Clinical Psychology Review 33 (2013) 1041–1056

Contents lists available at ScienceDirect

Clinical Psychology Review

Systematic information processing style and perseverative worry

Suzanne R Dash *, Frances Meeten, Graham C L Davey

University of Sussex, Brighton, UK

HIGHLIGHTS

- Similar psychological states and appraisals influence worry and systematic processing.
- Increased sufficiency thresholds and systematic processing help to understand worry.
- Systematic processing may be a transdiagnostic process across perseverative disorders.
- Incorporating the HSM in models of worry provides new therapeutic opportunities.

ARTICLE INFO

Article history:
Received 19 April 2013
Received in revised form 13 August 2013
Accepted 19 August 2013
Available online 27 August 2013

Keywords:
Worry
Perseveration
Systematic processing
Sufficiency threshold

ABSTRACT

This review examines the theoretical rationale for conceiving of systematic information processing as a proximal mechanism for perseverative worry. Systematic processing is characterised by detailed, analytical thought about issue-relevant information, and in this way, is similar to the persistent, detailed processing of information that typifies perseverative worry. We review the key features and determinants of systematic processing, and examine the application of systematic processing to perseverative worry. We argue that systematic processing is a mechanism involved in perseverative worry because (1) systematic processing is more likely to be deployed when individuals feel that they have not reached a satisfactory level of confidence in their judgement and this is similar to the worrier's striving to feel adequately prepared, to have considered every possible negative outcome/detect all potential danger, and to be sure that they will successfully cope with perceived future problems; (2) systematic processing and worry are influenced by similar psychological cognitive states and appraisals; and (3) the functional neuroanatomy underlying systematic processing is located in the same brain regions that are activated during worrying. This proposed mechanism is derived from core psychological processes and offers a number of clinical implications, including the identification of psychological states and appraisals that may benefit from therapeutic interventions for worry-based problems.

Contents

* Corresponding author at: School of Psychology, University of Sussex, Brighton BN1 9QH, UK. Tel.: +44 1273 876650.
E-mail address: s.dash@sussex.ac.uk (S.R. Dash).

0272-7358/$ – see front matter
http://dx.doi.org/10.1016/j.cpr.2013.08.007

Worry retards reaction and makes clear-cut decisions impossible — Amelia Earhart

1. Introduction

Worry is defined as "a chain of thoughts and images, negatively affect-laden and relatively uncontrollable" (Borkovec, Robinson, Pruzinsky, & DePree, 1983, p. 10). These negative thoughts are aimed at anticipating threats (Mathews, 1990) and solving problems (Davey, 1994). Worry thoughts can be catastrophic in nature (Davey & Levy, 1998a), and include themes of personal inadequacy (Davey & Levy, 1998b). Excessive, uncontrollable worry is the cardinal feature of generalized anxiety disorder (GAD) (American Psychiatric Association, 2000, DSM-IV-TR, 4th ed., text rev.), but perseverative worry also plays a role in the anxious apprehension surrounding social and performance situations seen in social anxiety, in the concerns about panic attack symptoms in panic disorder, and in the fears about bodily symptoms in hypochondriasis (Purdon & Harrington, 2006). Furthermore, worry has been implicated in checking and doubting subtypes of obsessive–compulsive disorder (OCD) (Tallis & DeSilva, 1992). Worry also predicts treatment outcomes in psychosis; worry significantly predicted persecutory delusions at three-month follow-up, with those scoring higher on measures of worry at baseline showing less symptom improvement (Startup, Freeman, & Garety, 2007). The pervasive nature of perseverative worry across psychopathologies emphasises the need for an understanding of the mechanisms of worry and effective strategies for the clinical management of worry-based presentations.

In the past 15 years, numerous variables have been shown to increase worry perseveration. However, little is known about the mechanisms accounting for the impact of these variables on worry perseveration. One possible mechanism is *systematic processing*, which is defined as "a comprehensive, analytic orientation[1] in which perceivers access and scrutinize all useful information in forming their judgments" (Chaiken, Liberman, & Eagly, 1989, p. 212) — a process that would undoubtedly result in the worrier[2] devoting extended periods of time to considering a chain of worry thoughts. This article reviews systematic information processing, a processing style that shares many formulistic similarities with worry. Firstly, systematic processing is characterised by detailed, analytical thought about issue-relevant information (Chaiken et al., 1989), and in this way, is similar to the persistent, detailed processing of information that characterises perseverative worry. Secondly, both worry and systematic processing arise through subjectively unconscious/non-deliberative means (Borkovec et al., 1983; Chen & Chaiken, 1999). Thirdly, systematic processing is more likely to be deployed when individuals feel that they have not reached a satisfactory level of confidence in their judgement (Chaiken et al., 1989), and this is similar to the worrier's striving to feel adequately prepared (Borkovec & Roemer, 1995), to have considered every possible negative outcome/ to detect all potential danger (Mathews, 1990), or to be sure that they will successfully cope with perceived future problems (Davey, Hampton, Farrell, & Davidson, 1992). Fourthly, systematic processing and worry are influenced by similar psychological cognitive states and appraisals, including negative mood, responsibility, desire for control and accountability (Ambady & Gray, 2002; Bohner, Moskowitz, & Chaiken, 1995; Brain et al., 2008; Johnston & Davey, 1997; Maheswaran & Chaiken, 1991; Roemer & Borkovec, 1993; Startup & Davey, 2003; Tetlock, 1983). Lastly, there is evidence that the functional neuroanatomy underlying systematic processing and worry is the same, with both associated with left frontal lobe activation (Borkovec, Ray, & Stöber, 1998; Leynes, 2002; Leynes & Phillips, 2008; Nolde, Johnson, & Raye, 1998). This most likely reflects that systematic processing and worry are both verbal-based forms of analytical thought (Carter, Johnson, & Borkovec, 1986; Evans, 2008). Despite there being a convincing case for considering the role that systematic processing plays in worry, it should be noted that systematic processing and worrying are not the same thing. Both represent forms of effortful, analytic thought, but systematic processing is deployed in a broad range of tasks with personal and social significance (e.g., forming attitudes, Martin & Hewstone, 2003). Furthermore, worry is defined by cognitive and emotional experiences that are not uniformly encountered in other contexts where systematic processing occurs. For more detail on how worry and systematic processing differ, see the section headed 'Worry as a form of systematic processing'). Given the structural similarities of these two phenomena, the purpose of this review is to explain the theoretical rationale behind conceiving of systematic information processing having a role in worry as a proximal mechanism involved in the initiation and maintenance of perseverative worry and its iterative style. Systematic processing does not negate the theoretical importance of the variables that have previously been identified as worry promoters; rather it offers a theoretical framework for understanding how these different variables lead worriers to engage in perseverative worry (see the Systematic processing and Models of Worry Cognitive models section for a description of empirically-supported models of worry, and a discussion of how the HSM may fit into these models). The key determinants of systematic processing will be covered, alongside consideration of the application of systematic processing to perseverative worry and existing models of worry-based pathology.

[1] The use of the word 'orientation' suggests a general tendency to use this information processing style.

[2] The term 'worrier' is used in this paper to refer, predominantly, to individuals who experience worry with a high frequency (i.e., they would score above average on the Penn State Worry Questionnaire developed by Meyer et al. (1990)). However, Ruscio, Borkovec and Ruscio (2001) demonstrated using taxometric analytic methods that normal and pathological worry are best conceptualised as occupying the extreme end of a single continuum, rather than as discrete entities. Consequently, it is anticipated that systematic processing will play a role in anyone who is worrying, including in the bouts of worry displayed by low frequency worriers.