Affective forecasts and the Valentine’s Day shootings at NIU: People are resilient, but unaware of it

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Affective forecasts and the Valentine’s Day shootings at NIU: People are resilient, but unaware of it

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People overestimate the extent to which emotion-producing life events affect subsequent affect. However, research has yet to conclusively demonstrate that this phenomenon occurs following significant trauma affecting entire communities, or whether it applies to predictions of discrete emotions. Exploring such issues, student reports of emotion states were collected both before and after the oncampus Valentine’s Day, 2008 shootings at Northern Illinois University (NIU). A separate group of students not on campus when the shootings occurred provided emotion state reports and predictions of the emotions they would expect to experience 2 weeks after a shooting occurred. Examination of these data suggests that: (1) emotion states of NIU students reflected resilience, and (2) students made affective forecasting errors indicating that this resilience was unexpected. These data confirm results of prior affective forecasting studies, extending them to cases of traumatic experiences, and suggest that such studies can expand their focus to explore specific post-event emotions.

Keywords: affective forecasting; emotions; trauma; resilience

Introduction

Humans consistently overestimate the duration and magnitude of their post-event affective reactions (for a review, see Wilson & Gilbert, 2003). Such results have been observed in laboratory settings (e.g. reading sad news stories – Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998), and for both unpredictable (e.g. receiving an unexpected gift – Wilson, Centerbar, Kermer, & Gilbert, 2005) and predictable (e.g. a football game – Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000) real life events.

Past research in this area has previously explored frequently experienced personal tragedies (job loss and dissolution of a romantic relationship – Gilbert et al., 1998). However, whether such tendencies extend to the occasional extraordinary events that occur in one’s life has rarely been examined (for example, see Smith et al., 2009). This article examines this idea, exploring actual and predicted emotional reactions to the Valentine’s Day, 2008 shootings at Northern Illinois University (NIU). On this day, a former NIU student opened fire in a crowded lecture hall, killing five students and wounding 18 others before taking his own life. This was a major traumatic event in the lives of those on campus and in the surrounding communities, and dealing with the event and its aftermath dominated campus life for the entire Spring 2008 semester.

This research report capitalizes on the fact that, as a part of an ongoing study, emotion state data were collected from one group of NIU undergraduates in the weeks prior to the shooting and from a separate group of NIU undergraduates in the weeks following the shooting. These data allowed us to assess whether, and the extent to which, peoples’ post-shooting emotions returned to pre-shooting baseline levels in the weeks after the shooting.

We expected that peoples’ post-shooting emotions would be at or near pre-shooting baseline levels. This expectation was partially derived from the literature that explores psychological responses to trauma. Recent positive psychology work has emphasized the notion of resilience, which pertains to the ability of adults in otherwise normal circumstances who are exposed to an isolated and potentially highly disruptive event, such as the death of a close relation or a violent or life-threatening situation, to maintain relatively stable, healthy levels of psychological and physical functioning. Two lessons from that research are that severe and persistent negative reactions to trauma are expressed by a relative minority of individuals and that resilience following a tragedy is a more common reaction than is prolonged dysfunction (e.g., Bonanno, 2005; Bonanno, Galea, Bucciarelli, & Vlahov, 2006; Orcutt, Erickson, & Wolfe, 2004). Hence, many often show amazing resilience in the aftermath of severe
trauma, and we expected this resilience to be reflected in the emotion reports that we obtained.

We also expected people to be relatively unaware of their capacity for resilience. To examine this issue, in the academic year after the shooting occurred, we obtained predicted reactions to the shooting from naïve freshmen who were not on campus at the time of the shooting. These naïve students were asked to imagine that they were on campus during the shooting and they predicted the emotional states that they expected to be experiencing 2 weeks after the shooting.

The accuracy of such forecasts can be assessed by comparing these emotion forecasts to the actual post-event emotions reported by students who experienced the shooting event. Our expectation was that, should the extant affective forecasting research generalize to extreme traumatic events, naïve students would erroneously predict that their post-shooting emotions would be extremely negative. Thus, we expected the data to suggest that many people are resilient to trauma (little difference in the negativity of actual post-shooting emotions versus actual pre-shooting emotions), but we also expected them to be relatively unaware of their capacity for resilience (large difference in the predicted negativity of post-shooting emotions versus the negativity of the actual emotions).

In addition to studying reactions to a large-scale tragedy, this research moved beyond the positive affect and negative affect typically measured in affective forecasting research and studied specific emotions. This is relatively novel: the affective forecasting literature has only begun to explore predictions of specific emotional states (Dohke & Murata, 2009). Accordingly, the instrument used in our study assessed multiple emotions: depression, vigor, anger, fatigue, confusion, and tension. The multi-faceted exploration of emotion that characterizes our study, though the product of chance (it was the scale that we happened to use at the time of the shooting) also meets the suggestion of Russell and Carroll (1999), who argue that emotion researchers should advance the study of emotion beyond valence. It also fits with ideas derived from Woodzicka and LaFrance (2001), who found differences between the types of emotions imagined in response to some events (sexual harassment) and those actually experienced.

Method

Phase 1: The collection of the actual emotion data

Participants

Undergraduates (N=370) enrolled at NIU chose to participate in return for credit toward completion of a course research requirement. Data from baseline participants (n=307) were obtained from students enrolled in the Fall 2007 semester. Data from participants who were enrolled at NIU at the time of the shooting (n=63) were obtained between 27 February, 2008 and 3 March, 2008.

Procedures and materials

At the start of a study unrelated to the one described herein, participants responded to items on the Profile of Mood States (PoMS; Shacham, 1983) presented via computer. The PoMS is a 36-item scale that asks participants to rate the extent to which they are currently experiencing a variety of different emotions. Responses to each item are reported on a 5-point ordered-category scale (1 = Not at All to 5 = Extremely).

The PoMS contains six subscales (depression, tension, anger, fatigue, confusion, and vigor). Scores for each participant were obtained by averaging scores on each subscale.

Phase 2: Collection of the imagined emotion data

Participants

Data were collected between 13 April and 15 April, 2009. Participants (N=55) were NIU freshmen who were neither enrolled nor on campus at NIU on Valentine’s Day 2008. Data from seven participants who violated one or both of these conditions were omitted from data analysis. Participants received course credit in exchange for their participation.

Methods

Responding to items presented via computer, participants first completed the PoMS. Next, participants were asked to contemplate the events of 14 February, 2008 after reading the following prompt:

This survey is designed especially for NIU freshman because it involves a question about the 2/14/2008 campus shootings at NIU. While we know that you were not yet a student at NIU when this even occurred; we are going to ask you to imagine that you were. Specifically, we want you to imagine, if you had been a student, how do you think you would have felt two to three weeks after the shooting? Please use the following scale to rate your imagined feelings.

Participants then completed the PoMS a second time.

Results

Analytic strategy

Three different sets of analyses were used to explore the data. First, a series of between-subjects ANOVAs was conducted on the responses provided by the students in the 2007–2008 academic year cohort. Each ANOVA examined a separate PoMS subscale.
These analyses were conducted to test the idea, derived from both the affective forecasting literature and the trauma literature, that pre-shooting baseline PoMS scores should minimally differ from actual post-shooting experience PoMS scores. Time (pre-shooting baseline group vs. actual post-shooting experience group) was the independent variable in each analysis.

A second series of between-subject ANOVAs compared the post-shooting emotion data collected from students who experienced the shooting (the experienced subjects) to imagined responses from the students not on campus but who imagined the shooting and who predicted how they would feel after the shooting (the naïve imagined event group). A separate ANOVA was conducted for each subscale. Student status (experienced group vs. imagined group) was the between-subjects variable for each ANOVA. These analyses assess whether participants showed the usual overprediction effect: predicted emotions should be much more negative than actual emotions.

A third set of within-participant ANOVAs compared the imagined emotion data reported by the naïve participants from the 2009 cohort to the actual emotions that they reported prior to imagining the shooting event. Results of these analyses were expected to show that these naïve participants anticipated that their emotions would be especially negative relative to the baseline emotion data collected before they were asked to imagine the shooting. Such a result would show that the negative post-event predictions made by this group could not be accounted for by their negative mood states prior to making the predictions.

Results grouped by subscale

Table 1 gives the means, standard deviations (SD), and reliability information for responses to the various PoMS subscales for different participant groups. Results from two of the subscales (vigor, anger) differed somewhat from the results for the depression, confusion, tension, and fatigue subscales. As such, results for the former subscales will be discussed in detail, followed by a summary of results for the latter subscales.

Vigor

Participants who experienced the shooting reported levels of vigor that did not differ from baseline levels reported before the shooting, $F(1, 366) = 0.604$, $p = 0.438$, $\eta^2_p = 0.002$. Such a result is consistent with usual affective forecasting findings and with the notion of resilience.

However, the reported level of participant vigor actually experienced after the shooting and the level of vigor imagined by naïve participants after the shooting did not significantly differ, $F(1, 114) = 0.760$, $p = 0.382$, $\eta^2_p = 0.014$. This result is not consistent with prior affective forecasting findings, which would have suggested that imagined vigor levels would be lower than experienced vigor levels.

A third result indicated that naïve participants who imagined the event expected that their vigor level would be below that reported at their own pre-imagination actual vigor baseline, $F(1, 108) = 6.40$, $p < 0.05$, $\eta^2_p = 0.056$. Hence, the negativity of the emotions that naïve participants expected to experience post-shooting was not a consequence of being in a low vigor state prior to imagining the event.

Anger

Levels of anger among those who experienced the shooting were significantly higher following the shooting than before the shooting, $F(1, 366) = 10.31$, $p = 0.001$, $\eta^2_p = 0.027$. The anger scale was the only scale to demonstrate a statistically significant increase after the shooting (in comparison to pre-shooting data).

In comparison to actual post-shooting anger levels, naïve participants imagining the shooting overestimated how much anger would be felt after the shooting, $F(1, 114) = 54.21$, $p < 0.001$, $\eta^2_p = 0.324$. This result is consistent with the usual direction of the

<table>
<thead>
<tr>
<th>PoMS scale</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td></td>
<td>Pre-shooting</td>
<td>Post-shooting</td>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Depression</td>
<td>1.48</td>
<td>0.55</td>
</tr>
<tr>
<td>Vigor</td>
<td>2.20</td>
<td>0.87</td>
</tr>
<tr>
<td>Tension</td>
<td>1.51</td>
<td>0.49</td>
</tr>
<tr>
<td>Anger</td>
<td>1.43</td>
<td>0.53</td>
</tr>
<tr>
<td>Fatigue</td>
<td>2.12</td>
<td>0.84</td>
</tr>
<tr>
<td>Confusion</td>
<td>1.68</td>
<td>0.60</td>
</tr>
</tbody>
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affective forecasting error reported by other affective forecasting studies.

Finally, naïve participants who imagined the shooting reported expected anger levels that exceeded their own pre-imagined event actual baseline anger levels, \( F(1, 108) = 92.98, p < 0.001, \eta^2_p = 0.463 \). Hence, the negativity of the emotions that naïve participants expected to experience post-shooting was not a consequence of being especially angry prior to imagining the event.

**Depression, confusion, tension, and fatigue**

The results from analyses of responses provided to these four subscales fit well with predictions derived from the affective forecasting literature. For those who actually experienced the shooting, pre-shooting baseline emotions and actual emotions experienced post-shooting did not differ on any of the four subscales (depression, \( F(1, 366) = 0.249, p = 0.618, \eta^2_p = 0.001 \); tension, \( F(1, 367) = 0.0, p = 0.994, \eta^2_p = 0 \); fatigue, \( F(1, 366) = 0.147, p = 0.701, \eta^2_p = 0.001 \); confusion, \( F(1, 366) = 1.38, p = 0.241, \eta^2_p = 0.004 \)). Such data reflect resilience in reactions to a traumatic event.

For all subscales, expected post-shooting emotions reported by the naïve group were more negative than the actual post-shooting emotions reported by the experienced group (depression, \( F(1, 114) = 62.44, p < 0.001, \eta^2_p = 0.384 \); tension, \( F(1, 114) = 158.70, p < 0.001, \eta^2_p = 0.584 \); fatigue, \( F(1, 114) = 12.76, p = 0.001, \eta^2_p = 0.101 \); confusion, \( F(1, 114) = 79.78, p < 0.001, \eta^2_p = 0.414 \)). Such data reflect the usual affective forecasting error.

Finally, for all four subscales, the post-shooting emotions expected by naïve participants were more negative than their actual emotion baseline scores (depression, \( F(1, 108) = 94.88, p < 0.001, \eta^2_p = 0.468 \); tension, \( F(1, 108) = 203.24, p < 0.001, \eta^2_p = 0.653 \); fatigue, \( F(1, 108) = 24.41, p < 0.001, \eta^2_p = 0.184 \); confusion, \( F(1, 108) = 113.83, p < 0.001, \eta^2_p = 0.513 \)). Hence, the negativity of the emotions that the naïve participants expected to experience post-shooting was not a consequence of being in negative emotion states prior to imagining the event.

**Conclusion**

Many people are not affected by trauma in extreme ways (e.g., Bonanno, 2005). This effect may not apply to all people: As illustrated by PTSD, the emotional states of some are profoundly affected by trauma. However, our data reflected general resilience to trauma: After a 2-week lag from a traumatic event, on average, peoples’ emotions were at or near pre-event levels.

Many people may be unaware of this capacity for resilience. Naïve participants not on campus at the time of the shooting predicted they would experience substantial negative affect 2 weeks after the shooting event. Comparison to the post-shooting emotions reported by those who actually experienced the shooting event showed that these predictions were erroneous. This result confirms results from prior research: People overestimate the impact of life events on their subsequent daily emotions. This overestimation applies not only to relatively mundane events (e.g. losing a football game) but also to the major traumatic events that one occasionally experiences in life (e.g. the NIU shooting event).

There were two minor exceptions from these trends. First, naïve participants were able to accurately predict the level of vigor experienced after the shooting. The implications of this exception for affective forecasting theory are unclear. First, this result may be a consequence of low statistical power. The difference between the imagined event group and experienced group vigor means was in the expected direction (imagined < experienced), but our sample size may simply have been too small to conclude that this effect was statistically reliable. A second consideration is that vigor was the only positive emotion assessed, and it may be somewhat difficult for people to anticipate how negative events might affect positive emotions (or vice versa). A third possibility is that people may have greater levels of self-understanding for some emotions (e.g. vigor) than for others. These latter two possibilities need to be explored, as they have implications for the accuracy of the emotion forecasts that people make after life events.

A second minor exception from the usual trends observed in affective forecasting research was that actual levels of post-shooting participant anger were greater than the levels of participant anger reported by the NIU students who were on campus prior to the shooting event. As noted earlier in this article, this outcome is a bit unusual for the affective forecasting literature, much of which shows that people’s predictions of affect are more extreme than the affect that they actually experience. However, from another perspective, this effect is entirely consistent with the implications of that literature in that it shows that people are often incorrect when they predict the emotions that they will experience in the future. However, while our findings are congruent in this regard with the implications of the bulk of the existing affective forecasting research, they demonstrate that further research into predictions about discrete emotions (instead of simple positive affect and negative affect) may be an important avenue for future affective forecasting research. While people may not be as resilient for some emotions (anger) as for others (depression, confusion, tension, and fatigue), the data do not contradict the idea that people are not
especially accurate at predicting post-event emotional states.

The usual confound-related cautions applicable to quasi-experiments should be applied when evaluating our results. For example, participants could not be randomly assigned to be experiencers or to be naïve imaginers. Hence, results could be affected by the unique character of the participants in each of the conditions.

However, in principle, one issue that is not of concern is that the emotion predictions were obtained from a different group of subjects than those who reported their actual post-event emotions. The applicability and logic of between-subjects designs to affective forecasting is clear: The predictions need not come from the same group of subjects who report actual emotions. This point is emphasized by the fact that some affective forecasting studies have used exactly these designs (e.g., see Mallett, Wilson, & Gilbert, 2008). Additionally, both data sets were collected from demographically similar subject pools, which all contained students enrolled in the Introduction to Psychology course at the same large Midwestern school. At this school, it is the case that the overwhelming majority of students in the course are in their freshman year. This knowledge helps to lessen, but not eliminate, concerns regarding the differences between these groups of participants.

Of more concern is that, though our naïve predictors were not on campus at the time of the shooting, they clearly could have been exposed to, and might have been knowledgeable about, the event. Hence, their emotion predictions may have been especially likely to be affected by the descriptions to which they were exposed. Hence, it is the fact that the naïve experiencers made their predictions after the shooting, and not that they were not the same students who experienced the shooting that should lead to caution in interpreting our emotion forecasting results.

An additional concern is that we do not know for sure (because we did not ask) if any of our research participants were either in the classroom at the time of the shooting or had close relationships with individuals who were. However, the typical size (over 1400 students) of the group of students enrolled in the Introduction to Psychology course in a typical semester, as well as the fact that the group typically contains an overwhelming majority of freshmen, makes it somewhat unlikely that any substantial number of participants in the study fit into either of these categories (the class in which the shooting occurred mainly comprised of non-freshmen). This makes it unlikely that the responses of such individuals had much impact on our data.

But what if the numbers of such individuals were substantial? Three possibilities, all very interesting, present themselves. One possibility is the effects that we observed might have been caused by the data provided by these individuals. This would be very interesting because it would both confirm our claim of resilience, as well as suggest that our misprediction results occurred only when people directly experienced the shooting or were interpersonally close to a victim. A second possibility is that the responses of individuals who were in the classroom or who were close to a victim did not differ from the responses of those who were not in either of these categories. This would attest to the generality of both resilience and of error in affective forecasting. A third possibility is that our misprediction results might be limited to those who were not in the classroom or who were not interpersonally close to a victim. This would challenge our results, implying that our claim of resilience might not apply to those encountering highly significant and personal tragedies, and that our claim of misprediction similarly does not apply to such individuals. Exploration of such possibilities are left to the efforts of future researchers.

In addition to the methodological concerns, we also note that our data do not speak to the processes underlying errors in affective forecasting. Such questions might be addressed by examining variables that moderate error magnitude. For example, one might suspect that the predictions that people make about their responses to trauma might reflect generalized expectations or theories about how people respond to traumatic events. Thus, it might be the case that those with considerable experience in the face of trauma (EMTs, emergency room workers) might show reduced error, and their affective forecasts might become increasingly accurate with job experience. One might speculate that such individuals might possess personal exemplars of past responses on which they can draw when making their predictions.

One other additional research direction might explore valence differences in the accuracy of emotion forecasts. Such ideas are prompted by the work of Taylor (1991), who proposed that peoples’ biological, cognitive, and social systems work to dampen the strong initial reactions that people have to negative events, and by the work of Fredrickson (1998), who has proposed that attempts at affect regulation might result in the long-term dampening of responses to negative affect. Indeed, research into the fading affect bias (Ritchie, Skowronski, Hartnett, Wells, & Walker, 2009) suggests that over the long term, people may be more likely to experience positive affect when remembering positive events than negative affect when remembering negative events. This finding may have implications for the relative accuracy of emotion forecasts for such events. Given the maintenance of positive affect over time, predictions of affective responses to positive events may not be especially erroneous. It may be that long-term responses to negative events that are particularly likely to evince misprediction.
However, we leave it to future research to explore the situations that lead to error or accuracy in affective forecasts and the variables that mediate such effects. For purposes of this article, our message is a simple and optimistic one. Peoples’ daily post-event emotions are resilient to trauma. People do not seem to be aware of their capacity for such resilience, and the absence of such knowledge might cause people to be pleasantly surprised when they find that they can function positively in the aftermath of major life traumas.

References


