I, Jennifer D Trich Kremer, hereby submit this original work as part of the requirements for the degree of:

Doctor of Philosophy

in Psychology

It is entitled:

Preference for Alcohol as a Coping Mechanism in a Task-Induced Stress Situation

Student Signature: Jennifer D Trich Kremer

This work and its defense approved by:

Committee Chair: Gerald Matthews, PhD

Giao Tran, PhD

Purcell Taylor, EdD

Jennifer D Trich Kremer
Preference for Alcohol as a Coping Mechanism in a Task-Induced Stress Situation

A dissertation submitted to the
Graduate School
Of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

In the Department of Psychology
Of the College of Arts and Sciences
by

Jennifer Trich Kremer

M.A. University of Cincinnati
June 1998

Committee Chair: G. Matthews, Ph.D.
Abstract

The purpose of this study was to assess the impact of task-induced stress on participants’ mood and to determine if alcohol would be used as a coping mechanism. Individual traits such as personality, alcohol expectancies and self-report consumption behavior were evaluated to assess their impact on participants’ use of alcohol as a coping mechanism for task-induced stress. Participants were assigned to either an easy or hard vigilance task. The tasks only differed in the level of discrimination difficulty. The expectation was that individuals in the hard condition would be placed in a heightened stress state.

The last portion of the study incorporated a taste-testing task. The purpose of this task was to assess whether or not stressed participants chose alcohol as a coping mechanism. Participants were given the option of selecting 16 oz. size unbranded alcoholic or non-alcoholic beverages to consume in a six-minute period. Participants were led to believe the alcoholic beverages provided contained alcohol, but non-alcoholic equivalents were provided for the beer and wine. Each participant provided ratings about the beverage taste, their subjective experience drinking the beverage, their guess on what the beverage was and why they selected it. Beverage selection and consumption measurements were also gathered. It was hypothesized that individuals in the stressful condition would be more likely to select alcohol in the taste-testing task. It was also hypothesized that a participant’s beverage selection would be influenced by personality, alcohol expectancies, and coping strategies.

Overall, participants experienced task-induced stress with the 16-minute vigilance task. DSSQ post-task scores for distress and some aspects of worry
increased while task engagement scores decreased. Participants in the hard vigil condition exhibited sharper decreases in task engagement than the easy condition. The only significant difference in coping strategies was for participants in the hard condition who exhibited higher levels of emotion-focused coping. None of the personality factors were significantly correlated with self-reported drinking behavior. Alcohol expectancies were positively correlated with self-reported consumption behavior. Personality was correlated with stress state and coping strategies.

Task difficulty did not significantly influence choice of alcoholic beverage. Analysis of personality data showed that psychoticism and extroversion, but not neuroticism, were related to alcoholic beverage selection. Additionally, psychoticism related to higher levels of post-task worry following performance. However, task difficulty did not moderate the effect of psychoticism on alcohol choice. In the current experimental paradigm, personality factors were the strongest predictor for beverage choice. Beverage choice did not seem to be influenced by task stress.
Acknowledgements

I would like to thank my husband and daughter, Vince and Amanda, for tolerating and supporting me during this process. It was not always easy, but they were always very supportive. Their love and support was essential in me completing this project.

The completion of my doctoral degree did not occur in isolation. I would like to thank my committee chair, Dr. Gerald Matthews, without his direction, encouragement and patience on this project I would not have finished. I would like to thank the members of my committee Dr. Giao Tran and Dr. Purcell Taylor. They were willing to take time out of their busy schedules to provide guidance and support to me during the dissertation writing and defense.

I would also like to thank specific faculty who helped me along my path to completing my dissertation. Thanks go to Dr. Kevin Corcoran for his assistance with the formulation of my dissertation project. I would like to thank Dr. Joel Warm who served on my MQE committee and helped guide my education in the field of human factors. I would also like to thank my original advisor, Dr. Daniel Berch, for bringing me into the program and the faculty who provided me the knowledge that I am still using today.

Finally, I would like to thank a few of my colleagues at Penn State-Erie, Dr. Dawn Blasko, Dr. Victoria Kazmerski and Dr. Carol Wilson their feedback and assistance was appreciated.
# Table of Contents

Abstract ........................................................................................................... ii
Acknowledgements ......................................................................................... v

Chapter I ....................................................................................................... 1
  Introduction ............................................................................................... 1
  Stress and Coping Theories ...................................................................... 1
  Individual Differences in Stress and Coping .......................................... 10
  Sustained Attention and Vigilance ............................................................ 19
  Alcohol Expectancy ................................................................................. 23
  Summary ................................................................................................. 32

Chapter II .................................................................................................... 35
  Method ..................................................................................................... 35
  Participants ............................................................................................ 35
  Materials ................................................................................................ 35
  Vigilance task ........................................................................................ 35
  Questionnaire measures. ....................................................................... 36
  Taste-testing task ................................................................................... 38
  Design and Procedures .......................................................................... 38

Chapter III .................................................................................................. 41
  Results .................................................................................................... 41
  General Demographics ........................................................................... 41
  Vigilance Task Performance ................................................................... 42
  Post-Task Stress State ............................................................................ 44
  Predictors of Habitual Alcohol Consumption ....................................... 51
  Predicting Post-Task Stress State .......................................................... 56
  Predictors of Beverage Choice ............................................................... 59

Chapter IV .................................................................................................. 62
  Discussion ............................................................................................... 62
  Predictors of Beverage Choice ............................................................... 63
  Predictors of Post-Task Stress State ....................................................... 71
  Predictors of Habitual Alcohol Consumption ....................................... 78
  Conclusion ............................................................................................. 80

References .................................................................................................. 83

APPENDIX A: PARTICIPANT INSTRUCTIONS .............................................. 95
APPENDIX B:   GENERAL DEMOGRAPHIC QUESTIONNAIRE ................................. 97
APPENDIX C:  EPQ-R.......................................................................................... 101
APPENDIX D: DUNDEE STRESS STATE QUESTIONNAIRE:  PRE-TEST.......... 104
APPENDIX E: DUNDEE STRESS STATE QUESTIONNAIRE:  POST-TEST .............. 110
APPENDIX F:  CITS-S ......................................................................................... 115
APPENDIX G: TASTE STUDY QUESTIONNAIRES.............................................. 117
APPENDIX H:  VIGILANCE TASK INSTRUCTIONS ............................................. 119
APPENDIX I:  DEBRIEFING STATEMENT ............................................................. 121
APPENDIX J: CORRELATIONAL TABLES BY TASK DIFFICULTY ....................... 123
Chapter I

Introduction

The current study was designed to assess the use of alcohol as a coping mechanism in a task-induced stress situation. The impact of individual difference factors (personality, alcohol expectancies and consumption) was also addressed to see if they influenced the use of alcohol as a coping mechanism.

Stress and Coping Theories

At some point in our lives we all have to deal with a stressful situation. It could be the loss of a child, the death of a close family member, or an angry boss. How we deal with the situation can affect our health and well-being. If we are able to implement positive coping strategies in these situations, we have the ability to save our health and persevere through stressful times.

Oftentimes, our life stressors are induced by a particular task. For example, we may be completing a big report for a client and learn the due date has been moved up by two weeks. We may be on our way to pick up our child, get stuck in traffic, arrive 20 minutes late for pickup and then be charged late fees. We may be required to learn a new skill at our job to be promoted. All of these situations share a common theme; they are all task-induced stressors.

Traditional theories of stress, such as the idea of a General Adaptation Syndrome, focus on stress as a simple stimulus and response relationship (Lazarus & Folkman, 1984; Selye, 1978). If a stressful event occurs the stimulus event is considered the stressor. A key criticism of traditional theories of stress is that something cannot accurately be assessed as stressful without understanding the factors mediating the Stimulus-Response (S-R) relationship. More contemporary
process-oriented approaches, such as Lazarus and Folkman’s Transactional Theory of Stress (Lazarus & Folkman, 1984) attempt to address this issue.

The Transactional Theory of Stress looks beyond a simple S-R explanation for stress and focuses on the interactive person-environment relationship. When a person perceives a situation as being too taxing or extending beyond their abilities, then the situation is appraised as stressful (Lazarus & Folkman, 1984). Intrapersonal and environmental factors are not seen as the only causes of stress. When a situation is assessed as stressful, the individual needs to determine if they have the necessary skills to effectively cope with the situation. This interplay between the person, the situation, and the person’s cognitive appraisal of the situation is the core of transactional theories.

According to the transactional approach, a situation requires the person to make a primary and secondary cognitive appraisal to determine if it is stressful. Individuals first make a primary appraisal to determine if a situation requires attention. For example, does the person perceive a potential of harm/loss, threat or challenge to themselves? Once the initial appraisal is complete a secondary appraisal evaluates whether or not a coping strategy can be applied to the situation. If an appropriate coping strategy is available then no stress occurs; but if no effective coping strategy is available then the person feels stressed.

Lazarus and Folkman (1984) admit there are no clear ‘good’ or ‘bad’ coping mechanisms. This process-oriented approach to coping requires an individual to monitor their appraisals and behaviors to manage demands that have the potential to exceed their capacity. So, if a person is exposed to a situation where they find their coping strategies are not sufficient, the person will feel overtaxed by the
workload and therefore become stressed. In this process, Lazarus and Folkman (1984) identify two types of coping strategies: task-/problem-focused and emotion-focused coping. Task-focused coping requires an individual to manage or alter the problem within the environment that is causing stress. In emotion-focused coping the individual is required to regulate their emotional response (Lazarus, 1991).

More recently researchers identified a third coping strategy, avoidance (Endler & Parker, 1990; Matthews, 2001; Matthews & Campbell, 1998; Parker & Endler, 1996). Avoidance is defined as coping by diverting your attention from the problem. It can be seen as a person-oriented or task-oriented strategy (Endler & Parker, 1990). Person-oriented avoidance requires an individual to look for help or support from others (e.g., calling a friend after having a very bad day). Task-oriented avoidance strategies focus on diverting the individual’s attention from the problematic task to another task (e.g., going to the movies instead of taking a test in class; Parker & Endler, 1996). Although Lazarus and Folkman (1984) never specifically addressed avoidance, they discussed a similar concept of denial. In their view, denial is an ineffective approach to coping because the person is not addressing the problem.

In current coping research, three coping strategies are typically evaluated in stressful situations: task-focused, emotion-focused, and avoidance. Based on this theoretical perspective we need a tool that measures all three coping strategies. A reliable tool for assessing the three dimensions of coping, within the context of task-induced stress, is the Coping Inventory for Task Stress-Situational (CITS-S; Matthews & Campbell, 1998). The idea behind the CITS-S is that individual coping
patterns are reflective of task demands and perceived workload. The CITS-S requires participants to rate statements on a five point scale of ‘Not at all’ to ‘Extremely’ for 21 statements that are representative of the three coping strategies. Examples of statements for each of the three coping strategies, along with the factor loadings, are included below (Matthews & Campbell, 1998):

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task-focused: (planned action)</td>
<td>.76</td>
</tr>
<tr>
<td>Example: Made every effort to achieve my goals.</td>
<td></td>
</tr>
<tr>
<td>Emotion-focused: (self-criticism and worry)</td>
<td>.81</td>
</tr>
<tr>
<td>Example: Worried about my inadequacies.</td>
<td></td>
</tr>
<tr>
<td>Avoidance: (withdrawal, or “giving up”)</td>
<td>.79</td>
</tr>
<tr>
<td>Example: Acted as though the task wasn’t important.</td>
<td></td>
</tr>
</tbody>
</table>

The Alpha coefficients for these three scales ranged from .84 to .86; showing that the questionnaire is a reliable measure of these three coping strategies. In the current study the CITS-S was used to assess the individual’s coping strategies after completion of a sustained attention task.

The Transactional Theory of Stress does not address the complex processing of situational factors, biological stressors, mediation of stress responses by coping and the self-regulative processes that occur during a stressful situation (Matthews, 2001). The Cognitive-Energetical Framework was developed as a multidimensional approach to analyze the impact of stress and workload on individual performance (Hockey, 1997). This framework uses a negative feedback system that allows a person to compare their performance with the current task and determine whether they are performing effectively. If not the person needs to adjust their performance by applying more resources or by changing the priority of the task (Hockey, 1997).
As seen in Figure 1 there are two levels in this framework. The lower level of the framework, Loop A, focuses on well-learned or ‘automatic’ skills that have clearly established performance goals. The active assessment behavior, discussed in the previous paragraph, is part of Loop B. Loop B is the upper level of the framework (see Figure 1) which is focused on effort-based regulation. The effort monitor, in Loop B, is responsible for assessing control demands from Loop A and telling the supervisory controller when to step in and regulate resources. The supervisory controller has multiple options for regulating resources; it could adjust task goals, increase effort, or some combination of both. The main point of the model is to describe how resources are allocated across two levels.

My primary interest lies in Loop B, the effort-based regulation component. Here the assessment of a task’s value, a person’s goals and capacity to sustain the task, and their tolerance to states associated with high strain are addressed.
relation to task performance, Loop B is associated more highly with performance decrements related to stressful tasks and high workload situations, similar to sustained attention tasks (Hockey, 1997).

Three coping modes are identified in the model: active, strain and passive-coping (Hockey, 1997). In the active coping mode the individual has to increase their mental activity (energy), but they do not feel distressed. The strain-coping mode calls for an increased effort, possibly beyond a person’s capacity, to meet the changing demands of the task. The individual can also alter their strategies as a way to meet these demands. Again these changing demands could be based on a multitude of factors. Operating in this mode can lead to successful task completion if used for only a short period of time; but prolonged use could lead to maladaptive behaviors. Matthews et al. (2002) describes this as an “overload mode”. This approach is comparable to Lazarus and Folkman’s (1984) concept of task/problem-focused coping if the individual is increasing effort or altering strategies. If the individual places their additional effort on worrying about their performance, they would be applying emotion-focused coping strategies (Matthews & Desmond, 2002).

Passive-coping mode calls for a reduction in performance goals. This reduction leads to a loss of motivation and energy (Matthews, et al., 2002). For example, in a sustained attention task (i.e., vigilance task) a person may decide they will respond more slowly to the stimuli which would allow for more correct responses, but reaction times would sharply increase. The person has made the decision to reduce the performance goal of speed. By making this decision, the stress placed on the supervisory controller within Loop B is reduced.
The passive-coping mode could be taken to an extreme, and an individual could completely disengage from the task. This is similar to the idea of the avoidance coping strategy previously mentioned (Endler & Parker, 1990). Participants also have been found to disengage from tasks, occurring under stressful work conditions, when they felt their effort was not effective or possibly counter-productive (Schultz & Schönpfleg, 1982, as cited in Hockey, 1997). This would be most closely associated with an emotion-focused approach to coping. An example of this could be trying to argue with a police officer to stop them from writing a ticket when you clearly broke the law. In this situation, continuing to argue with the officer could cause further penalty and lead to negative consequences.

Hockey (1997) also allows for what he terms ‘strategy adjustments’. A strategy adjustment could have a person reduce the amount of effort they are putting forth on a task when the workload is assessed as being too great. For example, air traffic controllers changed their monitoring strategy when the number of aircrafts exceeded their workload comfort level. The air traffic controllers switched from using an individual plane routing strategy to using a global routing strategy. Instead of the individual reallocating resources they selected a completely different strategy for processing and organizing the information to reduce workload (Sperandio, 1978).

Strategy adjustments could also include an individual reducing the amount of effort they are putting forth on a task such as identifying stimuli in a time-constrained task. The individual could decide to focus on responding fast with less emphasis on accuracy. This shift in strategy could cause a speed-accuracy tradeoff.
Sustained attention tasks are one example of time-constrained tasks. Individuals may try various coping strategies when they are faced with the time constraints and attentional requirements of a sustained attention task. While environmental (e.g., time constraints, task attentional requirements, workload) and person variables (coping strategies, resource allocation strategies) are represented in current multidimensional frameworks of stress, we still need to find a validated measure of stress that incorporates these variables.

To better understand the multi-faceted nature of stress the Dundee Stress State Questionnaire (DSSQ) was developed by Matthews et al. (1999; 2002). It assesses the transient states associated with mood, arousal, and fatigue. Ten scales are contained within the DSSQ: Energetic Arousal (alertness-sluggishness), Tense Arousal (nervousness-relaxation), Hedonic Tone (pleasant vs. unpleasant mood), Task Motivation, Self-Focused Attention (self-preoccupation, daydreaming, etc), Self-Esteem, Concentration, Confidence and Control, Task-Related, Cognitive Interference (worry about performing adequately), and Task-Irrelevant Cognitive Interference (self-oriented thoughts that are not task related). Three secondary factors (Task Engagement, Distress, Worry) were identified by Matthews et al. (1999) using the ten scales in the DSSQ. The first factor, task engagement, is based on the energetic arousal, motivation, and concentration scales. Distress is the combination of tense arousal, hedonic tone, and confidence and control. Worry is made up of self-focused attention, self-esteem, concentration, task-related and task-irrelevant cognitive interference.

The DSSQ gives researchers the ability to measure the constructs found in the stress and coping literature. Hockey’s (1997) coping modes can be measured
using the DSSQ. For example, the strain-coping mode, where an individual overloads their capacity shows increased distress (Matthews, et al., 2002). Distress is measured as an individual experiencing higher levels of nervousness (tense arousal), an unpleasant mood (low hedonic tone), and lower levels of confidence and control. When an individual lowers their performance targets it is said that they are using a passive-coping mode to deal with stress, this can be measured using the task disengagement factor of the DSSQ. By lowering performance targets a passive-coping mode is comparable to the avoidance coping strategy (Endler & Parker, 1990).

The DSSQ has been used as a measure of stress in sustained attention tasks (Matthews, et al., 1999). Researchers have shown that vigilance tasks reduce task engagement, due to decreases in energetic arousal, concentration and motivation. Increases in distress, measured by a decrease in hedonic tone and confidence, were also found, especially when workload was high (Grier, et al., 2003; Helton, Dember, Warm, & Matthews, 1999; Szalma, et al., 2004; Temple, et al., 2000).

To summarize, the stress and coping literature has moved from treating stress as a simple Stimulus-Response relationship to transactional theories of stress incorporating concepts of cognitive appraisal, task-/problem- focused and emotion-focused coping strategies. In the most recent research a multidimensional framework incorporating several environmental and person variables treats the operator as an active agent in making decisions about how to cope with task demands. The DSSQ has been developed to measure the multidimensional nature of stress, understanding that stress responses are state dependent. One topic that merits further discussion is the relationship of individual differences like personality
to the stress and coping literature.

In an effort to better understand how individuals use coping strategies in different situations, the current study will assess a participant’s coping strategy (task-focused, emotion-focused, avoidance) and stress levels during a timed sustained attention task.

**Individual Differences in Stress and Coping**

The study of individual differences in relation to stress dates back to World War II and the Korean War (for a discussion see Lazarus & Folkman, 1984). When researchers started to understand that people responded differentially to stress, they started looking at other potential factors related to stress including coping strategies and personality factors.

When studying coping strategies, early researchers focused mostly on a person’s ability to cope with life-threatening or traumatic events. By focusing only on extreme stressors, researchers concluded that there were minimal effects of individual differences on coping. When coping with a traumatic event there are a limited set of coping strategies an individual can select from and implement. It was not until the 1970’s and early 1980’s that researchers shifted their focus to looking at other factors related to coping, like the context of the situation. So, instead of studying coping strategies for life-threatening or traumatic events, the research net was expanded to incorporate more common potential stressors, such as environmental and person factors. The new focus for researchers was to determine if and how these environmental factors (e.g., social support, finances, and education) and person factors (e.g., personality, self-esteem, and self-efficacy) influenced an individual’s selection of coping strategies (Holahan, Moos, & Schaefer,
In a study by McCrae (1984) participants were asked to complete a survey on the coping responses they used the last time they experienced either a loss, threat, or challenge to them. The type of stressor was consistently shown as having a significant effect on the selection of coping mechanisms. For example, participants who experienced a loss coped by using their religious faith or through an outward expression of their feelings.

When assessing the different types of environmental and person factors influencing coping research, researchers also categorized the factors based on whether or not they were interested in studying specific variables or traits (interindividual) or a process approach to coping (intraindividual). The interindividual approach to coping looks to identify coping styles that individuals use across multiple situations. Intraindividual coping approaches focus on identifying coping behaviors or strategies used by individuals in certain types of stressful situations (Parker & Endler, 1996).

Lazarus (1961) discussed the concept of stress in relationship to personality theory. He felt that all the theoretical views of the time would apply equally to stress and coping. For example, he noted that all personality theories have a fear or anxiety component which is necessary for the development of an individual’s personality. This argument for a common component led Lazarus (1961) to hypothesize one model of stress for all personality theories; conflict leads to anxiety or fear. Where the theories differ is their conception of where stress comes from and how the person responds to stress.

While stress and coping researchers were postulating relationships between
stress and personality, personality theorists were working on finding ways to explain personality’s influence on behavior. These explanations focused around different psychological disciplines with varying degrees of success. One of the most validated models of personality is the Five Factor Model (FFM: McCrae & Costa, 1999). The FFM focuses on personality from a fixed-trait perspective and is comprised of five core personality traits, Openness (O), Conscientiousness (C), Extroversion (E), Agreeableness (A), and Neuroticism (N) - now known as Emotional Stability (McCrae & Costa, 1999; Passer & Smith, 2005). A variety of adjectives are used to describe each of the core traits. Some examples of the different descriptive adjectives associated with each trait include: Openness (feelings, fantasies, ideas, values), Conscientiousness (order, dutifulness, self-discipline), Extroversion (warmth, gregariousness, assertiveness, positive emotions), Agreeableness (trust, altruism, compliance), and Neuroticism (anger, anxiety, hostility, depression, vulnerability). This trait approach to personality is similar to the interindividual approach to coping. Both support the idea that an individual has a set of responses that they will use consistently across different situations.

While one group of personality psychologists focused on using the trait approach to explain behavior, another group looked at the impact of situational factors on behavior. The premise was that a person would adjust their behavior in a situation if they felt it was appropriate. This type of active adjustment is known as self-monitoring. Self-monitoring requires an individual to attend to situational cues and adapt their behavior in the situation. This approach argues that situational factors are the primary influence on behavior, which is in line with the
coping theorist’s intraindividual approach to coping.

More current research has looked to combine the trait personality perspective with coping. Researchers applied the FFM of personality to study how individuals cope with different situations (DeLongis & Holtzman, 2005; Matthews, Schwean, Campbell, Saklofske, & Mohamed, 2000). One study examined individual differences in stress and coping on couples living in step-families (DeLongis & Holtzman, 2005). They found several influences on how a person responds to stressful events in daily life. These influences included: the specific nature of the stressor, an individual’s level of satisfaction with partner support, and the individual’s personality and partner’s personality. How a person regulates their stress is partly dependent on spousal support. This line of research helped to establish a relationship between personality and coping strategies.

Researchers today are still looking at the impact of the broad personality traits found in the trait approach, and their interaction with how an individual copes with different situations (DeLongis & Holtzman, 2005; Matthews, Schwean, et al., 2000). Self-regulation is an area of research that combines coping strategies and the interactive nature of traits and the environment on personality (Matthews, Schwean, et al., 2000). In its application to coping and personality research, self-regulation is a general term used to describe any cognitive processes and behaviors that are implemented by individuals to meet specific goals in an ever-changing environment. The focus on the cognitive processes involved in self-regulation fits well with Lazarus and Folkman’s (1984) concepts of cognitive appraisal. In both cases researchers are looking at the cognitive strategies that individuals use to successfully assess and complete a task.
Recent research on personality has focused on three higher-order factors, also known as the Eysenckian Perspective. The three higher-order factors are Neuroticism (N), Extroversion (E), and Psychoticism (P) (H. J. Eysenck, 1997; S. B. Eysenck, H. J. Eysenck, & Barrett, 1985). S. B. Eysenck et al. (1985) argues that the factors in the FFM are partly overlapping. The constructs of agreeableness and conscientiousness are inversely part of the higher-order factor psychoticism (H. J. Eysenck, 1997). Openness is considered part of the higher-order factor extroversion and part of neuroticism via its relationship to conscientiousness. Anytime self-report is used to study personality it is important to control for social desirability. Social desirability is represented as the Lie (L) in the Eysenck Personality Questionnaire-Revised (EPQ-R; S. B. Eysenck, et al., 1985; for a review see Matthews, Deary, & Whiteman, 2003).

Research has shown that neuroticism, extroversion and psychoticism influence how a person copes with a stressful situation (H. J. Eysenck, 1997; Matthews, Schwean, et al., 2000). Neuroticism has been correlated with high levels of stress symptoms and is the personality trait most often linked to stress vulnerability (Matthews, Deary, & Whitman, 2003). Transactional theories of stress identify differences in situation appraisal and coping strategies for highly neurotic individuals. They exhibit unpleasant tension and nervousness, constant worry, and feelings of inadequacy which are all stressful factors. They react more negatively and strongly to daily stressors, when compared to individuals who score at the lower end of the neuroticism scale. These differences in reactions are partly due to the fact that highly neurotic individuals use pessimistic appraisal styles and less effective coping strategies; emotion-focused and avoidance (Endler & Parker, 1990;
Matthews, et al., 2003). To determine if coping strategies moderated the stress-neuroticism association, Bolger (1990; as cited in Matthews, et al., 2003) evaluated pre-med students coping strategies in the month leading up to their exam. Neuroticism predicted increased anxiety in the week directly prior to the exam. Highly neurotic students were more likely to use avoidance coping strategies (i.e., wishful thinking and self-blame). Other researchers have been able to find a relationship between emotion-focusing coping, neuroticism and job-related stress. Additional studies have been conducted assessing coping strategies in the context of an individual’s neuroticism score. The bottom line is that neuroticism can be a causal factor in determining effective coping strategies.

Individuals who score high on extroversion have been found to use more task-focused coping strategies (Matthews, et al., 2003). Extroversion has also been shown to interact with the effects of neuroticism (H. J. Eysenck, 1997). Neurotic extroverts were found to experience behavioral problems, while neurotic introverts were prone to emotional disturbances (Matthews, et al., 2003). Extroversion’s role in stress and coping is not completely clear. While extroverts tend to implement more successful coping strategies, such as task-focused coping, we do not know if it mediates the impact of stressful life events or just makes better adjusted individuals.

A high score on psychoticism is usually linked with disordered thinking. The psychoticism scale attempts to gain information on several factors including hostility, cruelty, and lack of empathy (S. B. Eysenck, et al., 1985). Due to the negative connotations of the term psychoticism, Eysenck has suggested changing the term to tough-mindedness as a more accurate representation of the factor (H.
J. Eysenck & S. B. Eysenck, 1991). Psychoticism, like neuroticism, is seen as a normal personality trait, because it really only predisposes a few individuals to developing psychotic or neurotic disorders.

Using the Eysenck Personality Questionnaire-Revised (EPQ-R; H. J. Eysenck & S. B. Eysenck, 1991; S. B. Eysenck, et al., 1985) Matthews, Schwean, et al. (2000) revealed that neuroticism was consistently linked to emotion-focused coping, appraisals of threat, loss and lack of control across several studies. However, Matthews et al. (2000) did not find a significant relationship between coping and extroversion or psychoticism. This could be due to the fact that psychoticism represents many factors, in comparison to the other traits (S. B. Eysenck, et al., 1985).

Clearly neuroticism, extroversion, and psychoticism influence coping strategies, situational appraisal, and anxiety levels in individuals. The question is, are studies of personality and task-induced stress compatible with the general personality and stress literature?

Matthews et al. (2003) provides a review of how personality theory can be studied in the context of performance. In reviewing arousal theory, Hockey (as cited in Matthews et al., 2003) used the theory to explain the impact of environmental stressors (i.e., heat and noise) on performance and found they are extremely complex and task dependent. Hockey’s (1997) transactional theory of stress takes this information and applies a cognitive framework to processing information. One term used to describe how stressors impact a range of different tasks is ‘cognitive patterning’. If we can understand the cognitive patterning of personality traits, we can try to predict performance on different tasks. The
cognitive patterning of extroversion has been measured on several cognitive tasks including: divided attention, short-term memory, long-term memory, problem solving and visual vigilance (Matthews, et al., 2003). Extroverts were found to perform better on divided attention and short-term memory tasks; while introverts were better at long-term memory, problem solving and visual vigilance tasks (Harkins & Geen, 1975, as cited in Matthews et al., 2003). For a review of how extroverts perform on vigilance tasks see Koelega (1992).

Research has also been conducted on neuroticism and sustained attention tasks. While low scores on extroversion are beneficial to individuals in a vigilance task; that is not the case for neuroticism. Matthew and Dorn (1995) developed an approach that argues the beneficial nature of high scores in neuroticism (as cited in Matthews et al., 2003). Specifically, individuals who score high on neuroticism tend to do better on tasks that require active monitoring of threats, like in a vigilance task. Their heightened state of awareness appears to maintain their motivation to monitor the environment when no threat is eminent (Matthews, et al., 2003).

To summarize neuroticism, extroversion, and psychoticism are three personality traits that have implications for how individuals cope with task stressors. Current theories of personality and stress can assist in studying this relationship in more detail. One goal of this study was to explore the relationship between personality (as measured by the EPQ-R), stress, coping strategies and alcohol consumption for individuals completing a stressful task. It was expected that individuals scoring high on neuroticism would use more emotion-focused coping strategies, which may benefit them in the vigilance task due to their heightened state of awareness. It was expected that extroverts would be more
likely to use task-focused coping strategies which have the potential to benefit them in the vigilance task if they find the task to be easy. The relationship between psychoticism and coping strategies is inconsistent. Therefore, no a priori hypotheses were made for psychoticism’s relationship to coping.

Researchers have also looked at the relationship between personality and alcohol consumption independent of stress. Traits such as impulsivity and sensation-seeking have been identified as possible influences on alcohol use (Hair & Hampson, 2006; Malouff, Thorsteinsson, Rooke, & Schutte, 2007; Raynor & Levine, 2009). Sensation-seeking and impulsivity have been negatively correlated with personality traits, such as conscientiousness (Hair & Hampson, 2006), which in low levels may be one of the components of psychoticism (H. J. Eysenck, 1997). Thus, psychoticism may be related to impulsivity through its relationship to low conscientiousness (McAdams & Donnellan, 2009). High levels of extroversion have also been related to sensation-seeking behaviors and increased alcohol consumption (Martsh & Miller, 1997). Researchers looked at the role impulsivity and the FFM of personality play in predicting alcohol consumption and academic performance in a college population. They found alcohol consumption to be negatively correlated with agreeableness and conscientiousness (Hair & Hampson, 2006).

A recent meta-analysis attempted to identify the five-factor personality characteristics that were related to alcohol involvement and the strength of the relationship (Malouff, et al., 2007). A total of 20 studies were included in the meta-analysis. Alcohol involvement was a general construct that represented alcohol intake quantity, amount consumed, and alcohol-related problems. Malouff, et al.,
(2007) found a relationship between three personality factors in the FFM and alcohol involvement. A high level of neuroticism and low levels of conscientiousness and agreeableness were related to alcohol involvement. Conscientiousness and agreeableness correspond to the psychoticism measure. Researchers also identified an inverse relationship between alcohol involvement and extroversion, but it only applied to populations that were being treated for alcohol problems. Individuals who were receiving treatment for alcohol-related problems tended to score low on extroversion.

In the current study I expect to find a relationship between personality and alcohol consumption. High levels of neuroticism and psychoticism are expected to positively correlate with alcohol consumption. No specific hypotheses were generated for extroversion. The current study will also need to address the relationship between personality and alcohol consumption in conjunction with coping strategies.

*Sustained Attention and Vigilance*

In order to study individual differences in coping strategies, we need a reliable way of inducing stress. Researchers have noted a relationship between stress and performance, specifically on sustained attention tasks (Hockey, 1997; Hancock & Warm, 2003). Researchers have noted that the high workloads imposed on individuals lead them to assess the task as stressful. To measure workload researchers use the NASA Task Load Index (NASA-TLX; Hart & Staveland, 1998). Using the NASA-TLX researchers are able to assess the demands the task places on the individual (i.e., mental demands); as well as their reaction to the task (i.e., frustration; Warm, Dember, & Hancock, 1996). Warm et al. (1996) found high
scores for mental demand and frustration for participants in a vigilance task.

Hockey (1997) found participants incorporated a cooperative and motivated attitude when completing performance tasks, which also occurs with sustained attention tasks. This means that the individual should place a high priority on the task for the entire duration. In theory, sustained attention tasks should have higher ecological validity than other tasks because there are many tasks that require this level of monitoring.

A key benefit for studying the relationship between stress and performance is for practitioners to be able to predict how different forms of stress would impact an operator’s task performance. While researchers have not be able to create exact predictions on how operators perform in stressful situations, they do have a better understanding of what can cause the operator’s stress (Hancock, 1986). An individual’s level of adaptability or inability to adapt causes stress. Hancock (1986) discusses how stress is a process which includes input from the environment, a person’s response (adaptation), and then the output from the individual. How well an individual adapts is the key indicator of stress. If the individual is able to adapt they do not experience stress; if they are unable to adapt stress is experienced.

The study of sustained attention in vigilance tasks is also relevant to society in general, and not just specific jobs (e.g., air traffic controller). Over 20 years ago Sheridan (1987) noted the increased use of automation in the work setting. Operators have gone from active participants to attendants who have to monitor displays and only interact with the system when it appears there is a problem. Performance on any task that requires sustained attention should show similar increases in workload and frustration as seen in vigilance tasks. Since the use of
automation will continue to increase, many more individuals will be moved into jobs that require monitoring systems for errors or problems, instead of constantly interacting with them.

In the lab environment we often ask participants to complete vigilance tasks and then measure their subjective experiences related to workload and stress (Warm, 1993). The purpose of a vigilance task is to determine how well a person can focus their attention to detect unpredictable and infrequent signals over a period of time. It has also been shown that a person’s ability to focus their attention (vigilance level) decreases significantly over as little as 30 minutes (Wickens & Hollands, 1999). Vigilance tasks are similar to automated systems, such as an air traffic control system. Users are required to monitor the system and identify and respond to infrequent signals (Matthews, et al., 1998; Warm, 1993). Vigilance tasks provide an environmental source of stress where the task is also appraised as stressful by the participant (Hancock & Warm, 2003). A real world example of this type of situation would be a student taking a timed test. If the student did not study the process of taking the test would be stressful. By adding the time limit component an additional source of stress is added to the environment. The current study utilized two levels of discrimination difficulty (easy and hard) in the vigilance task. The levels of difficulty were created by altering the contrast of the letter in relation to the white background. It was expected that both versions of the vigilance task would exhibit the standard vigilance decrement, frustration, and mental workload issues as expected from a vigilance task. It was also expected that these results would be more pronounced for the individuals in the hard vigilance condition.
One question is how long a vigilance task must be to include appropriate levels of stress. Vigilance tasks usually take a minimum of 40 minutes (Szalma, et al., 2004). It was noted by Szalma et al. (2004) that a 40-minute vigil was used to give participants time to develop an effective coping strategy. However, Temple et al. (2000) have shown that an 18-minute vigilance task induced a heightened stress state. Research still needs to be conducted to determine if individuals can identify effective coping strategies in the shortened vigilance time frame. In the current study coping strategies were measured using the CITS-S (Matthews & Campbell, 1998). It was expected that participants would have developed specific coping strategies during the shortened vigilance task. Specifically, participants in the hard condition were expected to use more emotion-focused and avoidance coping strategies, while participants in the easy condition were expected to use more task-focused coping strategies.

Along with reporting heightened stress states, individuals commonly report specific symptoms of stress including, boredom, irritation, and fatigue upon completion of a vigilance task (Warm, 1993). In the past, researchers have assessed workload using the NASA TLX but only assessed stress state via self-report. While these self-reports from participants are beneficial they do not fully address the multifaceted nature of stress (Matthews, 2001). As stated earlier, the DSSQ has been used in several studies to assess stress caused by vigilance tasks (Grier, et al., 2003; Helton, et al., 1999; Matthews, et al., 1999; Temple, et al., 2000). During a vigilance task participants were assessed as having lower levels of task engagement, and increased levels of distress (Matthews, et al., 1999). The fact that vigilance tasks can induce distress and nervousness (measured via tense
arousal) could allow us to study the impact of stress on tension reduction. If an individual is in a situation where they have been distressed and are nervous, they will be looking for ways to reduce that distress.

Another important question is, how will individuals deal with this increased stress? If individuals believe that alcohol consumption will reduce that stress, they could be more likely to implement alcohol usage as a coping mechanism. Theories of alcohol expectancy would suggest that individuals would choose to consume larger quantities of alcohol in stressful situations. This would occur for individuals who expected consumption to lead to social facilitation or tension reduction. It should be noted that consumption can also be mediated by individual differences in consumption behavior (heavy vs. light drinkers; Darkes & Goldman, 1993, 1998), gender (Corcoran, 1996), self consciousness (Bartholow, Sher, & Strathman, 2000) and situational factors (Corcoran, 1994) to name a few.

It was expected that participants in the current study who scored high on tense arousal would be more likely to exhibit positive alcohol expectancies related to the reduction of tension.

*Alcohol Expectancy*

A considerable amount of investigation has been conducted on the relationship of alcohol expectancy to consumption. People’s expectations of the effects of alcohol will influence their behavior (Darkes, Greenbaum, & Goldman, 2004; Goldman & Darkes, 2004; Goldman, Darkes, & Del Boca, 1999; Goldman, Del Boca, & Darkes, 1999; Hull & Bond, 1986; Hull & Slone, 2004). Alcohol expectancy has been associated with both positive and negative behaviors that occur with alcohol consumption.
Hull and Bond (1986) believed a very inconsistent relationship exists between consumption and expectancy. They found that consumption and expectancy differentially impacted behavior. Specifically, they noted that alcohol expectancy was more important than consumption in increasing the likelihood that a person would participate in a socially deviant behavior. This result was likened to the idea that people see being intoxicated as an excuse to behave in a socially deviant manner. These results did not carry-over to the study of nonsocial behaviors (e.g., memory processing tasks). In memory processing tasks alcohol consumption was more important than expectancy in leading to poorer performance (Hull & Bond, 1986).

More recent research takes a different approach to explaining the relationship between expectancy and consumption. Semantic network models (see Collins & Loftus, 1975) from memory literature have been used to explain the alcohol consumption decision process (Rather, Goldman, Roehrich, & Brannick, 1992). Rather et al. (1992) used multidimensional scaling to develop an alcohol expectancy semantic network. To develop the network, participants were asked to rate previously generated adjectives on how often they thought the effect occurred or could occur after consuming several drinks (e.g., “Drinking alcohol makes me: sociable, sleepy, pass out, smart, etc”). This model gives researchers an idea of how alcohol-associated terms are stored and accessed, using a spreading activation model. They found that all participants associated pro-social effects with drinking. Heavier drinkers associated the most with alcohol’s arousing effects and lighter drinkers associated the most with alcohol’s sedative effects. More research needs to examine the activation pathways and processes of the semantic network models.
It is important to assess if this class of models can explain the influence of situational factors and individual differences on alcohol expectancies.

Using these semantic network models as a foundation, Goldman (1999c) developed a neural network model to explain alcohol expectancy. The “extensive construct-validation network” explains how expectancies, specifically arousal and social facilitation are correlated with drinking (Goldman, 1999a). The model uses a very broad definition of alcohol expectancy which covers any process that influences behavior. Goldman’s (1999a; Goldman et al., 1999) model describes expectancies as a series of templates that are specific to a situation. When a person experiences a particular situation the most similar templates are activated until one reaches threshold. It is hypothesized that a set of templates or expectancies exist for many situations and individuals use one set of templates to appraise the situation and a second set to determine how to behave (Goldman, 1989, 1999a, 1999b, 1999c). The selection of a template can be an automatic process, requiring little to no effort. This means that these expectancies exist for all behaviors. If we apply this approach to alcohol expectancies, individuals develop templates that contain information on biological (feelings), psychological (thoughts) and environmental (situation) variables related to alcohol use.

If these templates or sets of templates exist, the question is how were they developed? The templates are based on an individual’s past experiences. These experiences are held in long-term memory. The expectancy information housed in long-term memory includes how the person felt, their experiences consuming alcohol, and if they viewed the experience positively or negatively. This information is held in a node and activated when the person is placed in a similar or familiar
situation. One consequence of positive alcohol expectancies is that they could lead an individual to start consuming alcohol and then maintain the individual’s alcohol use by reinforcing positive alcohol expectancies. Such positive alcohol expectancies can be beneficial to an individual. For example, individuals could recall a time where they felt more comfortable in a social situation, while consuming alcohol (social facilitation). Another benefit could arise if an individual could recall a stressful experience that seemed less stressful after consuming alcohol (tension reduction). These positive recollections reinforce alcohol consumption. In this way, alcohol can become a crutch or even a requirement to have positive experiences.

We have established that expectancies may reinforce consumption but the opposite may also occur; consumption may reinforce positive expectancies. This is called the reciprocity effect (Bauman, Fisher, Bryan, & Chenowith, 1985; Smith, Goldman, Greenbaum, & Christiansen, 1995). Smith et al. (1995) argued that alcohol use could increase expectancies because drinking experiences would reinforce positive expectancies, and these positive consumption experiences could be selectively stored thus reinforcing an already existing schema. Adolescents start drinking due to high expectancies, and they continue to drink because they continue to experience those anticipated positive expectancies. Two recent studies support the reciprocity explanation for the relationship between expectancies and future consumption for adolescents (Bauman, et al., 1985; Smith, et al., 1995). The research on reciprocity effects is not as clear for college age students (Sher, Wood, Wood, & Raskin, 1996). Sher et al. (1996) found a significant reciprocity effect, but in a different direction. College students showed a decline in consumption over time which led to a decline in expectancies. In this situation the
templates created by the college students relating alcohol consumption to positive alcohol expectancies may not be activated or reinforced since the students have reduced their consumption. It is also possible that other experiences have influenced the strength of connection between positive alcohol expectancies and consumption; this may be explained as a change to the semantic network model itself.

More recently, researchers have developed different techniques for testing neural network models. Priming and mood manipulation tasks have been developed to determine if expectancies are processed automatically in memory and if mood manipulations can prime this processing (Stein, Goldman, & Del Boca, 2000). Stein et al. (2000) found that the alcohol primed groups consumed significantly more alcohol than any other group, and that individuals with histories of heavy alcohol consumption drank the most when primed. This priming may have helped the participants to automatically access positive alcohol consumption templates; thus reinforcing their consumption behavior.

To summarize, recent research has focused on developing a cognitive framework for explaining the complex relationship between alcohol expectancies and consumption in adolescents and adults. Semantic and neural network models are being used to study this relationship. Work is still needed to understand the dynamic relationship between two positive expectancies: tension reduction and social facilitation.

The most widely used alcohol expectancy assessment tool is the Alcohol Expectancy Questionnaire (AEQ; Brown, Christiansen, & Goldman, 1987; Brown, Goldman, Inn, & Anderson, 1980; Christiansen & Goldman, 1983). The AEQ
consists of 90 items used to assess positive effects of alcohol consumption (Brown, et al., 1987; Brown, et al., 1980; Corcoran & Parker, 1991). Two versions have been created to assess adult and adolescent expectancies. Six expectancy factors have been identified for adults: (1) global/positive changes (2) enhanced sexual performance and experience, (3) social and physical pleasure (social facilitation), (4) positive and socially assertive personality changes (increased social assertion), (5) relaxation and tension reduction, and (6) increased power and aggression.

Researchers have examined which of these expectancy factors are the best predictors of alcohol consumption. The social and physical pleasure subscale (social facilitation) of the AEQ was found to be the best predictor of alcohol consumption (Christiansen, Smith, Roehling, & Goldman, 1989; Corcoran, 1995a). In contrast, the AEQ's tension reduction subscale was not able to predict either the selection of an alcoholic beverage or the amount of alcohol that was actually consumed. Researchers have used a brief version of the AEQ that included only the social facilitation and the increased social assertion subscales to measure positive alcohol expectancies for social drinkers (Corcoran, 1994, 1995b; Corcoran & Michels, 1998; Corcoran & Segrist, 1993).

One question researchers still need to address is: if individuals use alcohol to reduce tension, would they feel the need to reduce tension during a sustained attention task? Another question to answer would be if individual difference factors like personality mediate the effects of alcohol expectancies. A recent study found weak evidence for the mediating effects of perceived stress on desire to drink (Carney, Armeli, Tennen, Affleck, & O'Neil, 2000). Carney et al. (2000) found evidence that individuals consume alcohol to cope with negative experiences (non-
work, health or work related experiences). They were also able to find relationships between personality dimensions (neuroticism and extroversion) and alcohol consumption. Specifically individuals who scored high on neuroticism had stronger expectancies between negative non-work events and consumption. Extroversion was positively related to drinking to cope and drinking to cope was related to perceived stress.

As stated earlier, previous research can establish a relationship between personality and alcohol consumption independent of coping (Hair & Hampson, 2006; Malouff, et al., 2007; Martsh & Miller, 1997; McAdams & Donnellan, 2009; Raynor & Levine, 2009). High levels of alcohol consumption were linked to low levels of agreeableness and conscientiousness (high psychoticism), high neuroticism and possibly high levels of extroversion (Hair & Hampson, 2006; Martsh & Miller, 1997).

Previous research also found support for a relationship between coping strategies and alcohol expectancies; specifically, coping theory which predicts negative affect will lead to increased positive expectancies (Hufford, 2001). These results also support motivational models for drinking. Motivational models suggest that individuals have different motivations for drinking and these motivations are based on the incentive value we place on drinking (Cox & Klinger, 2004). Cox and Klinger (2004) suggested that if individuals do not acquire appropriate motivational structures, they are more likely to turn to alcohol as a coping mechanism, especially if they associate positive outcomes to drinking. Once individuals begin to use alcohol as a coping mechanism, they will not have a reason to change their behavior unless they perceive negative consequences for drinking as well as
positive consequences for change. For the current study, it is expected that individuals who exhibit high levels of alcohol expectancies for social facilitation and increased social assertion will be more likely to report consuming alcohol and more likely to select an alcoholic beverage during the research study if they were in the hard vigilance condition.

One final study evaluated specific personality characteristics to assess their relationship to alcohol expectancies using the Alcohol Expectancy Questionnaire (AEQ; Brown, et al., 1987). Personality was assessed using the Sixteen Personality Questionnaire (16PF). Previous research identified two personality factors related to alcoholics, extroversion and anxiety. They found extroverted participants had higher scores on the social and physical pleasure scale (social facilitation), relaxation-tension reduction scale, and arousal with feelings of power due to alcohol consumption. More anxious individuals scored higher on the global positive changes, social assertion, sexual enhancement, and arousal with feelings of power scales of the AEQ.

For the current study alcohol consumption and two of the alcohol expectancies (social facilitation and social assertion) were measured. Previous research has shown that social facilitation and social assertion were both related to alcohol consumption (Corcoran & Parker, 1991). Corcoran and Parker (1991) measured the number of drinks (alcoholic or non-alcoholic) individuals consumed in a non-social drinking situation. Participants were allowed to pour as little or as much as they wanted from a pitcher into their glass during a twenty minute period. Since participants could vary how much beverage they placed in their cup, it was not clear whether or not males who were shown to consume more drinks (5.9
drinks vs. 4.36 drinks) actually consumed more volume than females. In the current study alcohol expectancies, beverage choice and the actual volume of beverage consumed were measured. All beverages (two alcoholic and two non-alcoholic options) were presented in 16 ounce water bottles with plain white labels. As in the Corcoran and Parker (1991) study, participants were allowed to pour as much or as little beverage as they wish during the abbreviated drinking period (five minutes). The alcoholic beverage options in the study were actually low-alcohol options, but the participants thought they were being given alcohol. The amount of beverage in the bottles was measured before and after consumption, and the difference, after accounting for any beverage left in the glass, was listed as the amount consumed. This taste-testing paradigm was based, in part, on a study by Kisler and Corcoran (1997) where they assessed a participant’s reaction to cookies presented to them by completing a sensory task rating activity. Participants were presented with a bowl of cookies (previously weighed), told they could have as many or as few cookies as they wanted and were asked to rate the cookies. In my particular study the participants were given the beverage choices and allowed to select and then consume as much beverage as they wished within a five minute time period.

The expectation was that individuals who participated in the hard vigilance condition and who reported high alcohol expectancies would be more likely to select an alcoholic beverage and consume more of it than individuals with low alcohol expectancies. It was also expected that personality traits and coping strategies would additionally influence beverage choice.
Summary

We know that stress is everywhere and there has been a great deal of research about the types of factors that induce stress. The study of individual differences suggests that people respond differently to the same stressful situation based on specific characteristics of the person and the environment (Hockey, 1997; Lazarus, 1991; Lazarus & Folkman, 1984; Matthews, 2001; Matthews, Davies, Westerman, & Stammers, 2000; Matthews, Schwean, et al., 2000; Porter & Stone, 1996). Process approaches to coping use task-focused, emotion-focused, and avoidance strategies. Transactional models of stress define coping mechanisms based on cognitive overload or fatigue. We know much less about how particular individuals cope with stress. Some people take a yoga class or exercise while others smoke and go to bars to consume alcohol. More research needs to be conducted on perceived stress and the use of alcohol as a coping mechanism. The use of a sustained attention task allows researchers to study task-induced stress, individual differences (personality and alcohol expectancies), stress states, coping strategies and alcohol consumption.

In this study, a shortened 16-minute vigilance task will be used to place the participant in a stress state which would require participants to engage in various coping strategies that might include drinking alcohol. To manipulate the degree of stress, task difficulty will be manipulated to produce easier and harder conditions. The tasks were designed to be generally challenging, but it is expected that participants in the harder condition will show a stronger vigilance decrement, higher mental workload, and heightened stress state, relative to participants in the easier condition. Task-induced stress will be measured using the DSSQ. It was
hypothesized that participants would experience increases in worry and distress, and a decrease in task engagement, especially in the hard condition. Participants in the hard condition were expected to use more emotion-focused or avoidance coping strategies.

The first hypothesis was designed to assess predictors of habitual alcohol consumption. It was expected that personality and alcohol expectancies would be predictors for self-reported alcohol consumption behavior. Individuals scoring high on psychoticism and neuroticism were expected to be more likely to report consuming alcohol. Since the relationship between extroversion and alcohol consumption is not consistent, no specific hypotheses were generated. All alcohol expectancies (social facilitation and social assertion) were hypothesized to be positively correlated with self-reported alcohol consumption.

The second hypothesis attempts to identify predictors of task-induced stress. I expect that alcohol expectancies and personality factors will be related to stress state and the use of specific coping strategies. Task-induced stress states will be measured using the DSSQ. The three secondary factors of stress that will be evaluated are worry, distress and task engagement. I expect task difficulty to increase stress levels and be a potential moderating factor. I hypothesize that alcohol expectancies will be related to both stress states and coping strategies. Individuals scoring high on distress will probably have higher social facilitation and social assertion alcohol expectancies. I also expect emotion-focusing coping strategies to be positively correlated with alcohol expectancies.

For the personality factors, neuroticism is expected to be positively correlated with distress and worry. No specific hypotheses were generated for
extroversion or psychoticism. Personality is also expected to influence the use of specific coping strategies. Individuals scoring high in neuroticism are expected to engage in more emotion-focused and possibly avoidance coping strategies. It is expected that individuals scoring high on extroversion will be more likely to use task-focused coping strategies. I expect task difficulty to magnify this effect.

The last hypothesis is that the selection of an alcoholic beverage would be predicted by personality (psychoticism and neuroticism), stress states (worry, distress and task engagement) and coping strategies (emotion-focused and avoidance focused) in a task-induced stress situation.

Individuals scoring high in neuroticism or psychoticism will be more likely to consume alcohol. Individuals who report using emotion-focused coping strategies will be more likely to select an alcoholic beverage. The perceived stress of the task is also expected to influence alcohol selection. Specifically, participants will be more likely to select an alcoholic beverage if they feel the task is distressing. Task difficulty was expected to moderate alcohol consumption; specifically individuals in the harder condition were expected to be more likely to select an alcoholic beverage. Personality is expected to interact with task difficulty, with participants who score high on neuroticism and are in the harder condition being the most likely to select an alcoholic beverage.
Chapter II

Method

Participants

A total of 129 undergraduates at the University of Cincinnati participated in partial fulfillment of an Introductory Psychology course requirement. Thirty-seven participants (29%) were removed due to data collection failures, other technical reasons, or error rates greater than specified cutoffs. The final sample consisted of 92 participants, 46 males and 46 females, between the ages of 21-41, with a mean age of 23 years old. All participants reported normal vision and hearing prior to completing the study.

Materials

Vigilance task. Presentation of stimuli for the shortened vigilance task was under the control of a 486-DX2/66 MHZ PC. Superlab for the PC was used to present the vigilance stimuli to the participants. All surveys and scales were delivered to the participant via the internet.

All participants completed a 16-minute vigilance task, divided into eight 2-minute periods of watch. This shortened vigilance task was based on the 12-minute vigilance task used by Temple, et al. (2000). The 16 minute vigil used the same probability of presentation for a critical signal ($p = .20$), and each non-critical signal ($p = .40$). The respondent was required to identify a critical signal (an O) by pressing the spacebar; no response was required for a non-critical signal (D or a backwards D). Responses to the critical signal occurring within 1000 ms seconds were recorded as correct detections (hits); all other responses were recorded as errors of commission (false alarms). The practice session consisted of 46 trials and
the experimental session consisted of eight periods with 115 trials per period.

Two levels of discrimination difficulty (easy and hard) were created by altering the contrast of the letter in relation to the white background. The value in the easy condition was 52% and the value for the hard condition was 29%. Ambient illumination in the testing room was provided by a rear fluorescent light and was 6.25 cd/m². A total of two pilot studies (17 participants per study) were conducted to insure that the two levels of discrimination difficulty (easy vs. hard) in the vigilance task were significantly different.

*Questionnaire measures.* Presentation of all questionnaires was conducted via the internet in a laboratory environment. Participants were required to read each questionnaire on the screen and select a response. Once the participant submitted the survey an email with the data was sent to the researcher. If any question was not completed the participant was directed to complete the question(s) and then click the submit button when they were done. Several questionnaires were used to gather general information about the participant’s experiences with alcohol, personality, stress and coping.

The demographic questionnaire was used to gather basic demographic data, computer usage data and some details about the participant’s previous use of alcohol. Alcohol usage questions focused on consumption frequency and amounts. A short personality adjective rating scale was also included. The full demographic questionnaire can be found in Appendix B.

A brief version of the Alcohol Expectancy Questionnaire (AEQ; Brown, et al., 1987) was used to assess social facilitation and social assertion using 20 statements where the participant must answer ‘True’ or ‘False’. Some samples
The Eysenck Personality Questionnaire-Revised (EPQ-R) measures personality on four dimensions: Neuroticism, Psychoticism, Extroversion, and Social Desirability (lie scale; H. J. Eysenck, 1997; H. J. Eysenck & S. B. Eysenck, 1991; S. B. Eysenck, et al., 1985). Participants answer ‘Yes’ or ‘No’ to 48 questions representing all four dimensions of personality see Appendix C. For example a neuroticism question would be “Does your mood often go up and down?”, a question evaluating psychoticism would be “Do you take much notice of what people think?”, a sample extroversion question would be “Are you a talkative person?”, and a sample question from the Social Desirability scale would be “If you say you will do something, do you always keep your promise no matter how inconvenient it might be?”.

The Dundee Stress State Questionnaire (DSSQ; Matthews et al., 1999; 2002) assesses transient states associated with mood, arousal, and fatigue. The DSSQ is administered directly prior to the vigilance task and directly after the vigilance task. The Post-DSSQ measure also includes a workload measure. The workload measure included in the Post-DSSQ has been found to be similar to the NASA-TLX (Hart & Staveland, 1988; Matthews, et al., 1999). A copy of the DSSQ-Pre and DSSQ-Post can be found in Appendices D and E respectively.

The Coping Inventory for Task Stress- Situational (CITS-S) measures the use of task-/problem- focused, emotion-focused, and avoidance coping strategies in a
task-induced stress situation (Matthews & Campbell, 1998). The CITS-S requires participants to rate 21 statements that are representative of the three coping strategies on a five point scale of ‘Not at all’ to ‘Extremely’. For example, “Worked out a strategy for successful performance” would be an example of a task/problem-focused question; “Worried about what I would do next” is an emotion-focused coping question; and “Stayed detached or distanced from the situation” is an example of an avoidance coping strategy question. The full version of the CITS-S is located in Appendix F.

Taste-testing task. There were a total of four different beverage options provided to all participants. All beverages were presented in a clear 16 oz. bottle with a white label stating the name of each beverage on the front (lemon-lime soda, grape juice, wine, beer). Non-alcoholic versions were used for the beer and wine beverages. All brand information was removed from the beverages. All beverages were served cold. Participants completed two taste-testing questionnaires during this portion of the study (Appendix G).

Design and Procedures

Participants arrived to the session and were required to present a valid driver’s license to verify that they were 21 years of age or older. The participant then reviewed and signed two copies of the informed consent statement and returned one copy to the experimenter. Participants read a set of instructions for the study (See Appendix A) where they were informed there would be two studies for them to participate in for a total duration of one hour and 15 minutes. Participants then began completing the pre-task questionnaires. Participants completed a general demographic questionnaire (see Appendix B), the brief version
of the Alcohol Expectancy Questionnaire, the EPQ-R (see Appendix C), and the DSSQ Pre-Test (see Appendix D). Upon completion of these questionnaires the participant was then instructed to complete a computerized vigilance task (see Appendix H for full instructions). Participants were randomly assigned to either the easy or difficult vigilance task. Upon completion of the 16 minute vigil, the participant was presented with the DSSQ Post-Test (see Appendix E), and the CITS-S (see Appendix F). Questionnaires were presented in the same order to all participants.

Upon completion of the CITS-S participants were instructed to move to another room to complete the second part of the study, a taste-testing task. Participants entered the room and were presented with four clear 16 oz. bottles with black and white labels for each beverage type (lemon-lime soda, juice, wine and beer). Participants were informed that the purpose of the study was to gather beverage rating data for the beverage of their choice. They were instructed they would have six minutes to consume the beverage they selected and complete a short taste rating form. Once a beverage was selected the participant was given a cup and the short taste rating form (see Appendix H). The form consisted of eight statements about the visual appeal and taste of the beverage. Participants rated each statement on a Likert-type rating scale with 1 (Strongly Agree) to 5 (Strongly Disagree). Participants were asked to take one sip of the beverage and then complete the rating form. The rating form was then taken from the participant and they were given five minutes to consume as much beverage as they desired. Participants were instructed that the researcher would return at the end of the five minutes with a second taste rating form.
The second taste rating form included the same eight rating questions from the first form plus two additional questions about the beverage brand and why they selected a particular beverage (see Appendix H). A Breathalyzer was used to ensure that no participant left the session with a blood alcohol level (BAL) above the legal limit. Since all participants who selected an alcoholic beverage option were really given a non-alcohol equivalent no participant had a BAL above the legal limit (.08). The taste-rating task was used to distract the participant from the purpose of the study and to see if they selected an alcoholic or nonalcoholic beverage.

Participants were debriefed at the end of the taste-testing portion of the study. A copy of the debriefing statement is located in Appendix I. Participants were informed that the goal of the questionnaires and computer task was to see if their ratings on the DSSQ would change after completing an easy or difficult computerized vigilance task. They were told that the goal of the taste-testing study was to see if there were any relationships between completing a computerized task that may or may not be perceived as stressful and their beverage choice and consumption amount. Participants were also asked not to share the goal and purpose of the study until after the end of the term.
Chapter III

Results

General Demographics

Self-report data were collected on current drinking behavior. Participants provided information on how often they consumed alcohol. 65% of the participants reported drinking alcohol once a month or more often (see Figure 2).

![Frequency of Alcohol Consumption](image)

*Figure 2: Frequency of alcohol consumption of participants.*

Self-report data were also collected on the number of beverages consumed by participants when they are drinking. On average, participants reported consuming 3.5 beverages when they consume alcohol (see Figure 3). When participants were asked to report the greatest number of drinks they had consumed at a single time the average was 5.88 drinks. (see Figure 3).
**Vigilance Task Performance**

Vigilance performance was assessed in relation to correct signal detections and false positive responses. It was hypothesized that participants in both the hard and easy vigilance task would show a vigilance decrement, with individuals in the hard condition performing significantly worse. No gender differences were expected in performance on the vigilance task.

**Signal Detections.** As seen in Figure 4, there was a vigilance decrement for both the easy and hard vigil conditions. The decrement was more pronounced for individuals in the hard condition. This was confirmed with a 2 (task difficulty) X 8 (period) mixed model ANOVA, with repeated measures on the period variable. Effect sizes are represented by partial eta-squared. There was a significant vigilance decrement indicated by the main effect of period, $F(7, 630) = 12.94, p < .01, \eta^2_p = .13$ and a main effect of task difficulty was found, $F(1, 90) = 4.13, p < .05, \eta^2_p = .04$ such that performance was significantly worse for individuals in the hard condition. There was also a significant interaction between period and task.
difficulty level, $F(7, 630) = 2.02, p < .05, \eta^2_p = .02$ associated with a larger vigilance decrement in the hard condition.

![Figure 4](image)

**Figure 4**: Mean percentage of correct detections for the easy and hard vigilance tasks plotted as a function of watch period (2 minute periods). Error bars are representing standard error.

**False Alarms.** Mean percentages of false alarms by vigilance task difficulty are presented in Figure 5. Overall, false alarm rates were low, with the highest false alarm rate being 2.7%. A 2 (task difficulty) X 8 (period) mixed model ANOVA, with repeated measures on the period variable, was conducted to look for differences in false alarm rates. There was a main effect of task difficulty, $F(1, 90) = 14.18, p < .01, \eta^2_p = 14$ with participants in the easy condition committing significantly fewer false alarms than participants in the hard condition. There was also an interaction between vigil difficulty and period, $F(7, 630) = 2.10, p < .05, \eta^2_p = .02$ such that false alarms tended to increase over time in the hard condition only.
Figure 5: Mean percentage of false alarms for the easy and hard vigilance tasks plotted as a function of watch period (2 minute periods). Error bars are presenting standard error.

**Workload.** Contrary to expectation, there were no significant differences in perceived mental workload in relation to vigil task difficulty (easy condition $M = 32.5; SD = 10.06$; hard condition $M = 31.37; SD = 8.41$), $t(90) = .56, p > .1$.

**Post-Task Stress State**

It was expected that both vigilance task conditions would cause changes in stress state for all participants. Specifically, for the three secondary factors I expected increased levels of distress and worry and decreased levels of task Engagement. The changes were expected to be greater for participants in the hard condition. All comparisons of data from 10 DSSQ scale scores between pre-vigil and post-vigil phases were standardized against a normative British sample obtained from Matthews et al. (1999). The following formula was used to obtain a standardized change score:
\[ z = (M_{\text{phase}} - M_{\text{norm-group}}) / SD_{\text{norm-group}} \]

**Coarse-Grained Analysis.** Data from the DSSQ were analyzed at a coarse and fine-grained level. The coarse-grained analysis provides data on the three secondary factors of the DSSQ, worry, distress and task engagement. A 2 (task difficulty) X 2 (time) mixed model ANOVAs, with repeated measures on the time factor, were computed on the differences between pre and post task scores for each of the three factors. Effect sizes were calculated using partial eta-squared.

Significant differences were found for worry, \( F(1, 90) = 16.62, p < .01, \eta^2_p = .156 \) distress, \( F(1,90) = 72.05, p < .01, \eta^2_p = .45 \) and task engagement, \( F(1, 90) = 14.68, p < .01, \eta^2_p = .14 \). The only respect in which participants differed based on task difficulty was for task engagement. Individuals in the hard condition showed a significant drop in task engagement when compared to the participants in the easy condition, \( F(1, 90) = 4.78, p < .05, \eta^2_p = .02 \).

---

**Figure 6:** DSSQ Pre and Post Scores for worry, Distress and Task Engagement listed by task difficulty.
**Fine Grained Analysis.** Analysis of the 10 DSSQ scales further elucidated the state changes induced by performing the task. A 2 (task difficulty) X 2 (time) mixed models ANOVAs, with repeated measures on the time variable, for each of the 10 scales. Figure 7 shows the individual scale score changes, from pre to post task, by task difficulty.

![Figure 7: DSSQ scale scores changes from pre to post task by task difficulty.](image)

As expected there was a significant reduction in the task engagement components, concentration, \( F(1, 90) = 29.393, p < .01, \eta^2p = .25 \) and motivation, \( F(1, 90) = 28.05, p < .01, \eta^2p = .24 \) when comparing Pre and Post DSSQ scores (time variable). There was also a main effect of vigil difficulty for both concentration, \( F(1, 90) = 4.01, p < .05, \eta^2p = .04 \) and motivation, \( F(1, 90) = 4.13, p < .05, \eta^2p = .04 \). As expected, participants in the hard vigil condition exhibited lower levels of concentration and less motivation after the vigilance task; in comparison to the participants in the easy vigil condition. An overall decrease in energetic arousal was expected across time; but this did not turn out to be significant. There was a significant interaction between task difficulty and time, \( F(1, 90) = 3.89, p = .05, \eta^2p = .04 \). This interaction is due to individuals in the hard vigil condition reporting the lowest levels of energetic arousal after completing the vigilance task, all \( p \) values < .05 (see Figure 8 for results).
It was hypothesized that participants would experience higher levels of nervousness (tense arousal), unpleasant mood (low hedonic tone), and lower levels of confidence and control. All of these factors are components of distress. As predicted, participants did experience significant increases in tense arousal, $F(1, 90) = 46.39, p < .01, \eta^2_p = .34$, Hedonic Tone, $F(1, 90) = 41.69, p < .01, \eta^2_p = .32$ and a decrease in confidence and control, $F(1, 90) = 14.74, p < .01, \eta^2_p = 14$. There was also a significant main effect of task difficulty for confidence and control, $F(1, 90) = 6.99, p < .01, \eta^2_p = 07$. Participants in the hard vigil condition exhibited lower levels of confidence and control when compared to easy vigil condition participants (see Figure 9 for all distress scores).

Figure 8: DSSQ Pre and Post Scale Scores for Task Engagement.

Note. EA = Energetic Arousal, Mot. = Motivation, Conc. = Concentration.
While differences were expected for worry, I did not have specific hypotheses for the scales that compose the worry construct. Participants experienced significant decreases in self-focused attention, $F(1, 90) = 38.35, p < .01, \eta^2 p = .30$, self-esteem, $F(1, 90) = 44.28, p < .01, \eta^2 p = .33$, task-related interference, $F(1, 90) = 66.21, p < .01, \eta^2 p = .42$ and task-irrelevant interference, $F(1, 90) = 26.43, p < .01, \eta^2 p = .23$ from pre to post task. There was no main effect of task difficulty for any of the worry scales. There were also no interactions between task difficulty and time (see Figure 10 for all worry scores).
Coping Strategies (CITS-S). An individual’s coping strategies were measured once the participants completed the vigilance task and the post-task DSSQ. Three independent sample $t$-tests were calculated comparing differences in coping scores by task difficulty. The only difference in coping strategies found between the easy and hard condition was for the emotion-focused coping strategy (see Figure 11). As expected, participants in the hard condition used more emotion-focused coping strategies than participants in the easy condition $t(90) = 2.93, p < .01$. A difference between participants in the hard and easy condition on the Avoidance coping strategy was also expected, but was not statistically significant $t(90) = 1.91, p < .06$. 

*Figure 10*: DSSQ Pre and Post Scores for the Worry scale by vigil task condition.

Predictors of Habitual Alcohol Consumption

It was hypothesized that personality would be related to alcohol consumption and alcohol expectancies. Table 1 represents the inter-correlations of all the temporally stable measures (personality, alcohol expectancies, and alcohol consumption) for all participants. Neuroticism and psychoticism were expected to be positively related to self-report consumption behavior, but they were not. Social assertion was correlated with two of the personality measures. Individuals scoring high neuroticism were more likely to have social assertion alcohol expectancies; the opposite was true for extroversion. Someone scoring low in extroversion (high introvert) was more likely to have an increase in social assertiveness.

To assess whether or not alcohol expectancies were related to self-report consumption behavior, the alcohol expectancy scores were correlated with the three self-reported consumption questions from the general demographic survey. As seen in Table 1, all three consumption measures were significantly correlated with
both alcohol expectancy measures, all $p < .05$. Both social facilitation and social assertiveness appear to promote consumption.

Table 1

*Correlations of personality traits, task performance, alcohol expectancies and alcohol consumption*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>P</th>
<th>E</th>
<th>AEQ: S.F.</th>
<th>AEQ: S.A.</th>
<th>How Often Consumed</th>
<th>Typical Number Consumed</th>
<th>Consumed Past Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>----</td>
<td>.257*</td>
<td>-.108</td>
<td>.088</td>
<td>.208*</td>
<td>.005</td>
<td>-.062</td>
<td>-.161</td>
</tr>
<tr>
<td>2</td>
<td>----</td>
<td>-.135</td>
<td>.192</td>
<td>.166</td>
<td>.112</td>
<td>.022</td>
<td>.025</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>----</td>
<td>-.020</td>
<td>-.284**</td>
<td>.109</td>
<td>-.030</td>
<td>.038</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>----</td>
<td>.443**</td>
<td>.447**</td>
<td>.278**</td>
<td>.335**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>----</td>
<td>.243*</td>
<td>.266*</td>
<td>.341**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>----</td>
<td>.303**</td>
<td>.546**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>----</td>
<td>.640**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>----</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* N=Neuroticism, P=Psychoticism, E=Extroversion, AEQ: S.F. = Social Facilitation, AEQ: S.A. = Social Assertiveness, How Often Consume= How often participants consumed alcohol (scored from never to more than once a day), Typical Number Consumed = Typical number of drinks consumed when they drink, Consumed past month= the greatest number of drinks they consumed in a single time in the past month.

** $p < .01$, * $p < .05$.

**Predictors of Task-Induced Stress.** Table 2 represents the relationship
among the stable traits (personality, alcohol expectancies) and the transient states measures (pre-task stress state). As noted in Table 2, personality traits and alcohol expectancies were correlated with stress state, prior to completing the vigilance task. Specifically, extroversion was positively correlated with task engagement; Neuroticism was correlated with both distress and worry; while psychoticism was correlated with worry. Social assertion was positively correlated with Distress, pre-task.

Except for the correlation between extroversion and task engagement, the correlations for the all traits were the same for the pre-task and post-task phases of the study. This result shows us both personality and social assertion are related to stress state without the introduction of any task stressors.
Table 2

Correlations of personality traits, alcohol expectancies, coping strategies, stress states for all participants

<table>
<thead>
<tr>
<th>Pre-task Stress States</th>
<th>Distress</th>
<th>Worry</th>
<th>Task Engage.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.149</td>
<td>-.142</td>
<td>.266*</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.472**</td>
<td>.502**</td>
<td>-.072</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>.147</td>
<td>.232*</td>
<td>-.032</td>
</tr>
<tr>
<td><strong>Alcohol Expect.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Fac.</td>
<td>.094</td>
<td>-.075</td>
<td>-.067</td>
</tr>
<tr>
<td>S. Assert.</td>
<td>.231*</td>
<td>.124</td>
<td>.006</td>
</tr>
</tbody>
</table>

*Note.* S. Fac. = Social facilitation, S. Assert. = Social Assertion.

** p < .01, * p < .05.

While Table 2 provides an argument for a pre-existing relationship between personality traits and stress state, differences were also found in how personality related to post-task stress state based on the vigil difficulty condition. All correlations by task difficulty can be found in Appendix J (Tables 3 and 4). There were four correlations that were different based on task difficulty. In the hard condition, neuroticism was positively correlated with distress, $r(44) = .39, p < .01$ and emotion-focused coping, $r(44)= .535, p < .01$. Individuals scoring high in neuroticism were more likely to use emotion-focused coping strategies, as we expected, but, we did not expect them to show higher levels of distress. I did expect neuroticism to correlate with worry, as well, but that correlation was not
significant for participants in the hard condition.

For participants in the easy condition, psychoticism was positively correlated with worry, \( r(44) = .324, p < .05 \). Social assertion was the only alcohol expectancy that was correlated with any of the stress and coping measures, and this result only occurred for participants in the hard condition, \( r(44) = .356, p < .05 \).

Table 5 shows correlations for personality traits and alcohol expectancies with post-task stress states and coping strategies. Overall, neuroticism was positively correlated with post-task worry and distress. Psychoticism was also positively correlated with worry. The only alcohol expectancy that was related to stress state was social assertion. Social assertion was positively correlated with distress. Participants who believed that alcohol provided a level of social assertiveness experienced higher distress during performance.
Table 5

**Correlations of personality traits, alcohol expectancies, coping strategies, post-task stress states for all participants**

<table>
<thead>
<tr>
<th></th>
<th>Post-task Stress States</th>
<th>Coping Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distress</td>
<td>Worry</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.115</td>
<td>-.018</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.236*</td>
<td>.261*</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>.160</td>
<td>.283**</td>
</tr>
<tr>
<td><strong>Alcohol Expect.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. S. Fac.</td>
<td>.101</td>
<td>-.009</td>
</tr>
<tr>
<td>5. S. Assert.</td>
<td>.293**</td>
<td>.172</td>
</tr>
</tbody>
</table>


**p < .01, * p < .05.

**Predicting Post-Task Stress State**

To assess the impact of these stable factors (personality traits and alcohol expectancy) on state factors (stress states and coping strategies) multiple regression analyses were conducted. The goal was to find a model to explain the influences of these factors on post-task stress state (worry and distress) and coping strategies (emotion-focused). Regressions included only those variables that were significantly associated in the bivariate analyses.

Multiple regression analyses were conducted using post-task distress, worry and emotion-focused coping strategies as dependent variables. The predictors
included were neuroticism and social assertion for distress, psychoticism for worry, and neuroticism for emotion-focused coping. Task difficulty, a categorical variable, was coded as 1 for hard and -1 for easy. Interaction terms were included where the bivariate analyses suggested that predictors of the criterion might differ across the two task conditions. They were calculated as product terms, i.e., predictor × task difficulty. The continuous variables were centered prior to the analysis in order to reduce multi-collinearity. A test of the full models, including all predictors, were significant for distress, ($ΔR^2 = .13$), $F(4, 91) = 4.27, p < .01$; emotion-focused coping, ($ΔR^2 = .26$), $F(3, 91) = 11.55, p < .01$. A test of the full model for worry approached significance, ($ΔR^2 = .05$), $F(3, 91) = 2.60, p = .06$. To assess multicollinearity, variance inflation factors were calculated for each predictor; all VIFs were < 2.0, implying that multicollinearity was not an issue.

As seen in Table 7, social assertion was the only factor that significantly predicted post-task distress. Task difficulty was approaching significance with a $p$ value < .07. Neuroticism, task difficulty and the Neuroticism x Task Difficulty interaction were all significant predictors of emotion-focused coping (see Table 8). Finally, psychoticism was found to significantly predict post-task worry (see Table 9). The results from these three regression analyses start to explain the relationship between the trait and state variables. With neuroticism controlled, the task manipulation acted only to increase use of emotion-focused coping strategies. In addition, participants scoring high on neuroticism showed higher levels of both distress and emotion-focused coping strategies when trying to deal with the task stressor. Social assertion had an effect on distress with the other variables controlled. While task difficulty did not have a significant impact on distress, there
was a trend. In addition, high neuroticism individuals were especially high in emotion-focus during performance of the difficult task, as evidenced by the significant interaction. Participants high in psychoticism were more prone to stress to the extent that psychoticism correlated with post-task worry. Since the Psychoticism x task difficulty interaction was not significant, I can determine that psychoticism did not specifically relate to task-induced stress.

Table 6

*Summary of regression analysis for predicting Post-task Distress*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE$_b$</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Difficulty</td>
<td>.181</td>
<td>.097</td>
<td>.185</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.148</td>
<td>.100</td>
<td>.151</td>
</tr>
<tr>
<td>Social Assertion</td>
<td>.206</td>
<td>.102</td>
<td>.209*</td>
</tr>
<tr>
<td>N x Task Difficulty</td>
<td>.125</td>
<td>.101</td>
<td>.126#</td>
</tr>
</tbody>
</table>

*Note.** p < .01, * p < .05, # .05 < p < .1.*

Table 7

*Summary of regression analysis for predicting Emotion-focused Coping*

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE$_b$</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Difficulty</td>
<td>.249</td>
<td>.091</td>
<td>.250**</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.364</td>
<td>.092</td>
<td>.364**</td>
</tr>
<tr>
<td>N x Task Difficulty</td>
<td>.206</td>
<td>.092</td>
<td>.205*</td>
</tr>
</tbody>
</table>

*Note.** p < .01, * p < .05.*
Table 8

Summary of regression analysis for predicting Post-task Worry

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEₜ</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Difficulty</td>
<td>.005</td>
<td>.092</td>
<td>.005</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>.252</td>
<td>.093</td>
<td>.282**</td>
</tr>
<tr>
<td>P x Task Difficulty</td>
<td>-.031</td>
<td>.093</td>
<td>-.034</td>
</tr>
</tbody>
</table>

Note. ** p < .01, * p < .05.

Predictors of Beverage Choice

A logistic regression was performed on alcohol selection as an outcome with five predictors: gender, task difficulty, personality, stress state, coping strategy. Logistic regression allows a categorical dependent variable to be predicted from both categorical and continuous variable. All variables used in the regression analysis were centered to reduce covariance between interaction terms and the individual main effects (Pedhazur, 1997). Logistic regression provides information about the percentage of cases that are correctly predicted by the model, the statistical significance of each coefficient (Wald Test) and the probability (odds ratio). I hypothesized that an individual’s selection of an alcoholic beverage during the taste-testing portion of the study would be influenced by personality, task difficulty, stress state, and coping strategy. Gender was included to assess any potential gender differences, but no gender differences were found. In the first logistic regression I also tested for any interactions between task difficulty and personality traits, again calculated as product terms. All predictors were entered into the first block, and the interactions were entered into the second block of the regression analysis. The overall fit for the model was $X^2(11, N = 92) = 19.25, p <$
None of the interactions were significant: Extroversion X Task Difficulty ($z = 3.42, p > .05$), Neuroticism X Task Difficulty ($z = 0.99, p > .05$), and Psychoticism X Task Difficulty ($z = 0.17, p > .05$). From this point forward, all logistic regression analyses will only include the linear terms, since none of the interactions were significant.

To identify the factors that predicted alcohol selection, a logistic regression was performed using five predictors: gender, task difficulty, personality, stress state, coping strategy. Since some overlap exists between stress state and coping strategies, two different logistic regressions were conducted. Table 6 shows the impact of personality, gender, task difficulty and stress state on beverage selection. Again, the overall model was not significant, $p > .1$. It correctly classified 96% of the non-alcohol beverage selection and 19% of the alcohol beverage selection, for an overall success rate of 74%. As shown in Table 6, psychoticism and extroversion were the only significant predictors of beverage selection. The second logistic regression evaluated the impact of personality, gender, task difficulty and coping strategies on beverage selection. That is, stress states were replaced with the coping variables as predictors. Results were similar to the previous regression. The overall model was not significant, $p > .1$. 94% of the non-alcohol beverage selection and 23% of the alcohol beverage selection was correctly classified with this model. The overall success rate of this model was 73%. Coping strategies were not a significant predictor of beverage selection.

In the current experimental paradigm, personality factors were the strongest predictors for beverage choice, although prediction of beverage choice was generally weak. Beverage choice did not seem to be influenced by task stress. The
stress and coping variables were unrelated to beverage choice, and there were no
significant interactions between personality factors and task difficulty.

Table 9

*Logistic regression analysis of alcohol beverage selection as a
function of personality, gender, task difficulty and stress state*

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald Test (z-ratio)</th>
<th>df</th>
<th>Sig.</th>
<th>Odds Ratio</th>
<th>Upper</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sample N = 92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>-.245</td>
<td>.290</td>
<td>.712</td>
<td>1</td>
<td>.399</td>
<td>.783</td>
<td>.443</td>
<td>1.382</td>
</tr>
<tr>
<td>P</td>
<td>.690</td>
<td>.290</td>
<td>5.663</td>
<td>1</td>
<td>.017</td>
<td>1.993</td>
<td>1.129</td>
<td>3.518</td>
</tr>
<tr>
<td>E</td>
<td>.623</td>
<td>.306</td>
<td>4.144</td>
<td>1</td>
<td>.042</td>
<td>1.864</td>
<td>1.023</td>
<td>3.395</td>
</tr>
<tr>
<td>Gender</td>
<td>-.176</td>
<td>.284</td>
<td>.385</td>
<td>1</td>
<td>.535</td>
<td>.839</td>
<td>.481</td>
<td>1.462</td>
</tr>
<tr>
<td>Vigil Diff.</td>
<td>.244</td>
<td>.274</td>
<td>.795</td>
<td>1</td>
<td>.373</td>
<td>1.276</td>
<td>.746</td>
<td>2.183</td>
</tr>
<tr>
<td>Worry</td>
<td>.012</td>
<td>.296</td>
<td>.002</td>
<td>1</td>
<td>.967</td>
<td>1.012</td>
<td>.566</td>
<td>1.810</td>
</tr>
<tr>
<td>Engage</td>
<td>.146</td>
<td>.265</td>
<td>.302</td>
<td>1</td>
<td>.582</td>
<td>1.157</td>
<td>.688</td>
<td>1.944</td>
</tr>
<tr>
<td>Distress</td>
<td>-.324</td>
<td>.283</td>
<td>1.314</td>
<td>1</td>
<td>.252</td>
<td>.723</td>
<td>.416</td>
<td>1.258</td>
</tr>
<tr>
<td>Constant</td>
<td>-.985</td>
<td>.306</td>
<td>10.373</td>
<td>1</td>
<td>.001</td>
<td>.374</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N= Neuroticism, P= Psychoticism, E= Extroversion, Vigil Diff=
Vigil Difficulty, Worry = Post-task Worry, Engage= Post-task Task
Engagement, Distress = Post-task Distress.

** p < .01, * p < .05.*
Chapter IV

Discussion

The overall goal of this study was to predict the impact of personality, alcohol expectancies, coping strategies, stress state, and task difficulty on alcohol consumption. The vigilance task proved to be effective as a stress induction. All participants exhibited a significant vigilance decrement, with participants in the hard condition performing significantly worse. Participants exhibited higher levels of distress and some aspects of worry and decreased levels of task engagement. The only significant difference in coping strategies was for participants in the hard condition; they exhibited higher levels of emotion-focused coping than those in the easy condition.

Alcoholic beverage selection was hypothesized to be predicted by personality (psychoticism and neuroticism), task-induced stress (worry, distress, and task engagement), and coping strategies (emotion-focused and avoidance focused) in a task-induced stress situation. Because neuroticism relates to stress vulnerability, it was expected that this personality trait would relate to a preference for alcohol specifically in the stressful environment created by the difficult task. In fact, the only factors that significantly predicted beverage selection were psychoticism and extroversion, although prediction of beverage choice was generally weak. Stress and coping variables were unrelated to beverage choice, and task difficulty did not significantly interact with personality.

The second hypothesis identified predictors of task-induced stress. I expected personality factors and alcohol expectancies would predict stress state and coping strategies. Neuroticism was expected to be the major predictor of stress
response to the task. Correlations were conducted with the predictor variables (personality and alcohol expectancies) on post-task stress and coping strategies. These analyses confirmed that neuroticism was positively correlated with post-task distress, worry and emotion-focused coping. Regressions were conducted for only those variables that were significantly associated in the bivariate analysis. Overall, social assertion was the only factor that significantly predicted post-task distress. Psychoticism predicted post-task worry. Three factors predicted emotion-focused coping, task difficulty, neuroticism and a Neuroticism X Task Difficulty interaction, such that neuroticism was more strongly related to emotion-focused coping following the difficult task.

The third hypothesis identified predictors for habitual alcohol consumption. It was hypothesized that personality factors (psychoticism and neuroticism) and alcohol expectancies (social facilitation and social assertion) would predict habitual alcohol consumption (measured by self-reported consumption behavior). The only factor that predicted alcohol consumption was social assertion. So while personality predicted alcohol selection behavior in the current study; it does not predict overall consumption behavior.

Next, findings related to the three hypotheses are discussed in more detail.

Predictors of Beverage Choice

Overall, beverage selection was not influenced by stress state or coping strategies. It was hypothesized that participants would consume more alcohol after completing the vigilance task. It was expected that trait (personality) and state factors (post-task stress state and coping strategies) would influence beverage selection. Contrary to expectation, high neuroticism individuals did not prefer an
alcoholic beverage, although, as discussed in the next section, these individuals appeared to be more vulnerable to stress. In fact, the subjective state and coping variables were unrelated to beverage choice, implying that stress was not a major influence on beverage choice.

The only factors that predicted alcohol selection were the personality traits of psychoticism and extroversion. Previous researchers have stated that the personality trait, psychoticism, is a higher-order personality factor that is made from a combination of low levels of agreeableness and conscientiousness (H. J. Eysenck, 1997). If a person scores high in psychoticism, they may be more likely to be impulsive (as measured by low levels of conscientiousness). Specifically, low levels of conscientiousness represent high levels of impulsiveness, undisciplined behavior and anti-social behavior. Low levels of conscientiousness are negatively correlated with psychoticism (Rawlings & Dawe, 2008). Several previous studies have identified a relationship between traits such as impulsivity and sensation-seeking and reasons for alcohol consumption and abuse (Hair & Hampson, 2006; Malouff, et al., 2007; Raynor & Levine, 2009). Specifically, McAdams and Donnellan (2009) related psychoticism directly to impulsivity and impulsivity to alcohol-related variables.

Researchers have also studied the biological bases of psychoticism and impulsivity (H. J. Eysenck, 1997; Matthews & Gilliland, 1999; Smillie, Jackson, & Dalgleish, 2006). H. J. Eysenck (1997) explained that the neurotransmitter dopamine was the common biological component of both psychoticism and impulsivity based on Gray’s Reinforcement Sensitivity theory (1994; as cited in Matthews & Gilliland, 1999). Gray believed that his Behavioral Approach System,
which represented individual differences in reward sensitivity, could explain impulsivity’s impact on behavior. The current study evaluated personality using Eysenck’s personality dimensions. Gray focuses on evaluating the same biological bases of personality using impulsivity and anxiety dimensions. Impulsivity is not perceived as only low conscientiousness, but as a separate trait that influences behavior. Matthews and Gilliland (1999) argue that impulsivity relates to different factors (high sensory threshold and subjective energy) just as well as extraversion (cortico-recticular and dopaminergic) and more so than psychoticism. The common factor between psychoticism and impulsivity is dopamine. Dopamine transmission is related to personality traits associated with emotionality, novelty, sensation-seeking and impulsivity (Ibáñez, Ruiperez, Villa, Moya, & Ortet, 2008). Previous research has also found psychobiological factors related to rewards and incentive motivations which are associated with impulsivity and alcohol use. Ibáñez et al., (2008) found that the rewarding effects of alcohol use are associated with dopamine release. The dopamine release may be higher for individuals who score high on psychoticism or impulsiveness, meaning they would find alcohol to be extremely rewarding. What this may imply is that psychoticism mediated alcohol selection via a psychobiological reward system that had nothing to do with the stress induction.

Alcohol consumption is related to multiple areas of the brain. Serotonin has been linked to alcohol dependence via negative affect/emotions (Ibáñez, et al., 2008). The Eysenckian personality factor that best represents negative affect would be neuroticism. This relationship between neuroticism and serotonin is present, but weak (Ibáñez et al., 2008). Part of alcohol dependence could also be related to the
tension-reduction hypothesis. Physiological data from animals have shown that alcohol can reduce anxiety, thus reinforcing consumption in rats (Ibáñez, et al., 2008). The reverse also occurred for the rats; once they started consuming alcohol and it was taken away, they exhibited withdrawal producing increased levels of anxiety. Again, the only way to reduce anxiety was to consume alcohol. The behavioral data for tension reduction is not consistent, but can lend support for a tension reduction approach in relation to alcohol expectances (Goldman, 1999b, 1999c; Goldman, Del Boca, et al., 1999). It is clear that alcohol consumption behavior can be influenced by various areas of the brain based on the goal of the participant.

I did not originally expect extroversion to predict alcohol selection behavior, given the inconsistent associations between the trait and alcohol use reported previously (Ibáñez, et al., 2008). On the one hand, some researchers have identified positive relationships between high levels of extroversion, sensation-seeking behavior and increased alcohol consumption (Martsh & Miller, 1997), as well as associations between extroversion and positive alcohol expectancies (Brown, et al., 1987). Conversely, a more recent meta-analysis found that extroversion related to alcohol involvement, but only for populations that were being treated for alcohol problems (Malouff, et al., 2007). Individuals receiving treatment for alcohol-related problems tended to score low on extroversion. In addition, studies of extroversion and alcohol consumption may have to take into account the definition of extroversion being used. For example, if high levels of extroversion are specifically measuring sensation-seeking behavior, then that would explain the use of alcohol. On the other hand, if extroversion is defined as warmth,
assertiveness, and positive emotions as defined in the Five Factor Model (FFM), it may not make sense for extroversion to predict alcohol consumption (McCrae & Costa, 1999).

Gray’s theory again could explain the relationship between extroversion and beverage selection with reference to impulsivity (Matthews & Gilliland, 1999), which is a key personality influence on alcohol use (Ibáñez, et al., 2008). Gray’s theory links impulsivity with the Eysenckian factor extroversion. So if impulsivity relates to both high psychoticism and extroversion, then that could explain why only those two factors were significant predictors of alcohol selection. It is possible that the three Eysenck factors are too broad to provide optimal prediction of alcohol use, and future research might focus on more narrowly-defined constructs, such as impulsivity.

Factors unrelated to the study may have also impacted alcohol selection behavior, weakening the sensitivity of the behavioral measure to personality. At the end of the study participants were asked to identify the main reason driving their beverage choice. These data were content analyzed and several categories were created. The interesting pieces of data are the reasons why participants did not choose alcohol. Sixty-six out of the 92 participants chose not to drink alcohol. Of these 66 participants, 65% reported a preference for non-alcoholic beverages, 19% reported not being in the mood to drink alcohol, and 16% reported that they do not drink alcohol (either by choice or because of a medical reason). Lack of alcohol selection could have little to do with response to the task manipulation and more to do with the participant’s expectations or mental models related to alcohol consumption.
The semantic network modeling work of Rather and Goldman (Goldman, 1989, 1999b, 1999c; Goldman, Darkes, et al., 1999; Goldman, Del Boca, et al., 1999; Rather, et al., 1992) may help explain why most of the participants did not select alcohol. They hypothesized that individuals each have a neural network model of alcohol expectancies and within this model are several templates related to alcohol expectancies. It is thought that the activation of these templates is situation specific. The idea is that in any given situation multiple templates are activated, and the template that best matches the situation is the one that is applied. These templates are based on biological (feelings), psychological (thoughts) and environmental (situation) experiences related to alcohol use. By the time individuals are in college, they have developed several templates related to alcohol consumption based on these factors. One of two template activation scenarios is possible. First, it is possible that the artificial nature of the laboratory (lack of social or group interactions) did not fit any templates that they had for alcohol consumption; therefore they did not choose to consume alcohol. Second it is possible that college students show a decline in consumption over time and this decline in consumption can lead to a decline in expectancies, thus altering the alcohol expectancy semantic network model (Sher, et al., 1996). This is known as a reciprocity effect (Bauman, et al., 1985; Smith, et al., 1995). This effect is more established in adolescents, but it is possible that it occurred in the current study. Participants in the current study reported lower levels of alcohol consumption behavior in a single session, 3.5 vs. 8.8 drinks in a single session, compared with the Corcoran and Parker (1991) study. This lower level of self-reported consumption behavior could support a change in the semantic network model itself.
Another factor that could have influenced the lack of alcohol selection was the laboratory environment. The current study took place in a sterile lab environment. In an effort to increase internal validity, I may have created an artificial drinking environment that did not seem realistic to the participants. The design of the taste-testing study was based on previous work by Corcoran (Corcoran & Parker, 1991; Kisler & Corcoran, 1997). In their study they placed an individual in a room and gave each participant 20 minutes to prepare a 10-minute presentation on their most embarrassing body part. The participant was also told that their presentation would be evaluated by a group of professionals. This stress manipulation was representative of a social anxiety situation, which is a very different type of stress induction from the current study. A task-induced stress manipulation, with no third party evaluation of participant performance, was used in the current study. It is possible that these two tasks induced different types of stress reactions in the participants and that is why they exhibited different alcohol selection behaviors.

Previous research has found a difference in alcohol expectancies related to the environment (Tran, Haaga, & Chambless, 1997). They found that social anxiety was a moderator for alcohol consumption. Individuals who did not expect alcohol to reduce tension did not consume more alcohol (regardless of their level of social anxiety). It is possible that participants did not consume alcohol (even if they normally would in high social anxiety situations) because they did not believe that alcohol consumption would elevate their anxiety. Tran, Haaga and Chambless (1997) also suggest multiple third variables that could confound the relationship between social anxiety and alcohol consumption. Specifically, they suggest that
negative expectancies (e.g., behavioral impairment) could lead individuals to avoid alcohol consumption for fear of behaving poorly. Participants in the current study could have been concerned about how their drinking behavior would be evaluated by the researcher. It is important to note that the current study did not directly measure social anxiety, although two alcohol expectancies related to social anxiety were measured (social facilitation and social assertion). Neuroticism has been linked to social anxiety (Norton, Cox, Hewitt, & McLeod, 1997). Norton et al. (2007) found generalized social anxiety to be correlated to neuroticism. In the current study, neuroticism was the only personality factor not correlated with alcohol consumption. This could lend support for the argument that social anxiety was not present in the current study and is important for inducing alcohol consumption in stressful situations. Future research needs to address the relationship of individual difference factors, like social anxiety, on drinking behavior.

One last possible reason for only a few participants selecting alcohol could be due to the selected sample of participants. Corcoran and Parker (1991) administered the AEQ in a group session as part of a different study. They excluded participants from the second part of the study (the stress manipulation) if they reported never consuming alcohol or had medical issues. In the current study, we did not exclude participants from the study based on these factors. Future research on this topic should look at possibly developing a more externally valid drinking situation.

Researcher gender may have indirectly played a factor in beverage selection. It is possible that male participants did not feel comfortable consuming alcohol in the presence of a female researcher. Future studies should control for Researcher
Gender X Participant Gender interactions.

**Predictors of Post-Task Stress State**

I hypothesized that task difficulty, personality, and alcohol expectancies would impact perceived stress state and coping strategies.

**Task Difficulty.** Task difficulty did impact participants’ perceived stress state and coping strategies. It was hypothesized that all participants would experience significant changes in stress for the three secondary factors of the DSSQ. As expected, all participants showed significant increases in distress and worry and a decrease in task engagement, on both task versions. The only state sensitive to task difficulty was task engagement. Individuals in the hard condition reported significantly lower task engagement after the task compared to participants in the easy condition. One might argue that participants just gave up on that task, but that is not the case. Data from the fine-grained analysis show us that individuals in the hard condition had significantly lower overall scores in concentration and motivation, as well as an interaction for both factors with task difficulty. Participants in the hard condition scored significantly lower on Concentration and Motivation than all other groups. Also, the lack of differences in task-focused coping, based on task difficulty, show that both groups of participants remained at least somewhat committed to maintaining performance on the task (Lazarus & Folkman, 1984). Task-focused coping strategies were the most often used coping strategies in the current study at both levels of difficulty.

**Task Difficulty and Coping.** I expected task difficulty to also influence coping strategies. Specifically, it was expected that participants in the hard condition would be more likely to use emotion-focused and avoidance coping
strategies than participants in the easy condition. Participants in the hard condition did use emotion-focused coping strategies more often. There was also a trend ($p = .06$) for task difficulty influencing the use of avoidance coping strategies. These data are consistent with findings from a study in which time pressure was used as a difficulty manipulation (Matthews & Campbell, 2009). Higher time pressure elevated both emotion-focus and avoidance coping strategies.

Results resemble those seen in previous vigilance studies that have shown increases in distress and decreases in task engagement (Grier, et al., 2003; Helton, et al., 1999; Matthews, et al., 1999; Szalma, et al., 2004; Temple, et al., 2000). Patterns of state change and coping may be understood in relation to Hockey’s theory discussed in the introduction (Hockey, 1997). Increased distress corresponds to the strain coping mode. In a strain-coping mode an individual has to increase their mental activity, possibly beyond capacity, to deal with the situation at hand. So, while participants may be able to adjust their strategies on the vigilance task, it only worked for a short period of time. Since the vigilance task was only 16 minutes in length, it could have been perceived as difficult (as noted by high levels of mental workload) and distressing (as noted by increased levels of post-task distress), but participants could have still completed the task successfully. The explanation supports the operation of the effort-based control loop (Loop B) of Hockey’s compensatory control model of performance regulation. Matthews et al. (2002) describes this as an “overload mode.” So, participants may have been able to perform in this “overload mode” for the duration of the task.

Task engagement significantly decreased for all participants. Individuals in the more difficult task condition show the sharpest decline in task engagement.
Decreased levels of task engagement correspond to Hockey’s passive-coping mode. For example, participants could have lowered their performance goals to complete the task. If taken to the extreme, the passive-coping mode could lead to an individual completely disengaging from the task. This complete disengagement is similar to the idea of avoidance coping (Endler & Parker, 1990). While I did find significant decreases in task engagement for all participants, especially for individuals in the more difficult task condition, I did not have the same reduction in energetic arousal. This partial disengagement could be the reason why I did not find a significant effect for the use of an avoidance coping strategy.

Hockey’s passive-coping mode is comparable to using emotion-focused coping strategies. The use of passive-coping mode calls for a reduction in performance goals. Matthew et al. (2002) also found that this reduction leads to a loss of motivation, concentration and energy. Participants in the current study showed significant drops in motivation and concentration from pre to post task; while overall task engagement decreased from pre to post task, participants did not show a significant drop in energetic arousal.

Research by Szalma et al. (2004) provides support for this argument. In their study the findings mirror the results of the current study for the three secondary stress factors. They found significant increases in post-task distress worry and decreases in task engagement. An unusual feature of the present data is that energy did not decline, although concentration and motivation did decline. Szalma et al., (2004) found significant changes in energetic arousal post-task. So, while a shortened vigilance task can elicit a significant vigilance decrement, it may not allow us to fully explore the impact of task-induced stress on coping strategies.
The changes in energetic arousal for the current study were very small (hard condition change $M=1.63$, $SD=4.88$; easy condition change $M=-.4130$, $SD=5.05$). It could be that large decreases in energetic arousal do not occur till later in the task. The current task was only 16 minutes, while Szalma’s vigilance task was 40 minutes in length. Future research should address the relationship between length of vigilance task and coping strategies in more prolonged task-induced stress situations.

While Hockey’s model of coping can explain how individuals cope with increases in distress and decreases in task engagement, it cannot explain the stress state of worry (Hockey, 1997; Matthews, et al., 2002). Worry incorporates self-referent negative thoughts or personal concerns individuals have about their performance. How an individual manages feelings of worry can impact their performance on the vigilance task. This management of feelings, or appraisal, can be explained using the work of Lazarus and Folkman (1984). Lazarus and Folkman describe coping and appraisal as an interactive process for an individual. Coping strategies can impact appraisal and appraisal can impact coping strategies. Matthews et al. (2002) also suggested that this appraisal process could include an internal or external assessment. For example, if an individual internally perceives themselves negatively (e.g., lacking in ability), then they would be more likely to exhibit emotion-focused coping strategies. By using this less effective coping strategy, they may not perform as well. The example illustrates how negative views about personal performance can lead a person to select a maladaptive coping strategy, and, by selecting an ineffective coping strategy the individual performs poorly, thus reinforcing thoughts of lack of ability. The relationship between
appraisal and coping strategy could also have a positive outcome. An individual could use a more successful task-focused coping strategy if they perceived themselves as competent (internal assessment) or the task as challenging (external assessment). The important point here is that appraisal and coping may mediate stress effects on performance and appraisal may be more predictive of performance than personality (Matthews & Campbell, 2009).

Based on these results, I believe that participants in the hard condition did find the task difficult, exhibited signs of stress and worry (via the use of emotion-focused coping strategies) but did not fully give up on the task.

**Personality, Coping and Stress.** It was hypothesized that both trait factors, personality and alcohol expectancies, would be related to stress and coping strategies. It was hypothesized that neuroticism would be positively correlated with post-task distress and worry and emotion-focused coping. I found that neuroticism was correlated with distress and worry (both pre-task and post-task versions) and with emotion-focused coping. This result is consistent with similar findings from Matthews and colleagues (Matthews, et al., 2002; Matthews, Schwean, et al., 2000).

Matthews and Campbell (2009) evaluated the relationship of neuroticism, appraisal and coping strategies. They found that, while neuroticism was associated with distress, threat and controllability appraisals, and emotion-focused coping, it was not as useful as a predictor of stress specifically induced by the task. One reason for this finding is that neuroticism is usually correlated with pre-task as well as post-task stress state (Matthews, et al., 1999). High neuroticism individuals may be more sensitive to the performance context as a whole than to the specific
task demands. In the current study, neuroticism was correlated with pre- and post-task distress and worry, as in previous research. Thus, stress states experienced prior to the task may have carried through into the task phase. In this study, the relationship between neuroticism and stress states was clearer in the bivariate correlations than in the regression analyses. However, the regressions confirmed that the relationship between neuroticism and emotion-focus is moderated by task difficulty, so that high neuroticism relates most strongly to emotion-focus in the hard condition, consistent with the idea that neuroticism represents stress vulnerability. It is possible that the primary effect of neuroticism is to influence emotion-focus coping, which, in turn, influences distress. In this case, the effect of neuroticism on distress would be indirect, and perhaps weaker than its effect on emotion-focused coping.

Neuroticism may also be related to coping strategies via cognitive appraisal. If a person high in neuroticism appraises a situation as extremely difficult or appraises themselves as missing a key skill, the person may be more likely to respond with an emotion-focused coping strategy.

The current study did not address the role of appraisal in mediating relationships between personality and coping strategies. If a relationship exists future researchers should consider incorporating appraisal into any study that evaluates coping strategies. Thus, the results confirm the hypothesis that more neurotic individuals are more vulnerable to task stress, as evidenced most strongly by the interactive effect of task difficulty and neuroticism on emotion-focused coping. However, this stress vulnerability did not translate into greater preferences for alcohol.
I expected high extroversion to be related to the use of task-focused coping strategies. This was not the case in the current study. As previously mentioned, the only personality factor related to coping strategies was neuroticism. The lack of a relationship between extroversion and task-focused coping is not completely clear. One possible reason for a lack of a relationship could be due to overall performance issues. Previous research linked low extroversion scores with improved performance on visual vigilance tasks (Harkins & Geen, 1975, as cited in Matthews et al., 2003). Based on my results, it is clear that participants utilized task-focused coping strategies, but task difficulty did not significantly influence the selection of task-focused coping strategies. This could be an argument for a lack of variation in the difficulty levels of the vigilance tasks. Future research should look to replicate this finding. No a priori predictions were made for extroversion mediating stress states. Consistent with findings from Matthews et al. (2002), I did find that extroversion was positively correlated with pre-task task engagement. This result supports the findings from Matthews et al. (2003), where they identified relationships between extroversion for pre-task task engagement and distress. I did not find a relationship between extroversion and pre-task distress.

One finding that I did not predict was a positive correlation between psychoticism and worry. Previous research has linked high psychoticism scores with disordered thinking (S.B. Eysenck, et al., 1985). These disordered thoughts could include hostility, cruelty, and lack of empathy. In general, the goal of the psychoticism scale is to measure disordered thought similar to that of schizophrenics. This interpretation of psychoticism suggests that it may relate to thought disturbances that are expressed as worry. Psychometrically, the construct
of worry correlates most strongly with five factors (self-focused attention, self-esteem, concentration, and task-related and task-irrelevant interference).

Someone who experiences disordered thinking could have issues with focusing their attention, concentrating and becoming easily distracted by task-related and personal concerns, leading to the association between psychoticism and worry.

**Predictors of Habitual Alcohol Consumption**

It was hypothesized that personality factors (specifically neuroticism and psychoticism) and alcohol expectancies (specifically social facilitation and social assertion) would be related to self-reported alcohol consumption in everyday life. Specifically, I expected that individuals scoring high on neuroticism and psychoticism would be more likely to report consuming alcohol. Overall, none of the personality traits were correlated with self-reported alcohol consumption measures. These results do not match previous research (Hair & Hampson, 2006; Malouff, et al., 2007; Martsh & Miller, 1997; McAdams & Donnellan, 2009; Raynor & Levine, 2009). They also contrast with findings that personality traits did predict alcohol selection behavior in this study.

One reason for the lack of relationship is that the trait of impulsivity that I attributed to be part of psychoticism may be a separate, distinct trait, not related to specific personality factors (Shaw, et al., in press). Since impulsivity was not measured for the current study, it is not possible to assess its direct impact. Previous researchers have suggested that impulsivity is related to arousal based on time-of-day; with impulsivity being related to a morning deficit (Humphreys & Revelle, 1984). I can conclude that this was not an issue in the current study since all participant data were collected in the afternoon and early evening, due to the
inclusion of alcohol consumption. As previously noted, future research may require a more fine-grained differentiation of impulsivity traits related to psychoticism.

A lack of significant correlation between personality and self-reported alcohol consumption could be due to low power. Previous studies that incorporated correlational analysis between personality and consumption behavior produced significant correlations for personality and alcohol consumption behaviors were between .22 and .28 (Hair & Hampson, 2006). I conducted a post-hoc power analysis on these significant correlations, finding that they achieved a high level of power, .89 (Cohen, Cohen, West, Aiken, 2003). Using the same tables to assess the power of the correlations among personality and alcohol consumption in the current study, I only achieved a post-hoc power of .16. Correlations with personality and self-reported alcohol consumption behavior for the current study were between .005 and .161. In the current study, personality may not have been correlated with consumption measures due to low power.

Another possible reason for the lack of relationship between personality factors and alcohol consumption could be related to the age of the sample. The current study only surveyed participants of legal drinking age (21 years of age or older), since alcohol consumption was part of the study. The average age of participants for Hair and Hampson (2006) was 20.3, Raynor and Levine (2009) included participants as young as 18 years of age, and McAdams and Donnellan (2009) surveyed only incoming freshmen. There may be an argument for changes in consumption behavior or possibly alcohol expectancies once a person is of legal age to consume alcohol. Some evidence exists for differences in consumption behavior. In the current study, participants reported consuming an average of 3.5
alcoholic beverages in a single session, while participants in the Corcoran and Parker (1991) study reported consuming an average of 8.8 alcoholic beverages per session.

The results supported the hypothesis that alcohol expectancy measures would be correlated with self-reported consumption behavior. The two alcohol expectancies measured in the current study were social facilitation and social assertion. The positive correlation between social facilitation and self-reported alcohol consumption measures supports previous research (Christiansen, et al., 1989; Corcoran, 1995a). The reciprocity effect, discussed in reference to the semantic network model, could explain this relationship (Bauman, et al., 1985; Smith, et al., 1995). Individuals choose to begin drinking alcohol due to high expectancies, they continue to drink and since their positive consumption experiences reinforce the existing positive alcohol expectancy scheme. Both of these expectancies focus on the positive impact of alcohol use to improve social interactions. Given these findings, the lack of association between alcohol expectancies and beverage choice may again raise the issue of whether the experimental paradigm is adequately representative of real life contexts for drinking.

Conclusion

The current study confirmed that personality traits may relate to both beverage choice and stress response in the specific context of this laboratory experiment, but it does have some limitations. With a study containing this many variables, there are concerns with adequate power and sample size. A larger sample size would help address the lack of power for testing correlations between personality factors
and alcohol consumption measures. Increasing sample size would also allow for the use of statistical techniques like Structural Equation Modeling (SEM). SEM allows researchers to model relationships among multiple independent and dependent constructs at the same time. For example, SEMs might be useful in testing models of inter-relationships between personality, appraisal, coping and stress state.

The ecological validity of the study needs to be addressed in future research. It is clear that using a vigilance task to induce stress in the current study did not induce the same types of stress responses as the Corcoran and Parker (1991) did with their embarrassing presentation situation. It is also clear that further research needs to be conducted on the relationship between alcohol expectancies and age. It is possible that once individuals reach legal drinking age a change occurs related to alcohol consumption behavior and expectancies.

Implications for future research should focus can be made based on this study. One is that situational factors may play more of a role in activating alcohol expectancies and influencing alcohol consumption behaviors. Just because a situation is stressful does not mean that individuals will look towards alcohol as a coping mechanism. Researchers need to look at more than just one type of stress induction. Based on the current study, it is clear to me that multiple trait and state factors influence a person’s response to a stressful task. If researchers wish to continue exploring personality’s ability to mediate an individual’s response to a stressful task, they need to conduct a more fine-grained differentiation of personality factors (e.g., neuroticism, impulsivity).

In conclusion, the findings of this study point to personality factors as being more predictive than alcohol expectancies and stress measures for the selection of
alcohol in my study. However, it appears that the situational stress manipulation did not make a difference in the use of alcohol as a coping mechanism. Although high neuroticism individuals are more stress-vulnerable, they did not show any tendency to prefer to drink alcohol as a means of coping. Psychoticism and extraversion were the traits that predicted alcohol choice. This finding may be attributed to the association of both these traits with impulsivity, whose effects on drinking may be driven by sensitivity to reward rather than by coping with stress. Future research should focus on developing more ecologically valid, tension-producing situations and evaluate both alcohol beverage consumption behaviors and alcohol expectancies.
References


Corcoran, K. J. (1994). Predicting reduction in tension following alcohol consumption in a stressful situation with the Alcohol Expectancy Questionnaire. *Addictive behaviors, 19*(1), 57.


Grier, R. A., Warm, J. S., Dember, W. N., Matthews, G., Galinsky, T. L., Szalma, J.


Lazarus, R. S. (1961). Adjustment and stress *Adjustment and Personality* (pp. 303-


McAdams, K. K., & Donnellan, M. B. (2009). Facets of personality and drinking in


Wickens, C. D., & Hollands, J. G. (1999). Signal detection, information theory, and absolute judgment *Engineering psychology and human performance* (pp. 17-
APPENDIX A: PARTICIPANT INSTRUCTIONS
General Participant Instructions

These general instructions were included in the informed consent document.

The present study will last no longer than 1 hour and 15 minutes. During this session, you will be required to fill out several surveys, complete a computerized vigilance task (Part A), and complete a taste-testing task (Part B). You will complete questionnaires about the following:

- A general demographic questionnaire
- A 20-item questionnaire about your current beliefs on alcohol and alcohol consumption
- A short questionnaire about mood and personality
- A questionnaire about how you are feeling before and after completing the computerized vigilance task,
- A short questionnaire about the problem solving strategies that you used during the computerized task
- An 8-item taste test questionnaire (at two different times)

(Part A)

For the computerized vigilance task, you will be presented with information on the computer screen and asked to respond to the presented information with a key press. The computer will record your actual responses, along with the accuracy and speed of response.

(Part B)

For the taste-testing task, you will be presented with four beverage options (sparkling water, juice, beer, and wine) and asked to choose one to test. If you have any allergies to the beverage options, you will need to notify the experimenter at this time (the experimenter will also ask you if you have any allergies). Once you choose a beverage, the experimenter will obtain a freshly chilled bottle of your choice, provide you with a plastic cup, and two copies of the 8-item taste questionnaire. You will be given a total of six minutes to complete the entire taste task. You will pour yourself as much beverage as you want. You will complete one copy of the taste questionnaire immediately after your first drink. You will complete the second copy of the taste questionnaire at the end of six minutes. Based on your beverage choice, you may be asked to take a breathalyzer test before leaving the testing session.
APPENDIX B: GENERAL DEMOGRAPHIC QUESTIONNAIRE
General Demographic Questionnaire

Thank you for your cooperation in completing the following questions as accurately as possible. Remember, all information will remain confidential.

1. Your gender: (circle one)  Male    Female    Age (at last birthday)______
2. Your year in school: (circle one): Freshman  Sophomore  Junior  Senior
3. What is your ethnicity?
   ___white    ___black/African American  ___Asian American
   ___Latino/Hispanic    ___other    (please specify) _______________________
4. Are you currently in a romantic relationship?   YES   NO  
   (skip to Question 4d)
5. if yes, how long have you been going out?   __________
6. Using the following scale to answer the next two questions:
   1=Not at all  2=Slightly  3=Somewhat
   4=Definitely more satisfied than not   5=very satisfied
7. How satisfied are you with your current romantic relationship? ______
8. How satisfied is the person with whom you are having a relationship? ______
9. if no, how long has it been since your last date?  __________
10. How often do you socialize with same sex friends? (circle only one)
    1  2  3  4  5  6  7
    8
every day    once in a while    rarely
11. How satisfied are you with the quality of your same sex friendships? (circle only one)
    1  2  3  4  5
    1=very satisfied    2=somewhat    3=not at all
12. How many hours per week, on average, do you spend studying? ______
PART II: For each of the following questions, please place an X on the line which represents your behavior
1 Drink = 12 oz. beer = 5 oz glass of wine = 1 "shot" liquor

1. How often do you consume alcohol?
   _____ More than once a day _____ Once per week
   _____ Once a day _____ Once every two weeks
   _____ Five times per week _____ Once per month
   _____ Three times per week _____ Less than once per month _____ Never

2. What is the typical number of drinks that you drink when you do consume alcohol (if greater than 12, please specify)?
   __1 ___2 ___3 ___4 ___5 ___6 ___7 ___8 ___9 ___10 ___11 ___12 __(more)

3. In the past month, what is the greatest number of drinks you have consumed at a single time?
   __1 __2 __3 __4 __5 __6 __7 __8 __9 __10 __11 __12 __13 __14 ____ (More than 14--specify)

4. How often do your dates in your current relationship involve alcohol consumption?
   _____most _____some _____rarely _____never

5. Please circle the number between the two sets of adjectives which best describes you:
   sociable, assertive, active, extroverted 1 2 3 4 5 6 reserved, quiet, introverted, passive
   sensitive, nervous, worrying, emotional 1 2 3 4 5 6 relaxed, calm, secure, at ease
   curious, creative, imaginative 1 2 3 4 5 6 conventional, practical down-to-earth
   compassionate, trusting, soft-hearted 1 2 3 4 5 6 skeptical, competitive, hard-headed, proud
   Conscientious, careful well-organized 1 2 3 4 5 6 Carefree, easygoing disorganized
In the Questionnaires on the following pages, you will be asked your views on a number of issues related to your life and your preferences. Please do your best to answer as honestly as possible--there are no right or wrong answers, just your perspective--please be sure that you are answering on the correct part of the answer sheet, and that your Participant identification number is on that answer sheet. Thank you!
APPENDIX C: EPQ-R
Next, please answer some questions concerned with what you are like in everyday life. Answer each question by putting a circle around the 'Y' for YES or the 'N' for NO. There are no right or wrong answers. Work quickly and do not think too long about the exact meaning of the questions.

1. Y N Does your mood often go up and down?
2. Y N Do you take much notice of what people think?
3. Y N Are you a talkative person?
4. Y N If you say you will do something, do you always keep your promise no matter how inconvenient it might be?
5. Y N Do you ever feel just miserable for no reason?
6. Y N Would being in debt worry you?
7. Y N Are you rather lively?
8. Y N Were you ever greedy by helping yourself to more than your share of anything?
9. Y N Are you an irritable person?
10. Y N Would you take drugs which may have strange or dangerous effects?
11. Y N Do you enjoy meeting new people?
12. Y N Have you ever blamed someone for doing something you knew was really your fault?
13. Y N Are your feelings easily hurt?
14. Y N Do you prefer to go your own way rather than act by the rules?
15. Y N Can you usually let yourself go and enjoy yourself at a lively party?
16. Y N Are all your habits good and desirable ones?
17. Y N Do you often feel 'fed-up'?
18. Y N Do good manners and cleanliness matter much to you?
19. Y N Do you usually take the initiative in making new friends?
20. Y N Have you ever taken anything (even a pin or button) that belonged to someone else?
21. Y N Would you call yourself a nervous person?
22. Y N Do you think marriage is old-fashioned and should be done away with?
23. Y N Can you easily get some life into a rather dull party?
24. Y N Have you ever broken or lost something belonging to someone else?
25. Y N Are you a worrier?
26. Y N Do you enjoy co-operating with others?
27. Y N Do you tend to keep in the background on social occasions?
28. Y N Does it worry you if you know there are mistakes in your work?
29. Y N Have you ever said anything bad or nasty about anyone?
30. Y N Would you call yourself tense or 'highly-strung'?
31. Y N Do you think people spend too much time safeguarding their future with savings and insurances?
32. Y N Do you like mixing with people?
33. Y N As a child were you ever cheeky (insolent) to your parents?
34. Y N Do you worry too long after an embarrassing experience?
35. Y N Do you try not to be rude to people?
36. Y N Do you like plenty of bustle and excitement around you?
37. Y N Have you ever cheated at a game?
38. Y N Do you suffer from 'nerves'?
39. Y N Would you like other people to be afraid of you?
40. Y N Have you ever taken advantage of someone?
41. Y N Are you mostly quiet when you are with other people?
42. Y N Do you often feel lonely?
43. Y N Is it better to follow society's rules than go your own way?
44. Y N Do other people think of you as being very lively?
45. Y N Do you always practice what you preach?
46. Y N Are you often troubled about feelings of guilt?
47. Y N Do you sometimes put off until tomorrow what you ought to do today?
48. Y N Can you get a party going?
APPENDIX D: DUNDEE STRESS STATE QUESTIONNAIRE:
PRE-TEST
STATE QUESTIONNAIRE

General Instructions. This questionnaire is concerned with your feelings and thoughts at the moment. We would like to build up a detailed picture of your current state of mind, so there are quite a few questions, divided into four sections. Please answer every question, even if you find it difficult. Answer, as honestly as you can, what is true of you. Please do not choose a reply just because it seems like the 'right thing to say'. Your answers will be kept entirely confidential. Also, be sure to answer according to how you feel AT THE MOMENT. Don't just put down how you usually feel. You should try and work quite quickly: there is no need to think very hard about the answers. The first answer you think of is usually the best.

Before you start, please provide some general information about yourself.
Age............. (years)                                         Sex.   M  F   (Circle one)
Occupation............................................................
If student, state your course...................................
Date today.....................                                Time of day
now..................

1. MOOD STATE
First, there is a list of words which describe people's moods or feelings. Please indicate how well each word describes how you felt AT THE MOMENT. For each word, circle the answer from 1 to 4 which best describes your mood.

<table>
<thead>
<tr>
<th></th>
<th>Definitely</th>
<th>Slightly</th>
<th>Slightly Not</th>
<th>Definitely Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Happy</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Dissatisfied</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Energetic</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Nervous</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7.</td>
<td>Passive</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Cheerful</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Tense</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>Jittery</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>Sluggish</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>Sorry</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>Composed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14.</td>
<td>Depressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15.</td>
<td>Restful</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16.</td>
<td>Vigorous</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17.</td>
<td>Anxious</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18.</td>
<td>Satisfied</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19.</td>
<td>Unenterprising</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20.</td>
<td>Sad</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21.</td>
<td>Calm</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22.</td>
<td>Active</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23.</td>
<td>Contented</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24.</td>
<td>Tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25.</td>
<td>Impatient</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>26. Annoyed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>27. Angry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>28. Irritated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>29. Grouchy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
2. MOTIVATION

Please answer the following questions about your attitude to the task you are about to do. For each question, circle a number from 0 to 9, according to how strongly you agree with one or other of the two extreme alternatives.

1. How motivated are you to do the task?
   Not at all         Very much
   0 1 2 3 4 5 6 7 8 9

2. Do you think the content of the task is:
   Very dull        Very interesting
   0 1 2 3 4 5 6 7 8 9

3. How eager are you to do well at the task?
   Very eager       Not at all eager
   0 1 2 3 4 5 6 7 8 9

4. How do you expect to feel after doing the task?
   More cooperative        More annoyed
   0 1 2 3 4 5 6 7 8 9

5. How much mental effort will you exert?
   Very little         A great deal
   0 1 2 3 4 5 6 7 8 9

6. I want to succeed on this task:
   Very much         Very little
   0 1 2 3 4 5 6 7 8 9

7. How will you feel if you perform badly on this task?
   Very un concerned        Very upset
   0 1 2 3 4 5 6 7 8 9

8. I think that doing this task will be:
   Very worthwhile         A waste of time
   0 1 2 3 4 5 6 7 8 9
3. THINKING STYLE

In this section, we are concerned with your thoughts about yourself: how your mind is working, how confident you feel, and how well you expect to perform on the task. Below are some statements which may describe your style of thought RIGHT NOW. Read each one carefully and indicate how true each statement is of your thoughts AT THE MOMENT. To answer, circle one of the following answers: Extremely = 4 Very much = 3 Somewhat = 2 A little bit = 1 Not at all = 0

1. I'm trying to figure myself out. 0 1 2 3 4
2. I'm very aware of myself. 0 1 2 3 4
3. I'm reflecting about myself. 0 1 2 3 4
4. I'm daydreaming about myself. 0 1 2 3 4
5. I'm thinking deeply about myself. 0 1 2 3 4
6. I'm attending to my inner feelings. 0 1 2 3 4
7. I'm examining my motives. 0 1 2 3 4
8. I feel that I'm off somewhere watching myself. 0 1 2 3 4
9. I feel confident about my abilities. 0 1 2 3 4
10. I am worried about whether I am regarded as a success or failure. 0 1 2 3 4
11. I feel self-conscious. 0 1 2 3 4
12. I feel as smart as others. 0 1 2 3 4
13. I am worried about what other people think of me. 0 1 2 3 4
14. I feel confident that I understand things. 0 1 2 3 4
15. I feel inferior to others at this moment. 0 1 2 3 4
16. I feel concerned about the impression I am making. 0 1 2 3 4
17. I feel that I have less scholastic ability right now than others. 0 1 2 3 4
18. I am worried about looking foolish. 0 1 2 3 4
19. My attention is directed towards things other than the task. 0 1 2 3 4
20. I am finding physical sensations such as muscular tension distracting 0 1 2 3 4
21. I expect my performance will be impaired by thoughts irrelevant to the task. 0 1 2 3 4
22. I have too much to think about to be able to concentrate on the task. 0 1 2 3 4
23. My thinking is generally clear and sharp. 0 1 2 3 4
24. I will find it hard to maintain my concentration for more than a short time. 0 1 2 3 4
25. My mind is wandering a great deal. 0 1 2 3 4
26. My thoughts are confused and difficult to control. 0 1 2 3 4
27. I expect to perform proficiently on this task. 0 1 2 3 4
28. Generally, I feel in control of things. 0 1 2 3 4
### 4. THINKING CONTENT

This set of questions concerns the kinds of thoughts that go through people's heads at particular times, for example while they are doing some task or activity. Below is a list of thoughts, some of which you might have had recently. Please indicate roughly how often you had each thought **DURING THE LAST TEN MINUTES** or so, by circling a number from the list below.

<table>
<thead>
<tr>
<th>Thought</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I thought about how I should work more carefully.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. I thought about how much time I had left.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. I thought about how others have done on this task.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. I thought about the difficulty of the problems.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. I thought about my level of ability.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. I thought about the purpose of the experiment.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. I thought about how I would feel if I were told how I performed.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. I thought about how often I get confused.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. I thought about members of my family.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. I thought about something that made me feel guilty.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11. I thought about personal worries.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. I thought about something that made me feel angry.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13. I thought about something that happened earlier today.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>14. I thought about something that happened in the recent past</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>(last few days, but not today).</td>
<td></td>
</tr>
<tr>
<td>15. I thought about something that happened in the distant past</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>16. I thought about something that might happen in the future.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
APPENDIX E: DUNDEE STRESS STATE QUESTIONNAIRE:
POST-TEST
STATE QUESTIONNAIRE

General Instructions
This questionnaire is concerned with your feelings and thoughts while you were performing the task. We would like to build up a detailed picture of your current state of mind, so there are quite a few questions, divided into four sections. Please answer every question, even if you find it difficult. Answer, as honestly as you can, what is true of you. Please do not choose a reply just because it seems like the 'right thing to say'. Your answers will be kept entirely confidential. Also, be sure to answer according to how you felt **WHILE PERFORMING THE TASK**. Don't just put down how you usually feel. You should try and work quite quickly: there is no need to think very hard about the answers. The first answer you think of is usually the best.

1. MOOD STATE
First, there is a list of words which describe people's moods or feelings. Please indicate how well each word describes how you felt **WHILE PERFORMING THE TASK**. For each word, circle the answer from 1 to 4 which best describes your mood.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definitely</th>
<th>Slightly</th>
<th>Slightly Not</th>
<th>Definitely Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Energetic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Nervous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Passive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Cheerful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Tense</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Jittery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sluggish</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sorry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Composed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Depressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Restful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Vigorous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Anxious</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Satisfied</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Unenterprising</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sad</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Calm</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Active</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Contented</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Impatient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Annoyed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Angry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Irritated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Grouchy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
### 2. MOTIVATION AND WORKLOAD

Please answer the following questions about your attitude to the task you have just done. For each question, circle a number from 0 to 9, according to how strongly you agree with one or other of the two extreme alternatives.

1. How motivated were you to do the task?
   
   Not at all         Very much
   0 1 2 3 4 5 6 7 8 9

2. Do you think the content of the task was:
   
   Very dull        Very interesting
   0 1 2 3 4 5 6 7 8 9

3. How eager were you to do well at the task?
   
   Very eager         Not at all eager
   0 1 2 3 4 5 6 7 8 9

4. How do you feel after doing the task?
   
   More cooperative        More annoyed
   0 1 2 3 4 5 6 7 8 9

5. How much mental effort did you exert?
   
   Very little         A great deal
   0 1 2 3 4 5 6 7 8 9

6. I wanted to succeed on this task:
   
   Very much         Very little
   0 1 2 3 4 5 6 7 8 9

7. How would you feel if you performed badly on this task?
   
   Very unconcerned        Very upset
   0 1 2 3 4 5 6 7 8 9

8. I think that doing this task was:
   
   Very worthwhile        A waste of time
   0 1 2 3 4 5 6 7 8 9

9. Please rate the MENTAL DEMAND of the task: How much mental and perceptual activity was required?
   
   Low 0 1 2 3 4 5 6 7 8 9 10 High

10. Please rate the PHYSICAL DEMAND of the task: How much physical activity was required?
    
    Low 0 1 2 3 4 5 6 7 8 9 10 High

11. Please rate the TEMPORAL DEMAND of the task: How much time pressure did you feel due to the pace at which the task elements occurred?
    
    Low 0 1 2 3 4 5 6 7 8 9 10 High

12. Please rate your PERFORMANCE: How successful do you think you were in accomplishing the goals of the task?
    
    Low 0 1 2 3 4 5 6 7 8 9 10 High

13. Please rate your EFFORT: How hard did you have to work (mentally and physically) to accomplish your level of performance?
    
    Low 0 1 2 3 4 5 6 7 8 9 10 High
14. Please rate your FRUSTRATION: How discouraged, irritated, stressed and annoyed did you feel during the task?
Low  0  1  2  3  4  5  6  7  8  9  10  High
3. THINKING STYLE

In this section, we are concerned with your thoughts about yourself: how your mind is working, how confident you feel, and how well you believed you performed on the task. Below are some statements which may describe your style of thought during task performance. Read each one carefully and indicate how true each statement was of your thoughts **WHILE PERFORMING THE TASK**. To answer circle one of the following answers:  Extremely = 4  Very much = 3  Somewhat = 2  A little bit = 1  Not at all = 0

1. I tried to figure myself out. 0 1 2 3 4
2. I was very aware of myself. 0 1 2 3 4
3. I reflected about myself. 0 1 2 3 4
4. I daydreamed about myself. 0 1 2 3 4
5. I thought deeply about myself. 0 1 2 3 4
6. I attended to my inner feelings. 0 1 2 3 4
7. I examined my motives. 0 1 2 3 4
8. I felt that I was off somewhere watching myself. 0 1 2 3 4
9. I felt confident about my abilities. 0 1 2 3 4
10. I was worried about whether I am regarded as a success or failure. 0 1 2 3 4
11. I felt self-conscious. 0 1 2 3 4
12. I felt as smart as others. 0 1 2 3 4
13. I was worried about what other people think of me. 0 1 2 3 4
14. I felt confident that I understood things. 0 1 2 3 4
15. I felt inferior to others. 0 1 2 3 4
16. I felt concerned about the impression I was making. 0 1 2 3 4
17. I felt that I had less scholastic ability than others. 0 1 2 3 4
18. I was worried about looking foolish. 0 1 2 3 4
19. My attention was directed towards things other than the task. 0 1 2 3 4
20. I found physical sensations such as muscular tension distracting. 0 1 2 3 4
21. My performance was impaired by thoughts irrelevant to the task. 0 1 2 3 4
22. I had too much to think about to be able to concentrate on the task. 0 1 2 3 4
23. My thinking was generally clear and sharp. 0 1 2 3 4
24. I found it hard to maintain my concentration for more than a short time. 0 1 2 3 4
25. My mind wandered a great deal. 0 1 2 3 4
26. My thoughts were confused and difficult to control 0 1 2 3 4
27. I performed proficiently on this task. 0 1 2 3 4
28. Generally, I felt in control of things. 0 1 2 3 4
CITS-S
Think about how you dealt with any difficulties or problems that arose while you were performing the task. Below are listed some options for dealing with problems such as poor performance or negative reactions to doing the task. Please indicate how much you used each option, specifically as a deliberately chosen way of dealing with problems. To answer circle one of the following answers:

Extremely = 4 Very much = 3 Somewhat = 2 A little bit = 1 Not at all = 0
I...
1. Worked out a strategy for successful performance
2. Worried about what I would do next
3. Stayed detached or distanced from the situation
4. Decided to save my efforts for something more worthwhile
5. Blamed myself for not doing better
6. Became preoccupied with my problems
7. Concentrated hard on doing well
8. Focused my attention on the most important parts of the task
9. Acted as though the task wasn't important
10. Didn't take the task too seriously
11. Wished that I could change what was happening
12. Blamed myself for not knowing what to do
13. Worried about my inadequacies
14. Made every effort to achieve my goals
15. Blamed myself for becoming too emotional
16. Was single-minded and determined in my efforts to overcome any problems
17. Gave up the attempt to do well
18. Told myself it wasn't worth getting upset
19. Was careful to avoid mistakes
20. Did my best to follow the instructions for the task
21. Decided there was no point in trying to do well
APPENDIX G: TASTE STUDY QUESTIONNAIRES
TASTE STUDY QUESTIONNAIRES

Initial Taste Form

Participant number #
Beverage Choice ______

Please complete the following taste questionnaire; make sure to complete all questions. There are no right or wrong answers, we are interested in your personal opinion of the beverage you choose to rate. Use the following rating scale for all responses:

Strongly Agree=1  Agree=2  Neutral=3  Disagree=4  Strongly Disagree=5

1. The beverage is visually appealing to me.  1  2  3  4  5
2. The beverage has a sweet taste to me.  1  2  3  4  5
3. The beverage has a bitter taste to me.  1  2  3  4  5
4. The beverage leaves a pleasant after taste.  1  2  3  4  5
5. The beverage leaves an unpleasant after taste.  1  2  3  4  5
6. The beverage has non after taste.  1  2  3  4  5
7. The overall taste of the beverage was appealing to me.  1  2  3  4  5
8. I would drink this beverage again.  1  2  3  4  5

Final Taste Form

Participant number #
Beverage Choice ______

Please complete the following taste questionnaire; make sure to complete all questions. There are no right or wrong answers, we are interested in your personal opinion of the beverage you choose to rate. Use the following rating scale for all responses:

Strongly Agree=1  Agree=2  Neutral=3  Disagree=4  Strongly Disagree=5

9. The beverage is visually appealing to me.  1  2  3  4  5
10. The beverage has a sweet taste to me.  1  2  3  4  5
11. The beverage has a bitter taste to me.  1  2  3  4  5
12. The beverage leaves a pleasant after taste.  1  2  3  4  5
13. The beverage leaves an unpleasant after taste.  1  2  3  4  5
14. The beverage has non after taste.  1  2  3  4  5
15. The overall taste of the beverage was appealing to me.  1  2  3  4  5
16. I would drink this beverage again.  1  2  3  4  5

Please make an educated guess to the brand of the beverage you tasted, on the line below.

____________________

Please list the main reason you choose this particular beverage. (use the back of this paper if necessary)
APPENDIX H: VIGILANCE TASK INSTRUCTIONS
LETTER DETECTION

Your task will be to monitor the video screen in front of you for the presence of a target letter.

Throughout the task, one of three possible letters will appear in the middle of the screen. The letters will be presented very fast, so it is important to pay close attention. The letters to be presented are a normal “D”, a backwards “D” ( “Ω” ) and an “O”. The “D” and “Ω” are neutral events which require no response from you. The “O” is the target letter. Whenever you have spotted an “O”, you should respond by pressing the **spacebar** indicating that you have detected a signal.
APPENDIX I: DEBRIEFING STATEMENT
DEBRIEFING STATEMENT

Purpose of Part A: (The questionnaires and the computer task)

The main purpose of Part A was to see if your ratings on the DSSQ would change significantly after completing one of two computerized vigilance task. Two different versions of the vigilance tasks are included in the study, a hard and easy version, each participant only completes one of the vigilance tasks.

All questionnaire data that was collected will be used to assist in categorizing your results.

Purpose of Part B: (The taste test)

The main purpose of Part B was to see if there is any relationship between completing a computerized task (that may or may not be perceived as stressful) and your later choice of beverage. Individuals respond to difficult tasks in a variety of ways. After completing a task that may be perceived as difficult an individual may prefer to complete a simpler task (such as rating the taste or sparkling water) or may prefer another challenging/difficult task (such as rating the taste of wine). Or individuals may choose to test a particular beverage because of their perceptions of how that beverage would influence their mood or stress level.

We appreciate your cooperation in this study, and request that you not tell anyone else about this study until the end of the fall term. The results of this study will not be available until sometime fall quarter 2000, but you can contact the research to find out about the results when they are available.

If you are interested in reading more about this line of research, please leave your name and email address with the researcher and you will be sent a reference list of relevant articles.
Table 3

Correlations of personality traits, alcohol expectancies, coping strategies, stress states for participants in the hard vigil condition

<table>
<thead>
<tr>
<th>Personality</th>
<th>Post-task Stress States</th>
<th>Coping Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distress</td>
<td>Worry</td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.079</td>
<td>-.029</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.386**</td>
<td>.264</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>.174</td>
<td>.237</td>
</tr>
</tbody>
</table>

Alcohol Expect.

4. S. Fac. | .144 | -.177 | -.113 | -.163 | -.136 | .086 |
5. S. Assert. | .356* | .074 | .163 | .060 | .097 | -.090 |


* p < .05.
Table 4

Correlations of personality traits, alcohol expectancies, coping strategies, stress states for participants in the easy vigil condition

<table>
<thead>
<tr>
<th></th>
<th>Post-task Stress States</th>
<th>Coping Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Distress</td>
<td>Worry</td>
</tr>
<tr>
<td><strong>Personality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.118</td>
<td>.001</td>
</tr>
<tr>
<td>Neuroticism</td>
<td>.008</td>
<td>.249</td>
</tr>
<tr>
<td>Psychoticism</td>
<td>.082</td>
<td>.324*</td>
</tr>
<tr>
<td><strong>Alcohol Expect.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. S. Fac.</td>
<td>.055</td>
<td>.217</td>
</tr>
<tr>
<td>5. S. Assert.</td>
<td>.195</td>
<td>.267</td>
</tr>
</tbody>
</table>


*p < .05.