



Neurobiology of Anger Course Worksheet

1. Which term refers to the internal emotional experience that may or may not be outwardly expressed?
 - A. Aggression
 - B. Hostility
 - C. Anger
 - D. Irritability
2. Epidemiological research suggests that approximately what percentage of U.S. adults report recurrent, impairing anger episodes?
 - A. 3.1%
 - B. 7.8%
 - C. 12.4%
 - D. 20.0%
3. Which brain region is most associated with rapid threat detection and anger escalation?
 - A. Hippocampus
 - B. Amygdala
 - C. Thalamus
 - D. Cerebellum
4. In cognitive–affective models, which of the following describes the tendency to interpret ambiguous cues as hostile?
 - A. Hostile attribution bias
 - B. Catastrophic misinterpretation
 - C. Rumination bias
 - D. Cognitive fusion
5. Trait anger is best described as:
 - A. A stable predisposition toward frequent or intense anger
 - B. Anger experienced only during conflict
 - C. Anger resulting from acute interpersonal events
 - D. Anger limited to trauma survivors
6. Which construct reflects a persistent, negative cognitive orientation associated with mistrust and cynicism?

- A. Irritability
- B. Hostility
- C. Fear response
- D. Contempt

7. The anterior insula contributes to anger primarily through:

- A. Encoding procedural memory
- B. Reducing physiological arousal
- C. Mapping bodily states linked to anger
- D. Inhibiting motor impulses

8. Reduced connectivity between the amygdala and ventromedial prefrontal cortex (vmPFC) is linked to:

- A. Enhanced social bonding
- B. Impaired anger regulation
- C. Increased cognitive flexibility
- D. Decreased threat detection

9. Which brainstem structure plays a key role in coordinating fight-or-flight responses and defensive aggression?

- A. Basal ganglia
- B. Hypothalamus
- C. Periaqueductal gray (PAG)
- D. ACC

10. The “induction network” includes which set of regions?

- A. Amygdala, insula, hypothalamus, PAG
- B. vmPFC, dlPFC, ACC
- C. Hippocampus, cerebellum, corpus callosum
- D. Striatum, thalamus, medulla

11. Low serotonergic functioning is most strongly associated with:

- A. Cognitive rumination
- B. Emotional numbing
- C. Impulsive aggression
- D. High HRV

12. Which neurotransmitter is most associated with the reinforcing and rewarding aspects of retaliatory behavior?

- A. Serotonin
- B. GABA
- C. Dopamine
- D. Oxytocin

13. Which physiological indicator reflects parasympathetic flexibility and emotional regulation capacity?

- A. Elevated systolic blood pressure
- B. Cortisol awakening response
- C. Startle reflex magnitude
- D. Heart rate variability (HRV)

14. The dual-hormone hypothesis focuses on interactions between:

- A. Oxytocin and norepinephrine
- B. Testosterone and cortisol
- C. Dopamine and serotonin
- D. Estrogen and progesterone

15. Chronic anger has been associated with elevations in which biological marker?

- A. Vitamin D
- B. Melatonin
- C. C-reactive protein (CRP)
- D. Thyroxine

16. Genetic studies indicate that low-activity variants of which gene increase vulnerability to impulsive aggression when combined with early adversity?

- A. COMT
- B. DRD4
- C. MAOA
- D. 5-HTTLPR

17. Which attachment style is linked with heightened anger sensitivity and difficulty regulating interpersonal emotions?

- A. Secure
- B. Anxious
- C. Avoidant
- D. Disorganized

18. Which neurodevelopmental condition is strongly associated with deficits in inhibitory control and anger regulation?

- A. OCD
- B. ADHD
- C. Eating disorders
- D. Tourette syndrome

19. In Intermittent Explosive Disorder (IED), neuroimaging frequently shows:

- A. Heightened amygdala reactivity and reduced prefrontal activation
- B. Increased hippocampal volume
- C. Enhanced vmPFC inhibition
- D. High HRV at baseline

20. Anger in PTSD is often driven by:

- A. Reward overactivation
- B. Hypervigilance and heightened salience network activation
- C. Excessive cognitive flexibility
- D. Increased vmPFC functioning

21. A key distinguishing feature of anger in Borderline Personality Disorder (BPD) is:

- A. Exclusively impulsive outbursts
- B. Minimal physiological arousal
- C. Affective lability and rapid emotional shifts
- D. Consistent low amygdala reactivity

22. In psychotic disorders, anger and aggression often arise from:

- A. Increased autonomic recovery
- B. Threat misperception and aberrant salience
- C. Excessive parasympathetic activation
- D. Elevated HRV

23. Which measure assesses state anger, trait anger, expression, suppression, and control?

- A. Beck Anxiety Inventory
- B. STAXI-2
- C. MMPI-2 A scale
- D. ASQ

24. A core CBT strategy that directly targets maladaptive interpretations driving anger is:

- A. Mind-body grounding
- B. Cognitive restructuring
- C. Values clarification
- D. Sensory modulation

25. Mindfulness reduces anger reactivity by:

- A. Broadening attentional awareness and decreasing automaticity
- B. Repressing emotional experience
- C. Increasing sympathetic activation
- D. Eliminating negative thoughts

26. Affect labeling helps reduce anger intensity by:

- A. Increasing dopamine release
- B. Activating right ventrolateral prefrontal cortex (rVLPFC) and reducing amygdala activity
- C. Triggering the HPA axis
- D. Stimulating the PAG

27. DBT's distress-tolerance "TIPP" skills primarily target:

- A. Cognitive reframing
- B. Interpersonal schemas
- C. Autonomic hyperarousal
- D. Memory consolidation

28. Opposite action, within DBT emotion-regulation skills, involves:

- A. Redirecting blame
- B. Engaging in behaviors contrary to anger urges
- C. Avoiding difficult emotions
- D. Identifying core beliefs

29. Cognitive Bias Modification (CBM) targets which type of cognitive process?

- A. Conscious logical reasoning
- B. Automatic interpretive and attentional biases
- C. Episodic memory recall
- D. Language-based processing

30. Working memory training reduces anger primarily by:

- A. Increasing limbic activation
- B. Promoting emotional suppression

- C. Strengthening executive control and delaying impulsive reactions
- D. Enhancing sympathetic arousal