Individual Differences in Anxiety, Arousal, and Threat Perception after the Boston Marathon Bombings.

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Abstract: On April 15, 2013, two bombs exploded near the finish line of the Boston Marathon, killing three people and injuring more than 250 others. We explored how individual differences in anxiety, arousal, and threat perception were related to initial exposure to the bombings and recent exposure to media coverage of the bombings. Participants first completed a questionnaire assessing their experiences the week of the bombings. Participants then completed an affective modulation of startle task where they viewed neutral images and images of the bombings while listening to startle-inducing noises. Physiological arousal was assessed via startle blink response using facial electromyography and via electrodermal activity. Participants also completed a shooter bias task on the computer in which they attempted to shoot armed and not-shoot unarmed individuals. Finally, participants completed a series of questionnaires including measures of their current mood, feelings of anxiety, personal/social support, and recent exposure to media coverage of the bombings. We predicted that higher levels of exposure at both time points would be related to heightened anxiety and arousal, a lower threat bias in the threat task (i.e., shooting more often), and lower threat sensitivity. This data represents the first wave in a longitudinal study that will explore how the relationships between anxiety, arousal, and threat perception change as media coverage of the Boston Marathon Bombings over time.

Introduction:
Past research has investigated how terrorism impacts everyday behaviors such as driving techniques (Bonanno, Galea, Bucciarelli & Vlahov, 2006), but has not explored changes in affect and behavior on the individual level. Preliminary evidence from our lab indicates that the Boston Marathon Bombings created heightened arousal in Boston area residents that influenced their perceptions of threat in the months after the incident. These findings are consistent with past research suggesting that heightened threat accessibility caused by exposure to real-world threats can lead people to perceive ambiguous situations, people and objects as more threatening (Thoresen et al., 2012).

The current study explores how individual differences in initial and current exposure to the Marathon Bombings relates to participants’ threat sensitivity (the ability to discriminate between threatening and non-threatening stimuli) and their bias (the tendency to respond to all stimuli as if they are threatening).

Hypotheses:
Increased levels of initial and current exposure to media coverage of the Boston Marathon Bombings, as well as increased initial and current affectedness by the bombings, will be related to increased arousal, a less conservative bias in the threat detection task, and lower threat sensitivity.

Methods:
1. Marathon Recall Survey
Participants were asked to complete a survey about their experiences during the Marathon Bombings and subsequent manhunt and lockdown.
Participants rated their initial exposure to the event as well as how affected by it they were on 7-point Likert Scales.

2. Affective Modulation of Startle Task
Participants viewed images from media coverage of the bombings and neutral images from the International Affective Picture System (IAPS) while trying to ignore loud, short bursts of white noise (50ms, ~100db).
We measured physiological arousal to the images via (1) the startle blink reflex in the orbicularis oculi muscle region under the left eye, and (2) electrodermal activity (sympathetic activity in the palmar sweat glands).

Methods (Continued):
3. Picture Rating Task
- Viewed same images from the startle task and rated how pleasant/unpleasant and how activated/deactivated each picture made them feel.

4. Shooter Bias Task
- On each of 40 trials, participants were shown several background images, and then a man appeared in one of the backgrounds.
- The man was holding either a gun or an everyday object (e.g., wallet).
- Participants pressed a button to “shoot” or “not shoot” armed and unarmed men, respectively.
- Images were shown for 1000ms followed by a backward mask.

- In order to increase error rates, images were made to be difficult to see clearly.

5. Self-Report Measures
A series of questionnaires measured: current mood, anxiety (BAI), depression (PHQ-8 and PHQ-15), personality (NEO-FFI), social support (MOS-SSS), current exposure to media coverage of the Boston Marathon Bombings, and current stress/affectedness over the Boston Marathon Bombings (Impact of Event Scale; IES).
Participants also rated how worried they were about a variety of potentially life-threatening events (e.g., leukemia, violent crime).

Results:
Being more affected by the bombings the week they occurred was related to:
- Having significantly higher current level of affectedness (r=.32, p<.01)
- Being marginally less sensitive to the distinction between threats and non-threats (r=.18, p=0.09)
- Being significantly more worried about violent crime and terrorism (r=.22, p<.05)

Discussion:
This study shows lasting effects of the Boston Marathon Bombings on the average community member nearly 1 year after the traumatic event.
Surprisingly, our results demonstrate that exposure per se is not related to an individual’s mood, anxiety, or threat perception. Rather, subjective affectedness seems to be more strongly related to these outcomes.
Given these findings, it would be important for future research to explore what factors contribute to greater or lesser affectedness following similar levels of exposure.
This study represents the first wave of a longitudinal study. In particular, we are interested in whether exposure will be a better predictor of mood, anxiety, and threat perception as exposure to media coverage of the Boston Marathon Bombings increases over the first anniversary.

Methods (Continued):
- Being more affected by the bombings currently was significantly related to:
  - Higher anxiety (r=.37, p<.01)
  - Higher depressive symptomology (PHQ8: r=.31, p<.01; PHQ15: r=.30, p<.01)
  - A more negative current mood (r=.25, p<.05)
  - Being significantly more worried about violent crime and terrorism (r=.40, p<.05)

References:

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