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Brief Report

Immune neglect in affective forecasting

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ABSTRACT

Research on emotional prediction, or affective forecasting, shows that people regularly overestimate the emotional intensity of events. Particularly for negative events, people fail to consider how coping resources will ameliorate negative affect, a phenomenon termed immune neglect. In an affective forecasting study of nine football games, participants ($n = 180$) overestimated emotional reactions to wins and losses, and an experimental manipulation helped reduce bias. Further, those reporting greater use of emotional processing coping strategies recovered more effectively from losses, but failed to foresee this when making predictions, leading to increased bias. This is the first study to document individual differences in immune neglect. Results support the generalizability of biased predictions and contribute to the understanding of affective forecasting and coping.

1. Introduction

A wealth of psychological research and theory supports that consciously or unconsciously people frequently base decisions on avoidance of distress and pursuit of pleasure (Bentham, 1789/1948; Kermer, Driver-Linn, Wilson, & Gilbert, 2006; Wilson, 2002). However, as current rates of divorce and occupational dissatisfaction suggest, a broad range of decisions are frequently made in an effort to improve emotional well-being, and lasting happiness is often elusive. Research examining affective forecasting, or predicted emotional reactions, indicates that people typically overestimate the emotional intensity of events, which has been termed the *impact bias* (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). On average, positive events are not as fulfilling as people expect and people tend to be more resilient in recovering from negative events than they anticipate (for reviews see Dunn & Laham, 2006; Wilson & Gilbert, 2003). Although there are mechanisms for attenuating both positive and negative affect, Wilson, Gilbert, and Centerbar (2002) argued that the array of techniques for fending off negative affect is likely more extensive due to the distress and threat to self esteem associated with negative affect.

Techniques for reduction of negative affect include defense mechanisms, coping strategies, dissonance reduction, self-serving biases, and other processes that might be termed the psychological immune system (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). When forecasting emotional experiences, people often exhibit immune neglect, failing to consider how quickly and effectively their psychological immune systems will diminish negative affect (Gilbert et al., 1998). Interestingly, Gilbert et al. found that situational variables facilitating coping tended to increase the impact bias because participants failed to account for these moderators when forecasting. At the level of individual differences, coping strategies vary as a function of personality (Bolger & Zuckerman, 1995). In general, it follows that those with more effective coping strategies for dealing with specific stressors ought to also have a greater impact bias than those with few effective strategies. That is, because people neglect their coping resources when forecasting, effective coping should be related to an increased impact bias.

It is important to consider the context of the present study because the type of coping strategies that are effective may vary depending on the event in question (Carver, Scheier, & Weintraub, 1989). In order for the results of the study to generalize to everyday forecasts, it was necessary to choose an event of modest importance that produces relatively transient emotional reactions. As such, this study was designed to examine predicted and actual emotional reactions to home team football games among college students. Because football games occur regularly, results could be obtained across numerous games, thereby improving generalizability. For any event, some coping strategies will be generally effective, others ineffective, and still others irrelevant. Within the context of relatively transient emotionally evocative events, such as college football games, coping strategies relying on emotional processing are thought to facilitate emotional recovery, whereas strategies involving emotional avoidance tend to hinder emotional recovery (Austenfeld & Stanton, 2004; Carver et al., 1989; Folkman & Moskowitz, 2004; Stanton, Danoff-Burg, Cameron, & Ellis, 1994; Stanton et al., 2000; Wilson et al., 2002). Because effective coping is thought to be associated with an increased impact bias, it was hypothesized that emotional processing strategies would correlate

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positively with the impact bias, whereas emotional avoidance would correlate negatively with the impact bias. Additionally, coping variables are more closely related to recovery from negative events (Gilbert et al., 1998), so results may be more salient for football losses than wins.

Although immune neglect is an important cause of the impact bias, a more general reason for the impact bias is that when making affective forecasts people tend to consider the target event (e.g. a football game) as though it occurs in a vacuum, devoid of context such as peripheral activities and daily events, like homework and visiting friends (Wilson et al., 2000). Wilson et al. (2000) showed that the impact bias could be substantially reduced by simply asking participants questions about their daily activities. Presumably by increasing the salience of daily activities, contextualization of the target event is increased, thereby improving forecasting accuracy. The boundary conditions of this method remain poorly understood. For emotionally evocative events, the valence of the daily activities used to increase contextualization may be an important determinant of the effectiveness of this intervention. That is, more balanced predicted reactions to positive events, like football wins, may be obtained by having individuals consider unavoidable displeasing activities that will bring down the emotional high.

In the only study to date that examine the role of activity valence, Wilson et al. (2000) showed that participants randomly assigned to answer questions about either (a) neutral daily activities or (b) a mix of pleasant and unpleasant daily activities were more accurate than control participants in terms of forecasting accuracy but did not differ from each other. Alternatively, in this study, we compared forecasting accuracy in a control condition to (a) a pleasant activity condition and (b) an unpleasant activity condition, to better test the boundary conditions for bias reduction. Interestingly, in cognitive therapy, clients are often asked to challenge their unrealistic expectations by balancing them out with opposing cognitions (Persons, 1989). Instead of catastrophizing, depressed clients are instructed to focus on the positive. Similarly, clients who are naively optimistic are requested to prepare for the worst. Thus, although thinking about any daily activities may decrease the impact bias (Wilson et al., 2000), we also hypothesized an interaction effect. That is, thinking about positive activities should best improve forecasts for negative events (e.g. football losses) by balancing out unrealistic cognitions, whereas thinking about negative activities may be most effective for improving forecasts for potentially positive events (e.g. football wins).

To summarize, participants provided information regarding preferred coping strategies and they were assigned to one of three contextualizing conditions to help determine the influence of these variables in affective forecasting accuracy. Participants forecasted their emotions for one of nine football games. Effective coping strategies were expected to relate to a greater impact bias, particularly for negative events, such as football losses (Gilbert et al., 1998). Within the context of transient events, like football games, emotional processing is more effective than emotional avoidance in terms of dissipating affect (Austenfeld & Stanton, 2004; Carver et al., 1989; Folkman & Moskowitz, 2004; Stanton et al., 1994, 2000; Wilson et al., 2002), so emotional processing was expected to correlate positively with the impact bias; emotional avoidance strategies negatively. Additionally, participants were assigned to one of three conditions: control, pleasant peripheral activity condition, or unpleasant peripheral activity condition. Those in either experimental condition where expected to make better forecasts than controls (Wilson et al., 2000). Thinking about pleasant activities was expected to best improve forecasts for football losses; thinking about unpleasant activities for football wins.

2. Methods

Students at Michigan State University (MSU) forecasted their level of happiness for one of nine MSU football games, which included five wins and four losses. Each student only participated in the study for one game.

2.1. Participants

Participants were 180 MSU students (67% female, mean age = 19.58, $SD = 2.71$). The central dependent variable, impact bias, was unaffected by the demographic variables of gender, $t(178) = 0.39$, *ns*, and age, $r = .07$, *ns*. Each week, 15–30 students participated in the study, with equal numbers assigned across the three experimental conditions. By happenstance, half of the students ($n = 90$) participated during a winning week; half for a loss. Participants self-reported watching an average of 4.30 ($SD = 3.27$) MSU football games during the previous season, and though they knew in advance that the study pertained to football, they were not required to be fans. In contrast to studies using participants highly invested in the event in question, we used a broader sample to obtain results more generalizable to typical forecasts. All participants indicated wanting MSU to win. No participant dropped out at any stage of the study.

2.2. Procedures

On the Wednesday prior to a Saturday game, participants completed the first online phase of the experiment. Participants provided demographic information and completed a coping inventory before being randomly assigned to one of three conditions. They then forecasted how they expected to feel two days after the football game, depending on the outcome. On the Monday after the game, participants went online and rated their current level of happiness.

2.3. Measures

2.3.1. Coping style

The COPE Inventory (Carver et al., 1989) was used to assess coping style. The inventory contains 60 items that asses the use of 15 styles of coping with stressful events (e.g. "I discuss my feelings with someone). Participants were asked to rate the likelihood of various responses on a scale from 1 (I usually do not do this at all) to 4 (I usually do this a lot). Carver et al. suggested grouping the scales rationally based on the particular event under study. As such, nine clinical psychology graduate students read rated each of the 15 coping styles in terms of their emotional avoidance versus affective engagement on a scale with anchors −5 (emotional avoidance), 0 (neutral/irrelevant), and +5 (emotionally engaged processing), based on how they judged each coping style would be used to deal with a football loss. Raters demonstrated excellent agreement with an average measures intraclass correlation of .95. Based on the average ratings, Venting Emotions, Emotional Social Support, and Positive Reinterpretation were defined as emotional processing coping styles ($M = 3.59$, $SD = 1.14$). Denial, Substance Use, Mental Disengagement, and Behavioral Disengagement were classified as emotional avoidance coping styles ($M = -3.78$, $SD = 0.69$). The remaining eight coping scales were classified as relatively neutral and irrelevant to coping with football losses ($M = 0.96$, $SD = 1.04$).

2.3.2. Affective forecasting

Participants rated their baseline level of happiness by answering *How would you rate your level of happiness compared to how*

happy you are on average?, using a scale from 1 (Below average happiness) to 9 (Above average happiness). Participants predicted how happy they would feel two days after an MSU football loss and how they would feel two days after an MSU football win, using the same 9-point response scale. Then, two days after the game, participants rated their actual level of happiness, using the same response scale. Predicted and actual (post-game) happiness scores were each controlled for baseline happiness, yielding change scores.

2.3.3. Forecasting manipulation

Participants were randomly assigned to one of three conditions prior to making their affective forecasts. Participants either completed a Negative Activity Questionnaire (NAQ), a Positive Activity Questionnaire (PAQ), or completed no questionnaire (control condition), before proceeding directly to forecasting. For both the PAQ and the NAQ, participants were asked to make ratings about 12 typical daily activities. Activities were intended to be pleasant on the PAQ (e.g. "visiting friends"), and unpleasant on the NAQ (e.g. "doing homework assignments"). Participants rated the average amount of time they spent on each activity each day and how much they enjoyed each activity. As a manipulation check, the PAQ enjoyment ratings were verified to be higher than those for the NAQ, $d = 1.00$, $t(118) = 5.43$, $p < .001$, and the two did not differ in time estimates, $d = 0.19$, $t(118) = 1.08$, *ns*.

3. Results

Participants predicted they would be much happier following a win than a loss, $d = 1.54$, $t(178) = 10.23$, $p < .001$, with predicted increases for wins, $M = 1.39$, $SD = 1.65$, and predicted decreases for losses, $M = -1.49$, $SD = 2.10$. In actuality, participants were only modestly happier 2 days after a win than a loss, $d = 0.37$, $t(178) = 2.42$, $p = .02$, with mild increases in happiness for wins, $M = 0.46$, $SD = 1.28$, and small decreases for losses, $M = -0.13$, $SD = 1.92$. As such, the impact bias, or difference between predicted and actual change in happiness, was significant both for wins, $d = 0.62$, $t(89) = 5.11$, $p < .001$, and for losses, $d = 0.68$, $t(89) = 6.186$, $p < .001$.

As expected, no coping style was correlated with the impact bias for football wins (all $ps > .10$); however, there was evidence for the hypothesized pattern of correlations between coping styles and the impact bias for football losses. Table 1 shows that emotional processing was related to better recovery after a loss (less change in happiness from baseline), whereas emotional avoidance was related to slower recover. Because participants failed to account for these differences when making predications, those relying on more effective coping strategies had a greater impact bias. A composite index of coping ability (emotional processing minus emotional avoidance) correlated moderately with emotional recovery from losses ($r = .49$, $p < .001$) and a greater impact bias ($r = .26$, $p = .01$). Although the simple difference method is commonly used to calculate impact bias in the forecasting literature, results using a regression-adjusted method of calculating impact bias were strikingly similar. Impact bias (and more specifically, immune neglect) can be characterized as the part of actual reactions participants were unable to predict. When adaptive coping was correlated with actual reactions (while controlling for predicted reactions), the results remained significant ($r = 0.47$, $p < .001$). The irrelevant coping styles were not strongly related to the impact bias, with correlations having an average magnitude of $r = .07$, $p = .51$.

A 2 (game outcome) × 3 (condition) ANOVA was used to examine whether the impact bias differed by experimental condition. The impact bias did not differ by game outcome, $F(1,174) = 2.04$, $p = 0.16$, $\eta^2 = .01$. Consistent with our hypotheses, the impact varied by condition, $F(1,174) = 12.94$, $p < .001$, $\eta^2 = .13$, but contrary to our hypotheses, there was no interaction between experimental condition and game outcome in predicting the impact bias, $F(1,174) = 1.10$, $p = 0.34$, $\eta^2 = .01$. A post hoc Bonferroni test indicated that those in the PAQ and NAQ conditions had a significantly lower impact bias than those in the control condition but did not differ from each other. Collapsing across questionnaire conditions, targeted post hoc analyses revealed that the questionnaires decreased the impact bias by causing participants to make less extreme predictions (wins: $d = 0.54$, $t(88) = 2.42$, $p = .02$; losses: $d = 0.93$, $t(88) = 3.04$, $p = .003$) than those in the control group. The questionnaire manipulations did not have an inadvertent effect on post-game changes in mood ($ps > .10$).

Table 1
Coping style, predicted and actual change in happiness, and impact bias for losses.

Coping style	Predicted	Actual	Impact bias
Emotional processing	0.16	0.47*	0.21*
Emotional social support	0.13	0.33*	0.13
Positive reinterpretation	0.09	0.38*	0.19†
Venting	0.12	0.35*	0.15
Emotional avoidance	−0.03	−0.31*	−0.20†
Behavioral disengagement	0.03	−0.35*	−0.28*
Denial	−0.01	−0.22*	−0.16
Mental disengagement	0.07	−0.06	−0.10
Substance use	−0.12	−0.26*	−0.09
Adaptive coping	0.11	0.49*	0.26*

Note. $N = 90$. Predicted, predicted change in happiness; actual, actual change in happiness; impact bias, actual − predicted, or unexpected ease of recovery; adaptive coping, emotional processing − emotional avoidance.
† $p < .10$.
* $p < .05$.

4. Discussion

These findings add to the generalizability of past research by documenting the presence of an impact bias across a representative sample of nine football games (Dunn & Laham, 2006; Wilson & Gilbert, 2003). Participants overestimated how happy they would feel after wins and how unhappy they would feel after losses. With the validity of the impact bias well-established, research should begin to focus on the correlates of the impact bias as well as the boundary conditions defining when the bias occurs. Gilbert et al. (1998) found that because people overlook coping variables when forecasting emotions, situational factors that facilitated emotional recovery actually increased the impact bias. In the present study, participants relying on emotional processing recovered from football games more easily than those drawing upon emotional avoidance, consistent with past research (Austenfeld & Stanton, 2004; Carver et al., 1989; Stanton et al., 1994, 2000; Wilson et al., 2002). Because participants failed to account for these differences when forecasting, those relying on emotional processing were more likely to overestimate the negative impact of a football loss, whereas those with the less facilitatory, emotionally avoidant strategies rightly foresaw their later distress. Given the importance of emotional prediction for determining behavior (Kermer et al., 2006; Mellers, 2000), researchers have examined methods for reducing the impact bias, for both positive and negative events (Wilson et al., 2000). Replicating the findings from Wilson et al., thinking about peripheral activities when forecasting increases contextualization of the event in question, improving forecasting accuracy, though the valence of these peripheral activities had no discernible effect.

Although this study documents the important role of coping variables in the accuracy of emotional prediction and demonstrates the generalizability of the impact bias across a group of events, several limitations of the study require further attention. Foremost, the coping variables measured in this study do not adequately characterize the breadth and depth of the psychological immune system (Gilbert et al., 1998). To the extent that people are less aware of defensive processes, productive defense mechanisms may be even more strongly correlated with the impact bias. Interestingly, participants in the current study described their typical coping strategies but then apparently failed to consider these coping factors when making predictions, perhaps emphasizing the automaticity and pervasiveness of the impact bias (Wilson, 2002).

To explore the importance of unique coping styles to specific events, researchers may wish to examine alternative focal events in which coping strategies judged irrelevant in the current study would be applicable (e.g. problem-solving in the face of relationship frustration). Finally, a weakness of the study was that participants only made one post-game mood rating. Future researchers may wish to obtain mood ratings at multiple time points to better characterize the effects of coping on mood and time to return to baseline. For example, whereas emotional processing was related to better recovery from losses two days after the game, emotional avoidance might have produced better short-term outcomes immediately after the game.

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