Mood Congruency in Affective Forecasting: The Effects of Current Mood in Near versus Distant Future Predictions

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Abstract

Affective forecasting occurs when an individual predicts their emotional response to a future target. The current study looks at the effect of current mood on affective forecasting. Based on Bower's (1981) *mood congruity effect*, it was argued that affective forecasts would be biased towards the direction of an individual's current affect, depending on the temporal distance of the event that is being predicted. Two competing hypotheses were tested, whereby it was argued that the effects of current mood were either more influential in the near future, or in the distant future. The second hypothesis was supported, while the first hypothesis was contradicted, whereby participants showed a mood congruity effect in the distant future, negative events. Results showed that the valence of the predicted event acted as a potential second moderator to the effects of current mood. The implications of these findings on the impact bias are also discussed.

Acknowledgements

In writing this thesis, not only have I gained knowledge and hopefully added to the current of knowledge on affective forecasting, I have also realised how truly blessed I am.

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Introduction

Imagine you are on a plane that is about to take off to a foreign country half way around the world. You are ecstatic that your adventure, which you have been meticulously planning for the last year or so, is about to begin! But, 14 hours later, sitting next to a not-so-friendly stranger on the plane, after the airline company forgot to cater to your Kosher needs, you suddenly realize that maybe this was not the best idea. After all, you will be traveling, alone, to a strange country on a different continent where the locals do not speak your language. As you land, you realize that you are not even half as ecstatic as you were when you were leaving home, let alone when you were planning your trip. But you are the same person who planned the trip. What has changed?

When planning your trip you were probably making your decisions based on how happy and excited you *anticipated* feeling. Decision researchers have argued that choices are partially determined by the pleasure those choices are expected to bring. For example, Decision Affect theory assumes that when making decisions or choices, we anticipate the pleasure or pain of future outcomes, consider their likelihood, and then select the option with a greater average expected pleasure (Mellers & McGraw, 2001). For example, Mellers, Schwartz and Ritov (1999) found a relationship between anticipated emotions and choice in a gambling study. Participants made gambles in a simulated game of roulette, but before each gamble they estimated how they would feel about winning or losing the gamble. It was found that when participants anticipated that they would feel pleasure after winning the gamble, they were willing to bet more money.

As the opening example shows, however, people do not always feel the way they expect they will, and as a result may make suboptimal decisions. Making predictions about emotional reactions to future events is called *Affective Forecasting* and can be broken down into four components; predictions about the valence, nature, intensity and duration of a future emotional reaction (Wilson & Gilbert, 2003; 2005). Errors in affective forecasting can occur in any of these components, whereby individuals anticipated affect would deviate from their actual affect.

Wilson and Gilbert (2003) argued that people are in fact quite good at predicting the valence of future outcomes, but they overestimate *how* positive or how negative they will feel. For instance, when you were planning your trip, you predicted positive affect[1] but now as your plane lands; you are not feelings as positive as you remember thinking you would feel. The valence of your prediction is correct--you are still feeling positive about the trip--just not as positive as you predicted.

Wilson and Gilbert (2003) also argued that people are reasonably good at predicting the nature of their emotional responses--the specific emotions experienced. For example, people asked how they would feel if they had to eat a live snail would probably accurately predict that they would be quite disgusted (Gilbert, Gill & Wilson, 2002; Wilson & Gilbert, 2003). Nevertheless, Wilson and Gilbert (2003) also argue that individuals can experience a variety of emotions, some of which can be overlooked when predicting how they think they might feel. For example, if an individual was asked to predict how they expected to feel after watching a pleasant movie, finally moving out of their college dormitory or graduating from college, they might say that they would feel happy and excited in all cases. But research by Larsen,

[1] There are distinctions between affect, mood and emotion (see Forgas, 1995; Schwarz & Clore, 1996), which are not critical for the current studies. Here, these terms are used interchangeably.

McGraw and Cacioppo (2001) showed that, counterintuitively, participants report feeling both happy and sad in response to such events. Therefore, people may make errors when predicting their specific emotional responses because they may focus on either just positive or negative emotions, not realizing that they could feel both. In the example of your trip aboard, when planning the trip you might accurately predict excitement, without appreciating that the excitement could co-exist with, and be overwhelmed by other negative emotion.

The Impact Bias and its Potential Reduction

Whereas individuals can relatively accurately predict what emotions they will experience in the future, they are not as good at predicting how long and intensely they will experience them. So-called "affective forecasting errors" can occur when an individual overestimates the rate of acceleration of their initial emotional response, their peak emotional response or the duration of their emotional response (Wilson & Gilbert, 2003; 2005; Gilbert, Pinel, Wilson, Blumberg & Wheatly, 1998; Ayton, Pott, & Elwakili, 2007; Eastwick, Finkel, Krishnamurti & Loewenstein, 2008). Because it is currently difficult to separate these three sources of error, Wilson and Gilbert (2003) use the term *impact bias* to refer to all mispredictions of this sort.

For example, Dunn, Wilson and Gilbert (2003), demonstrated the intensity error component of the impact bias. Dunn et al. (2003) asked first year college participants to predict how happy they thought they would be in one year after they had been placed in one of 12 different houses available to them. Desirable and undesirable houses were defined as those that participants rated above or below (respectively) their own mean desirability rating. One and two years later they were asked to rate

their actual happiness, and these ratings were compared to their predicted happiness. It was discovered that, one year later, participants that were put into their undesirable houses were significantly happier than they predicted whereas participants that were put in their desirable houses were significantly less happy than they predicted. It was concluded than participants overestimated the impact of their housing placement on their emotional response, hence demonstrating the intensity error component of the impact bias.

Gilbert, Pinel, Wilson, Blumberg and Wheatley (1998) demonstrated a factor underlying the over prediction of the intensity and the duration of affective forecasts, "immune neglect". Immune neglect occurs when an individual fails to account for their "psychological immune system" (Gilbert et al., 1998), the process by which they rationalize and reconstruct a negative event, thereby reducing the emotional pain it causes over time (Gilbert et al., 1998; Ayton et al., 2007). For example, Gilbert et al. (1998) asked participants to predict their future affect following a relationship breakup and (in a second study) asked professors to predict their affect if they failed to achieve tenure. Individuals who were in a relationship predicted feeling sad more intensely and for longer than individuals who had actually experienced a break up, while professors who did not achieve tenure predicted that they would feel worse than those who actually did not achieve tenure.

More recently, Eastwick et al. (2008) conducted an extensive longitudinal study that investigated affective forecasting, once again with respect to a relationship break up. This study demonstrated the over prediction of the intensity of affective forecasts, but also showed a lack of the immune neglect. Participants were first year university participants who predicted their "distress" if they were to break up with their partners in the next two, four, eight and twelve weeks. Participants also reported their actual

distress if and when their relationship actually ended. Results showed that on average predicted distress ratings were overestimated compared to actual distress ratings. More interestingly, as actual distress ratings decreased over time, so did predicted distress ratings. In other words, participants mispredicted their actual emotional responses to the breakup, but they were accurate in predicting their rate of recovery from it, demonstrating a lack of immune neglect.

Another factor that contributes to the impact bias, and hence errors in affective forecasting, is "focalism", (also known as the focusing illusion), which occurs when individuals ignore other factors (other than the predicted event) that can indirectly influence their thoughts and emotions (Schkade & Kahneman, 1998; Wilson, Wheatley, Meyers, Gilbert & Axsom, 2000; Wilson & Gilbert, 2003). As stated by Gilbert et al. (1998), "...the fact of the matter is that trauma does not take place in a vacuum: Life does go on and nonfocal events do happen and do have affective consequences." (p.619).

To demonstrate that individuals are susceptible to focalism, Schkade and Kahneman (1998) ran a study that asked university participants from California and the American midwest to rate their own personal life satisfaction, along with the personal life satisfaction of a typical individual living in either California or the American midwest. It was observed that although there were no actual reported differences in life satisfaction between the two groups of participants, both groups of participants rated people in California to be happier than people living in the American Midwest. Researchers noted that when making their judgments, the participants focused more on the climate aspect of the individual life difference between the residents in the two areas, and tended to ignore other aspects of life that influences satisfaction, such as job opportunities. Research have since argued that

individuals are subject to focalims when making affective forecasts that cause them to overpredict the intensity and duration of their affective forecasts.

Going back to the example of the overseas trip, when making the decision to travel, you may have focused primarily on the actual trip and the amount of joy that you predicted it would bring. You probably ignored other nonfocal events. Something unexpected might happen on the flight (the airline company forgetting to cater to your dietary requirements, for instance) or a friend back home deciding to have a wedding that you might be forced to miss. These nonfocal events could potentially dampen your mood causing your initially predicted affect to be an overestimation.

In a series of studies by Wilson et al. (2000), it was observed that focalism can be reduced if individuals pay attention to other events as well as the target event when making affective forecasts. College participants were asked to predict how happy they would feel on the day and for a week after, their football team won a game. Half of the participants were instructed to keep a diary in which they considered what they would be doing either 2 or 3 days after the football game, while the other half were not given any additional instructions. Researchers argued that by instructing the participants to write about what they expected to be doing on days following the football game, the participants would pay attention to other events that are likely to occur in that timeframe, hence making nonfocal events more salient. Results showed that participants who were instructed to focus on nonfocal events as well as the focal event (the football game) displayed less of an impact bias than participants that were not.

Ayton et al. (2007) found that prior experience with an event does not reduce the impact bias. The study was carried out in driving test centers in London, where participants were asked to predict the likelihood of them passing the test, how happy

they currently were, and how happy they predicted they would feel if they passed or failed their driving test. Consistent with the impact bias, participants predicted that they would feel more intense emotions in response to the outcome of the test, compared to how they actually felt. More importantly though, it was noted that the impact bias was not reduced by previous experience; participants who had previously taken the drivers test were no more accurate at predicting their emotional responses than participants who had not previously taken the drivers test (Ayton et al., 2007).

Affect in Judgment and Decision Making

Notably, the reviewed research on affective forecasting has primarily emphasized cognitive influences on biases in affective forecasting. However, emotion too has been shown to have an important role in many judgment domains (Forgas, 1995; Loewenstien & Lerner, 2001). With regard to the affective forecasting, it is crucial to distinguish two general aspects of emotion, *anticipated emotion* and *experienced emotion* (Mellers et al., 1999). Anticipated emotion is the affect the decision maker expects to experience at the time of or as a result of a decision. Experienced emotion refers to the actual affect at the time the decision is being made.

Early work on anticipated emotion looked mainly at the role of anticipated regret and disappointment (Bell, 1985; Loomes & Sugden, 1982; Ritov & Baron, 1990). Regret is defined as the feeling in response to a discovery that a better alternative is available, while disappointment occurs when a chosen outcome turns out to be worse than expected (Bell, 1983, 1985).

Bell (1983) and Loomes and Sugden (1982) concluded that individuals have the ability to anticipate regret, and that they behave in ways to avoid it. Accordingly,

researchers have argued that decisions are partly based on the motivations to avoid regret and disappointment (Ritov & Baron, 1990; Zeelenberg, van Dijk, Manstead & van der Pligt, 2000). For example, Ritov and Baron (1990) found that participants were reluctant to vaccinate a child when it was observed that there could also be fatal side effects, even though the outcomes of not vaccinating the child could also be fatal. Ritov and Baron (1990) concluded that this omission bias -- a tendency to favour omissions (in this case, letting someone die), over commissions (killing someone actively) -- was due to the effect of anticipated regret. This and subsequent studies indicated that decision making and behaviour, can be influenced by anticipated emotion (Ritov & Baron, 1995).

More relevant to the current thesis is the work on experienced emotion. To understand the importance of current affective information for information processing, the functioning of the memory system and the semantic metaphor need to be explained. Early researchers observed a "cognitive loop", whereby mood congruent events were more accessible from memory, thereby strengthening the affect felt, which in turn influenced decisions and judgments (Isen, Shalker, Clark & Karp, 1978). Bower (1981) formalized this "mood congruence" hypothesis, proposing that emotional states are stored as nodes in an associative network. It is argued that when an individual is in a particular emotional state, corresponding affective nodes are triggered which spread activation to mood-congruent concepts to aid in their recall and processing. Mood congruent information is said to help processing at both the encoding and retrieval stages of information processing, and hence mood congruent information is more elaborate and easily available (Bower, 1981; Matt, Vazquez & Campbell, 1992).

As evidence, Bower (1981) gave participants a daily diary and asked them to write in any pleasant or unpleasant incidents that occurred that week. It was observed that although participants wrote in more pleasant than unpleasant incidents on average, participants in a positive mood recalled more pleasant incidents and participants in a negative mood recalled more unpleasant incidents. The same mood congruency effect was observed when participants were asked to recall childhood memories. It was concluded that this mood congruency effect was due to the fact that the emotional state that the participants were in triggered mood congruent information from their memory.

In another demonstration of mood congruence, Isen et al. (1978) conducted two studies to investigate the influence that positive mood has on recall. The first study was carried out in a shopping mall where participants were induced into a happy mood by receiving a free gift. They were then asked to answer a "consumer opinion survey" to rate the performance and service records of either their cars or television sets. It was observed that participants in a good mood recalled more positive trait words, and gave more positive consumer satisfaction ratings, than participants in a neutral mood. A second study investigated both positive affect and negative affect. Participants were induced into positive moods or negative moods (by winning or losing a computer game); participants that were in a positive mood recalled more positive words from memory during a word recall task. The results from these experiments support the hypothesis that current affect influences memory.

Forgas and Bower (1987) looked at the influence of mood on person perception judgments. Participants were manipulated into either a positive mood or a negative mood, and then asked to form impressions of four individuals, two with positive characteristics and two negative characteristics. Results showed that

participants paid more attention to individuals whose characteristics were congruent with their own mood and they were quicker in making judgments about these individuals. Participants in a positive mood also reported more positive impressions of the targets than participants in a negative mood.

Mood congruence effects have not only been observed in recall tasks but also in directed forgetting tasks (Power, Dalgleish, Claudio, Tata & Kentish, 2000). As for a recall task, a group of depressed participants and non-depressed participants were presented with a list of 20 positive trait words and a list of 20 negative trait words. Participants were asked to rate how self-descriptive they found each trait word. They were then given a three minute distracter task, after which they were asked to recall as many words as they could. It was observed that depressed participants recalled more negative trait words and positive trait words, demonstrating a mood congruency effect. In addition, Power et al. (2000) also observed a mood congruency effect in a directed forgetting task. Once again, the participants consisted of depressed and non-depressed individuals that were told to rate the self-descriptiveness of 20 positive trait words and 20 negative trait words. Half of the participants were then told to forget the task that they had just done because it was merely practice while the other half was not. All the participants were then asked to recall the list of words that they were presented with and results showed that depressed participants, although told to forget the trait words recalled more negative trait words than non depressed participants.

Current Study: Current Mood and Affective Forecasts

The current study utilises the idea of mood congruence and applies it to affective forecasting. Because people's current moods influence the ease with which congruent affective information comes to mind and is processed, I propose that their thoughts

and expectations of the future will be biased in the direction of how they are currently feeling, depending on the temporal distance of the event that is being predicted. To my knowledge, this has never been empirically tested before.

Some studies on affective forecasting have already shown that individuals can be influenced by some current states. For example, Gilbert et al. (2002) observed that participants' current level of hunger influenced how much they predicted they would enjoy eating spaghetti and what food items they bought at a grocery store. It was also observed that cognitively loaded participants especially were susceptible to this effect (Gilbert et al., 2002). No studies, however, have specifically examined the influence of the current emotional state on affective forecasts.

Affect congruent predictions for distant versus near future events

Although I expect forecasts of the future to be affect-congruent, there are competing predictions about whether mood will be more or less influential for forecasts of the near versus the distant future.

On the one hand, research on anchoring and adjustment suggest that current moods should be more influential in near future predictions (Tversky & Kahneman, 1974; Epley, 2004). Tversky and Kahneman (1974) argue that when individuals are making judgments about uncertain outcomes they often base their judgments on an initial value or outcome and then 'adjust' that outcome to yield a final answer. Gilbert et al. (2002) argue that when individuals are making affective forecasts they imagine the event as though it were to happen at that moment, often unconsciously basing their judgments on their current state, and then perform "temporal correction" in which they try to imagine how their reactions would change based on when the event

is actually happening. The more distant the event, the farther and more variable that current-mood-anchored judgments will be adjusted, resulting in less correspondence between current mood and predicted mood, and the closer the event, the less adjustment will be required and so it is predicted that the current mood that is used as the anchor will influence the affective forecasts more.

Research on "affect infusion" also suggests that near future predictions should be more affect congruent. The Affect Infusion Model (AIM) (Forgas, 1995) proposes that affect influences judgments to the extent they are constructive and analytic, rather than directly or mindlessly accessed from a performed or memory stored judgment. It is argued that affect would have a stronger influence on judgments and decisions that are more complex and that require more elaborate and substantive processing, due to the fact that there will be larger scope for affectively valence information to be incorporated into the judgment (Forgas, 1995). If near future predictions, which incorporate more nonfocal events, require more complex, analytic thought, they should be more susceptible to the influence of current mood.

Other research, however, suggests that current moods should be more influential in *distant* predictions. "Construal level theory" (Trope & Liberman, 2000, 2003; Liberman and Trope, 2008; Trope, Liberman and Wakslak, 2007) assumes that people can represent events at varying levels of abstraction. Low level construals are very concrete and consists of representations that include supplementary and peripheral features that hence cause representations of near targets to be rich in detail (Trope et al., 2007). High level construals on the other hand consist of schematic representations that only focus on the general idea, and involve only a few superordinate or core features of the target (Trope et al., 2007). Due to the fact that interpretations of the distant future consist of limited cognitive and concrete

representations, it can be argued that current emotions and mood may override the typical cognitive processing (Baumeister & Heatherton, 1996; Loewenstein, 1996; Loewenstein & Lerner, 2001). It has been argued that the presence of emotion intensifies; it exerts an ever-increasing influence on behavior (Loewenstein & Lerner, 2001). Hence, it can be argued that individuals making affective forecasts about the distant future will rely more on their current mood and emotion when making affective forecasts on the distant future because of the lack of other knowledge on the distant future, as opposed to the near future. In light of the construal level theory, the current mood may receive higher relative weight in the set of information on which the forecasts is based.

In sum, the current studies tested the hypothesis that affective forecasts will be mood-congruent, for both positive and negative events, and that the temporal distance of the predicted events will moderate the strength of the effects though the direction of this moderation effect is open to empirical outcome. In a pretest, participants validated the perceived positivity and likelihood of target events. The pretest confirmed that the positivity and the likelihood of the events did not interact with temporal distance. In the main study, participants were induced into happy or sad moods, after which they predicted how they would feel if each of the target events occurred in the near future (that night) or the distant future (one year from that day). It was predicted that happy participants would predict their response to both positive and negative events to be more positive, compared to sad participants, and the difference would depend on temporal distance, although no a priori predictions were made about the nature of the interaction.

Pretest

To present a full range of positive and negative events and in order to ensure that the valence of the positive and negative events to be used in the main study were indeed perceived as positive and negative, equally extreme, and independent of temporal distance, a pretest was conducted. Participants also judged the likelihood of the events.

Method

Participants

One hundred and twenty two participants, 84 females and 38 males, volunteered for the study. The overall mean age of the participants was 19.57 (*SD*=1.90) years. Participants were all undergraduate Psychology students from the University of Otago who can satisfy a small portion of course assessment by completing a worksheet based on the experiment.

Materials and Stimuli

The events chosen were three positive and three negative events that might plausibly occur to a university student. The three positive events were: winning a fully sponsored flat party through a competition that was entered; being offered a summer job that was previously applied for; and learning that their IQ was in the top 5 % in the university that they attended. The three negative events were; a beloved grandparent dying; being told that they were HIV-positive; and discovering that their

house had been robbed. Table 1 has the full text of the events presented to the participants.

Table 1

Events Presented to the Participants ('Tonight" and "One Year" Condition) in the Pretest

Positive Events	Negative Events
You go back to your flat tonight (one year from today) and your flatmates tell you that your flat has won a fully sponsored flat party.	You are having dinner tonight (one year from today) and your cell phone rings. It is a parent of yours telling you that your beloved grandparent has died.
Tonight (One year from today), just as you are about to go to bed, you decide to check your email. You realize that you have one new message. It is a reply from the company where you were hoping to get a summer job, telling you that you got the job.	You return home from university tonight (one year from today) and you decide to check the mail. As you are flipping through the mail you notice that you have received the results of the blood test that you took not too long ago. The letter says that you are HIV positive.
On you way home from university tonight (one year from today) you get a call. It is from the company that has the job of calculating the IQ scores of the IQ test that was given to Dunedin university students. You are informed that you scored in the top 5%.	You return home to your flat tonight (one year from today). Your all your flatmates for one reason or another are not home, yet the front door seems to be wide open. You walk in to discover that your flat has been robbed.

Participants were asked to rate on a nine-point scale how positive or negative they found each event (-4 being very negative, 4 being very positive) and how likely it was that the event would occur to them (-4 being very unlikely, 4 being very likely). Examples of the scales presented to the participants are shown in Figure 1.

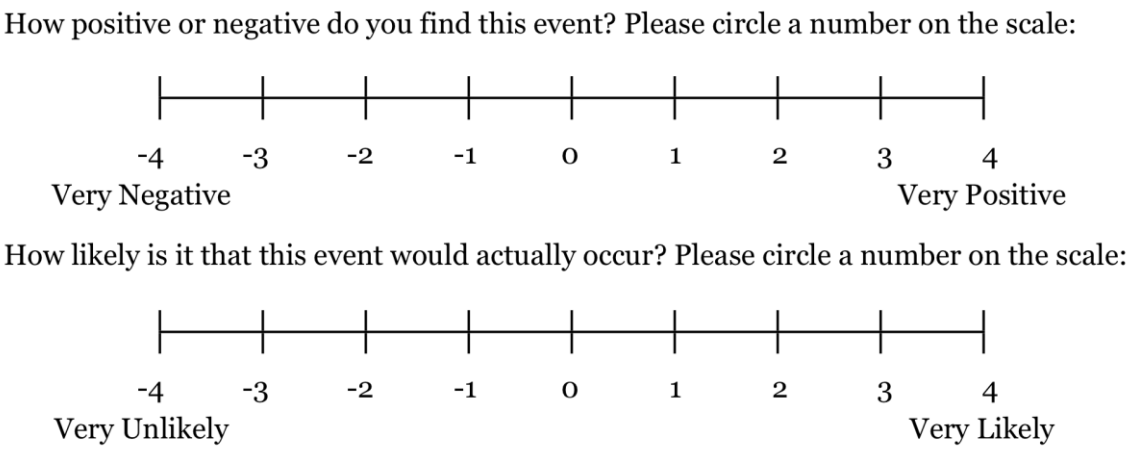

Figure 1. **The scales used to rate the event valence and likelihoods**

Procedure

Participants were tested in groups of up to 30 at large tables. The study involved a paper-and-pencil questionnaire and utilised a between subjects design, with participants randomly assigned to the tonight or the one year condition.

After providing informed consent, and completing an unrelated initial questionnaire, participants were either asked to imagine themselves either one year from the date of the experiment, or that night: to imagine specifically what they saw themselves doing, thinking and feeling, and to keep the image of themselves in mind as they completed the study.

Participants were then presented each event on a separate page (randomly ordered for each participant) and asked to rate the valence and likelihood of each event, by

circling a number that corresponded best to their response. After the participants had finished answering the event questionnaire, at their own pace, they completed another, unrelated task before being debriefed and dismissed. The experiment took approximately 20 minutes.

Results and Discussion

Four participants (all female) were removed from the study because their data were incomplete. The mean valence and likelihood ratings for each event in each experimental condition are presented in Table 2.

Table 2

Means and Standard Deviations of Valence and Likelihood Ratings in the One Year and Tonight Condition.

Event	Timeline Condition			
	One year		Tonight	
	Valence	Likelihood	Valence	Likelihood
Flat Robbed	-2.75(1.35)	-0.09(1.97)	-3.04(1.02)	0.11(1.74)
Grandparent Died	-2.98(1.25)	0.99(2.46)	-3.40(.88)	0.68(2.28)
HIV Positive	-3.59(.85)	-2.34(1.95)	-3.60(.94)	-2.95(1.27)
Flat Party	2.76(1.21)	-1.37(2.02)	2.68(1.33)	-1.88(2.12)
Summer Job	3.26(.95)	2.17(1.42)	3.20(.95)	1.37(2.22)
IQ Scores	2.91(1.06)	-0.82(2.27)	3.46(.84)	-0.85(2.27)
Average Positive Events	2.98(.80)	-0.04(1.19)	3.11(.72)	-0.44(1.52)
Average Negative Events	-3.11(.77)	-0.47(1.23)	-3.41(.67)	-0.89(1.21)

Mean positivity and negativity ratings were analyzed in a 2 (event valence) x 2 (event temporal distance) mixed model analysis of variance, with the first factor treated as a repeated measure. The analysis revealed only a main effect of valence, $F(1,117) = 3287.75$, $p = <.001$ and no interaction (other p *s*> .05*).* Thus, positive events were rated as more positive than negative events irrespective of when they were expected to occur. An additional analysis of the absolute values of the positivity ratings

confirmed that the positive and negative events were equally extreme (see Figure 2), given that they were equally distant from the neutral midpoint of the scale.

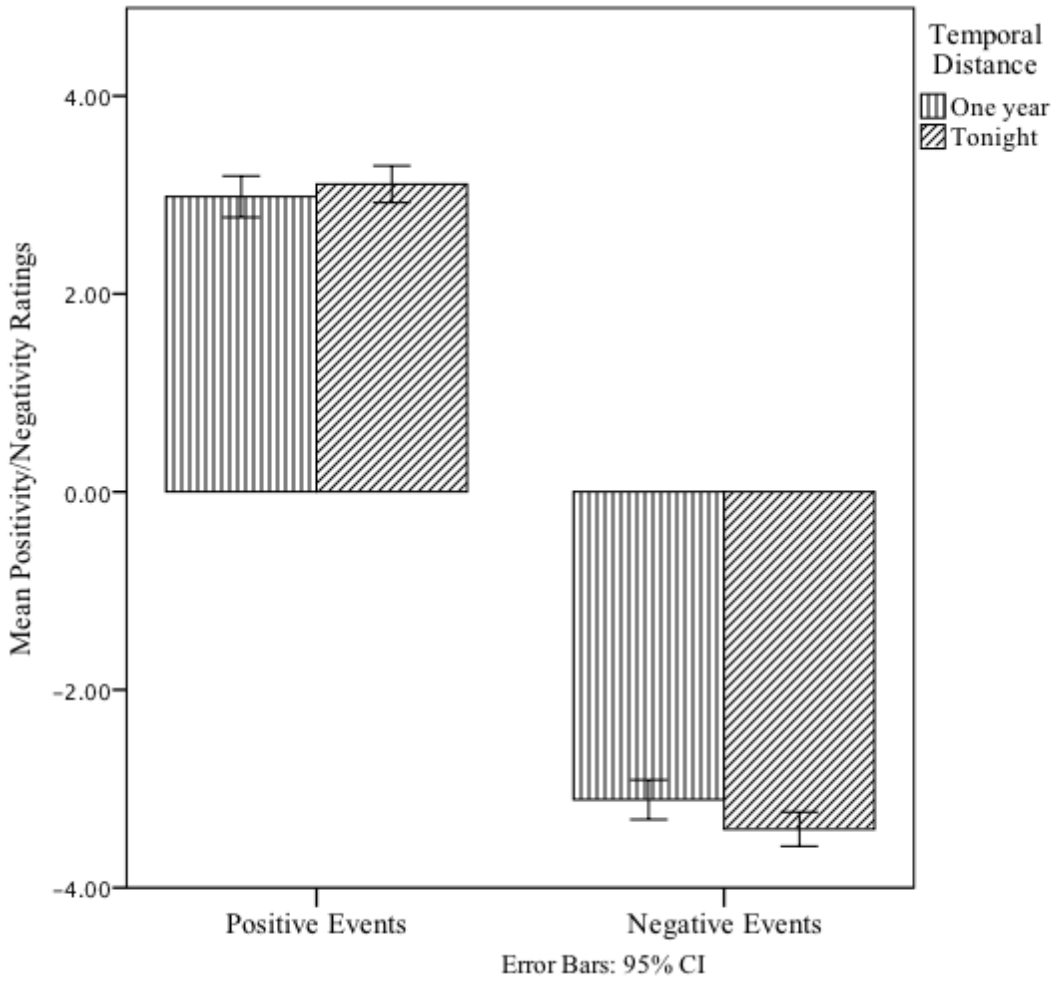

Figure 2. **Mean positivity and negativity ratings for positive and negative events for one year and the tonight conditions**

The analysis was repeated for the mean likelihood ratings for positive and negative events.

The analysis revealed only a main effect of event valence, $F(1,117) = 6.60$, $p < .02$ and no interaction(other *ps* > .9), such that negative events were judged as less likely

to occur than positive events, and this difference in likelihood ratings did not depend on temporal distance (see Figure 3).

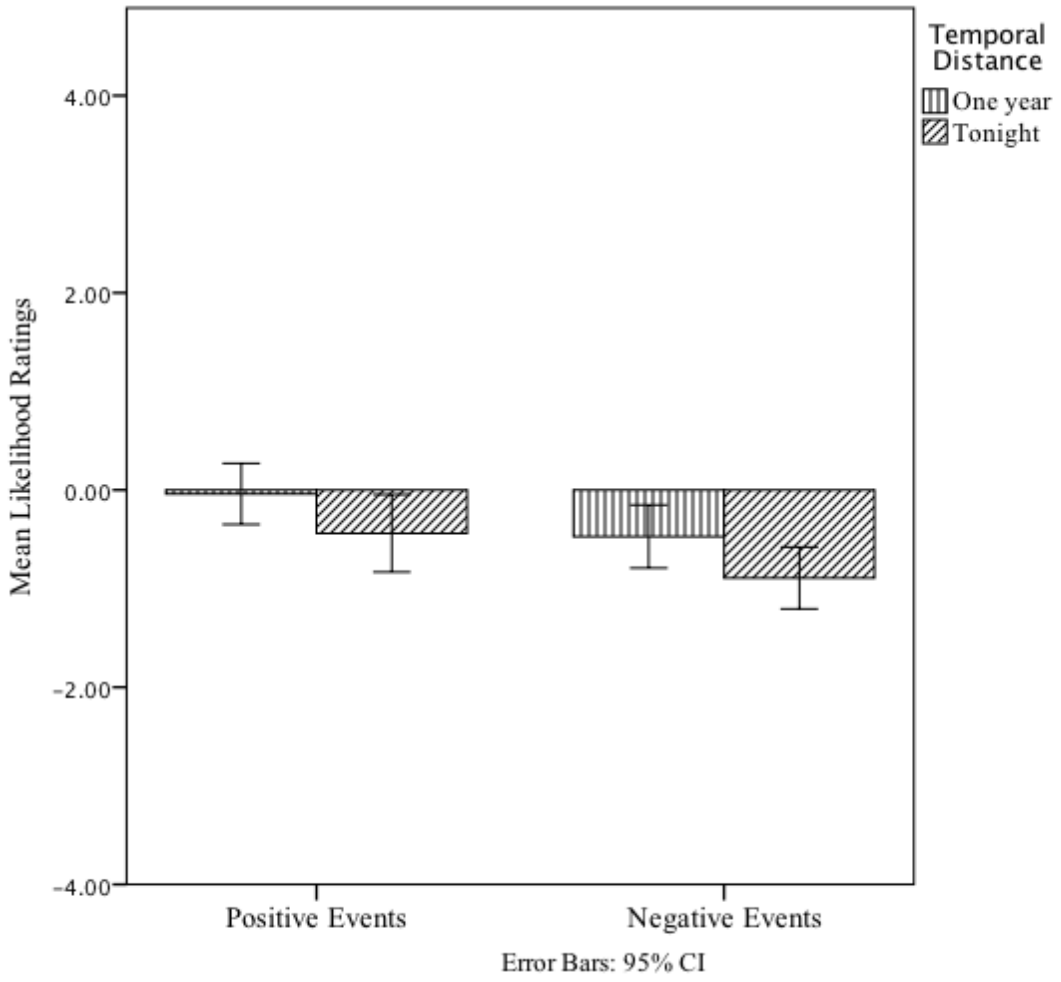

Figure 3.**Mean likelihood ratings for positive and negative events for one year and tonight conditions.**

Results from the pretest showed that the scenarios posed were indeed perceived as equally extreme examples of positive and negative events in our student sample. Positive events were also judged as more likely to actually occur, consistent with robust optimism bias discussed in the social cognition literature (Taylor & Brown, 1988). Although likelihood therefore represents a confound of valence, it may be an unavoidable one if target events are to be matched on the extremity. It is unlikely that

this confound can fully explain the differences in effect sizes as judged by the *F*-values of both analyses. Also important, valence did not interact with temporal distance for either judgment. Thus, the events were deemed suitable for use in the main study.

Main Experiment

Method

Participants

One hundred and forty seven non-psychology students, 63 females and 84 males age (mean age=23.78 years, *SD*=2.03) volunteered for the study in exchange for NZ$12.50 as compensation for their travel costs.

Design

This was a mixed design, with the current affect condition ("happy" and "sad") as well as the temporal distance condition ("tonight" and "one year") treated as between subjects, and events that were being predicted (three positive and three negative) as a within subjects variable.

Materials and apparatus

The events that participants predicted were the same events that were presented to the participants in the pilot study.

Emotion was manipulated using the continuous music technique (Niedenthal, Halberstadt & Setterlund, 1994). Using this technique participants listened to either happy or sad classical music throughout the experiment and while engaging in other tasks. Participants in the happy condition listened to *Brandenberg Concerto No.3*, by Bach played by jazz flutist Hubert Laws; participants in the sad condition listened to *Adagio for Strings*, by Barber. The pieces were 17.5 and 16.2 minutes long, respectively, and were played on a continuous loop, through Genius headphones.

Participants used the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988; Crawford & Henry, 2004) both to rate their own emotional state (before and after listening to the music for 2 minutes) as well as to predict their emotional reaction to each of the events. The measure includes 10 positive states (active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, strong) and 10 negative states (hostile, disappointed, afraid, irritated, jittery, nervous, ashamed, scared, guilty, upset). Participants were asked to use a five-point scale (1=very slightly or not at all, 2= a little, 3= moderately, 4=quite a bit, 5= extremely) to indicate how much of each state they were feeling. Each item from the PANAS was presented on a new screen, in a different random order for each participant. An example item is shown in Figure 4.

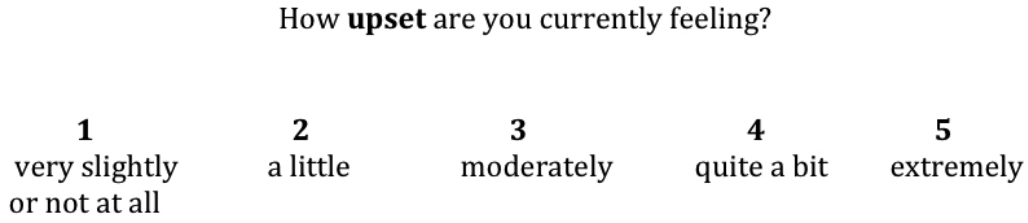

Figure 4. **An example PANAS item used to measure current mood**

Procedure

After giving informed consent, participants were randomly assigned to individual light and sound attenuated cubicles. All stimuli were presented and data gathered on iMac computers running Superlab software.

The experiment was described as a study of the effect of music on cognition. Participants were informed that they would be listening to some background music while they made some predictions about the future. Participants were asked to first

evaluate how they were feeling at that moment using the PANAS, and rated how they were feeling for each of the 20 emotional states separately (see Figure 4).

After rating their mood, participants pressed the space bar to begin music appropriate to their randomly assigned mood condition. During the first two minutes of music the screen remained blank except for the words, "Relax and listen to the music". After the first two minutes of music, participants were asked to rate their current mood a second time.

As in the pilot study, participants were asked to imagine themselves either one year from the date of the experiment, or that night: to imagine specifically what they saw themselves doing, thinking and feeling, and to keep the image of themselves in mind as they answered they completed the study.

Participants predicted their emotional response to each event, in random order, using a separate PANAS scale, in which the order of the PANAS items were also randomized (see Figure 5 and Figure 6).

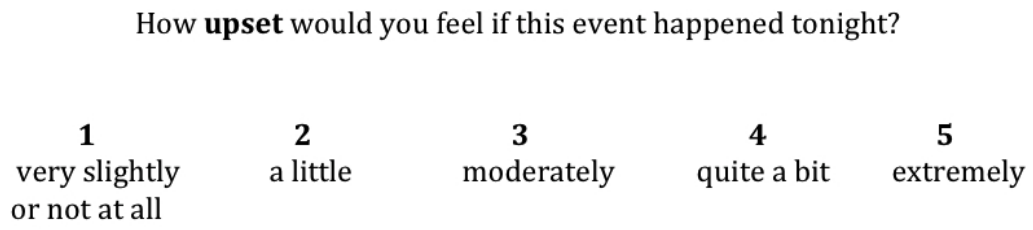

Figure 5. **An example PANAS item used to measure predicted mood for the 'tonight' condition**

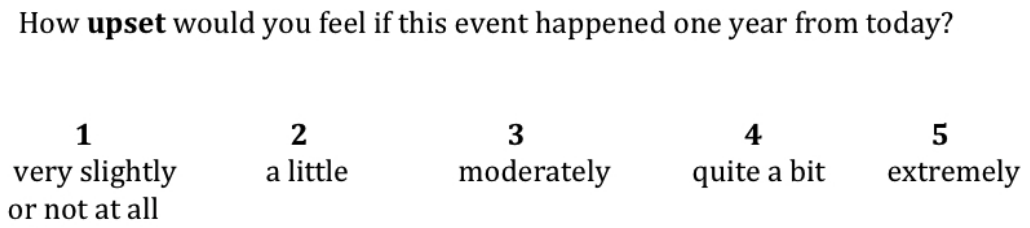

Figure 6. **An example PANAS item used to measure predicted mood for the 'one year' condition**

Participants then participated in an unrelated experiment, before being debriefed, paid and dismissed.

Results

Fourteen participants (8 males and 4 females) were excluded from the experiment because their data were incomplete.

Affect Manipulation Check

Participants' pre-manipulation mood, post-manipulation mood and predicted mood were calculated in the same way, by averaging the responses for the 10 positive and 10 negative PANAS items and taking the difference, such that more positive numbers represent more positive actual or predicted emotional states (Watson et al., 1988; Crawford & Henry, 2004). Participants' self reported average moods before listening to music and after listening to music are presented in Figure 7.

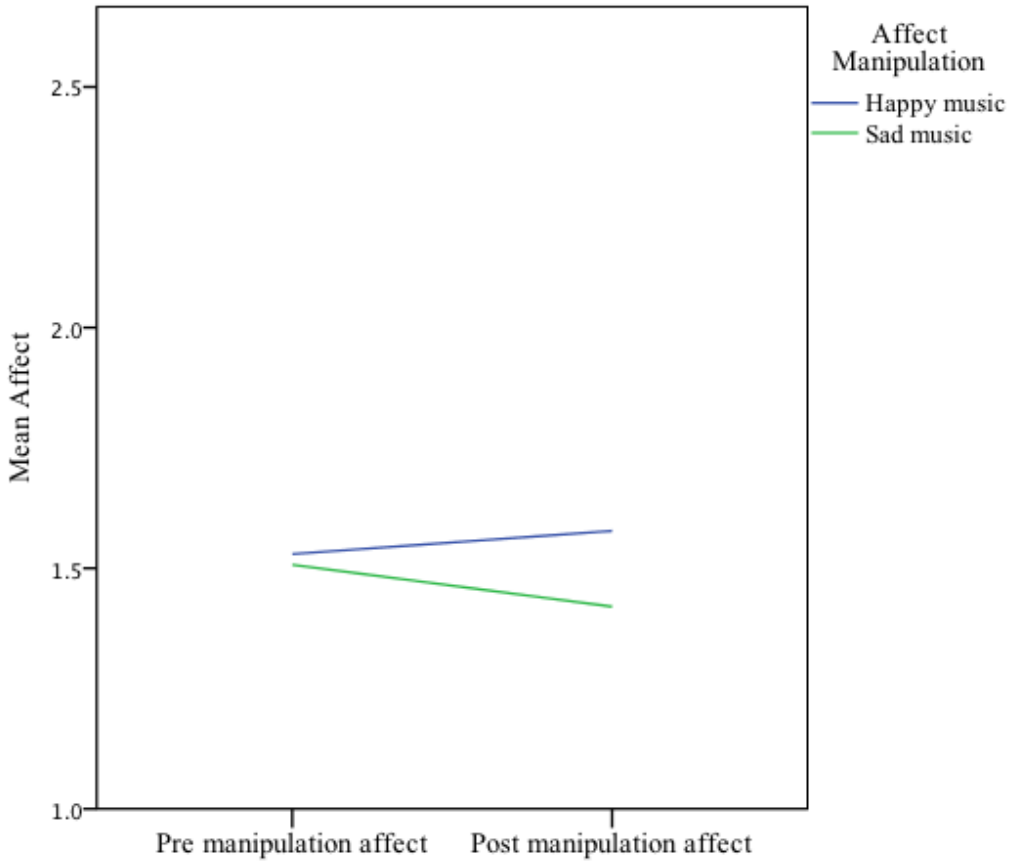

Figure 7. **The mean affect reported by participants before and after they listened to the happy music (happy condition) or the sad music (sad condition)**

Participants' actual moods were analyzed in a 2 (mood condition) x 2 (pre versus post manipulation) mixed model ANOVA, with the second factor treated as a repeated measure. The analysis revealed no significant main effects or an interaction, all *ps* > .4 . Thus, although participants' moods numerically changed in the direction expected, the differences were not reliable.

Predicted Affect

The mean predicted mood for all six events, as a function of mood condition and temporal perspective are presented in Table 3.

Table 3

Mean (Standard Devitaions in brackets) Predicted Affect for all Six Events as a Function of Participants Manipulated Affect and Temporal Distance.

Events	Happy Condition		Sad Condition	
	One Year Condition	Tonight Condition	One Year Condition	Tonight Condition
Flat Robbed	-.58(.86)	-.40(.35)	-.74(.86)	-.37(.46)
Grandparent Died	-.52(.90)	-.56(.37)	-.84(.74)	-.59(.52)
HIV Positive	-1.86(1.05)	-.49(.44)	-1.85(.97)	-.54(.42)
Flat Party	1.49(.92)	.033(.53)	1.44(1.16)	.19(.42)
Summer Job	2.56(.64)	.35(.48)	2.35(.86)	.43(.33)
IQ Scores	2.42(.61)	.90(.50)	2.31(.64)	.80(.47)

From Table 2, it is obvious that participants predicted that they would feel more negative about the negative events that would occur in the future and more positive about the positive events that would occur in the future. Results also show that participants in the happy condition made more positive predictions in general when compared to participants in the sad mood condition, and that participants in the one year condition gave more extreme ratings that participants in the tonight condition.

Scores for the negative events and the positive events were calculated by averaging the three events of each type separately to create two overall predictions for each participant. These data appear in Table 4.

Table 4

Mean Predicted Affect as a Function of Participants Manipulated Affect and Temporal Distance.

Events	Happy Condition		Sad Condition	
	One Year	Tonight	One Year	Tonight
Negative Events	-.99(.71)	-.48(.29)	-1.14(.66)	-.50(.35)
Positive Events	2.16(.55)	.43(.27)	2.00(.69)	.47(.30)

Composite affect predictions were analyzed in 2 (mood condition) x 2 (temporal distance) factorial ANOVAs conducted on negative and positive events separately.

The analysis of negative events revealed a main effect of temporal distance, $F(1, 129) = 355.90$, $p < .001$. It was observed that participants in the both the happy and sad condition rated negative events in the one year condition as more negative than in the tonight condition. There were no main or interaction effects involving manipulated mood, *ps* >.4.

The analysis of positive events revealed a main effect of temporal distance, $F(1, 129) = 36.01$, $p < .001$. It was observed that participants in both the happy and sad condition rated positive events in the one year condition as more positive in the one year condition than in the tonight condition. There were no main or interaction effects involving manipulated mood, *ps* > .3.

Correlation and Regression Analyses

The null results of manipulated mood on affective forecasts are not surprising in light of the ineffectiveness of the mood manipulation. Instead of ANOVAs, a correlational and regression analysis was carried out, using participants' self reported mood following the mood manipulation (mean centered), temporal distance (dummy variable coding as recommended by Aiken and West (1991): coded one year as 1, and tonight as 0) and their interaction in multiple regressions as concurrent predictors of affective forecasts, for negative and positive events separately. Bivarate correlations confirmed that mood significantly predicted affective forecasts of negative events in the distant future, r=.27, p<.05.

Table 5

Coefficients for a regression model predicting affective forecasts of negative events.

	b	*SE b*	*β*	*t*
(Constant)	-.49	.07		-7.31
Current Mood	.01	.06	.02	.21
Temporal Distance	-.57	.09	-.47	-6.15**
Current Mood*Temporal Distance	.19	.09	.21	1.99*

** $p < .001$, *$p < .05$

The analysis of negative events revealed a significant main effect of temporal distance, $\beta = -.47$, $t(129) = -6.15$, $p < .001$ and a significant interaction effect between current mood and temporal distance, $\beta = .21$, $t(129) = 1.99$, $p < .05$ on affective forecasts. There was no significant main effect of current mood, $p = .84$. Table 5 shows the regression analysis coefficients.

Following slope analysis procedures recommended by Aiken and West (1991), the two-way interaction between current mood and temporal distance is depicted at one standard deviation above and below the mean mood score, by inserting the appropriate values into the regression equation. The interaction between current affect and temporal distance for negative events is depicted in Figure 8.

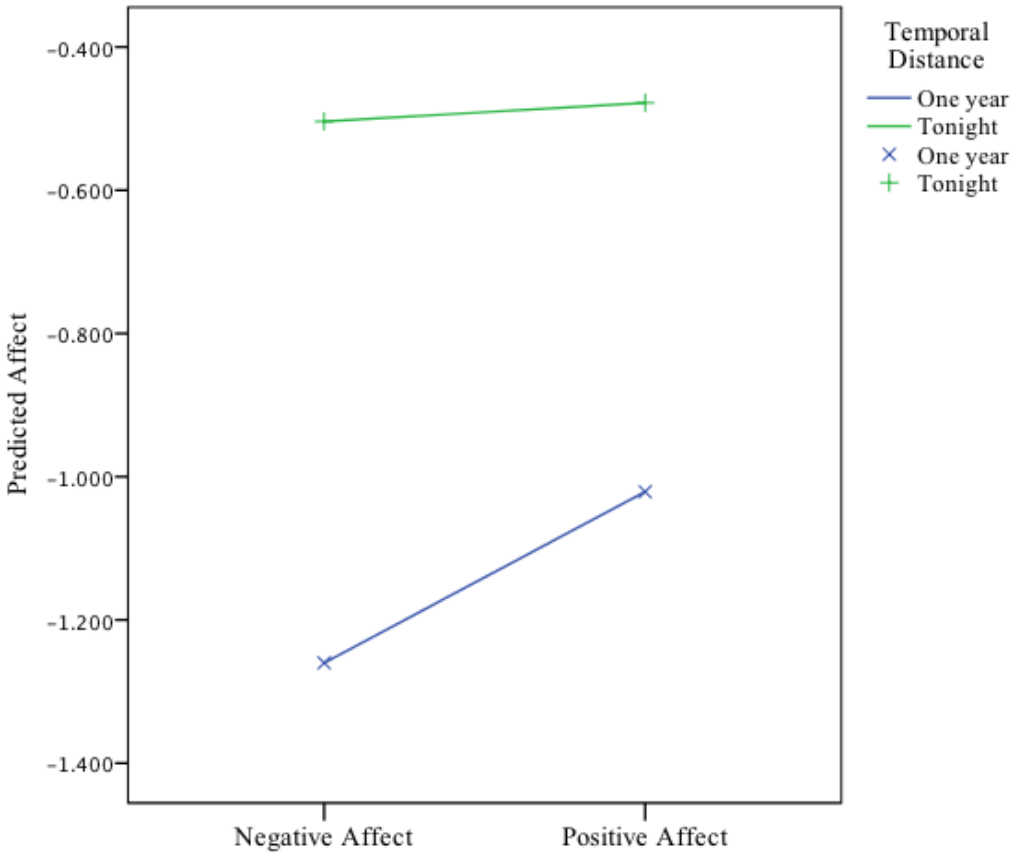

Figure 8. **Predicted affect as a function of current affect and temporal distance for negative events**

As indicated by the significant interaction for negative events, the different slopes of the regression lines show that the influence of current mood on affective forecasting was only present when predicting distant future rather than near future events.

Table 6

Coefficients for a regression model predicting affective forecasts of positive events.

	b	*SE b*	*β*	*t*
(Constant)	.44	.06		6.97
Current Mood	.10	.06	.10	1.60
Temporal Distance	1.67	.09	.86	19.22**
Current Affect*Temporal Distance	-.01	.09	-.01	.89

**$p < .001$

The analysis of positive events revealed significant main effects of temporal distance, $\beta = .86$, $t(129) = 19.22$, $p < .001$, but no significant effects of current mood or interactions, *ps* >.1. Table 6 shows the regression analysis coefficients.

Similar to the negative events, a slope analysis was carried out and the two-way interaction between current mood and temporal distance is depicted at one standard deviation above and below the mean mood score, by inserting the appropriate values into the regression equation. The interaction between current affect and temporal distance for positive events is depicted in Figure 9.

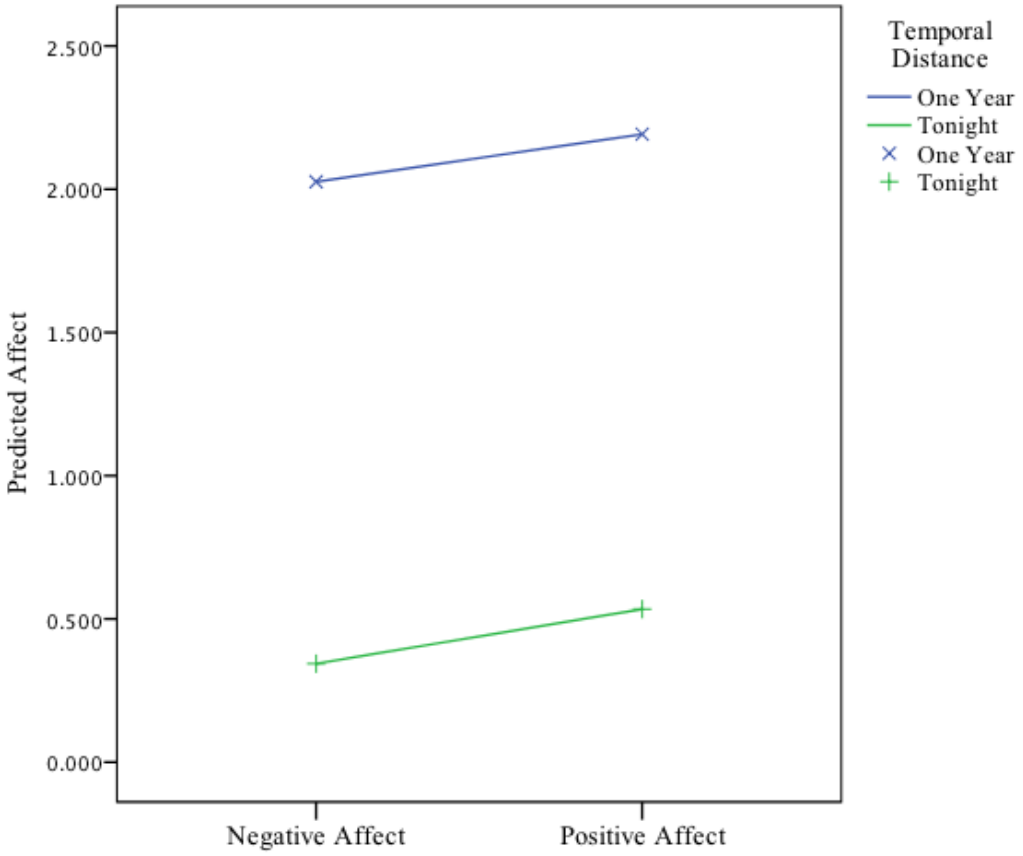

Figure 9. **Predicted affect as a function of current affect and temporal distance for positive events**

As indicated by the missing significant interaction for positive events, the slope of the regression lines did not overlap or cross.

General Discussion

The current study extrapolated the effects of congruent mood to affective forecasting. It was argued that affective forecasts would be congruent with the current mood of the forecaster, which will make mood-congruent information more accessible and more heavily weighted in predictions of the future. There were, however, two alternative hypotheses regarding the nature of the interaction between current affect and temporal distance of the event that is being predicted.

First, participants might have shown greater mood congruent predictions for *near* events, because nearer events require less "temporal correction" than distant events (Gilbert et al., 2002). That is, due to the fact that the near future is temporally closer than the distant future, individuals predicting for the near future will not perform temporal correction as much as individuals who are making distant future predictions, becasue the effects of the current mood (that is used as the anchor) will be more prominent. This hypothesis is also consistent with the Affect Infusion Model (AIM), which argues that affect is more influential in complex and elaborate judgments (Forgas, 1995). Assuming that near future predictions are much more complex and elaborate than distant future predictions (Trope & Liberman, 2000, 2003; Liberman and Trope, 2008; Trope et al., 2007), affect will be infused more into the near than the distant future.

Alternatively, there might have been a stronger influence of current affect on *distant* future predictions. Distant future events are represented in high level construals, and hence events will be construed in a more abstract and gist-based manner, with limited cognitive and concrete representations (Schwarz & Clore, 1983: Schwarz & Clore, 1988; Schwarz & Clore, 1996; Schwarz, 2000; Slovic, Finucane, Peters & MacGregor, 2006; Trope et al., 2007). It has been argued that emotion will

have a stronger influence on judgments, when cognitive representations are limited (Baumeister & Heatherton, 1996; Loewenstein, 1996; Loewenstein & Lerner, 2001). Assuming individuals have more information to guide their near versus distant affective forecasts, the influence of current mood will be stronger in the later.

The current results partially supported the second hypothesis, in that mood congruence was stronger for distant events, but the interaction between affect and temporal distance differed between the two types of events. The interaction between current affect and temporal distance was only significant in distant future *negative* events. It was observed that, when participants were making predictions in regards to distant (but not near) negative events, the lower the participant's mood, the more negative they predicted their future emotional reaction would be.

This suggests that the mood congruity effects of current mood were emphasised when thinking about distant future events and was only apparent in negative events and not positive events. These findings extend on those of previous mood congruity studies by showing that both temporal distance and the valence of the event that was being predicted act as moderators to the effect of current mood on affective forecasts.

The study by Forgas and Bower (1987) parallel the mood congruity effect of the current study, whereby it was observed that congruent mood made aspects of certain traits (of the individual that they were perceiving) more salient, which then influenced participant's judgments. Results showed that participants in a positive mood reported more positive impressions of the targets than participants in a negative mood. In the current study, it is argued that participant's current mood may have made certain chracteristics of the events that were congruent to their current mood more salient, hence influencing their affective forecasts. Unlike the Forgas and Bower

(1987) study, participants were only influenced by the mood congruity effect in negative events that were to occur in the distant future.

In the current study, one possible explanation of the different results for the positive and negative events is the relative likelihood of the events. The construal level theory incorporates four dimensions of psychological distance; spatial (the distance of space between the target and the perceiver), temporal (the amount of past or future time between the target and the perceiver), social (how psychologically close the target is to the perceiver), and hypothetical (how likely it is that the target event is going to happen to the perceiver; Bar-Ann, Liberman & Trope, 2006; Trope et al., 2007). Construal level theory argues that an event that is regarded as more likely would seem more closer psychologically than events that are regarded as less likely (Wakslak, Trope, Liberman and Alony, 2006).

Hence, events that are likely, should be, according to the construal level theory, represented by concrete, low level construals compared to events that are considered to be less likely. Because the positive events were viewed as more likely, participants may have viewed the positive events in a more concrete manner than the negative events, including peripheral and supplementary information that may have acted as cues to nonfocal events. For example, participants in the distant future condition may have construed the event of getting a summer job as ‘getting paid’ and participants in the near future condition may have construed the event of getting a summer job to include the kind of job that they might be working, the hours as well as other activities that they might not have been able to do while they were working in summer. Hence, participants may have been more aware of other non focal events, and may have not relied on their current mood as much to guide their predictions. These findings are in opposition to the first hypothesis that suggested that the more

complex and elaborate construals would be more susceptible to the influence of current mood.

The current findings add to the research on the impact bias. In terms of the interaction observed between of current mood and temporal distance on affective forecasting of negative events, the current results suggest that individuals are more likely to overpredict their future emotional response to the event when they themselves are in a negative mood. Hence, there is a stronger effect of the impact bias when predicting negative events in the distant future when in a negative mood.

The main temporal distance effect supports current research on construal level theory, which argues that the same target is construed differently depending on the temporal location of the target (Trope & Liberman, 2000, 2003; Liberman and Trope, 2008; Trope et al., 2007). It was observed that there was in increase in the impact bias when participants were making distant future predictions, whereby it was observed that participants in the distant future condition made more extreme predictions when compared to participants in the near future condition. Thus, temporal manipulation may provide a novel way to examine the impact bias in the laboratory.

As mentioned previously, according to the construal level theory, events in the near future will be construed using low level concrete construal, and events in the distant future will be construed using high level, abstract and gist based construals (Trope & Liberman, 2000, 2003; Liberman and Trope, 2008; Trope et al., 2007). Results revealed a significant effect of temporal distance for both positive and negative events, such that, it was observed that participants in the distant future condition rated all the positive events as more positive, and, the negative events as more negative, than participants in the near future condition.

The current results indicate that participants in the near future events might have exhibited the opposite of focalism. Focalism occurs when individuals ignore other factors that can indirectly influence their thoughts and emotions, hence causing them to overpredict the emotional influence of the focal event (Schkade & Kahneman, 1998; Wilson et al., 2000; Wilson & Gilbert, 2003). Wilson et al. (2000) discovered that by making nonfocal events more salient, it was possible to reduce the effects of focalism and hence the impact bias. In the current study, it could be argued that because participants were making near future predictions, and were more aware of the nonfocal events that might influence their predicted affect, they were probably less likely to overestimate the intensity and the duration of their emotional reactions to the future event. Extrapolating from research that has looked at the way in which temporal distance affects task completion, it was observed that when planning for near future events, participants used low level construals that focused on peripheral and incidental features which then prompted participants to focus on the potential obstacles that they would face when completing their tasks (Buehler & Griffin, 2003). Also, previous research has shown that as temporal distance to a task reduces, individuals are more aware of potential obstacles (Eyal, Liberman, Trope & Walther, 2004).

The effects of further temporal distance on affective forecasting is consistent with the focalism account of impact bias, on the assumption that participants were less likely to consider nonfocal events in the distant future, due to high level construals that cause participants to think in a more abstract manner that ignores other peripheral and supplementary information, hence causing them to overpredict the impact of their future emotional responses (Schkade & Kahneman, 1998; Wilson et al., 2000; Wilson & Gilbert, 2003).

The current findings support the research by Liberman, Sagristano and Trope (2002) who found that participants had more extreme ratings for distant future events compared to near future events. Liberman et al. (2002) argued that because distant future events were construed in broader, more abstract categories, such events were expected to be more prototypical, less variable and more extreme (Liberman et al., 2002). In the current study, it is possible that when participants imagined a negative event in the distant future, they imagined prototypically negative responses. For example, in the event of their flat being robbed, participants in the distant future condition may have imagined how a person would typically feel if her house were robbed, whereas participants in the near future condition may have imagined more specific responses and behaviours, such as replacing stolen items, which could have mitigated their overall negative response.

The results showed that there was no significant main effect of current mood on affective forecasts. However, as observed in Figures 8 and Figure 9, the lower participants reported their current mood, the lower their predicted affect for both positive and negative events, leaning towards a mood congruity effect. Initially, to test the two hypotheses, participants were asked to make predictions about how they would feel in response to positive and negative events in the in the near or distant future, after having undergone either a positive or negative mood manipulation. Participant's current affect was measured before and after they were exposed to the affect manipulation procedure. However, although the manipulation altered participants' mood in the expected direction, the difference was not statistically reliable. Music, specifically the continuous music induction method that was used in the current study, has successfully been used manipulate affect in previous research (Eich & Metcalfe, 1989; Niedenthal, Halberstadt & Setterlund, 1997). Compared to

other methods of mood manipulation, meta-analyses show that music has a high success rate (75%) in inducing the desired mood in participants (Martin, 1990; Westermann, Spies, Stahl & Hesse, 1996).

It is not clear why the music was ineffective in the current main study. In some previous studies, participants were given pretaped instructions, which may have prompted participants to pay more attention to the music (Niedenthal et al., 1997). Additionally, the initial 2 minutes participants spent listening to the music might have not been enough to change their mood before intermittent instructions began appearing. The current study only presented the music for two minutes initially because it used the continuous music technique, but it is argued that the mood music presentation time can vary, from up to 55 minutes to 7 minutes in different mood induction techniques (see Martin, 1990).

Due to the fact that the affect manipulation was unsuccessful, an internal analysis was conducted using participants' reported affect immediately prior to making their predictions (independent of their experimental affect condition). The effect of current mood on affective forecasts might have been stronger if the mood manipulation procedure had been successful and there had been a stronger variation between participants mood.

The major limitation of the current study was that, due to the fact that the mood manipulation was unsuccessful, participants' own self reported mood was used in its place, effectively creating a correlational design, and its associated causal ambiguity. One could argue that the correlations observed between participants' current mood and their future affect may have been influenced by other factors, common to both variables. For example, a participant may have rated their current mood as well as their future forecast as higher, due to their dispositional optimism, without actually

relying on their current mood. Individual differences are less explained in the interaction between mood and temporal distance, but the current study clearly needs to be replicated with a more effective mood manipulation procedure.

The current findings shed some light on how individuals who are already in a negative mood or affect, have a higher tendency to overpredict the extent of their negative emotional reactions to distant future negative events. This may then cause them to worry or stress about the distant future negative event, which might then cause them to feel even more negative, much like the 'cognitive loop' discussed by Isen et al. (1978). Prolonged worry, anticipatory stress and rumination is argued to have negative side effects on health, potentially leading to cardiovascular and immunological diseases (Brosschot, Gerin & Thayer, 2006).

The current findings could help explain why women who experience domestic violence often choose to stay with their abuser. Studies have shown than women who are abused show signs of ill mental health such as depression (Roberts, Williams, Lawrence & Rapheal, 1999). Other studies have revealed that, when asked most victims say that their reason for staying was that they predicted that things would be worse if they left their partner in the long run, due to a lack of options such as housing or income (Ferraro & Johnson, 1983). These current findings indicate that it is not that things would be worse in the distant future, but due to one's current negative affect, things might seem worse in the distant future. The current findings shed some light on what seems to be a cycle of negative affect followed by negative distant future predictions, which then may cause even more negative affect for a prolonged time period. Hopefully, the current findings, and future research into the effects of current mood and affective forecasts can help break this cycle.

Conclusion

In sum, the current findings show that when making distant future predictions about negative events, the state of our current mood should be considered. A mood congruency effect on the affective forecasts of negative events in the distant future was observed. The current findings explain why sometimes a negative event in the future may seem worse than it actually is. If an individual is aware that their affective forecast is biased by their current negative affect, they might be able to control for the effect of current mood on affective forecasts and hence realize that things are not as negative as it may seem. These findings may help research into depression and may be integrated into ways of coping with depression or negative affect.

Back to the example of going on a trip overseas, these findings help explain why when we are finally on a trip or holiday that we had previously planned ; we realize that we are not as enthusiastic as previously predicted. This effect of reduced emotional intensity may be explained based on, when the predictions and trip was planned, relative to the actual time of the trip. Results show that we may be biased to overpredict the intensity of the emotional reactions to the trip (happiness or enthusiasm) if we are planning a trip that is far into the future. This is because we might ignore other nonfocal events that may influence our emotional reactions to the trip.

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