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Implementing Psychological Methods in the Management of Trauma-Associated Tinnitus

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Trauma, Tinnitus, and Disorders of Sound Tolerance

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All Things Financial.
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WELCOMES YOU TO
GREER STADIUM
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BALL
STRIKE
OUT
AT BAT
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Bud
Copley
US LEC
voice / data / Internet
TWIN OAKS
SHONEY'S
GOLD'S GYM
333-3633
SUPERCUTS
HAIRCUTS & COLOR
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Enterprise
BEST BUY
Shirley Zeitlin & Company, Realtors
YOU DUMP IT, YOU DRINK IT
USED MOTOR OIL CONTAMINATES OUR WATER

Tinnitus, Hyperacusis, and Posttraumatic Stress

1. Review of trauma's effects and PTSD
   - Childhood trauma
2. Traumatic memory and tinnitus
3. Clinical data from Mountain Home
4. Management: Addressing expectations
   - Trauma counseling and tinnitus
   - Hearing aid study ongoing

PTSD Changes People and Character

- Judith Herman (1997)
  - "All those norms of human behavior which are inculcated in one from the cradle are subjected to deliberate and systematic destruction. …Only by maximum exertion of will is it possible to retain one's former, normal scale of values." (Trauma and Recovery; p. 77-78; re: a survivor)
  - The more pronounced and longer in duration the captivity/trauma, the more likely one loses the struggle to retain their sense of value, or their character
  - "…the study of psychological trauma is an inherently political enterprise because it calls attention to the experience of oppressed people." (p. 237)

PTSD: Perpetrator, Victim, Witness

- Jonathan Shay (1994) comments on the perpetrator of trauma experiencing PTSD:
  - Violation of "what is right" or social/moral order (whether in families or the military) "inflicts manifold injuries" on the perpetrator/victim (particularly true for military veterans due to the moral imperatives imposed on soldiers)
  - As in a family abuse situation, violation of a moral order affects the most vulnerable most profoundly (children/combat personnel)
- Consider also Lifton's interviews w/ Nazi Doctors
- Witnesses to massacres or their aftermath

Posttraumatic Stress Disorder

- Origins of the PTSD diagnosis (see Herman, 1997 for review, examples, definitions, etc.)
  - PTSD first appears in the DSM-III (1986) as distinct from "gross stress reaction" which did not consider the durability of the symptoms
  - Long-term trauma or captivity increases severity and number of symptoms; Herman has proposed terming such cases "complex" PTSD (ie., POWs, concentration camp survivors, domestic abuse victims)
  - Shay encourages us to consider PTSD an injury affecting the character and core beliefs of a victim as opposed to a mental health disorder
    - "We don't say that someone with a broken arm has 'broken arm disorder.'"

PTSD: Diagnostic Tests

- Mississippi Scale for Combat-Related PTSD (Keane et al., 1988); standardized on 2200 vets
  - 35-item questionnaire (also a 39-item version, but the Quillen VAMC section uses the former)
  - 1-5 points for responses; 107-point cut-off is recommended for Dx

  Sample Questions:
  - I wonder why I am still alive when others died in the military
  - I feel there are certain things that I did in the military that I can never tell anyone because no one would understand.
  - When I think of things I did in the military I wish I were dead
  - Nobody understands how I feel, not even my family.
  - The people who know me best are afraid of me.

Traumatic Brain Injury (TBI)

- Traumatic Brain Injury: Data from CDC (2010)
  - 1.7 million cases/year in US
  - Fatal in 52,000/yr.
  - Approx. 275,000 hospitalized
  - 1,365,000 ED visits; nearly 500,000/year ages 0-14
  - 62% increase in ED visits for 0-14 yrs. TBI (2002-6)
  - Contributing factor in 30.5% of all injury-related deaths
  - Known as risk factor increasing probability of Alzheimer's, epilepsy, Parkinson's
  - 5.3 M Americans with permanent effects

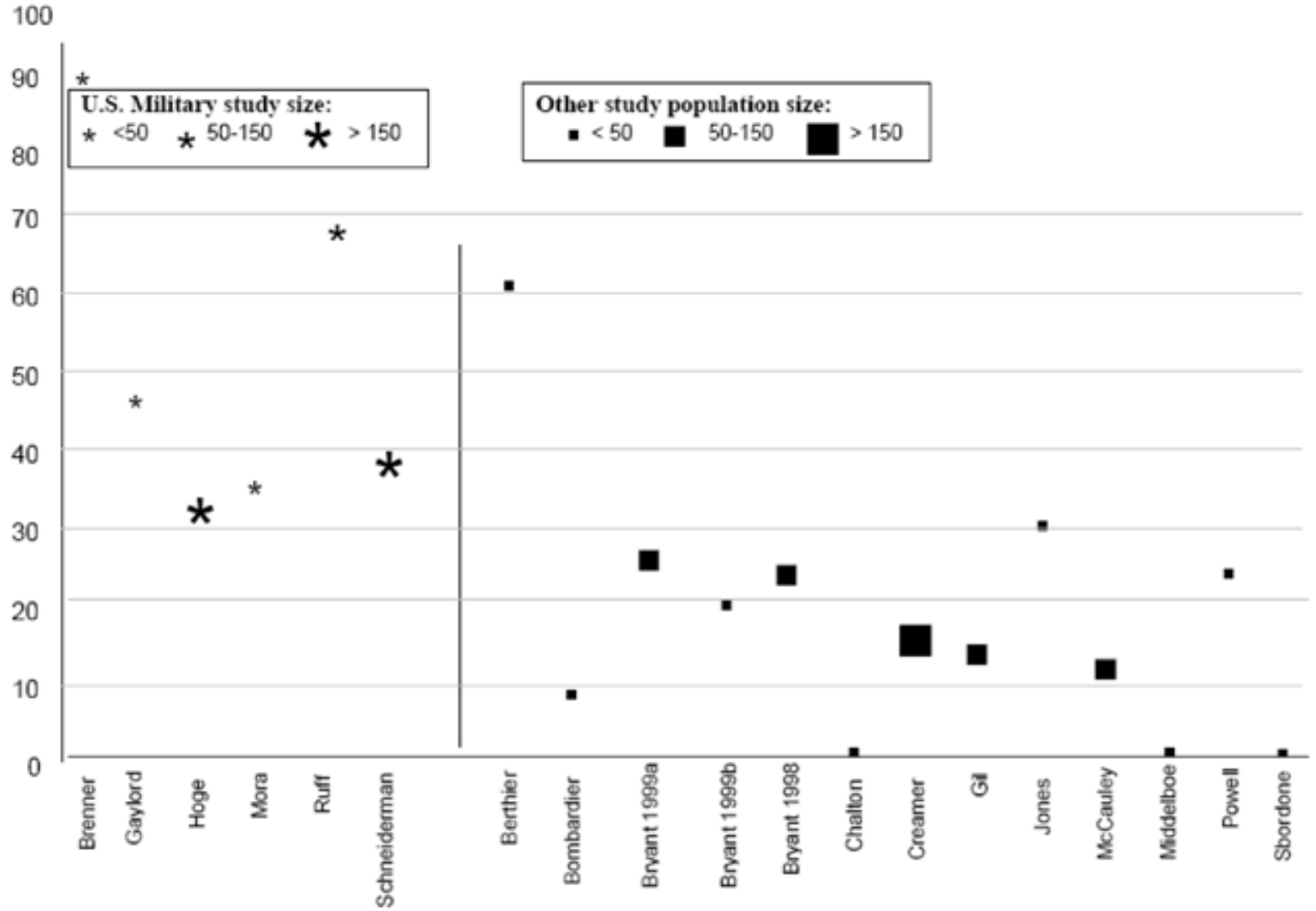
Traumatic Brain Injury (TBI)

- In Military (2016 Med. Surveillance Rpt.)
  - 276,858 pts w/ first-time dx of TBI
  - More than 11/1000 active military affected
  - Currently-deployed individuals 1.5x more likely than individuals not yet deployed and 1.2x more likely than those previously deployed to experience TBI

Traumatic Brain Injury (TBI)

- TBI: Association with psychological conditions (Brain Injury Assoc. of America)
  - Approx. 6% of Americans suffer significant depression at some point in their lives
  - Nearly ten times that number experience at least one episode of severe depression while recovering from a traumatic head injury
  - Trauma ➡ Psychological effects ➡ Influence on tinnitus (mutual reinforcement, hyperarousal, increased attention, etc)

mTBI and PTSD Co-occur in military and civilian populations (Carlson, 2009; VA HSR&D analysis)



PTSD: At-Risk Populations

- Civilian
  - Victims of sexual abuse/sex trade
  - Domestic violence
  - Motor vehicle accident survivors
  - Hurricane, natural disaster survivors
  - Indentured servitude
- Military
  - Combat trauma (either as perpetrator, victim, or observer)
  - Blast survivors (w/ mTBI)
  - Childhood trauma victims
- Victims of Captivity (whether military or civilian)

PTSD in Childhood: Risk Factors

- Abusive environment at home
- Mental health disorder in the family
- Displacement following war, natural disaster
- Unsafe environment at school and neighborhood
- MVA
- Medical trauma
- Traumatic loss of sibling or parent
- Captivity/slavery
- Combat exposure

Herman (1997) and Bremner (2002) review evidence supporting the powerful influence of childhood trauma as a predisposing condition for complex PTSD

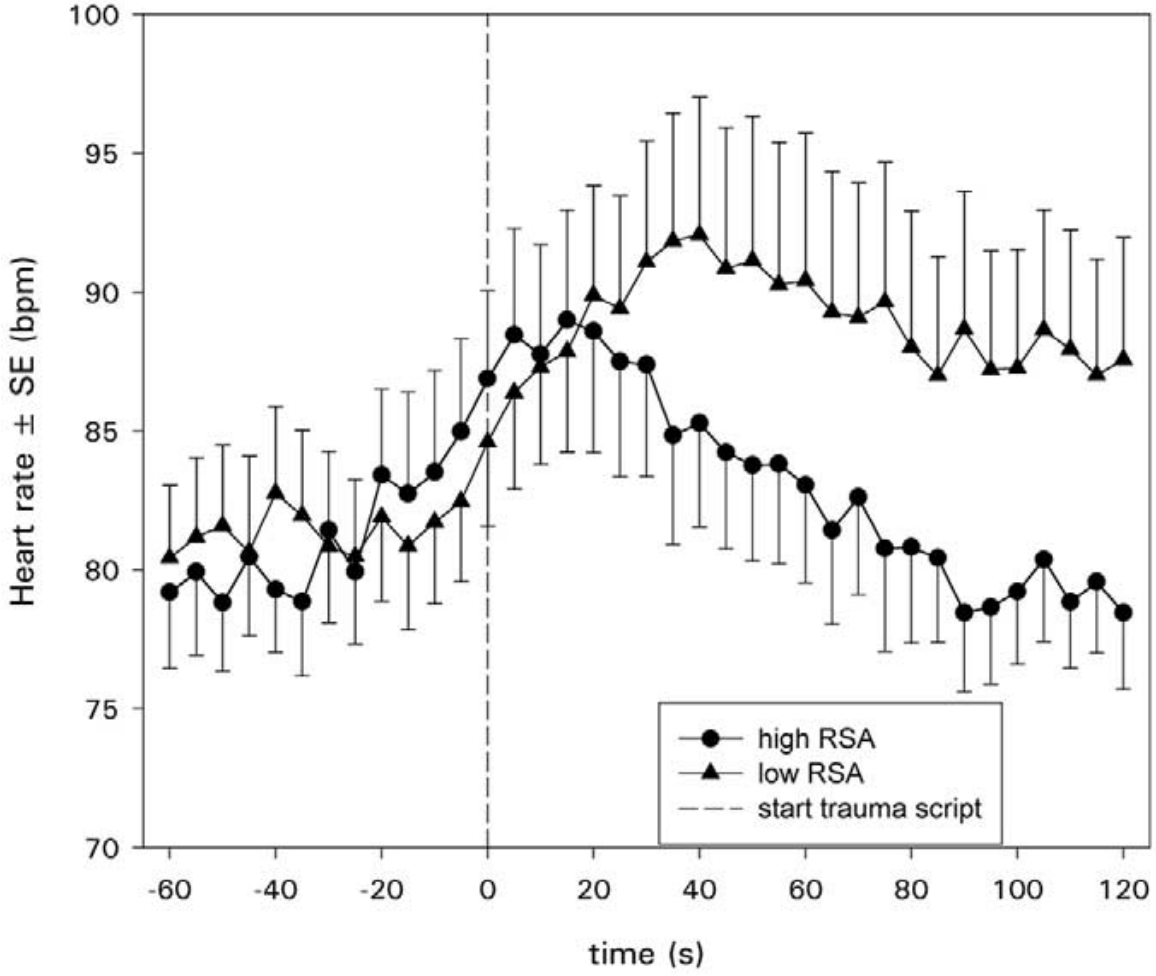
Childhood Trauma and PTSD

- Finkelhor et al (2005; 2011; The Developmental Victimization Studies (n>6500); telephone interviews
  - 54 forms of victimization identified
  - Children aged 2-17 yrs
  - 71% were exposed to one or more incidents (as victim or witness)
  - 70% of those children were exposed to multiple events
  - 53% experienced physical assault
  - 8% sexual trauma
  - 36% witnessed violence
  - The mean number of exposures was 3.0; a victimized child had a 69% chance of experiencing at least one more episode within one year

Childhood Trauma: Durable Physical Consequences

- Cardiac: Measures of respiratory sinus arrhythmia (RSA) and heart rate variables such as cardiac vagal tone
  - Patients with PTSD displayed:
    - Low vagal tone (or low RSA); associated with deficient arousal and emotion regulation capabilities (Thayler and Lane, 2000)
    - Heart rate increases noted during reading of trauma script that remained above levels observed in patients without trauma (Sack et al., 2004)
    - Pts with high RSA displayed recovery of pre-exposure heart rate more quickly and consistently

Childhood Trauma: long-term effects of the exposure; RSA (Sack et al, 2004)



PTSD: Behavioral Diagnostic Markers

- As defined in the Diagnostic and Statistical Manual of the APA (DSM-V; 2013), the criteria for a diagnosis of PTSD include:

  A: Exposure to traumatic stressor

  B: Re-experiencing symptoms (flashbacks; acknowledges considerations for at-risk children)

  Avoidance and numbing symptoms split in new version:

  C: Focuses on avoidance behaviors

  D: Cognitive distortions and mood changes related to trauma and its reminders

  E: Symptoms of increased arousal

  F: Duration > one month

  G: Significant distress or impairment of functioning

PTSD: Behavioral Diagnostic Markers

- The DSM-V (2013 revision) manual further specifies the symptoms of increased arousal – patients must demonstrate 2 of the following:
  - Sleep Disorder (difficulty going to sleep and/or staying asleep)
  - Irritability or outbursts of anger
  - Difficulty concentrating
  - Hypervigilance (anxiety, stress)
  - Exaggerated startle response (sound tolerance problems)

Distinguishing PTSD from other disorders

- Breslau (2002)
  - Symptoms linked to specific event(s)
    - Nightmares, avoidance, numbing, increased arousal, etc., are all symptoms associated with a variety of psychiatric disorders
    - The connection with a distinct event is required to endorse PTSD diagnosis
    - Implications for sudden onset tinnitus, linked to a specific event that also produces PTSD are essential to consider during patient interviews
- Herman (1997)
  - Traumatized people cannot “tune out” repetitive stimuli that others would find “merely” annoying

Tinnitus with Co-morbid PTSD from Mtn. Home Clinic

- Expected complications (Schnurr & Janikowski, 1999; clinical experience)
  - Psychological – increased likelihood of depression, anxiety, irritability, sense of isolation, suicide ideation
  - Physical – chronic fatigue, chronic pain, increased incidence of RA, diabetes, HBP, etc.
  - Auditory – sound tolerance problems, exaggerated startle, concentration/attentional deficits
- Unexpected complications
  - Influence/prevalence of sudden-onset tinnitus
  - Increased likelihood of ‘reactive’ tinnitus
  - Also unexpected was the influence of tinnitus on PTSD (Hinton et al., 2006): Mutual reinforcement

Experience, Memory and Learning

- William James (1890): "An impression may be so exciting emotionally as almost to leave a scar upon the cerebral tissues."

- Aage Møller (2010): "Activation of neural plasticity can be purposeful and beneficial, or it can be purposeful, but not beneficial"

PTSD: Neural Mechanisms

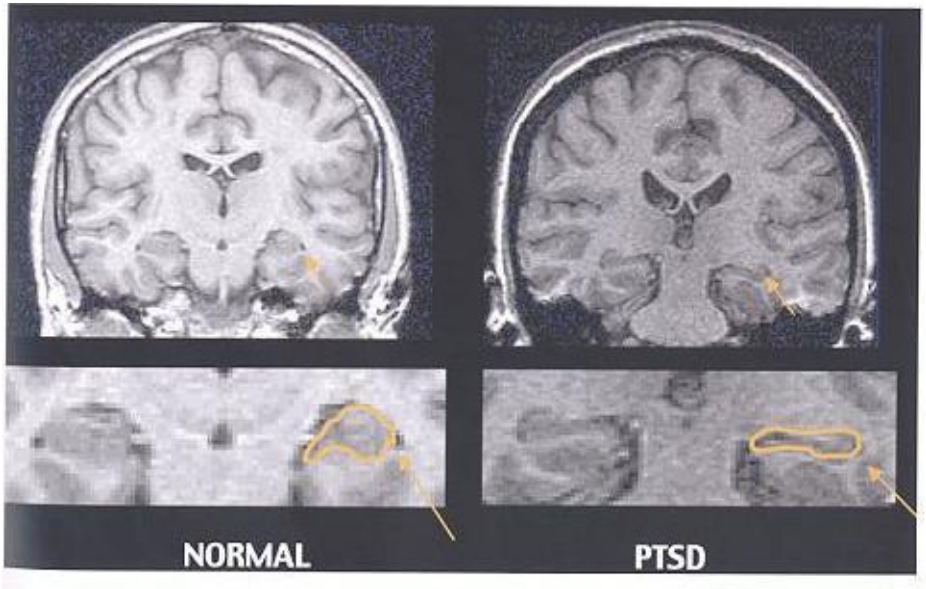
- Animal models of fear conditioning and acute stress supported subsequent human brain imaging results
- Three major brain structures are implicated in the animal models:
  - The amygdala, activated by fear and stress
  - The hippocampus, which is important for memory and conditioning but which is impaired and even damaged by excessive arousal states (Landfield et al., 1981), and….
  - The prefrontal cortex (PFC), which should, under normal conditions exert inhibitory control over the amygdala

PTSD Mechanisms: Cortisol Phys. Effects

- Primary control over cortisol levels is mediated by pituitary gland and the hypothalamus
  - The stress-provoked hyperactivity of the Hypothalamus-Pituitary-Adrenal (HPA) axis activity is well-documented in trauma victims (Schnurr & Janikowski, 1999)
- When present at chronically high levels, cortisol:
  - Produces transient infertility
  - Reduces serotonin levels in the brain
  - Reduces quality and quantity of sleep; inc. in blood sugar and blood pressure
  - Reduces immune system activity
  - Contributes to adrenal fatigue

PTSD Mechanisms: Cortisol Effects

- Chronic elevated levels damage cells in the hippocampus
  - Decreased volume has been recorded in hippocampus of combat veterans (Bremner, 2002) and was first discussed in animal studies in 1981 (Landfield et al., 1981)



  - Learning impairments, deficiencies in memory retrieval (specifically w/ regard to coping strategies)
  - "Persistence of valid adaptations to danger into a time of safety afterward." Shay, 2002

Experience, Plasticity, and Tinnitus

Traumatic events that produce auditory insult raise the probability that individuals will develop tinnitus.

Does the process by which traumatic/emotional memories are formed increase the likelihood that a victim develops and maintains distressing tinnitus?

Would the tinnitus then be associated with the event and have the potential to trigger and/or be triggered by memories of the event long after the event occurred?

Psychological Stress vs. Physiological Stress

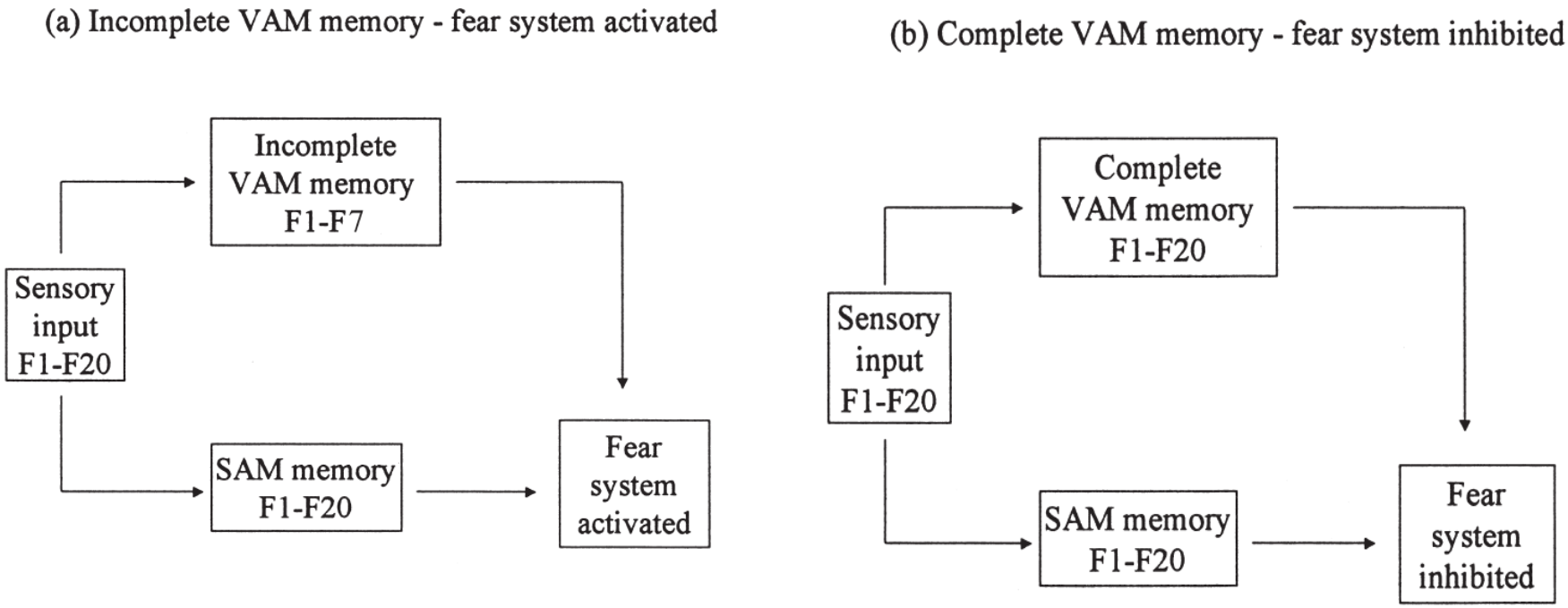
- Lupien et al., 2009 (Nature Reviews)
  - The authors specify two types of stress:
  - Physiological stressors directly influence body systems
  - Psychological stressors influence “higher-order sensory cognitive processing” (p. 436; Nature Rev., 2009; Vol. 10)
    - Such stressors’ effects may be anticipatory, based on learned and memorized expectations

  - Consider the potential value of counseling that modifies for the patient the tinnitus value; pro-active thinking and accurate appraisals of stimuli could reduce psychological stress and minimize perceived need to practice avoidance

Tinnitus, PTSD, and "Deep Learning:" Provoking the Fear Response (Brewin, 2001)

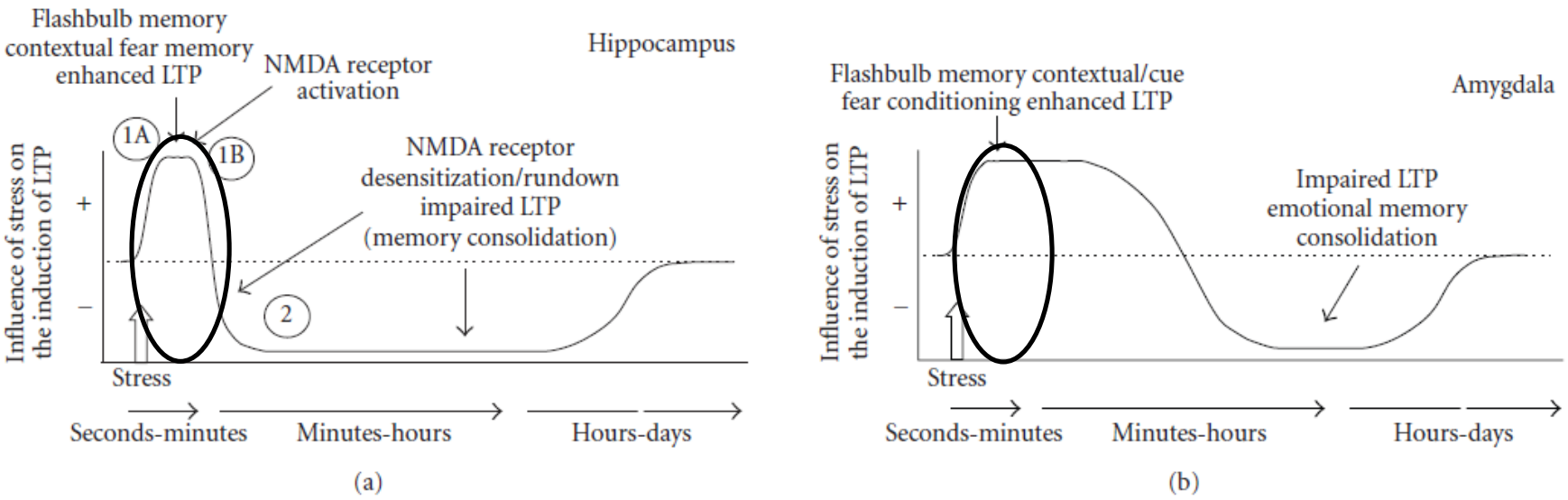
- Two elements of memory relevant to patient's understanding and evaluation of trauma/tinnitus experience
  - Verbally Accessible Memory (VAM) – declarative memory; the production and maintenance of a narrative that facilitates contextualizing the trauma (or tinnitus) within the person's autobiographical knowledge base: Associated with activity in the hippocampus
  - Situationally Accessible Memory (SAM) – sensory/visuospatial information and the body's response to the remembered scene: Associated with activity in the amygdala
  - The resulting memory of the traumatic event may consist of "snatches" of narrative interspersed with voids in detail, but recall of emotions; lack of an informed narrative raises the likelihood that the emotional memory will contribute to a fear response

Brewin, 2001; the value of supporting patient recall and associated narratives



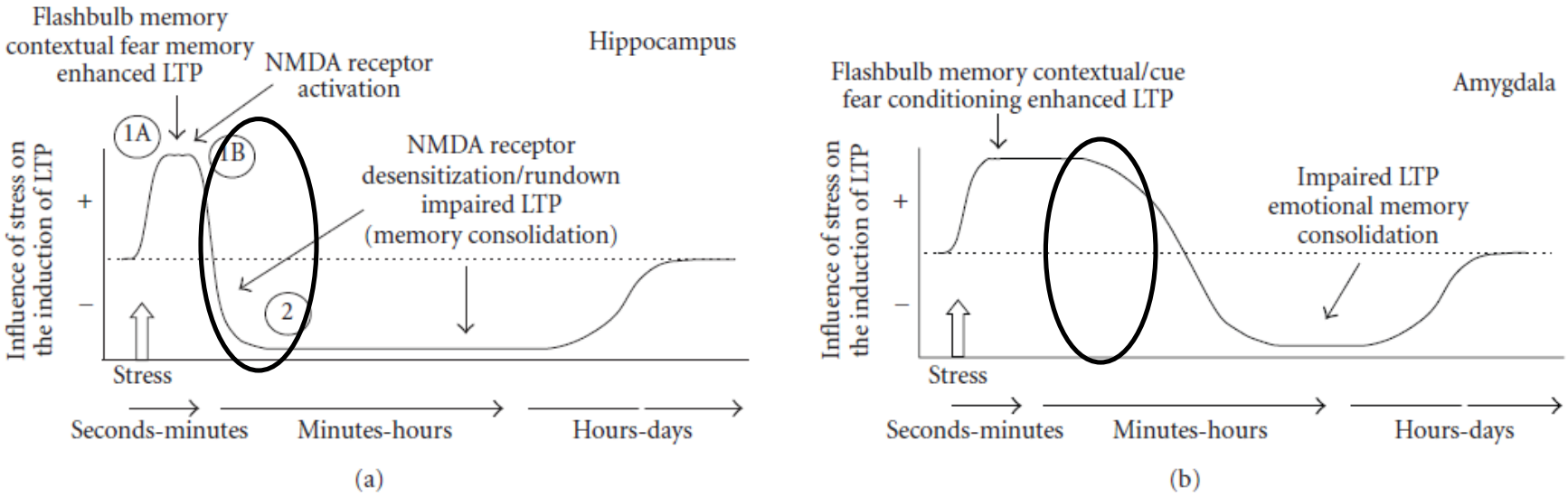
Improving verbally accessible memories (or understanding and internal narrative regarding tinnitus meaning and mechanisms) and the effect on activation of the fear system. “As the VAM representation grows, fewer trauma [tinnitus] reminders are able to activate the body’s defensive reactions.” (p. 382); Exchange “fewer elements of tinnitus distress” for “fewer trauma reminders”

The Temporal Dynamics Model of Emotional Memory Processing (Diamond et al., 2007)



Hippocampal mechanisms of memory storage are rapidly engaged by an arousing and stressful experience. This contributes to declarative memory (or verbally-accessible memory) of the event. Release of glucocorticoid (inc. cortisol) enhances LTP. Priming for consolidation of trauma-associated learning and memory follows.

The Temporal Dynamics Model of Emotional Memory Processing (Diamond et al., 2007)

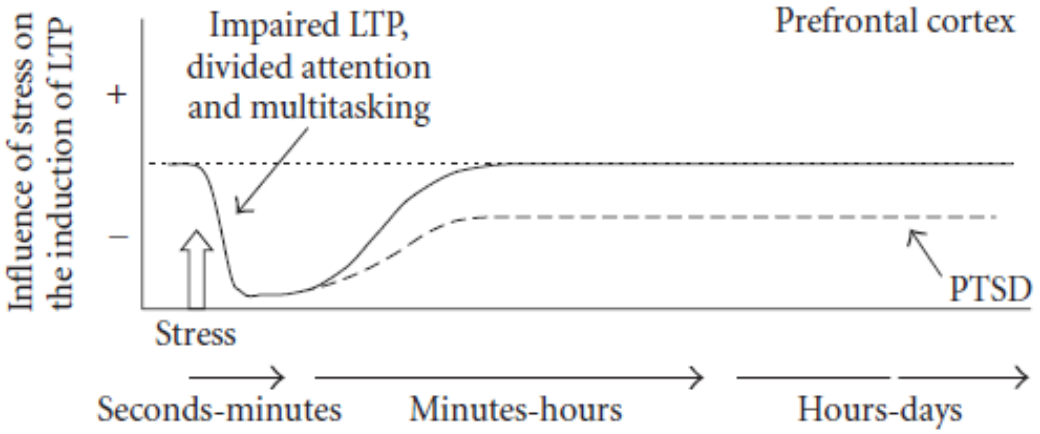


Amygdala activity continues after Hippocampus ceases. Contributes to emotional memory/learning, situationally-accessible memory, fear conditioning.

Johnathan Shay: Achilles in Vietnam

- Shay (1994): "When the body is tortured or its boundaries are violated, or it is otherwise assaulted by starvation, sleep deprivation, cold, or drugs under which escape is impossible, the body reacts with fear and rage, **and the mind undergoes a distinctive kind of deep learning**. After the danger and violation have passed, the deep learning persists as PTSD symptoms and damage to the best (and most highly valued) character as understood within the culture." p. 208

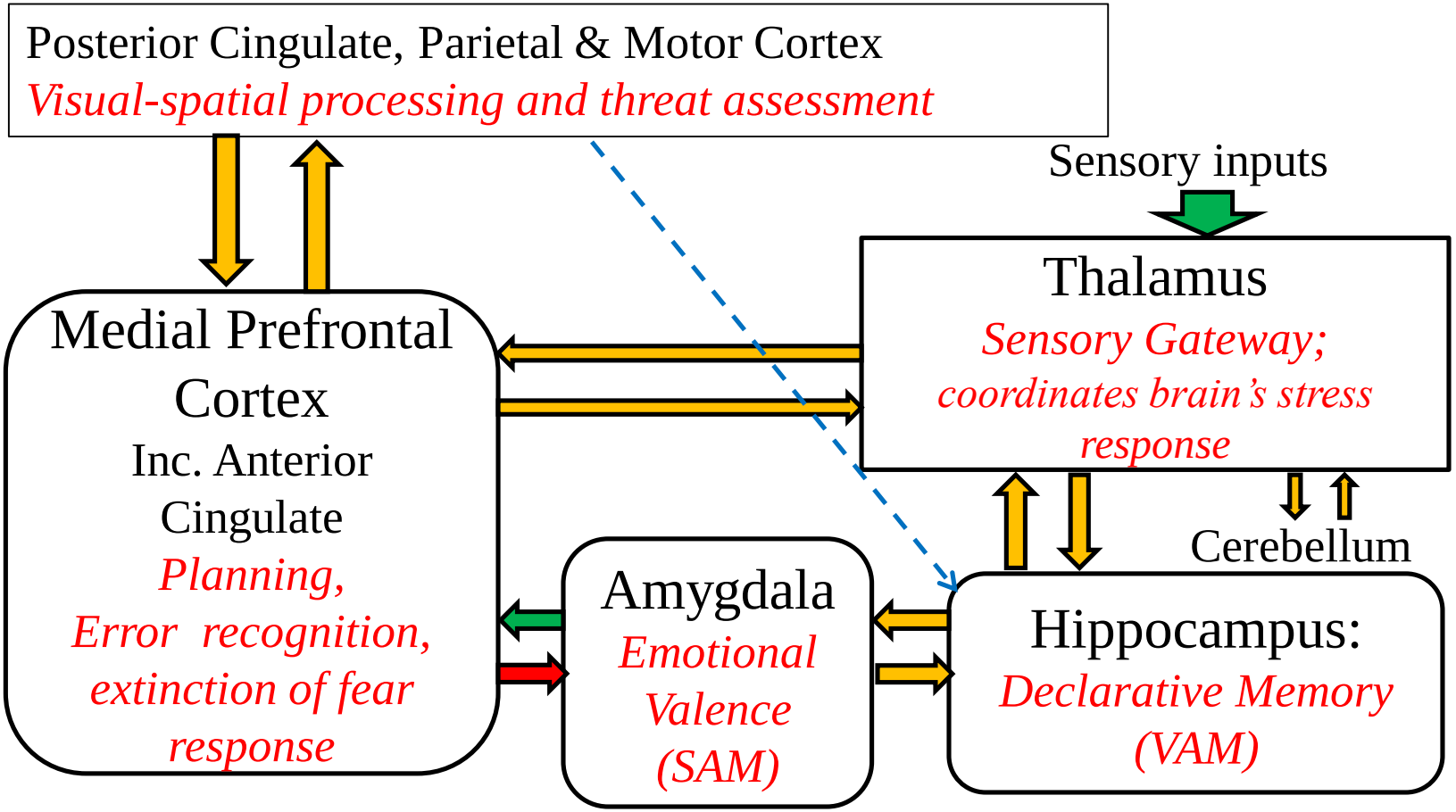
Reduced Activity in Pre-Frontal Cortex and "Deep Learning"



Pre-frontal cortex is exclusively inhibited by stress (unlike hippocampus and amygdala). "Recovery from its suppression of functioning would depend on the nature and intensity of the stressor, interacting with the ability of the individual to cope with the experience." - Diamond et al.

Additional elements of the model supported by Bremner and others who have demonstrated in cases of severe trauma insufficient PFC contribution to the regulation of limbic system activity post exposure.

Functional Neuroanatomy of Trauma Spectrum Disorders



Adapted from Bremner, 2002

Profile of Patients with Tinnitus and Co-Morbid Psychological Injury/Disorder

- Clinical reporting of mutually reinforcing effects:
  - McKenna (2004), Coles (1995), Baguley (2011), not to mention centuries-old medical literature
  - Of our first 800 patients, 276 (or 35%) are enrolled concurrently in one or more PTSD clinics (many have PTSD in addition to other psych-specific service connections)
  - An additional 254 patients seen in mental health clinics for anxiety/depression/panic disorders w/out PTSD
  - Fixation on trauma (Freud, Janet); inability to tune out repetitive stimuli that others would find “merely annoying”

Tinnitus and PTSD: Provoking the Fear Response

- Sensory events trigger powerful physical responses
- If not actually representative of a threat, the sensory events (including tinnitus) can be **misinterpreted** by the perceiver
  - May create arousal consistent with survival instincts or with the sense of threat (deafness, tumor, insanity, etc.)
- Responses to perceived threat are difficult to control or suppress (Vets avoiding crowds of people bunched together; trauma victims avoiding intersections, empty streets, crowded spaces, parks, etc.)
  - Consider also sounds offered by various masking devices, and how they affect patients w/ specific trauma histories

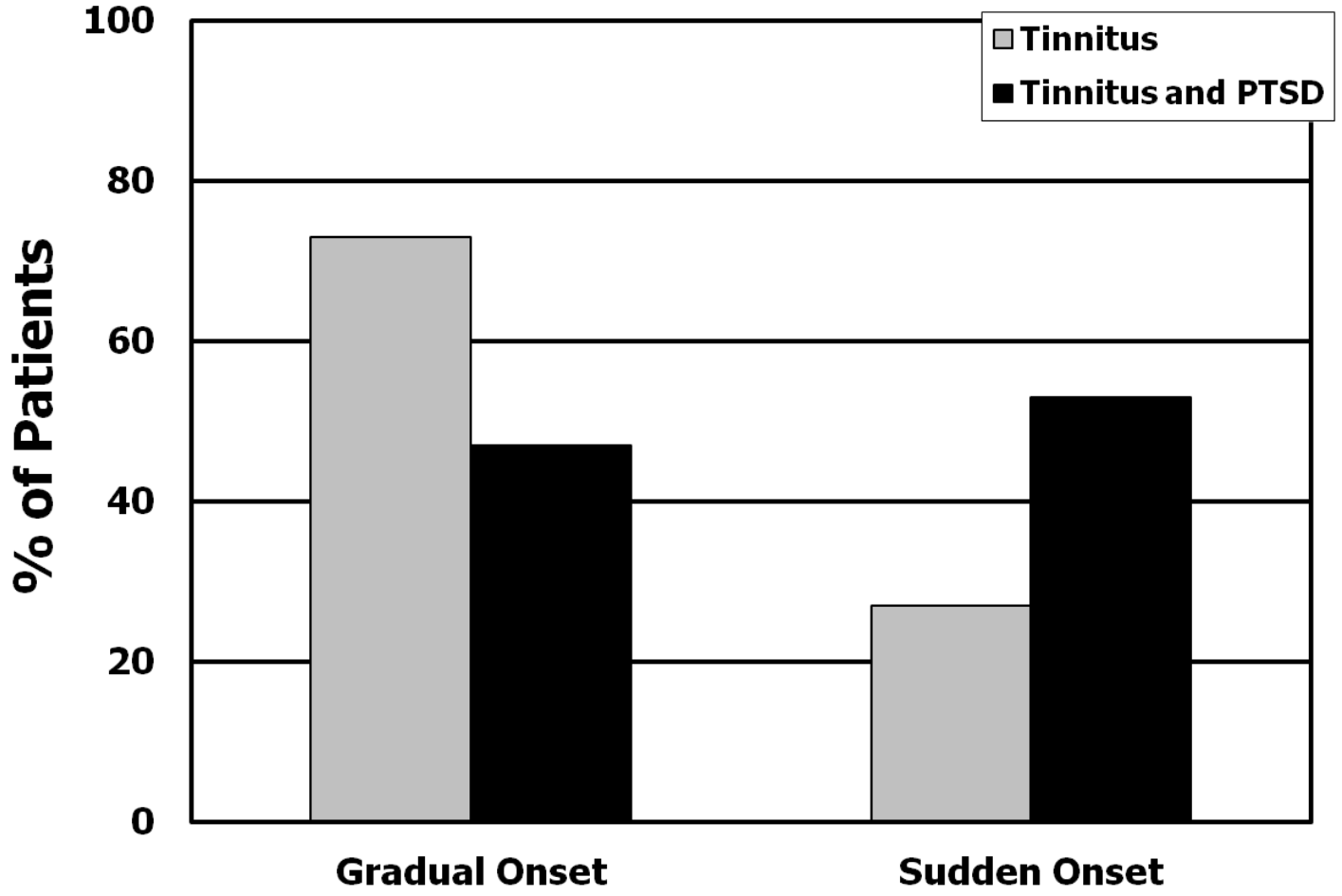
Why Consider Traumatic Associations with Tinnitus?

- What we learn from patients with tinnitus and psychological injury/disorder
  - Greater tinnitus handicap as indicated on questionnaire responses
  - Patients have lower levels of confidence (ie., poorer self-efficacy) in ability to manage condition, poorer coping ability than patients whose tinnitus is not complicated by psychological injury
  - Patients frequently misinterpret or misjudge physical characteristics of environmental events
    - Hyperacusis may be a blatant form of the effect
    - Exaggerated startle responses
  - All of this can occur, and affect tinnitus, regardless of hearing loss

Profile of Patients with Tinnitus and Co-Morbid Psychological Injury/Disorder

- Clinical findings – Tinnitus-related symptoms that distinguish stressed patients:
  - Onset of tinnitus (2x more likely to experience sudden onset)
  - Reactive tinnitus (3x more likely to experience tinnitus that is exacerbated by exposure to other sounds)
  - Presence and severity of hyperacusis
  - Other exacerbating events reported: nightmares, exaggerated startle response, uncertainty re: potential dangers in the environment

Reported Onset of Tinnitus (N=500; T=329; PT=171)

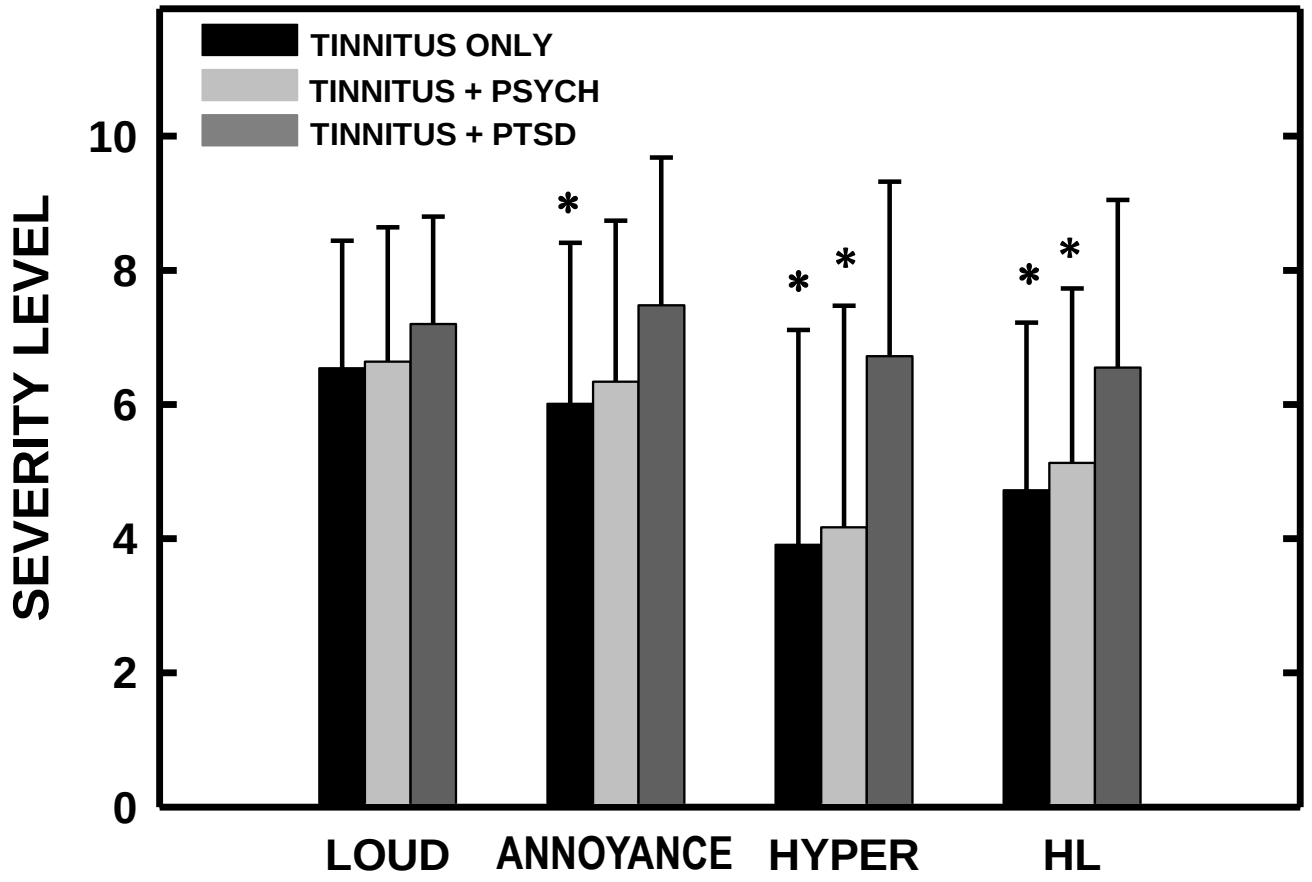


Fagelson, (2007). The Association between tinnitus and PTSD; AJA.

Kreuzer et al., 2012

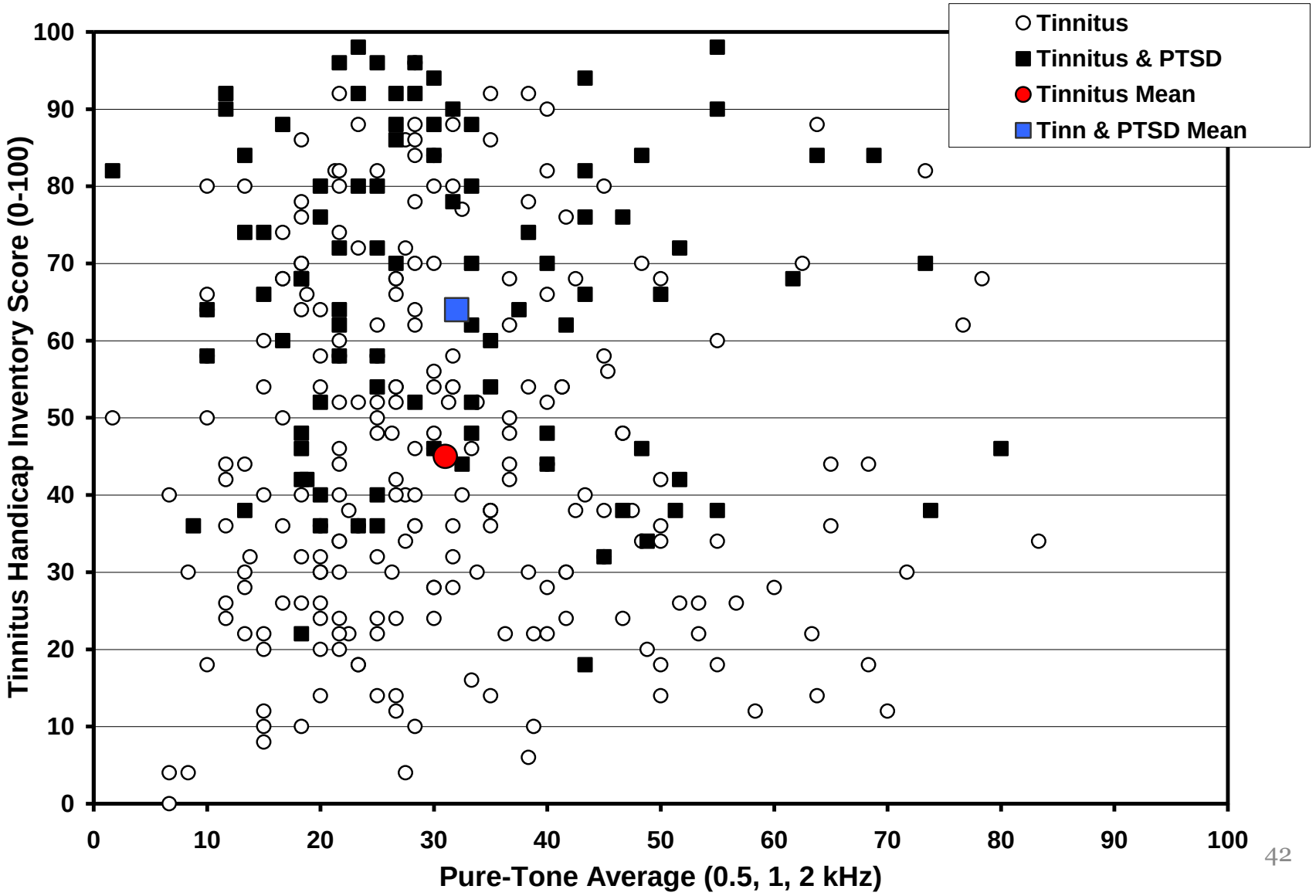
- Review of traumatic events associated w/ tinnitus onset
- Sudden onset produces greater “burden” on pts
- Of 1627 patients, 241 (15%) indicated tinnitus onset associated with trauma
  - 146 noise trauma
  - 44 whiplash
  - 28 head trauma
  - 13 noise + whiplash
  - 7 whiplash + head trauma
  - 3 noise + head trauma

Patient Ratings of Tinnitus/Hearing Symptoms

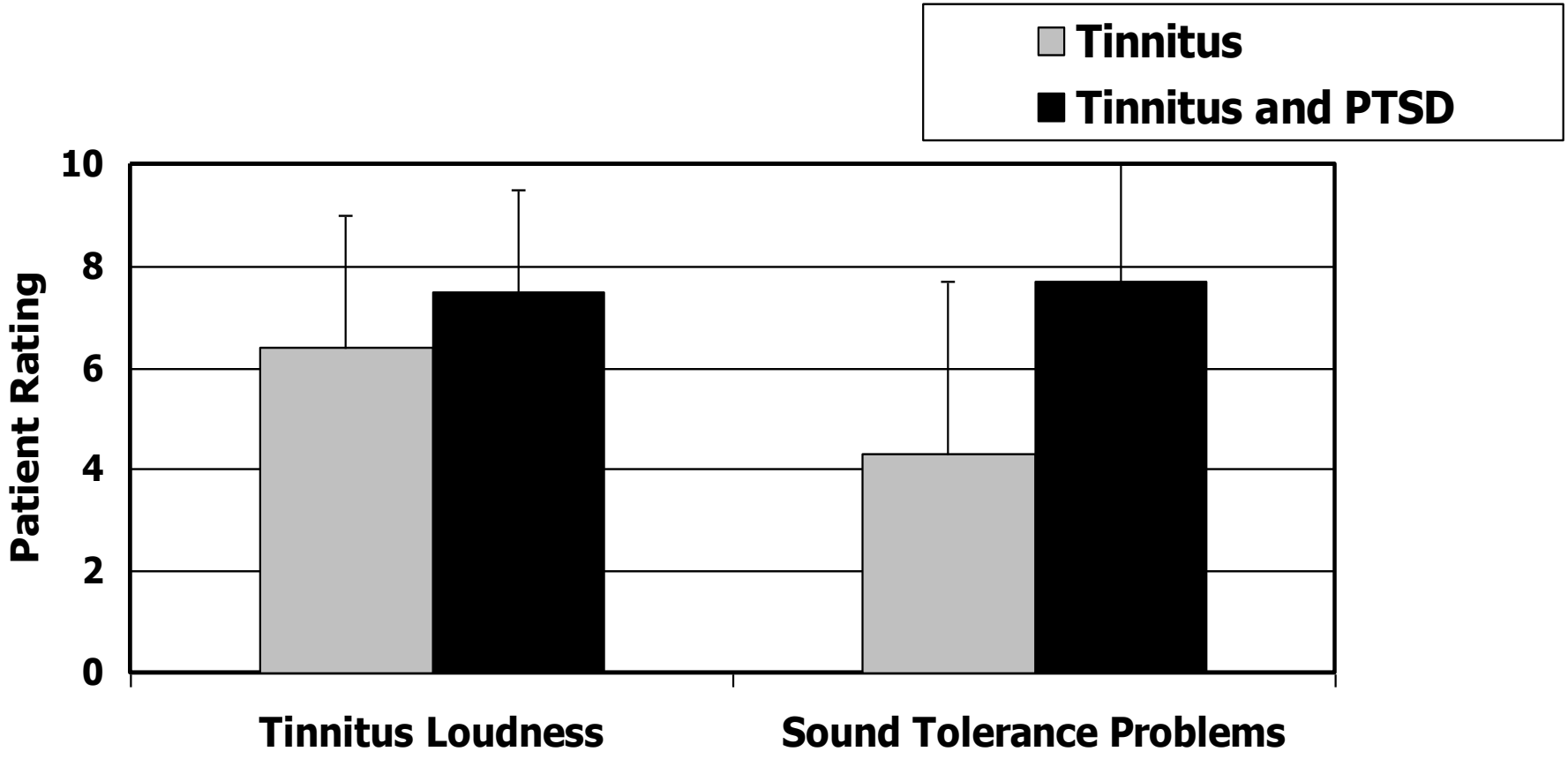


Fagelson & Smith, 2016 E&H

Perceived Tinnitus Handicap, and Relation to Auditory Sensitivity

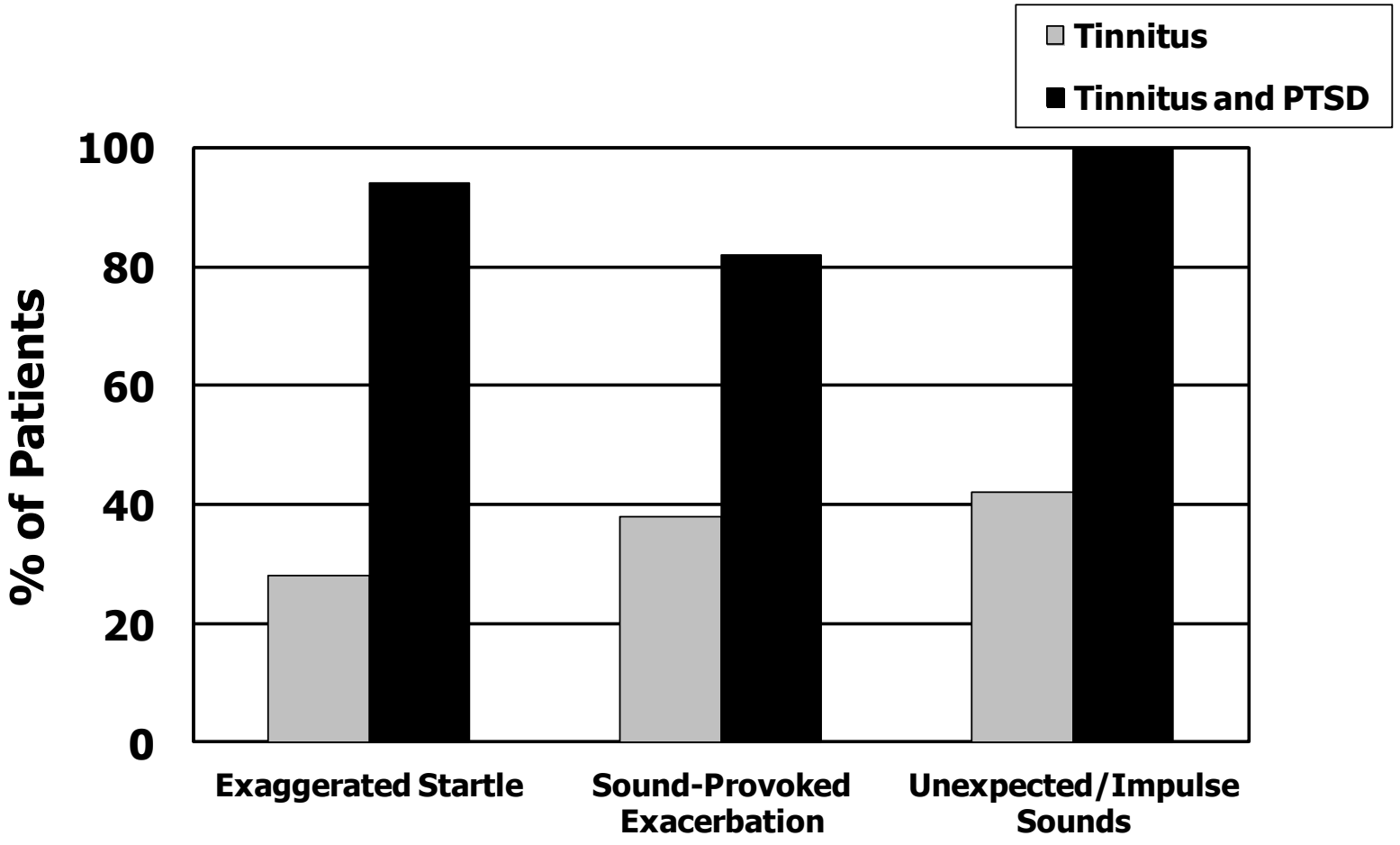


Patient Ratings of Tinnitus Loudness and Sound Tolerance

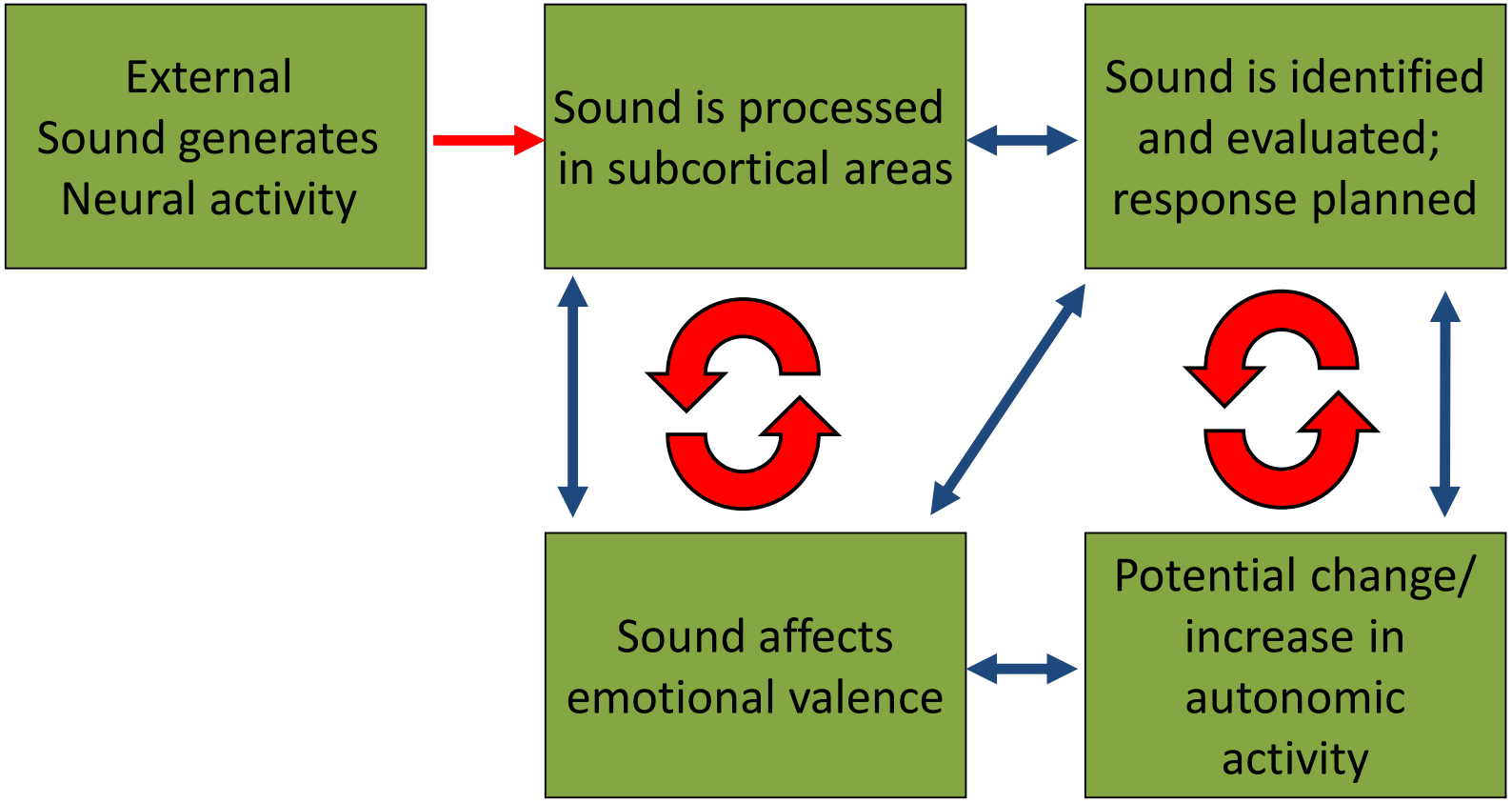


Fagelson, (2007). The Association between tinnitus and PTSD; AJA.

Sound and PTSD-Related Hyperarousal

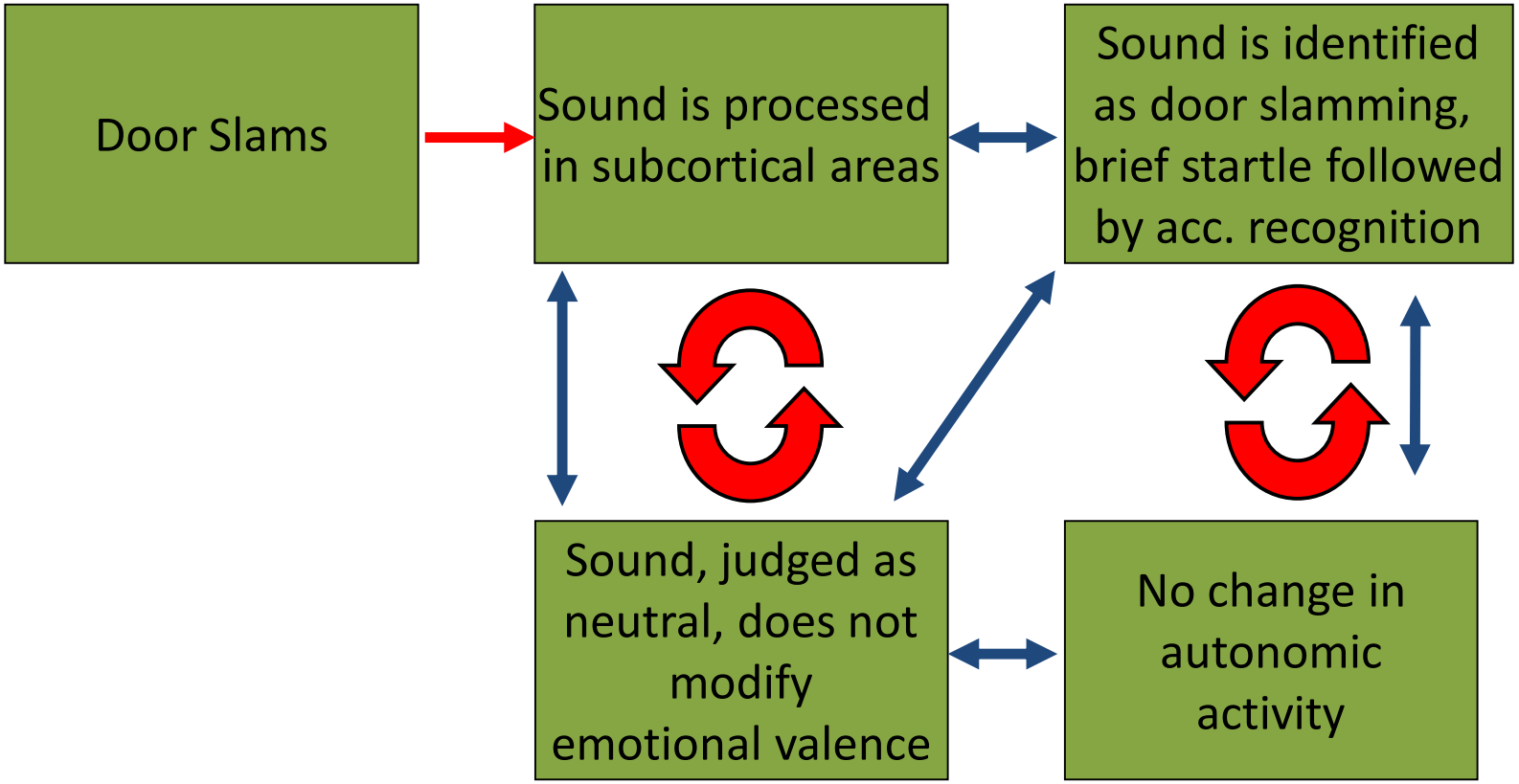


Sound and Response



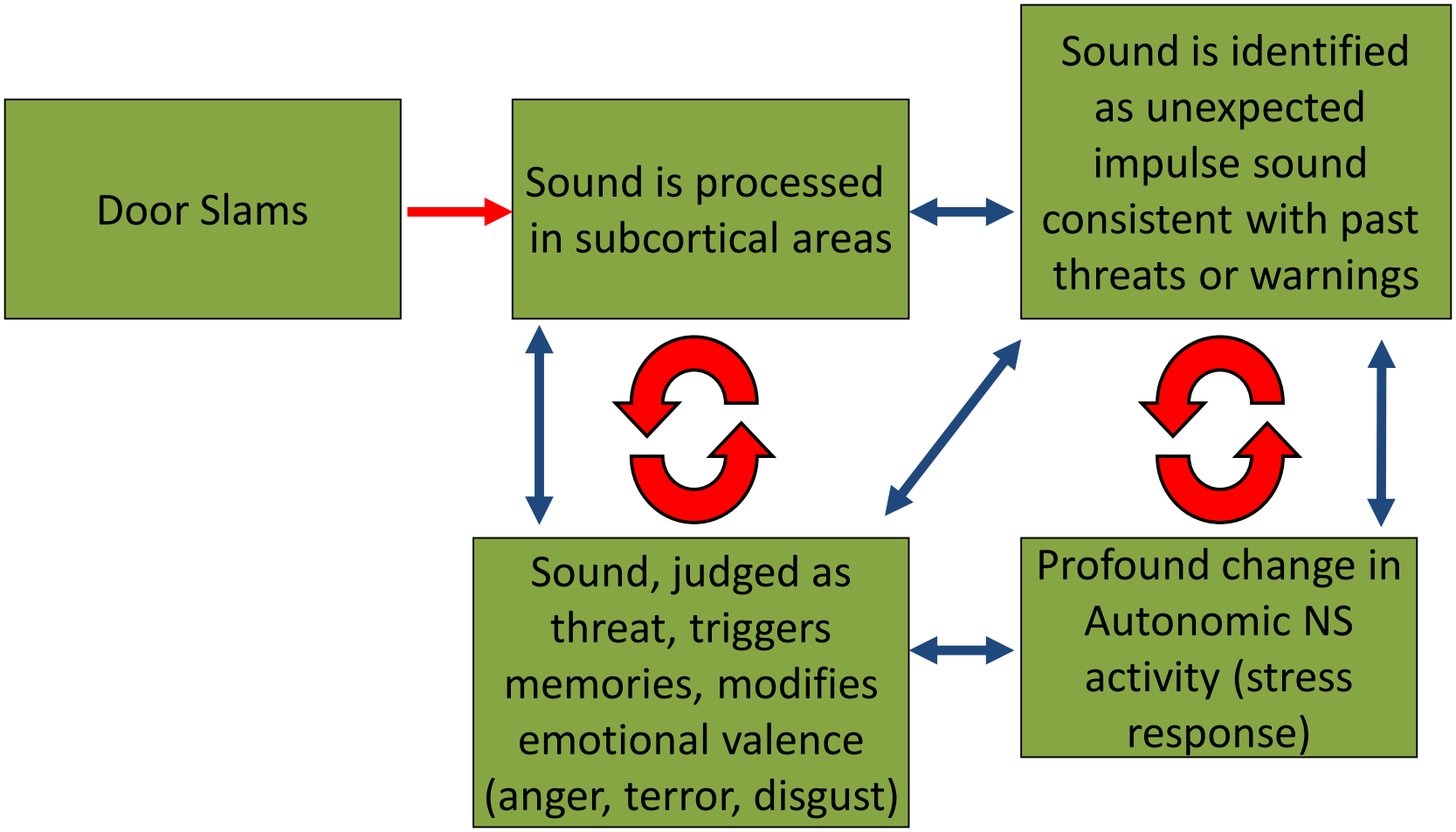
Adapted from McKenna, Baguley, McFerran, 2010

Sound and Response: accurate



Adapted from McKenna, Baguley, McFerran, 2010

Sound and Response: inaccurate



Adapted from McKenna, Baguley, McFerran, 2010

Sounds Triggering Physical Discomfort

Offending Sound	Proportion of Patients Reporting (N=166)
Impulse	84%
Impulse (“worse when unexpected?”)	100%
Children Shouting (“Carrying on”)	72%
Metallic “scraping” sounds	69%
Sirens	67%
Machinery	56%
Helicopters/Airplanes	53%

Summary: Tinnitus in Trauma Victims

- Sensory events (or anticipation of events) trigger powerful physical responses and avoidance
  - Pt. 3x more likely to have reactive tinnitus
  - 2x more likely to have sudden onset
- The sensory events (including tinnitus) may be misinterpreted by the perceiver
  - Contributing to disorders of sound tolerance(?)
  - Pts with trauma histories 2x more likely to state that sound tolerance problems>tinnitus
- When associated with trauma (most obvious in sudden-onset cases) arousal consistent with survival instincts or with the sense of threat
- May produce tinnitus that demands attention in a manner consistent with the memory of a weapon used in an assault

Targeting the Response to Tinnitus

Patients Compare Expectations….

……to reality

Treatment versus Management

- Value of distinguishing for patients treatment from management, or intervention from cure
- Most patients are calibrated to believe that “treatment” results in a “cure”
- If a patient receives a form of intervention that is designed to facilitate coping and management of a condition, but the patient associates intervention with “treatment” and expects a cure, then that belief will require attention during counseling
- Drugs may relieve symptoms associated with traumatic memories, but they will not heal the person, a distinction that patients may not understand

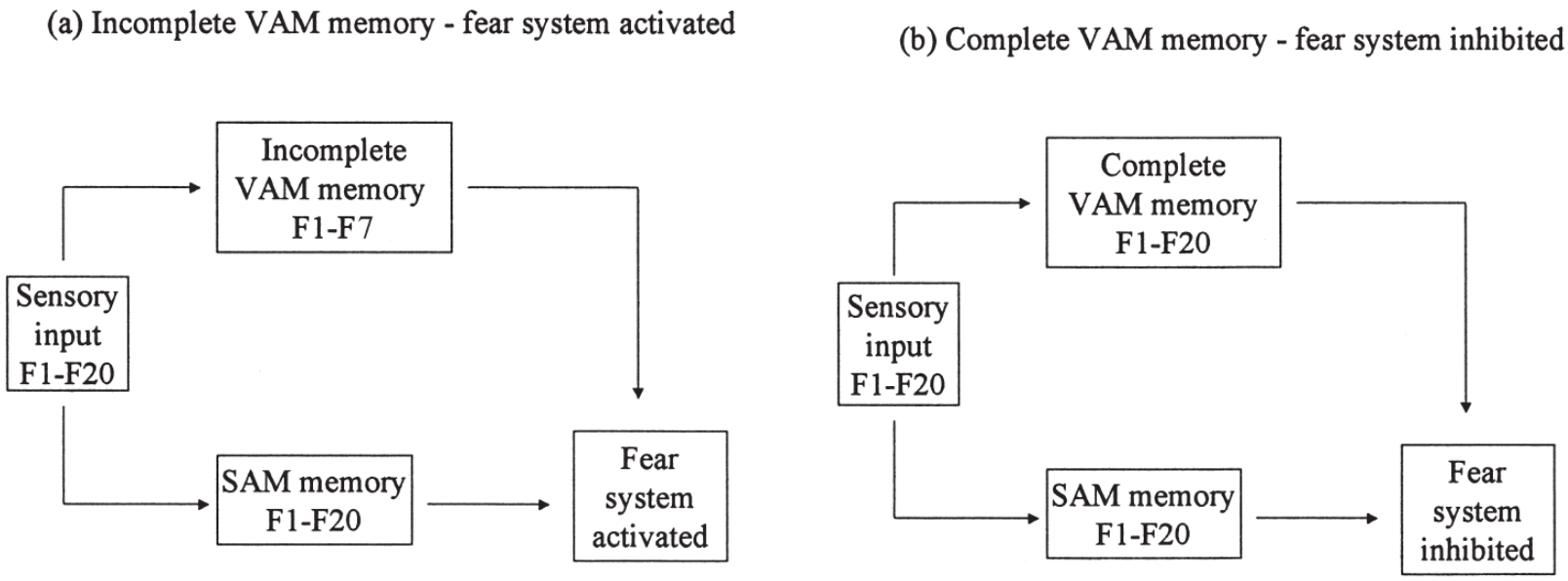
Tinnitus and Trauma: Value of Counseling

- Primacy of counseling as an element of intervention for tinnitus is well-established; but what do we learn from trauma victims regarding counseling?
  - Janet, Freud and others report that symptoms of hysteria could be alleviated when the traumatic experiences were put into words
  - Breuer and Freud termed their patient interactions "catharsis" and ultimately "psycho-analysis," but one of Breuer's more famous patients, Anna O. termed it the "talking cure."
  - Consistent with Brewin's (2001) assertion: Trauma victims must be provided the means to verbalize and provide narratives of their memories, associated cognitive challenges, and sensory distortions

Tinnitus, PTSD, and "Deep Learning:" Provoking the Fear Response (Brewin, 2001)

- Recall the two elements of traumatic memory that we may compare to elements of tinnitus evaluation
  - Verbally Accessible Memory (VAM) – declarative memory; the production and maintenance of a narrative that facilitates contextualizing the trauma within the person's autobiographical knowledge base: Associated with activity in the hippocampus that saturates during or in a few minutes after the exposure
  - Situationally Accessible Memory (SAM) – sensory/visuospatial information and the body's response to the remembered scene: Associated with activity in the amygdala that persists during the period of inactivity in the hippocampus following traumatic exposure

Brewin, 2001; the value of supporting patient recall and associated narratives

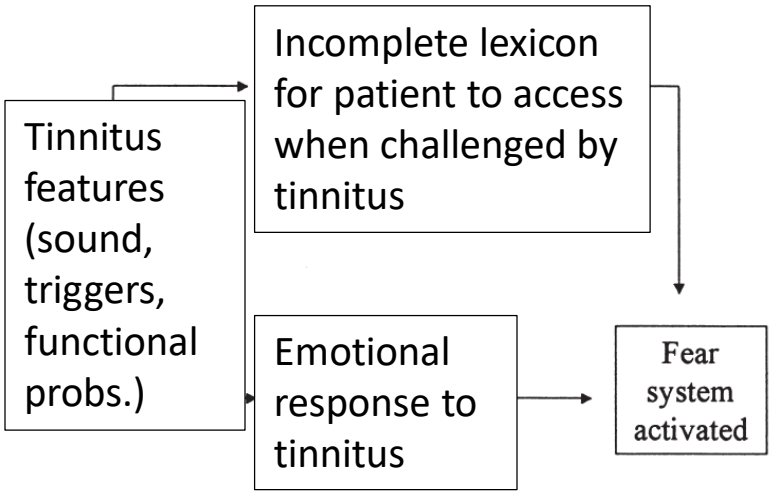


"As the VAM representation grows, fewer trauma [tinnitus] reminders are able to activate the body's defensive reactions." (p. 382); Exchange "fewer elements of tinnitus distress" for "fewer trauma reminders"

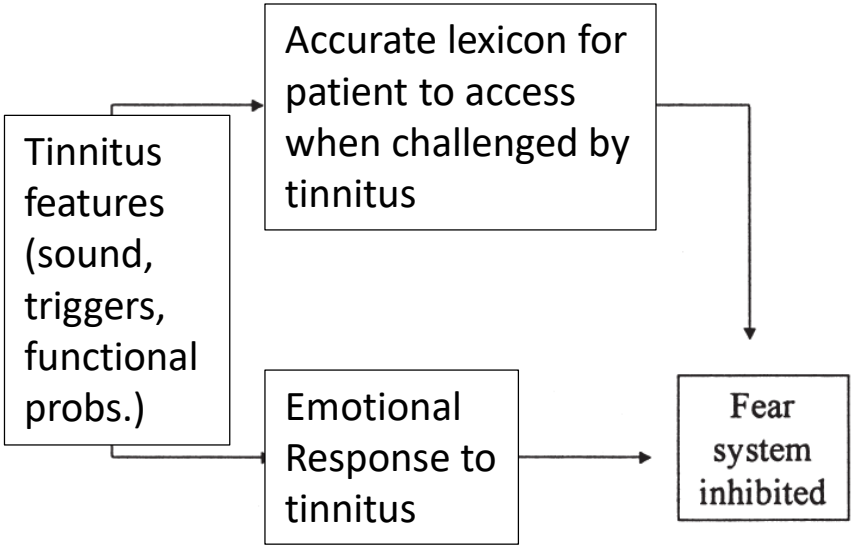
Consider also the unique challenges provided by children.

Brewin, 2001 (adapted); the value of supporting patient understanding of mechanisms and tinnitus facts

Incomplete understanding of tinnitus and effects



Improved understanding of tinnitus and effects



Janet (1919): "A situation has not been satisfactorily liquidated…until we have achieved not merely an outward reaction through our movements, but also an inward reaction through the words we address to ourselves, through the organization of the recital of the event to others and to ourselves, and through the putting of this recital in its place as one of the chapters in our personal history…"

Drug use versus effective counseling and psychological intervention.

Counseling & Educating the Patient

- CBT is the most widely reported (and successful) veteran PTSD treatment
  - Effective in 60-80% of reported cases
- Also Recommended by Sweetow (1986), Henry & Wilson (2001), Cima et al. (2011) for managing severe tinnitus
- May be included as an element of Progressive Tinnitus Management, incorporating self-efficacy training, acceptance commitment therapy, mindfulness
  - Asserts the value of interprofessional care as specified in the PTM triage procedure

Hearing Aids for the Trauma/TBI Patient

- Hearing aids: address unique needs for this population
  - Facilitate monitoring environment
  - Make some social situations easier to manage
  - Pt. less often surprised by sudden unexpected sounds; perhaps fewer misinterpretations of events
  - Establishing acceptable output levels the most important consideration
  - Likely to see increased use for patients with minimal hearing loss or near-normal audiograms

Hearing Aids for the Trauma/TBI Patient: Student project investigating patient perceptions of hearing aid benefit using a homemade questionnaire; some preliminary results

Items on Study Questionnaire Under Development (HA group n=30; PTSD group N=20)		UNAIDED		AIDED		DIFFERENCE	
		HA-Only	PTSD	HA-Only	PTSD	HA-Only	PTSD
I communicate well in a quiet situation.	M SD	4.3 2.1	6.0 2.2	8.6 1.4	8.5 1.5	**4.3** 2.3	**2.5** 2.8
I communicate well in a noisy situation.	M SD	2.5 1.6	2.7 1.1	6.6 2.2	6.7 2.3	**4.1** 2.8	**4.0** 3.0
I am able to identify environmental sounds accurately.	M SD	4.4 2.6	4.1 1.6	7.8 2.3	8.2 1.0	**3.4** 0.8	**4.1** 0.8
I am aware of my surroundings.	M SD	6.7 2.8	7.6 2.7	8.2 2.3	9.5 0.7	**1.5** 2.7	**1.9** 2.4
I feel secure in my home.	M SD	6.2 2.5	7.0 2.2	9.2 0.9	8.6 1.5	**3.0** 2.4	**1.6** 1.6

Hearing Aids for the Trauma/TBI Patient: Student project investigating patient perceptions of hearing aid benefit using a homemade questionnaire; some preliminary results

Items on Study Questionnaire Under Development (Reverse score items; higher score when aided indicates greater problem)		UNAIDED		AIDED		DIFFERENCE	
		HA-Only	PTSD	HA-Only	PTSD	HA-Only	PTSD
I am more bothered by environmental sounds than other people	M	**3.4**	**5.5**	5.5	7.8	2.1	2.3
	SD	1.5	2.7	2.9	2.1	0.5	0.8
Unexpected sounds make me anxious.	M	**4.9**	**8.5**	6.0	9.1	1.1	0.6
	SD	3.0	2.0	3.0	1.4	3.4	0.8
Hearing certain sounds trigger memories that are difficulty for me to handle.	M	**3.4**	**7.6**	4.1	7.4	0.7	(0.2)
	SD	2.6	3.4	3.2	3.5	0.3	0.2
Everyday sounds that are comfortable or slightly loud for other people are too loud or cause me pain	M	**2.8**	**3.9**	4.8	5.5	2.0	1.6
	SD	1.6	2.6	2.8	2.9	0.6	0.9
Unseen or unexpected sounds startle me.	M	**5.3**	**7.7**	7.1	8.6	1.8	0.9
	SD	3.0	2.3	2.9	1.6	0.6	0.5

Hearing Aids Ameliorate Tinnitus Distress?

Do hearing aids reduce the amount of tinnitus distress?	Proportion of "Yes" Patients
Mild tinnitus (N=83)	58%
Moderate tinnitus (N=162)	53%
Severe tinnitus (N=89)	59%
Pts. with psych. condition (N=134)	32%
Pts. with PTSD (N=118)	55%

Self-Efficacy Theory

- Belief, or domain-specific confidence, individuals have in their abilities to accomplish a set of skills to achieve a certain behavior, including health behaviors (Bandura,1989, 1997)
  - "Medical conditions that produce severe permanent impairments can be devastatingly demoralizing to patients and their families."
  - "Goals must be restructured in ways that capitalize on remaining capacities."
  - "Clinical transactions operate bidirectionally to shape the course of change [affecting both patient and clinician]."
  - "To be effective, health communications should be framed in ways that instill in people the belief they have the capability to alter their health habits, and should instruct them how to do it."

Why Is Self-Efficacy Important?

- Patients with high self-efficacy beliefs for skills needed to manage a health condition have been associated with:
  - Increased compliance with treatment/management recommendations
  - Improved subjective and objective outcomes
  - Higher health-related quality of life
  - **Persevere in face of difficulty**
  - **Put forth greater effort in managing challenges**

Self-Efficacy and Tinnitus

- Self-efficacy objectives for the **patient** with tinnitus
  - To enhance Mastery: Identify specific activities for which the patient lacks sense of control (communication, concentration, sleep, etc.) and target intervention accordingly. Support use of masking devices, assistive devices, and/or hearing aids
  - To provide Vicarious Experiences: group sessions, anecdotes/meetings with other patients, review of data
  - Verbal persuasion can focus on mechanisms, communication strategies, sleep hygiene, etc.
  - Physiologic and Affective States: Increase sense of control over the influences of tinnitus on daily function and emotions through collaborative counseling, use of hearing aids or assistive devices, and interprofessional approaches when necessary (ie., in cases of co-morbid psychological injury)

Self-Efficacy and Tinnitus

- Self-efficacy objectives for the **clinician**
  - To enhance Mastery: Identify specific activities for which the clinician lacks sense of control (counseling, understanding of mechanisms, fitting hearing aids, managing psychological injury) and seek experience and literature to support competence
  - To provide Vicarious Experiences: Participating at workshops, sharing successful cases with other clinicians, observing master clinicians
  - Verbal persuasion: Evidence that realistic approaches to management can be implemented by the audiologist; understanding the mechanisms of tinnitus/hyperacusis targeted by intervention to support counseling objectives
  - Physiologic and Affective States: Increase sense of control in the clinic by improving clinician knowledge and adaptability.

Summary

- Identify strategies that address specific functional impairments experienced by patient (ie., sleep, communication)
- Hearing aids a far more effective intervention (due to their flexibility) than in the past, with or without combination masking circuitry
- Improvement in measures targeting the high end of the dynamic range rather than threshold would be helpful
- Work w/ psychologists, or other professionals to ensure that co-morbidities are being addressed
- Support pt's ability to distinguish tinnitus effects from the effects of other conditions or injuries that exacerbate it

Summary

- Importance of sub-types; PTSD among civilian and veteran populations has implications for audiologists, their tests, counseling, referrals and interpretation of pt. history and complaints (prior trauma a major factor)
- Intrusive memories, tinnitus exacerbation, and DST may be triggered by sensory events, particularly those associated w/ trauma (unexpected impulse sounds, etc.)
- Potential of systematic studies of resilience that can support adaptable and perhaps more generalizable interventions

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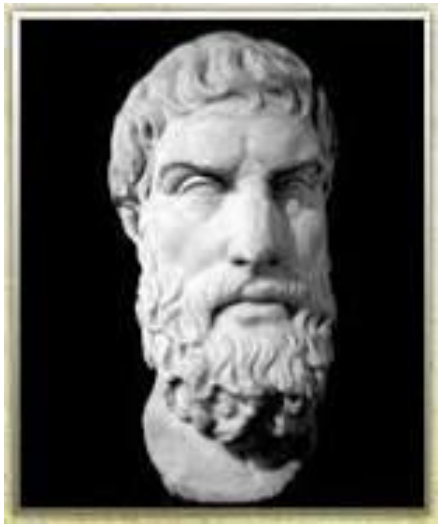

And a word from the stoic Epictetus: “It is not events that disturb people, it is their judgments concerning them.”