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The Role of Mood as a Mediator in Trait-Congruent Cognitive Processing: Does Mood State Mediate the Relationship Between Personality Traits and Judgment?

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The Role of Mood as a Mediator in Trait-Congruent Cognitive Processing: Does Mood State Mediate the Relationship Between Personality Traits and Judgment?

BY

Janice E. Harewood

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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The Role of Mood as a Mediator in Trait-congruent Cognitive Processing:
Does Mood State Mediate the Relationship between Personality Traits and Judgment?

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Abstract

The relationship between affective traits and predictive judgment was investigated using a mediation framework approach to examine whether the current mood state of participants acted as a mediator between traits and judgment. This relationship was examined for anxious trait, anxious mood, and judgment for negative events and for subjective well-being, happy mood, and judgment for positive events. A written scenario and an imaginal procedure were used to create anxious, happy, or neutral moods in participants, and a fourth group received a simple cognitive task. Results showed that the mood inductions were invalid. Given that the correlations necessary to test for mediation were found only in the happy mood induction group, the test for mediation was conducted only with this group, but no support for mediation was found. Implications of the results for Bower's (1981) associative network theory are discussed, as well as implications for judgment and decision-making.
Dedication

I dedicate this thesis to the members of my family, especially to the following: my mother, Barbara Harewood; sisters, Heather and Laura; and, Owen, my brother-in-law. I say thank you for your love, encouragement, support, and prayers while I have been away from home. I also dedicate this thesis to the memory of my father, Joseph Harewood, who encouraged me to do the best that I could at the tasks that I undertake.
Acknowledgements

I give thanks to the Almighty God, the one who sends all blessings. These blessings often come in the form of individuals with whom I cross paths on my life’s journey – individuals who support, encourage, and teach me. In this regard, I thank my thesis committee Chair, Dr. John Best, for superb guidance throughout the process of writing this thesis. Dr. Best, with your help I have gained increased confidence in my ability to conduct independent research at the graduate level. Your orderly thinking, focus, commitment, and attention to detail are characteristics that I try to emulate. Thanks for helping me to stay ‘on track’ with this project.

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Table of Contents

Title Page ................................................................. p. i
Abstract ................................................................. p. ii
Dedication ................................................................. p. iii
Acknowledgements ................................................... p. iv
List of Tables ............................................................ p. vii
List of Figures ........................................................... p. viii
List of Appendices .................................................... p. ix
Introduction .............................................................. p. 1
   The Effects of Mood on Cognitive Processes .............. p. 6
   The Effects of Traits on Cognitive Processes ............. p. 9
   The Relationship between Traits and Moods .......... p. 12
   Inconsistency in the Literature ........................... p. 15
   Proposed Methods for Addressing These Inconsistencies p. 17
The Current Study ...................................................... p. 21
Method ................................................................. p. 27
   Pilot Study ........................................................... p. 27
   Participants .......................................................... p. 30
   Materials ............................................................. p. 31
   Design and Procedure .......................................... p. 34
Results ................................................................. p. 36
   Validity of the Mood Induction ............................. p. 37
   Zero-order correlations .............................. p. 37
List of Tables

1. Descriptive Properties of the Participant Groups............................ p. 60
2. Means of State Anxiety by Mood Induction Procedure...................... p. 62
4. Correlations for the Anxious Mood Induction Group....................... p. 64
5. Correlations for the Happy Mood Induction Group.......................... p. 65
6. Neutral Mood Induction Group................................................ p. 66
7. No Mood Induction Group........................................................ p. 67
List of Figures

1. Path Analysis Diagram of the Relationship between Trait Positive Affect, State Positive Affect, and the Positive Judgment Items in the HMI Group .......... p. 68
## List of Appendices

A. Mood Induction Scenarios for the Anxious Mood Induction................ p. 69

B. Mood Induction Scenarios for the Happy Mood Induction................ p. 71

C. Mood Induction Scenarios for the Neutral Mood Induction.............. p. 73

D. Cognitive Tasks for the No Mood Induction Scenario.................. p. 75

E. Permission to use the State-Trait Anxiety Inventory (Form Y)........ p. 77

F. Permission to use the Positive and Negative Affect Schedule – Expanded
   Form .............................................................................. p. 78

G. Likelihood Judgment Items...................................................... p. 79

H. Informed Consent and Demographic Information Form.................. p. 80

I. Debriefing Statement............................................................. p. 81
The Role of Mood as a Mediator in Trait-congruent Cognitive Processing:

Does Mood State Mediate the Relationship between

Personality Traits and Judgment?

Judgment can be described as a cognitive process involving the use of available knowledge and information to make evaluations or predictions. Evaluations may be viewed as expressions of preference, whereas predictions about future outcomes demonstrate expectancies about the future, and both types of these judgments are used to make decisions (Hogarth, 1987). The focus of this work is on predictive judgments. Judgment will be the term used hereafter to refer to predictive judgment, while evaluative judgment will be specified as such. Tversky and Kahneman (1974) suggested that the expression of judgments through the use of statements such as “I think that... chances are... [and] it is unlikely that...” (p. 1124) that are used so commonly in everyday language are the verbal equivalents of subjective numerical probability assessments. They also noted that a variety of decisions are based on the beliefs or judgments that individuals have about the likelihood that uncertain events will occur.

The importance for decision-making of research in judgment is found across a range of behaviors and situations. The decision areas range from the mundane – such as deciding whether or not to carry an umbrella based on the expectation of rain (Nakajima & Ohta, 1989) - to more serious implications for policy making (Lichstein, Slovic, Fischhoff, Layman, & Combs, 1978) and for the legal system (Slovic & Monohan, 1995). For example, Lichstein et al. asked subjects to estimate the rates at which people died from a variety of causes. They found that groups of college students and non-university
women inaccurately overestimated or underestimated a number of categories of causes of
death. They demonstrated how this insight into the predictions people made could have
important implications for the management of societal hazards, including the promotion
of safety behaviors. It has also been used for looking at decision-making in the legal
system for the coerced treatment of mental patients, where Slovic and Monohan found
that if people rated mental health patients as more likely to harm someone, then they were
also more likely to recommend the use of coerced treatment for the patient. Since
judgment has important implications for decisions ranging from the personal to social
policy (Johnson & Tversky, 1983; Wright & Bower, 1992), understanding the processes
that affect judgment is a worthwhile area of study.

As a result of the uncertainty that surrounds judgments, there is a degree of
flexibility in the conclusions that might be formed from person to person and from
situation to situation. It has been shown that judgment can be influenced by a number of
contextual factors. For example, Sieber (1974) placed college students in a multiple
choice exam situation. While half of the group believed that they could retake the exam if
they performed poorly, the other half was led to believe they had only this one chance to
be tested. Hence, the contextual factor in this study was the importance of the testing
situation in which they were placed. Sieber found that, when compared to the students in
low-importance testing situation, students who were in the high importance test condition
overestimated the correctness of high-probability test items and underestimated the
correctness of low-probability test items. Weinstein (1980) asked college student
participants to estimate the likelihood that they would experience certain negative and
positive events compared to other people. He found that a number of contextual factors
such as whether the event was negative or positive, whether predictions were being made about possible events in the participant's own life or in the life of others, the level of controllability of the outcome, and prior personal experience affected the subjects' judgments about the future events. For example, subjects were more likely to predict that positive events would happen to themselves than to others, but underestimated the likelihood of the occurrence of negative events for themselves when compared to others.

On the other hand, it has been suggested that there is a degree of stability in the way in which an individual makes predictions. Anecdotally, people speak of pessimistic thinkers and optimistic thinkers. There is some evidence, discussed further below, that supports the idea of stability in making judgments. Both contextual and stable factors influencing judgment are examined in this study.

An important direction for investigating both the stable and contextual influences on judgment has emerged from the study of affect and cognition. In accordance with Eysenck and Keane (2000), hereafter I will use the term affect as a broad term that encompasses emotions, moods, and affective traits. Emotions will be used to refer to brief and intense affective experiences, while mood states will refer to slightly more prolonged affective experiences of a lower intensity than an emotion, and affective traits will refer to stable, longstanding affective personality dispositions. In this document I will use the term mood, mood state, and affective state interchangeably.

In addition to the general importance of judgment to decision-making, the study of affect and cognition and their relation to judgment can have special significance for the mental health field, especially with the rise of cognitive approaches to understanding and treating psychological disorders. Beck (1995) described a cognitive conceptualization of
psychological disturbances, which proposed that the distorted thinking found in psychological disorders is related to problems in the mood and behavior of the mental health client, while a shift to more realistic thinking helps to improve the mood and behavior of the client. Williams, Watts, MacLeod, and Mathews (1997) focused on the depressive and anxiety disorders. They pointed out that judgment is one of the cognitive processes that can be biased in people with emotional disorders, whereby they tend to predict more negative outcomes for future events. This can be demonstrated by the research of Gladiss and Bryant (1998), who studied individuals diagnosed with acute stress disorder (ASD) following a car accident. The researchers found that, compared to people who were involved in motor accidents but were free of ASD, those who had ASD made more predictions that negative events would befall them. Beidel and Turner (1997), in reviewing the clinical features of anxiety disorders pointed out that “cognitive symptoms of anxiety usually entail worry about specific events involving the possibility of danger or harm to one’s self or others...occurrence of the fearful event, although a possibility, is usually of very low probability, thus fear is out of proportion to situational demand” (p. 290).

Williams and colleagues (1997) suggested that the knowledge of how both temporary moods and more longstanding factors affect cognitive responses could help to inform the treatment of emotional disorders. For example, a cognitive conceptualization of emotional disorders would suggest that one area in which more realistic thinking could be sought is in the biases found in judgment. So, from a clinical point of view, it is worthwhile to investigate the influences on judgment of contextual and stable affective factors in an effort to give insight into how treatments can be developed for emotional...
Personality Traits, Mood and Judgment

disorders. Such treatments can relate, for example, to the decision that phobic patients
might take about approaching a feared object or situation based on the predictive
judgments that they have made. Specifically, in this experiment, anxiety and its effects
on judgment will be a focus.

On the other hand there may be affective factors, both stable and contextual, that
exist in people that might direct them away from the pessimistic biases that tend to be
found in those who have emotional disorders and lead them to think in a more positive
manner. That could mean that there are stable and contextual components of a person’s
affective life that are related to better mental health. For example, it was found that a
happy mood led to reductions in self-focused attention in a group of undergraduate
student subjects (Green, Sedikides, Saltzberg, Wood, & Forzano (2003). These authors
pointed out that high self-focused attention has been reported to be a correlate of serious
psychopathology, including anxiety. Watson (2002) noted that a low level of the trait of
positive affectivity was associated with a number of anxiety disorders, such as social
phobia and agoraphobia. It might be possible that positive affective factors could also
contribute to better mental health by leading to positive biases in judgment, in a similar
fashion to how negative affective factors are related to worsened mental health.
Dewberry and Richardson (1990) found that optimism was reduced when people
experienced anxiety states. It might be possible that a similar result holds for positive
mood; people who experience a positive mood might show decreased pessimism.
Experiencing positive affect might counteract or oppose tendencies to predict negatively,
and this could impact on clinical disorders such as anxiety. Thus, a second focus of this
study will be to investigate the above views, from an individual’s subjective perspectives of her or his own well-being.

**The effects of mood on cognitive processes**

Several researchers and reviewers have noted that affect can influence cognitive processes such as judgment in predictable ways so that the outcome of the cognitive processes will vary according to the temporary affective state of the subject (e.g., Bower, 1981; Forgas, 2001; Rusting, 1998). The evidence shows that mood state can be an important contextual influence on cognitive processes. *Mood-congruent processing* is said to occur where the individual selectively or differentially processes information that is similar in affective tone to her or his current mood state (Bower, 1981; Bower, 1987). This would mean, for example, that people in positive moods would be more likely to recall, selectively attend to, or more quickly perceive positively valenced items such as happy memories, or events and terms, i.e., those that hold positive emotional meaning. Those in negative moods would be more likely to recall, attend to or more quickly perceive negatively-valenced items such as events or items with negative emotional themes such as sadness (Bower, 1981; Salovey & Singer, 1989).

One theory that is used to explain how such mood-congruent processing occurs is Bower’s (1981) “associative network theory of memory and emotion” (p. 134). In this article Bower reported the results of a number of experiments involving mood and memory. For example, he found that subjects who read stories describing happy and sad incidents learned more about the incidents that were congruent with their mood state. Also, in a test of memory for autobiographical incidents, he found that subjects who were in a pleasant mood recalled more pleasant autobiographical incidents than those who
were in an unpleasant mood. Conversely, he found that those who were in an unpleasant mood recalled more of the unpleasant incidents that they had experienced.

Based on such findings, Bower (1981) developed a conceptualization of how information is organized in memory. He proposed that each event in memory consists of a cluster of propositions, and are defined by specific concepts. New events are recorded in memory when associative connections are made among the concepts used to define an event. The basic process of thought takes place when activation of the proposition and its concepts spreads to other propositions and concepts. That is, linkages are made from event to event when a thought occurs. Bower suggested that emotions are specific units in memory that have linkages with specific events, appraisals, and labels. He argued that in the event that a particular emotion is aroused then, through a process of spreading activation, connected event nodes would be activated as well. Consequently, it would be easier for someone in a happy mood to recall happy events. On the other hand, events of an unrelated or opposite emotional tone would be less likely to be activated, or may even be inhibited.

Bower (1987) elaborated on his semantic network theory, explaining the way in which an activated emotion will lead to mood-congruent processing. He noted that:

perceptual descriptions of events that originally produced emotions will be encoded into memory, and re-thinking of those events (by activating them) can reactivate the emotions by the spreading of activation to the emotion. Importantly, the links are two-way, so that the influences work in the reverse direction as well, viz, when aroused by whatever means, an emotion will tend to activate selectively
those memories, themes, perceptual categories and thoughts that have been associated with that emotion in the past. (p. 444)

This not only suggests that particular moods can be induced by having people re-think or focus on specific events, but it also explains clearly how cognitive biases might occur across a variety of cognitive areas. So, although the mood congruence theory was first developed specifically with relation to his experiments involving memory, Bower (1981, 1987) also suggested that mood congruence should generalize to other areas of cognitive processing such as associative processes, interpretive processes, forecasting future events and evaluating oneself and others in mood-congruent ways.

As predicted by Bower’s (1981) framework, mood-congruent processing has been found in other areas apart from memory, including the interpretation of ambiguous stimuli (Eysenck, Mogg, May, Richards, & Mathews, 1991), evaluative judgment (Isen & Shalker, 1992; Weis & Lovejoy, 2002) and predictive judgment (Johnson & Tversky, 1983; Wright & Bower, 1992). For example, Isen & Shalker (1982) induced mild positive and negative moods in undergraduate student participants by exposing them one of three conditions. They asked them to take a test on which they would be rated either as successes or failures for their test performance, or arranged it so that participants would find a dime. They then asked participants to rate a number of slides for pleasantness that had been previously rated as being pleasant, unpleasant, or ambiguous. Isen and Shalker found that, in comparison to a control group, those who had been labeled as failures rated ambiguous slides as more unpleasant and those who had found a dime rated ambiguous slides as more pleasant.
Wright and Bower (1992) induced happy or sad moods in undergraduate student participants by placing them under hypnosis and asking them to recall and focus on past events that were happy or sad in nature. They were then asked to predict the likelihood that a number of events, either positive or negative, would take place in the future. Wright and Bower found that, when compared to control subjects, those who experienced happy moods gave higher estimates of future positive outcomes, and lower estimates of future negative outcomes. On the other hand, the sad subjects overestimated future negative outcomes and underestimated future positive outcomes. Johnson and Tversky (1983) found similar results in the predictions of risk by college student participants who read positive newspaper-style stories, designed to induce anxiety and worry, about events that led to the death of an individual. Johnson and Tversky found that, when compared to the control group, those who underwent the negative mood induction gave higher estimates of the frequencies of disease risk globally, regardless of the specific risk that had been used to induce anxiety and worry or depression. They also showed that the induction of a positive mood led to decreased worry and a decrease in the negative estimates of risk. Hence it would seem that mood congruency effects are also found in the judgment of the occurrence of future events.

The effects of traits on cognitive processes

Just as the study of affect and cognition has led to an examination of the effect of the contextual factor of mood state on cognitive processing, there has also been a consideration of the effects of more longstanding tendencies. The study of affective influences on cognitive processes such as judgments has examined the stable and consistent affective tendencies in individuals that would lead them to process information.
in ways consistent with these affective personality traits. Spielberger, Goruch, Lushene, Vagg, and Jacobs (1983) stated that "personality traits can be conceptualized as relatively enduring differences among people in specifiable tendencies to perceive the world in a certain way and in dispositions to react or behave in a specified manner with predictable regularity" (p. 1). When taken from the perspective of affective personality dispositions this definition would suggest that an individual may have a relatively stable experience of a particular valence of affect which can lead to consistent, predictable biases in cognitive processes such as judgment. Mood state can bias one's cognitive processing in the short-term, and perhaps it can be expected that stable affective dispositions might lead to more stable influences on these cognitive processes. An understanding of this might indicate susceptibility to affective disorders versus tendencies towards good mental health based on the valence of affective traits. For example, Spielberger et al. showed that high trait anxiety could be diagnostic of anxiety disorders.

One implication of a major role for personality traits in the judgment process would be that, in spite of variability in judgment due to contextual factors, there may exist some stable and highly predictable element in thinking. This could mean that there could be limitations to changing the way in which people make judgments.

Much of the research involving personality traits and their effect on cognitive processing has been carried out by looking at the two broad personality traits of extraversion and neuroticism. These two traits have generally been described in terms of their affective characteristics. Extraversion is a personality dimension, which, at the high end, is characterized by a disposition to be gregarious, assertive, warm, and to experience positive emotional feelings. Neuroticism is a personality dimension, which, at the high
Personality Traits, Mood and Judgment

end, is characterized by a disposition to experience negative affect, to be unstable, highly anxious, vulnerable and depressive (Pervin & John, 2001). Given that extraversion and neuroticism both have such strong affective components it is not surprising that research has shown that extraversion and neuroticism are related to a propensity to bring about biases in processing that can be described as *trait-congruent* (e.g., Rusting, 1998). That is, these biases are consistent with the affective tone of these traits. Ruiz-Caballero and Bermudez (1995) found that undergraduate student subjects who scored high on neuroticism recalled more negative autobiographical memories than those who scored lower on neuroticism. Rogers and Revelle (1998) also found trait-congruent effects of neuroticism and extraversion across a range of evaluative judgments made for pleasant, unpleasant and neutral pairs of words.

Rusting and Larsen (1998) explained how trait-congruent processing could be explained by Bower’s (1981, 1987) theory. They felt that “the associative network for an individual high in neuroticism would have many interconnections among...negative emotional concepts, events and images... [while that] for an extravert would have many interconnections among positive emotional concepts, events and images” (p. 201). Hence, trait-congruent processing occurs by a process similar to that of mood-congruent processing, except that there been the development of many network linkages over time. That is, these networks could have become more elaborated over time. Rusting (1998) added that “hedonic information consistent with these traits should attract attention and be easily brought to mind because of the multiple pathways and strong connections among trait-congruent constructs. Such personality effects, however, may depend on temporary emotional states to activate these memory associations” (pp. 169-170).
The relationship between traits and moods

If indeed traits and moods can be conceptualized as using the same types of associative networks, then there should also exist a relationship between traits and moods. The relationship between traits and moods can be understood more clearly by reviewing the work of Watson and Clarke (1992), who gave some insight into the tendency of the traits extraversion and neuroticism to be related to two general affect dimensions. They described the *Positive Affect* (PA) dimension as a higher order factor reflecting the tendency to experience positive moods states such as excitement, alertness, and confidence, whereas *Negative Affect* (NA) is composed of negative emotional states such as fear, hostility, and guilt. Watson and Clarke reviewed the research that had already been completed in this area and pointed out that “these two factors represent affective state dimensions...they are related to corresponding affective traits of positive and negative emotionality” (p. 1063). They added that “trait PA and NA roughly correspond to the dominant personality factors of extraversion and anxiety/neuroticism, respectively...low PA and high NA (both state and trait) are major distinguishing features of depression and anxiety, respectively” (p. 1063).

Watson and Clark (1992) conducted their study on the Five-Factor model of personality, which has personality dimensions of neuroticism and extraversion that are highly similar to Eysenck’s constructs. Participants were rated on positive affect and negative affect using the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) as well as other related measures. They found confirmatory evidence that negative affect has a strong positive relationship with neuroticism, while positive affect has a strong positive relationship with extraversion. Other researchers have found
results which match this finding. For example, David, Green, Martin and Suls (1997), in a week-long test of male subjects drawn from a community sample, found that extraversion was positively related to their reports of positive mood, while neuroticism was positively related to their reports of negative moods.

There is evidence that affectively toned traits bias cognitive processing in affect congruent ways, just as moods do. For example, Rusting and Larsen (1998) tested undergraduate student participants to see whether the traits of extraversion and neuroticism were related to their performance on memory and reaction time tasks for emotionally-toned material, and also on their performance on a judgment task for ambiguous material. The judgment task involved having participants fill in letters to complete a word that would have either a positive or neutral emotional tone, or a word with either a negative or neutral emotional tone. The timed task involved asking participants to indicate on a computer keyboards whether a word appearing on a computer screen was positive, negative, or neutral. Participants were tested on recall of the words from the reaction time tasks. The researchers found that extraversion was related to the completion of ambiguous word fragments to create words with positive meanings, while neuroticism was related to the completion of these fragments as words with negative meanings. Extraversion was related to faster reaction times to and fewer errors made on positive items, as well as better recall of positive words, while neuroticism was related to having fewer errors on the negative items in the reaction-time task, as well as better recall of these negative items.

Trait-congruent processing has been found for both broad personality traits such as extraversion and neuroticism, and also for narrower, specific traits such as trait anxiety.
Butler & Mathews, 1987; Kverno, 2000; McLeod & Cohen, 1993). For example, in Kverno's (2000) study, college student participants were divided into two groups based on the ratings for high or low trait anxiety. They were asked to review words presented on slides and, after the presentation of all the words, were asked to judge the frequency with which they felt that each word had appeared to them. These words presented were either neutral or physically threatening in emotional tone. Kverno found that those high in trait anxiety estimated that more threatening words had been presented than did those low in trait anxiety had estimated, but there was no difference found between the two groups in estimating the frequency at which the neutral words had appeared.

Similarly mood-congruent processing has also been found not only for the broad descriptions of positive and negative mood but, as already demonstrated above, it has also been found for more specific mood states such as anxiety (e.g., Butler & Mathews, 1987; Mathews, Richards, & Eysenck, 1989; Richards & French, 1992). For example, Richards and French (1992) induced anxious mood or neutral mood in participants. They found that the subjects that had undergone priming by anxious mood induction made more negative evaluative judgments of homophones.

At this point, it should be noted that work involving the investigation of specific positive moods and positive traits such as joy and elation are rare, since far less attention has been paid to positive emotional experience than to negative emotional experience. As pointed out by Frederickson (2002), there has been:

the habit among emotion theorists of creating models of emotions in general.

Such models are typically built to the specifications of those attention-grabbing
negative emotions (e.g. fear and anger), with positive emotions squeezed in later, often seemingly as an afterthought. (pp. 120-121)

She added further that positive emotions were often not specified sufficiently in terms of specific action tendencies, unlike the case with specific negative emotions. Hence, the focus on positive mood and trait in this study will remain relatively general.

**Inconsistency in the literature**

Although there is a substantial body of evidence for mood and trait-congruent processing throughout the literature, results for mood- and trait-congruent processing are inconsistent across a range of cognitive tasks, traits, and moods, as several researchers have found that the affect-congruent effects are not always apparent (e.g. Dalgleish, Taghavi, Neshat-Doost, Moradi, Canterbury, & Yule, 2003; Isen & Shalker, 1982; Kverno, 2000; Mathews & Milroy, 1994; Rusting & Larsen, 1998). For example, in their first experiment Rusting and Larsen (1998) found trait-congruent processing for extraversion on reaction time tasks, error tests, and recall tests, but not on a word-completion test. Neuroticism predicted results on word-completion test, and the error test, but did not predict the results on the reaction time test nor on the recall test. Matthews and Milroy (1994) used a lexical decision-making task to test their prediction that trait-congruent processing would occur whereby anxious subjects would make faster decisions for anxious threatening words than non-anxious subjects. However, the predicted effect did not occur. In the Isen and Shalker (1982) experiment described above, participants who were placed in a positive mood by being told that they had passed a test did not show mood congruency in the ratings of slides.
Rusting (1998) noted that this inconsistency in results can be found across the whole body of research in traits and mood congruency. Her comprehensive review of the research on the relationships between personality traits, moods, and cognitive processing summarized a number of possible reasons why consistency had not been found in the affect and cognition research. For example, she suggested that subjects in negative moods might use mood regulation strategies such as accessing positive information, thereby reducing the effect of the negative mood. She also cited statistical and methodological weaknesses, such as insufficient statistical power due to small sample size. Rusting also felt that the failure to match the specificity of mood state with the specificity of the processing cues used (e.g., using an anxious mood induction with materials that are about anxiety, and not simply general negative mood), could also be a factor in this issue.

Rusting (1998) also suggested that such inconsistencies could be due in part to the separation of mood and trait effects in research designs. She argued that not only did both traits and mood states predict biases in cognitive processing, but she also pointed out that the strong relationship that has been reported between traits and mood states that are similar in affective tone meant that both traits and mood states should be considered together whenever their effects on cognitive biases were under consideration. In reality, one’s current mood state always exists in the context of one’s more longstanding personality dispositions. Support for Rusting’s argument can be gleaned from a number of reviews and experiments. For example, Williams, Mathews, and MacLeod (1996), in a review of the testing for cognitive biases in psychopathology using the Stroop task, while noting that subjects’ trait scores tended to bring about trait-congruent processing in attention, suggested that “trait differences require some activation by current emotion or
circumstances to show the disruption [on the Stroop task]” (p. 7). MacLeod and Mathews (1988) conducted an experiment with medical students to examine whether they could separate the effects of trait anxiety from the effects of state anxiety on a dot probe task testing for attention to threatening words. State anxiety was manipulated by testing students at twelve weeks and again at one week before an important examination. Based on their findings the researchers concluded that trait anxiety alone best accounted for attentional bias to generally threatening stimuli. However, for threat stimuli that was specifically related to the examination, their results suggested that “attentional bias in response to currently relevant stress-related stimuli may be associated with neither state nor trait anxiety alone, but with some interactive function involving both factors” (p. 666)

Proposed methods for addressing these inconsistencies

Given findings such as those of Watson and Clarke (1992) about the strong relationship between affective traits and mood states, Rusting’s (1998) argument seems strong. She noted two frameworks by which the effect of both trait and state could be considered at the same time. These frameworks are the moderation and mediation frameworks.

The moderation approach includes an analysis of traits and mood measures together by testing for interaction effects and there is some evidence that such relationships exist between the two variables. Rusting (1999) induced positive or negative moods in undergraduate student participants. They were later asked to do homophone, story-completion and memory tasks. Rusting found evidence for interaction effects between mood and the traits of extraversion and neuroticism and positive affectivity and negative affectivity across a number of memory and evaluative judgment tasks. For
example, she found that subjects who scored high on positive affectivity and who were also in a positive mood were more likely to have greater recall for positive words than those who were in a negative mood at the time. Those who were rated as high on neuroticism or negative affectivity, and who were also in a negative mood were able to recall more negative words, wrote more negative stories, and gave more negative meanings to homophones when compared to those in this group who were not in a negative mood. However, she noted that this study did not test for a relationship by using a second framework which would examine whether the effects of personality traits on the cognitive tasks could have been mediated by mood states.

It is this second framework that the current study will use to examine affect-congruent processing. First, because traits and moods might affect cognition by using the same kind of associative network and because they are so highly correlated, it would seem logical that the two should be considered in a model that measures their shared effects on judgment. Because it is assumed that, as the more stable factor, traits influence the temporary mood states, and it is known that mood states influences cognitive processing, then it is possible that the effect of traits on cognitive processes could actually be routed through one’s current mood state. Such an indirect effect of trait on cognition by way of mood demonstrates the mediation framework.

Baron and Kenny (1986) provide a thorough explanation of the concept of mediation. Mediation is said to occur if the causal or predictive relationship from one variable to another is directed through a third variable. This can be described more clearly in the context of the study at hand. Thus far, the literature reviewed has shown that both personality traits and mood states predict judgment biases directly. However, it
is possible that mood acts as a mediator of this relationship as follows: traits lead to the experience of a related mood, which then affects cognitive processing. It should be noted that the mediation framework assumes a number of causal relationships as follows: from trait to mood state; from trait to judgment; and, from mood state to judgment. If mood does act as a mediator, then this could help to reduce the degree of determinism that is implied by a direct effect of traits on judgment.

The early evidence for the mediating role of mood in the relationship between traits and cognitive processing is mixed. Weis and Lovejoy (2002) examined the role of mood states and traits in evaluative judgment by looking at the ratings that low socio-economic status mothers, drawn from a community sample, gave to their interactions with their children. They were guided by the view that emotionally congruent processing would be more likely to occur where the cognitive task required more substantive processing, especially where complex tasks were carried out in situations that held personal significance for the participants. Hence they created an experimental environment to reflect the realities of parent-child interactions on the premise that such interactions affected the mother’s mood state. In the low stress, play condition mothers simply played with their children. This was expected to lead to positive mother-child interactions. In the high stress, task condition mothers were required to perform a task while in a room with the child and several advanced toys. This was intended to lead to a conflict in the mother’s attention and therefore to lead to negative parent-child interactions. Weis and Lovejoy’s subjects were rated on a number of measures including trait affect, mood state, and the mother’s evaluations of the child’s behavior and of the parent-child interaction. Results were mixed, but there was some evidence to support a
role for mood state as a mediator between trait affect and the mothers' ratings of their interactions with their children. In the play condition they found that positive maternal mood mediated the relationship between the mothers' trait levels of positive affect and their reports of child behavior, and also between the mothers' trait levels of affect and their evaluations of the parent-child interaction for supportive/engaged behavior. In the task condition negative maternal mood was found to mediate the relationship between trait levels of negative maternal affect on mothers' reports of negative behavior by the child. They also found that the positive maternal mood partially mediated the effect of trait levels of positive maternal affect on their ratings supportive/engaged interactive behaviors. However, in both the play and the task groups, negative mood was found to be the sole predictor of mothers' reports of hostile coercive behavior.

Other researchers have found no evidence in support of a mediation framework. For example, Rusting and Larsen (1998), as noted earlier, found trait congruency for extraversion and neuroticism on three cognitive tasks. However, they found that these relationships were direct, and were not mediated by the mood states of the participants.

Zelinski and Larsen's (2002) tested for mediation in the effects of traits on predictive judgments, but their results did not support the view of a mediating role for mood states. A composite measure of affect-related traits was created to provide a strong measure of extraversion and neuroticism, including the use of Eysenck's factors and of several other measures that were considered to be strong contributors to the two traits dimensions. In the first of their studies, participants' natural mood states were measured and they were asked simply to rate the likelihood of future events using a Likert-type scale. Zelinski and Larsen found that the positive trait and positive mood each predicted
increased likelihood ratings for positive events. However, the effects of traits were not mediated by mood. In their second study they induced mood in an attempt to create a stronger mood effect and thus to increase the possibility of findings for mediation. They induced happy, sad, fearful, and neutral moods in participants using a within-subject manipulation. They found that negative trait and positive trait affect again showed a direct, positive relationship with the ratings of patterns of likelihood items and that this relationship was not mediated by mood states.

The current study

The inconsistency of the results in looking at affect and cognitive processing, and the dearth in the literature of studies looking at mediation suggests that there is room for further testing of this model. Furthermore, as suggested by Rusting (1998) mediation is implied by the mood-congruent effects found in natural mood studies; any mood state found in such experiments is likely to be reflecting the effects of the related affective traits. If the trait is leading to the experience of the natural mood state, and then if that mood state influences judgment, then that would be a mediation effect. This could mean that studies of natural mood that have found mood-congruent effect could be indirectly testing an effect of trait.

Other studies imply that mediation could be occurring. For example, MacLeod and Rutherford (1992) tested high and low trait anxious students at times in the semester when their state anxiety was high (during an examination period) and when there state anxiety was low (at the beginning of the semester). Using an emotional Stroop task, they tested these subjects for their attention to negative examination-related words. They found that at the time of low state anxiety, attention to negative words was equal.
However, when state anxiety was high, only the high trait anxious subjects showed increased attention to the negative words. Although they found evidence for an interactive effect, these results could as easily suggest that state anxiety acted as a mediator since their results show that when state anxiety was increased and trait anxiety was high, then an affect-congruent effect for trait anxiety was found.

There are a number of reasons why a mediating role for mood might not have been found in existing studies. Zelinski and Larsen (2002) noted that it was not possible for mediation to be found in Study 2 of their experiment because the necessary relationships from trait to mood for the positive mood condition, and from mood state to judgment for the negative condition mood were not found. A study that is designed to maximize the likelihood of finding the necessary correlations might allow one to test successfully for mediation. Zelinski and Larsen make no speculation as to why these linkages, already found in other experiments, should fail in this case. Perhaps one explanation for this could be the within-subjects manipulation that was used for the mood induction. Each subject underwent, in succession, mood inductions for sadness, fear, and neutral and positive moods; although the differences between each group on their self-report of positive and negative moods differed significantly, it is possible that even stronger moods could have been obtained if subjects were not required to experience a number of moods in rapid succession. The experience of stronger moods might increase the chances of finding stronger, more consistent relationships between traits and moods, and between moods and judgment.

Additionally, it is possible that making the testing situation more personally relevant to the participants might increase the likelihood of affect-congruent processing
taking place, as noted by Weis and Lovejoy (2002). For example, with college students, a mood induction task that includes materials that are specific to the life of undergraduate students, and the use of self-referent judgment items that focus on concerns that may be of interest to students could help to increase the relevance of the testing situation, even though the mood experience would still take place in a laboratory setting.

Zelinski and Larsen (2002) suggested that there is merit in investigating narrower traits for expanding our knowledge of trait and mood effects. Berenbaum, Fujita, and Pfennig (1995) showed that the study of specific negative emotions provided more information about cognitive styles than simply looking at broader conceptualizations of negative emotions. Also, based on Rusting's (1998) observation that a closer matching of the moods included and the test cues used could lead to greater consistency in finding mood-congruency effects, it is possible that a closer matching of the trait and mood measures could also have a similar influence. Also noted above, understanding predictive judgments may have special implications for understanding anxiety disorders. Hence, this experiment focused on the specific trait of anxiety and anxious mood measures, and these were measured using one instrument, the State-Trait Anxiety Inventory (STAI).

In differentiating between trait and state anxiety, Spielberger, Goruch, Lushene, Vagg, and Jacobs (1983) noted that anxiety emotional states “are characterized by subjective feelings of tension, apprehension, nervousness, and worry and by arousal of the autonomic nervous system” (p. 1). Trait anxiety is described as “relatively stable individual differences in anxiety-proneness, that is, to differences between people in the tendency to perceive stressful situations as dangerous or threatening and to respond to such situations with elevations in the intensity of their state anxiety (S-Anxiety) reaction”
Spielberger also notes that the stronger an individual’s level of trait anxiety, the more likely that individual is to experience state anxiety in situations they see as threatening. An examination of trait and state anxiety might be able to reveal more about cognitive processing in those who suffer from momentary anxiety and those who suffer from anxiety disorders (Barlow, 2002; Williams, Watts, MacLeod, & Mathews, 1997).

As noted earlier, there are also mental health implications for people who may be in positive moods or have positive traits. The experience of positive moods reduces self-focused attention and can lead to a cycle of broadminded coping, which are both correlates of good mental health (Frederickson, 2002; Frederickson & Joiner, 2002). It would therefore be interesting to investigate how traits and moods that contribute to an individual’s emotional well-being impact the way that people make predictive judgments. It has already been reported earlier that affect-congruent cognitive biases have been found for positive traits and positive mood. Hence that might suggest that people who are generally emotionally healthy reflect that in their judgments. However, the main question to be considered here is whether such processing occurs through a mediation framework. Given the dearth of research on specific positive traits and moods, it was decided that a measure of subjective well-being and happy mood will be done using measures of trait positive affect and state positive affect, respectively.

Subjective well-being (SWB) is often referred to as happiness over the long term, and it is also associated with good mental health. Diener, Suh, and Oishi (c. 1997) proposed that, in an affective sense, high SWB could be described as the frequent experience of joy, the infrequent experience of unpleasant emotions, and the experience of life satisfaction. On the other hand, they characterize a person with low SWB as
experiencing little joy or satisfaction with life, as well as often having feelings of negative emotions such as anxiety or anger. Costa and McCrae (1980) also reported that SWB was associated with a balance of positive and negative affect.

Diener, Suh, Richard, and Smith (1999), however, described SWB as an overarching category under which the separate, but correlated, constructs of pleasant affect, unpleasant affect, life satisfaction, and satisfaction in specific domains could be considered. It has also been suggested that, affectively, SWB has the characteristics of both traits and states, with people showing consistency in happiness over time or situation but also reporting changed levels of current happiness in response to contextual factors (Diener, Suh, Lucas, & Smith, 1999; Stones, Hadjistavropoulos, Tuuko, & Kozma, 1995). Based on Watson and Clarke (1992), it can also be surmised that the positive and negative affect components, respectively, of SWB, contribute to its trait-like properties.

Another point of interest would be to compare how anxious people process emotionally-toned materials when compared to persons who are considered to be happy, that is, rating higher in the affective components of SWB. For example, will SWB offer a protective effect in judgment? It has already been seen that an experience of positive affect has mental health benefits in self-focused attention, and for broadminded coping (Frederickson & Joiner, 2002). It was also considered useful to test for mediation in groups with different valence of affect since assumptions should not be made that negative and positive affect will show parallel processes (Rusting, 1998; Watts, 1992).

Hence, the test to see whether mood mediated the effect of traits on judgment was carried out as described. Using trait positive affect as a measure of SWB, a trait anxiety measure, state positive affect as a measure of happy mood, and a state anxiety measure,
several predictions were made. The main prediction was that trait-congruent processing for judgment will occur, as measured by ratings on likelihood judgment items, and that these effects would be mediated by mood. In order for this to be tested a number of predictive relationships would have to be established between personality, mood and traits. First, personality traits should predict mood states. That is, in response to the relevant mood inductions people who are high in trait positive affect will experience more happy moods, and those who are high in trait anxiety will experience more state anxiety. It was also expected that trait-congruent biases in judgment would be found. That is, persons who are high in trait positive affect would make more positive judgments, and those who are high in trait anxiety would make more negative judgments. Also, mood-congruent biases in judgment were expected. That is, those who are experiencing higher state positive affect would make more positive judgments as measured by higher likelihood ratings for positive future outcomes. Those who are experiencing higher state anxiety would make more negative judgments as shown by higher likelihood ratings for negatively phrased items.

Induced moods were used for this experiment. Zelinski and Larsen (2002) wondered whether the use of natural mood was too weak to permit findings for mediation and therefore induced mood in the hopes of getting a stronger mood effect and therefore a greater possibility of finding mediation. Additionally, from a theoretical point of view, one can argue that a measure of one’s natural mood level may simply be a reflection of the trait of the individual as measured at a specific point in time. However, successfully induced moods would suggest that the mood state being measured was actually a different construct to the trait being measured.
If the above relationships hold, then tests for the role of mood state as a mediator in the relationship between traits and judgment can be conducted. If the relationships between trait and mood and between mood and judgment are controlled, and the strength of the relationship between trait and judgment is significantly reduced as a result, then it can be argued that mood state acts as a mediator between traits and judgment (Baron & Kenny, 1986).

Method

Pilot study

Eleven participants took part in a pilot study for the preliminary testing of a number of proposed scenarios in order to help determine which ones might best be used. These participants were volunteers from an advanced psychology course at a mid-sized Midwestern university. All participants were Caucasian. Female participants comprised 63.34% of the pilot participants and 36.36% were male. The average age was 24.55 years, and their ages ranged from 21 to 44 years. The scenarios tested included four anxiety-related scenarios, three happiness-related scenarios, and one neutral scenario. The anxiety-related scenarios included the topics of academic difficulty, a dangerous cold and flu season, poor social relationships, and financial concerns. The happiness-related scenarios included the topics of positive academic outcome, a safer cold and flu season, and positive social relationships. The neutral scenario gave basic details about the university environs. All scenarios were related in some respect to university student populations. Five participants received only either two positive scenarios or two negative scenarios. In addition, five of the participants received the neutral scenario before receiving the positive or negative scenarios. These participants were asked to read the
scenarios and then to make predictions about the outcomes of a number of positive and negative events. These likelihood items were the same as those used in the actual study. Pilot subjects were also asked to rate each scenario on its ability to make one experience positive or negative feelings. A description of these items and the scale used to rate them are found below, and are also found in Appendix E.

For those who read the positive scenarios regarding a positive academic outcome, positive predictions were made at an average rate of 89%, and negative predictions made at an average rate of 28%; also, this scenario was rated at 68% in terms of its ability to cause happy feelings. Those who read the positive cold/flu season scenario predicted positive outcomes at a rate of 69%, predicted negative outcomes at a rate of 41%, and rated the scenario at 60% in terms of ability to cause positive feelings. For the positive social relationships scenario participants predicted positive outcomes at an average rate of 71%, predicted negative outcomes at an average rate of 45%, and rated the scenario at 58% in its ability to cause positive feelings.

In the negative scenario about a poor academic situation, participants made positive predictions at an average rate of 80%, made negative predictions at an average rate of 20%, and rated this scenario at 50% in terms of its ability to cause negative feelings. In the negative scenario involving the cold/flu season, participants predicted positive outcomes at an average rate of 46%, predicted negative outcomes at an average rate of 62%, and rated the scenario at 58% in terms of its ability to cause negative feelings. For the negative financial situation participants predicted positive outcomes at a rate of 60%, predicted negative outcomes at a rate of 47%, and rated the scenario at 38% in terms of its ability to cause negative feelings. For the negative social relationships
scenario, participants predicted positive outcomes at a rate of 71%, predicted negative outcomes at a rate of 27%, and rated the scenario at 38% in terms of its ability to cause a negative mood.

The neutral scenario was rated for its ability to cause a positive mood at an average rate of 68.4%, and rated for its ability to cause negative mood at 21%.

It should be noted that wide variability was found within each group of average scores. Since there was no clear favorite amongst the scenarios, and given a desire to match as carefully as possible the positive and negative scenarios in terms of themes of the scenarios, it was felt that they could all work equally well. Several subjects noted that they became aware of the purpose of the scenarios shortly after they began to read the second scenario, which suggested that the scenarios were indeed toned in the appropriate manner and contained sufficient references to emotionally laden events. However, they also felt that they were able to detect the aim of the scenarios because of their sophistication with regard to experiments, and felt that most freshman students would be unable to detect the aims of the experiments so easily. Some participants felt that the information was irrelevant for them personally, but would be of greater relevance to freshmen and those who lived on campus, or that they would have had a greater effect if they were relevant to them personally and they felt more affected by the details of the scenario. They also felt that the ability of the scenarios to induce the moods was sufficiently strong. It was suggested that “cold hard facts” be used to help strengthen the scenarios.

As a result of this it was decided to use the positive and negative academic scenarios, and the positive and negative social situations scenarios. In order to help
ensure that students could achieve the desired mood induction regardless of whether or not the scenario was of personal relevance to them, it was also decided that an imaginal procedure should be used with the scenario, and only slight changes were made to the wording of the scenarios to aid this. This imaginal procedure is described in further detail below.

**Participants**

Two hundred and thirty-two participants took part in the first part of the experiment, in which participants were told that they were completing part A of a study which was to be continued at a later time during the same semester. They were asked to complete the trait forms of the STAI and the Positive and Negative Affect Schedule – Expanded Form (PANAS-X) with instructions to record how they feel “in general”.

Participants were run in groups of up to 40 persons. All participants were contacted by telephone within three weeks after completing the first part of the study to request their participation in the second part of the study. They were randomly assigned to experimental groups.

In total, 166 participants completed both parts of the study. Of this number, two participants were deleted because they seemed to misunderstand the instructions and wrote on the judgment items sheet scores either of zero or of 100%, rather than giving a range of scores. The statistical analyses were carried out on the remaining 164 subjects, of whom 79.88% were female and 20.12% male. The average age of the participants was 18.72 years, with a range from 18 to 28 years. Of this group of participants 90.24% were Caucasian, 4.27% were African American or black, 2.44% were Asian American, 2.44% were Hispanic, and .61% did not declare ethnicity. Participants were drawn from the
subject pool of the psychology department of a mid-sized Midwestern university, and consisted of students taking a course in Introductory Psychology. All participants gave their informed consent to the experiment, and were told that their participation in the study was voluntary. They received course credit in exchange for their participation. 

Materials

In part A of the study, participants were asked first to complete the T-Anxiety scale (STAI Form Y2) and then the PANAS-X. In the second part of the study two scenarios per mood induction group in typewritten form were used. Each scenario ranged from 312 to 396 words in length. The scenario told the experience of university students in a number of situations. The anxious mood induction (AMI) scenarios were a story about a student who could not determine his career course, and one about a lonely student who watched a TV show describing poor outcomes for students who were not sociable. The AMI scenarios are found in Appendix A. The scenarios for the happy mood induction (HMI) consisted of a story about a student who had received good grades on a paper, and a student who was watching a TV show about the social benefits of being in college. The HMI scenarios are included in Appendix B. The scenarios for the neutral mood induction (NMI) included one story about a variety of activities that students could undertake, and another describing the university and its environs. The NMI scenarios are included in Appendix C. The materials for the subjects in the no mood induction (NoMI) group are included in Appendix D. Instead of reading two scenarios, the NoMI subjects were given a sheet with fill-in-the-blanks word items, and simple arithmetic problems. The STAI Form Y1 and the PANAS-X with written instructions to say how the subjects were feeling “at the moment” were also used in this part of the experiment.
Spielberger’s (1983) State-Trait Anxiety Inventory (Form Y) was used to measure trait and state anxiety (see Appendix E). The T-Anxiety (STAI Form Y2) scale was used to measure trait anxiety and the S-Anxiety scale (STAI Form Y1) was used to measure state anxiety. Each scale consists of 20 statements to which participants were asked to respond as follows: 1 = almost never; 2 = sometimes; 3 = often; and 4 = almost always. Instructions for the T-Anxiety scale asked subjects to respond to the statements in terms of how they generally feel, while items on the S-Anxiety scale asked participants to say how they feel at present. Items on the T-Anxiety scale and the S-Anxiety scale include “I feel calm”, “I am presently worrying over possible misfortunes”, and “I am content”. The test was administered in pencil and paper format. Reliability data for college students reported in the STAI manual were based on earlier versions of the STAI, and are as follows: when normed on college students the test-retest correlations for the T-Anxiety scale ranged from .86 to .73. The test-retest reliability for the S-Anxiety scale was much lower in this group, ranging from .54 to .16. Internal consistency of the S-Anxiety scales had a median Cronbach’s coefficient of .93, while the T-Anxiety scale had a median coefficient of .90. The concurrent, convergent, divergent, and construct validity of the scales have also been established.

SWB was assessed by measuring positive affect using the PANAS-X (Watson and Clark, 1994). (See Appendix F). This instrument was used to measure SWB as a trait and happiness as a mood state. That is, to measure the stable features of positive affect over time as well as at the current point in time. The PANAS-X consists of 30 positive affect and 30 negative affect items. Participants were asked to rate their experience of each affective item on a scale ranging from 1 to 5, where 1 = very slightly or not at all, 2
= a little, 3 = moderately, 4 = quite a bit, and 5 = extremely. They were asked to rate how they feel “at the present moment” in order to obtain a measure of mood state. They were asked how they feel “in general” for the SWB measure. Items in the positive affect scale included “excited” and “inspired”. The PANAS-X was administered in pencil and paper format. Out of all the items administered only 10 from the positive affect scale were analyzed, those 10 being the same items that comprise the positive affect scale of the PANAS (Watson, Clark, & Tellegen, 1988). This is appropriate as Watson and Clark (1994) state that researchers can select from the PANAS-X the scales that are most relevant to the research at hand. However, they gave no specific instruction as to how the reliability and validity of scales used in this way from the PANAS-X are to be reported. Hence, the reliability and validity measures given below are those reported for the PANAS. Internal consistency reliability ranges from .83 to .90 for the positive items. The test also has adequate factorial and external validity.

The judgment task required participants to complete a sheet with the likelihood judgment items. This consisted of 16 items in total, eight of which predicted positive outcomes, and eight of which predicted negative outcomes (see Appendix G). The likelihood judgment items were generated by the researcher, who aimed to include items that would be seen as relevant to the lives of freshman university students. The questions were arranged in random order. The positive judgment items included statements such as “You will find a great job as soon as you finish school” and “you will have a great college experience overall”. Negative judgment items included “you will lag behind your peers in finding a job” and “you will break up with a close college friend”. Instructions
were also typewritten on this sheet asking subjects to rate the chances of the occurrence of each event using a rating scale from 0% to 100%.

Design and Procedure

In the first part of the experiment students were run in groups of up to 40 persons per sitting over a period of two and a half weeks. Participants were welcomed to the experiment and were told that they would be asked to complete two questionnaires that would ask them to rate how they see themselves, and that this was the first part of a two part study. They were also informed that their participation in the experiment was voluntary and that they could withdraw at any time. They then signed the informed consent forms, and completed demographic information forms. These are included in Appendix H. Subjects then completed the STAI-Y2 and trait version of the PANAS-X.

After completion, subjects were reminded that there was a second part to the experiment. They were told that “because of some limitations in the study” all of them might not be able to go forward to the second part of the experiment, but that it was possible that all of them, and at least most of them, would be able to go forward to the second part of the experiment. This was said to ensure that any student who scored very high on both the STAI-Y2 and the PANAS-X positive affect scale could be eliminated from the second part of the study without having them feel that they were eliminated because of a deficiency in their scores. However, all participants who took part in the first part of the study and wished to take part in the second part of the study were able to do so. They were told that they would be contacted shortly to arrange for participation in the second part of the study.
In the second part of the experiment, subjects were run in 15 sessions over a two-week period, and were randomly assigned to one of the four mood induction groups. Forty-six participants were in the AMI group, 43 were in the HMI group, 41 were in the NMI group, and 34 were run in the NoMI group. Both the NMI group and the NoMI group acted as control groups. The NMI group was intended to show results for a group who did not have a positively or negatively valenced mood. The NoMI group was included so as to aid the determination of whether any mood changes seen were due to mood induction or simply to cognitive processing.

In the second part of the study subjects were asked to sit with at least one seat space between themselves and the person seated next to them. This was done to encourage subjects to answer questions as honestly as possible without the concern of being observed. Subjects were told that the second part of the experiment would involve reading some stories about everyday situations in the lives of students, and that they would then be asked to fill out some related questionnaires. The mood induction used was an imaginal type, and subjects were asked to get into the mood of the story as they read it. The instructions given were as follows, and are loosely based on those used in Larsen and Ketelaar (1991) and Zelinski and Larsen (2002):

Today we will read some scenarios that involve looking at things that students experience in their everyday lives; these are things that students typically encounter. I want to see what you think about these situations. I will ask you to read a few of these scenarios, and then I will ask you some questions related to the scenarios. Since I am going to ask you some questions related to the scenarios, if you actually try to get into the feeling of this story as you read and
imagine it, then that might be more helpful when it is time to answer the questions. So, “read the scenarios and imagine the situations as vividly as you can. Imagine the events happening to you. Think the thoughts you would actually think in these situations. Let yourself react as though you were actually there. Get into the feeling of the story.” (Larsen & Ketelaar, 1991)

This type of mood induction has been reported as being used successfully to induce a variety of moods (e.g. Gerrards-Hesse, Spies, & Hesse, 1994; Larsen & Ketelaar, 1991; Zelinski & Larsen, 2002). Furthermore, there is no indication that running the participants in larger groups should be detrimental to the mood induction, as group mood inductions have been carried out successfully before (Sinclair, Enzle, Borkovec, and Cumbleton, 1994). Afterwards, participants were given the STAI-Y1 and the PANAS-X for completion, in order to measure their current mood state. The order in which these scales were given was counterbalanced across the groups. After completion of the mood states scales, subjects were handed the likelihood items sheet. After all the subjects had completed the judgment items, all materials were collected. The subjects were then debriefed and told the purpose of the study. The debriefing statement is included in Appendix I. When polled, all participants said that they were unaware of the purposes of the study.

Results

Results are provided for four groups of participants. Descriptives are provided in Table 1.
Validity of the mood induction

In order to test effectiveness of the mood induction procedures the means and confidence intervals in each group of participants were compared. Means and confidence intervals of the state anxiety scores for all groups of subjects are reported in Table 2. It was found that the means and standard deviations of state anxiety in the AMI, HMI, NMI and NoMI groups were 41.95 and 13.17, 35.84 and 9.94, 36.36 and 13.68, and 39.57 and 9.48, respectively. A comparison of the confidence intervals of the mean score of each group shows that these differences were not significant. Consequently, it may be concluded that the AMI was not valid.

The means and confidence intervals of the happy mood scores for all groups of subjects are reported in Table 3. The means and standard deviations for the AMI, HMI, NMI, and NoMI groups were 25.22 and 7.81, 28.86 and 6.69, 26.65 and 7.61, and 26.90 and 7.93, respectively. A comparison of the confidence intervals of the mean score of each group shows that these differences were not significant. Consequently, it may be concluded that the HMI was not valid.

Zero-order correlations

The main hypothesis being tested was that mood state acts as a mediator between affective traits and judgments, and this was based on the relationships discussed earlier about positive relationships between traits and mood states, traits and judgment, and mood states and judgment. Hence, correlations between the anxiety measures and negative judgment items and between the positive affect measures and the positive judgment items are reported below. In order to examine the strength of the relationship
between pairs of variables, $F$ tests were also conducted for those pairs of variables reported below that were found to have significant correlations.

**Anxious mood induction group.** Table 4 reports the correlations found in the AMI group. It was expected that those with higher levels of trait anxiety would also experience higher levels of state anxiety and be more likely to predict negative outcomes. It was also predicted that those higher in state anxiety in this group would make more negative predictions. As predicted, it was found that the higher the participants’ trait anxiety, the greater was their anxious mood, $r(44) = .37, p < .05$. Trait anxiety accounted for 14% of the variation seen in state anxiety, $F(1, 43) = 7.00, p < .01$. Similarly, the higher the trait anxiety of the participants, the more they predicted negative outcomes, $r(44) = .48, p < .05$. Trait anxiety predicted 15% of the variation in the prediction of negative outcomes, $F(1, 43) = 12.86, p < .01$. However, running counter to predictions, there was no significant relationship found between state anxiety and the negative judgment items in the AMI group.

Since it was found that the mood induction was not successful, it was decided that the correlations on the positive items should also be reported. It was found that the higher the trait positive affect of the participants, the higher was their positive mood, $r(44) = .39, p < .01$. Trait anxiety predicted 13% of the variance in state positive affect, $F(1, 43) = 7.73, p < .01$. However, there was no significant relationship found between trait positive affect and the positive judgment items, nor between state positive affect and the positive judgment items.

**Happy mood induction group.** Correlations for the HMI group are reported in Table 5. In the HMI group it was expected that participants’ trait positive affect would
predict their current level of affect as well as the tendency to predict more positive outcomes. It was also predicted that positive state affect would predict a tendency to predict positive outcomes. It was found that the greater the participants' trait positive affect, the higher was their experience of state positive affect, \( r(41) = .48, p < .01 \). Trait positive affect predicted 23% of the variance in state positive affect, \( F(1, 41) = 12.11, p < .01 \). Also the higher their trait positive affect, the more they predicted positive outcomes, \( r(41) = .65, p < .01 \). Trait positive affect predicted 43% of the variance in the prediction of positive outcomes, \( F(1, 41) = 30.39, p < .001 \). It was also found that the higher their state positive affect, the more they predicted positive outcomes, \( r(41) = .41, p < .01 \). State positive affect predicted 17% of the variance in the prediction of positive outcomes, \( F(1, 41) = 8.29, p < .01 \). Hence, all of the predicted outcomes for correlations in the HMI group were found.

Since the happy mood induction was deemed to be invalid, it was decided that the anxiety measures should also be tested in this group. It was found that there were no significant relationships between trait anxiety and state anxiety, trait anxiety and negative judgment items, or between state anxiety and negative judgment items.

Neutral mood induction group. Since the NMI group was intended to serve partly as a comparison group for both the AMI and HMI groups, both the anxiety-related and happiness-related correlations are reported for this group. These correlations are reported in Table 6. In the NMI group, it was found that the higher the trait anxiety of participants the greater was their state anxiety, \( r(32) = .58, p < .01 \) as was predicted. Trait anxiety accounted for 34% of the variance in state anxiety, \( F(1, 32) = 16.24, p < .01 \). Unexpectedly, there was no significant relationship between trait anxiety and prediction
of negative outcomes, and none between anxious mood and prediction of negative outcomes. In this group it was also found that the higher the trait positive affect of the participants, the higher was their state positive affect, $r(32) = .57, p < .01$. This was the predicted result. Trait positive affect accounted for 32% of the variance in state positive affect, $F(1, 32) = 15.05, p < .01$. However, there was no significant relationship between trait positive affect and the prediction of positive outcomes, and none between state positive affect and the prediction of positive outcomes.

**No Mood Induction group.** As in the NMI group, correlations were conducted in the NoMI group between both the anxiety-related items and the happiness-related items. These correlations are reported in Table 7. In keeping with the predictions in the NoMI group it was found that the higher the trait anxiety of participants, the greater was their experience of state anxiety, $r(40) = .51, p < .05$. Trait anxiety predicted 26% of the variance in state anxiety, $F(1, 40) = 14.00, p < .01$. However, unexpectedly, there was no significant relationship found between trait anxiety and the prediction of negative outcomes, nor between state anxiety and the prediction of negative outcomes. Also, as predicted, it was found that those who had higher trait positive affect also experienced higher levels of state positive affect, $r(40) = .38, p < .05$. Trait positive affect predicted 14% of the variance in state positive affect, $F(1, 40) = 6.57, p < .05$. Also, the higher the trait positive affect of the participants, the more they predicted positive outcomes, $r(40) = .45, p < .01$. Trait positive affect predicted 20% of the variance in the prediction of positive outcomes, $F(1, 40) = 10.09, p < .01$. However, there was no significant relationship found between state positive affect and the prediction of positive outcomes.
Testing for mediation

In the positive mood induction group above it was found that there was a relationship between trait positive affect and the performance on the judgment items. This relationship might be direct. However, it is also possible that the relationship was mediated by the happy mood that the participants experienced at the time they completed the judgment items. According to Baron and Kenny (1983) in order to test for mediation in this experiment the following requirements must be met: (1) The trait measure must predict the mood state; (2) the trait measure must predict the outcome on the judgment items; (3) the mood state must predict the outcome on the judgment items in a regression equation in which the trait measure is also included; and, (4) the trait measure in the third equation must be smaller than that of the trait measure in the second equation. It should be noted that for equations (1) and (2) the coefficients, $\beta_x$, of each predictor variable would be the same as the correlations found above for the relationships between trait and mood state, and between trait and the performance on the judgment items, respectively. Hence, a regression analysis for equation (3) only was conducted. Additionally, since the correlations on which the premise of testing for mediation is based were found among trait, mood state, and judgments only in the HMI group, testing for mediation was conducted for this group only.

A multiple regression analysis was conducted to examine how trait positive affect and state positive affect predicted the outcome on the positive judgment items. Results show that trait positive affect and state positive affect together predicted 43% of the variance in answers on the positive judgment items, $F(2, 40) = 15.60, p < .001$. Trait positive affect accounted for 59% of this variance, $p < .001$. However, state positive
affect was not a significant predictor of the variance in this equation. As noted above, a requirement for mediation is that state positive affect be a significant predictor of positive judgments in the multiple regression equation (3). Hence, there was no evidence found for mediation in the HMI group. This is demonstrated in Figure 1, where the numbers in parentheses are the beta values obtained from the multiple regression analysis that included both trait positive affect and state positive affect as predictors of judgment on the positive likelihood items.

Discussion

The main focus of this experiment was to see whether there is evidence that the relationship between traits and judgment is mediated by the current mood state of the participant, which is one of the frameworks for considering the effects of affective factors on cognitive processing (Rusting, 1998; Rusting 1999; Weis & Lovejoy, 2002; Zelinski & Larsen, 2002). This model assumes that predictive relationships will be found between the traits and mood, traits and judgment, and mood and judgments, thereby enabling a test for mood as a mediator in the relationship between traits and judgment. Hence correlations for each of these relationships were examined.

Generally, it was found that the relationships from trait to mood state were as predicted, and match the findings of Watson and Clark (1992). Those in the AMI, NMI and NoMI groups who reported higher levels of trait anxiety were also more likely to experience more anxious mood than those who had lower levels of trait anxiety. In addition, those in the AMI, HMI, NMI, and NoMI groups who had higher levels of SWB, as measured by trait positive affect, reported being in a happier mood than those who had
lower levels of trait positive affect. It was only in the HMI group that the expected relationship between trait anxiety and state anxiety was not found.

With regard to the relationship between traits and judgment, the findings were not consistent. In the AMI group, those who reported higher levels of trait anxiety also showed a bias towards making more negative predictions. In both the HMI and the NoMI groups, those who had higher levels of SWB showed a bias towards predicting more positive outcomes. This is consistent with findings for a trait-congruent bias in cognitive processing for both broader and narrower traits, both on non-judgment tasks and on judgment tasks (e.g., Butler & Mathews, 1987; Mathews, Richards, & Eysenck, 1989; Richards & French, 1992; Rogers & Revelle, 1998; Ruiz-Caballero & Bermudez, 1995). However, no further evidence was found for a trait-congruent bias in judgment in the groups.

Finally, it was only in the HMI group that a relationship was found between mood state and judgment, where those in happier moods tended to make more positive predictions. This is in keeping with previous findings such as those by Johnson and Tversky (1983) and Wright and Bower (1992).

The test for mediation could be conducted only on the HMI group, and it showed that mediation did not occur in this group. This suggests that the relationship between SWB and the prediction of positive outcomes is direct, even when one accounts for the current mood of the participant. In other studies testing for mediation, similar results have also been found. For example, Rusting and Larsen (1998) found evidence for a direct relationship between for positive affective traits and the judgment of ambiguous items,
recall and reaction time tests (Rusting & Larsen, 1998), and in the relationship between positive traits and judgment (Zelinski & Larsen, 2002).

That the above finding fails to provide support for mediation is reinforced by the significant and direct relationship found between SWB and judgment for the positive judgment items in the NoMI group, even in the absence of a significant relationship between state positive affect and judgment on these items. A similar finding for a direct relationship between trait anxiety and judgment in the AMI group adds to this view that the relationship from trait to judgment is direct.

Given that Bower's (1981, 1987) associative network theory has been used to explain trait-congruent processing it is tempting to conclude that the findings for a direct effect of traits on judgment provides support for Bower’s theory. However, these findings must be taken in context. First, it was in fewer than half of the tests done between trait and judgment that trait-congruent processing occurred. Even more telling is the lack of significant findings for a mood-congruent effect on judgment, as predicted by his theory. This means that Bower’s associative network theory might not be adequate to explain fully the relationship between moods and judgment, even though mood congruency is expected based on his theory. It was only in the HMI group that mood predicted judgment, and it is therefore only the results from this group that supports Bower’s theory. Since the use of his theory to explain trait-congruency was based on an assumed similarity between the associative networks used for moods and traits (Rusting, 1998; Rusting & Larsen, 1998), a consistent failure to find mood congruency should make one more hesitant to explain trait congruency by using Bower’s theory.
However, it should be noted that when Bower first tested his theory (1981) he used hypnotically induced mood. His discussions of the associative network theory, both in his 1981 and 1987 articles, seem to imply a reliance on the arousal of emotions for the spreading activation to take place among themes and thought that are related to the emotion. However, in the present experiment there was no arousal of emotion of either positive or negative valence, since the mood measures for the AMI and HMI groups did not differ from the moods of those in the NMI and NoMI groups. Perhaps the fact that all subjects were, essentially, in a neutral mood may have led to the inconsistency in the results for mood congruency in judgment. Also, if as suggested by Rusting (1998) and Rusting and Larsen (1998) that trait-congruent processing also occurs by a process of spreading activation, and this through the activation of affective states, then the failure to induce happy and anxious moods could also explain why there was also inconsistency in trait-congruency results for judgment.

The strong relationship between traits and moods is consistent with the findings of Watson and Clarke (1992) that affective traits are closely related to affective states, both for specific traits and states, as shown by the results with anxiety, as well as for the broader affective trait and state positive affect. Hence, it can be concluded that there is a tendency to experience a given mood state if one also has a high level of an affectively related trait.

It should be noted, however, that the failure of the mood induction procedure disallows the interpretation that having certain affective traits makes one more susceptible to being induced into a certain mood, because there was little statistical difference between the groups on their mood states after the mood induction. In fact, it
can be argued that any state effects seen could simply be a reflection of trait affect measured at a specific point in time, and not truly be an independent mood state. However, perhaps cautious interpretations can still be made about the relationships involving mood. Because the mood scores showed no significant difference across groups, and were all similar to the NoMI group, it could be argued that participants were close to their natural mood states. As noted by Rusting and Larsen (1998) this might reflect more accurately the typical affective experiences of these participants, and permit inferences to be made about such experiences as opposed to when they experience moods which have a strong valence.

It was only in the HMI group where testing was conducted for mediation. What could account for the failure to find mediation in this group? It is possible that mediation is not a framework that is useful for understanding the relationship between traits and judgment. However, this would be a premature conclusion since there has been insufficient testing done to date using this framework. Additionally, Weis and Lovejoy (2002) found a mediating role for mood in the relationship between mothers’ traits and their ratings of their interactions with their children. Hence, other possible explanations should be explored. One explanation could be that Weis and Lovejoy’s experiment very closely approximated the relevance and reality of daily living and, as they pointed out, the use of a personally relevant situation may have made affect congruent processing more likely to occur. So, compared to a laboratory situation, it is possible that Weis and Lovejoy’s experiment made it more likely to find the required correlational linkages necessary to test for mediation.
Another possible reason for the failure to find the expected predictive relationships can be found from a review of the strength of the predictive relationships between the pairs of traits and moods, moods and judgments, and traits and judgments. These show that only a small, although significant, proportion of the variance in one item in the above pairs of variables is predicted by the other variable. For example, in the HMI group trait positive affect predicted 23% of the variance in state positive affect and 43% of the variance in judgment for the positive judgment items. State positive affect predicted only 17% of the variance in judgment on the positive judgment items. Hence, based on these results the relationship from mood state to judgment and, to a lesser extent from trait to judgment, could be affected by other factors. That is, there may be other factors that were unaccounted for in this experiment that predict a significant portion of the results, and that may act as strong influences on the results. These factors might also partly account for some of the unexpected inconsistency found in the correlations in the current experiment.

Perhaps the induced mood needs to be very strong so that it can be sufficiently large and a significant predictor of judgment in order to permit mediation to occur. The failure to achieve induced moods led to no difference in the AMI and HMI groups in the state affect measure above those of the NMI and NoMI groups. This also could have resulted in weaker than possible correlations between trait and moods, and moods and judgment. It is possible that mediation will only be found if current mood states are significantly higher or lower than usual.

Another important factor to consider is that, although positive and negative affective traits are often touted as related, but independent, factors (e.g. Watson & Clarke,
1992) the findings in the correlations analysis present some questions about how much the relatedness of the traits and moods influence each other and, thereby, how much they impact on the possibility of finding mediation. The correlations shown in Tables 4 to 7 show that trait anxiety and trait positive affect, trait anxiety and state positive affect, trait positive affect and state anxiety, and state positive affect and state anxiety can share significant proportions of variance. Perhaps the balance of the relationship between positive and negative traits and mood should be considered together when testing for mediation.

It was also of secondary interest to see whether there was a protective effect for positive affect. However, as there were no differences between the AMI and the HMI groups on the mood measures, and no significant differences between these groups on the predictions of negative and positive outcomes, this could not be determined.

There are a number of limitations in this study. In considering the possible reasons for the failure of the mood induction, one reason could be the failure of participants to get into the mood of the scenario as instructed. There is no way to guarantee that the subjects followed these instructions. Some participants appeared to simply scan the scenario very quickly, and perhaps did not concentrate fully on imagining them. And, although in prior work, imaginal procedures have been found to result in the expected mood induction, it is possible that subjects found these mood inductions difficult to imagine, especially since they involved characters who were hearing or seeing a report, rather than actively experiencing an event.

It is also possible that the specificity of the scenarios might have increased the difficulty of the participants in imagining themselves in the position of the character in
the scenario, which was a key factor in the mood induction procedure. For example, using a large number of specific details might have led participants away from identifying with the story, even imaginally, if they felt that the character and scenario seemed dissimilar to themselves. Perhaps the use of fewer specific details would have permitted a more active imaginal process to take place, and this could have led to greater mood differences among the four groups. Also, although mood inductions have been carried out successfully using group procedures (Sinclair, Enzle, Borkovec, and Cumbleton, 1994), working with individuals or smaller groups of people might reduce distractions to participants, and this could facilitate imagining the scenario.

Also, the similarity across all four groups on ratings for both the negative and the positive likelihood items might demonstrate ceiling effects. For example, the positive judgment items might have been highly likely for most participants and the negatively likelihood items might have been highly unlikely for most participants, thereby making it unlikely that there would be vast differences found in the likelihood judgments of the four groups, regardless of whether or not mood differences had been found.

Additionally, as mentioned above, perhaps it was unwise to try to account for the effects of a mood or trait without also taking into account the self-report of moods and traits of the opposite valence. For example, it has already been acknowledged that an assessment of SWB can involve measures of both positive and negative affect (Diener, Suh, & Oishi, c. 1997; Diener, Suh, Richard, & Smith, 1999). It is possible that a measure that considers a balance of both positive and negative affect might provide a more accurate assessment of an individual’s level of SWB and happy mood. This might improve the accuracy of any tests that are carried out to examine SWB and mood.
Perhaps future research should consider how positive and negative affect work together, both for SWB and for traits and moods such as anxiety.

Although they were few findings for a direct effect of traits on judgment, those that were found have implications for understanding cognitive biases in everyday life as well as in people with emotional disorders such as anxiety disorders. It confirms that stable factors can play an important role in decision-making, and this may have implications for mundane as well as more serious decisions.

Some of my findings also provide support for the view that longstanding personality factors might play a role in the expression of anxiety disorders, especially as far as cognitive biases and pessimistic thinking is concerned. It had been shown earlier that decisions are made based on one’s judgments (Lichstein, Slovic, Fischoff, Layman, & Combs, 1978; Nakajima & Ohta, 1989; Slovic & Monohan, 1995). The pessimistic outlook of those high in trait anxiety can affect the decisions that they make about the feared items, such as whether to avoid that object. Mediation was not observed in this experiment, and evidence was found instead for a direct role of trait anxiety on the prediction of negative outcomes. This could mean that attempts to use mood manipulation as a means of reducing the negative predictive bias in the treatment of anxiety disorders might have some limitations. At the same time, it should be recognized that this experiment was carried out with a non-clinical population, so any conclusions drawn about clinical disorders should be made with caution.

At the same time, a significant proportion of the predictions made by those who had high levels of SWB, as shown by trait positive affect, also seem to be based on stable factors rather than on mood. Although this reliance on traits for affecting mood levels and
for shaping judgment could imply that it would be difficult to change the way in which people make judgments. Watson (2002) felt that level of positive affect could be raised by a number of means, including taking a more outward looking focus, and striving for goals. Bear in mind that each of the subjects measured gave reports both for negative and positive traits and moods. Hence, even if an individual provides a report of having high negative affect and low positive affect, it might be possible to increase that person's experience of positive affect, and thereby influence his or her predictive judgments.

The fact that all the correlations required to test for mediation were found only in the HMI group suggests that there are sometimes different processes at work for positive mood and negative moods in the relationship between affect and cognition. For example, Rusting (1998) suggested that some subjects might regulate their moods so as to avoid negative feelings or to maintain positive moods. She proposed that traits related to emotion regulation should also be included in the study of affect-congruent cognitive processing. Perhaps mood regulation tendencies can be examined for their role as additional predictors in the relationships between traits, moods, and judgment.

Additionally, the current research was conducted with a non-clinical sample, and might therefore provide only limited information on predictive bias in anxiety disorders. Future research could test for a mediating role for mood states in the relationship between traits and judgment by using clinically anxious participants. Also, modifications can be made to the materials used to avoid ceiling effects in the ratings for the likelihood items. Smaller groups and less specific scenarios can be used to help improve the focus of participants to imagine themselves in the scenarios.
Finally, future research should consider that, in the same way that there are benefits for looking at specific negative traits and mood, there might be benefits for looking at specific positive traits such as joy, elation, and surprise.
References


children with depression, generalized anxiety, and posttraumatic stress disorder.

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Diener, E., Suh, E., & Oishi, S. (c. 1997). *Recent findings on subjective well-being.* Retrieved July 8, 2003 from Dr. Ed Diener’s home page at the University of Illinois at Urbana-Champaign’s website:


Rusting, C. L. (1998). Personality, mood, and cognitive processing of emotional information:


Table 1

Descriptive Properties of the Participant Groups

<table>
<thead>
<tr>
<th>Mood Induction Group</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxious Mood Induction a</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>18.56</td>
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<tr>
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<td>Negative Items Rating (%)</td>
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</tr>
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<td>Positive items Rating (%)</td>
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</tr>
<tr>
<td><strong>Happy Mood Induction b</strong></td>
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<td></td>
</tr>
<tr>
<td>Age (in years)</td>
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<td>Neutral Mood Induction Group c</td>
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<td>Age (in years)</td>
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<td>7.61</td>
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<tr>
<td>Negative Items Rating (%)</td>
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<td>18.17</td>
</tr>
<tr>
<td>Positive Items Rating (%)</td>
<td>76.06</td>
<td>12.10</td>
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<table>
<thead>
<tr>
<th>No Mood Induction d</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>18.57</td>
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<td>Trait Anxiety</td>
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<tr>
<td>Positive Items Rating (%)</td>
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<td>11.81</td>
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</table>

^a n = 45.  ^b n = 43.  ^c n = 34.  ^d n = 42.
Table 2

Means of State Anxiety by Mood Induction Procedure

<table>
<thead>
<tr>
<th>Mood Induction</th>
<th>State Anxiety Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Confidence Intervals at the 95% Level)</td>
</tr>
<tr>
<td>Anxious Mood Induction</td>
<td>41.95 (28.78, 55.11)</td>
</tr>
<tr>
<td>Happy Mood Induction</td>
<td>35.84 (25.90, 45.78)</td>
</tr>
<tr>
<td>Neutral Mood Induction</td>
<td>36.36 (22.68, 50.04)</td>
</tr>
<tr>
<td>No Mood Induction</td>
<td>39.57 (30.09, 49.047)</td>
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</table>
Table 3

Means of Happy Mood by Mood Induction Procedure

<table>
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<tr>
<th>Mood Induction</th>
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<tbody>
<tr>
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<td>(Confidence Intervals at the 95% Level)</td>
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<td>Happy Mood Induction</td>
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</tr>
<tr>
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<tr>
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<td>26.90 (18.97, 34.83)</td>
</tr>
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### Table 4

**Correlations for the Anxious Mood Induction group (N = 45)**

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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Trait Anxiety</td>
<td></td>
<td>.37*</td>
<td>-.54**</td>
<td>-.22</td>
<td>.48**</td>
<td>-.27</td>
</tr>
<tr>
<td>2. State Anxiety</td>
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<td>-.04</td>
<td>-.52**</td>
<td>.26</td>
<td>-.28</td>
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<tr>
<td>3. Trait Positive Affect</td>
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<td>.39**</td>
<td>-.02</td>
<td>.14</td>
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</tr>
<tr>
<td>4. State Positive Affect</td>
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<td>.06</td>
<td>.15</td>
<td></td>
<td></td>
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<tr>
<td>5. Negative Judgment Items</td>
<td></td>
<td></td>
<td>-.27</td>
<td></td>
<td></td>
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<td>6. Positive Judgment Items</td>
<td></td>
<td></td>
<td></td>
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</table>

* p < .05. ** p < .01
Table 5

Correlations for the Happy Mood Induction Group

<table>
<thead>
<tr>
<th>Measure</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1. Trait Anxiety</td>
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<td>-.37*</td>
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**p < .01

**
Table 6

**Neutral Mood Induction Group**

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* p < .05. ** p < .01.
Table 7

No Mood Induction Group

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$p^* < .05. \quad ** p < .01.$
Figure Caption

*Figure 1.* Path analysis diagram of the relationships between trait positive affect, state positive affect, and the positive judgment items in the HMI group.

**p < .01**
Appendix A

Mood Induction Scenarios for Anxious Mood Induction

Jake waited outside his advisor’s office. Jake had some really serious problems trying to declare a major, and he had no idea what he wanted to do as a career. He was starting to feel that he was falling behind his classmates and friends, many of whom had already made these decisions. Worse yet, he was worried about making his parents angry. They were paying his fees, and they had made it pretty clear that they would be extremely disappointed if he did not choose an Accounting major. But Jake definitely did not want to do accounting. How was he going to break the news to his parents?

Jake went into the office with a frown on his face. He told his story to a very concerned-looking advisor. When Jake had finished speaking the advisor said “I wish I could tell you that you have little to be concerned about, but I can’t. The facts are that students who have had difficulty declaring their major tend to take far longer to complete their degree programs than students who know what they want to do. You might even end up with lower grades. Students like you take lots of courses they don’t need, and waste a lot of time and money. By the time you figure out what you want to do, you’ll probably realize that you need to spend an extra semester or two here to finish off the required courses. That means more money spent on school, and a delayed entry into the job market. This indecision can really hurt your chances when you apply for a job!

Frankly, if you haven’t managed to figure out what you want to do for a career, this will likely affect your employment prospects for a year or two after you leave school. So, good luck to you if you haven’t gotten yourself together yet. You’ll need it!” (316 words)
Jody sat in her room waiting for her friend to call. She wondered if she was being stood up again, and would end up spending the evening alone – as usual. She turned on the TV just in time to hear the end of a talk show about campus issues. The guest speaker was saying, “In the popular media, advice columnists and others have often suggested that it is somehow ‘natural’ to be homesick at school or to feel isolated at times. They go on to suggest that just about everybody will sooner or later ‘fit in’. Actually, the scientific literature on social relationships in college reveals a dramatically different view.

For example, young adulthood is generally the time of life when the beginning of serious disorders, including schizophrenia, is most likely to occur. Further evidence suggests that the presence of these disorders may be associated with a difficulty in individuals who do not seem to be interested in mingling with others to the same extent as other college students do. Social isolation may be giving early signs of the onset of serious psychological problems, including anxiety disorders, depression, or suicidal tendencies.

In addition, studies have shown repeatedly that less popular or attractive people who have smaller groups of friends receive fewer job offers than do more socially-skilled people. In addition, socially awkward people who do not make friends easily generally earn less, and they report lower levels of satisfaction with their jobs compared to their more outgoing peers.

Finally, for people who experience difficulty fitting in, there are implications for mate selection and marital satisfaction. The research literature has shown that such people are more likely to be rejected by others as a suitable mate. With the resulting limitations in the number of people who want them, such social misfits are more likely to be “on the outside looking in” in our couples oriented society.

In conclusion, there are important patterns of social activity, belongingness, and acceptance that are established during the college years, and if you are a student, they will stay with you for the rest of your life. If you feel “isolated” at times, that could be a signal for a host of difficulties to come.”

Jody sat there quiet and worried. She thought, “That sounds like me.” (381 words)
Appendix B

Mood Induction Scenarios for Happy Mood Induction

Kelly had just finished her assignment, and she was feeling really good about it. She knew that it was a good paper. After all, she had covered the important points and it looked really professional now that it was all finished. When Kelly handed the paper to the professor, she felt almost like it was a weight lifted from her shoulders because now she was free to enjoy her weekend. The professor seemed pleasantly surprised when Kelly gave in her paper. She said, “This is great! I like it when my students submit their papers early. I am really looking forward to reading it!” Kelly thought to herself “Wow! That’s great! She’s really hard to please, but I think she’s going to like it!” During the week that went by Kelly felt more comfortable and relaxed than usual, because she knew that the paper was a good one.

When she got her paper back she saw an A+ on the top of the sheet, and she also got some very positive feedback from the professor, who had noted the following: “Excellent job! This paper was very well-written. You expressed your main ideas very clearly, and did a good job in supporting these ideas from the readings you were assigned in class. It is obvious that you worked very hard on this assignment and, as a result, you have managed to write a paper that was a pleasure to read and grade. I can see that you have good work habits, and these will help you to be a success both at school, and in the world of work. Keep up the good work!” She had also put a sticky note on it asking Kelly for a copy to keep as an example to show to her other students. Kelly smiled as she put the paper in her bag and when [sic] to lunch. (312 words)
Mark’s friends had just called to say they were coming over. While he waited he turned on the TV, and was just in time to hear the end of a talk show about campus issues. The guest speaker was saying, “Knowledgeable writers have suggested that it is natural to be homesick at school, or to feel isolated sometimes. They go on to suggest that everybody will sooner or later “fit in”. Happily, their views appear to be right! College is a time when many people have the chance to develop new, close social relationships. Although there is sometimes a period of discomfort at first, most students eventually discover that there are others on campus with whom they get along quite well. In college, there are so many different types of people you can meet that, believe me, you will find people with whom you can identify! This can help make the college experience one of the better experiences of your life.

Just being in the social setting of college brings a number of advantages. Since you meet more people, you have a greater chance of finding a good social support group who will probably be able to help you cope with the stresses of daily living better than [sic]. Students who have these opportunities for forming friendships might enjoy better mental health in general. The increased chances for social interaction can also help you to develop good social skills. Improved social skills will make you seem more confident and attractive to others, more competitive in the world of work, increase your worth as an employee, help you enjoy your work more, and might even lead to greater career success!

College is also the place where many people find romance. The fact is that there is simply a larger group of same-age peers from whom to choose. It even benefits those who already have someone, because having healthy social development should improve your relationship.

So, there is really nothing to worry about if you sometimes feel that you don’t fit in as easily as you thought you would. Many students who have felt the same way have found out that they were able to settle in, find good friends, and enjoy the many benefits that come with college life.”

“That sounds like me”, Mark thought as he smiled and opened the door to let his friends come in. (396 words)
Appendix C
Mood Induction Scenarios for the Neutral Mood Induction

June had just arrived at [sic] university and was settling into her room. She looked over the packet of materials she had received at orientation and started to read a pamphlet about the university. It read, “Eastern Illinois University is a public university located at 600 Lincoln Avenue in Charleston Illinois. There are approximately 10,000 students. Add this to the population of Charleston, which is around 20,000, and you will see that the university is a small school in a small town. Eastern Illinois University has students from all over the world but, not surprisingly, most of the students come from Illinois and from other parts of the USA. Some of the students come from small towns, while others come from metropolitan areas like Chicago, Springfield, or St. Louis. There are fewer than 200 international students at Eastern, representing the continents of North America, South America, Asia, India, Africa, and Europe.

Eastern offers a number of programs in the following areas, including: Education, Arts, Humanities, Natural Sciences, Physical Sciences, Social Sciences, Physical Education, Business, and Music. Within each of these of these fields several majors are offered. A quick visit to Eastern’s website will give you all the information you need. Eastern also has a Graduate School, but it does not offer any doctoral programs. The University also offers a number of academic and non-academic services to students. These include academic advising, career counseling, and mental health counseling which are there to help students adjust to any difficulties at school, or to get ready for the job market. Eastern also has a continuing education program, which can be used by students who are looking for non-traditional ways to get an education. There are also a number of other groups at the university. These include Registered Student Organizations including political, religious, and professional groups. Eastern was recently ranked in the top-tier of Midwestern masters-level universities in the US News ‘Best Colleges’ rankings for this year.”

June put the pamphlet away and continued to unpack. (332 words)
Pete had just arrived at university and was settling into his room. He set up his TV and turned it on. On the student channel someone was talking about activities in which students generally took part. The speaker said, "Student life is not just about studying. There are very many of activities that students like to do. These include academic activities, but also recreational and civic activities. On the recreational side of things, some students like to party a lot, either at bars and clubs or at other people's houses. Other students prefer to spend time going to places where they can hear live music performances. The music styles they listen to include jazz, rock, blues, country, and alternative. Other students prefer to entertain themselves at home. They prefer to rent videos or DVDs. However, on occasion, such students might go out to watch a recently released movie.

Other students prefer to stay at home to watch TV shows, the news, listen to music or read a book. There are also students who choose to spend much of their time studying or doing career-related activities like researching jobs areas that they might like and applying for internships. Some students take part in more physically demanding activities, such as jogging, hiking, swimming, or playing a team sport. For some students, such activity is taken very seriously, while for others it is simply a hobby.

Some students use their time in non-recreational activities. They might volunteer their time to work with less privileged people, such as people who find it harder to make social contacts or people who have mental health difficulties. Others join political, religious, scientific or social organizations and clubs because they can work with people who have similar interests. Although some students find being with others important, there are students who prefer solitary activities, such a bird watching, taking long walks, sitting in parks, or stamp collecting."

Pete watched the show for a short while as he finished unpacking some of his boxes. Then he turned off the TV and went outside. (343 words)
Appendix D
Cognitive Tasks for the No Mood Induction Scenario

Please complete the following items

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Please complete the following task by filling in the blank spaces to form words as best as possible:

1) S__UDE_T (1 word)

2) E__TE_N ILL_N_1 S U__V_R_IT__ (3 words)

3) CH_R LES__N (1 word)

4) SHU__LE B_S (2 words)
Personality Traits, Mood and Judgment 76

5) AC_D_M_C AD_IS_ING (2 words)
6) H_A_TH SER_IC_S (2 words)
7) FR_TE_NITY (1 word)
8) F_ESHM_N (1 word)
9) SO__OMOR_ (1 word)
10) M_J_R (1 word)
11) A_ADE_MI__AD_IS_NG (2 words)
12) C_UNSELI_G CE_T_R (2 words)
13) ST_DE_T A_FA_RS (2 words)
14) FINA_CI_L A_D (2 words)
15) CAR__R PL_N_ING (2 words)
16) PANT__R CA_D (2 words)
17) C_MPU_ER L_B (2 words)
18) L_VIN_ON C_MP_S (3 words)
19) B__TH L_BR_AR_ (2 words).
20) PS_C OL_GY D_PA_TM_NT (2 words)
21) EXPE_I_ENT (1 word)
22) PR_FESSO_ (1 word)
23) GR_DES (1 word)
24) EX_MIN_TI_N (1 word)
25) AS_IGNORE (1 word)
26) RE_REA_ION (1 word)
27) UNDERG_ADU_TE CAT_LOG (2 words)
Appendix E

Permission to use the State-Trait Anxiety Inventory (Form Y)

Permission to use the State-Trait Anxiety Inventory (Form Y) was granted with the purchase by the researcher of a sampler set, a duplication set, and bulk permission for the required number of copies of the instrument. The purchase was made from the publisher, Mind Garden, Inc.
Appendix F

Permission to use the Positive and Negative Affect Schedule – Expanded Form (by electronic mail)

Dear Janice,
Yes, you have my permission to use the PANAS-X in your research.
Sincerely,

David Watson, Ph.D.
Professor of Psychology

At 3:48 AM -0600 1/23/04, cgjh2 wrote:

Dear Dr. Watson,

At the end of September last year I contacted you for permission to use the PANAS, which you gave. I also needed to obtain permission from the APA. I contacted you again by telephone shortly after that to tell you that it would take up to eight weeks for the APA permission to be obtained, and I then requested your permission to use the PANAS-X instead. You again granted your permission for its use. However, I have no hard copy of this permission, and I do require one for my records. Could you respond to this e-mail confirming your permission for my use of the PANAS-X?

Thank you for your kind assistance in this matter.

Sincerely,

Janice Harewood
Appendix G

Likelihood Judgment Items

Answer the following questions using a rating scale ranging from 0% to 100%, where 0% means that the chances are smallest, 100% means that the chances are greatest. Write your answer next to the relevant question.

What are the chances that:

1. You will meet someone at college who has severe mental health problems?
2. You will be rejected by a partner?
3. You will have fewer job offers than your peers?
4. You will have a great college experience overall?
5. You will have a satisfactory life with a partner?
6. You will find a great job as soon as you finish school?
7. You will have a successful career over your lifetime?
8. Your pay at your first job will be less than that of your peers?
9. The grade on your next assignment will be worse than expected?
10. Non-academic concerns will affect your academic performance?
11. Your academic performance will improve?
12. You will break up with a close college friend?
13. You will finish your college education successfully?
14. You will soon meet some people that you really like?
15. Others will compliment you on your social skills?
16. You will lag behind your peers in finding a job?
Appendix H
Informed Consent and Demographic Information Form

Information Summary/Consent Form

Name:
Date:
Address:

I have been informed about the procedures that I will undergo in this experiment, and
the rationale of the experiment had been explained to me. I have also been informed
that my personal identifying information gathered during the process will be kept in
strict confidence. I also understand that I can withdraw from this experiment at any
time without penalty.

________________________________________
Participant’s signature, date

________________________________________
Experimenter’s signature, date

________________________________________
Supervisor’s signature, date

Demographic Information

Experiment I.D. #:
Age:
Gender:
Ethnicity:
Appendix I
Debriefing Statement

Over the past few weeks of your involvement in this experiment you completed two sets of tests, and today you also were asked to answer some questions related to a scenario you read. I am interested in seeing how people feel when they read certain types of information that has emotional feelings involved in the story. I want to see whether your reactions or feelings to the story influence the way you answer the questions. Additionally, I wanted to see if the way you feel most of the time, not just today, is related to the way you answer the questions. So, I tested you to see how you feel most of the time, and how you feel today, and I hope to see whether that makes a difference in how you answered those questions.

During the experiment some of you might have been experiencing some feelings. Maybe some of you had some negative feelings, or some positive feelings, or maybe you felt like how you normally feel. (For those of you who feel worried or upset after reading your scenario, I want you to know that those scenarios were worst-case scenarios. Generally, any negative feelings that you may have had after reading the scenarios will quickly pass). There may also be some of you here who tend to have worried feelings most of the time. I want you to be aware that the EIU Counseling Center is available to all full-time students for talking about a variety of issues, including persistent or excessive feelings of worry.

To help me maintain the integrity of my study I respectfully ask that you do not discuss today’s experiment with others. Do you have any questions?