Title: General Hypervigilance in Fibromyalgia: One swallow does not make a summer

In this issue you will find a paper by Carillo-de-la-Pena et al., entitled "Filtering out repetitive auditory stimuli in Fibromyalgia: A study of P50 sensory gating." in which the authors investigate general hypervigilance in Fibromyalgia (FM) patients. Indeed, several authors have stated that FM patients are characterized by general hypervigilance, i.e. an increased alertness towards noxious stimuli as well as towards non-noxious stimuli from diverse perceptual modalities (e.g., McDermid et al., 1996). Although the idea of general hypervigilance is often invoked to explain medically unexplained pain syndromes, some critical issues remain. In many studies the construct of hypervigilance is left unspecified. Also, there are not many studies that have addressed the role of attentional processes in fibromyalgia using well-validated experimental paradigms. In that context, the paper by Carillo-de-la-Pena has several strengths. The authors tested a well-specified mechanism and used a well-validated paradigm to investigate whether patients with FM displayed a sensory gating deficit in response to non-noxious, auditory stimuli. The sample sizes of the patient group as well as the matched comparison group were reasonably large, and, thus, there was a fair statistical power to detect a potential deficit.

In contrast with their expectation, results of this study did not reveal differences between FM patients and a comparison group. As such the paper challenges the hypothesis of generalized hypervigilance in FM. Evidently, when results turn out to be non-significant, one can come up with reasons for the lack of an effect, albeit post hoc. One could, for example, argue that further increasing the sample size, would lead to the detection of a sensory gating deficit. Indeed, there is a fundamental difference between "evidence for no effect" and "no evidence for an effect". Looking at the confidence intervals of the effect sizes is informative in this context. When inspecting the relevant confidence intervals in the study of Carillo-de-la-Pena et al. (in press), one may only conclude that the intervals are large, and uncertainty remains. It is thus still premature to conclude that FM patients do not display a deficit in sensory gating to auditory stimuli.

Nevertheless, the paper of Carillo-de-la Pena et al. (in press) provides food for thought, both in terms of methodology and theory. First, publication of methodologically-sound and well-executed studies that do not display significant results is important to advance science and to avoid publication bias. We doubt whether a single study will ever be able to endorse or reject a scientific idea. Indeed, one swallow does not make a summer. Only by combining information of multiple studies, preferentially stemming from different research groups, this can be achieved. Therefore a meta-analytic approach is needed that combines all available evidence on this topic. This approach can overcome the problem of 'relatively' small sample sizes in single studies, and is able to reveal systematic variation between studies and to identify variables that account for such variation.

Second, we agree with the authors that a clear definition between authors is currently lacking. Some inconsistencies in the literature may relate to the fact that the term 'hypervigilance' is used in an over-inclusive multivocal way. We suggest therefore to be more precise if "hypervigilance" is to survive as an explanatory construct. We defined hypervigilance for pain, as a heightened and selective attentional response that results from an unintentional and efficient process that emerges when the threat value of pain is high, the fear system is activated, and the individual's current concern is to escape and avoid pain

(Crombez et al., 2005). One may of course disagree with this view on hypervigilance. We may even agree that we disagree, as scientific debate keeps us awake and sharpens our ideas (Hollins, Harper & Maixner, 2009). Nevertheless providing a clear explication of hypervigilance is not just an intellectual "Spielerei". An explication should be based upon a theoretical model, result into testable hypotheses and help to create operationalizations of the concept. Our provided definition, for example, reveals how hypervigilance may be conceived of, and when it may be observed. In our understanding, hypervigilance is not a structural deficit that can be observed irrespective of type of stimuli, and irrespective of context. In contrast, we suggest that hypervigilance will emerge when patients appraise particular stimuli as threatening. As such, hypervigilance is not static but dynamic, and it may not be a characteristic of a particular pain syndrome, but of particular patients with chronic pain. Addressing above-mentioned challenges promises exciting times in the field of hypervigilance. One swallow does not make a summer, but with many more to come the summer may be ahead of us.

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Conflict of interest statement

There are no conflicts of interest that may arise as a result of this research.