

The relationship between individual differences in anxiety and cognitive biases towards or away from fire in a bushfire prone community

Lies Notebaert¹, Patrick Clarke¹ and Colin MacLeod¹

¹School of Psychology, University of Western Australia, WA

GOALS AND RELEVANCE

The degree to which we attend to signals of potential danger in the environment and the way we interpret ambiguous information regarding potential threat could both be considered critical to the timely identification and amelioration of hazards. Such attentional and interpretive 'cognitive biases' also causally influence the experience of anxiety.

The aim of this study is to assess several types of these cognitive bias and investigate how they are related to individual differences in anxiety and behavioural preparedness for bushfires.

To this end, we will sample participants from recently fire-affected community (Roleystone, Kelmscott, Red Hill, affected by fires in February 2011) report who have low, medium and high trait anxiety, and assess cognitive biases, anxiety, worry and preparedness behaviour at three time intervals.

The cognitive biases that will be assessed are:

Risk estimation: whether people estimate the chance of a negative event occurring higher than the chance of a positive event occurring
Attentional bias: whether people automatically attend to negative, threatening information

Interpretation bias: whether people interpret ambiguous information in a negative manner

Memory bias: whether people remember negative events better than positive events

Mental imagery: whether people can more easily and more clearly imagine a negative situation than a positive situation

With the results of this study, we will be able to identify which maladaptive cognitive biases are linked to maladaptive preparedness behaviour. This will allow us in subsequent studies to use cognitive bias modification (CBM) techniques to change the pattern of the bias to a more adaptive pattern, and thus, improve preparedness.

TASK 1

Process measured: Risk estimation

Task: Ratings of the likelihood that an event will occur next summer. 36 items in 3 categories: Positive, Fire-related negative, Non-fire-related negative.

Eg. FN: How likely is it that there will be a bushfire in your area next summer?

NFN: How likely is that you will break a limb next summer?

POS: How likely is that you will find a 50 dollar note next summer?

Hypotheses: LA people judge the risk of fire related items to be higher when summer approaches. HA people show a higher estimation of risk for all the negative. (Butler & Mathews, 1987)

TASK 2

Process measured: Attentional bias

Task: Standard dot-probe discrimination task with words (96 trials). Words: neutral (48), fire-related negative (24) or non-fire-related negative (24). Two words are presented (one negative, one neutral), and afterwards a probe (two dots) is presented at the former location of one of the words. Participants indicate whether the probe is aligned horizontally (..) or vertically (:) by a button press.

Hypotheses: HA people show an attentional bias towards negative information (faster reaction to probes that replace the negative word than to probes replacing the neutral word). LA people show an attentional bias away from negative information (faster reaction to probes replacing the neutral word than to probes replacing the threat word). (MacLeod et al, 1986)

TASK 3

Process measured: Mental imagery

Task: People will hear 64 sentences through headphones and have 5 seconds to imagine each situation. Afterwards, they rate ease of image formation, and the vividness of the image. Half the sentences (32) are ambiguous (16 fire related, 16 not), half are non-ambiguous (16 pos., 16 neg. (8 fire related, 8 not)).

Hypotheses: LA and HA people do not differ in the ease to form an image of a situation, but HA people's ease of image formation correlates with risk estimation of negative events (see task 1). Negative images are more vivid for HA than for LA people (Raun, MacLeod & Holmes, 2005). Whether this only relates to fire related items is something we need to explore.

TASK 4

Process measured: Interpretation bias & Memory bias

Task: Recognition-memory test. 64 sentences are presented sequentially on the computer screen.

Participants indicate whether the sentence has the same meaning as one of the sentences heard in task 3. 16 sentences have the same meaning as the 32 unambiguous neg. and pos. sentences, 16 sentences refer to the neg. interpretation of 16 of the ambiguous sentences (8 fire related, 8 not) and 16 sentences refer to the pos. interpretation of 16 of the ambiguous sentences (8 fire related, 8 not).

Hypotheses: Recognition of unambiguous sentences: HA people have better memory for neg. than for pos. items, as compared to LA participants (Mogg et al., 1989). Recognition of ambiguous sentences, HA are more inclined than LA people to interpret the ambiguous sentences in a negative fashion (Eysenck et al, 1991). Whether this only relates to fire related items is something we need to explore.