
		• Treatment comes through attachment, which is difficult and takes time.
		• As a therapist, it's important to think about your own countertransference with these patients in order to not feel critical.
		• In DBT, the goal is to integrate the emotional and thought centers into a "wise mind" (Linehan, 1993).
		• In mentalization, the belief is that when someone is physiologically aroused they enter "psychic equivalence mode" (Fonagy and Target, 1997).
		  ○ The reality they believe IS reality.
		  ○ Example: You are thinking something shameful about them.
		  ○ They must calm down physiologically in order to leave

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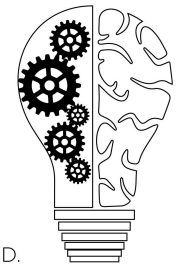

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Prognosis of Borderline Personality Disorder

- Per Dr. Cummings, many clinicians are pessimistic about the prognosis of BPD, but the recovery rate is as good as 85% of patients remitted at 10 years (Gunderson 2011).
- However, the suicide rate is very high at around 10% (Paris 2001).

Take-home Points

- Women now diagnosed with BPD may have been historically diagnosed with “hysteria”.
- The naming of BPD represents a long history of confusion concerning its etiology.
- BPD is common and most often diagnosed in females, although diagnostic bias may contribute to the 3 to 1 female-to-male ratio.
- While one’s temperament/personality was thought to be reliant on the environment for much of history, modern research suggests that temperament has some genetic basis.
- Childhood adversity and traumatic events are highly associated with the development of BPD.
- While the development of BPD is influenced by one’s environment, there remains a significant genetic component.
- Childhood trauma may impact one’s epigenetics, which means that trauma can literally be passed down through generations.
- BPD has a neurobiological basis (e.g., hyperactive amygdala, hypoactive frontal cortex), which can be positively altered through therapy.
- When diagnosing BPD, be mindful of the difference between psychosis and dissociation.
- Impulsive behaviors in people with BPD result from their desire for security and connection.
- Many people with BPD are highly socially adaptive and capable. Remember to highlight these positive aspects of their personality.
- People with BPD have a poor sense-of-self, which leaves them highly sensitive to interpersonal conflict.
- The dysphoric and labile affect seen in people with BPD has a clear neurobiological basis that can be changed through therapy.
- These patients are highly stigmatized by providers and nonproviders. Remember to show empathy. Part of the treatment is secure relationships and connection.

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Resources Mentioned

- The Brain That Changes Itself by Norman Doidge further explores neuroplasticity.
- **Dr. Pereau's PHP (Innovations for women and Courage for men): here**
- **Dr. Pereau's YouTube Video Recommendation: here**

Citations:

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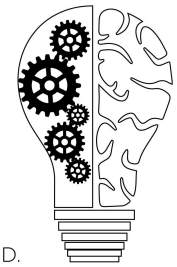

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Episode 115: Borderline Personality Disorder: History, Symptoms, Environment, Genetics & Brain Science

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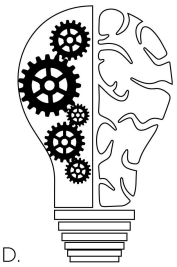

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