

PTSD and Chronic Pain

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Objectives

- Recognize the link between PTSD and Chronic Pain
- Learn about some theoretical models explaining the co-occurrence of PTSD and chronic pain
- Appreciate some treatment approaches

PTSD- Definition and Mechanisms

Posttraumatic Stress Disorder (PTSD)

- Experienced, witnessed, or confronted by threat of death or serious injury
- Response is intense fear, helplessness, or horror
- Persistent reexperiencing: intrusive recollections, distressing dreams, flashbacks, intense psychological or physiological distress at exposure to a cue reminiscent of the trauma
- Persistent avoidance: avoids thoughts, activities, feeling detached, restricted affect, sense of foreshortened future
- Persistent arousal: insomnia, irritability, poor concentration, hypervigilance, exaggerated startle



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- Duration > 1 month

The Fear Structure

- A fear structure is a program for escaping danger
- It includes information about:
 - The feared stimuli
 - The fear response
 - The meaning of stimuli and responses

Trauma Memory

- A specific fear structure that contains representations of:
 - Stimuli present during and after the trauma
 - Physiological and behavioral responses that occurred during the trauma
 - Meanings associated with these stimuli and responses
 - Associations may be realistic or unrealistic

Characteristics of early trauma structure

- Large number of stimuli
- Excessive responses [PTSD symptoms]
- Erroneous associations between stimuli and “danger”
- Erroneous associations between responses and “incompetence”
- Fragmented and poorly organized relationships between representations

Early PTSD symptoms

- Trauma reminders in daily life activate trauma memory and the associated perception of “danger” and “self incompetence”
- Activation of the trauma memory is reflected in re-experiencing symptoms and arousal
- Re-experiencing and arousal lead to avoidance behavior

Recovery Process

- Recovery is the norm!!!
- Repeated activation of trauma memory and emotional engagement
- Incorporation of corrective information about “world” and “self”
- Activation and disconfirmation occur via confronting trauma reminders [thinking about, and contact with, trauma reminders]
- Corrective information consists of absence of anticipated harm

Chronic PTSD

- While avoidance may be helpful short term, over long term it is harmful
- Persistent cognitive and behavioral avoidance prevents change in trauma memory by:
 - Limiting activation of trauma memory
 - Limiting exposure to corrective information
 - Limiting articulation of trauma memory and thus preventing organization of the memory

Erroneous cognitions underlying PTSD

- The world is extremely dangerous
- People are untrustworthy
- No place is safe
- I am extremely incompetent
- PTSD symptoms are a sign of weakness
- Other people would have prevented the trauma

PTSD and Chronic Pain- Epidemiology

Chronic Pain is Prevalent Among Individuals with PTSD

- 66-80% of combat vets with PTSD report chronic pain [Beckham et al., 1997; Shipherd et al., 2007]
- 45% of veteran firefighters with PTSD report chronic pain [McFarlane et al., 1994]
- 30-50% of MVA survivors with PTSD report chronic pain [Chibnall et al., 1994; Hickling et al., 1992]
- 22-49% of PTSD patients meet criteria for fibromyalgia [Amir et al., 1997; Amital et al., 2006]

Chronic Pain is Prevalent Among Individuals with PTSD

- Sareen et al. [2007]: Compared people with and without PTSD in a community sample of 36,984
 - PTSD: 46% chronic back pain
 - NO PTSD: 21% chronic back pain
 - PTSD: 33% migraines
 - NO PTSD: 10% migraines
 - Pain symptoms also more likely to persist in those with PTSD [Dirkzwager et al., 2007]

PTSD is prevalent among individuals with chronic pain

- Up to 33% of patients in pain clinics exhibit PTSD symptoms [Beckham et al., 1997; Benedict et al., 1996; MacFarlane et al., 1999; Meltzer-Brody et al., 2007]
- Rates of PTSD in patients with pain secondary to MVA are 30-50% [Hickling et al., 1992; Chibnall et al., 1994; Taylor et al., 1995]

PTSD is prevalent among individuals with chronic pain

- In a sample of 113 Veterans referred for pain treatment at VA Boston, 35% (n=50) met criteria for PTSD based on a PCL cutoff score of 50.
- In a sample of 30 OEF/OIF veterans referred for pain treatment at VA Boston, 73% (n=22) of the sample met criteria for PTSD based on a PCL cutoff score of 50.
- Morrison, J., Scioli, E, Schuster, J., & Otis, J. (March, 2009). *The Prevalence and Impact of Comorbid Chronic Pain and PTSD on U.S. Veterans*. Poster presented at the 29th annual meeting of the Anxiety Disorders Association of America, New Mexico.

PTSD + Chronic Pain = Worse Outcomes

- Chronicity of pain [Olsen et al., 2007; Dirkzwager et al., 2007]
- More intense pain [Geisser et al., 1996]
- More affective distress from pain [Geisser et al., 1996]
- Higher levels of life interference from pain [Turk et al., 1996]
- Lower pain threshold, and greater disability from pain [Sherman et al., 2000]
- Higher levels of depression and anger [Chibnall et al., 1994]
- PTSD related re-experiencing associated with pain severity, self-reported physical symptoms, and limitations in functional ability

Etiologic Models of co-occurring PTSD and Chronic Pain

Models unsupported by data

- One causes the other
- They are independent and unrelated to each other

Mutual maintenance

- Physiological, affective, and behavioral components of PTSD maintain and exacerbate pain AND vice versa
- **Example:**
 - Person with PTSD and musculoskeletal pain experiences pain and arousal
 - Pain and arousal are constant reminders of trauma that caused the pain
 - Trauma recollection leads to physiological arousal
 - This leads to avoidance of pain-related activities
 - This leads to deconditioning, which then worsens pain
 - Vicious cycle of distress and functional disability

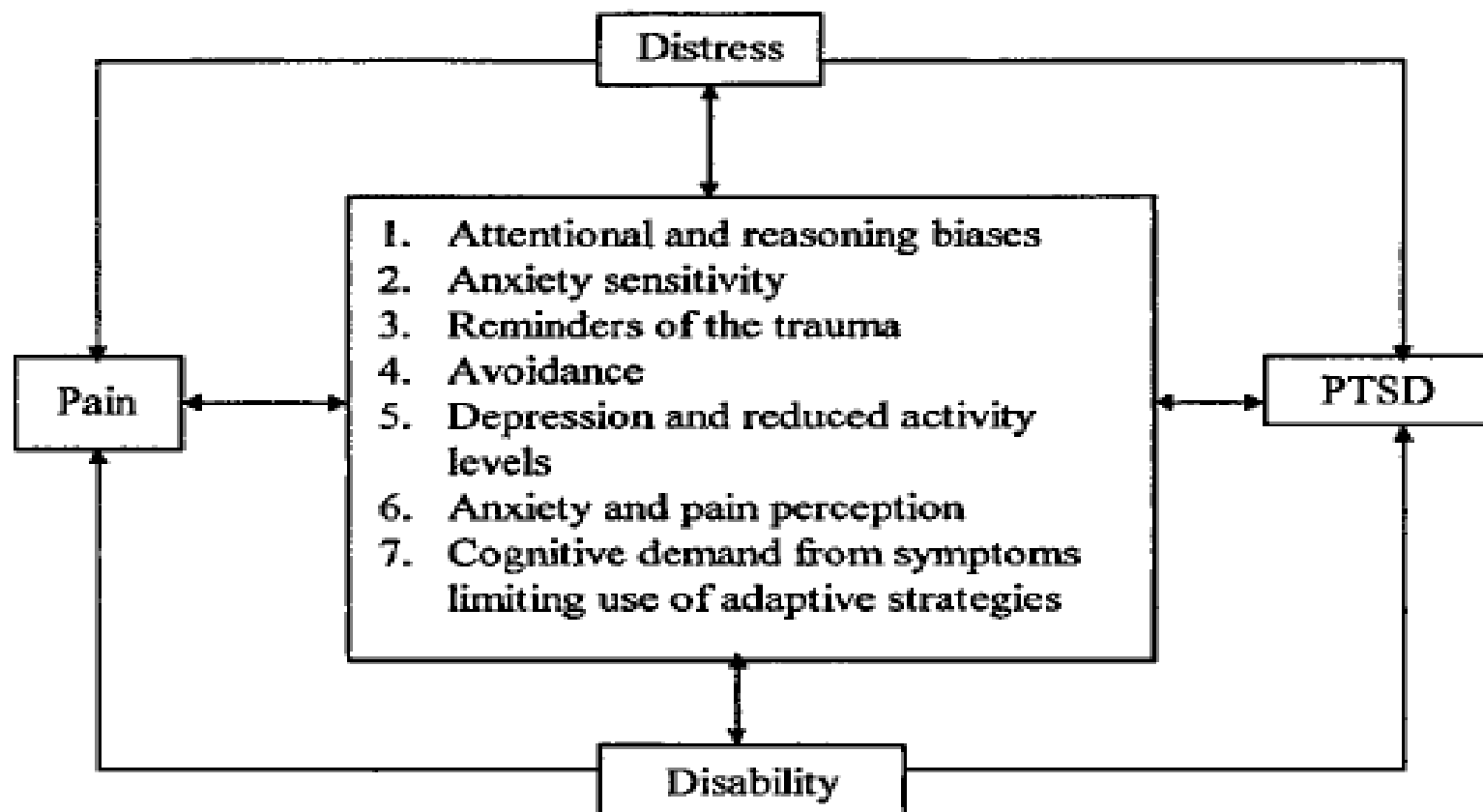


Figure 2. Mutual maintenance model. From Sharp TJ, Harvey AG: Chronic pain and posttraumatic stress disorder: mutual maintenance? *Clinical Psychology Review* 2001;21(6):857-77, p. 870. Copyright 2001. Reprinted with permission from Elsevier Science.

Clinical Examples

- “When ever I'm laying in bed at night and my shoulder starts hurting, I start having thoughts of when I was shot.”
- “When I think about the day my car had the accident, I can feel the pain in my back flare up right where I was hurt.”
- “I tried my PT exercises but the pain started increasing and I started thinking about what I saw and heard in Iraq so I just said the heck with it and called it quits for the day.”
- “I managed to avoid dealing with my PTSD all of my life, but when the other car hit me it brought all of the feelings to the surface (feeling powerless).

Shared vulnerability

- Mutual maintenance factors may be related to some shared vulnerability
- Combination of genetics and environmental factors

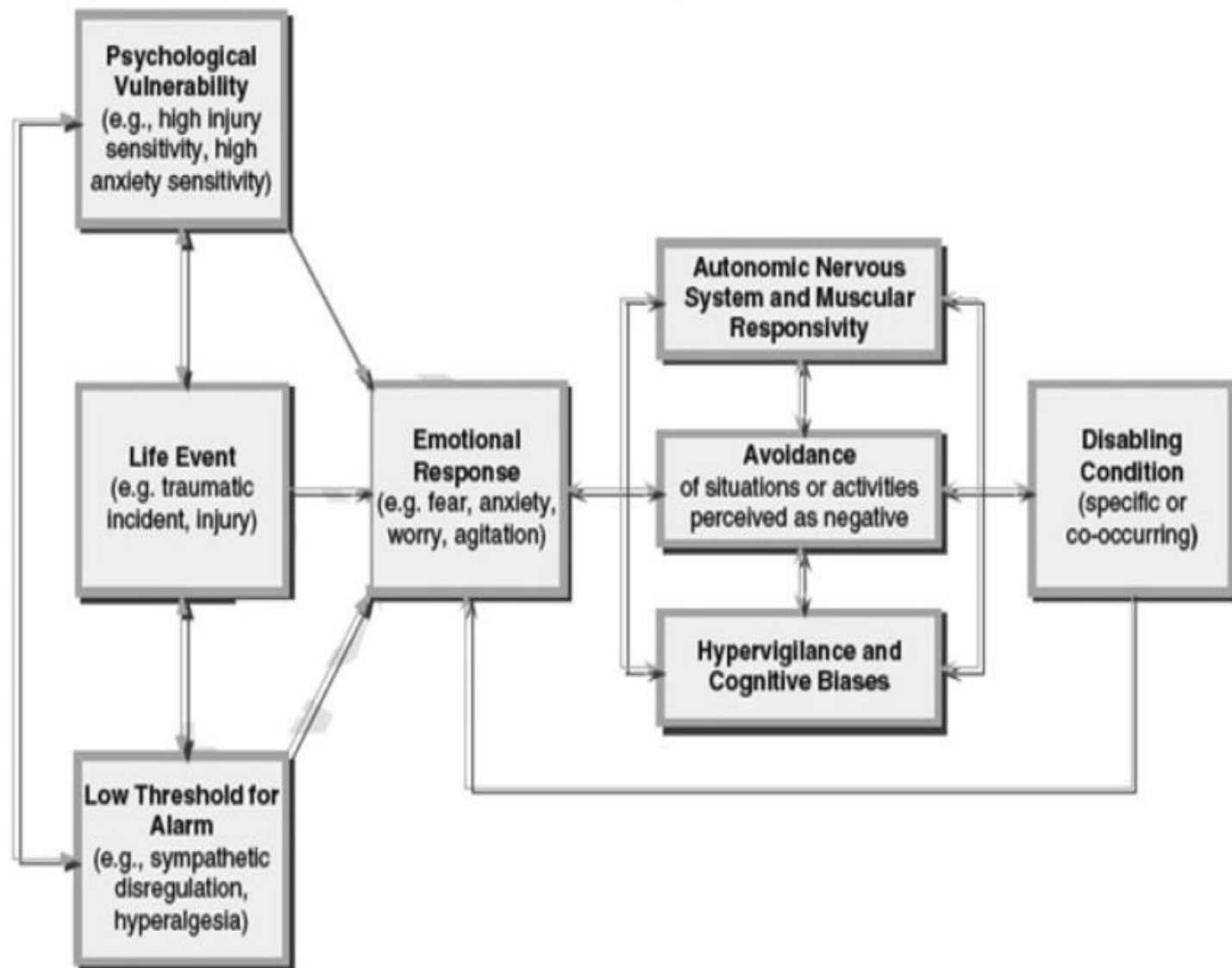


Figure 3. Shared vulnerability model. From Asmundson GJG, Abrams MP, Collimore KC: Pain and anxiety disorders, in Health behaviors and physical illness in anxiety and its disorders: Contemporary theory and research. Edited by Zvolensky MJ, Smits JAJ. New York: Springer, 2008, pp 207-235, p. 216. Copyright 2008. Reprinted with permission from Springer Science and Business Media.

PTSD and pain

- **AVOIDANCE** is critical to maintaining PTSD
- It may also worsen pain outcomes
- Often, the same event that led to chronic pain also led to the PTSD
- Pain related avoidance may worsen PTSD

Psychological mechanisms
underlying pain-
PTSD relationship

Anxiety sensitivity [AS]

- Fear of anxiety based on belief that anxiety may have harmful consequences
- Increased in most anxiety disorders
- May also be increased in some chronic pain conditions [Asmundson et al, 2000]
- AS correlated with PTSD severity
- AS correlated with severity of labor and dental pain
- AS increases the risk of pain-related avoidance and disability following physical injury in adults and children with chronic pain
- Influenced by genetic and environmental factors
- Catastrophizing – exaggerated beliefs and expectations that events will lead to negative outcomes.

Selective attention to threat

- Directing attention to feared objects or situations
- Robust findings for many anxiety disorders
- Less robust findings for chronic pain
- Patients with greater pain severity and pain-related disability more likely to selectively pay attention to trauma related stimuli than those with less pain [Beck et al., 2001]

Lower threshold for alarm

- Pain and anxiety both lead to physiologic arousal
- Prolonged states of arousal can be detrimental to health
- Anxiety disorders, particularly PTSD, see increased sympathetic activity
- This can lead to further avoidance

Avoidance!

- PAIN: The avoidance of physical activities
- PTSD: The avoidance of feared thoughts/situations

TREATMENT APPROACHES

Psychosocial treatments

Posttraumatic Stress Disorder (PTSD)

Non-Medication Treatment

- Exposure Therapy [evidence: Ia]
- CBT/Cognitive Restructuring [evidence: Ia]
- EMDR [evidence: Ia]
- Seeking Safety



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Non-pharmacological approaches

- Woods & Asmundson [2008]: Graded in-vivo exposure demonstrated significant improvements in:
 - fear of pain and movement
 - fear-avoidance beliefs
 - pain-related anxiety
 - pain self-efficacy
 - Anxiety and depression
 - Pain catastrophizing
 - [compared to wait list and graded activity]
 - Only 8 sessions; improvements maintained over 1 month f/u

Need for integrated treatment

- Parallel Treatment

- Poor collaboration among providers
- Different philosophies of treatment
- Patient receives no treatment because no one takes responsibility

- Sequential Treatment

- Untreated disorder worsens the treated disorder
- Disagreement as to which should be treated first
- Clinicians don't follow through with referral for the untreated disorder

Need for integrated treatment

- Liedl and Knaevelsrud [2008]
 - Psychoeducation
 - Physical activation to break the cycle of avoidance
 - Relaxation techniques to reduce hyperarousal [progressive muscle relaxation, diaphragmatic breathing, biofeedback]

INTEGRATED TREATMENT MODEL [OTIS AND KEANE]

Treatment Components

CBT for Pain

- Education re: pain
- Relaxation training
- Cognitive restructuring
- Stress management
- Activity pacing
- Pleasant activity scheduling
- Anger management
- Sleep hygiene
- Relapse prevention

CBT for PTSD

- Education re: PTSD
- Cognitive restructuring vs Prolonged Exposure therapy
- Teach coping skills
- Social support
- Anger management & sleep
- Reprocessing the meaning of the event

Integrated Treatment

- Session 1 Education on Chronic Pain and PTSD
- Session 2 Making Meaning of Pain and PTSD
- Session 3 Thoughts/Feelings related to Pain and PTSD & Cognitive Errors
- Session 4 Cognitive Restructuring
- Session 5 Diaphragmatic Breathing and Progressive Muscle Relaxation
- Session 6 Avoidance and Interoceptive Exposure
- Session 7 Pacing and Pleasant Activities
- Session 8 Sleep Hygiene
- Session 9 Safety/Trust
- Session 10 Power/Control/Anger
- Session 11 Esteem/Intimacy
- Session 12 Relapse Prevention and Flare-up Planning

Table 2. Selective Serotonin Reuptake Inhibitor and Serotonin Norepinephrine Reuptake Inhibitor Antidepressant Options

Medication	Anxiolytic Efficacy*	Advantages	Disadvantages
Fluoxetine	Panic, [†] PTSD*	Generic available; long half life (no withdrawal)	Most stimulating; longer half life
Paroxetine	Panic, [†] GAD, [†] SAD, [†] PTSD [†]	Generic available; most extensively studied across these anxiety disorders; least stimulating; no P450 3A4 effects	Most sedating; shorter half life and worse withdrawal
Sertraline	Panic, [†] GAD,* SAD, [†] PTSD [†]	Well-studied across these 4 anxiety disorders; least P4502D6 effects; minimal P4503A4 effects; intermediate half life (less withdrawal)	Most diarrhea
Citalopram	Panic*	Generic available; no P450 effects	
Escitalopram	Panic,* GAD, [†] SAD*	No P450 effects	
Venlafaxine ER	Panic, [†] GAD, [†] SAD, [†] PTSD	No P450 effects, pain effects	Short half life; withdrawal with missed dose or sudden discontinuation; increased blood pressure at >225 mg
Duloxetine	GAD [†]	Pain effects	Unclear efficacy for other anxiety disorders; more stimulating

*Randomized controlled trials but no Food and Drug Administration-approved indication.

[†]Food and Drug Administration-approved indication as of January 2006.

GAD, generalized anxiety disorder; PTSD, posttraumatic stress disorder; SAD, social anxiety disorder.

Basic Steps to pharmacotherapy

- Step 1: Try an SNRI or an SSRI
- Step 2: Augment with anti-anxiety medications [non-benzodiazepines first, then benzodiazepines]
 - Early in tx for faster response/”bridge”
 - Later for breakthrough anxiety
 - Consider use of gabapentin, pregabalin
- Step 3: Switch SSRI/SNRI or anti-anxiety medications
- Step 4: Continued lack of response: Consult with a specialist
- <http://hsc.unm.edu/som/psychiatry/crcbh/docs/COD%20Manual%20-%20FINAL%20-2-2010.pdf>

Posttraumatic Stress Disorder (PTSD)

Medication Treatment

- Prazosin [evidence: Ib]
- SSRIs [evidence: Ia]
- SNRIs [evidence: Ib]
- Antipsychotics [evidence: Ib] works best for those that do not respond to SSRI/SNRI
- Bupropion, Trazodone [evidence: IIa]
- Mirtazepine [evidence: IIb]



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Davidson, et al. Archives of General Psychiatry, 2006;63:1158-1165

Rothbaum, et al. Journal of Clinical Psychiatry, 2008;69:520-525 (less promising: Krystal, et al. JAMA, 2011)

Tyrer & Silk, Effective Treatments In Psychiatry, 2008, Cambridge University Press

Conclusions

- Chronic pain and PTSD co-occur at higher than expected rates
- Co-occurrence related to worse outcomes
- There may be mutually maintaining underlying mechanisms
- These mechanisms can often be addressed through non-pharmacologic means
- Medications can also play an important role in treatment