

JUDGING THE LIKELIHOOD OF FUTURE EVENTS: THE ROLE OF
ANTICIPATED AFFECT

By

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Presented to the Faculty of the Graduate School of

Stephen F. Austin State University

In Partial Fulfillment

Of the Requirements

For the Degree of

Master of Arts in Psychology

STEPHEN F. AUSTIN STATE UNIVERSITY

August, 2012

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ABSTRACT

The desirability bias explains that desirable events are judged as more likely to occur. Lench (2009) paired positive affect to a white car image and found higher likelihood ratings for the white car, supporting the desirability bias. In this study, participants ($N=90$) anticipated watching a valenced video (positive, negative, or neutral), viewed a series of neutral images (including a white car image), then rated the likelihood of owning a white car. The “buffer hypothesis” suggests that anticipation of a negative event (i.e., a negative video) would infuse current experiences (owning a white car) with positive affect so that these experiences would be rated as more likely to occur, supporting the desirability bias. Although this effect was not found, significant correlations reveal a positive relationship between feelings towards white cars and likelihood of owning a white car. It is suggested that anticipation decreased congruency between these variables.

DEDICATION

I dedicate this thesis to the memory of my mother, Seemie Shahabuddin. You were a fantastic mother who truly cared about my needs, my wants, my happiness, and my success. Even though I did not call you often when I was away from home, I still used everything that you taught me when I was growing up. You never cared what career path I chose because you just wanted me to be happy, and I thank you for that. You will always be in my heart as well as in the heart of Daddy, Nani, Shaaz, and Sheereen. I will continue to always pray for you.

ACKNOWLEDGEMENTS

First and foremost, my two years at Stephen F. Austin State University would not have been complete without the guidance and mentorship of my Thesis Director, Dr. Steven Estrada. The time that Dr. Estrada has devoted in assisting with my thesis has truly shaped me into a pragmatic researcher, a more meticulous scientist, and a more confident lecturer.

I would also like to express gratitude to Dr. Sarah Savoy, Dr. Jeremy Heider, and Dr. Stephen Kosovich for generously serving on my research committee and helping edit my thesis. Aside from helping improve my thesis, Dr. Savoy has also edited my past research posters, recommended conferences to present my research results, and sat with me to discuss my future academic and career goals, all tasks that were above and beyond her duties. Before I even entered graduate school, Dr. Heider assisted me tremendously with questions that I had about the program and spoke to me about the opportunities that I would have as a graduate student at Stephen F. Austin.

Most importantly, I would have never had the motivation to work as hard as I did on my thesis, as well as throughout my graduate career, if it had not been for the positive influence that I have had from my parents, Syed and Seemie Shahabuddin.

Thank you all for believing in me and for having faith that I would be able to achieve this accomplishment.

TABLE OF CONTENTS

Abstract.....	i
Dedication.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Figures.....	v
List of Tables.....	vi
Introduction.....	1
Method.....	19
Participants.....	20
Materials.....	21
Procedure.....	22
Results.....	27
Discussion.....	40
References.....	50
Appendix A.....	56
Vita.....	58

LIST OF FIGURES

Figure 1. Graph of likelihood of owning a white car by anticipation before Mahalanobis distance calculation.....	28
Figure 2. Graph of likelihood of owning a white car by anticipation after Mahalanobis distance calculation.....	29
Figure 3. Scatter plot of correlations for all anticipation conditions.....	36
Figure 4. Scatter plot of correlations for positive anticipation condition.....	37
Figure 5. Scatter plot of correlations for negative anticipation condition.....	37
Figure 6. Scatter plot of correlations for neutral anticipation condition.....	38

LIST OF TABLES

Table 1: Affective Amplification and Affective Attenuation in Anticipation of Future Events.....	2
Table 2: Correlation Coefficients of Positive Anticipation Condition.....	34
Table 3: Correlation Coefficients of Negative Anticipation Condition.....	34
Table 4: Correlation Coefficients of Neutral Anticipation Condition.....	34

Judging the Likelihood of Future Events: The Role of Anticipated Affect

Moviegoer aficionados have a passion for watching films that induce emotions of happiness, sadness, fear, inspiration, and anger. A partial factor in experiencing such strong emotions in films is the anticipation that one holds about the film before it is viewed. If a certain film has been admired and praised by past critics, and it does not elicit the congruent response as one had expected, then it would be categorized as “over-rated”. Similarly, if a person holds very negative viewpoints about a film due to the critic ratings, but the film turns out to be very good, it would be categorized as better than expected. Golub, Gilbert, and Wilson (2009) use the terms “affective attenuation” to describe negative anticipation towards an event when it turns out badly (“I was anticipating this film to be horrible, but now that I am watching it, the film is not so bad”) and “affective amplification” when the event turns out well (“I was anticipating this film to be horrible, but now that I am watching it, the film is excellent!”). When anticipating a positive event, however, affective attenuation is experienced when the event is good (“I was anticipating the film to be very good, so I am not surprised that I enjoyed it”) and affective amplification occurs when the event is bad (“I was anticipating the film to be very good, so I am terribly disappointed that I did not enjoy it”) (Table 1).

Table 1

Affective Amplification and Affective Attenuation in Anticipating Future Events

Anticipation of event (film)	Event (Film)	
	<u>Positive</u>	<u>Negative</u>
Positive	Affective Attenuation ("I was expecting the film to be very good, so I am not surprised that I enjoyed it.")	Affective Amplification "(I was expecting the film to be good, so I am terribly disappointed that I did not enjoy it.")
Negative	Affective Amplification ("I was expecting the film to be horrible, but now that I am watching it, the film is excellent.")	Affective Attenuation ("I was expecting the film to be bad, but now that I am watching it, the film is not that bad.")

Note. Adapted from Golub, Gilbert, & Wilson (2009).

In a scenario where there is no anticipation involved, such as when a person views a film that he/she does not have any prior expectation towards, then the film can be viewed very differently. Without anticipation, a negative film will be viewed as negative and a positive film will be viewed as positive; therefore, anticipating an expected emotion changes the experience of that emotion. If anticipating a certain event results in a different experience of that event, then anticipation and experience are two separate constructs.

In discussing the concept of anticipation, a strict disparity exists between *anticipated* emotions and *anticipatory* emotions. Researchers (Cheung & Mikels, 2011; Lowenstein, Weber, Hsee, & Welch, 2001) have described *anticipatory*

emotions as the immediate reactions to uncertainties (e.g., fear, anxiety, dread) and *anticipated* emotions as emotions that are not experienced in the present but are rather expected to be experienced at some point in the future (e.g., regret, joy). Lowenstein et al. (2001) describe decisions that are influenced by emotions and moods as “easier, faster, and often more efficient than decisions made using a rational/analytic system”. In defining emotions, “affect” refers to the positive (pleasant) and negative (unpleasant) feelings that occur in reaction to a specific stimulus or event, whereas “mood” describes a more general “free floating” state that does not necessarily need to be linked to a specific event (Grable & Roszkowski, 2008). Although moods impact daily decisions (e.g., what clothes a person will wear, what food they will eat, etc.) and their duration is longer than that of affect, they are only a temporary state. Multiple theories have been developed to explain the influence of experienced and anticipated affect on judgment and decision making, including the affect infusion model (AIM; Forgas, 1995), the mood-maintenance hypothesis (MMH, Isen, Nygren, & Ashby, 1988), and the bracing hypothesis (Shepperd, Findley-Klein, Kwavnick, Walker, & Perez, 2000), and each theory holds a unique methodology in implementing a desired affect induced state.

Diverse methods have been used to induce participants into a particular affective state, including instructing participants to write a description of a recent happy or sad event (Schwarz & Clore, 1983), having participants imagine a hypothetical event that causes positive or negative feelings (Chepenik, Cornew,

& Farah, 2007; Gilbert, Morewedge, Risen, & Wilson, 2004; Lench, Safer, & Levine, 2011; Van Boven & Ashworth, 2007), and more recently, presenting images taken from the International Affective Picture System (IAPS; Center for the Study of Emotion and Attention, 1995; Bywaters, Andrade, & Turpin, 2004; Kleinsorge, 2009; Lang, Bradley, & Cuthbert, 2007; Lench, 2009). The IAPS is a database that provides a set of normative, emotional stimuli that have been pre-rated by past participants on affect, arousal, and dominance. Using any one of the latter methods to induce affect will produce *affect infusion*, the process whereby affectively loaded information exerts influence and becomes incorporated into the judgmental process (Forgas, 1995).

The affect infusion model (AIM; Forgas, 1995) uses two mechanisms of affective infusion that operate during heuristic processing, the *affect-priming principle* and the *affect-as-information* principle. The *affective-priming principle* explains how affect may indirectly influence judgments through attention, encoding, and retrieval, whereas the *affect-as-information* principle states that affective feelings can be used as a shortcut to evaluate reactions to certain targets (Clore et al., 2001). This principle further posits that judgments on certain events are influenced by fast, heuristic based processing that provides shortcuts to judgment due to affective feelings. Judgment towards an event will not be unbiased if the event produces affect, because individuals will use that affect to influence their decisions. Rather than recalling an image that was previously presented to them, participants instead recall the affect they felt when viewing

the image, and in doing so, judge the reaction of the image to their affective state. If participants are currently in a negative state when they view a positive image, the image will be reported as less positive, due to the influence of affect on their judgment. In decision making during gambling tasks, the AIM has found positive moods to elicit more risk taking behavior, in comparison to neutral or negative moods, due to optimistic beliefs of a higher probability of a win; negative moods result in less risk taking due to more pessimistic beliefs of a higher probability of a loss (Grable & Roszkowski, 2008). Positive mood has been found to be associated with less concentration to detail, therefore, individuals in a cheerful and happy mood are less cautious in making risky decisions and overestimate the likelihood of winning in a game of chance (Sizer, 2000). Storebeck and Clore (2005) explain that negative affect results in a reduced false memory due to the transformation of the default mode of processing into a more conservative, item-specific level of processing. In this new mode, the negative affect allows the mind to narrow attention to specific details which are encoded with greater accuracy. In pertaining to risk, individuals in a negative affective state may focus more attention on their current gamble and take fewer risks than individuals in a positive affective state who may focus less of their attention on the gamble.

In contrast to the AIM, Isen, Nygren, & Ashby (1988) propose the mood-maintenance hypothesis (MMH) which argues that participants in a positive mood will take greater caution when pursuing games of chance and will make less risky

decisions. According to this hypothesis, participants in a good mood will want to remain in that state and will, therefore, make fewer decisions that place them into a bad mood state. Although it has been shown that positive affect results in a belief that winning is relatively more likely than losing (Nygren & Isen, 1985), participants who were induced into a positive affect state by receiving a bag of candy were less likely to take a gamble with their course credit that they were earning for their participation in an experiment than were control participants (Nygren et al., 1996). Demaree et al. (2011) gave participants a chance to gamble between three different slot machines and found that when there was a low chance of winning high rewards (such as a 13% chance of winning \$100), participants abided by the MMH and took less risks when they were in a good mood. In another condition, where there was a high chance of winning low rewards (such as an 87% chance of winning \$5), participants took greater risk when in a good mood. It is interesting to note that although the AIM and MMH measure the same concept, the two theories have found different results of positive affect on risk taking. This difference illustrates the fact that further research needs to be developed in this area.

Although researchers have conducted experiments on experienced affect that test current and past emotions, more recent studies have used anticipated/expected affect in explaining future emotions that have not yet occurred. To stress the importance of anticipation, Baron (1992) states that decisions are affected by anticipation even when the emotions are not part of the

desired outcomes. In distinguishing between anticipated and experienced affect, Van Boven and Ashworth (2007) have found that participants report more intense emotions when they anticipate an event as compared to the retrospection of an event that has already occurred. In one study, for example, participants who anticipated a hypothetical, all expenses-paid ski vacation reported more happiness, a better mood, and greater enjoyment for the vacation than did participants who had retrospection of a hypothetical ski vacation that had already happened. Similar results were found in four experiments that manipulated events that were positive (e.g., Thanksgiving holidays), negative (e.g., menstruation), commonplace (e.g., annoying noises), uncommon (e.g., annual Thanksgiving holiday), and varying in temporal distance (e.g., holidays that were two weeks away). The researchers explain that people mentally simulate future events more extensively than they remember having experienced past events, and this simulation amplifies current emotions. For example, people may expect a future Thanksgiving holiday to be more enjoyable than the past Thanksgiving holidays that they remember experiencing because they think of events that have the possibility to arise in the future, such as meeting relatives that were not met at the last Thanksgiving (Van Boven & Ashworth, 2007).

There are numerous ways to induce participants into a positive and negative anticipated affect state, such as informing participants of receiving a bag of candy (Isen & Geva, 1987; Isen & Patrick, 1983; Nygren, Isen, Taylor, & Dulin, 1996), telling participants that they will give a speech to a classroom-sized

audience (Starcke et al., 2008), and describing a very happy video that will be presented at the end of the study (Fredrickson & Branigan, 2005). It is possible that expected affect may be beneficial to the human self. Hazlett, Molden, and Sackett (2011) mention that optimism, the notion of positive anticipation about future events, helps buffer stress and contribute to positive coping while pessimism, the thought of negative anticipation about future events, may buffer anxiety and aid in the management of expectations. Because optimists believe that positive outcomes are more likely than negative outcomes, they will endure less stress on their bodies and be able to cope better with their current experiences due to them guarding against negative beliefs. Although pessimists believe that negative outcomes are more likely, this thought process has the benefit of assisting in protecting against these outcomes. Shepperd et al. (2008) use a similar explanation in their bracing hypothesis to explain the benefits of negative anticipation on certain events.

The bracing hypothesis is defined as the overestimation of the likelihood of a negative outcome as a protection from the intense emotional reaction in case the outcome occurs. The authors explain that since underestimating a negative event is more harmful than overestimating the likelihood of the event, people predict the worst news about their outcomes in order to avoid unpleasant surprises. For the study, students were informed that the university had made a billing error and they would either receive money from the university or would need to pay money back. Participants who would be hurt financially due to the

extra payment were more likely to expect the billing error would result in them paying the university rather than them receiving money. The students who needed money were explained to have judged the likelihood of them paying money to the university as higher than that of them receiving money, because the former outcome prepared them in case of a potential loss. Other explanations of the benefit of anticipation include the “imaginability theory” (Krizan & Windschitl, 2007), which states that desirable outcomes that are consistently simulated in a person’s mind will be judged as more likely to occur, and the “familiarity theory” (Bar-Hillel, Budescu, & Amar, 2008), which states that familiar outcomes are judged as more likely to occur than unfamiliar events.

Golub, Gilbert, & Wilson (2009) argue in contrast with the bracing hypothesis and proposes that even though negative expectations can “soften the blow” of a negative event occurring, bracing makes the person feel bad when waiting for the event to take place. Participants in the study completed a personality test that would reveal one of three personality types (A, the best, B, intermediate, and C, the worst). Participants were told the tests were valid when scored by a psychologist, but a computer would be able to reveal a prediction of how the participants might score prior to receiving the actual feedback. Participants who were informed by the computer that their personality score was predicted to be a C (negative anticipation) were less happy than the positive anticipation condition before receiving the actual score; the negative condition was also no happier than the positive anticipation condition after actually

receiving the score of an A. Although participants in the positive anticipation condition felt better before receiving the results of the test from the psychologist, and participants in the negative anticipation condition felt worse before receiving the scores, both conditions felt equally the same after the actual event. The researchers concluded that bracing is a foolish strategy that only offers harm and no benefits.

Although positive and negative anticipation about future events can have both benefits and harm, it has been shown that the more desirable a future event is, the higher chance it is judged to occur. Studies (Krizan & Windschitl, 2007; Weinstein, 1980) show that this “desirability bias” occurs when participants judge the likelihood of experiencing various desirable future events (e.g., winning an award) as higher than experiencing various undesirable events (e.g., developing cancer). In laboratory experiments, this bias is demonstrated by participants viewing a deck of 10 cards and guessing whether the next card in the deck will be a winning or losing card (Krizan & Windschitl, 2007; Marks, 1951). In the “win” condition, participants earn money for drawing a marked card, whereas in the “lose” condition, participants lose money by drawing a marked card. Participants have been shown to predict drawing a marked card more often when in the winning condition and less often when in the losing condition, even though both conditions yield the same probability of the marked card. Because a marked card in the “win” condition results in a desirable future event, earning money, while the

same card in the “lose” condition results in an undesirable future event, losing money, the desirable future event is judged as more likely to occur.

It has been explained that affect is the mechanism involved in the “desirability bias” because people automatically rely on affective reactions to an event when judging its likelihood (Lench & Ditto, 2007; Slovic & Peters, 2006). When participants are considering potential negative events, the negative affect elicited by these events leads to rationalizing the event as undesirable, thus rejecting that the events might occur. Congruently, considering positive future events elicits a positive affect that leads to conceptualizing the event as desirable and results in acceptance of the occurrence of such events. Another explanation, however, states that negative affect can lead to pessimistic judgments about the likelihood of future events, regardless of the fact of whether the event is positive or negative (Lench, 2009). The risk-as-feelings approach (Lowenstein et al., 2001) agrees with the prior explanation and states that potential future events cause negative emotional reactions, such as anxiety and dread, which lead to greater pessimism and result in negative events being judged as more likely to occur. Slovic and Peters (2006) describe that the “affect heuristic,” a term referring to the reliance of emotional response when judging future events, shows that negative affect leads to judging negative events as more likely to occur.

The “desirability bias” is not exhaustive only to the psychology field, but its applications can be applied to the “real world” as well. Charter Financial Analysts

(CFAs) from around the United States have been shown to forecast the probability of certain financial outcomes as being more likely to occur depending on the desirability level of the outcomes reported (Olsen, 1997). In conjunction with American CFAs, Taiwanese invest managers have also been found to display a higher forecasting of certain financial events depending on their level of desirability, showing that the “desirability bias” occurs at the international level.

Aside from affect, the literature presents a different perspective on the “desirability bias” when referring to anticipation. In Vosgeraue (2010), for example, participants rolled a die four times and judged the likelihood of them receiving a roll of a 6 at least two times during their turn. In the “win” condition, participants were told that rolling a 6 at least two times out of their four rolls would allow them to receive a shot glass with the university emblem, while the “lose” condition stated that rolling a 6 at least two times would result in not receiving the shot glass. Participants who engaged in strategic pessimism (i.e., “I have a feeling that I will not win the shot glass”) judged rolling a 6 more often in the “lose” condition than in the “win” condition. The results in this case worked against the “desirability bias” because participants judged the desirable outcome, rolling a 6, as occurring more often in the “lose” condition than in the “win” condition. In the same study, Vosgerau (2010) found that participants judged the likelihood of nine random events as occurring more likely when the events were printed on bright pink paper (arousal condition) rather than on gray paper (non-arousal condition). Similarly, another group of participants were asked to imagine

watching a soccer game that had their home team playing against an opposing team either on television or live. The participants judged the likelihood of their team winning as more often when they imagined watching the game live rather than watching it on television. These effects are explained through the “stake-likelihood effect” (Vosgerau, 2010) which states that when participants are aroused, the arousal can be misattributed to the likelihood of an event, and favorable and unfavorable events are therefore judged as more likely to occur. The participants that watched the soccer game live were more aroused and judged a positive likelihood (e.g., home team winning against the opposing team) and a negative likelihood (e.g., home team losing against the opposing team) of the game as higher than non-aroused participants; non-aroused participants did not show a desirability bias.

Other than arousal, Lench (2009) explained the effect of the “desirability bias” on affect through the use of an associative process. An image of a white car was paired with either a positive, negative, or neutral image (depending on the valence of the condition) which was then subliminally primed to participants as they viewed other neutral images. The white car image became associated with the valenced, subliminal image of the condition, and resulted in either a desirable (for the positive condition) or undesirable (for the negative condition) affect. Participants in the positive condition judged the likelihood of owning a white car in the future as more likely than the negative and neutral conditions, and participants in the negative condition judged the likelihood of owning a white

car in the future as less likely than the positive and neutral conditions. In the positive condition, participants who viewed the white car also experienced positive affect, due to subliminal priming, and therefore developed desire for white cars. In the negative condition, participants who viewed the white car experienced a negative affect and developed an aversion for the white car. This study revealed that neutral stimuli can be paired with affect to present results of the “desirability bias” that have been viewed in past studies (Lench & Ditto, 2007; Weinstein, 1980), where desirable future events are judged as more likely to occur and undesirable future events are judged as less likely to occur.

When experience and anticipation are compared together, however, different effects are found. For instance, Lee, Frederick, and Ariely (2006) had participants sample a “regular beer” (i.e., Budweiser or Samuel Adams) that did not contain any additives and an “MIT” (Massachusetts Institute of Technology) beer that contained drops of balsamic vinegar. Participants were randomly assigned to a *blind* condition (never informed about the balsamic vinegar additive), a *before* condition, and an *after* condition. Participants in the *before* condition were informed about the contents of the vinegar before sampling while participants in the *after* condition were informed about the contents of the vinegar after sampling the beer but before reporting their preference. It was found that the *before* condition preferred the MIT beer less than the *after* and *blind* conditions, which was mostly due to the participants having prior negative anticipation of the MIT beer. Participants that were anticipating the beer to taste

bad reported the beer as less preferable, while participants who had no anticipation and only experienced the taste reported higher preference. Experience with anticipation revealed a different result in preference than did experience alone. In another study, Wilson, Lisle, Kraft, and Wetzel (1989) found that merely anticipating a positive event can make the actual event appear more positive, even if the event is not positive at all. Participants viewed six cartoons and were informed by the experimenters that these cartoons had been rated by past participants as very funny, although only half of the cartoons were rated funny and the other half were rated as not funny. Results showed that participants rated all six of the cartoons as very funny, and gave the unfunny cartoons an even funnier rating. These studies have shown that anticipating an event changes the experience of that event and results in a new experience, therefore, anticipation and experience are not the same construct.

One way to highlight this difference between anticipated and experienced affect is through the desirability bias. Lench (2009) found that positive affect can be linked to a neutral stimulus, but anticipation may also make neutral stimuli more desirable without the process of association. The current study extended the Lench (2009) study, but rather than participants experiencing the valenced affect, they were instead induced into an anticipated affect state. The results of the study hoped to support the “buffer hypothesis”.

Augustine and Larsen (2011) state that experiencing a negative affect represents a departure from the ideal affect state, which results in a higher

likelihood of engaging in affect regulation (e.g., choosing an immediate monetary reward). Similarly, Kurtz (2008) found that when senior college students were reminded of how little time they had left in college before graduation, they took part in more college-related activities (e.g., spent time with friends, took a scenic route to class or some other destination, took pictures, took part in a university-related club or activity) in order to focus their attention on a positive experience that was coming to an end. Furthermore, O'Brien and Ellsworth (2012) had participants taste five different types of chocolates, and participants either were or were not informed that the fifth chocolate was the last piece. Participants in the "last piece" condition preferred the last chocolate to the other pieces and rated the overall experience as more enjoyable than the control condition. In combining the aforementioned studies, the buffer hypothesis argues that if a person is expecting to feel negative in the near future, they will regulate their affective state by focusing attention on neutral experiences and judging these experiences as positive. The "buffer hypothesis" states that anticipation has the power to skew a person's perception of the world. When participants are informed of watching a video at the end of the study that has been described as very negative, they will perceive all current experiences as more positive due to the direct contrast of feeling negative in the future. The negative anticipation will buffer all current experiences as more positive and will result in judging neutral events as more likely to occur. Oppositely, when participants are informed of watching a video at the end of the study that has been described as very positive, they will perceive

their current experience as more negative because they will be aware of feeling very positive in the near future.

Although one can argue that anticipating a negative event in the future can lead to people feeling worse, because they know that they will be in a negative state, the opposite effect has also been studied. The buffer hypothesis is similar to a well-known concept referred to as the terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) which is the idea that the awareness of mortality creates a feeling of terror. In order to avoid the fear of one's own death, humans inflate the perception of their self-esteem to serve as a self-defense mechanism to control these thoughts. A recent research study (Hansen, Winzeler, & Topolinski, 2010) has shown that participants who base their self-esteem on smoking cigarettes adopted a more positive attitude towards smoking when they read cigarette warning labels that were related to death, compared to warning labels that were not related to death. In order to manage the distress that the participants faced when reminded about their mortality, participants who relied on cigarettes to increase self-esteem had more positive attitude towards cigarettes; a higher self-esteem aided in buffering against thoughts of mortality. Another explanation of TMT is that when individuals are reminded of death, they respond by fulfilling their desires and taking risky actions that they would not usually take (e.g., driving fast, gambling, having unprotected sex, skydiving, etc.). Many contemporary musical artists promote songs that highlight the limitedness of one's life and claim that one should live in the moment because life is very

limited. Such examples of these songs include “Live your life” (Balan et al., 2008) and “The Motto:” the latter has popularized the acronym YOLO: You Only Live Once (Karmanaut et al., 2011).

The current study specifically hypothesized that participants in the negative anticipation condition will judge the likelihood of owning a white car, a neutral event, as more likely than the positive and neutral anticipation conditions. Further, participants in the positive anticipation condition were hypothesized to judge the likelihood of owning a white car as less likely than the negative and neutral anticipation conditions. Because participants in the positive condition expected to experience a positive event, there was not a reason for them to associate a neutral event with positive affect and judge the event as occurring more often. Although past studies have manipulated anticipation to test for judgments (Bar-Hillel, Budescu, & Amar, 2008; Hazlett, Molden, & Sackett, 2011; Krizan & Windschitl, 2007), this is the first study, to the best of my knowledge, that uses anticipated emotions to find a desirability bias.

METHOD AND DESIGN

Overview of Current Study

The present study intended to find a significant difference in the likelihood of judgment between neutral events when a valenced (positive/negative) event was anticipated. Specifically, participants anticipating a negative upcoming event were hypothesized to judge owning a white car, a neutral future event, as more likely than the positive and neutral anticipation conditions, and participants anticipating a positive upcoming event were hypothesized to judge owning a white car as less likely than the negative and neutral anticipation conditions. The buffer hypothesis explains that anticipating a negative event will result in an induced negative affect state that participants will want to diminish. All current (neutral) experiences before this negative event will be perceived as more positive so that participants “savor the moment” of the experience that is coming to an end. When neutral events are associated with a positive perception and desire, then it was hypothesized that these neutral events would be judged as more likely to occur, supporting the desirability bias.

The second hypothesis states that anticipating a positive event will result in judging current neutral events as less likely to occur. If participants are informed of viewing a very positive video at the end of the study, then all current (neutral) experiences will feel more negative compared to the positive future

event. This negative perception will lead to negative feelings about the events and will result in judging these events as less likely to occur, supporting the desirability bias.

Participants

Participants were undergraduate students from Stephen F. Austin State University who were at least 18 years of age and were currently enrolled in a psychology class. A total of 90 undergraduate students (24 male, 66 female) participated in the experiment for partial course credit or for extra credit. Participants had a mean age of 19.26 years ($SD = 1.36$) and their ethnicities were as follows: 31 Caucasian, 36 African American, 21 Hispanic, and two mixed races. All participants independently signed up for the study using the university's online participant management system and studies were conducted one at a time.

It was decided that a total of 90 participants would take part in this study, with 30 participants in each condition, by inputting the effect sizes of Lench (2009) into an online sample size calculator (www.biomath.info/power/ttest.htm). The means for the positive condition ($M = 4.46$, $SD = 1.07$) and the neutral condition ($M = 3.42$, $SD = 1.62$) were used as the Group 1 and Group 2 means and the standard deviations of the two conditions were averaged together. By using an alpha level of .05 with a power level of .80, it was revealed that the

study would require a sample size of 28 per cell. The researcher verified that calculations made from the website were valid by comparing the sample size given by the online sample size calculator with that of Lench (2009), and found that Lench used a total of 94 participants. By assuming that Lench used approximately 31 participants per condition and the online sample size calculator predicted 28 participants per condition, a final total of 30 participants per condition was calculated.

Materials

IAPS

All images used in this study have previously been normed for valence (positivity/negativity), arousal (high/low), and dominance (high/low) and were taken from the International Affect Picture System (IAPS) database (Lang et al., 1997). The image of the neutral white car was piloted in a previous study (Lench, 2009) with 16 participants reporting the probability of owning a white car to be no greater than that of an average student. Participants in the pilot study also used a scale that ranged from 1 (*extremely negative*) to 7 (*extremely positive*) to rate the white car image ($M = 4.25$, $SD = 1.13$) as well as four filler images of landscapes and clouds ($M = 4.83$, $SD = 0.67$). The current filler images are the same images used in Lench (2009) and specifically contain scenes of clouds, a galaxy, a green

farmland, and a landscape with flowers and trees (See Appendix A). The entire study was presented using MediaLab presentation software (Jarvis, 2010).

Scales

Participants used a horizontal 7-point scale to respond to questions about likelihood (1 = Not that likely, 7 = Extremely likely) and mood (1 = Not that happy/sad/anxious, 7 = Extremely happy/sad/anxious); these scales have been used in past studies (Lench, 2009; Weinstein, 1980).

Procedure

Participants entered the laboratory and sat in front of a Dell Latitude E6500 laptop computer. After signing an informed consent form and agreeing to take part in the study, the experimenter explained to the participants that the entire study would be conducted on a laptop computer. Participants learned that in order to practice inputting responses, they must answer three questions relating to their current emotions (“How happy/sad/anxious do you currently feel?”) on a scale ranging from 1 (*Not at all*) to 7 (*Extremely*). These questions were presented in a random order, using MediaLab’s within-groups randomizer, and the responses were used to measure baseline mood and anxiety. Participants were then informed that they would view a series of images and would rate whether they believe (yes/no) that an image from the series would be

presented in the next series; participants were informed of completing the rating task after each series, with a total of three series. The images presented in these series were four filler images as well as the white car image, and the order of these pictures remained the same throughout all series:

Order 1: clouds, flower landscape, green farmland, galaxy, white car image.

Order 2: green farmland, clouds, flower landscape, galaxy, galaxy, clouds, white car image.

Order 3: galaxy, flower landscape, clouds, white car image.

Order 4: flower landscape, galaxy, flower landscape, white car image.

Order 5: galaxy, green farmland, galaxy, flower landscape, white car image.

Order 6: clouds, green farmland.

Although participants were informed of viewing three series, only two series of images were presented. This was designed in order for the participants to keep their attention focused on both series of images.

Before presenting the first series of images, and after the participants had reported their baseline moods, the experimenter induced the participants into an anticipated affect state. Participants learned that after rating the three series of pictures, they would view a *really* funny video that had made past participants feel *very* happy (positive anticipation), a *really* sad video that had made past participants feel *very* sad (negative anticipation), or a short video that had been shown to past participants (neutral anticipation) (Gross & Levenson, 1995;

Fredrickson & Branigan, 2005). Each participant was randomly assigned to an anticipation condition prior to running the experiment.

After viewing the images from the first series and rating whether the images would or would not be presented in the next series, participants paused to wait for additional instructions from the experimenter. The experimenter explained that the next series of images would be presented as soon as the “Continue” button was pressed, but then the experimenter remembered that they forgot to give one more important instruction. The second set of instructions was designed to re-introduce the same anticipation that was assigned from the video condition. Participants learned that after rating the three series and watching the assigned video, they would also receive a bag of candy (positive anticipation; Isen & Patrick, 1983), they would need to give a speech in front of a classroom-sized audience (negative anticipation; Starcke et al., 2008), or they would answer a few demographic questions (neutral anticipation). When the anticipation had been re-introduced, the next series of images was presented.

After viewing the second series of images and rating each image on whether or not it would occur in the third series, participants answered questions regarding their emotions that were presented at the beginning of the study (“How happy/sad/anxious do you currently feel?”) using the same 7-point scale. Responses to these questions ensured that the anticipation induction resulted in the correct valence of anticipated affect that was expected. Participants then used a scale ranging from 1 (*Much less likely than average*) to 7 (*Much more*

likely than average) to judge the likelihood of experiencing two minor positive events and two minor negative events compared to another college student who is of the same age and gender (Weinstein, 1980); the same scale format was used to judge the likelihood of owning a white car in the future. In order to validate that no participant had above average affective feelings towards white cars, all participants used a 7-point scale to report their affective reaction to white cars (1 = *Hate*, 7 = *Love*), the intensity of their current happiness, sadness, and anxiety, and whether or not they owned a white car.

After answering demographic questions, participants in the positive and negative conditions were debriefed and were informed that the event that was promised to occur after the video (i.e., candy, speech) would not occur because the instructions were only used to amplify the manipulated anticipation. Further, participants in the negative condition learned that they would not view a sad video clip but would rather view a clip that would make them smile, and participants in the positive condition learned that the video clip they would watch is not as funny as described by the experimenter but should still elicit a positive feeling. The neutral condition did not receive debriefing instructions about the video because there was no anticipated valence attached to this condition. Each study lasted a maximum of thirty-minutes, and at the end of the study, all participants watched the same video of penguins running and jumping that has been shown in a past study to induce a positive mood (Fredrickson & Branigan, 2005).

Participants were thanked for their time and were awarded credit through the participant management website.

RESULTS

A one-way univariate analysis of variance (ANOVA) was used to analyze the data with anticipation (positive, negative, neutral) as the independent variable and the “likelihood of judgment on a future neutral event (owning a white car)” as the dependent variable. According to the hypothesis, participants in the negative anticipation condition should have reported higher “likelihood of owning a white car” responses than the positive and neutral anticipation conditions, and the positive anticipation condition should have reported lower “likelihood of owning a white car” responses than the negative and neutral anticipation conditions. The analysis, however, did not reveal a significant main effect of anticipation, $F(2, 85) = .758, p = .472$, as participants in the negative anticipation condition did not report a significantly different likelihood of owning a white car ($M = 3.23, SD = 1.61$) than the participants in the positive ($M = 3.70, SD = 2.41$) and neutral anticipation conditions ($M = 3.87, SD = 1.89$) (see Figure 1).

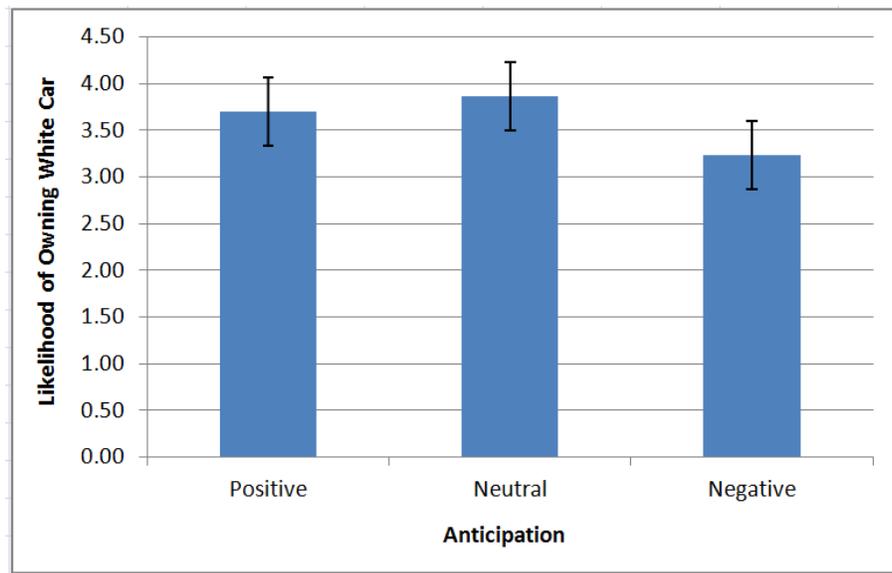


Figure 1. Graph of likelihood of owning a white car by anticipation before Mahalanobis distance was calculated.

One source of error between the anticipation manipulation and the likelihood response might have been the effectiveness and consistency of the manipulation. Self-report data taken after the experiment revealed that the manipulation may have been treated differently across the anticipation groups than the researcher had intended. For example, five participants did not mind giving a speech in front of a mid-sized classroom, a manipulation that was intended to induce negative anticipated affect, and four participants were not looking forward to receiving candy, a manipulation that was intended to induce positive anticipated affect. In order to determine whether multivariate outliers of reported anticipation were affecting the results, Mahalanobis distance values were assessed using $\chi^2 (3, N= 90) = 7.82, p = .05$. Manipulation checks of reported levels of happiness, anxiety, and sadness about the upcoming video

were included in the analysis to determine whether manipulation check scores deviated from the cluster of all scores; the results identified four participants who had values above the obtained χ^2 value of 7.82. After the data for these four participants were deleted, a one-way univariate ANOVA was again used to determine whether anticipation had an effect on owing a white car. Although the analysis revealed an increase in the F value from the original analysis (.758 to 1.411), the effect was not significant, $F(2, 81) = 1.411, p = .250$ (see Figure 2).

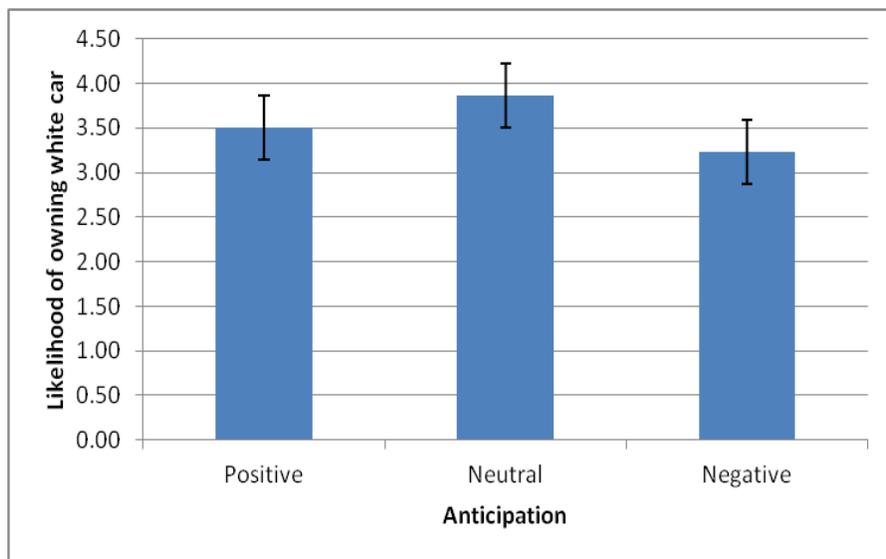


Figure 2. Graph of likelihood of owning a white car by anticipation after Mahalanobis distance was calculated and the multivariate outliers were deleted

Even though anticipation did not affect responses of the likelihood of owning a white car, anticipation might have still induced a specific affect state that could have transferred to feelings about the white car, similar to affect infusion and the results presented by Lench (2009). In order to verify whether

anticipation was related to changes in feelings towards white cars, a one-way univariate ANOVA was conducted with anticipation as the independent variable, feelings toward white cars as the dependent variable, and current ownership of white cars entered as a covariate. The analysis did not reveal a significant main effect of anticipation, $F(2, 82) = 0.064, p = .938$, indicating that anticipated affect did not induce any emotions toward the white car.

In order to explore the effects of the manipulation on participants' ratings, participant responses to the measures of anxiety, happiness, and sadness (i.e., 1=Not very, 7= Extremely) that were taken after the second anticipation induction were analyzed using three separate ANOVAs, with anticipation as a between-subjects factor and measures of anxiety, happiness, and sadness as the dependent variables. There was no significant main effect of anticipation on anxiety, $F(2, 83) = 1.595, p = .209$, as the negative condition ($M = 3.57, SD = 1.76$) did not rate themselves as significantly more anxious compared to the positive ($M = 3.88, SD = 2.27$) and neutral conditions ($M = 3.00, SD = 1.64$). There was also no significant main effect of anticipation on happiness, $F(2, 83) = 2.15, p = .123$, as the positive condition ($M = 3.31, SD = 2.17$) did not rate themselves as significantly happier compared to the negative ($M = 3.60, SD = 1.71$) and neutral conditions ($M = 2.63, SD = 1.67$). There was also no significant main effect of anticipation on sadness, $F(2, 83) = .542, p = .584$, as the negative condition ($M = 3.27, SD = 1.36$) did not rate themselves as significantly more sad

compared to the positive ($M = 2.88$, $SD = 2.10$) and neutral conditions ($M = 2.87$, $SD = 1.50$).

Considering that the anticipation manipulation did not seem to affect responses to measures of anxiety, happiness, and sadness that were taken after participants had been informed of the upcoming affective video (i.e., “post-induction”), the researcher combined the measures that were taken at the beginning of the study (i.e., “baseline”) into a new analysis that would determine whether a significant shift in mood occurred across the three manipulation conditions. Three separate repeated measures ANOVAs were conducted with anticipation as the between-subjects factor and time as the within-subjects factor; time contained two levels, baseline and post-induction (after exposure to stimuli but prior to judgments of likelihood). If the manipulation of anticipation had a significant effect, then the negative anticipation condition should have had an increase in anxiety and sadness and a decrease in happiness from baseline to post-induction, and the positive anticipation condition should have had a decrease in sadness and anxiety as well as an increase in happiness from baseline to post-induction. The results, however, did not reveal a significant main effect of anticipation on time on the variables of happiness, $F(1, 83) = 0.583$, $p = .447$, sadness, $F(1, 83) = .334$, $p = .565$, and anxiety, $F(1, 83) = .522$, $p = .472$.

In the positive anticipation condition, there was no significant difference in happiness from baseline ($M = 3.88$, $SD = 2.05$) to post-induction ($M = 3.31$, $SD = 2.17$), no significant difference in sadness from baseline ($M = 2.54$, $SD = 1.77$) to

post-induction ($M = 2.88$, $SD = 2.10$), and no significant difference in anxiety from baseline ($M = 3.08$, $SD = 2.02$) to post-induction ($M = 3.88$, $SD = 2.27$). In the negative anticipation condition, there was no significant difference in happiness from baseline ($M = 3.20$, $SD = 1.79$) to post-induction ($M = 3.60$, $SD = 1.71$), no significant difference in sadness from baseline ($M = 2.90$, $SD = 1.88$) to post-induction ($M = 3.27$, $SD = 1.36$), and no significant difference in anxiety from baseline ($M = 3.50$, $SD = 1.89$) to post-induction ($M = 3.57$, $SD = 1.75$). In the neutral anticipation condition, there was no significant difference in happiness from baseline ($M = 3.03$, $SD = 1.71$) to post-induction ($M = 2.63$, $SD = 1.67$), no significant difference in sadness from baseline ($M = 3.13$, $SD = 1.76$) to post-induction ($M = 2.87$, $SD = 1.50$), and no significant difference in anxiety from baseline ($M = 3.33$, $SD = 1.77$) to post-induction ($M = 3.00$, $SD = 1.64$).

Combining all three anticipation conditions, a correlation was performed between current ownership of white cars, the likelihood of owning a white car in the future, and feelings towards white cars. A significant correlation of feelings towards white cars and likelihood of owning a white car would support a possible desirability bias, because desirable feelings towards an event would be positively related to judging that event as more likely to occur. If participants in the positive anticipation condition judged white cars more positively than negatively, and if this judgment score was positively correlated with likelihood of owning a white car, then the researcher would be able to confirm support for a desirability bias through generation of positive affect, consistent with Lench (2009). For the

positive anticipation condition, the analysis revealed a high positive correlation between feelings towards white cars and likelihood of owning a white car, $r(24) = .72, p < .001$, a correlation between likelihood of owning a white car and currently owning a white car, $r(24) = .35, p = .04$, and a positive correlation between currently owning a white car and feelings towards white cars, $r(24) = .42, p = .01$ (see Table 2). For the negative anticipation condition, the analysis revealed a high positive correlation between feelings towards white cars and likelihood of owning a white car, $r(28) = .53, p = .001$, a marginally significant correlation between likelihood of owning a white car and currently owning a white car, $r(28) = .30, p = .053$, and a positive correlation between currently owning a white car and feelings towards white cars, $r(24) = .38, p = .02$ (see Table 3). For the neutral anticipation condition, the analysis revealed a high positive correlation between feelings towards white cars and likelihood of owning a white car, $r(28) = .75, p < .001$, a significant correlation between likelihood of owning a white car and currently owning a white car, $r(28) = .47, p = .005$, and a positive correlation between currently owning a white car and feelings towards white cars, $r(24) = .42, p = .01$ (see Table 4).

Table 2

Correlation Coefficients of Positive Anticipation Condition

	1	2	3
1 Likelihood of owning a white car	1	--	--
2 Feelings towards white cars	.72**	1	--
3 Currently owning a white car	.35*	.42*	1

* $p \leq .05$. ** $p \leq .01$

Table 3

Correlation Coefficients of Negative Anticipation Condition

	1	2	3
1 Likelihood of owning a white car	1	--	--
2 Feelings towards white cars	.53**	1	--
3 Currently owning a white car	.30	.38*	1

* $p \leq .05$. ** $p \leq .01$

Table 4

Correlation Coefficients of Neutral Anticipation Condition

	1	2	3
1 Likelihood of owning a white car	1	--	--
2 Feelings towards white cars	.75**	1	--
3 Currently owning a white car	.47**	.42*	1

* $p \leq .05$. ** $p \leq .01$

All three anticipation conditions showed a positive relationship between judging the likelihood of owning a white car and feelings towards white cars, as well as a positive relationship between feelings towards white cars and current ownership of white cars. In order to determine whether these correlations were significantly different between anticipation conditions, a Fisher to z transformation was conducted. In analyzing the correlations of “feelings towards white cars” and “likelihood of owning a white car”, the Fisher to z transformation did not reveal a significant difference between the two correlations with positive ($r = .71$) and negative ($r = .53$) anticipation ($1, N = 56$) = 1.12, $p = .13$, or with positive ($r = .71$) and neutral ($r = .75$) anticipation, ($1, N = 56$) = 0.23, $p = .41$, however a marginally significant effect was found between negative ($r = .53$) and neutral ($r = .75$) anticipations, ($1, N = 60$) = 1.41, $p = .08$. Because the last Fisher to z transformation was marginally significant, the researcher decided to delete the data of participants that already owned white cars ($N=13$ participants), since this variable might be a cause of disrupting the data, and then conducted another set of correlations between feelings towards white cars and likelihood of owning a white car. The new data revealed a significant correlation for all three anticipation conditions (see Figure 3), including a positive correlation for the positive anticipation condition, $r(21) = .62, p = .003$ (Figure 4), a positive correlation for the negative anticipation condition, $r(27) = .49, p = .01$ (see Figure 5), and a high positive correlation for the neutral anticipation condition, $r(25) = .82, p < .001$ (see Figure 6). A Fisher to z transformation between the new correlations revealed a

significant difference between the negative and neutral anticipation conditions, $(1, N = 52) = 2.09, p = .02$, a marginal significant difference between the positive and neutral anticipation conditions, $(1, N = 46) = 1.34, p = .09$, and no significant difference between the positive and negative anticipation conditions, $(1, N = 48) = .06, p = .27$.

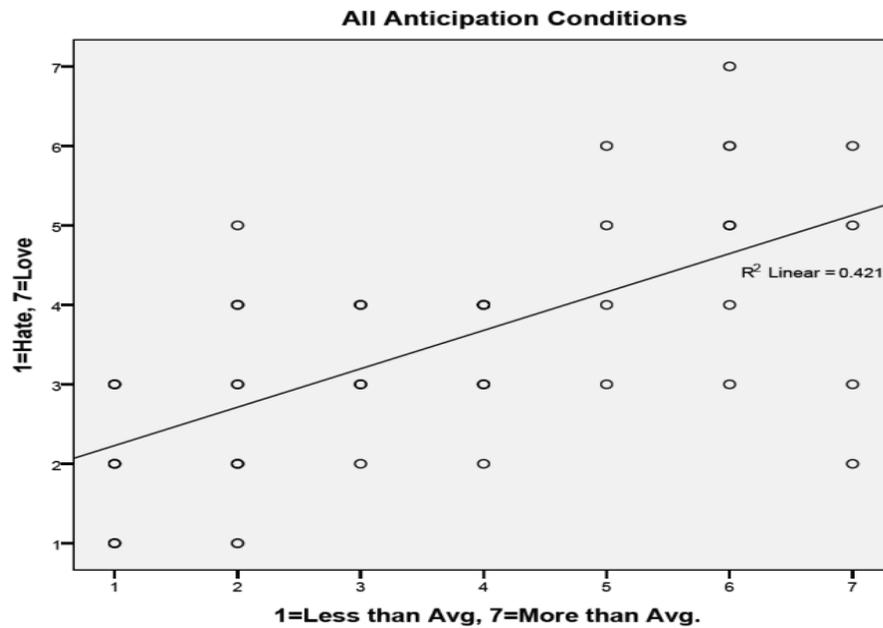


Figure 3. Scatter plot of correlations between likelihood of owning a white car and feelings towards white cars for all anticipation conditions.

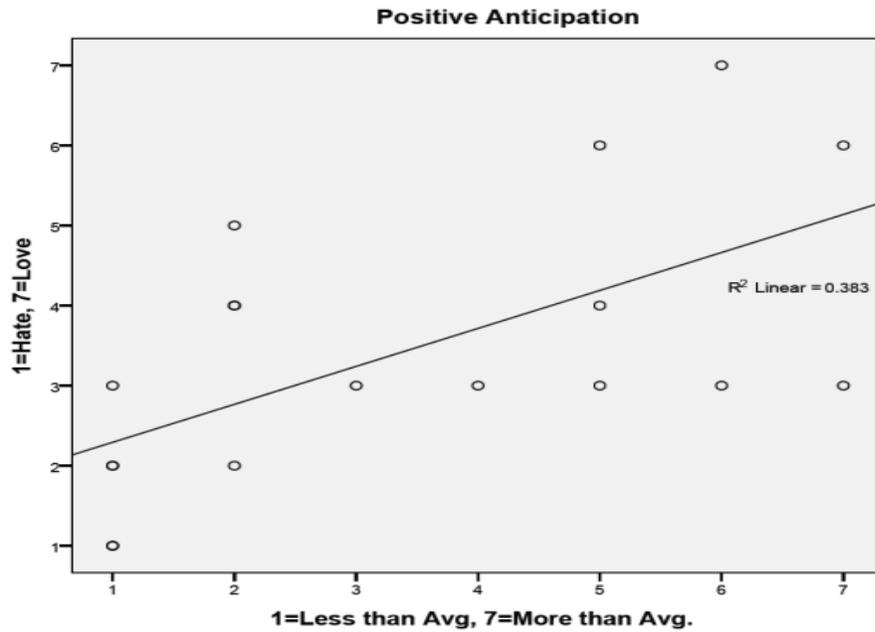


Figure 4. Scatter plot of correlations between likelihood of owning a white car and feelings towards white cars for positive anticipation.

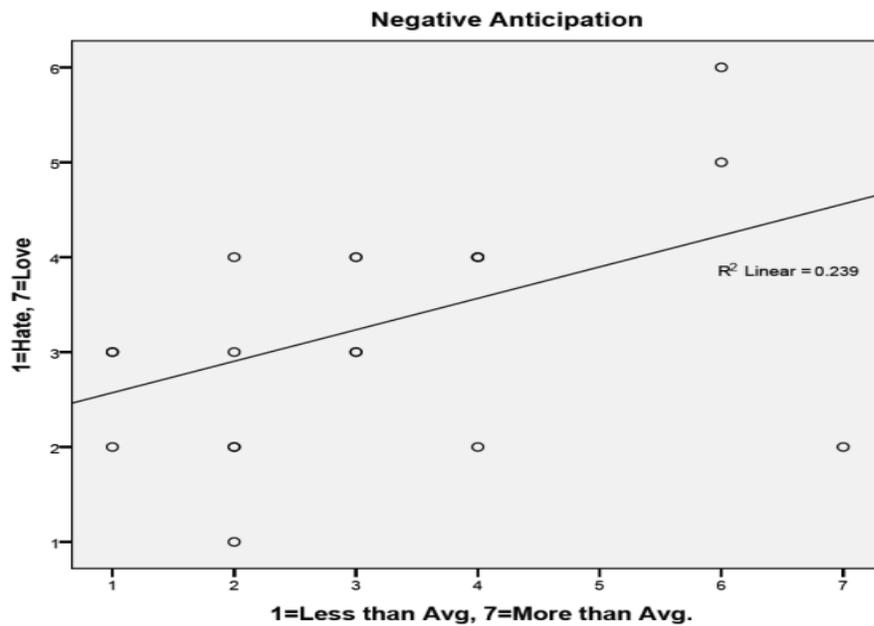


Figure 5. Scatter plot of correlations between likelihood of owning a white car and feelings towards white cars for negative anticipation.

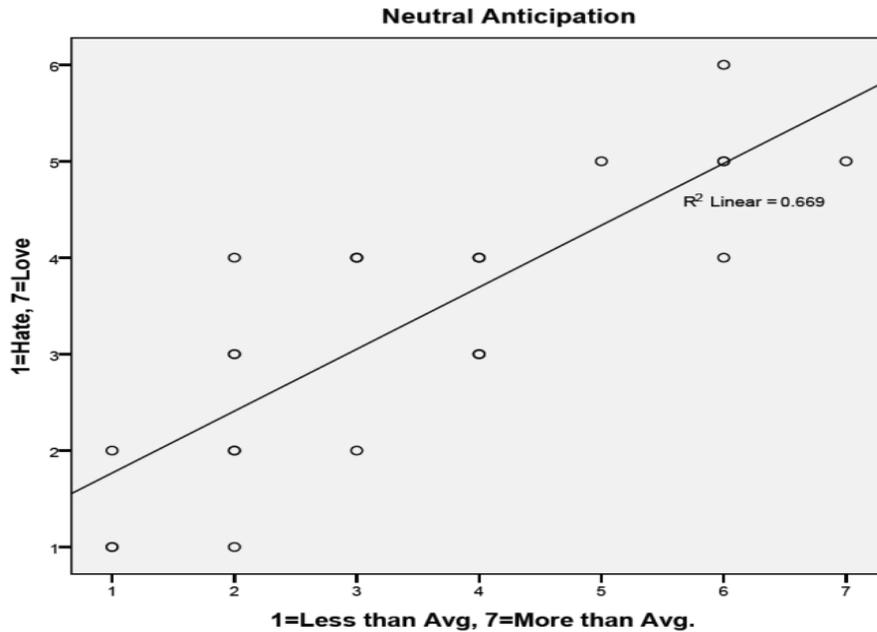


Figure 6. Scatter plot of correlations between likelihood of owning a white car and feelings towards white cars for neutral anticipation.

Due to the fact that deleting the data of the participants who owned white cars resulted in a significant Fisher to z transformation between the negative and neutral anticipation condition, it was believed that these data might be interfering with the data of the other participants. The participants that already owned white cars might have judged owning a white car in the future as more or less likely compared to participants that did not own white cars. The researcher decided to delete the data of the participants that already owned white cars and ran all analyses again to determine whether any significant effects occurred; after deleting the participants and analyzing the new data, no significant effects were present. Although there were no significant effects found, a marginal effect was found when using a univariate ANOVA with anticipation as the between-subjects

variable and anxiety as the dependent variable, $F(2, 70) = 2.40, p = .098$. The manipulation check revealed that the positive anticipation condition ($M = 4.43, SD = 2.11$) had higher anxiety than the negative ($M = 3.59, SD = 1.74$) and neutral ($M = 3.28, SD = 1.62$) anticipation conditions. Though this effect was not significant, there is some evidence that the positive anticipation manipulation might have caused anxiety.

DISCUSSION

The purpose of this study was to extend previous research (Lench, 2009) that found that subliminally priming participants with positive and negative images after the presentation of a white car image resulted in participants judging a higher or lower likelihood of owning a white car in the future, respectively; these effects are explained through the desirability bias. The current study examined the judgment of likelihood of a future event, owning a white car, across three levels of anticipation: positive, negative, and neutral. The buffer hypothesis, which suggests that anticipating a future negative event leads to “savoring the moment” and results in perceiving current events as more positive, was not supported in this study. Anticipated affect, the anticipation of viewing a video (positive, negative, or neutral), did not emerge as a significant effect on judging the likelihood of a neutral future event (owning a white car).

The buffer hypothesis explains that the anticipation for an upcoming negative event will buffer all current experiences as more positive in order for the individual to “savor the moment” before experiencing the event. If a participant is expecting to feel negative affect in the near future, then in contrast, all events that the individual currently experiences will be more positive. This positive perception will make the current experience to be viewed as more desirable, so that if asked about the likelihood of experiencing the current event in the future, participants will judge experiencing the event as more likely than the average

college student, supporting the desirability bias. The buffer hypothesis, however, was not supported in the current study as the negative anticipation condition did not judge owning a white car as significantly different than the positive and neutral anticipation conditions.

One explanation for the lack of support for the hypothesis is that the manipulation that was used for the experiment was not effective. For instance, participants who were informed of viewing a positive video should have reported higher happiness, lower anxiety, and lower sadness from the baseline mood than participants who were informed of viewing a negative video and participants who were informed of viewing a neutral video. In addition, participants who were informed of viewing a negative video should have reported lower happiness, higher anxiety, and higher sadness from baseline mood than participants who were informed of viewing a positive video and participants who were informed of viewing a neutral video. This pattern of results would indicate shifts in affect across the three affective anticipation conditions, however these shifts were not found. Past studies using similar manipulations have revealed consistent effective shifts (Geers & Lassiter, 2002; Golub et al., 2009; Kleinsorge, 2009; Kurtz, 2008; Van Boven & Ashworth, 2007), suggesting problems with the manipulation used in the current study.

Another reason for the lack of significant findings might have been due to the procedure of the study. Participants reported their mood when they first entered the laboratory (baseline) and then reported their mood again after

viewing the second series of images. There should have been a measure of mood taken immediately after the experimenter induced the anticipated affect, in order to confirm that any shifts in mood had been due to the manipulation. With the current procedure, participants first viewed two series of images and were informed about two different events (i.e., the valenced/neutral video and receiving candy, giving a speech, or answering demographic questions) before reporting their mood. It is possible that any one of these variables can attribute to a different shift in mood from baseline. Also, instead of presenting one manipulation check after both anticipation manipulations, two separate manipulation checks should have been presented after each manipulation. If participants reported their mood after the first manipulation (i.e., “You will watch a funny/sad video”) and the second manipulation (“You will experience an event”), then the researcher would have been able to conclude the strength of each manipulation and would be able to determine whether one manipulation caused a different effect than another. Due to the current protocol, it is impossible to determine whether the first anticipated affect induction created a different expected mood than the second anticipated affect induction. When participants learned about watching a happy video, they might have felt happier than when they entered the study; however after being informed about receiving candy, participants might have felt less happy. A “double-whammy” effect can also be used to explain the lack of significance in mood change from baseline. The video or “experiencing a future event” manipulations (i.e., receiving candy, giving a

speech, answering demographic questions) might have created the desired anticipated affect state that the researchers had intended, but the combination of both manipulations might have created a different anticipated affect state. Qualitative interviews with the participants after the study revealed that some students were not interested in the candy, were actually looking forward to giving a speech, were not excited about the positive video because they did not believe it would make them laugh, and *were* excited about the negative video because they were curious about how it would make them feel.

When changes in mood caused by anticipation were not found, the researcher created a variable that included only the shifts from baseline to happiness, sadness, and anxiety for all between-subjects variables. Although the new column revealed a significant effect, the effect was not in the desired direction of the manipulation. The negative anticipation group reported a higher average happiness rating than the positive and neutral conditions and the positive anticipation group reported a higher average anxiety as well as sadness rating than the negative and neutral conditions. This aberrant trend can be explained due to a large standard deviation amongst each condition as well as by qualitative interviews with participants.

Although the anticipation induction method did not seem to affect judgment, another method of measuring a possibility of a desirability bias was to run a correlation between feelings towards white cars and likelihood of owning a white car. A high correlation among these variables would support a desirability

bias because feelings towards an event would be positively related to judging that event as more likely to occur. When the researcher collapsed all conditions to run a correlation, a positive correlation between reported feelings of white cars and judging the likelihood of white cars was revealed for all three anticipation conditions. Participants with positive attitudes about white cars (i.e., loved white cars more than they hated white cars) judged owning a white car in the future as more likely, regardless of anticipation condition. Due to the fact that owning a white car could have influenced the positive attitudes about white cars as well a higher likelihood of owning a white car in the future, the data for participants that currently owned white cars were deleted and the correlation was computed again. After the deletion, the correlation between “Feelings towards white cars” and “Likelihood of owning a white car” was still present. A Fisher to z transformation revealed that the correlations between these two variables in the negative and neutral anticipation conditions were significantly different. There was a stronger relationship between feelings toward white cars and likelihood of owning a white car for the neutral anticipation condition compared to the negative anticipation condition. One reason for this result might have been because the neutral condition was anticipating a video but did not associate positive or negative feelings towards the video, therefore their responses to judging the likelihood of owning a white car had a strong relationship to their second question regarding their feelings towards white cars. Participants in this condition may have believed that since they judged owning (or not owning) a white car as very

likely in the first question, then they must have very positive (or very negative) feelings towards white cars, therefore the response to the second question was congruent to the response of the first question; the same trend is suggested for rating owning the white car as less likely. In the negative and positive conditions, however, participants were expecting to view a video that was attached with emotions. This anticipation might have resulted in a non-congruent response to the questions about judging the likelihood of owning a white car and feelings towards white cars. Participants expecting to view a valenced video, however, might have been so preoccupied with thinking about the upcoming video that they were unable to decide that a high/low response to the first question (i.e., “likelihood of owning a white car”) should be congruent with a high/low response to the second question (i.e., “feelings towards white cars”).

One might argue that an explanation for not finding the hypothesized effect might be the ambiguousness of when the negative event would specifically occur. O’Brien & Ellsworth (2012) found that participants rated a piece of chocolate as more enjoyable after they had been explicitly informed by the experimenter that the chocolate they were about to taste was the last chocolate for the study. Similarly, Kurtz (2008) informed senior college students that graduation was either very far (i.e., “about 1/10th of a year”) or very close (i.e., “about 1,200 hours”). In contrast to these studies, participants in the current study were unaware exactly when their current experience was coming to an end. Organizing the images so that the white car image was the last image that

the participants viewed before watching the video, and by informing the participants about the last image, would have created a confound. It would have been impossible to determine whether a change in anticipation occurred because of the induction manipulation or because of participants learning that the image of the white car was the last image of the presentation. These two manipulations are separate variables and can interact with one another because the manipulation induction can create a different effect than learning about the last image.

Implications

In order to compare the current findings with Lench (2009), a few points must first be addressed. Lench (2009) used an evaluative conditioning process by subliminally priming a valenced image with a neutral image of a white car to manipulate feelings towards the future. Evaluative conditioning (EC) has been described as a form of a learning process where automatic attitudes toward objects can be changed to another direction if valenced objects are presented at the same time, creating an association between the affective experience and the object (Olson & Fazio, 2001; Olson & Fazio, 2006). The EC process is similar to classical conditioning because several unconditioned stimuli are repeatedly paired with conditioned stimuli in order for the individual to change their views on the neutral stimuli to a positive or negative valence (Olson & Fazio, 2001). In Lench (2009), pilot participants rated their attitudes toward a presented image of

a white car as neutral and judged that they were as likely to own a white car in the future as an average college student. After this image had been rated as neutral, Lench used an EC process to subliminally prime the neutral white car image with positive, negative, or neutral affect in order to show that participants now judged that they were more likely than the average student to own a white car in the future. Due to the EC procedure, a neutral image was automatically paired with a valenced image and the effects of the valenced image were induced into the neutral image. The anticipated affect process that was used in the current study did not use a conditioning procedure, but instead hypothesized that anticipation would induce different motivational states, driven by the internally rather than externally, generated affect. Although EC has been applied to the field of marketing and advertisement (Schemer et al., 2008; Sweldens, Van Osselaer, & Janiszewski, 2010), the cognition of anticipating an affective state has not been taken into consideration. On a daily basis, it is assumed that individuals generate anticipated affect (e.g., dreading an upcoming exam, worrying about asking a girl out on a date, looking forward to watching a new movie) more often than experiencing EC (e.g., being subliminally primed into purchasing a new product). Whereas EC measures the strength of linking neutral events with valenced events, anticipated affect measures the differences in current experiences due to expectation of a future outcome. The two processes are different methods of measuring experienced outcomes, and although EC has been studied for a longer period of time, anticipated affect is a fairly new method

that needs to be researched more thoroughly (De Houwer, Thomas, & Baeyens, 2002).

The results of the current experiment examined the effect of anticipation on the judgment of likelihood of future events, proposing a second mechanism for instantiation of the desirability hypothesis. Previous research has shown that the desirability bias is due in part to the positive affect generated by the event. The buffer hypothesis provides a case wherein negative affect can also induce a desirability bias. Although participants induced into a specific anticipated affect condition did not judge the likelihood of owning a white car any differently than neutrally anticipated participants, the anticipated induction method should not be ruled out because there is a chance that a Type II might have occurred. Even though the current study did not reveal significant effects, there is a possibility that the buffer hypothesis exists, according to evidence from past studies.

Research has shown that optimists, individuals who have positive expectations about the future, assimilate their experience with the expectations while pessimists, individuals who have negative expectations about the future, contrast their experience with their expectations (Geers & Lassiter, 2002). When participants were expecting to view a video that they learned would be very boring, optimists rated the experience of watching the video as boring and pessimists rated the experience of watching the video as funny, even though both groups were shown a video that had been rated as funny by past

participants. Expectation about an event changed the experience of the event by the individual's positive or negative outlook.

Anticipation of future events is also beneficial in the corporate world. It has been shown that positive and optimistic attitudes towards future outcomes of life positively influence a worker's wage and monetary income (Mohanty, 2009). Similarly, studies conducted in the workplace environment, in contrast to a laboratory setting, have found that increased job insecurity is correlated with a decrease in job satisfaction and psychological well being (De Witte, 1999). Employees who were uncertain of whether they would continue working at their establishment in the future reported a higher amount of stress due to the unpredictability and uncontrollability of their outcome. A potential negative future event caused an immediate change in the employee's affect which resulted in a change in well-being. Understanding the effects of anticipated affect on judgments could lead to the development of effective preventative measures to reduce the detrimental impact of negative anticipation on many domains. Further, understanding anticipated affect can also provide benefits to protecting one's health. Optimists have been found to have better physical health than pessimists, are known to report less pain, and experience fewer physical symptoms (Rasmussen, Scheier, & Greenhouse, 2009; Carver, Scheier, & Segerstrom, 2010). These positive health benefits of optimists can be attributed to the influx of positive future expectations that help "buffer" against negative experiences.

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Appendix A

Images presented to participants

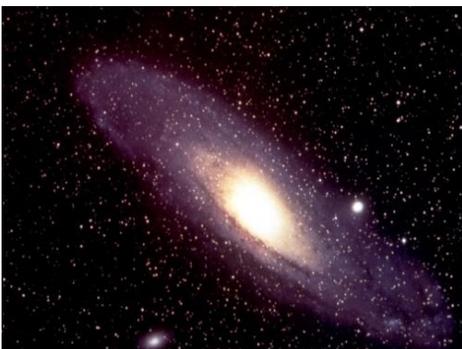
IAPS Pic # 5870 – clouds



IAPS Pic # 5760- landscape; flowers



IAPS Pic # 5300– universe; galaxy



Appendix A continued

IAPS Pic # 5720– grass; field



Target Picture – white car



VITA

Shaan Syed Shahabuddin was born on August 19, 1988 in Houston, Texas. He is the second child of Syed and Seemie Shahabuddin. After graduating from Cypress Ridge High School in Houston, Texas in 2006, Shaan began attending Lone Star Community College. In the spring of 2008, Shaan transferred to Texas A&M University in College Station, Texas. He received his Bachelor of Science degree in Psychology with a minor in Sociology in August of 2010 with *magna cum laude* honors. The following fall, Shaan began his graduate career in the General Psychology program at Stephen F. Austin State University under a two-year graduate assistantship. He has worked under the supervision of Steven Estrada, Ph.D. since attending SFASU. Shaan received his Master of Arts in Psychology in August 2012.

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APA format

This thesis was typed by Shaan S. Shahabuddin.