

## **ABSTRACT**

**i. Title:** Pain, Action and Interference

**ii. Author:** Johan W.S. Vlaeyen, PhD

Professor Health Psychology,  
Health psychology Research group  
KU Leuven University, Belgium and Maastricht University, Netherlands

**iii. Learning objectives:**

After the presentation, the participants will get a better understanding that ...

1. Pain is part of a motivational system that alarms, directs and energizes behavior in order to minimize threats to the organism.
2. The Fear-Avoidance Model of chronic pain has helped to better understand the transition from a common pain episode to burdensome persistent pain, and a large body of evidence is in line with its assumptions.
3. Learning enables the organism to respond to the relevance of noxious stimuli (either through habituation or sensitization), to predict harmful events (Pavlovian conditioning), and to prevent harmful events through avoidance behavior (operant conditioning).
4. There is strong evidence that fear of painful events can be learned, but the question whether pain itself can be a learned response is still unanswered
5. Individuals with disabling chronic pain seem to favor a “better safe than sorry” strategy. False alarms seem to be accepted in order not to miss a true alarm.
6. Responding to noxious events takes place in the context of competing non-pain goals and needs, which may inhibit pain and pain avoidance.
7. Exposure-based treatments can significantly reduce pain-related fear and the interference of pain in daily live. Some studies reveal a significant reduction in the report of pain intensity after pain-related fear has diminished.

**iv. Summary:**

The transition from a common episode of acute pain to a state of intermittent or chronic disabling pain has been a lasting preoccupation of clinicians and researchers alike. Here we take the position that pain is not just a sensory and emotional experience, but that is a hard-wired signal of bodily disturbance that is part of a basic motivational system that urges the individual to act, and to restore its integrity. Given its eminent survival value, pain is a strong motivator for learning. Responding to the repeated occurrence of the same painful event increases when harm risks are high (sensitization), and decreases in the absence of such risks (habituation). Discovering relations between pain and other events provides the possibility to predict (Pavlovian conditioning) and control (operant conditioning) harmful events. Avoidance is of particular relevance in explaining the development of chronic pain problems: It is adaptive in short term, but paradoxically may have detrimental long-term effects. Pain does not occur in a vacuum, and the urge to act competes with other demands in the person’s environment. Exposure-based behavioral treatments have been developed that share the aim to facilitate or restore the pursuit of individual valued life goals in the face of persistent pain. Although these have shown to be effective, there is still room for further improvement, which may require a paradigm shift towards more personalized approaches.

**v. Implications/Conclusions:**

The fear-avoidance model integrates learning mechanisms into a heuristic that helps deepening our understanding of how chronic pain evolves from a common pain episode to chronic disabling pain. This modern learning approach, incorporating behavioral, cognitive and motivational aspects, has already contributed to the development of cost-effective exposure-based treatments. Challenges remain in order to harvest the full benefit of the knowledge gained so far. Future effort should focus on developing more specific assessment procedures that could direct clinicians to the best treatment options and optimize tailoring.

**vi. Key words:**

Pain, learning, motivation, avoidance, exposure, personalized treatment

**vii. References or articles we can put on our website to support your presentation:**

Crombez G, Eccleston C, Van Damme S, Vlaeyen JW, Karoly P. Fear-avoidance model of chronic pain: the next generation. *The Clinical journal of pain* 2012;28(6):475-483.

Vlaeyen JW, Linton SJ. Fear-avoidance model of chronic musculoskeletal pain: 12 years on. *Pain* 2012;153(6):1144-1147.

Vlaeyen JW. Learning to predict and control harmful events: chronic pain and conditioning. *Pain* 2015;156 Suppl 1:S86-93.

Vlaeyen JW, Crombez G, Linton SJ. The fear-avoidance model of pain. *Pain* 2016;157(8):1588-1589.