

Original articles

Memory bias in health anxiety is related to the emotional valence of health-related words

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Abstract

Objectives: A model based on the associative strength of object evaluations is tested to explain why those who score higher on health anxiety have a better memory for health-related words. **Method:** Sixty participants observed health and nonhealth words. A recognition memory task followed a free recall task and finally subjects provided evaluations (emotionality, imageability, and frequency) for all the words. Hit rates for health words, d' , c , and psychological response times (PRTs) for evaluations were examined using multi-level modelling (MLM) and regression. **Results:** Health words had a higher hit rate, which was greater for those with higher levels of health anxiety. The higher hit rate for health words is partly mediated by the extent to which health words

are evaluated as emotionally unpleasant, and this was stronger for (moderated by) those with higher levels of health anxiety. Consistent with the associative strength model, those with higher levels of health anxiety demonstrated faster PRTs when making emotional evaluations of health words compared to nonhealth words, while those lower in health anxiety were slower to evaluate health words. **Conclusions:** Emotional evaluations speed the recognition of health words for high health anxious individuals. These findings are discussed with respect to the wider literature on cognitive processes in health anxiety, automatic processing, implicit attitudes, and emotions in decision making.
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Keywords: Health anxiety; Object evaluation; Signal detection; Recognition memory; Health words; Implicit cognitions

Introduction

There is evidence that health-related words are more accurately recalled and recognized than nonhealth-related words (the health-word effect) and that this effect is stronger for those who score higher on measures of health anxiety (the health anxiety moderation effect) [1–3]. These findings are interpreted to be consistent with cognitive-behavioural models of health anxiety [4–6]. While the health anxiety moderation effect has been replicated, less research has focused on the potential mechanisms that underpin it. Signal detection is one theoretical mechanism that has been previously explored [2] and this paper looks to replicate this and extend previous work on mechanisms

by exploring an object-evaluation associative strength model [7–9].

Object-evaluation associative strength

This model suggests that the stronger the associative strength between an object and its evaluation, the greater the probability that it is activated in memory and that this may reflect automatic processing [7–9]. Objects are defined, by Fazio et al. [7,8], in a broad sense to include a variety of categories (e.g., words); similarly, evaluations include both emotional and cognitive judgments. Furthermore, there are likely to be individual differences in associative strength that are, in part, a function of the interests and knowledge of the individual [7,8]. The health anxious person is more likely to be interested in health-related issues and as such should have stronger associations between health-related objects and their evaluations. Psychological response time (PRT) latencies between objects and their evaluations can be used to index associative strength—shorter PRTs equate to a

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stronger associated strength [7–9]. Psychological response times for evaluation latencies should be quicker for health words, compared to nonhealth words, for those who score higher on health anxiety. This suggests some degree of automatic processing. On the other hand, those lower in health anxiety should be slower to make evaluations of health words, as the process of making the evaluation for these people is more likely to reflect controlled and conscious processing [7–9]. Exploring the idea of automaticity within the context of health anxiety allows initial links to be made to the wider literature on implicit cognitions and attitudes [10–12]. For example, implicit and explicit attitudes show a double dissociation whereby implicit measures predict spontaneous behaviours and explicit attitudes more planned behaviours [10]. While there is evidence that increased levels of health anxiety are associated with explicit beliefs and attitudes about health and illness [4–6], it is not known whether the same is true for implicit attitudes [10]. Indeed, implicit attitudes may be a better predictor of spontaneous/automatic behaviours (e.g., anxiety reactions or checking behaviours triggered by an environmental factor) associated with health anxiety [4–6] than explicit attitudes [10]. With this in mind, this study offers a first step in this direction by exploring an object-evaluation associative strength model of the health anxiety moderation effect observed for the recognition of health-related words.

To test this model, participants were requested to provide evaluations of health and nonhealth words, and the PRTs to make these evaluations were recorded. Three evaluations are explored: (1) emotionality, (2) imageability, and (3) familiarity.

Word emotionality

There is evidence that words objectively categorized as negative are better recalled [2,8,13]. There is also evidence that those who score higher in health anxiety are more likely to perceive the outcomes of ambiguous health scenarios as more negative [14] and to “catastrophize” health-related information [15,16]. As such, it is predicted that negative emotional evaluations of health words will be higher, compared to nonhealth words, and this effect will be stronger for those who score higher on health anxiety.

Word imageability

Work in the area of cognitive heuristics—especially the availability heuristic—suggests that the more easily something is imagined the more likely it is to be activated in memory [17–19]. The health-related words used in previous studies [1–3,20] tend to be more concrete than the nonhealth words. Furthermore, it has been demonstrated that word concreteness is correlated with imageability [21]. Therefore, ratings of the extent to which images are easily formed should be greater for health words than for nonhealth words.

Word familiarity

Health words are likely to be more familiar than nonhealth words given their prominence in public health campaigns as well as in the mass media [22,23]. Also, there is some evidence that health anxious people, compared to nonhealth anxious people, seek out more information on health-related topics [24,25]. Therefore, they are more likely to be exposed to health-related words. This increased exposure may be reflected in increased familiarity with health words and increased ease of retrieval from memory [23].

These evaluative dimensions also have direct relevance to models of decision making that focus on emotions/feelings [17,26–29]. For example, models such as ‘risk as feeling’ suggests that the extent to which a construct is imageable predicts its emotional evaluation [17]. Furthermore, all of these models suggest that emotion, whether experienced, anticipatory, appraised, or evaluated as information, has a pivotal role to play in decision making and cognition. Given the central role ascribed to emotions, it is hypothesised that, of the three evaluative dimensions explored in this study, emotional evaluations should be the primary explanatory dimension underlying the health-word and health anxiety moderating effects.

A moderated mediation model

Based on the above arguments a moderated mediation hypothesis for the retrieval of health words in health anxiety is proposed (see Fig. 1). For clarity of expression, this will be described with respect to emotional evaluations (but the argument equally applies to imageability or familiarity).

The emotional evaluation of a word should mediate the relationship between word type (health vs. nonhealth) and hit rate. That is, subjective evaluations of emotionality should account for a significant proportion of the variance in the relationship between word type and hit rate. Furthermore, the strength of the link between the emotional evaluation and hit rate will be stronger for those with higher levels of health anxiety (i.e., moderated by health anxiety). To test whether the moderation by health anxiety is

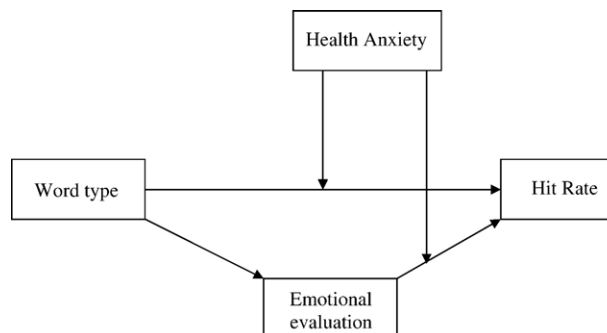


Fig. 1. Moderated-mediation model.

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