Objectives

- Identify a model for understanding the cognitive processing of interpersonal violence, crime and trauma.
- Define information processing and trauma learning.
- List five response patterns identified in trauma victims.

The Neurobiology of Trauma

- The anatomy of trauma is predicated on a conceptual framework drawn from:
  - Neuro-psycho-social concepts of information processing and
  - The role of the neuromodulatory systems on cognition and memory.

The Neurobiology of Trauma

- This portion of the presentation will focus on the four-phase trauma learning model and the response patterns noted in victims of interpersonal violence and crime.
Conceptual Framework

- **Limbic system**
  - filters and codes incoming information
  - group of brain regions
  - center for alarm and protection
  - regulation of:
    - arousal
    - emotion
    - sleep/rest
    - memory
    - attachment
    - sexual response

Conceptual Framework

- **Assumptions**
  - experience is sensory based
  - filtered through limbic system
  - unsuccessful management transfers to survival response of numbing/dissociation
  - Post-traumatic Stress Disorder
    - distorts emotional expression
    - links to fear
    - links to aggression

FIGHT OR FLIGHT?

- A PRIMITIVE DRIVE
- HUMANS HAVE THE INNATE NEED TO SURVIVE
- HUMANS ALL FEEL THE NEED TO BE IN CONTROL
- THE TWO SOMETIMES CAN BECOME BLURRED AND ANGER AND AGGRESSION OR FEAR AND AVOIDANCE CAN BECOME EXAGGERATED

The Information Processing of Trauma
THE LIMBIC SYSTEM

- Located in the cortical and subcortical portions of the brain
- Mediates the primitive emotions and basic drives
  - For example:
    - Appetite
    - Sex drive
    - Aggression & emotional expression
    - Startle
    - Sleep and waking

Information Processing of Trauma Model

- Phase 1: Pre-trauma phase
  - Age
  - Personality development
  - Family structure
  - Sociocultural factors
  - Prior trauma

AMYGDALE

- Receives and interprets sensory information
  - "Cheesecloth"
- Plays critical role in learning and memory

Information Processing of Trauma Model

- Phase 2: Trauma Encapsulation Phase
  - Input of event: Alarm response
    - Event information
    - Offender behavior: access, control, activities, secrecy
    - Environmental cues

- Phase 2: (cont)
  - Throughput: Alarm reaction
    - Arousal disharmony: fight/flight/freeze
    - Sensory: dissociation, numbing, loss of sensation
    - Perceptual: survival images
    - Cognitive: amnesia

- Phase 2: (cont)
  - Throughput: Alarm reaction
    - Defenses
      - Denial
      - Fragmentation of self
      - Repression
Information Processing of Trauma Model

- Phase 2-Output:
  - Trauma learning
    - encoding in limbic system
    - stored information in memory
    - disconnected information
      - sensory
      - perceptual
      - cognitive
      - interpersonal

- Phase 2:
  - Personal constructs
    - distortions of thoughts/beliefs
    - depletion of energy
    - disruption of development
    - distortion and diminution of power and awareness

- Phase 3: Disclosure
  - Social response of:
    - family
    - peers
    - school
    - investigation
    - treatment
    - legal process
    - media

- Phase 4: Post-trauma outcome
  - Behavioral patterns and patterns of disconnected information:
    - Integrated
    - Anxious
    - Avoidant
    - Aggressive
    - Disorganized
Post-traumatic Stress Disorder
(Adapted from Burgess, Hartman & Clements, 1995)

Stressor overwhelms biological systems for managing stimuli
Integrated
No PTSD
Depression reactions
Low sexual involvement
Drugs reduce tensions
Somatization
Avoidant
High risk behaviors
Anti-social acts
Drug abuse (stimulant)
High sexual involvement
Aggressive
Re-enactment
Symbolic elaboration of trauma
Psychotic reactions
Displacement
Trauma Learning
PTSD ACUTE CHRONIC
Biphasic response / Intrusive
Avoidant / Numbing
Hyperarousal

EVENT

ASSESSMENT
- HEAD INJURY
  - INCLUDING MILD CONCUSSION OR BEING "KNOCKED OUT"
  - MAJOR AND MINOR HEAD INJURIES
  - DEMONSTRATE EPISODES OF RAGE AND VIOLENCE

NEUROTRANSMITTERS
- SEROTONIN 5-HT
- GABA
- DOPAMINE
- NOREPINEPHRINE
- ACETYLCHOLINE

DRUG & ALCOHOL ABUSE
- INCREASED POTENTIAL FOR AGGRESSION WITH SUBSTANCE ABUSE

DRUG ABUSE
- DRUGS MOST OFTEN IMPLICATED FOR AGGRESSIVE BEHAVIOR
  - DEPRESSANTS (ALCOHOL/BENZODIAZAPINES)
  - STIMULANTS (COCAINE/AMPHETAMINES/CAFFEINE & NICOTINE)
  - HALLUCINOGENS (PCP/MARIJUANA)
  - NARCOTICS