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Heartbeat perception in panic disorder: a reanalysis

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Abstract

This article describes a reanalysis of seven studies on heart beat perception (HBP) in panic disorder. The pooled sample had 709 participants from eight diagnostic categories. Accurate HBP was uncommon, but more prevalent among panic disorder patients than among healthy controls, depressed patients, patients with palpitations and individuals with infrequent panic attacks. No differences were found between panic disorder patients and patients with other anxiety disorders. Accurate perceivers had higher anxiety sensitivity scores than inaccurate perceivers. The data remain inconclusive as to whether perceived heart rate is correlated with anxiety in inaccurate perceivers. Physical exercise, distraction, variations in instructions and treatment each influenced HBP. However, the influence was different than previously thought. Finally, it is suggested that HBP may be understood in terms of schema-guided information processing. © 1999 Elsevier Science Ltd. All rights reserved.

1. Introduction

There has been some controversy regarding the question of whether patients with panic disorder are better at perceiving their own heartbeats than are other groups. In a heartbeat perception (HBP) task, participants are asked to silently count all heartbeats they feel in their body, without taking their pulse. This procedure is known as 'mental tracking' (Schandry,

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1981). Various other procedures exist to measure HBP, e.g. asking subjects to choose their own heart rhythm from a number of series of tone pips (e.g. Brener & Kluvitse, 1988). However, because the 'mental tracking' procedure is the only procedure that has yielded significant differences between panic disorder patients and other groups, this article will only concern studies that used this procedure. In the first of these studies, Ehlers and Breuer (1992) showed that panic disorder (PD) patients perform better on this test than normal controls, infrequent panickers and patients with specific phobias. Test performance can be expressed in a continuous score (percentage error) or in a dichotomous score (accurate/nonaccurate, using a criterion of maximum difference between actual and counted beats). The above findings appeared with both types of scores. In a second study, both panic disorder and generalized anxiety disorder patients had lower percentage error scores than depressed patients (Ehlers & Breuer, 1992). These results were replicated by Ehlers et al. (1995). In this latter study, panic disorder patients again had a significantly lower error score than controls. The group difference was also significant in a second condition, when a series of distracting tones was presented during the task. However, during a third, strict instruction condition ('count only those heartbeats about which you are sure') no group differences emerged. The findings gained clinical relevance in a study by Ehlers (1995), that showed that good HBP was predictive of poor treatment outcome and of recurrence of panic attacks after initial remission.

However, Antony et al. (1995) failed to find differences in HBP among groups of patients with panic disorder, patients with social phobia and normal controls. The error scores of the PD and control group were quite comparable to Ehlers et al. (1995), but with less statistical power the difference was not significant. Furthermore, the social phobics had identical scores to the PD patients.

Barsky, Cleary, Sarnie and Ruskin (1994) studied three groups: two groups of patients who were referred to ECG monitoring for the evaluation of palpitations (groups with and without panic disorder) and a normal comparison group. Results showed that palpitation patients with PD were not more accurately aware of their heartbeats than nonpanic palpitation patients or controls.

Recently, Van der Does, Van Dyck and Spinhoven (1997) found no differences in error scores among patients with panic disorder, depressed patients and normal controls. The above reviewed studies are summarized in Table 1.

Van der Does et al. (1997) argued that comparing mean error scores between groups may not be the best way of analyzing the findings. This has to do with the validity of the HBP task. Although the test–retest reliability of the test is adequate (Ehlers & Breuer, 1992; Van der Does et al., 1997), its validity is uncertain. Ehlers et al. (1995) found support for the validity in the fact that there is a significant correlation between stroke volume and test results (Schandry, Bestler, & Montoya, 1993). Furthermore, almost all participants count fewer beats than actually occur, which is a logical outcome if participants accurately count their heartbeats but miss a few. Third, the possibility that participants estimate the duration of the trials and then make an educated guess about the number of heartbeats has been ruled out in several studies (e.g. Ehlers & Breuer, 1992). However, time estimation is only one of several alternative explanations of HBP test performance. Furthermore, participants' self-reports after the test are contradictory to the second argument. Participants typically report *not* having missed a few beats, but instead having felt a regular rhythm somewhat slower than the actual rhythm (Van

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