PainWeek®

Moving Beyond the Obvious: The Pivotal Role of Psychology in Pain Management

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Disclosures

- Consultant/Independent Contractor: Johnson and Johnson
- Advisory Board: Bicycle Health, Lumina Analytics
- Stock Shareholder: Bicycle Health

Learning Objectives

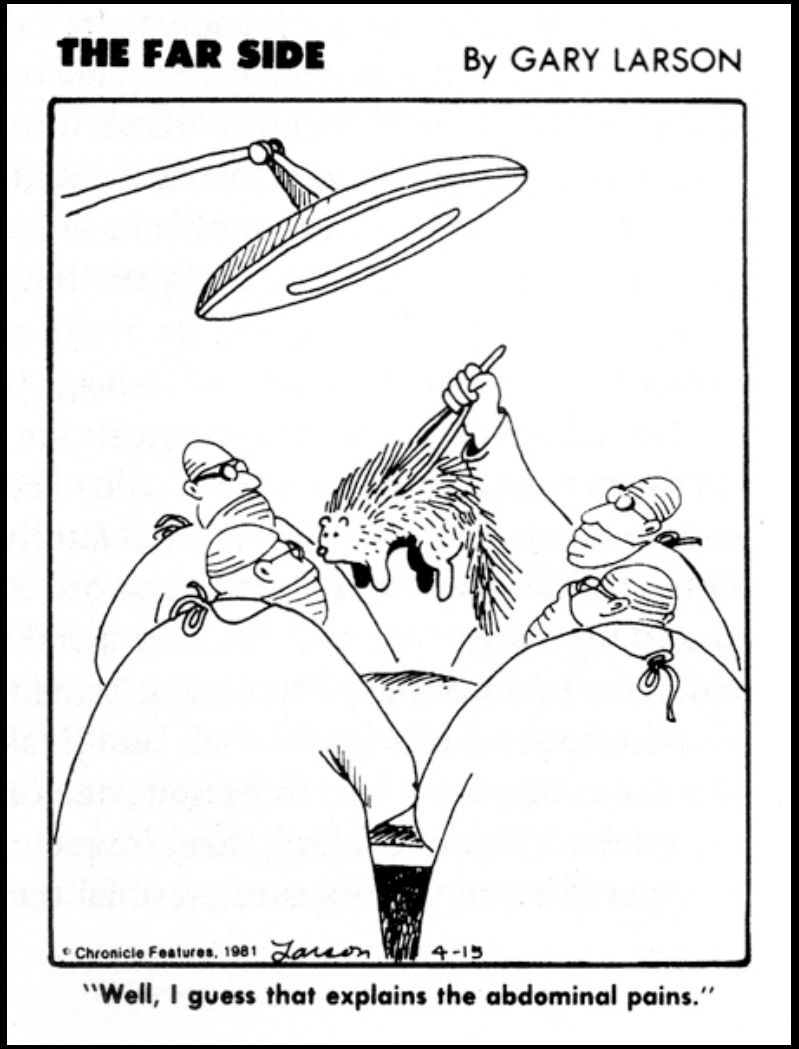
- Articulate the differences between acute and chronic pain etiology and treatment

- Identify evidence-based treatments for pain

Pain in Context

- IOM Report (2011)
  - Chronic pain affects approximately 100 million American adults
  - More than those affected by heart disease, cancer, and diabetes *combined*
  - Estimated annual cost of $500-600 billion in medical treatment and lost productivity

Pain Etiology



Etiological Pathways

- Biomedical
  - Initial lesion
  - Brain processing
- Physical
  - Posture
  - Repetitive movements
  - Deconditioning
  - Overcompensation
  - Guarding

Psychological Factors and Pain

- Depression and Pain
- Currie & Wang (2005) examined the temporal relationship between MDD & CBP in the general Canadian population
- National Population Health Study (NPHS)
  - Data comprised of physical & mental health status, lifestyle behaviors, healthcare utilization, socioeconomic information
  - Time 1 – Time 2: 24 months
  - Study comprised of 9,909 respondents
- Depressed individuals 3x more likely to develop CBP compared to non-depressed individuals

Psychological Factors and Pain

- Epidemiologic Catchment Area Project (funded by NIMH) sought to assess prevalence of psychiatric disorders in the general population
  - Data collected between 1980-1983, 1993-1996 in 3 waves
  - n > 20,000; Baltimore area n = 3,349, 2747, 1771
  - Diagnostic Interview Schedule: structured interview created by NIMH for study, yields diagnoses of specific disorders
- At 13 year f/u, risk of CBP increased when depressive disorder present at baseline
- Lifetime history of depressive disorder at wave 1 or 2 associated with greater than 3x risk for first ever report of back pain during the 13 year f/u period

Adverse Childhood Experiences

- Adverse Childhood Experience (ACE) Study
  - CDC/Kaiser Permanente collaboration
  - Co-PIs: Robert Anda, MD, Vincent Felitti, MD
  - Examining relationship between ACEs and health/behavioral outcomes later in life
  - Data gathered from 17K individuals between 1995-97

Adverse Childhood Experiences

- Physical/emotional neglect
- Recurrent emotional abuse
- Recurrent physical abuse
- Sexual abuse (contact)
- Household substance abuse
- Incarceration of household member
- Chronic mental illness
- Mother treated violently
- One or no parents

Adverse Childhood Experiences

- Higher ACE scores increase risk for developing
  - Medical/psychiatric disease
  - CD/SA issues
  - Health-related QOL issues
  - Partner violence
  - Sexual activity
  - Suicidality

Adverse Childhood Experiences

- Abuse and Somatic Disorders
- Systematic review & meta-analysis of literature from 1/1980 – 12/2008 (Paras et al. 2009)
- 23 studies, 4640 subjects
- Significant association between sexual abuse and a lifetime diagnosis of:
    - Functional GI disorders
    - Non-specific chronic pain
    - Psychogenic seizures
    - Chronic pelvic pain

Psychological Factors and Pain

- Surgical Outcomes (lumbar surgery, SCS)
- Review of literature relating to presurgical psychological screening
- Successful outcomes generally defined
  - Decreased pain
  - Increased function
  - Return to work
  - Reduced medical treatment
- Positive relationship between one or more psychological factors and poor treatment outcome in 92% of reviewed studies

Psychological Factors and Pain

- Most useful predictors of poor outcome:
  - Presurgical somatization
  - Depression
  - Anxiety
  - Poor coping

- Minimally predictive factors
  - Pretreatment physical findings
  - Activity interference
  - Presurgical pain intensity

Summary: Role of Psychology in Pain Etiology

- Some pain conditions are primarily due to psychogenic factors but virtually all can be influenced by psychological factors

Does pain serve any function or purpose?


WARNING
BEWARE
OF HARM


Beware

Is All Pain the Same?

Acute Pain

- Hurt = Harm
  - –Avoidance decreases damage
- Etiology:
  - –Clear pathway
  - –Often single cause
- Treatment Course
  - –Fixed end point
  - –Immobilization often essential for recovery
  - –Medications

Chronic Pain

- Hurt ≠ Harm
  - –Fear-avoidance cycle
- Etiology:
  - –Many unknowns
  - –Multifactorial
- Treatment Course
  - –No fixed end point
  - –Immobilization can worsen condition
  - –Medications: Caution

Management Approach to Pain

- Similar to other chronic health conditions lacking a cure
- Focus on quality of life & functioning

Example: Diabetes

- Regulate diet
- Check blood sugars
- Exercise regularly
- Take insulin/medications
- Monitor wounds

Chronic Pain Management

- Medical optimization
  - Physician, NP, PA
- Physical reconditioning
  - Rehabilitation provider (e.g., PT)
- Behavioral/lifestyle modification
  - Pain psychologist

Interdisciplinary Management

Diabetes

- Regulate diet
- Check blood sugars
- Exercise regularly
- Take insulin/medications
- Monitor wounds

Chronic Pain

- Medical optimization
- Physical reconditioning
- Behavioral/lifestyle modification

Common Pain Psychology Curriculum Components

- Overview of pain
- Pacing of activities
- Pain & stress physiology
- Relaxation training
- Sleep hygiene

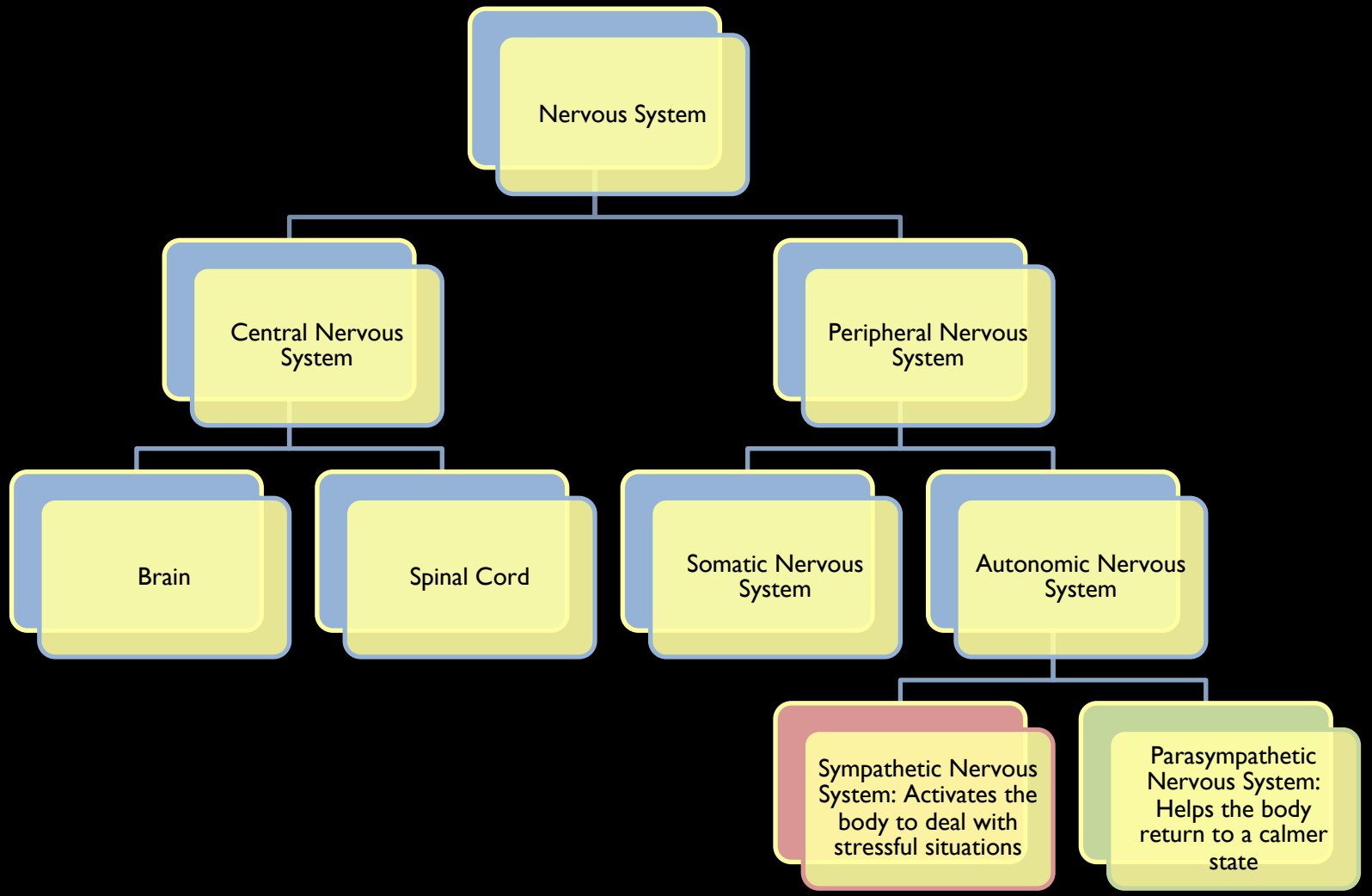
Common Pain Psychology Curriculum Components

- Identifying environmental stressors (work & home)
- Development of stress management techniques (e.g., cognitive restructuring)
- Assertiveness/communication skills development
- Flare contingency planning

Deconstructing Pain Psychology

- Relaxation training
- The role of cognitive processes

Stress, the Nervous System, and Pain



Stress, the Nervous System, and Pain

Sympathetic Activation

- Increased heart rate
- Increased blood pressure
- Increased muscle tension
- Constriction of blood vessels
- Release of stress hormones
- Pupil dilation
- Change in breathing patterns
- Additional systemic changes

Stress, the Nervous System, and Pain

Parasympathetic Activation

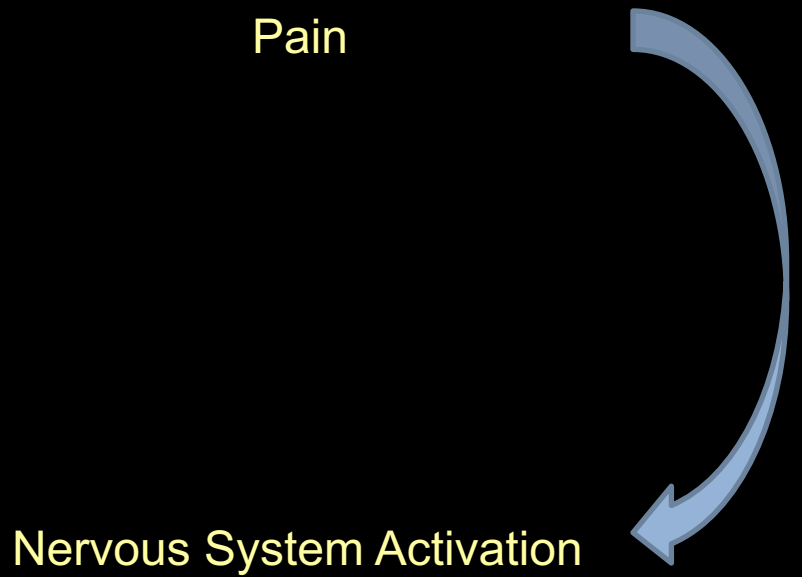
- Decreased heart rate
- Decreased blood pressure
- Decreased muscle tension
- Expansion of blood vessels
- Discontinuation of stress hormone release
- Pupil constriction
- Change in breathing patterns
- Additional systemic changes

Stress, the Nervous System, and Pain

Pain

Nervous System Activation

Stress, the Nervous System, and Pain



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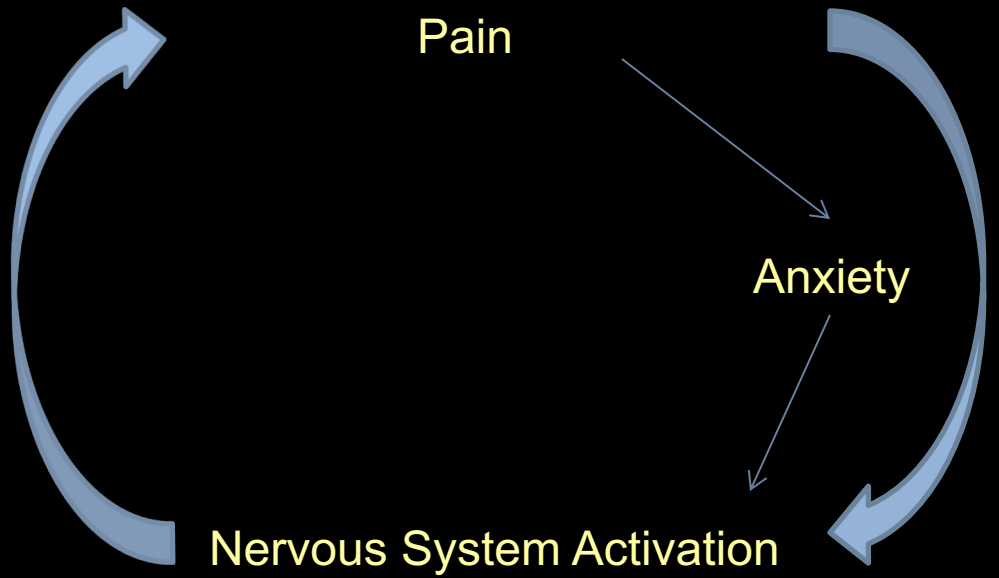

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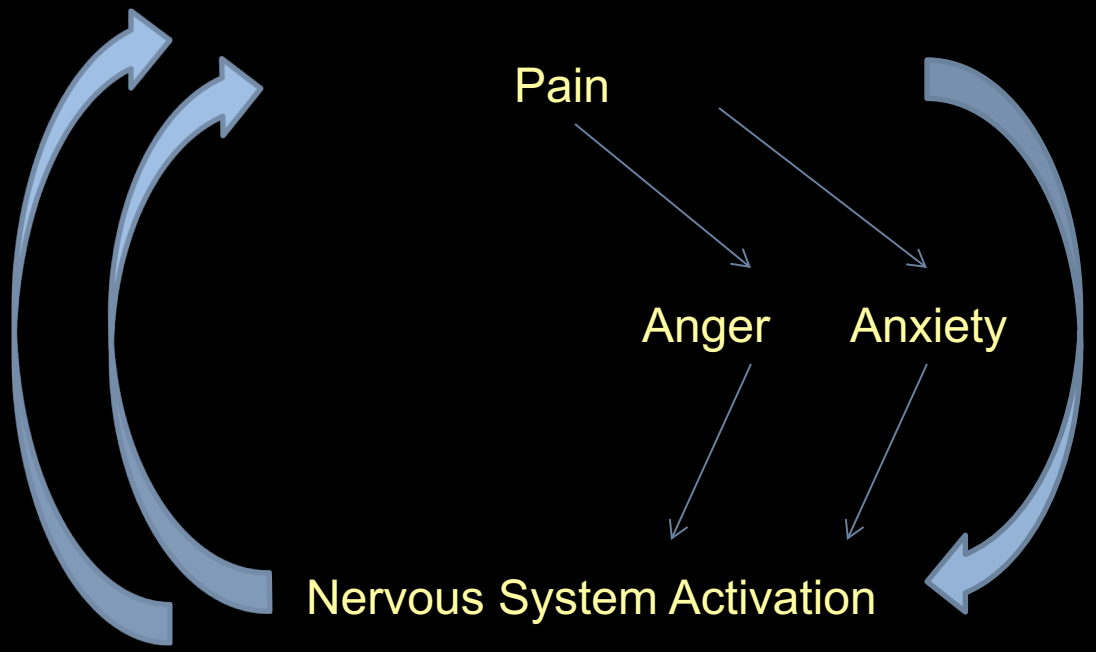

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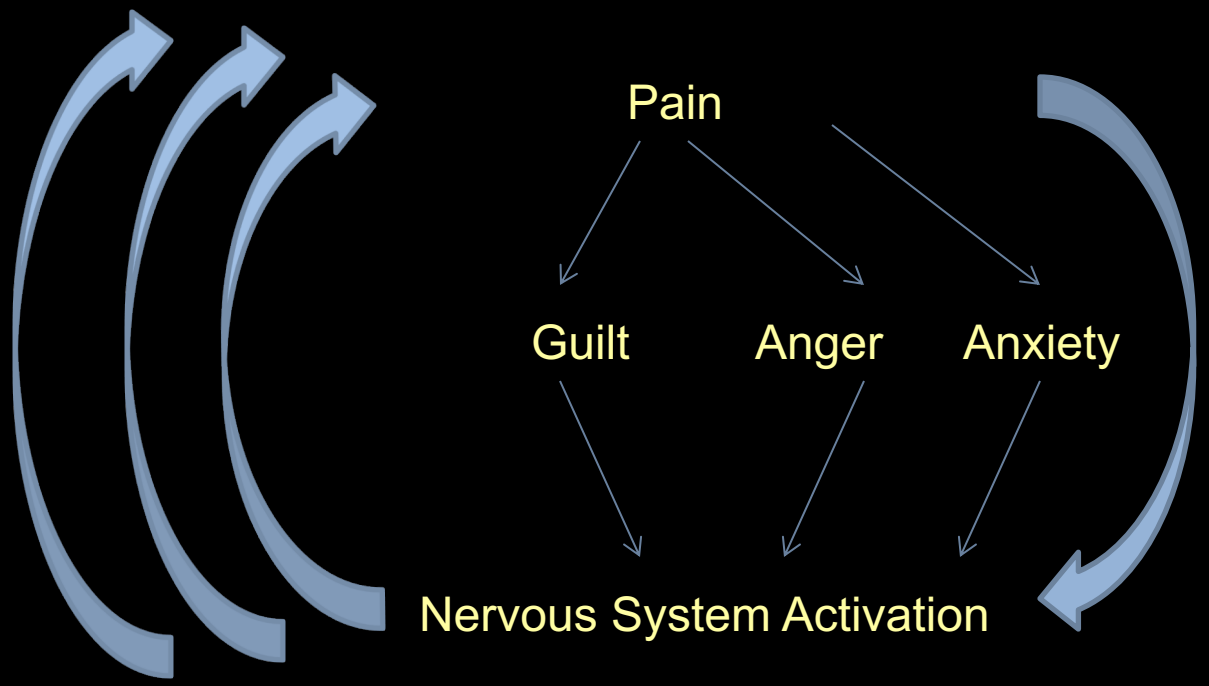

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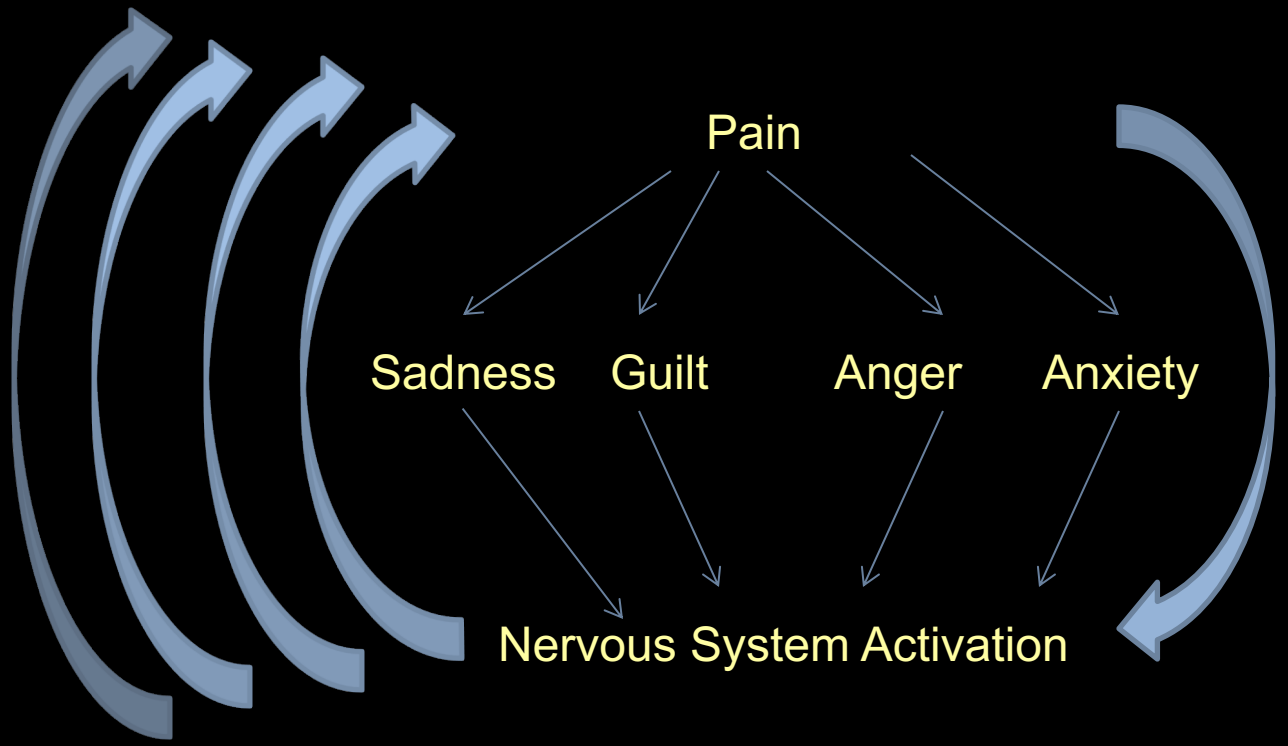

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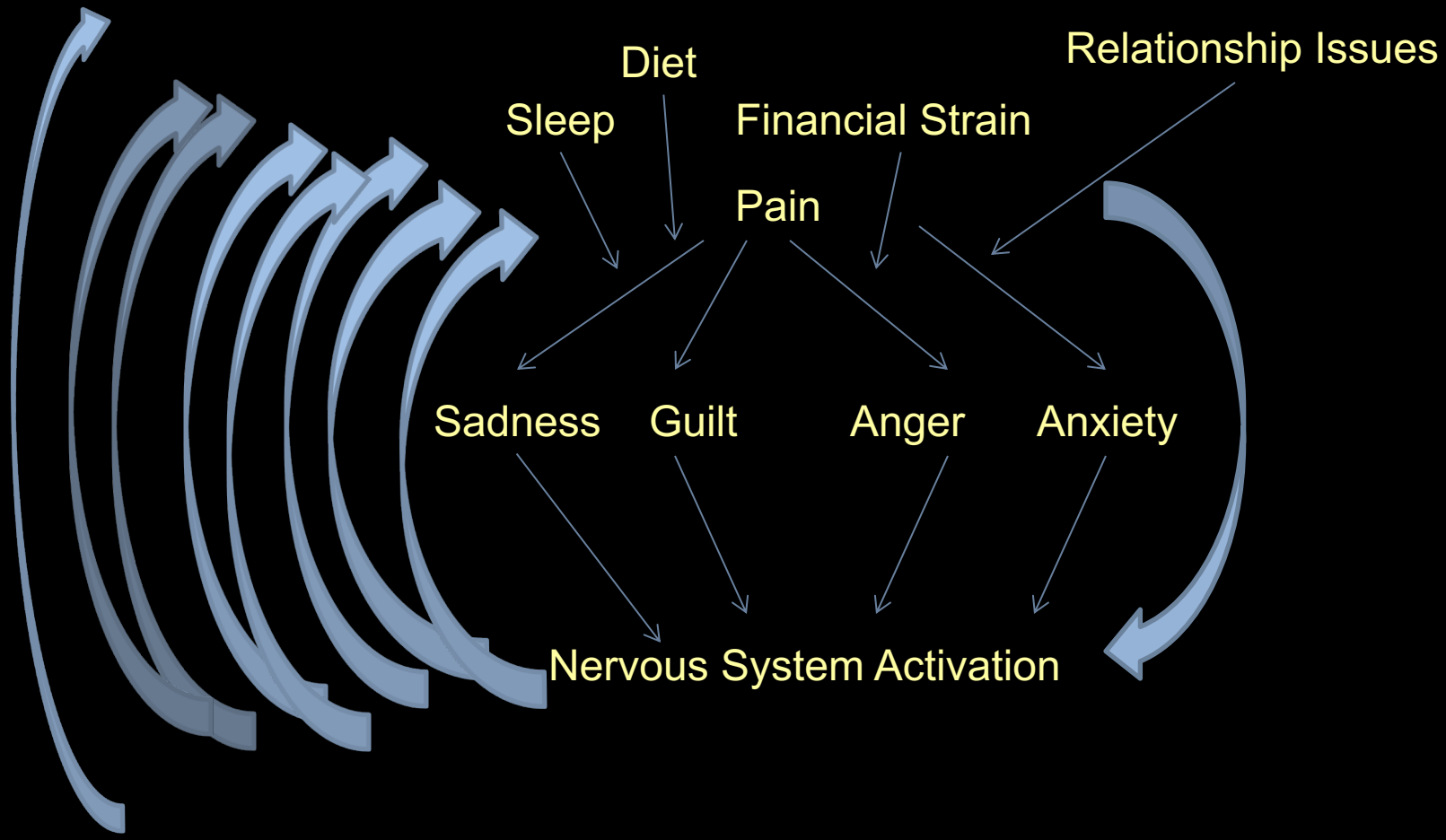

Relaxation Training

- Breathing exercises
  - Parasympathetic activity
  - Distraction

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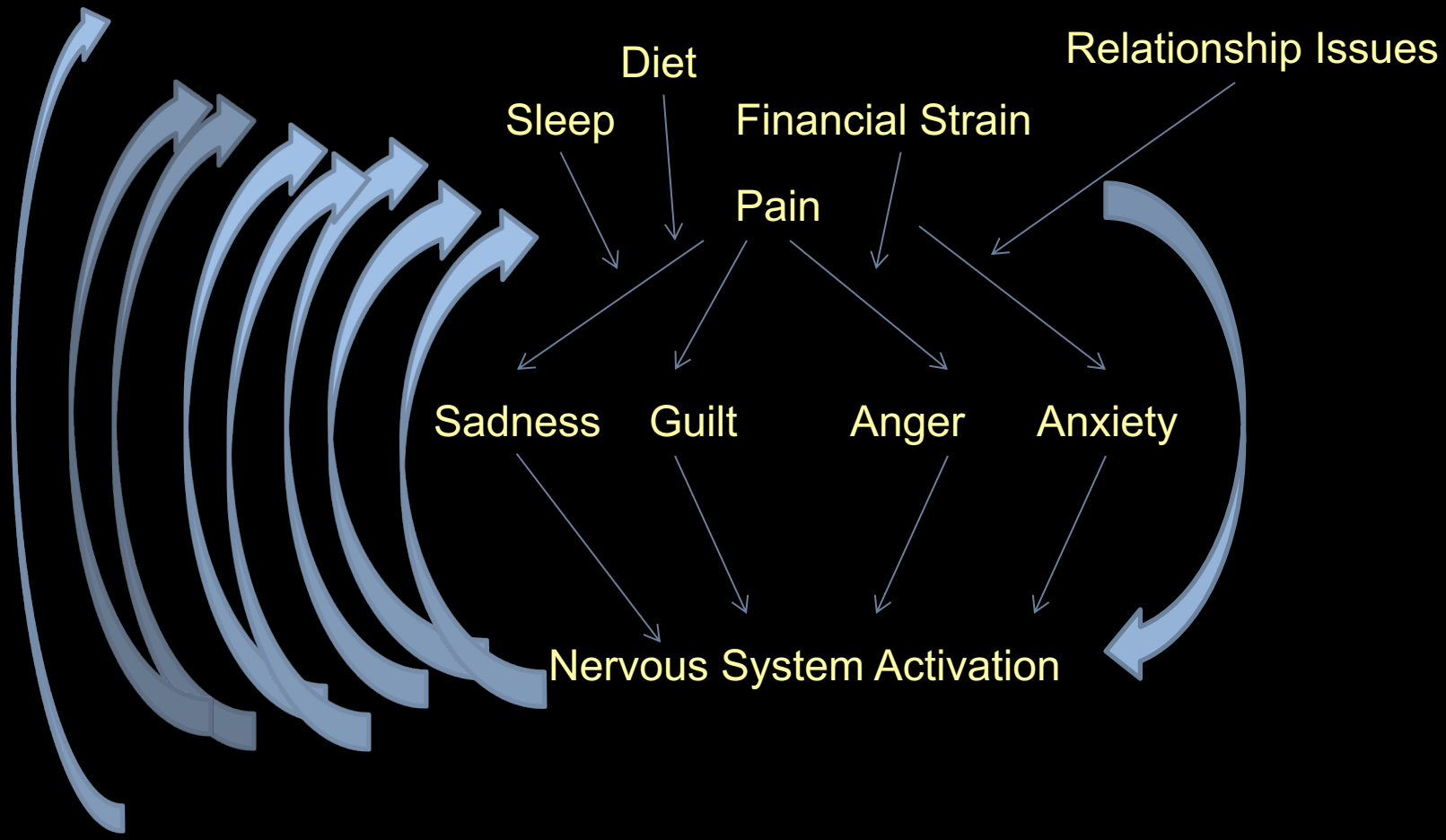

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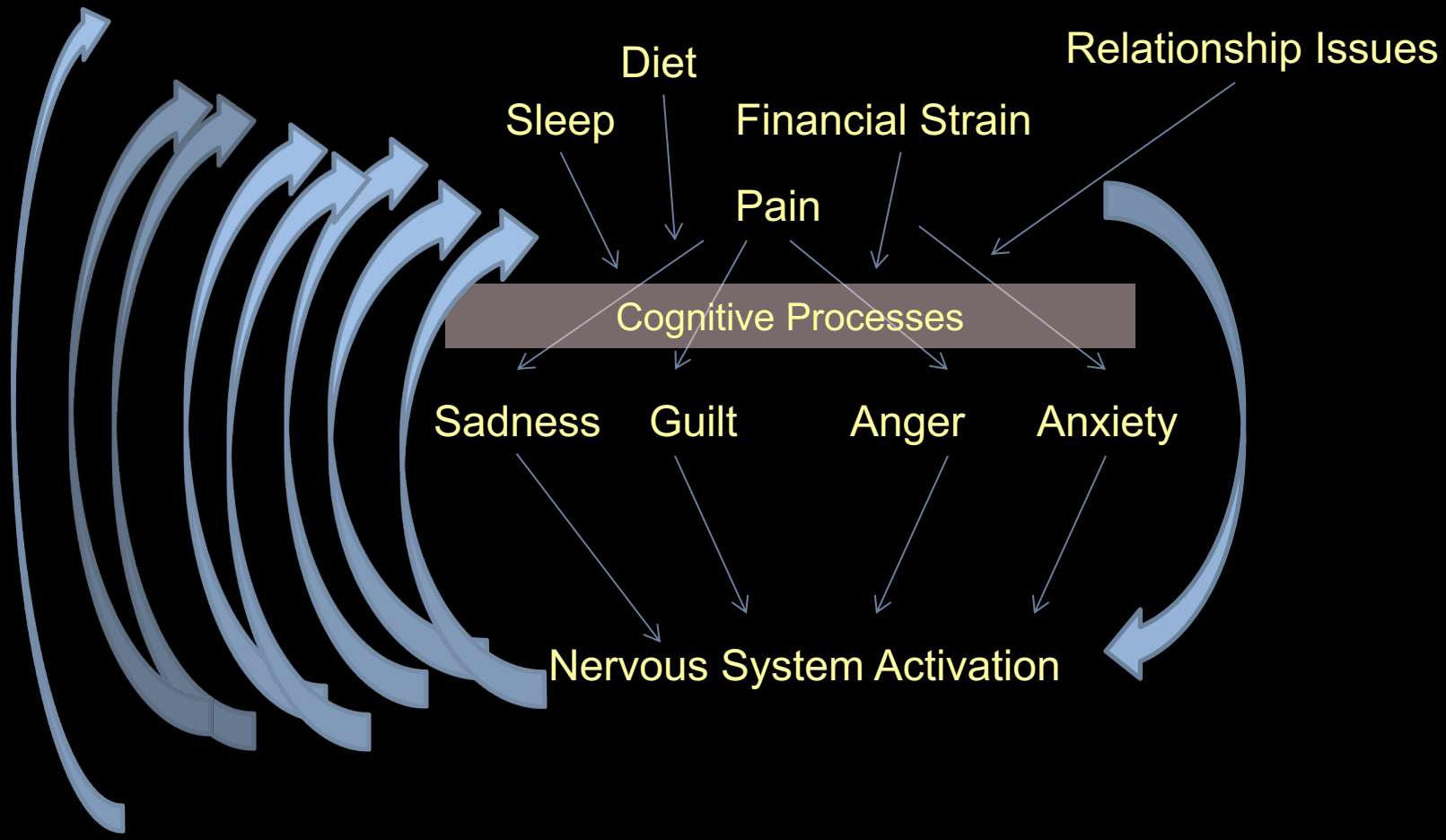
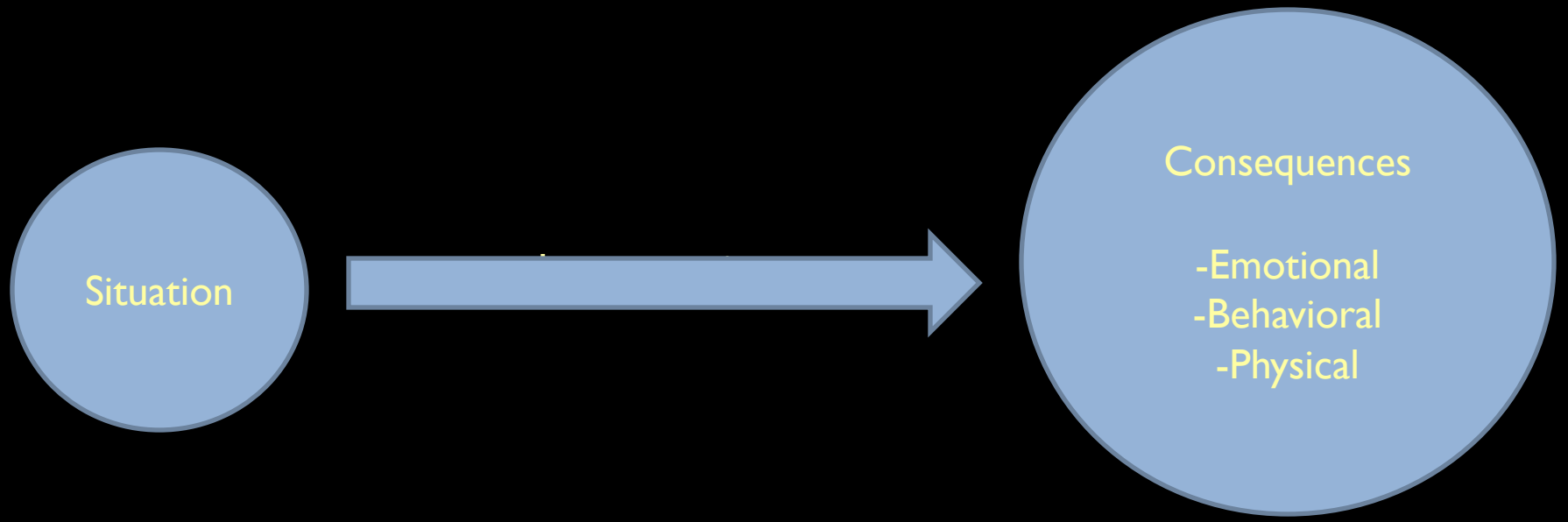


The Role of Cognitions



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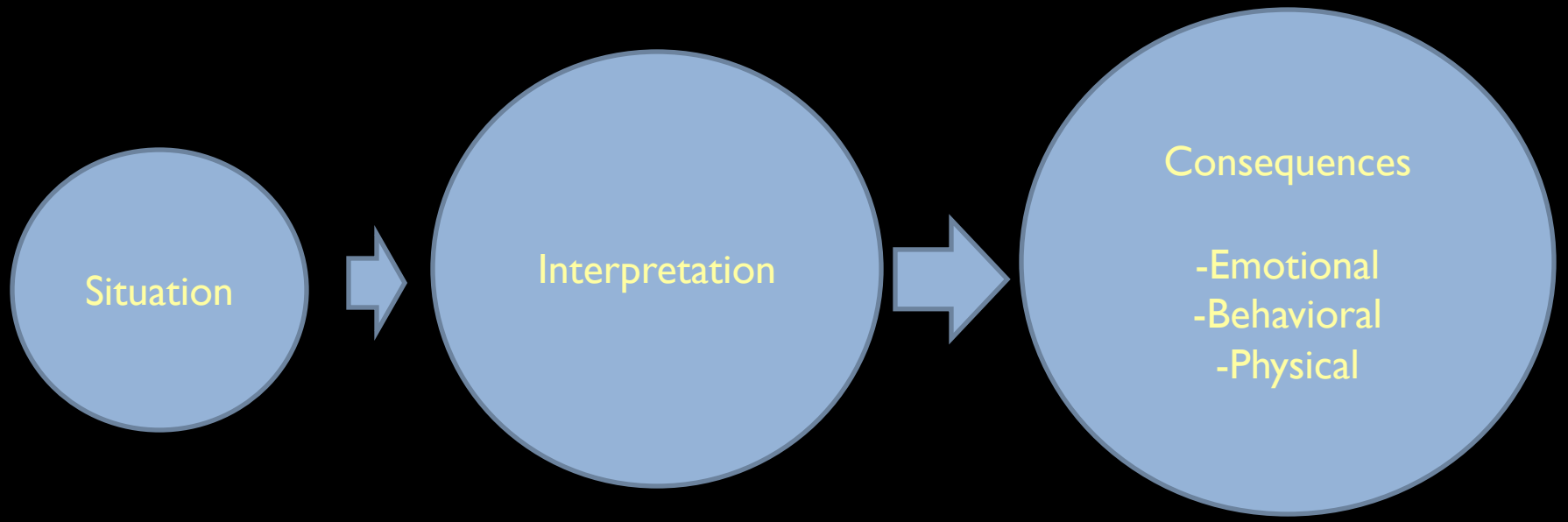

The Role of Cognitions

- Thought processes are often rooted in our core perception of ourselves and our roles in this world
- Usually shaped by early experiences
- Much of our maladaptive behaviors are rooted in dysfunctional thought patterns
- Can take a significant amount of time and work to alter our automatic thought processes

Catastrophization

- Exaggerated perception of a situation being worse than it actually is
  - Magnification
  - Rumination
  - Helplessness

Catastrophization

- Implications
  - Pain expectations → affective distress
  - Somatic hypervigilance/attention → increased pain perception
  - Activity reduction coping strategy → fear-avoidance cycle
  - Persistent symptoms
  - Disability

Goal of Cognitive-Behavioral Therapy

- Target maladaptive thought process to achieve healthier outcomes
  - Emotional
  - Behavioral
  - Physiologic

Empirically Validated Treatment: Self-Management Education

- Lambeek, Van Mechelen, Knol, Loisel, Anema (2010)
- Buchner, Zahlten-Hinguranage, Schiltenwolf, Neubauer (2006)
- Linton & Ryberg (2001)
- Flor, Fydrich, Turk (1992)

Empirically Validated Treatment

- Linton & Andersson (2000)
  - Randomized control trial (n=213)
  - All patients received regular primary care tx + Minimal Treatment (information pack, pamphlet) or 6-session CBT treatment.
  - Assessments administered at pretest and 12-month follow-up
  - Risk for developing long-term sick absence decreased 9x in CBT group
  - CBT participants had decreased medical utilization compared to increase in other groups

Empirically Validated Treatment

- Linton & Nordin (2006)
  - 5-year follow-up of Linton & Andersson (2000) study, also used supplemental records from the National Insurance Authority
  - 97% completed follow-up questionnaire
  - CBT group had significantly less pain, higher activity, better quality of life, and better general health compared to Minimal Treatment Group
  - Risk of long-term sick leave 3x higher in the non-CBT group
  - CBT group had significantly less lost productivity costs

Empirically Validated Treatment

- Gatchel, Polatin, Noe, Gardea, Pulliam, Thompson (2003)
  - Patients deemed HR for development of chronic disability were randomly assigned to an early intervention FR group (n=22) or a non-intervention group (n=48). Low risk non intervention subjects also evaluated (n=54).
  - Patients tracked at 3 month intervals over the course of a year
  - HR patients in the early intervention group had significantly lower rates of healthcare utilization, medication use, and self-report pain variables

Empirically Validated Treatment

- [continued] Gatchel, Polatin, Noe, Gardea, Pulliam, Thompson (2003)
  - HR non-intervention group displayed more symptoms of chronic pain disability compared to low risk subjects
  - Greater cost savings associated with early intervention ($12,721) vs no intervention group ($21,843). Cost variables included healthcare visits, medication, lost wages, early intervention program cost.

Cochrane Review of Multidisciplinary Programs for Pain

- 41 studies, 6858 participants
- LBP > 3 months with some prior treatment
- MDP vs unimodal care focused on physical factors, standard care with GP
- Moderate quality evidence for improvements in pain and daily functioning
- Increased likelihood of RTW in 6-12 months

Biofeedback

- Definition
- Course of treatment
- Non-invasive
- Active versus passive treatment modality

Empirically Validated Treatment: Biofeedback

Appl Psychophysiol Biofeedback (2008) 33:125–140
DOI 10.1007/s10484-008-9060-3

Biofeedback Treatment for Headache Disorders: A Comprehensive Efficacy Review

Yvonne Nestoriuc · Alexandra Martin · Winfried Rief · Frank Andrasik

Published online: 26 August 2008

Empirically Validated Treatment: Biofeedback

- Focused on migraine and TTH
- 150 outcome studies, 94 included in review
- Medium to large mean effect sizes
- Results stable over time (ave 14 months)

Empirically Validated Treatment: Biofeedback

- Improvements
  - Headache frequency
  - Perceived self-efficacy
  - Anxiety symptoms
  - Depressive symptoms
  - Medication usage

Empirically Validated Treatment: Biofeedback

- BFB superior compared to wait list control and headache monitoring
- EMG for TTH headache superior to placebo and relaxation therapies

Empirically Validated Treatment: Biofeedback

- Limitations
  - Not sufficiently investigated with other specific disorders

Mindfulness-Based Stress Reduction

- Jon Kabat-Zinn (1979) U. Mass

- Curriculum
  - 8 weeks (2.5 hour sessions)
  - Full day retreat
  - Experiential
  - Didactics
  - Group discussion
  - Daily practice

Mindfulness-Based Stress Reduction

"The awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment to moment"

Mindfulness-Based Stress Reduction

- Application in pain
  - Awareness of somatic sensations without emotional attachment
  - Physiologic implications
  - Desensitization: experience of pain without negative consequences

Empirically Validated Treatment: MBSR

- Literature review (1960-2010)
- Focused solely on studies examining pain intensity
- Significant evidence for reduction in PI
- Other studies have found possible non-specific effects
- *Note: MBSR does not target changing/controlling pain*

Acceptance and Commitment Therapy

- Based on a relational approach to human language and cognition
- Uses acceptance and mindfulness processes and commitment and behavior change processes to create psychological flexibility

Acceptance and Commitment Therapy

- Movement away from strategies to control pain
- Focus on longer-term values rather than more immediate thoughts and emotions

Acceptance and Commitment Therapy

- Pain acceptance associated with decreases in
  - Pain intensity
  - Pain-related anxiety
  - Pain-related avoidance
  - Depression
  - Disability

Empirically Validated Treatment: ACT

- Meta analysis (22 studies, 1235 patients)
  - Small to medium effects on
    - Pain intensity
    - Depression
    - Anxiety
    - Physical well-being
    - Quality of life
- Findings equivalent to CBT

Empirically Validated Treatment: ACT

- ACT vs CBT
  - 114 pain participants(18-89)
  - Random assignment to 8 week ACT or CBT tx
  - Assessments at 4 time points including 6 month follow-up

Empirically Validated Treatment: ACT

- ACT vs CBT
  - Improvements for both groups
    - Pain interference
    - Pain-related anxiety
    - Depression
  - Tx effects maintained at 6 month follow-up
  - No between group differences
  - ACT participants more satisfied with tx

Emotional Awareness and Expression Therapy

- Centralized pain conditions
- Core principles/techniques:
  - Brain generates and amplifies pain
  - Stressful experiences and avoidance of their associated impacts can influence pain
  - Therapy focuses on helping patients develop an awareness of the above and appropriately express their associated emotions

Lumley MA & Schubiner, H. Emotional Awareness and Expression Therapy for Chronic Pain: Rationale, Principles and Techniques, Evidence, and Critical Review. Current Rheumatology Reports (2019) 21:30.

Emotional Awareness and Expression Therapy

- Core principles/techniques (continued):
  - Therapy helps patients rescript their traumas/past stories and learn to express the "right emotion at the right target"
  - Communication and boundary setting as a means of reducing stress and pain are taught and applied

Lumley MA & Schubiner, H. Emotional Awareness and Expression Therapy for Chronic Pain: Rationale, Principles and Techniques, Evidence, and Critical Review. Current Rheumatology Reports (2019) 21:30.

Emotional Awareness and Expression Therapy

- Applied in individual and group formats
- Reliably reduces pain and interference
- Was found to be more effective than CBT for fibromyalgia

Lumley MA & Schubiner, H. Emotional Awareness and Expression Therapy for Chronic Pain: Rationale, Principles and Techniques, Evidence, and Critical Review. Current Rheumatology Reports (2019) 21:30.

Evidence For Psychological Treatments

Procedure	Guideline	Level of evidence
• CBT	ACOEM Pain	Better Evidence
• CBT	Colorado Pain	Strong Evidence
• CBT	AHRQ Pain	Better Evidence
• Mindfulness	AHRQ Pain	Better Evidence
• Interdisciplinary Tx	AHRQ Pain	Better Evidence
• Interdisciplinary Tx	ACOEM Pain	Good Evidence
• Pain education	Colorado Pain	Better Evidence
• Biofeedback	ACOEM Pain	Good Evidence
• Fear avoidance	ACOEM Pain	Good Evidence

Putting it All Together: Addressing Chronic Pain

- Employ use of a biopsychosocial formulation of the patient's predicament versus focusing solely on a biomedical model
- Emphasize focus on function versus pain elimination: Set functional goals (resumption of normal activities, RTW) and use activity tracking sheets
- Select most appropriate evidence-based treatment based on patient presentation

Questions?

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