



Avoidance behavior in chronic pain research: A cold case revisited



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ABSTRACT

In chronic musculoskeletal pain, avoidance behavior is a prominent behavioral characteristic that can manifest itself in various ways. It is also considered a crucial component in the development and maintenance of chronic pain-related disability, supposedly fueled by pain-related fear and catastrophic beliefs. Despite the frequent occurrence of avoidance behavior and its potential impact on quality of life, relatively little research has been dedicated to the nature of avoidance in chronic pain and its assessment, leaving its underlying mechanisms poorly understood. In the current paper, we stipulate some of the existing parallels between chronic pain research and more basic fear and anxiety research inspired by modern learning theories. After a brief introduction, we discuss avoidance theories that are likely apt to be applied to chronic pain, including avoidance as a response that can affect fear responding, and the role of avoidant decision making and motivational context. Finally, we will outline how these theories may impact clinical treatment.

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Introduction

Simon, a 52-year-old male with back pain for the past 30 years is referred to a rehabilitation department for the treatment of his pain problem. Until a year ago, his pain was still bearable, and did not cause much problems in terms of daily functioning. Currently however, he experiences severe pain stabs, making him afraid there is something seriously wrong in his body. Simon admits the complaints are starting to interfere with his daily life activities [functional disability]. Simon no longer lifts heavy things, bends over, or does exercises, he finds himself giving up on his favorite activities: his job as a teacher, his dancing lessons with his wife, and he even cancelled his summer vacation [total avoidance behavior as in entirely not engaging in an activity]. Sometimes, he starts an activity but stops as soon as he thinks it may potentially harm his back [escape behavior]. Additionally, he is also doing certain activities less frequently, or in a different manner: using a lighter bicycle, carrying groceries cautiously, using a crutch while standing in the shower or when brushing his teeth

[subtle avoidance behavior]. Sometimes he tries not to concentrate on the pain, or to think of something else [covert avoidance]. When the therapist asks why he is behaving like this, he responds that it makes him feel safe [safety behavior or safety-seeking behavior]. Also, using these tricks and aids enables him to still achieve some of his goals [perceived benefits of avoidance behavior]. Simon also says that on the one hand, he wants to do things in such a way that he feels the least pain possible. On the other hand, when it really matters, he can do the activity despite the pain. For example, he drives the car at night despite pain to please his wife who really hates driving in the dark [valued goals override pain avoidance goals].

About one in five people in Europe (19% in the last 6 months) and the United States (19% based on 1-year prevalence, 29.3% lifetime prevalence) report chronic pain (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006; Von Korff et al., 2005). In the European study of Breivik et al. (2006), 18%–85% reported severe pain with an average of 34%. Sixty-six percent of chronic pain sufferers had moderate pain. Forty-six percent of European respondents with pain reported having constant pain, and 54% had intermittent pain. In addition, 40% of the European respondents were not satisfied with the effect of their pain treatment; 38% was not satisfied with the doctor treating their pain. Additionally, it also appears that people who experience long-lasting pain do not always experience

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much support from their social environment. In fact, 30% felt no one believed how much pain they were in. Finally, chronic pain not only puts a huge burden on the individual but also on society by excessive health care costs due to unnecessary and ineffective interventions and lost work productivity (Dagenais, Caro, & Haldeman, 2008; Ekman, Johnell, & Lidgren, 2005; van Tulder, Koes, & Bouter, 1995).

The apparent failure of curative treatments for chronic pain has inspired theoretical models that approach the understanding and management of chronic pain from a non-curative angle. Modern learning theories of chronic musculoskeletal pain have included fear of pain and avoidance behavior as a central disabling factor, as illustrated by the example of Simon. In particular, the fear-avoidance model (Crombez, Vlaeyen, Heuts, & Lysens, 1999; Lethem, Slade, Troup, & Bentley, 1983; Vlaeyen & Linton, 2000, 2012) has emphasized that catastrophic misinterpretations of and cognitions about pain give rise to pain-related fear, which can induce avoidance behavior meant to avert the perceived danger (e.g., Trost, France, & Thomas, 2011; Vlaeyen, Kole-Snijders, Boeren, & van Eek, 1995). Because in chronic pain patients, pain is typically no longer a sign of actual danger (e.g., the injury has healed, despite persistent pain) avoidance behavior loses its adaptive function as a protective strategy and may initiate a pathway towards functional disability (Zale, Lange, Fields, & Ditre, 2013). Additionally, patients do not have the opportunity to verify whether their assumption of impending danger is accurate. Avoidance behavior is thus considered to contribute majorly to the self-perpetuating cycle of pain, catastrophizing and fear. In spite of this, avoidance behavior has not received much attention in chronic pain research (especially compared to the amount of attention for pain-related fear, e.g., Karsdorp & Vlaeyen, 2009; Picavet, Vlaeyen, & Schouten, 2002; Severeijns, Vlaeyen, van den Hout, & Weber, 2001; Sullivan et al., 2001; Vlaeyen, Kole-Snijders, Rotteveel, Ruesink, & Heuts, 1995) nor is there a clear framework to empirically and systematically investigate avoidance behavior.

A basic obstacle in avoidance research is the lack of conceptual clarity: It appears to be difficult to come up with one single definition of avoidance behavior. A generic definition is that it is a behavior that prevents or postpones the occurrence of an aversive stimulus (Pierce & Cheney, 2008). It is as such differentiated from escape behavior, which is behavior that (prematurely) ends an ongoing aversive stimulus. However, as illustrated by Simon, avoidance behavior can present itself in various ways, ranging from avoidance (i.e., not engaging at all in an activity or situation), to subtle within-situation avoidance behavior (i.e., staying in the feared situation, but still avoiding full exposure, e.g., bending down, but keeping back straight) to more covert, emotional and mental avoidance strategies (e.g., distraction; Brown & Barlow, 2009; Sexton & Dugas, 2008). Because such actions are often performed deliberately and *because* they are assumed to protect oneself from an aversive event and bring about a sense of safety (e.g., preventing more pain, preventing harm), a more overarching term that is often used is *safety behavior* or *safety-seeking behavior* (Salkovskis, 1991; Salkovskis, Clark, & Gelder, 1996; Wells et al., 1995).

Avoidance behavior is often associated with fear and much of what we know about avoidance behavior stems from research on anxiety disorders. The American Psychiatric Association (2000) even considers excessive avoidance behavior as a central diagnostic feature of anxiety disorders. Because chronic pain also seems to include a pathological aspect driven by pain-related fear there is no a priori reason to assume that the processes underlying that fear-driven pathology should differ from those in basic pathological anxiety, especially considering that chronic pain frequently co-occurs with anxiety disorders (Breivik et al., 2006; Demyttenaere et al., 2007; Von Korff et al., 2005). This fuels the idea that they

may share vulnerability factors and/or maintenance processes (for a review, see Asmundson & Katz, 2009). Because of the apparent parallels between anxiety disorders and chronic pain, we propose to build upon general avoidance theories not limited to a specific disorder, to increase our understanding and management of disability in chronic musculoskeletal pain. Evidence in line with such a view is already emerging. Research has shown that classical conditioning principles are involved in the development and extinction of fear in general (Barlow, 2002). Using a pain-tailored fear conditioning paradigm, it was recently also shown that the same principles apply to pain-related fear (Meulders, Vansteenwegen, & Vlaeyen, 2011; Meulders & Vlaeyen, 2012; 2013). The paradigm consists of a basic differential fear conditioning procedure, in which an originally neutral conditioned stimulus (CS; a joystick arm movement) is paired (CS+) or unpaired (CS-) with a painful unconditioned stimulus (US). This results in more fearful responding to the CS + movement than to the CS-movement. Importantly, the use of a proprioceptive CS (a movement) and a US that is painful, is of particular relevance to chronic pain patients. This is opposed to basic fear conditioning paradigms, where the CS is typically an exteroceptive cue such as a geometric shape or a sound, and the US is an unpleasant but not painful electrocutaneous stimulus, both of which are less relevant to pain patients.

In the remainder of this paper, we will zoom in on relevant conceptualizations of avoidance behavior, as well as on avoidance-fear theories that could drive falsifiable hypotheses and empirical studies. Next, we will also discuss potential implications for treatment of chronic pain patients with higher levels of fear.

Disabling mechanisms underlying avoidance behavior

Potential conceptualization of avoidance behavior

In the context of chronic pain, some would label avoidance behavior as typical overt pain behavior characterizing chronic pain patients. For example, Revicki et al. (2009) state that “pain behavior” is merely an indication of the pain experience itself (e.g., intensity, amount, cause) or an indication of how a person deals with pain. Accordingly, pain behavior is conceptualized as observable behavior meant to communicate to other people that one is experiencing pain, e.g., grimacing, moaning, asking medication (Fordyce, 1976; Fordyce, Shelton, & Dundore, 1982; Keefe, Bradley, & Crisson, 1990). Other authors have proposed to distinguish between communicative (e.g., grimacing) pain behaviors and protective (e.g., guarding, bracing, rubbing) pain behaviors, based on the finding that both are determined by different factors: protective pain behavior seems to vary according to the physical demands of the task, but does not appear to depend on what was asked to communicate (estimate the weight vs. rate experienced pain), while the display of communicative pain behavior seems to vary with the communication goal (stronger while rating pain vs. estimating weight), but not with the physical demands of the task (Sullivan et al., 2006).

However, conceptualizing avoidance as a mere behavioral expression of pain, may not do justice to what avoidance potentially is: a crucial element in the development and maintenance of anxiety-related pathology. One recent suggestion is to conceptualize avoidance behavior as an action tendency or action disposition that reflects the motivational component of the fear emotion (Beckers, Krypotos, Boddez, Effting, & Kindt, 2013; Krypotos, Effting, Arnaudova, Kindt, & Beckers, 2014). Pathological fear can thus be seen as a disproportionate disposition to avoid, which is in line with anxiety disorders essentially being a behavioral dysfunction manifesting itself through excessive avoidance

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