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Threat Perception after the Boston Marathon Bombings: The Effects of Personal Relevance and Conceptual Framing

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Abstract

We examined how the Boston Marathon bombings affected threat perception in the Boston community. In a threat perception task, participants attempted to "shoot" armed targets and avoid shooting unarmed targets. Participants viewing images of the bombings accompanied by affectively negative music and text (e.g., "Terror Strikes Boston") made more false alarms (i.e., more errors "shooting" unarmed targets) compared to participants viewing the same images accompanied by affectively positive music and text (e.g., "Boston Strong") and participants who did not view bombing images. This difference appears to be driven by decreased sensitivity (i.e., decreased ability to distinguish guns from non-guns) as opposed to a more liberal bias (i.e., favoring the "shoot" response). Additionally, the more strongly affected the participant was by the bombings, the more their sensitivity was reduced in the negatively-framed condition, suggesting that this framing was particularly detrimental to the most vulnerable individuals in the affected community.

Keywords

Threat Perception; Threat Accessibility; Framing; Terrorism; Signal Detection Theory

Threat Perception after the Boston Marathon Bombings: The Effects of Personal Relevance and Conceptual Framing On April 15, 2013, the 117th Boston Marathon was brought to a violent end when two bombs exploded near the finish line, killing three people and injuring more than 250. A subsequent manhunt involved further public bloodshed and a day-long city-wide lockdown. Fed by media coverage, many residents reported hypervigilance–perceiving ambiguous objects, people, and situations as threatening. Consistent with this observation, previous research has repeatedly demonstrated that as threat-relevant cognitions become more accessible, people believe they are more likely to encounter threats (Johnson

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& Tversky, 1983; Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1979; Slovic, Fischhoff, & Lichtenstein, 1982; Freedy, Saladin, Kilpatrick, Resnick, & Saunders, 1994). As media coverage in Boston shifted to emphasize resilience and community cohesion (e.g., “Boston Strong”), however, hypervigilance seemed to decrease. This observation suggests a novel hypothesis: how a threat is framed may influence subsequent threat perception. We hypothesized that negatively framing a real-world threat by focusing on death and destruction would have a more pronounced impact on subsequent threat perception than positively framing the same information by focusing on people’s heroic responses.

To test this hypothesis, members of the Boston community were exposed to positively or negatively-framed audiovisual vignettes about the Boston Marathon bombings in the months following the tragedy. We then measured threat perception using an in-lab shooting task. If threat accessibility alone influences threat perception, we would expect more false alarms (i.e., more errors mistakenly “shooting” unarmed suspects) in both framing conditions relative to a control condition in which no threat-relevant information was presented. If framing matters, we would expect participants exposed to negatively-framed bombing information to make more false alarms compared to participants exposed to positively-framed bombing information.

In addition, to help fill an important gap in the existing literature, we utilized signal detection theory to distinguish between two potential causal explanations for differences in false alarm rates. That is, we examined whether any observed differences in false alarm rates were driven by differences in biased responding (i.e., favoring the “shoot” response over the “don’t shoot” response) or decreased sensitivity (i.e., decreased ability to distinguish threats from non-threats). Understanding which underlying mechanism is driving observed differences in false alarm rates is crucial for developing successful interventions aimed at reducing false alarm rates following threats and, at a more basic level, understanding the observed phenomenon.

Methods

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study.

Participants

Eighty-one participants completed the experiment for $10 within two to four months of the Boston Marathon bombings. Participants were recruited from Northeastern University and the surrounding Boston community through fliers and Craigslist.com advertisements. Target sample size was based on previous experiments utilizing a similar threat detection task (e.g., Baumann & DeSteno, 2010). Potential participants completed the 8-item Patient Health Questionnaire (PHQ-8; Kroenke, Strine, Spitzer, Williams, Berry & Mokdad, 2008) and those without significant depressive symptomology (<10 on the PHQ-8) were eligible to participate. Five participants who misunderstood or disregarded task instructions were excluded from all analyses. Three participants were excluded because of computer failure. The final sample comprised 73 participants (29 males, 44 females; M_{age}=27.2, SD_{age}=1.30 years).

Materials

Marathon Recall Survey—Participants completed a Marathon Recall Survey in which they reflected on their experiences on the day of the bombings and rated how affected they were by the incident and how much exposure they felt they had to the incident on 7-point scales.

Vignette Stimuli—Participants were randomly assigned to watch one of three 4.5 minute news-style vignettes (videos comprising still images set to music). The control vignette (N=24) used 36 neutrally-rated images from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008; norms: $M_{valence}$=4.9, $M_{arousal}$=3.2) displayed for 5 seconds each (plus a 2.5 s cross-fade transition to the next image). Audio for the control condition was an unidentified musical composition (available on the Interdisciplinary Affective Science Laboratory website: www.affective-science.org). The two bombing vignettes utilized 28 identical images taken from newspaper sources that covered the bombings (e.g., *The Boston Globe, The Chicago Tribune*) displayed for 7 seconds each (plus a 2.5s cross-fade transition to the next image). Each bombing vignette used ten short phrases taken from public officials' speeches and newspaper headlines. Each phrase appeared for 4–10 s. Phrases included "Boston Strong" and "The People of Boston Refused to Be Intimidated" in the positively-framed vignette (N=24), and "Terror Strikes Boston" and "Not Since 9/11" in the negatively-framed vignette (N=25). Images were accompanied by affectively positive music in the positively-framed vignette (Holst's *The Planets, Op. 32-4. Jupiter, The Bringer of Jollity)* and affectively negative music in the negatively-framed vignette (Beethoven's *Moonlight Sonata, Mvt. 1*).

Shooter Bias Task—Threat perception was assessed via a modified version of the Shooter Bias Task (Correll, Park, Judd, & Wittenbrink, 2002; Correll, Park, Judd, & Wittenbrink, 2007). For each trial, participants were shown 1–4 randomly chosen images of background scenes (e.g., a park, a subway station) with variable duration (500–1000 ms). The final image of each trial (the target image) was displayed for 1000 ms and was a repeat of the final background scene but contained a person. To the participant, this looked as if a person appeared in the final background scene. The individual in the target image was always a white male holding either a gun (black or silver) or a neutral object (i.e., wallet, camera, soda can, mobile phone). Participants were asked to decide within the 1000 ms display time whether or not the person shown was holding a gun. Participants responded using a realistic, wireless gun controller that simulated recoil with vibration and slide motion upon trigger pull. Participants pulled the trigger if they believed the person shown on screen was holding a gun, and refrained from pulling the trigger if they believed the person was not holding a gun. Participants were instructed to leave the butt of the gun against a table top while pointing the muzzle of the gun at the screen, approximately 44.5 cm away. Participants were told to simply keep the gun pointing at the middle of the screen and not to aim at the individuals as they appeared. Participants did not receive feedback about their performance. A black screen was displayed between trials for 5000 ms. There were 10 target individuals, each shown four times: twice with a gun and twice with a neutral object, for a total of 40 trials. Ten practice trials preceded the task, using similar but not identical stimuli.

Visual noise was added to the original images from the Shooter Bias Task (Correll et al., 2002; 2007) to increase the difficulty of the task. Original images from the Shooter Bias Task were reduced to a contrast range of 35–65% of the maximum luminance available, and then the RGB values at each pixel were altered by adding a multivariate normally-distributed random RGB triplet (M=0, SD=17.5%, truncated at +/− 2 SDs). Each image was then gamma-corrected for the luminance nonlinearity of the monitor. Four versions of each image were created using this technique and the program randomly sampled (with replacement) from the four versions for each stimulus presentation. Images were displayed on a 24″ computer monitor at a resolution of 1024×768. Finally, because pilot data suggested a strong bias toward not shooting, all participants were told, "Although the number of armed and unarmed suspects can vary, there will be armed suspects in 40–60% of the trials."

Procedure

After providing informed consent, participants completed a demographic questionnaire and the Marathon Recall Survey, received instructions for the Shooter Bias Task, and completed the practice trials. Next, participants watched one of the news-style vignettes, according to their randomly assigned condition, while listening to the accompanying music over noise-cancelling headphones. After the video, participants continued listening to the assigned music while completing the Shooter Bias Task. Next, participants completed a measure of their mood that asked them to rate how strongly they were currently experiencing 35 different emotions on 5-point Likert scales. Finally, participants completed several questionnaires as part of a separate experiment.

Results

Mood Differences

Positive affect was measured as the mean rating across 8 items: cheerful, delighted, happy, inspired, excited, proud, positive, confident (α=.88). Negative affect was measured as the mean rating across 15 items: disgusted, sad, afraid, negative, alone, blue, guilty, nervous, lonely, ashamed, scared, angry, downhearted, frightened, dissatisfied with self (α=.91). As expected, manipulation checks revealed significant differences in how much negative affect participants reported feeling across conditions, $F(2, 70)=9.62$, $p<.001$. Post hoc comparisons revealed that participants in the control condition reported feeling significantly less negative affect (M=1.24, SD=.39) than participants in the positively-framed bombing condition (M=1.98, SD=.73) and participants in the negatively-framed bombing framing condition (M=1.67, SD=.57), ps<.05. A one-way ANOVA did not reveal a significant difference in the extent of positive affect participants felt, $F(2, 70)=2.13$, $p>.05$. However, post hoc tests suggested that participants in the control condition felt marginally more positive affect (M=2.33, SD=1.00) than participants in both the positively-framed bombing condition (M=1.92, SD=.67) and participants in the negatively-framed bombing condition (M=1.88, SD=.78), ps<.10. The two bombing conditions did not differ significantly in reported positive or negative affect (ps>.05). A third one-way ANOVA failed to reveal differences in self-reported arousal (item: activated) across conditions, $F<1$. Thus, participants viewing images of the bombings felt similarly negative, regardless of the framing.

We also conducted a one-way ANOVA to examine differences in self-reported fear (mean of three items: frightened, afraid, and scared; α=.79) across conditions. As expected, the experience of fear differed significantly by condition, $F(2,70)=5.13$, $p<.05$. Consistent with the other mood results, this effect was driven by differences between the control condition and the two bombing conditions only. Participants in the control condition reported experiencing significantly less fear ($M=1.22$, $SD=0.39$) than participants in both the positively-framed bombing condition ($M=1.75$, $SD=.79$) and participants in the negatively-framed bombing condition ($M=1.88$, $SD=.97$), *p*s<.05. Participants in the two bombing conditions did not report experiencing different amounts of fear (p>.05) despite receiving the different framings.

Threat Perception Performance by Condition

We first explored whether viewing images of the bombings would produce increased estimations of threat, as well as whether framing would moderate this effect, by examining participants' false alarm rates in the threat perception task (i.e., the proportion of trials with an unarmed target on which a participant mistakenly decided to "shoot"). As predicted, framing condition had a significant effect on false alarm rates, $F(2,70)=3.26$, $p<.05$ (Figure 1). Post-hoc comparisons revealed that participants in the negatively-framed bombing condition had a significantly higher false alarm rate ($M=.30$, $SD=.16$) than participants in both the positively-framed bombing condition ($M=.21$, $SD=.12$) and the control condition ($M=.23$, $SD=.11$), *p*s≤05. Despite viewing images of the bombings, participants in the positively-framed bombing condition did not have a higher false alarm rate than participants in the control condition, $p>.05$.

Next, we utilized signal detection theory to explore two potential causal explanations for the observed differences in false alarm rates (Wickens, 2002; Macmillan & Creelman, 1991). In signal detection theory, an increased false alarm rate can result from either a bias in responding (i.e., a tendency to respond as if a target is holding a gun vs. a non-threatening object regardless of the stimulus shown) or a decrease in sensitivity (i.e., a reduced ability to distinguish whether a person is holding a gun vs. a non-threatening object).Thus, for each individual participant, we calculated estimates of both bias (c) and sensitivity (d'). Bias was calculated as $c=-0.5(zH+zF)$, where zH and zF represent the inverse of the standard normal cumulative distribution for the hit rate and false alarm rate, respectively. Sensitivity was calculated as $d'=zH-zF$.

Bias—Across all participants, bias was significantly greater than zero ($M=.56$, $SD=.41$), $t(72)=11.71$, $p<.05$, indicating that participants had a significantly conservative bias (i.e., they favored the "don't shoot" response). A one-way ANOVA revealed that framing condition did not have a significant effect on response bias, $F(2, 70)=1.33$, $p>.05$.

Sensitivity—A one-way ANOVA revealed that framing condition had a marginally significant effect on participants' sensitivity, $F(2,70)=2.87$, $p=.06$. Post-hoc comparisons revealed that participants in the negatively-framed bombing condition had significantly lower sensitivity ($M=.25$, $SD=.36$), indicating that they were less able to distinguish guns from non-guns, compared to participants in the positively-framed bombing condition ($M=$.

52, SD=.41, p<.05). Sensitivity in the control condition (M=.41, SD=.43) was intermediate and did not differ significantly from sensitivity in either of the two bombing conditions (ps>.05).

Considering Personal Relevance as a Covariate

We then examined whether the extent to which participants reported being affected by the bombings (from the Marathon Recall Survey) predicted bias and sensitivity using multivariate regression. Multivariate regression was utilized to explore covariance instead of an ANCOVA as the data violated the assumption of homogeneity of slopes. Regression equations were of the general form:

$$\mathrm{y}=\mathrm{b}_0+\beta_1\mathrm{D1}+\beta_2\mathrm{D2}+\beta_3 BM_a+\beta_4(\mathrm{D1}*BM_a)+\beta_5(\mathrm{D2}*BM_a)$$

where framing condition was dummy coded (variables D1 and D2), and the variable BM_a represents how affected participants reported being by the bombings on the Marathon Recall Survey.

Bias—he regression model with bias as the outcome variable was not significant (R^2=.10, F(5,67)=1.50, p>.05) suggesting that how affected participants were by the bombings did not predict bias and did not interact with experimental condition to predict bias.

Sensitivity—The regression model with sensitivity as the outcome variable was significant (R^2=.19, F(5,67)=3.09, p<.05). The model revealed a significant interaction; the relationship between how affected participants were by the bombings and sensitivity significantly differed by framing condition (see Figure 2 for simple slopes). How affected participants were by the bombings negatively predicted sensitivity in the negatively-framed bombing condition (β=−.34, t=2.00, p<.05) but was not significantly related to sensitivity in the positively-framed bombing condition (β=−.33, t=1.53, p>.05). However, as suggested by the similar effect sizes (βs) for these relationships, there was no significantly different relationship between how affected participants were by the bombings and sensitivity for these two conditions (β=.01, t=0.05, p>.05). The relationship between how affected participants were by the bombings and sensitivity did differ significantly between both bombing conditions and the control condition (βs>.38, ts> 2.29, ps<.05) as there was a marginally positive relationship between how affected participants were by the bombings and sensitivity in the control condition (β=.37, t=1.70, p=.09). These results suggest that the more affected a participant was by the bombings, the less sensitive they were to the distinction between guns and non-guns in the threat perception task, but only after viewing one of the bombing vignettes. In particular, the negatively-framed bombing vignette appears to have been particularly harmful for the most affected individuals in the community, as this was the only condition where this relationship reached significance. Moreover, when controlling for how affected participants were by the bombings, participants in the negatively-framed bombing condition still had significantly lower sensitivity than participants in the positively-framed bombing condition (β=−.39, t=2.97, p<.05) and marginally lower sensitivity than participants in the control condition (β=−.25, t=1.92, p=.06).

Reaction Times

Reaction times were collected for each participant for all trials on which the participant pulled the trigger (i.e., hits and false alarms) and log-transformed to normalize the distributions. How affected participants were by the bombings was a significant positive predictor of reaction time (R^2=.08, $F(1,71)=6.01$, $p<.05$). That is, the more affected participants were by the bombings, the slower they were to shoot. A regression model investigating whether the extent to which participants were affected by the bombings significantly interacted with experimental condition to predict reaction times was not significant (R^2=.11, $F(5,67)=1.65$, $p>.05$), indicating that this effect did not differ by experimental condition. Further, reaction times did not differ by experimental condition ($F(2,70)=1.59$, $p>.05$) and were not related to false alarm rates ($r(72)=-.15$, $p>.05$), bias ($r(72)=.19$, $p>.05$), or sensitivity ($r(72)=-.10$, $p>.05$).

Discussion

To our knowledge, these results are the first to demonstrate that the framing of threat-relevant information influences subsequent threat perception. Participants who viewed images of the Boston Marathon bombings accompanied by news headlines focusing on death and destruction made significantly more false alarms (i.e., more errors “shooting” unarmed people) than participants who viewed the same images accompanied by news headlines focusing on the bravery and heroics of first responders and the community. Despite viewing salient images of the terrorist event, participants in this positively-framed condition did not make more false alarms than participants in the control condition who did not view any images of the bombings.

In addition, although there is ample evidence in the existing literature that the activation of threat-relevant cognitions increases false alarm rates, prior studies have largely failed to assess opposing causal explanations for this increase. By utilizing signal detection theory, we were able to distinguish between two possible reasons for the observed differences in false alarm rates in the current experiment: a less conservative bias and decreased sensitivity. If participants were exhibiting a less conservative bias, they would make more false alarms (mistakenly “shooting” unarmed targets) and fewer misses (mistakenly “not shooting” armed targets) relative to other participants, tending to favor the “shoot” response more than other participants. If participants were exhibiting reduced sensitivity, they would make more false alarms as well as more misses, performing more poorly overall relative to other participants on the task because of diminished ability to distinguish guns from non-guns. The results indicate that reduced sensitivity is the better explanation for the increase in false alarm rate following heightened threat accessibility in the negatively-framed bombing condition. We did not see any significant differences in bias by experimental condition and participants in the negatively-framed bombing condition consistently had significantly lower sensitivity than participants in the positively-framed condition.

There are several possible mechanisms that may underlie the observed differences in threat sensitivity between the positively- and negatively-framed bombing conditions. Interestingly, the data are not consistent with an explanation based on differences in affective or emotional experience across framing conditions. Participants in the two bombing conditions did not differ in self-reported positive or negative affect, arousal, or fear. Not surprisingly, viewing images of the bombings in the months following their occurrence appears to have been a relatively negative and fear-inducing experience for Boston area residents regardless of how the images were framed. Instead, we believe that the differences in threat perception are more likely driven by different conceptual information activated by the two bombing vignettes. For example, focusing on heroics as opposed to tragedy may have led to different perceptions of control or of the general trustworthiness of others. Future studies examining the impact of different conceptual frames on threat perception should include measures of situational appraisals (Keltner & Lerner, 2010; Loewenstein & Lerner, 2003) that may help disambiguate the experiences elicited by the two bombing vignettes, such as appraisals of certainty, control, dominance, or threat. It seems likely, for instance, that the negatively-framed bombing vignette elicits greater threat appraisals than the positively-framed bombing vignette.

The combination of negative arousal and potentially greater threat elicited by the negatively-framed bombing vignette may also decrease sensitivity indirectly by occupying mental functions that are needed to optimally distinguish between armed and unarmed targets. Indeed, previous research has demonstrated that fatigue and working memory are both important predictors of shooting behavior in similar tasks (Kleider & Parrott, 2009; Kleider, Parrott, & King, 2010; Ma, Correll, Wittenbrink, Bar-Anan, Sriram, & Nosek, 2013). In particular, one study demonstrated that reduced working memory capacity is related to decreased performance on a shooting task among police officers, but only for officers experiencing heightened negative arousal following a threat-eliciting video (Kleider et al., 2010). These findings suggest that the influence of executive functioning deficits on shooting performance may be exacerbated under threat. Thus, future studies also should examine the role of working memory in producing decreased threat sensitivity or potential interactions between the extent of threat and cognitive load.

A major strength of the current work is its ecological validity. The use of a realistic gun controller in the present experiment enhances generalizability of the findings to real-world decisions concerning whether or not to shoot potentially threatening individuals (e.g., for police officers, military personnel, or gun-owning citizens). However, there are several reasons to speculate that the use of the gun controller may have resulted in different threat perception performance than would be seen in studies of threat perception that require mere passive viewing of threat stimuli or even threat perception studies requiring a button press shoot decision. Ample evidence shows that the mere presence of a weapon increases aggressive thoughts and behavior (Berkowitz & LePage, 1967; Anderson, Benjamin, & Bartholow, 1998). Moreover, research shows that brain activity in response to the same stimuli differs depending on the type of response an observer is expecting to make (e.g., judging the gender of a face vs. the facial expression shown; Lange, Williams, Young, Bullmore, Brammer, Williams, Gray, & Phillips, 2003). Thus it is possible that the differences in threat sensitivity observed herein are specific to deciding whether or not to shoot potentially threatening stimuli with a gun and that differences in bias (rather than in sensitivity) may emerge under other conditions (e.g., see Baumann & DeSteno, 2010).

Another strength of the current work is that it investigated a real-world instance of threat, the Boston Marathon bombings, and assessed individual differences in how affected community members felt by the bombings. Results revealed that how affected participants were by the bombings interacted with experimental condition to predict threat sensitivity. In the positively- and negatively-framed bombing conditions, the more affected participants were by the bombings, the less able they were to distinguish threats from non-threats. This relationship reached statistical significance only in the negatively-framed bombing condition. This finding suggests that the negative framing may be particularly detrimental to those individuals in the affected community who are already most vulnerable following a terrorist event. We propose that those individuals who experienced greater distress and anxiety caused by the initial terrorism event are particularly sensitive to (and thus most strongly influenced by) reminders of the death and destruction of the initial event, even months after its occurrence.

Prior work on threat perception has documented that anxiety-related affective arousal influences threat perception. For example, both clinical anxiety, and heightened, clinically sub-threshold anxiety facilitates response times and other measures of attentional bias to threatening faces, but not non-threatening faces (e.g., Bradley, Mogg, White, Groom, & De Bono, 1999; Robinson, Charney, Overstreet, Vytal, & Grillon, 2012). Typically, attentional bias is interpreted as an increase in sensitivity to potential threat (e.g., Grillon, 2002), however, attentional bias is not commonly distinguished from discriminatory sensitivity, or whether one correctly categorizes a potential threat. It is possible that increased vigilance for threats may interfere with the ability to distinguish threats from non-threats, resulting in lower discriminative sensitivity. If viewing images of the bombings increased anxiety predominantly among those most affected by the bombings, this could explain why being more affected by the bombings was related to decreased sensitivity in the bombing conditions.

In line with this interpretation, results revealed that the more affected participants were by the bombings, the slower they were to “shoot” throughout the threat perception task. It is possible that those individuals who were more affected by the initial terrorist event may have been more concerned about potential threats throughout the task, which was distracting and slowed reaction time. All reaction time results, however, should be interpreted with caution since participants were required to respond under time pressure (within 1000 ms from stimulus onset) which necessarily truncated the range of possible reaction times. Also, we have no reaction time data for trials on which participants did not pull the trigger, so it is not clear whether participants who were more affected by the bombings were slower overall compared to participants who were less affected by the bombings or if they were only slower to decide to “shoot”.

Most prior work on the effects of real-world threats has focused on those with psychopathology (e.g., trauma) or who are otherwise vulnerable after a terrorist attack (e.g., Maguen, Papa, & Litz, 2008), and thus much less is known about how terrorism influences perceptions and behaviors in the more typical resilient community member who does not have overt psychopathology (e.g., after 9/11; Bonanno, Galea, Bucciarelli, & Vlahov, 2006). Interesting work on how terrorism impacts everyday behaviors (e.g., altered driving behavior after September 11th) also has been conducted, but has relied heavily on large public databases and naturalistic, observational designs (e.g., traffic fatality records; Gigerenzer, 2004; Su, Tran, Wirtz, Langteau, & Rothman, 2009), and so cannot address psychological mechanisms at the level of the individual that underlie changes in behaviors or judgments, such as extent of initial event exposure or mental health symptoms. Finally, other prior work has explored how emotion impacts the response to terrorism, but has focused almost exclusively on the perception of terrorism risks per se, or on judgments about terrorism-related events or policies (e.g., Fischhoff, Gonzalez, Lerner, & Small, 2005; Lerner, Gonzalez, Small, & Fischhoff, 2003). Thus, the current study extends the existing literature by addressing the changes that terrorism can cause in simple, non-terrorism-related judgments or behaviors, in line with calls by the Institute of Medicine (Butler, Panzer, & Goldfrank, 2003; Smelser & Mitchell, 2002) and others (Goodwin, Willson & Stanley, 2005; Maguen et al., 2008) encouraging more basic, social psychological study of the effects of terrorism.

Taken together, these findings have important implications for how the news media presents information about future real-world threats (e.g., terrorist attacks, mass shootings) that responsibly relays the facts without inadvertently creating detrimental community-wide effects on threat perception with potentially problematic results. Our study suggests that when appropriate and warranted, a more positive framing of serious threats could reduce the residual adverse impact of these events on perception and behavior.

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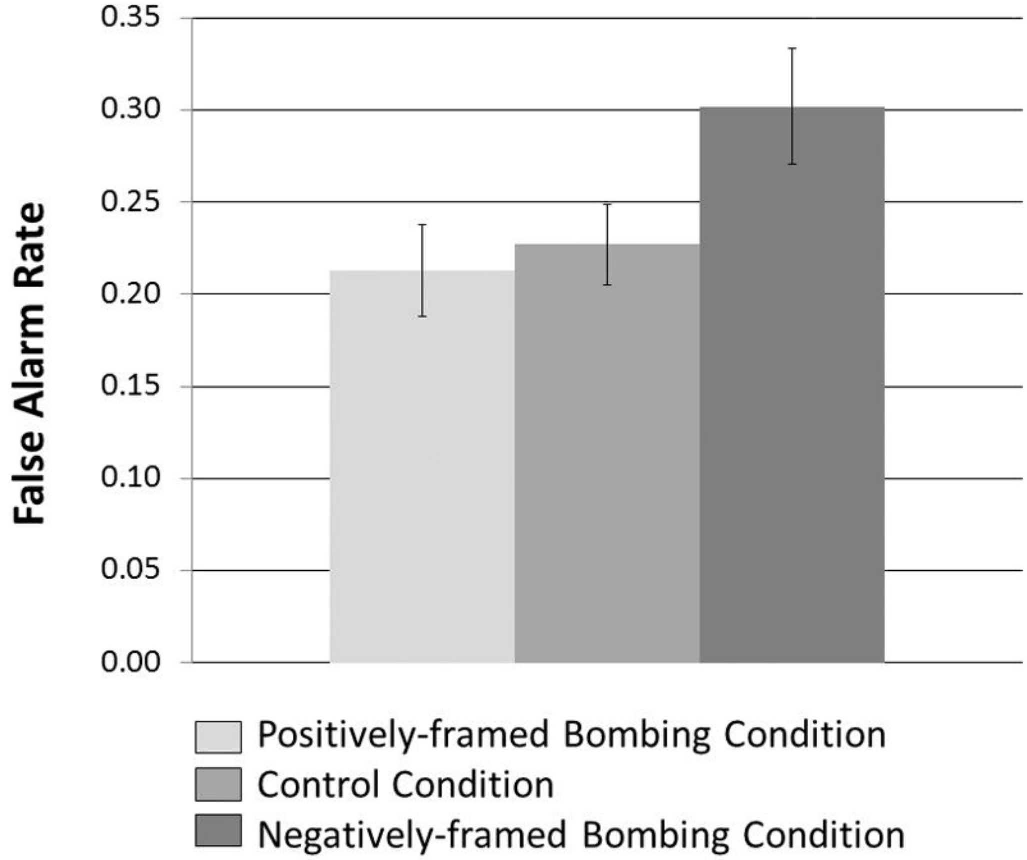

Figure 1.
Mean (±1SE) false alarm rate by condition.

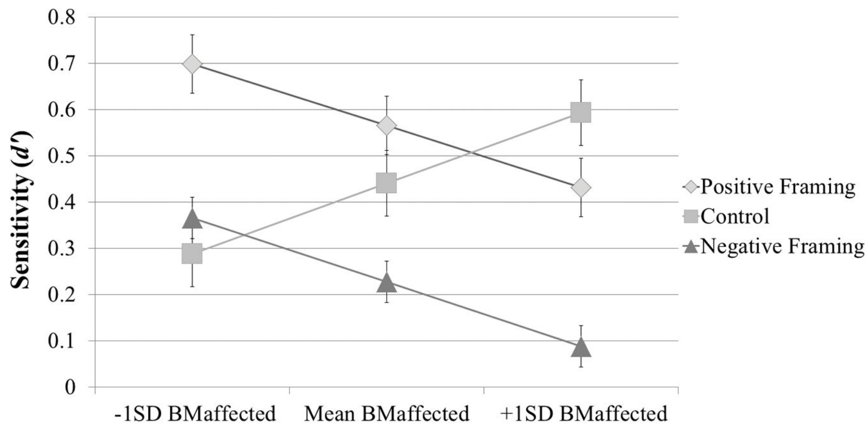

Figure 2.
Simple slopes analysis of sensitivity by condition at mean ±1SD of how affected participants were by the bombings (BMaffected). Error bars represent ±1SE.