

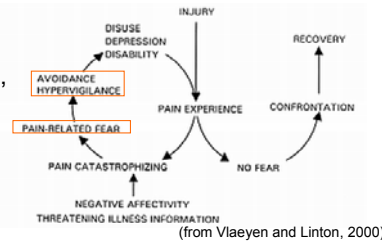
# Attention Bias In Chronic Pain Patients: Difficulty Disengaging from Negative Stimuli

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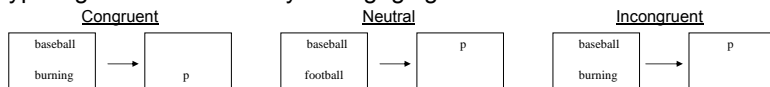
## Background

- The Fear-Avoidance Model of Chronic Pain (Vlaeyen and Linton, 2000; Leeuw et al., 2007) predicts that fear of pain and attention bias (e.g., avoidance, hypervigilance) contribute to the development of chronic pain (CP).
- Previous research has provided evidence for attention bias for pain-related information in CP patients (e.g. Dehghani et al., 2003).
- However, recent cognitive science research has shown that attention bias may consist of either **hypervigilance** or **difficulty disengaging** (Koster et al., 2004), a distinction that has significant implications for treatment.
- Models of anxiety indicate **difficulty disengaging** as the primary mechanism of attention bias, therefore, we hypothesize that attention bias in CP will also consist of difficulty disengaging from pain-related information.

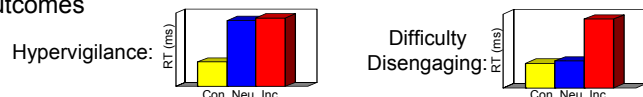


## Method

- Participants
  - Sample consists of a diverse public sector population at an urban hospital (41% African American, 25% Caucasian, 14% Asian American, 14% Latino, 5% Native American).
  - 30 chronic pain patients (CP) in pain for ≥6 months: mean age=49.9, average pain rating (out of 10)=6.5, average years of pain=8.8
  - 14 control patients: mean age=45.7, no current pain, no history of chronic pain
- Psychometric Assessment
  - Fear of Pain: Fear of Pain Questionnaire-III (McNeil and Rainwater, 1998)
  - Posttraumatic Stress: Posttraumatic Diagnostic Scale (Foa et al., 1997)
  - Anxiety: Burns Anxiety Inventory (Burns, 1984)
  - Depression: Beck Depression Inventory-II (Beck et al., 1996)
- Behavioral Measure
  - Dot Probe Task** used to assess attention bias for pain-related words
    - 500 ms presentation of pain-neutral word pairs, followed by response to neutral probe stimulus ('p' or 'q').
      - Pain word categories: negative affective, disability, sensory, threat.
    - Faster reaction time (RT; ms) for congruent versus incongruent condition indicates attention bias for pain-related information.
    - Inclusion of neutral-neutral condition allows for distinction between hypervigilance and difficulty disengaging.



- Possible outcomes

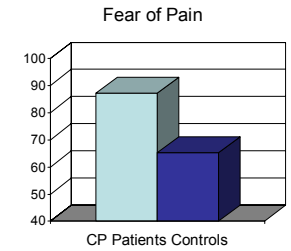


## Results

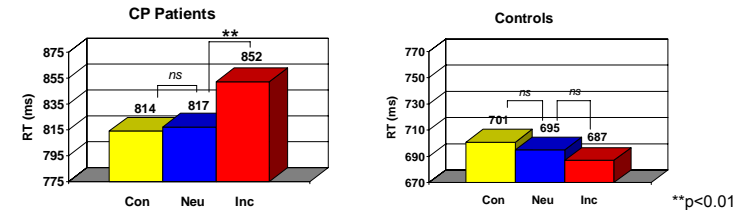
- CP patients reported significantly higher levels of fear of pain, posttraumatic stress, anxiety, and depression.

	CP Mean (SD)	Control Mean (SD)	t-score
Fear of Pain	87.2 (33.2)	65.2 (29.2)	2.1*
Posttraumatic Stress	20.2 (15.6)	8.8 (7.6)	2.6*
Anxiety	39.3 (26.8)	13.8 (13.7)	3.3**
Depression	18.7 (13.1)	6.8 (6.2)	3.2**

\*\*p<0.01, \*p<0.05



- Reaction time differences between CP patients and controls
  - Attention bias found for **negative affective** words in CP patients only [F(1.43,41.44)=3.96, p<0.05], with follow up analyses indicating a **difficulty disengaging** from these stimuli.
  - No attention bias found for control patients.
  - No attention bias found for disability, sensory, or threat stimuli in CP patients.



## Discussion

- Current findings indicate that attention bias for negative stimuli in CP is a result of **difficulty disengaging** from such stimuli. This is the first study of its kind to find that *CP patients and controls differ in their patterns of attention to negative affective information*.
  - The absence of attention bias for disability, sensory, or threat information is noteworthy. This may be due to nature of the public sector sample and the high ratings of posttraumatic stress, anxiety, and depression.
  - These findings support hierarchical models of sensitivity (e.g. Keogh and Asmundson, 2004) in which general negative affectivity overrides more specific anxiety sensitivity and fear of pain.
- Thus, CP patients who report high levels of fear of pain, posttraumatic stress, anxiety, and depression may experience difficulty disengaging from negative affective information, which may contribute to the etiology and maintenance of CP.
- Treatment implications:** Focus should be given to helping patients disengage from, or let go of, negative affective information once it is attended to. This may be done through interventions such as developing coping and mindfulness skills.