NIMH Research Domain Criteria Project (RDoC): Personality Disorders

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NEA-BPD Meet & Greet

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NIMH Strategic Plan: Goal 1.4

- "Develop, for research purposes, new ways of classifying mental disorders based on dimensions of observable behavior and neurobiological measures."

- Identify fundamental components that may span multiple disorders (e.g., executive function, affect regulation)

- Develop reliable and valid measures of these fundamental components for use in basic and clinical studies

- Determine the full range of variation, from normal to abnormal

- Integrate genetic, neurobiological, behavioral, environmental, and experiential components

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"If I only had a brain": Toward new models of mental disorders

- Shift from traditional clinical phenomenological views (cognition/emotion, mind/brain) to a view of behavior grounded in fundamental behavioral dimensions, as implemented by major brain circuits

- I.e., treat our data as constructs

- Measures in different response systems: behavior, self-reports (phenomenology), physiology
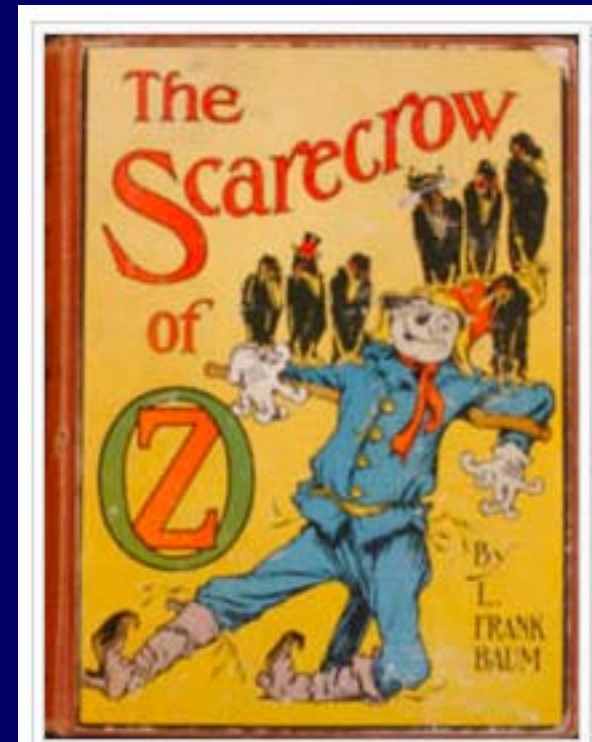
Continuity of motivational behavior from animals to humans
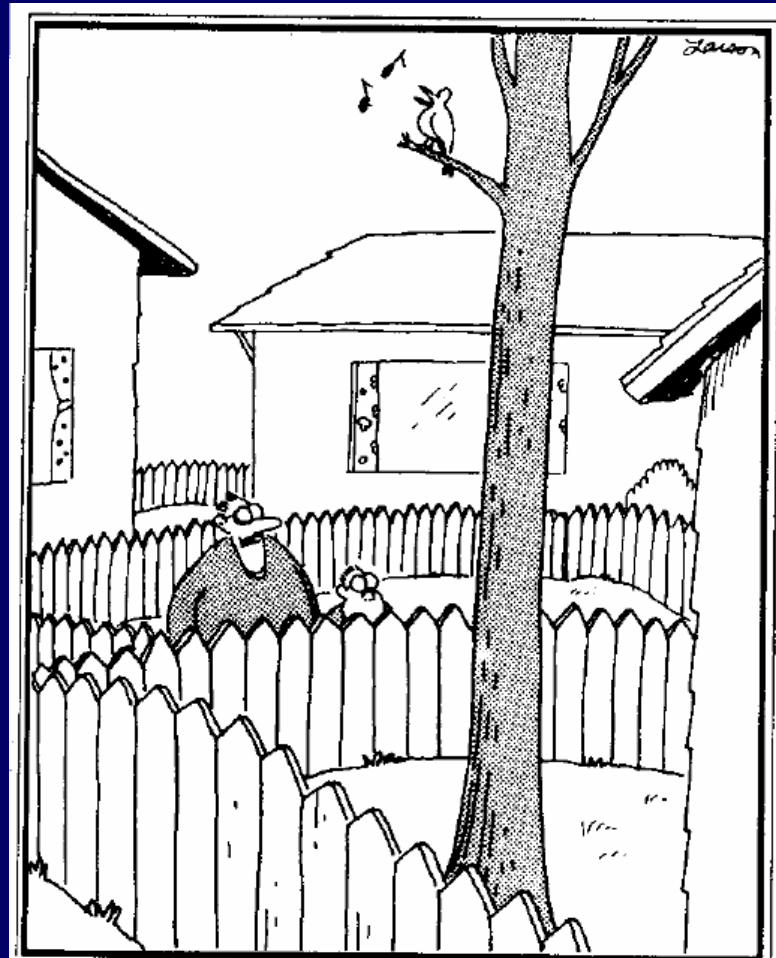
"And now, Randy, by use of song, the male sparrow will stake out his territory . . . an instinct common in the lower animals."

The public intellectuals catch up…..
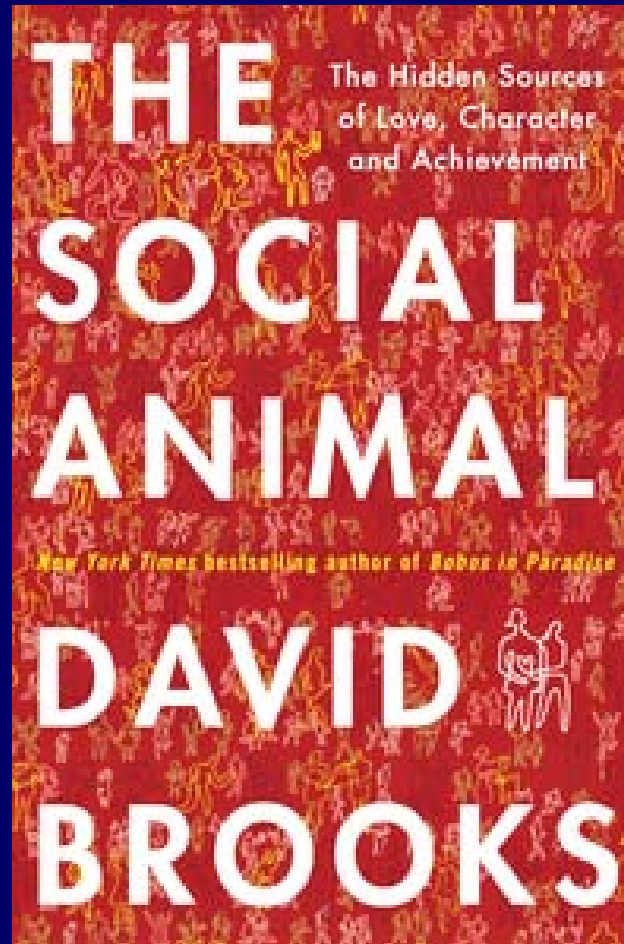
Dimensions of Borderline PD

Borderline as temperament variants, ca. 2003
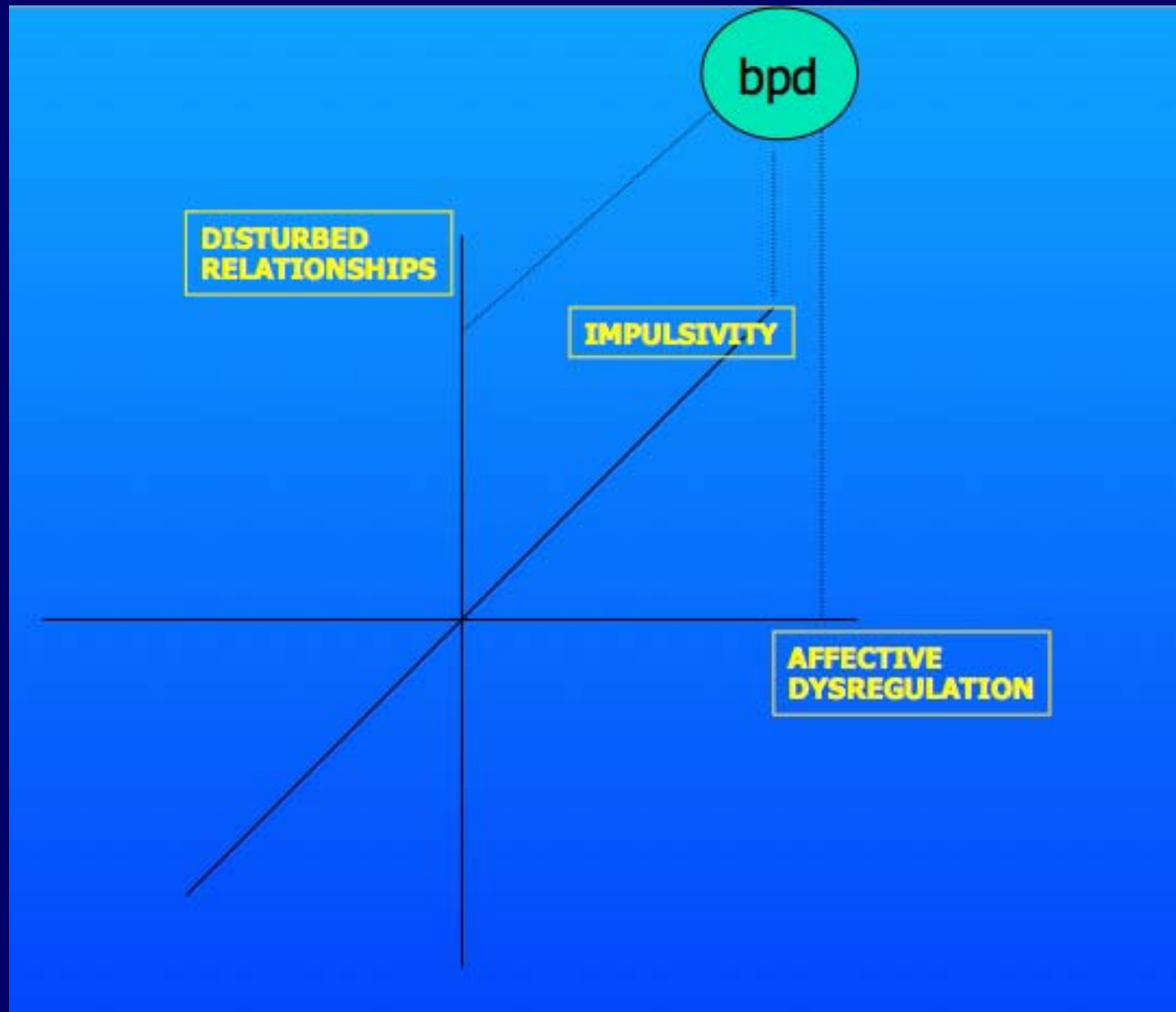
Making sense of a clinical picture

- Clinical syndromes as variants of normal dimensions of temperament
- Possibility to relate fundamental dimensions of behavior to the major brain systems

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Personality Traits

Proposed Revision	Rationale	Severity	DSM-IV

The Personality and Personality Disorders Work Group proposes five broad, higher order personality *trait domains* – negative affectivity, detachment, antagonism, disinhibition vs. compulsivity, and psychoticism – each comprised of several lower order, more specific *trait facets*. The broad trait domains are listed below in **boldface**, with the trait facets comprising each domain listed below the domain name. The proposed trait model is expected to evolve as data accumulate, both in the DSM-5 process per se and in the field more generally.

Negative Affectivity involves experiencing negative emotions frequently and intensely.

Trait facets: Emotional lability, anxiousness, separation insecurity, perseveration, submissiveness, hostility, depressivity, suspiciousness, restricted affectvity (-).

Detachment involves withdrawal from other people and from social interactions.

Trait facets: Restricted affectivity, depressivity, suspiciousness, withdrawal, anhedonia, intimacy avoidance,

Antagonism involves behaviors that put the person at odds with other people.

Trait facets: Manipulativeness, deceitfulness, grandiosity, attention seeking, callousness, hostility

Disinhibition involves engaging in behaviors on impulse, without reflecting on potential future consequences. Compulsivity is the opposite pole of this domain.

Trait facets: Irresponsibility, impulsivity, distractibility, risk taking, rigid perfectionism (-).

Psychoticism involves unusual and bizarre experiences.

Trait facets: Unusual beliefs & experiences, eccentricity, cognitive & perceptual dysregulation

Temperament and the Brain: Classic motivation centers

(behavior control; pre-frontal cortex, cingulate)

The Reward Pathway Deep within the brain are several structures that evolved to respond to pleasurable stimuli, such as food and sex, with a cascade of neurotransmitters, chief among them being dopamine. The cascade begins when neurons in the hypothalamus release serotonin. This triggers release of other neurotransmitters that in turn allow cells in the ventral tegmental area (VTA) to release dopamine. The dopamine travels to the amygdala, the nucleus accumbens, and certain parts of the hippocampus.

Along with the prefrontal cortex, these structures are involved in memory formation, explaining in part why visual and other cues associated with drug use can trigger intense cravings in people addicted to such substances as alcohol, nicotine, and cocaine. By hijacking the reward pathway, these drugs make addiction very difficult to overcome.

Nucleus accumbens

Hypothalamus

Prefrontal cortex

Hippocampus

Amygdala

(fear, defense)

Ventral tegmental area

(positive motivation)

RDoC: Matrix

v. 3.1, 6/30/2011	DRAFT RESEARCH DOMAIN CRITERIA MATRIX							
	– – – – – – – – – – UNITS OF ANALYSIS – – – – – – – – – – – – – – –							
DOMAINS/CONSTRUCTS	**Genes**	**Molecules**	**Cells**	**Circuits**	**Physiology**	**Behavior**	**Self-Reports**	**Paradigms**
Negative Valence Systems								
Acute threat ("fear")								
Potential threat ("anxiety")								
Sustained threat								
Loss								
Frustrative nonreward								
Positive Valence Systems								
Approach motivation								
Initial responsiveness to reward								
Sustained responsiveness to reward								
Reward learning								
Habit								
Cognitive Systems								
Attention								
Perception								
Working memory								
Declarative memory								
Language behavior								
Cognitive (effortful) control								
Systems for Social Processes								
Imitation, theory of mind								
Social dominance								
Facial expression identification								
Attachment/separation fear								
Self-representation areas								
Arousal/Regulatory Systems								
Arousal & regulation (multiple)								
Resting state activity								

Construct: A concept summarizing data about a specified functional dimension of behavior (and implementing genes and circuits).

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Perception								
Working memory								
Declarative memory								
Language behavior								
Cognitive (effortful) control		**Disinhibition**						
Systems for Social Processes								
Imitation, theory of mind								
Social dominance								
Facial expression identification								
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RDoC: Matrix

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Emotion regulation and the amygdala:
Viewing threatening faces
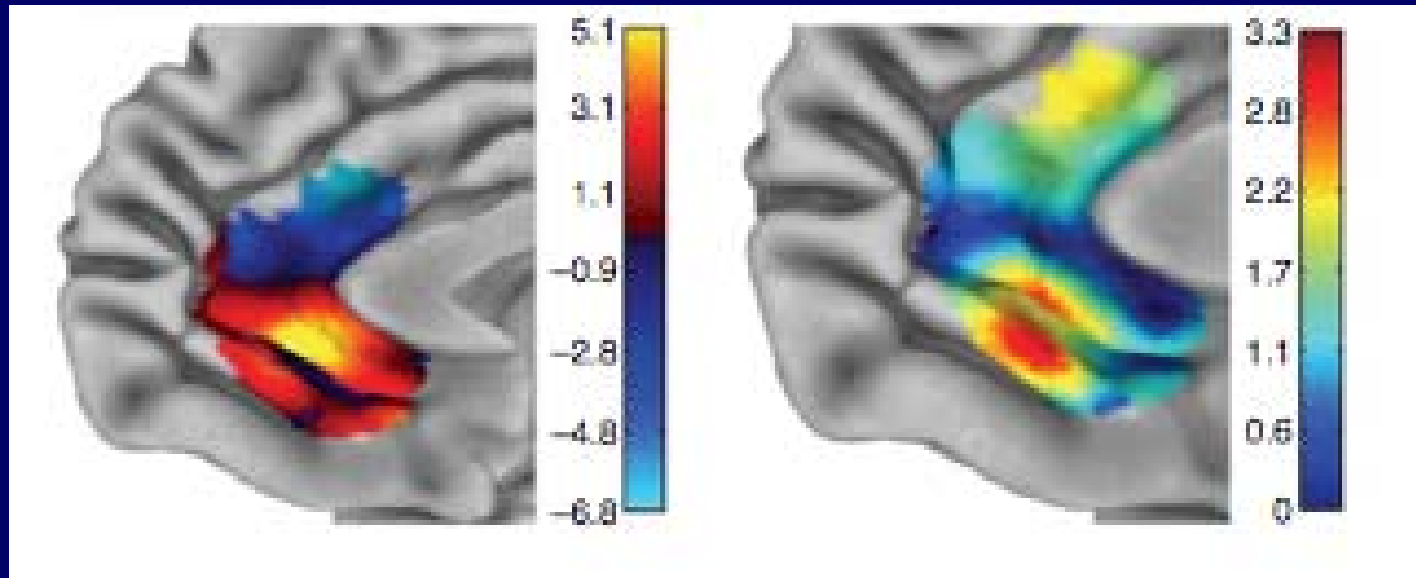
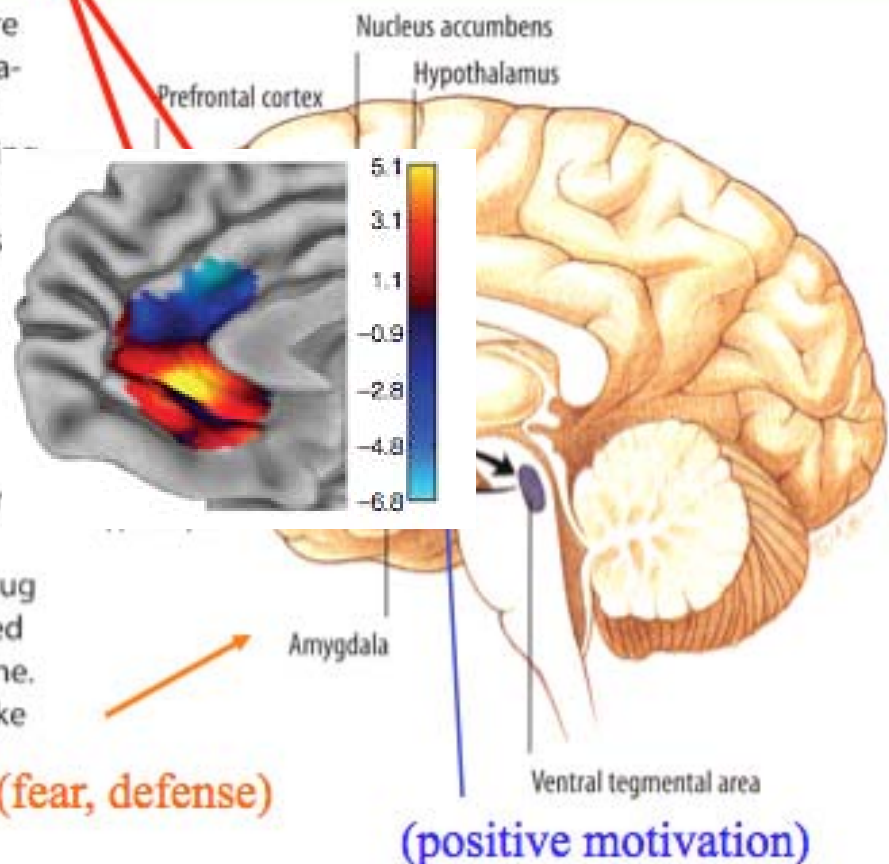

L/L 5-HTTLPR   S carrier 5-HTTLPR

Pezawas, Meyer-Lindenberg, & …. Weinberger, *Nature Rev. Neuros*., 2005

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(behavior control; pre-frontal cortex, cingulate)

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Ventral tegmental area

(fear, defense)

(positive motivation)

Emotion regulation in…….

- Borderline PD

- Other PDs

- Depression

- Anxiety disorders

- Bipolar disorder

- ……….. Why not study the mechanism?

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RDoC and Clinical Use

- Not intended for clinical use at the current time

- Clinical needs versus research needs

- RDoC: To build up a literature that can lead to better diagnosis, and thus treatments

- Agnostic to current disorders (Collins)

- Is Borderline PD a cohesive syndrome, or a fuzzy location in dimensional space? – to be determined

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RDoC: Summary/Conclusions

- Change in perspectives on psychopathology

- Inform future versions of psychiatric diagnosis

- Personalized medicine

- New treatment development focused on behavioral/brain mechanisms: Pharmacological, behavioral, devices, and combined

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